

PROPERTY OWNERS WITHIN 200 FEET

Block-Lot: 11.07-1 CHEN, KARL T & MARY A 2 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 2 SUMMERFIELD DR Block-Lot: 11.06-16 WILLIAMS, RONALD & LISA 2 BROOKSIDE DR PRINCETON, NJ 08540 RE: 2 BROOKSIDE DR Block-Lot: 11.06-9 WALTERS, JAMES E & CAROLYN 9 SUMMERFIELD DRIVE PRINCETON, NJ 08540 RE: 9 SUMMERFIELD DR Block-Lot: 11.07-2 MAKHJANI, ANJU S 4 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 4 SUMMERFIELD DR Block-Lot: 11.06-4 DALAL, PRATIK R & SOMNA S 7 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 7 SUMMERFIELD DR Block-Lot: 11.06-14 GHRAEL, AHMED 6 BROOKSIDE DR PRINCETON, NJ 08540 RE: 6 BROOKSIDE DR Block-Lot: 11.07-6 VORA, RAMESH & HARSHA 12 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 12 SUMMERFIELD DR Block-Lot: 11.09-23 TOWNSHIP OF FRANKLIN 475 DEMOTT LANE SOMERSET NJ 08873 RE: 1 BROOKSIDE DR Block-Lot: 11.06-7 MISHRA, PRADEEP K & RANJU 13 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 13 SUMMERFIELD DR Block-Lot: 11.06-6 ALAIKH, SUKHIR K & VIBHA 11 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 11 SUMMERFIELD DR Block-Lot: 11.09-24 PALLIKONDA, MURALI KRISHNA 1 STUMP RD. PRINCETON, NJ 08540 RE: 1 STUMP RD Block-Lot: 11.07-4 SUPER, JAMES M & CAROLYN E 8 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 8 SUMMERFIELD DR Block-Lot: 11.06-2 ANGELES, ANGELO & NIDA 3 SUMMERFIELD DRIVE PRINCETON, NJ 08540 RE: 3 SUMMERFIELD DR Block-Lot: 11.06-3 BROWN, BOBBIE & DANNA L 5 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 5 SUMMERFIELD DR Block-Lot: 20.01-16.01 JENSEN, ERIC R. & JENSEN, C.E. & JENSEN, A 588 NEW BRUNSWICK AVE. FORDS, NJ 08863 RE: 3523 RT 27 Block-Lot: 11.06-16 BALANI, KIREN & HEMRAJANI, DIMPLE 4 BROOKSIDE DR PRINCETON, NJ 08540 RE: 4 BROOKSIDE DR	Block-Lot: 11.07-3 BROWN, TREG & PAMELA 6 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 6 SUMMERFIELD DR Block-Lot: 11.06-1 RATTIAN, DEEPAK & RASHMI 1 SUMMERFIELD DRIVE PRINCETON, NJ 08540 RE: 1 SUMMERFIELD DR Block-Lot: 11.06-9 WALTERS, JAMES E & CAROLYN HOMEOWNERS ASSOC WOODFIELD ESTATES KENDALL PARK, NJ 08824 3520 ROUTE #27 PRINCETON, NJ 08540 RE: 3520 ROUTE #27 Block-Lot: 11.07-2 MAKHJANI, ANJU S TOWNSHIP OF FRANKLIN 475 DEMOTT LANE SOMERSET, NJ 08873 RE: BROOKSIDE DR Block-Lot: 11.07-7 PATEL, AJAY & BINDU 16 BROOKSIDE DR PRINCETON, NJ 08540 RE: 16 BROOKSIDE DR Block-Lot: 11.06-13 RAJAN, PRIYA & LUGO, WILLIAM 8 BROOKSIDE DR PRINCETON, NJ 08540 RE: 8 BROOKSIDE DR Block-Lot: 11.07-5 WILSON, STEVONNE 10 SUMMERFIELD DR PRINCETON, NJ 08540 RE: 10 SUMMERFIELD DR Block-Lot: 11.06-10 PATEL, BHARAT & NALLINI 10 BROOKSIDE DR PRINCETON, NJ 08540 RE: 10 BROOKSIDE DR Block-Lot: 20.11-16.03 TOWNSHIP OF FRANKLIN 475 DEMOTT LANE SOMERSET, NJ 08873 RE: 50 BUNKER HILL ROAD Block-Lot: 20.11-16.02 GREEN HILL MANOR VILLA, LLC 929 ROUTE 202 RARITAN, NJ 08869 RE: VETTER DRIVE Block-Lot: 11.06-16 WILLIAMS, RONALD & LISA 2 BROOKSIDE DR PRINCETON, NJ 08540 RE: 2 BROOKSIDE DR Block-Lot: 11.06-11.01 JENSEN, ERIC R. & JENSEN, C.E. & JENSEN, A 588 NEW BRUNSWICK AVE. FORDS, NJ 08863 RE: 11 BUNKER HILL RD Block-Lot: 11.06-14 GHRAEL, AHMED 6 BROOKSIDE DR PRINCETON, NJ 08540 RE: 6 BROOKSIDE DR Block-Lot: 11.06-17 TOWNSHIP OF FRANKLIN 475 DEMOTT LANE SOMERSET, NJ 08873 RE: 7 BROOKSIDE DR Block-Lot: 11.06-15 BALANI, KIREN & HEMRAJANI, DIMPLE 4 BROOKSIDE DR PRINCETON, NJ 08540 RE: 4 BROOKSIDE DR Block-Lot: 20.11-16.02 GREEN HILL MANOR VILLA, LLC 929 ROUTE 202 RARITAN, NJ 08869 RE: VETTER DRIVE	Block-Lot: 95.01-77.011 FIRST UNION NATIONAL BANK/WACHOVIA PO BOX 2609 CARLSBAD, CA 92018-2609 RE: 3510 ROUTE #27 Block-Lot: 348-24.01 BFC PROPERTIES INC., ETAL 515 LYLEL DR., STE 101 MODESTO, CA 95356 RE: 3534 ROUTE #27 Block-Lot: 348-24.03 MOHYI, LLC 3520 ROUTE #27 KENDALL PARK, NJ 08824 3520 ROUTE #27 Block-Lot: 348-24.04 SATWAH PLAZA LLC 3084 RT-27, STE-11 KENDALL PARK, NJ 08824 3530 ROUTE #27 Block-Lot: 348-24.05 NHAV, LLC 3538 ROUTE 27 KENDALL PARK, NJ 08824 3538 ROUTE #27
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BUNKER HILL DEVELOPMENT

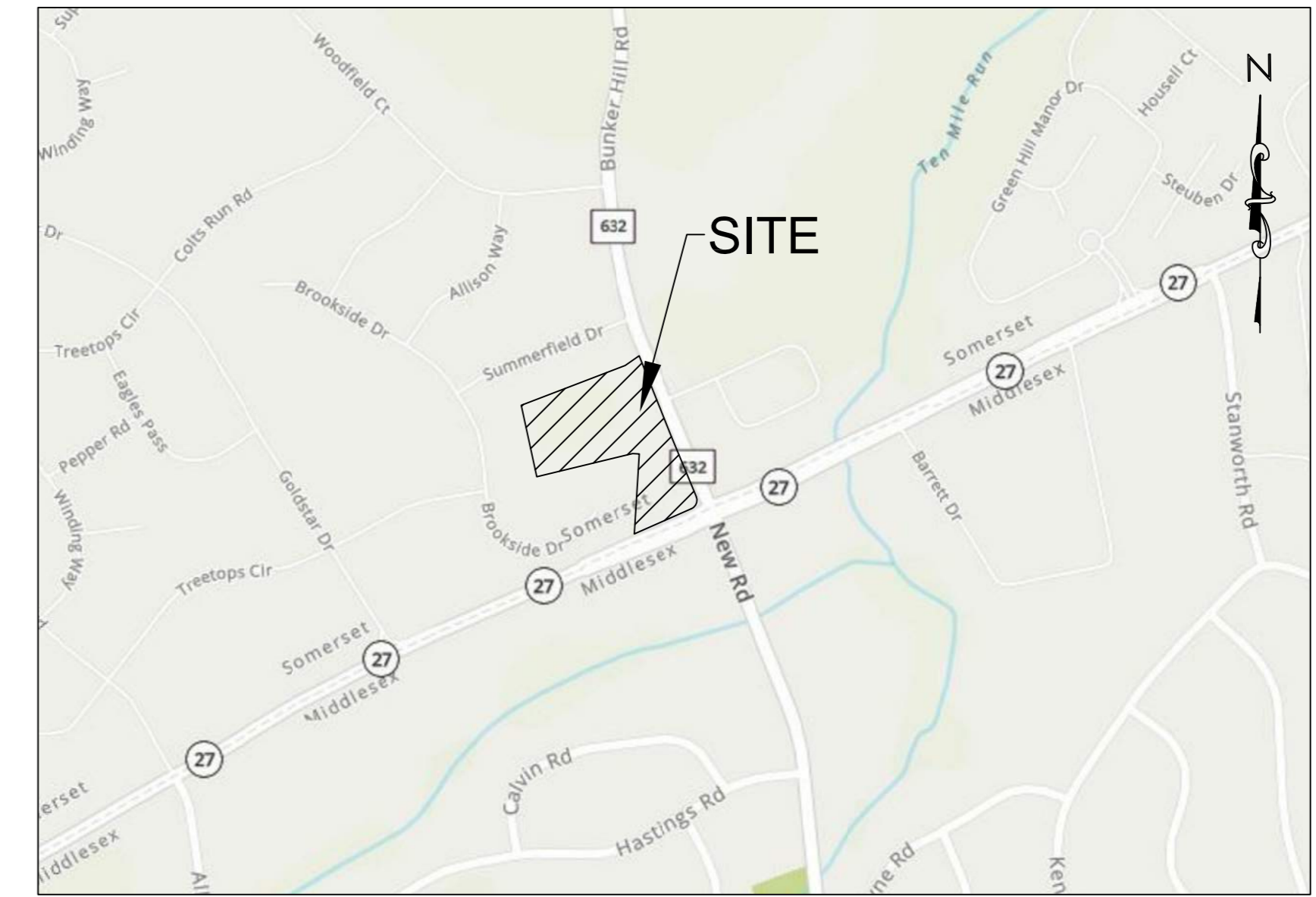
11 BUNKER HILL ROAD - BLOCK 11.06, LOT 11.01

3523 ROUTE 27 - BLOCK 20.01, LOT 16.01

FRANKLIN TOWNSHIP, SOMERSET COUNTY, NEW JERSEY



TAX MAP
(1"=200')
REFERENCE: TAX MAP SHEET No. 16.02 AND 23 FRANKLIN TOWNSHIP AND
TAX MAP SHEET No. 156 AND 159 SOUTH BRUNSWICK TOWNSHIP



SITE LOCATION PLAN
(1"=500')

PUBLIC UTILITIES

Right-of-Way Department Buckeye Pipe Line Company PO Box 368 Emmaus, PA 18049-0368	Sun Pipe Line Company Right of Way Dept. 525 Fritztown Road Sinking Spring, PA 19608	PSE&G 80 Park Plaza PO Box 570 Newark, NJ 07102-4194
Business Manager Comcast Cable 275 Amwell Road Hillsborough, NJ 08844	Ms. Joan Purcuro Right of Way Representative New Jersey Natural Gas Company PO Box 1464 Wall, NJ 07719	Verizon New Jersey Inc. 540 Broad Street, 20th Floor Newark, NJ 07102
Sunoco Pipeline LP Right of Way Dept Montello Complex 525 Fritztown Rd. Sinking Spring, PA 19608	Donna Short GIS Supervisor New Jersey-American Water Company, Inc. 1025 Laurel Oak Road Voorhees, NJ 08043	Comcast Business Communication LLC One Comcast Center Philadelphia, PA 19103
	New Jersey Board of Public Utilities P.O. Box 350 44 S. Clinton Avenue Trenton, NJ 08625	

APPROVALS

APPROVED BY THE PLANNING BOARD OF THE TOWNSHIP OF FRANKLIN AT IT'S MEETING OF _____ (DATE)

FRANKLIN TWP. PLANNING BOARD CHAIRPERSON	DATE
FRANKLIN TWP. PLANNING BOARD SECRETARY	DATE
FRANKLIN TWP. ENGINEER	DATE
FRANKLIN TWP. CLERK	DATE
SOMERSET COUNTY PLANNING BOARD CHAIRPERSON	DATE
SOMERSET COUNTY PLANNING BOARD SECRETARY	DATE

ZONING: SCHEDULE OF GENERAL REGULATIONS

ZONE DISTRICT: R10B RESIDENTIAL

PROPOSED USE: SINGLE-FAMILY DWELLINGS
TOTAL NUMBER OF UNITS: 8

DESCRIPTION	REQUIRED	EXISTING	PROPOSED LOT 1	PROPOSED LOT 2	PROPOSED LOT 3	PROPOSED LOT 4	PROPOSED LOT 5	PROPOSED LOT 6	PROPOSED LOT 7	PROPOSED LOT 8	PROPOSED LOT 9	PROPOSED LOT 16.011	RELIEF REQUIRED
MINIMUM LOT AREA (SF)	7,500	175,444	10,439.55	9,988.93	9,365.07	12,086.06	19,354.14	11,855.54	13,572.59	9,627.93	13,261.04	44,591.73	NO
MINIMUM LOT FRONTAGE (FT)**	75	221.19	101.84	106.97	102.40	87.52	96.42	93.32	161.89	95	-	-	NO
MINIMUM FRONT YARD (FT)	25	-	25	25	25	25	25	25	25	25	-	-	NO
MINIMUM 1 SIDE YARD (FT)	8	53.5	8	8	8	8	8	8	8	8	-	-	NO
MINIMUM 2 SIDE YARDS (FT)	20	-	20	20	20	20	20	20	20	20	-	-	NO
MINIMUM REAR YARD (FT)	20	63.5	20	20	20	20	20	20	20	20	-	-	NO
MAXIMUM HEIGHT (STORIES/FT)	2.5 / 35	2.5 / 35	2.5 / 35	2.5 / 35	2.5 / 35	2.5 / 35	2.5 / 35	2.5 / 35	2.5 / 35	2.5 / 35	-	-	NO
MAXIMUM LOT COVERAGE	25%	2%	14%	15%	16%	12%	8%	13%	11%	16%	-	-	NO
MAXIMUM IMPERVIOUS COVERAGE	35%	9%	19%	20%	21%	17%	10%	17%	15%	21%	-	-	NO
MAXIMUM FLOOR AREA RATIO (FAR)	-	-	-	-	-	-	-	-	-	-	-	-	NO

* EXISTING VARIANCE
** PROPOSED VARIANCE
*** FRONTAGE FOR SINGLE-FAMILY LOTS IN THE R-10B ZONE SHALL BE MEASURED AT THE REQUIRED FRONT SETBACK LINE

FOOTNOTES TO SCHEDULE 2 - LOT AND YARD REQUIREMENTS

9. In the R-10 B Zone:

	PROPOSED	PARKING REQUIREMENTS	PROVIDED
(a) The maximum permitted density shall be 2.1 dwelling units per gross acre for single-family residential development and 3.25 units per gross acre for garden apartment development.	(a) COMPLIES	REQUIRED 2.5 SPACES (PER RISIS)	2 CARS GARAGE + 2 CARS IN DRIVEWAY = 4 SPACES
(b) Open space shall be provided on tract according to the standards contained in Article XXX, Natural Resource Preservation Cluster Option, §§ 112-238C and 112-242C and as modified below:	(b) COMPLIES		
[1] A minimum of 25% of the tract shall be set aside as open space for single-family residential development and 60% for garden apartment development.	[1] COMPLIES		
[2] The minimum size of an open space area shall be four acres.	[2] VARIANCE REQUIRED		
[3] The minimum width of an open space area shall be 250 feet.	[3] VARIANCE REQUIRED		
(c) No development will be permitted of forests identified in the Forest Study prepared by the Franklin Township Environmental Commission.			
(d) Frontage for single-family residential lots in the R-10B Zone shall be measured at the required front setback line.			

INDEX OF SHEETS

SHEET NO.	TITLE
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	TREE REMOVAL PLAN
4	SUBDIVISION PLAN
5	GRADING AND UTILITY PLAN
6	LANDSCAPING AND LIGHTING PLAN
7	SOIL EROSION AND SEDIMENT CONTROL PLAN
8	SOIL EROSION AND SEDIMENT CONTROL DETAILS
9	ROADWAY PROFILE
10	CONSTRUCTION DETAILS
11	CONSTRUCTION DETAILS
12	CONSTRUCTION DETAILS

GENERAL INFORMATION

PROPERTY KNOWN AS 11 BUNKER HILL ROAD - BLOCK 11.06, LOT 11.01 AND 3523 ROUTE 27 - BLOCK 20.01, LOT 16.01, FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

APPLICANT:

DEVIN DEVELOPERS, LLC
6 POINTER PLACE
KENDALL PARK, NJ 08824

OWNER:

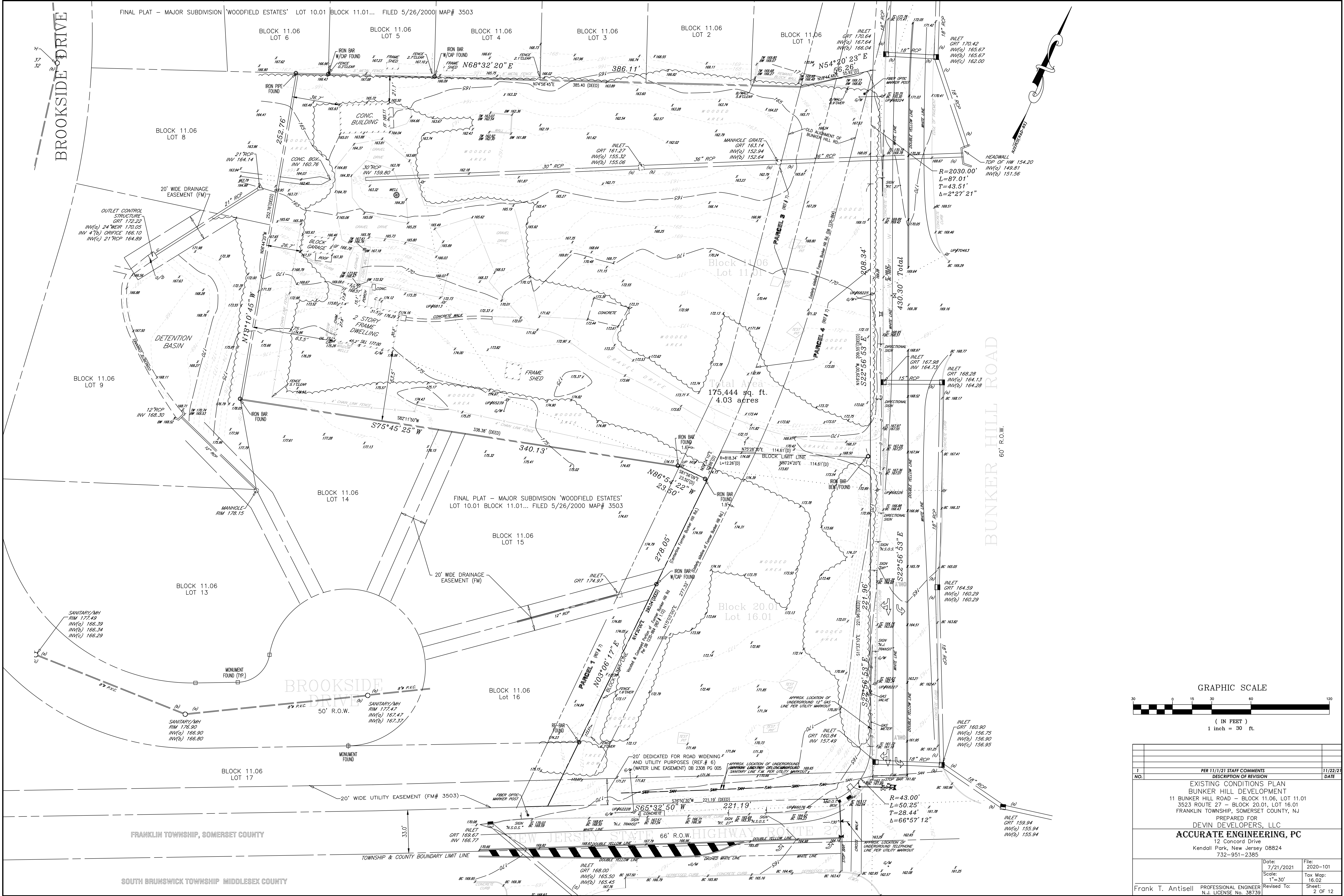
DEVIN DEVELOPERS, LLC
6 POINTER PLACE
KENDALL PARK, NJ 08824

PROTECT YOURSELF
A PHONE CALL CAN BE YOUR INSURANCE POLICY

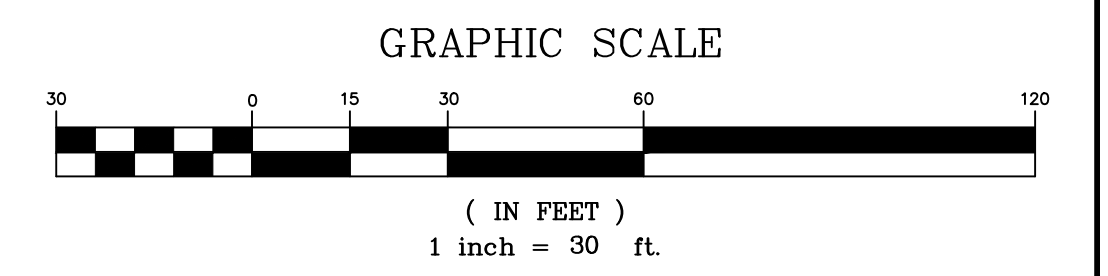


WHAT YOU DON'T KNOW CAN HURT YOU.
THE STATE OF NEW JERSEY REQUIRES NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE.

NO.	PER 11/1/21 STAFF COMMENTS	DESCRIPTION OF REVISION	DATE
1		COVER SHEET	11/22/21
		BUNKER HILL DEVELOPMENT 11 BUNKER HILL ROAD - BLOCK 11.06, LOT 11.01 3523 ROUTE 27 - BLOCK 20.01, LOT 16.01 FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ PREPARED FOR DEVIN DEVELOPERS, LLC ACCURATE ENGINEERING, PC 12 Concord Drive Kendall Park, New Jersey 08824 732-951-2385	
		Date: 7/21/2021 Scale: AS SHOWN Revised To:	File: 2021-011 Tax Map: 16.02 Sheet: 1 OF 12



Total Area
175,444 sq. ft.
4.03 acres



NO.	DESCRIPTION OF REVISION	DATE
1	PER 11/21 STAFF COMMENTS	11/22/23
NO.	DESCRIPTION OF REVISION	DATE

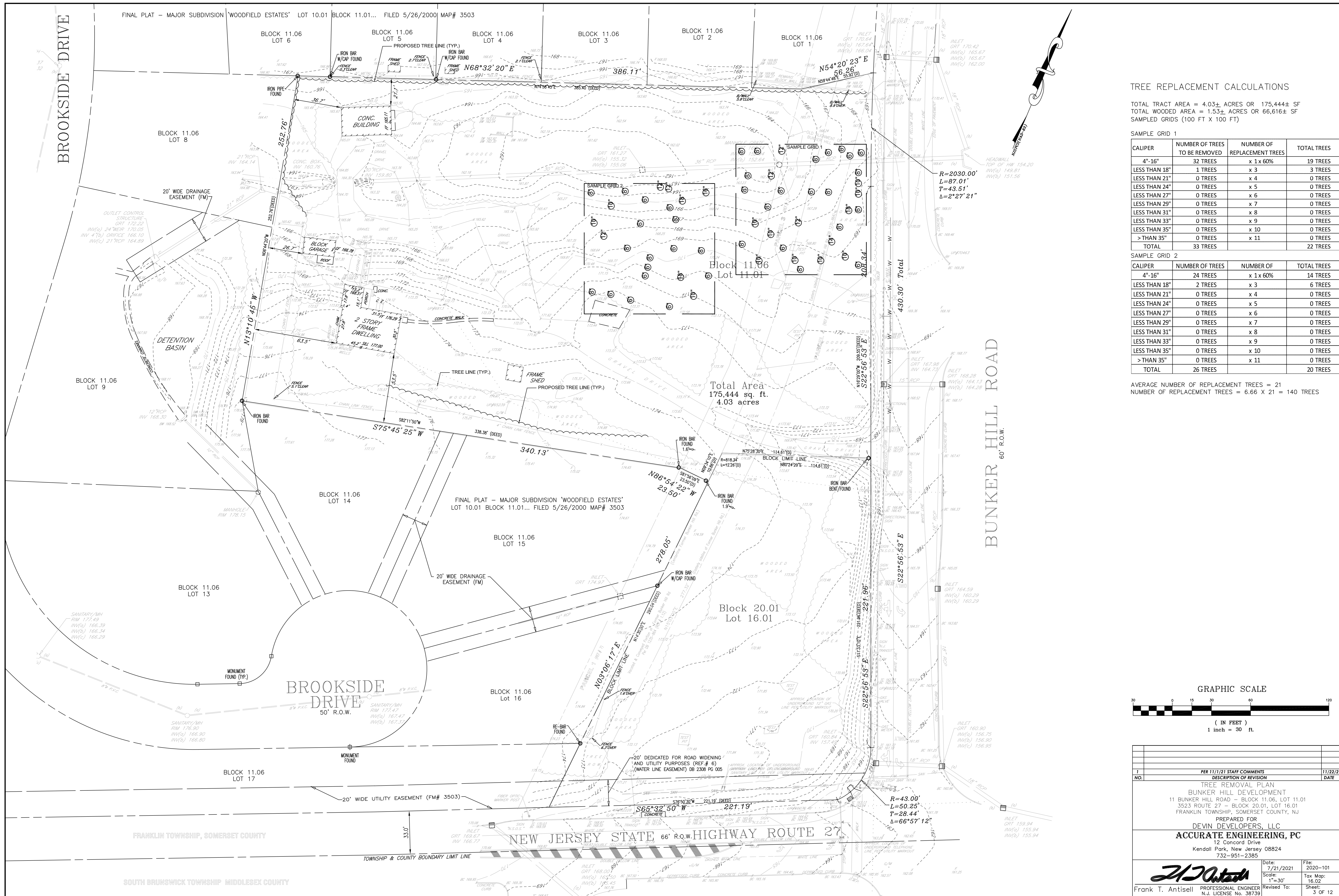
EXISTING CONDITIONS PLAN
BUNKER HILL DEVELOPMENT
11 BUNKER HILL ROAD - BLOCK 11.06, LOT 10.01
3523 ROUTE 27 - BLOCK 20.01, LOT 16.01
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ
PREPARED FOR
DEVIN DEVELOPERS, LLC
ACCURATE ENGINEERING, PC
12 Concord Drive
Kendall Park, New Jersey 08824
732-951-2385

Date:	7/21/2021	File:	2020-101
Scale:	1"=30'	Tax Map:	16.02
Revised To:		Sheet:	2 OF 12

Frank T. Antisell PROFESSIONAL ENGINEER
N.J. LICENSE No. 38739

FRANKLIN TOWNSHIP, SOMERSET COUNTY

SOUTH BRUNSWICK TOWNSHIP MIDDLESEX COUNTY



TREE REPLACEMENT CALCULATIONS

TOTAL TRACT AREA = 4.03± ACRES OR 175,444± SF
 TOTAL WOODED AREA = 1.53± ACRES OR 66,616± SF
 SAMPLE GRIDS (100 FT X 100 FT)

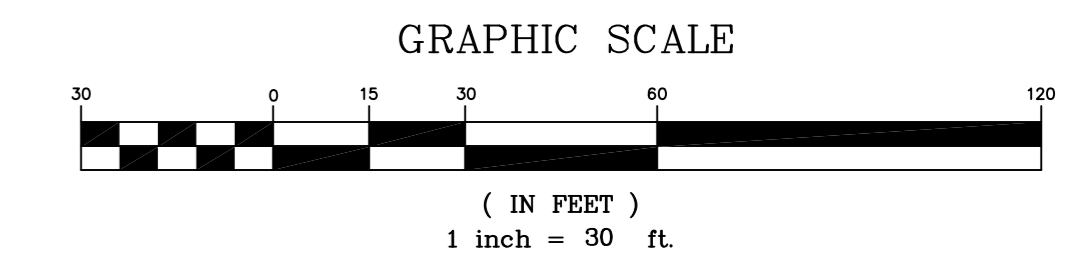
SAMPLE GRID 1

CALIPER	NUMBER OF TREES TO BE REMOVED	NUMBER OF REPLACEMENT TREES	TOTAL TREES
4"-16"	32 TREES	x 1 x 60%	19 TREES
LESS THAN 18"	1 TREES	x 3	3 TREES
LESS THAN 21"	0 TREES	x 4	0 TREES
LESS THAN 24"	0 TREES	x 5	0 TREES
LESS THAN 27"	0 TREES	x 6	0 TREES
LESS THAN 29"	0 TREES	x 7	0 TREES
LESS THAN 31"	0 TREES	x 8	0 TREES
LESS THAN 33"	0 TREES	x 9	0 TREES
LESS THAN 35"	0 TREES	x 10	0 TREES
> THAN 35"	0 TREES	x 11	0 TREES
TOTAL	33 TREES		22 TREES

SAMPLE GRID 2

CALIPER	NUMBER OF TREES	NUMBER OF REPLACEMENT TREES	TOTAL TREES
4"-16"	24 TREES	x 1 x 60%	14 TREES
LESS THAN 18"	2 TREES	x 3	6 TREES
LESS THAN 21"	0 TREES	x 4	0 TREES
LESS THAN 24"	0 TREES	x 5	0 TREES
LESS THAN 27"	0 TREES	x 6	0 TREES
LESS THAN 29"	0 TREES	x 7	0 TREES
LESS THAN 31"	0 TREES	x 8	0 TREES
LESS THAN 33"	0 TREES	x 9	0 TREES
LESS THAN 35"	0 TREES	x 10	0 TREES
> THAN 35"	0 TREES	x 11	0 TREES
TOTAL	26 TREES		20 TREES

AVERAGE NUMBER OF REPLACEMENT TREES = 21
 NUMBER OF REPLACEMENT TREES = 6.66 X 21 = 140 TREES



NO.	PER 11/11/21 STAFF COMMENTS	11/22/21
1	DESCRIPTION OF REVISION	DATE

TREE REMOVAL PLAN
 BUNKER HILL DEVELOPMENT
 11 BUNKER HILL ROAD - BLOCK 11.06, LOT 11.01
 3523 ROUTE 27 - BLOCK 20.01, LOT 16.01
 FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

PREPARED FOR
 DEVIN DEVELOPERS, LLC

ACCURATE ENGINEERING, PC
 12 Concord Drive
 Kendall Park, New Jersey 08824
 732-951-2385

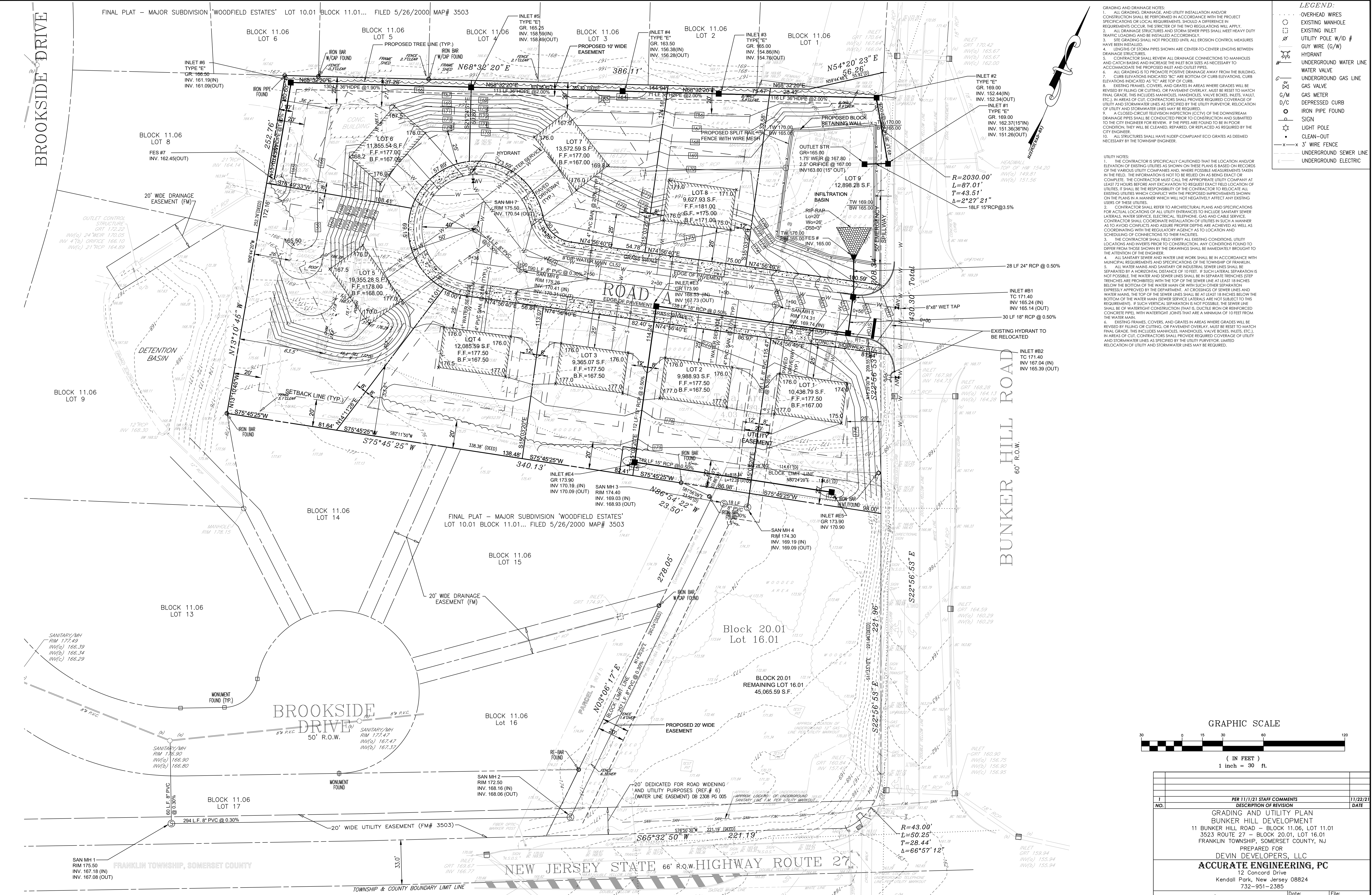
Frank T. Antisell
 Frank T. Antisell PROFESSIONAL ENGINEER
 N.J. LICENSE NO. 38739

Date: 7/21/2021
 Scale: 1"=30'
 Revised To: 16.02

File: 2020-101
 Tax Map: 16.02
 Sheet: 3 OF 12

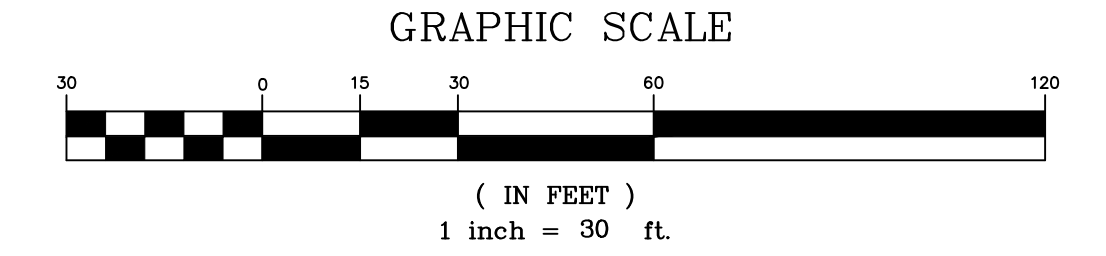
FINAL PLAT - MAJOR SUBDIVISION 'WOODFIELD ESTATES' LOT 10.01 BLOCK 11.01... FILED 5/26/2000 MAP# 3503

FINAL PLAT - MAJOR SUBDIVISION 'WOODFIELD ESTATES' LOT 10.01 BLOCK 11.01... FILED 5/26/2000 MAP# 3503



- GRADING AND DRAINAGE NOTES:**
1. ALL GRADING, DRAINAGE, AND UTILITY INSTALLATION AND/OR CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS OR LOCAL REQUIREMENTS. SHOULD A DIFFERENCE IN REQUIREMENTS OCCUR, THE STRICTER OF THE TWO REGULATIONS WILL APPLY.
 2. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC LOADING AND BE INSTALLED ACCORDINGLY.
 3. SITE GRADING SHALL NOT PROCEED UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
 4. LENGTHS OF STORM PIPES SHOWN ARE CENTER-TO-CENTER LENGTHS BETWEEN DRAINAGE STRUCTURES.
 5. CONTRACTOR SHALL REVIEW ALL DRAINAGE CONNECTIONS TO MANHOLES AND CATCH BASINS AND INCREASE THE INLET BOX SIZES AS NECESSARY TO ACCOMMODATE THE PROPOSED INLET AND OUTLET PIPES.
 6. ALL GRADING IS TO PROMOTE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
 7. CURB ELEVATIONS INDICATED "TC" ARE BOTTOM OF CURB ELEVATIONS. CURB ELEVATIONS LOCATED AS "TIC" ARE TOP OF CURB AS ELEVATIONS.
 8. EXISTING FRAMES, COVERS, AND GRATES IN AREAS WHERE GRADES WILL BE REVISED BY FILLING OR CUTTING, OR PAVEMENT OVERLAY, MUST BE RESET TO MATCH FINAL GRADE. THIS INCLUDES MANHOLES, HANDHOLES, VALVE BOXES, INLETS, VAULT, ETC.). IN AREAS OF CUT, CONTRACTORS SHALL PROVIDE REQUIRED COVERAGE OF UTILITY AND STORMWATER LINES AS SPECIFIED BY THE UTILITY PURVEYOR. RELOCATION OF UTILITY AND STORMWATER LINES MAY BE REQUIRED.
 9. A CLOSED-CIRCUIT TELEVISION INSPECTION (CCTV) OF THE DOWNSIDE DRAINAGE PIPES SHALL BE CONDUCTED PRIOR TO CONSTRUCTION AND SUBMITTED TO THE CITY ENGINEER FOR REVIEW. IF THE PIPES ARE FOUND TO BE IN POOR CONDITION, THEY WILL BE CLEANED, REPAIRED, OR REPLACED AS REQUIRED BY THE CITY ENGINEER.
 10. ALL STRUCTURES SHALL HAVE HULPEE-COMPLIANT ECO GRATES AS DEEMED NECESSARY BY THE TOWNSHIP ENGINEER.
- UTILITY NOTES:**
1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS IN A MANNER WHICH WILL NOT NEGATIVELY AFFECT ANY EXISTING USERS OF THESE UTILITIES.
 2. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ACTUAL LOCATIONS OF ALL UTILITY ENTRANCES TO INCLUDE SANITARY SEWER LATERALS, WATER SERVICE, ELECTRICAL, TELEPHONE, GAS AND CABLE SERVICE. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO AVOID CONFLICTS AND ASSURE PROPER DEPTHS ARE ACHIEVED AS WELL AS COORDINATING WITH THE REGULATORY AGENCIES AS TO LOCATION AND SCHEDULING OF CONNECTIONS TO THEIR FACILITIES.
 3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, UTILITY LOCATIONS AND INVERTS PRIOR TO CONSTRUCTION. ANY CONDITIONS FOUND TO DIFFER FROM THOSE SHOWN BY THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
 4. ALL SANITARY SEWER AND WATER LINE WORK SHALL BE IN ACCORDANCE WITH MUNICIPAL REQUIREMENTS AND SPECIFICATIONS OF THE TOWNSHIP OF FRANKLIN, N.J.
 5. ALL WATER MAINS AND SANITARY OR INDUSTRIAL SEWER LINES SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF 10 FEET. IF SUCH LATERAL SEPARATION IS NOT POSSIBLE, THE WATER AND SEWER LINES SHALL BE IN SEPARATE TRENCHES (STEP TRENCHES ARE PROHIBITED) WITH THE TOP OF THE SEWER LINE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN OR WITH SUCH OTHER SEPARATION EXPRESSLY APPROVED BY THE DEPARTMENT. AT CROSSINGS OF SEWER LINES AND WATER MAINS, THE TOP OF THE SEWER LINES SHALL BE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN. SEWER SERVICE LATERALS ARE NOT SUBJECT TO THIS REQUIREMENT. IF SUCH VERTICAL SEPARATION IS NOT POSSIBLE, THE SEWER LINE SHALL BE OF A WEIGHT WITHOUT CONSTRUCTION THAT IS DUCTILE IRON OR REINFORCED CONCRETE PIPE, WITH WATER-TIGHT JOINTS THAT ARE A MINIMUM OF 10 FEET FROM THE WATER MAIN.
 6. EXISTING FRAMES, COVERS, AND GRATES IN AREAS WHERE GRADES WILL BE REVISED BY FILLING OR CUTTING, OR PAVEMENT OVERLAY, MUST BE RESET TO MATCH FINAL GRADE. THIS INCLUDES MANHOLES, HANDHOLES, VALVE BOXES, INLETS, ETC.). IN AREAS OF CUT, CONTRACTORS SHALL PROVIDE REQUIRED COVERAGE OF UTILITY AND STORMWATER LINES AS SPECIFIED BY THE UTILITY PURVEYOR. LIMITED RELOCATION OF UTILITY AND STORMWATER LINES MAY BE REQUIRED.

- LEGEND:**
- - - OVERHEAD WIRES
 - EXISTING MANHOLE
 - EXISTING INLET
 - UTILITY POLE W/D #
 - GUY WIRE (G/W)
 - HYDRANT
 - UNDERGROUND WATER LINE
 - WATER VALVE
 - UNDERGROUND GAS LINE
 - GAS VALVE
 - G/M GAS METER
 - D/C DEPRESSED CURB
 - IRON PIPE FOUND
 - SIGN
 - LIGHT POLE
 - CLEAN-OUT
 - x-x 3' WIRE FENCE
 - UNDERGROUND SEWER LINE
 - UNDERGROUND ELECTRIC

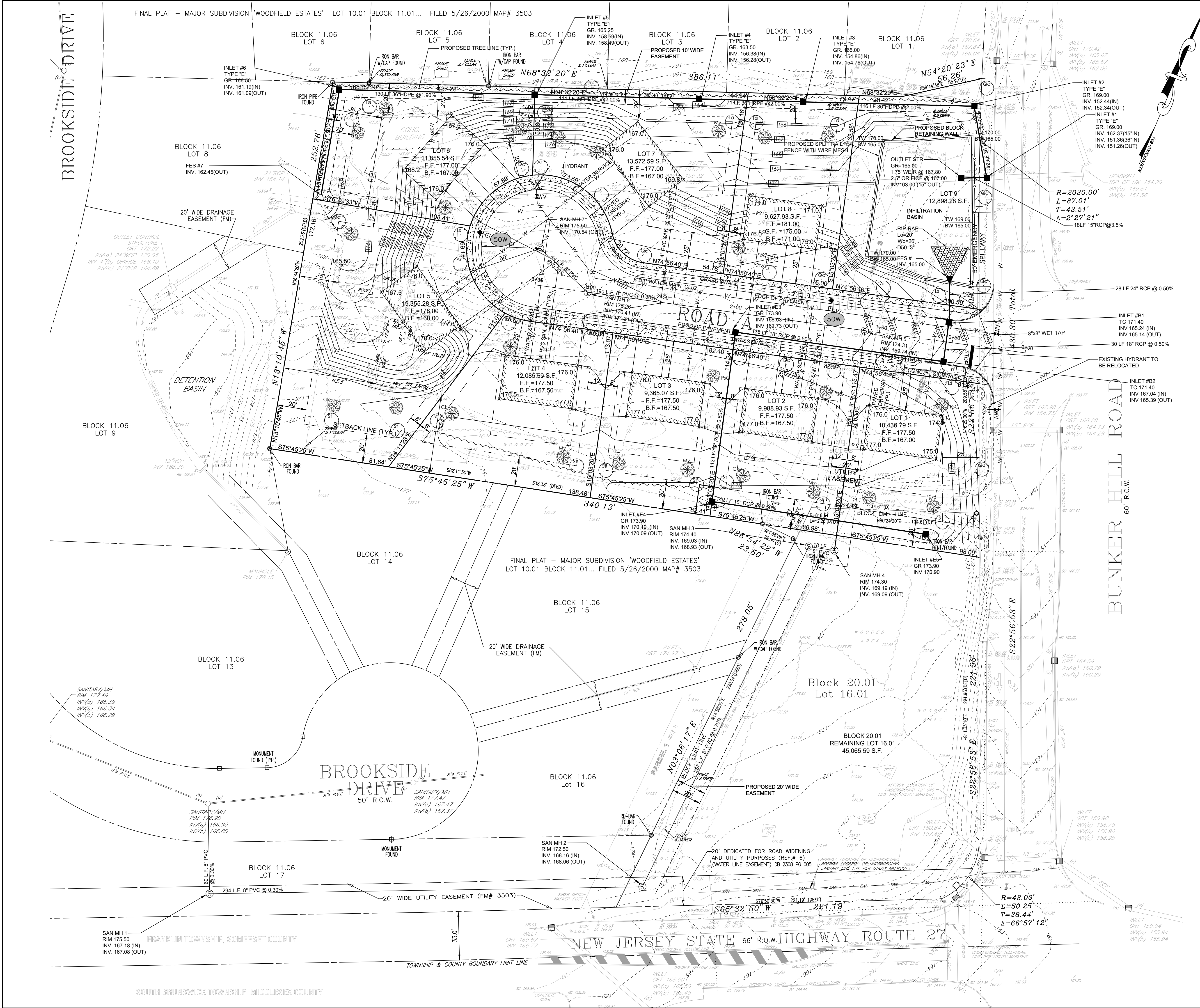


NO.	PER 11/21 STAFF COMMENTS	11/22/21
J	DESCRIPTION OF REVISION	DATE
1	GRADING AND UTILITY PLAN BUNKER HILL DEVELOPMENT 11 BUNKER HILL ROAD - BLOCK 11.06, LOT 10.01 3523 ROUTE 27 - BLOCK 20.01, LOT 16.01 FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ PREPARED FOR DEVIN DEVELOPERS, LLC ACCURE ENGINEERING, PC 12 Concord Drive Kendall Park, New Jersey 08824 732-951-2385	
	Date: 7/21/2021 Scale: 1"=30' Revised To:	File: 2021-011 Tax Map: 16.02 Sheet: 5 OF 12

Frank T. Antisell
PROFESSIONAL ENGINEER
N.J. LICENSE No. 38739

SOUTH BRUNSWICK TOWNSHIP, MIDDLESEX COUNTY

NEW JERSEY STATE 66' R.O.W. HIGHWAY ROUTE 27



LEGEND:

- OVERHEAD WIRES
- EXISTING MANHOLE
- EXISTING INLET
- UTILITY POLE W/D #
- GUY WIRE (G/W)
- HYDRANT
- UNDERGROUND WATER LINE
- WATER VALVE
- UNDERGROUND GAS LINE
- GAS VALVE
- G/M GAS METER
- D/C DEPRESSED CURB
- IRON PIPE FOUND
- SIGN
- LIGHT POLE
- CLEAN-OUT
- x 3' WIRE FENCE
- UNDERGROUND SEWER LINE
- UNDERGROUND ELECTRIC

TREE REPLACEMENT CALCULATIONS:
 TOTAL SITE AREA = 175,444 SF = 4.03 AC
 TOTAL AREA TO BE CLEARED = 69,805 SF = 1.60 ACRES

INVENTORY OF TREES GREATER THAN 4" CALIPER TO BE REMOVED SAMPLE AREA 1

CALIPER	# OF TREES TO BE REMOVED	NUMBER OF REPLACEMENT TREES	TOTAL TREES
4"-16"	35 TREES	x 1 x 60%	21 TREES
LESS THAN 18"	0 TREES	x 3	0 TREES
LESS THAN 21"	0 TREES	x 4	0 TREES
LESS THAN 24"	0 TREES	x 5	0 TREES
LESS THAN 27"	0 TREES	x 6	0 TREES
LESS THAN 30"	0 TREES	x 7	0 TREES
LESS THAN 33"	0 TREES	x 8	0 TREES
LESS THAN 36"	0 TREES	x 9	0 TREES
LESS THAN 39"	0 TREES	x 10	0 TREES
TOTAL	40 TREES		41 TREES

INVENTORY OF TREES GREATER THAN 4" CALIPER TO BE REMOVED SAMPLE AREA 2

CALIPER	# OF TREES TO BE REMOVED	NUMBER OF REPLACEMENT TREES	TOTAL TREES
4"-16"	0 TREES	x 1 x 60%	0 TREES
LESS THAN 18"	0 TREES	x 3	0 TREES
LESS THAN 21"	0 TREES	x 4	0 TREES
LESS THAN 24"	0 TREES	x 5	0 TREES
LESS THAN 27"	0 TREES	x 6	0 TREES
LESS THAN 30"	0 TREES	x 7	0 TREES
LESS THAN 33"	0 TREES	x 8	0 TREES
LESS THAN 36"	0 TREES	x 9	0 TREES
LESS THAN 39"	0 TREES	x 10	0 TREES
TOTAL	0 TREES		0 TREES

TOTAL REPLACEMENT TREES REQUIRED = 41 + 0 = 41

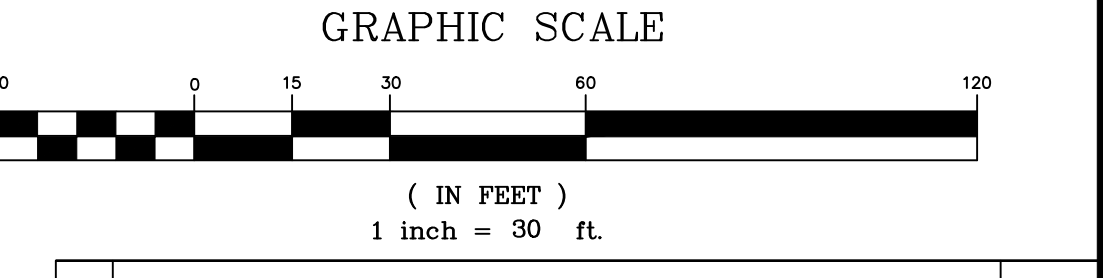
OVERALL TOTAL PROVIDED REPLACEMENT TREES = 41
 NOTE: TREE CALIPER MEASURED AT DIAMETER AT BREAST HEIGHT (DBH).
 * CONTRIBUTION TO TOWNSHIP TREE FUND TO BE PROVIDED FOR REMAINING REQUIRED REPLACEMENT TREES.

PER TWP. CODE SECTION 222-5.1
 % OF TREES TO BE REMOVED FROM THE ENTIRE DEVELOPMENT - 64% (BS / 132)
 % OF TREES TO BE REPLACED W/ TREES OF MINIMUM SIZE - 60% FOR TREES LESS THAN 16"

LANDSCAPE SCHEDULE

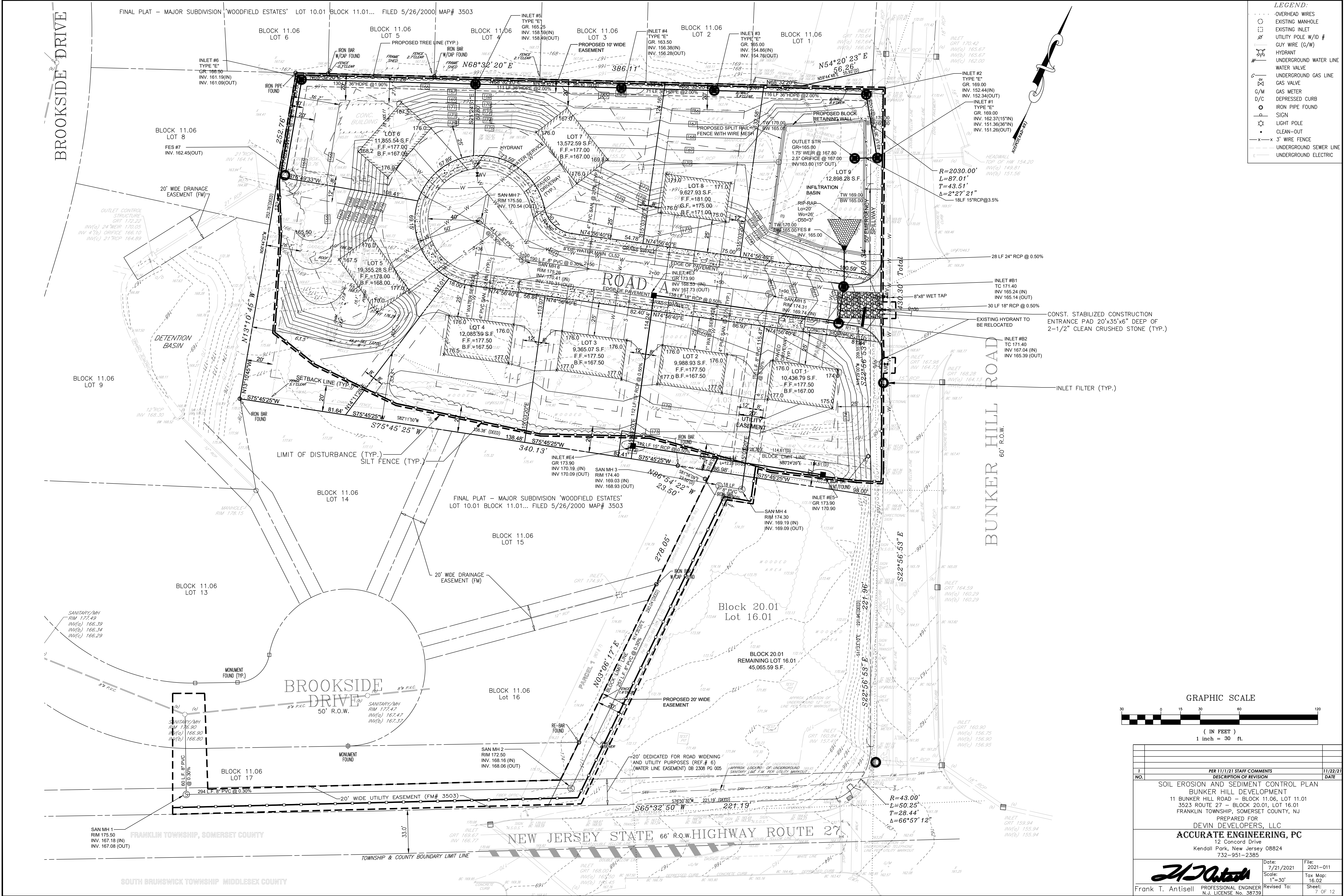
SYMBOL	KEY	QTY	COMMON NAME	BOTANICAL NAME	SIZE	CALIPER	COMMENTS
AR	AR	6	ARMSTRONG RED MAPLE	ACER RUBRUM 'ARMSTRONG'	13'-15'	2'-2.5" DBH	B & B
Qc	Qc	12	SCARLET OAK	QUERCUS COCCINEA	13'-15'	2'-2.5" DBH	B & B
LS	LS	7	ROTUNDILOBA	LIQUIDAMBER STYRACIFLUA 'ROTUNDILOBA'	13'-15'	2'-2.5" DBH	B & B
Tg	Tg	9	SILVER LINDEN	TILIA TOMENTOSA	13'-15'	2'-2.5" DBH	B & B
Sf	Sf	9	SCHOLAR TREE	STYPHNOLOBIUM	13'-15'	2'-2.5" DBH	B & B
Mv	Mv	9	SWEETBAY MAGNOLIA	MAGNOLIA VIRGINIANA	6'-8'		B & B
Ck	Ck	9	CORNUS KOUSA	KOUSA DOGWOOD	6'-8'		B & B
Psc	Psc	8	PRUNUS SARGENTI	SARGENT CHERRY COLUMARIS	6'-8'		B & B

- LANDSCAPING NOTES:**
- PRIOR TO THE START OF WORK, ALL NECESSARY PERMITS ARE TO BE OBTAINED.
 - ALL PLANT MATERIAL IS TO BE FIRST QUALITY NURSERY GROWN STOCK.
 - ALL PLANTING MATERIALS AND PLANTING METHODS SHALL MEET OR EXCEED MUNICIPAL ORDINANCES AND STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERMEN.
 - WOODED AREAS THAT ARE PROPOSED TO REMAIN SHALL BE STAKED OUT AND PROTECTED WITH SNOW FENCE PRIOR TO THE START OF CLEARING OPERATIONS. THE TOWNSHIP ENGINEERS OFFICE SHALL BE NOTIFIED WHEN THESE AREAS HAVE BEEN MARKED AND WILL INSPECT FOR CONFORMANCE WITH THIS PLAN.
 - ALL NEW LAWN AREAS SHALL RECEIVE A MINIMUM OF 4" TOPSOIL.
 - SEEDED LAWN SHALL BE IN ACCORDANCE WITH THE SEEDING SPECIFICATIONS SHOWN ON THE APPROVED SOIL EROSION AND SEDIMENT CONTROL PLANS.
 - TOPSOIL USED IN PLANTING PITS AND FOR BACKFILLING FOR TREES AND SHRUBS SHALL BE FERTILE AGRICULTURAL SOIL CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH AND SHALL HAVE A PH OF 5.5 TO 6.5. IT SHALL HAVE A UNIFORM COMPOSITION, BE FREE FROM LARGE STONES, WOOD AND OTHER FOREIGN OBJECTS AND SHALL NOT CONTAIN SUBSTANCES TOXIC TO PLANT GROWTH. POOR OR SANDY SOILS MAY BE USED IF SUPPLEMENTED BY A MINIMUM OF 50% BY VOLUME OF FEAT MICES.
 - ALL TREES ARE TO BE PROPERLY PLANTED, MULCHED, STAKED AND WRAPPED, AS SHOWN ON THE PLANTING DETAILS. ALL EXCESS MULCH ABOVE 4" SHALL BE REMOVED FROM AROUND THE STEM OF THE TREES AND PLANTS.
 - TREES SHALL BE LOCATED EIGHT FEET MINIMUM FROM A FIRE HYDRANT AND TWENTY-FIVE FEET FROM LIGHT STANDARDS AND 8 FEET FROM DRIVEWAYS.
 - ANY PLANT MATERIAL RECEIVED IN WIRE BASKETS SHALL BE PLANTED FIRST, AND THE TOP 1/3 OF THE BASKET SHALL BE CUT AWAY AND REMOVED. ALL SUPPORT ROSES, NATURAL OR SYNTHETIC, SHALL BE CUT AWAY FROM THE TRUNKS.
 - ALL PRUNING SHALL BE PERFORMED AT THE NURSERY. NO FIELD PRUNING IS PERMITTED.
 - PLANT SPECIES, SIZE & SPACING OF THE LANDSCAPING SHOWN ON THIS PLAN MAY BE ALTERED ONLY AT THE DISCRETION OF THE TOWNSHIP PLANNING OFFICE, SHADE TREE COMMISSION OR OTHER AUTHORIZED AGENT OF THE TOWNSHIP AS FIELD CONDITIONS AND/OR AVAILABILITY WARRANTS.
 - ALL LANDSCAPING TO BE PLANTED IN SEASON & GUARANTEED FOR ONE (1) YEAR.

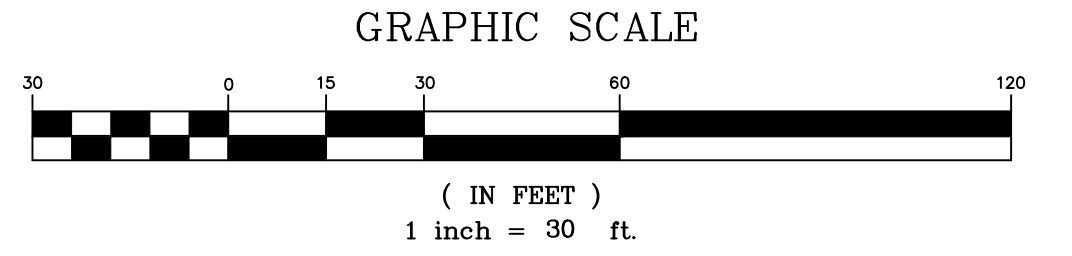


PER 11/1/21 STAFF COMMENTS		11/22/21
J.	DESCRIPTION OF REVISION	DATE
1	LANDSCAPING AND LIGHTING PLAN BUNKER HILL DEVELOPMENT 11 BUNKER HILL ROAD - BLOCK 11.06, LOT 11.01 3523 ROUTE 27 - BLOCK 20.01, LOT 16.01 FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ PREPARED FOR DEVIN DEVELOPERS, LLC ACCURATE ENGINEERING, PC 12 Concord Drive Kendall Park, New Jersey 08824 732-951-2385	
	Date: 7/21/2021	File: 2021-011
	Scale: 1" = 30'	Tax Map: 16.02
	Revised To:	Sheet: 6 OF 12

Frank T. Antisell PROFESSIONAL ENGINEER N.J. LICENSE NO. 38739



- LEGEND:**
- - - OVERHEAD WIRES
 - EXISTING MANHOLE
 - EXISTING INLET
 - UTILITY POLE W/D #
 - GUY WIRE (G/W)
 - ⊕ HYDRANT
 - UNDERGROUND WATER LINE
 - WATER VALVE
 - UNDERGROUND GAS LINE
 - GAS VALVE
 - G/M GAS METER
 - D/C DEPRESSED CURB
 - IRON PIPE FOUND
 - SIGN
 - LIGHT POLE
 - CLEAN-OUT
 - x - 3" WIRE FENCE
 - - - UNDERGROUND SEWER LINE
 - UNDERGROUND ELECTRIC



J.	PER 11/11/21 STAFF COMMENTS	11/22/21
NO.	DESCRIPTION OF REVISION	DATE
1	SOIL EROSION AND SEDIMENT CONTROL PLAN BUNKER HILL DEVELOPMENT 11 BUNKER HILL ROAD - BLOCK 11.06, LOT 11.01 3523 ROUTE 27 - BLOCK 20.01, LOT 16.01 FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ PREPARED FOR DEVIN DEVELOPERS, LLC	
ACCURATE ENGINEERING, PC 12 Concord Drive Kendall Park, New Jersey 08824 732-951-2385		
Date: 7/21/2021 Scale: 1"=30' Revised To:		File: 2021-011 Tax Map: 16.02 Sheet: 7 OF 12
Frank T. Antisell PROFESSIONAL ENGINEER N.J. LICENSE NO. 38739		

FINAL PLAT - MAJOR SUBDIVISION 'WOODFIELD ESTATES' LOT 10.01 BLOCK 11.01... FILED 5/26/2000 MAP# 3503

FINAL PLAT - MAJOR SUBDIVISION 'WOODFIELD ESTATES' LOT 10.01 BLOCK 11.01... FILED 5/26/2000 MAP# 3503

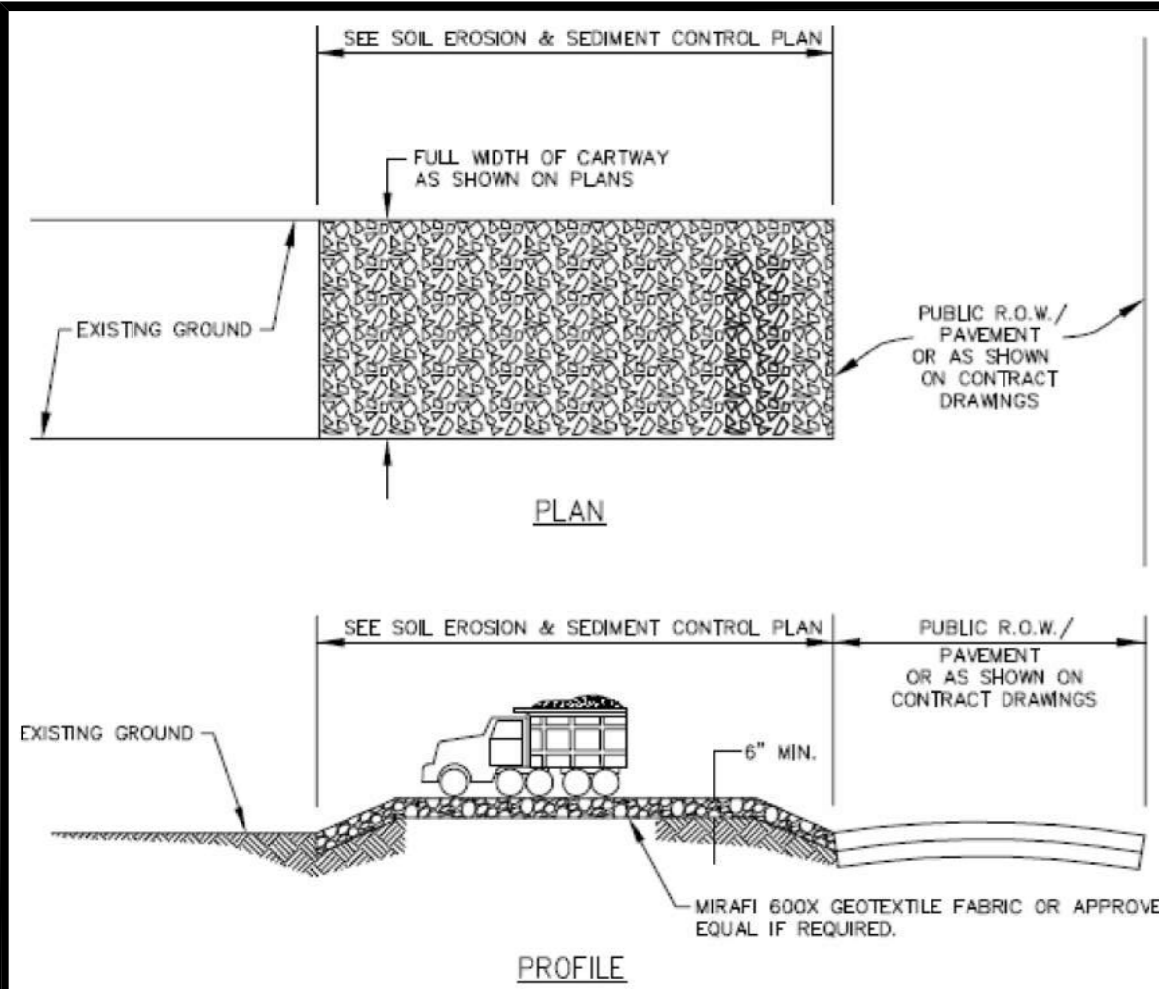
Block 20.01 Lot 16.01

NEW JERSEY STATE 66' R.O.W. HIGHWAY ROUTE 27

SOUTH BRUNSWICK TOWNSHIP, MIDDLESEX COUNTY

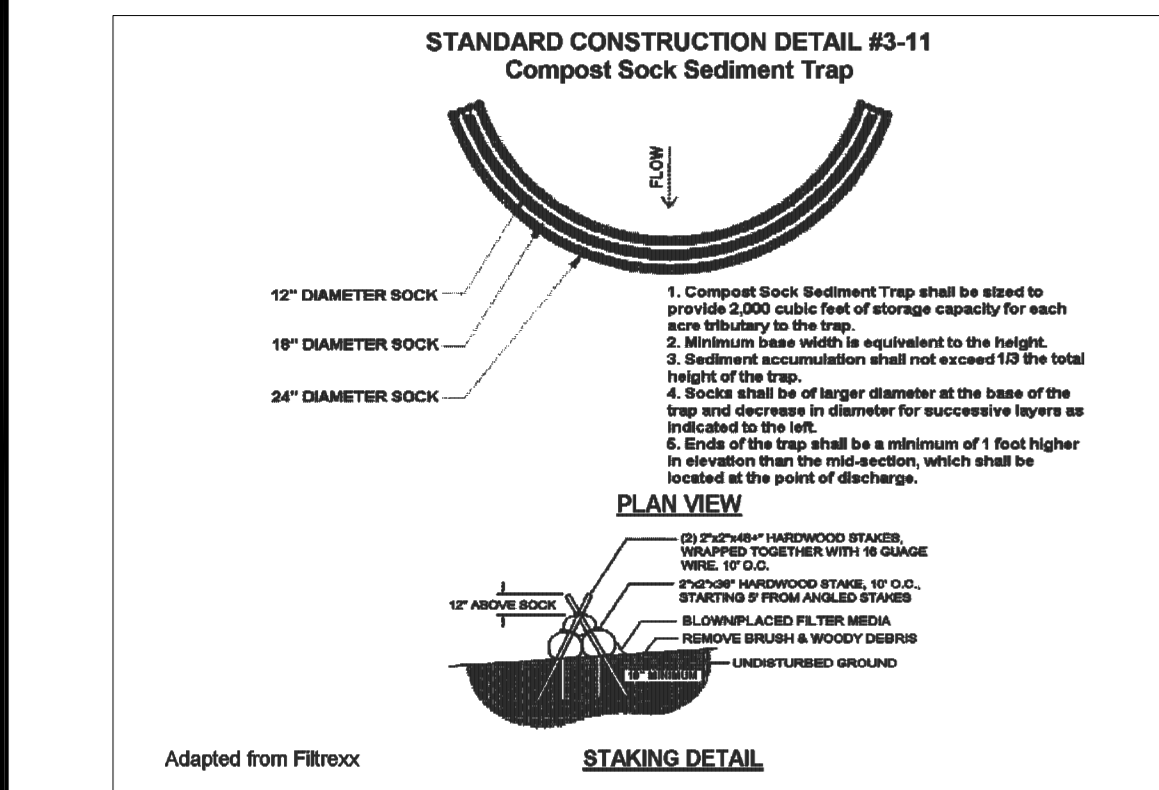
FRANKLIN TOWNSHIP, SOMERSET COUNTY

TOWNSHIP & COUNTY BOUNDARY LIMIT LINE



- NOTES**
1. PROVIDE APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION DRIVEWAY AND PUBLIC R.O.W.
 2. PLACE STABILIZED CONSTRUCTION DRIVEWAY AT LOCATION AS SHOWN ON THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
 3. STONE SIZE SHALL BE ASTM C-33, SIZE No. 2 OR 3, CRUSHED STONE.
 4. THE THICKNESS OF THE STABILIZED CONSTRUCTION DRIVEWAY SHALL NOT BE LESS THAN 6".
 5. THE WIDTH AT THE EXISTING PAVEMENT SHALL NOT BE LESS THAN THE FULL WIDTH OF POINTS OF INGRESS AND EGRESS.
 6. THE STABILIZED CONSTRUCTION DRIVEWAY SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC R.O.W./PAVEMENT. THIS REQUIRES PERIODIC TOP DRESSING AND REPAIR AND/OR CLEANOUT OF ANY MEASURE USED TO TRAP SEDIMENT OR AS MAY BE REQUIRED BY THE DISTRICT AS CONDITIONS DEMAND.
 7. ALL SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO THE PUBLIC R.O.W. PAVEMENT MUST BE REMOVED IMMEDIATELY.
 8. WHERE TRACKING OF SOIL ONTO ROADWAYS IS A CONTINGUAL OCCURENCE, ALL CONTRACTORS, BOTH SITE AND DWELLING CONTRACTORS, SHALL BE REQUIRED TO BROOMSWEEP THE ROADWAY AT TWO-HOUR INTERVALS MINIMUM AND PRIOR TO LEAVING THE CONSTRUCTION SITE AT THE DAY END.
 9. PLACE MIRAFI 600X GEOTEXTILE FABRIC OR APPROVED EQUAL AT POORLY DRAINED LOCATIONS UNDER STABILIZED CONSTRUCTION DRIVEWAY, IF REQUIRED.

STABILIZED CONSTRUCTION ENTRANCE
N.T.S.



Adapted from Filtrax

TABLE 4.1
Compost Sock Fabric Minimum Specifications

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12"	18"	18"	18"	18"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength	26 psi	26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability %	23% at 1000 hr.	23% at 1000 hr.	100% at 1000 hr.	100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Inner Containment Netting: HDPE biaxial net, Continuously wound, Fusion-welded junctures, 3/4" x 3/4" Max. aperture size, Composite Polypropylene Fabric.

Outer Filtration Mesh: (Woven layer and non-woven fleece mechanically fused via needle punch), 3/16" Max. aperture size.

Sock fabrics composed of burtop may be used on projects lasting 6 months or less.

Filtrax & J&D

TABLE 4.2
Compost Standards

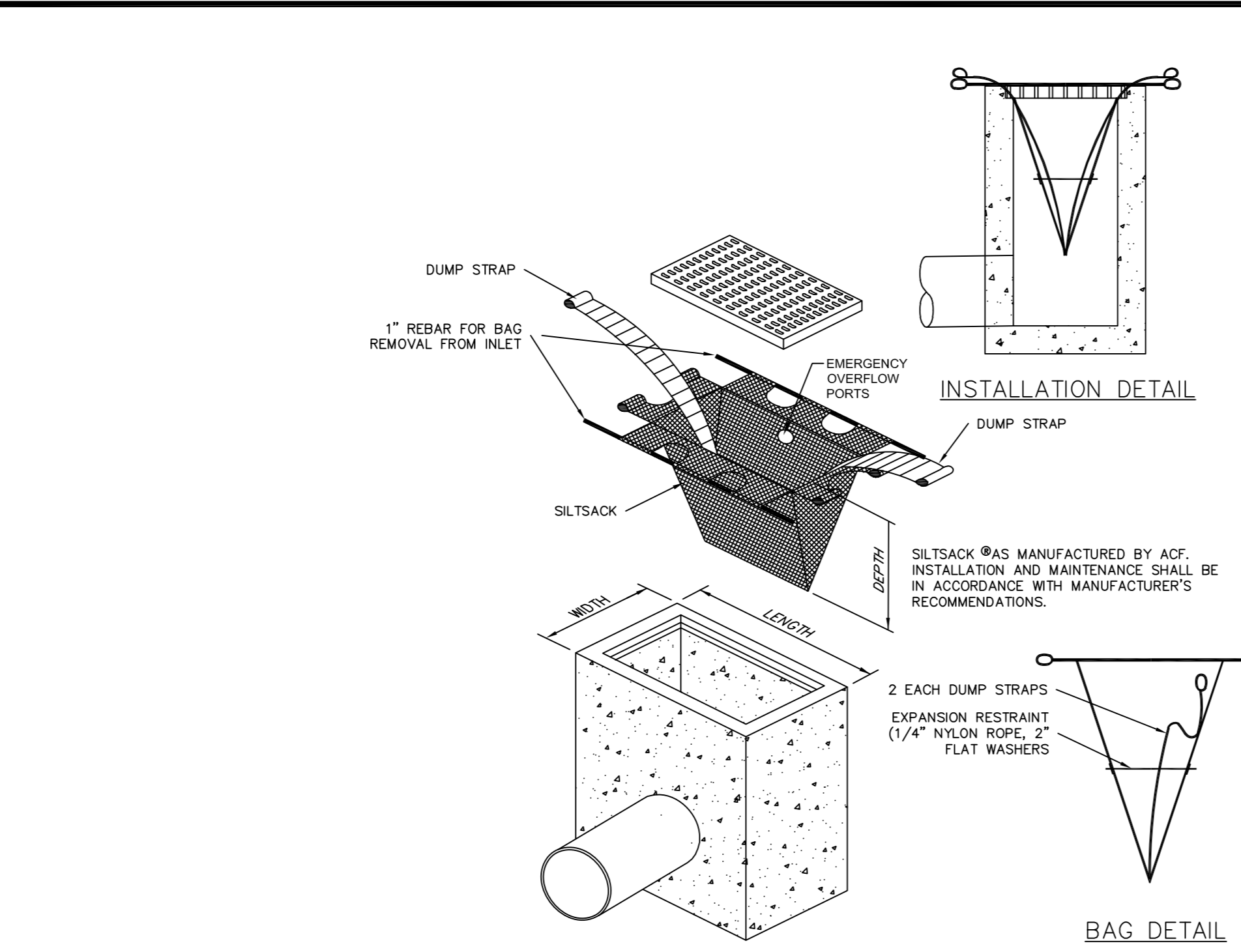
Organic Matter Content	80% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.0
Moisture Content	30% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 d5m (mmhos/cm) Maximum

Filtrax

TABLE 4.3
Compost Standards

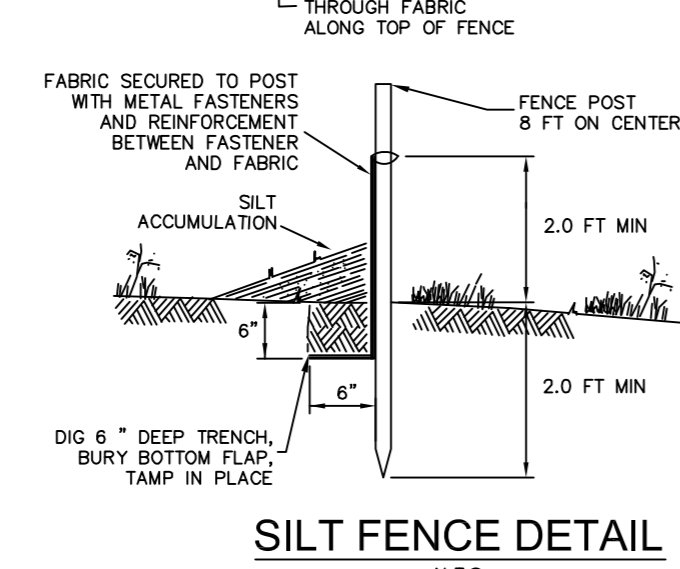
Organic Matter Content	80% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.0
Moisture Content	30% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 d5m (mmhos/cm) Maximum

Filtrax



- NOTE:**
1. SILTSACK FILTER MUST SAFELY PASS FLOWS GREATER THAN 1 YEAR / 24 HOUR STORM EVENT.
 2. INSPECT AND CLEAN FILTERS FREQUENTLY AND AFTER EVERY RAINFALL EVENT.

INLET SEDIMENT CONTROL DEVICE
N.T.S.



SILT FENCE DETAIL
N.T.S.

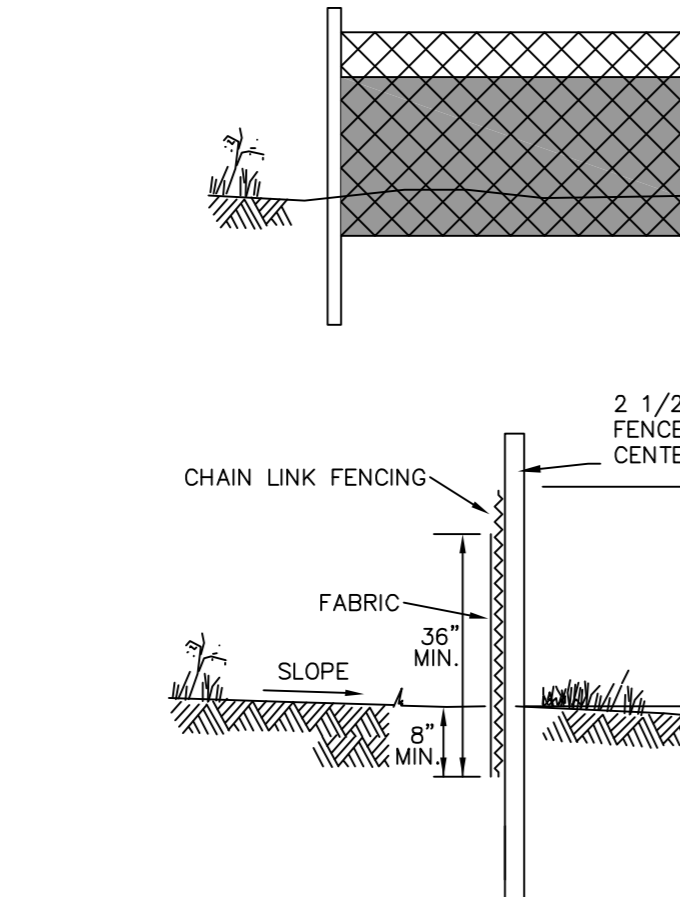
1. Compost Sock Sediment Trap shall be sized to provide 2,000 cubic feet of storage capacity for each tributary drainage area. Additional storage may be provided by means of an excavated sump 12" deep extending 1 to 3 feet upslope of the socks along the lower side of the trap.

2. Compost sock sediment traps shall provide 2,000 cubic feet storage capacity with 12" freeboard for each tributary drainage area. (See manufacturer for anticipated settlement.)

3. The maximum tributary drainage area is 5.0 acres. Since compost socks are "flow-through," no spillway is required.

4. Compost sock sediment traps shall be inspected weekly and after each runoff event. Sediment shall be removed when it reaches 1/3 the height of the socks.

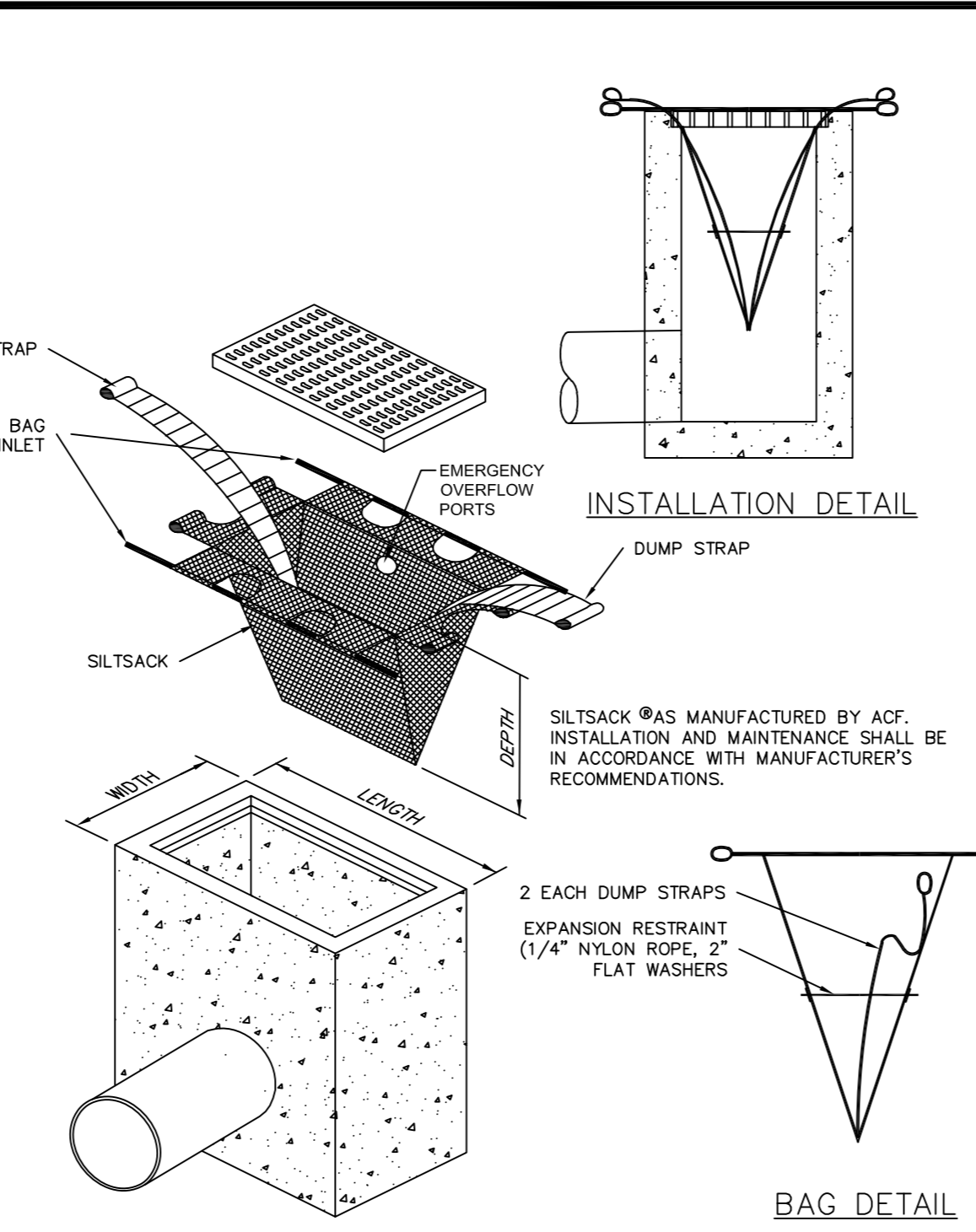
5. Photodegradable and biodegradable socks shall not be used for more than 1 year.



SUPER SILT FENCE NOTES:

1. SUPER SILT FENCE SHALL BE CONSTRUCTED WHERE SHOWN ON THE PLANS AND WHERE DIRECTED BY THE MUNICIPAL ENGINEER OR SOIL CONSERVATION DISTRICT.
2. SUPER SILT FENCE SHALL ALSO BE CONSTRUCTED WHEREVER MORE THAN ONE ACRE OF LAND WILL DRAIN TO THE SILT FENCE, WHEREVER THE LENGTH OF SLOPE ABOVE THE SILT FENCE EXCEEDS 150 FT AND WHEREVER THE SLOPE OF THE AREA ADJACENT TO THE UPHILL SIDE OF THE FENCE IS STEEPER THAN FIVE PERCENT WITHIN 30 FEET OF THE FENCE.
3. SUPER SILT FENCE SHALL BE CONSTRUCTED FREQUENTLY BY THE CONTRACTOR AND REPAIRED OR REPLACED PROMPTLY AS REQUIRED.
4. SUPER SILT FENCE SHALL BE INSPECTED FREQUENTLY BY THE CONTRACTOR AND REPAIRED OR REPLACED PROMPTLY AS REQUIRED.
5. SUPER SILT FENCE SHALL BE REMOVED WHEN THE TRIBUTARY DRAINAGE AREA HAS BEEN STABILIZED.

SUPER SILT FENCE DETAIL
N.T.S.



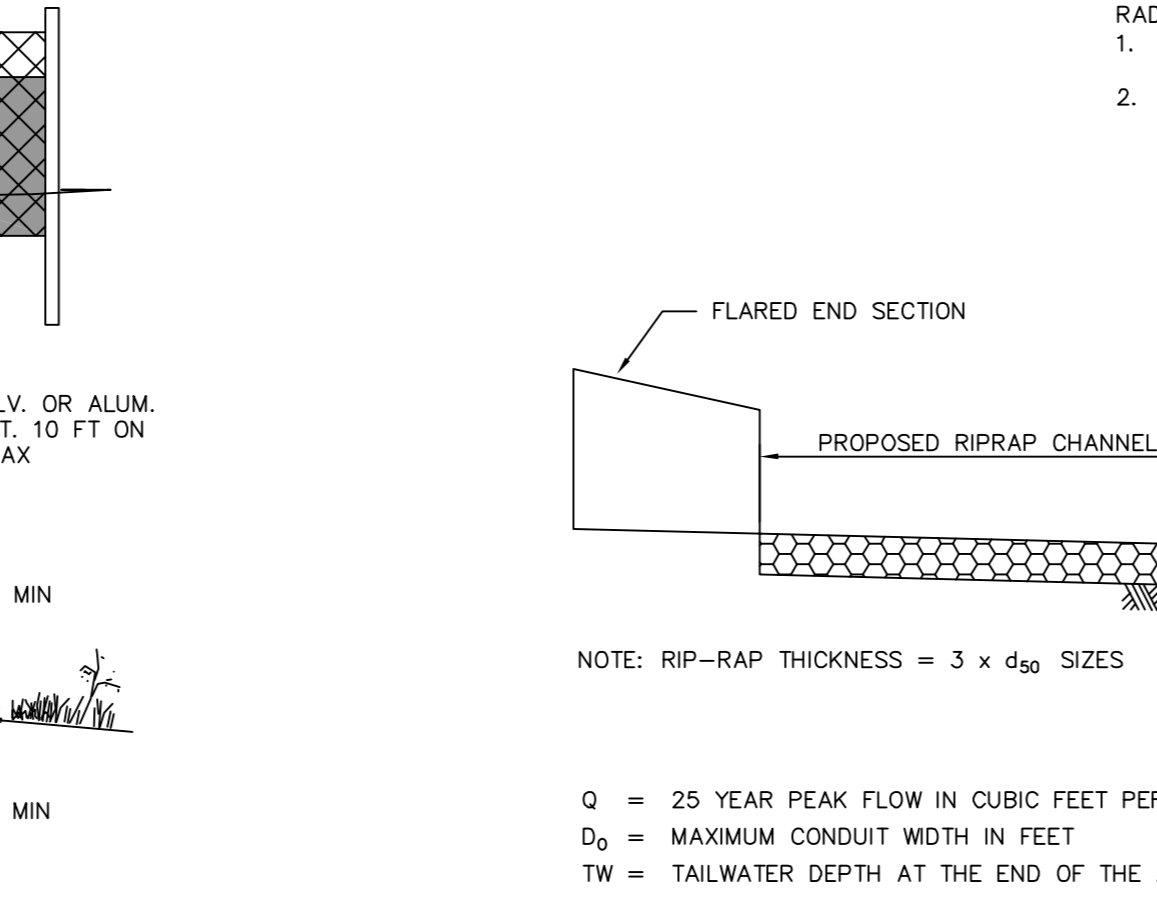
CONDUIT OUTLET PROTECTION SUMMARY

F.E.S. No.	Q (CFS)	D ₀ (FT)	TW (FT)	L _a (FT)	W _a (FT)	D(50) (IN)

REMOVAL OF TREE LIMB

ESTIMATE PROTECTED ROOT ZONE (PRZ) BY CALCULATING THE CRITICAL ROOT RADIUS (CRR):

1. MEASURE THE D_{bh} (DIAMETER OF TREE AT BREAST HEIGHT, 4.5' ABOVE GROUND ON UPHILL SIDE) IN INCHES.
2. MULTIPLY MEASURED D_{bh} BY 1.5 OR 1.0. EXPRESS RESULT IN FEET.
 - CRR FOR UNHEALTHY / SENSITIVE SPECIES: D_{bh} x 1.5
 - CRR FOR YOUNGER HEALTHY TREES: D_{bh} x 1.0



RIP RAP APRON CONDUIT OUTLET PROTECTION DETAIL
N.T.S.

THE WIDTH OF THE APRON AT THE CULVERT SHALL BE AT LEAST TRIPLE D₀. WHERE THERE IS A WELL-DEFINED CHANNEL DOWNSTREAM OF THE APRON, THE APRON BOTTOM WIDTH SHALL BE AT LEAST EQUAL TO THE CHANNEL BOTTOM WIDTH. THE LINING SHALL EXTEND AT LEAST ONE FOOT ABOVE THE TAILWATER ELEVATION BUT NO LOWER THAN 2/3 OF THE VERTICAL CONDUIT DIMENSION ABOVE THE CONDUIT INVERT. THE BOTTOM GRADE SHALL BE 0.0% AND LEVEL. THERE SHALL BE NO OVERFALL AT THE END OF THE APRON OR THE CULVERT.

50% BY WEIGHT OF THE RIPRAP MIX SHALL BE SMALLER THAN D₅₀. LARGEST STONE SHALL BE LESS THAN 1.5 TIMES D₅₀. APRON THICKNESS SHALL BE EITHER:

- 1) THREE TIMES THE D₅₀ SIZE, OR
- 2) TWO TIMES THE D₅₀ SIZE WITH A FILTER LAYER

RIP RAP APRON CONDUIT OUTLET PROTECTION DETAIL
N.T.S.

STANDARD FOR DUST CONTROL (Per Standards... Dust Control 16-1, May 2012)

DEFINITION—The control of dust on construction sites and roads.

PURPOSE—To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage and health hazards, and improve traffic safety.

CONDITION WHERE PRACTICE APPLIES—This practice is applicable to areas subject to dust blowing and movement where on- and off-site damage is likely without treatment. Consult with local municipal ordinances on any restrictions.

WATER QUALITY ENHANCEMENT—Sediments deposited as "dust" are often fine colloidal material which is extremely difficult to remove from water once it becomes suspended. Use of this standard will help to control the generation of dust from construction sites and subsequent blowing and deposition into local surface water resources.

PLANNING CRITERIA—The following methods should be considered for controlling dust:

- Mulches**—See Standards for Stabilization with mulches only (p. 5-1)
- Vegetative Cover**—See Standards for Temporary Vegetative Cover (p. 7-1), Permanent Vegetative Cover for Soil Stabilization (p. 4-1) and Permanent Stabilization with Sod (p. 6-1)
- Spray-on Adhesives**—On mineral soils (not effective on muck soils). Keep traffic off these areas.

Table 16-1. Dust Control Materials:

Material	Water Dilution	Type of Nozzle	Gal./Acre
Anionic asphalt emulsion	7:1	Coarse Spray	1,200
Latex Emulsion	12.5:1	Fine Spray	235
Resin in Water	4:1	Fine Spray	300
Polyacrylamide (PAM) — spray on	Apply according to manufacturer's instructions. May also be used as an additive to sediment basins to flocculate and precipitate suspended colloids. See Sediment Basin standard (p. 26-1).		
Polyacrylamide (PAM) — dry spray			
Acidulated Soy Bean Soap Stick	None	Coarse Spray	1,200

Illage: To roughen surface and bring clods to the surface. This is a temporary emergency measure which should be used before soil blowing starts. Begin blowing on windward side of site. Chisel-type plows spaced about 12 inches apart, and spring-toothed harrows are examples of equipment which may produce the desired effect.

Sprinkling: Site is sprinkled until the surface is wet.

Barriers: Solid board fences, snow fences, burlap fences, crate walls, bales of hay, and similar material can be used to control air currents and soil blowing.

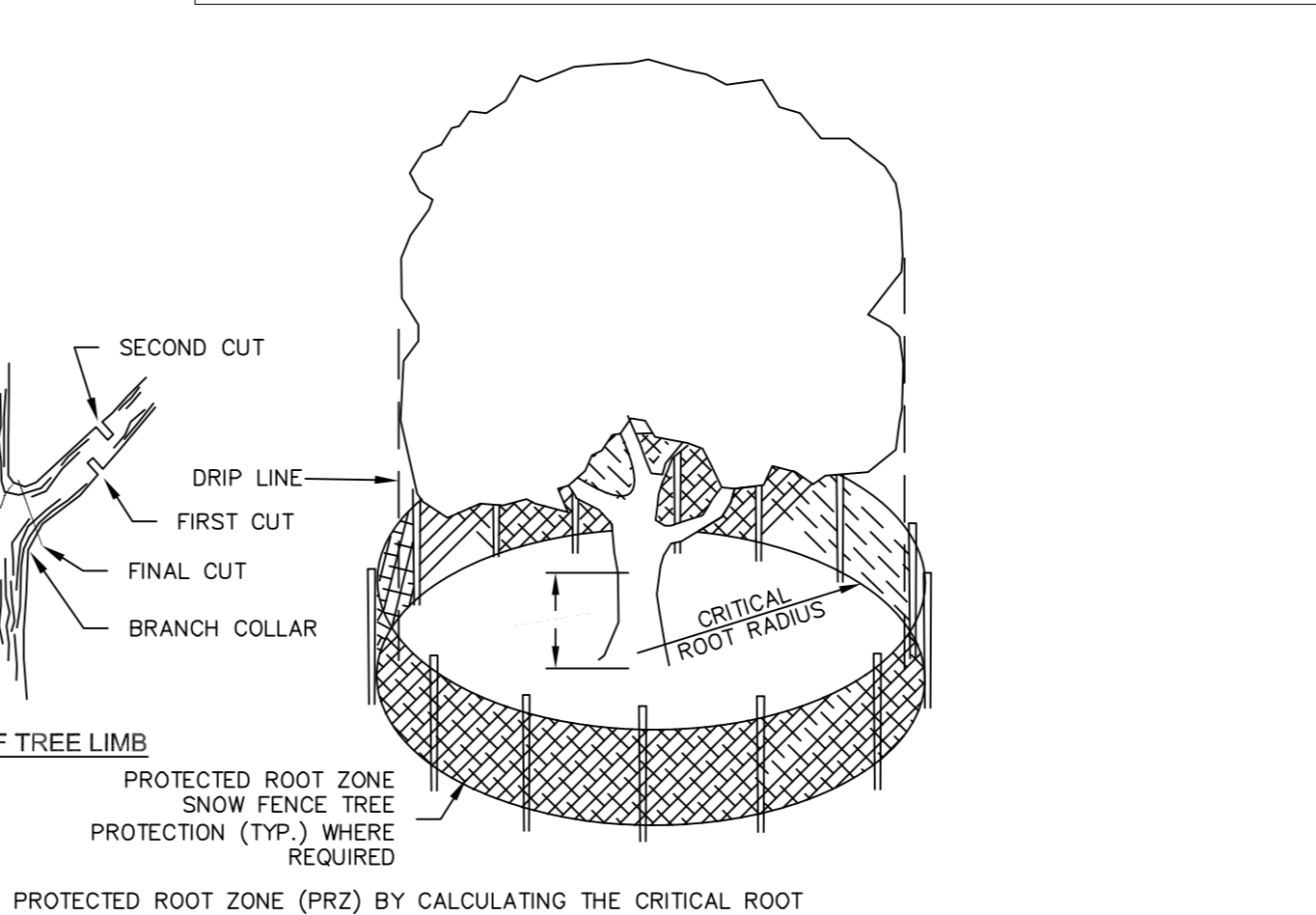
Calcium Chloride: Shall be in the form of loose, dry granules of flakes fine enough to feed through commonly used spreaders at a rate that will keep surface moist but not cause pollution or plant damage. If used on steeper slopes, then use other practices to prevent washing into streams or accumulation around plants.

Stones: Cover surface with crushed stone or coarse gravel.

Procedures for Soil Compaction Mitigation

Procedures shall be used to mitigate excessive soil compaction prior to placement of topsoil and establishment of permanent vegetative cover.

Restoration of compacted soils shall be through deep scarification/illage (6" minimum depth) where there is no danger to underground utilities (cables, irrigation systems, etc.). In the alternative, another method as specified by a New Jersey Licensed Professional Engineer may be substituted subject to District Approval.



TREE PROTECTION DETAIL
REFER TO STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY: 9.1

NOTE: RIP-RAP THICKNESS = 3 x d₅₀ SIZES

Q = 25 YEAR PEAK FLOW IN CUBIC FEET PER SECOND
D₀ = MAXIMUM CONDUIT WIDTH IN FEET
TW = TAILWATER DEPTH AT THE END OF THE APRON (OR 0.2 D₀ WHERE TW IS INDETERMINATE)
L_a = APRON LENGTH IN FEET
W_a = APRON WIDTH AT THE OUTFALL END (NOT APPLICABLE FOR WELL-DEFINED CHANNELS)
d₅₀ = MEDIAN RIPRAP SIZE IN INCHES

SEQUENCE OF CONSTRUCTION

1. NOTIFY THE SOMERSET-UNION SOIL CONSERVATION DISTRICT AT LEAST 48 HOURS PRIOR TO ANY PROJECT PRE-CONSTRUCTION MEETING OR SITE DISTURBANCE.
2. CLEAR PROPOSED ENTRANCE AND PLACE STABILIZED CONSTRUCTION ENTRANCE PAD AS NOTED.
3. CLEAR LAND AREA TO BE DEVELOPED. TREES SHALL REMAIN WHEREVER POSSIBLE.
4. STOCK PILE AND SEED OR MULCH TOPSOIL.
5. ROUGH GRADE THE SITE.
6. STABILIZE ALL AREAS NOT SUBJECT TO CONSTRUCTION TRAFFIC THAT WILL REMAIN LEFT EXPOSED FOR MORE THAN 30 DAYS.
7. BEGIN BUILDING CONSTRUCTION.
8. CONSTRUCTION UNDERGROUND UTILITIES TO DWELLING.
9. CONSTRUCT ROOF DRAINAGE SYSTEM AND STORMWATER SEEPAGE PIT.
10. FINE GRADE THE SITE.
11. CONSTRUCT DRIVEWAY PAVEMENT.
12. INSTALL LANDSCAPING.
13. STABILIZE ALL DISTURBED AREAS IN ACCORD WITH APPLICABLE TEMPORARY OR PERMANENT SEEDING SPECIFICATIONS.
14. REMOVE SEDIMENT AROUND SILT FENCES.
15. WHEN AREA IS STABILIZED, SEDIMENT CONTROL STRUCTURES CAN BE REMOVED.

• THIS IS AN ENGINEER'S CONSTRUCTION SEQUENCING AND SCHEDULE. THE INFORMATION CONTAINED ABOVE MAY BE SUBJECT TO CHANGE BASED ON INPUT FROM THE SITE CONTRACTOR, WEATHER, AND UNEXPECTED ENCOUNTERANCES. VARIATIONS OF THIS SCHEDULE WILL BE SUBMITTED TO THE DISTRICT AS NECESSARY.

SOMERSET-UNION COUNTY SOIL CONSERVATION DISTRICT SOIL EROSION AND SEDIMENT CONTROL NOTES

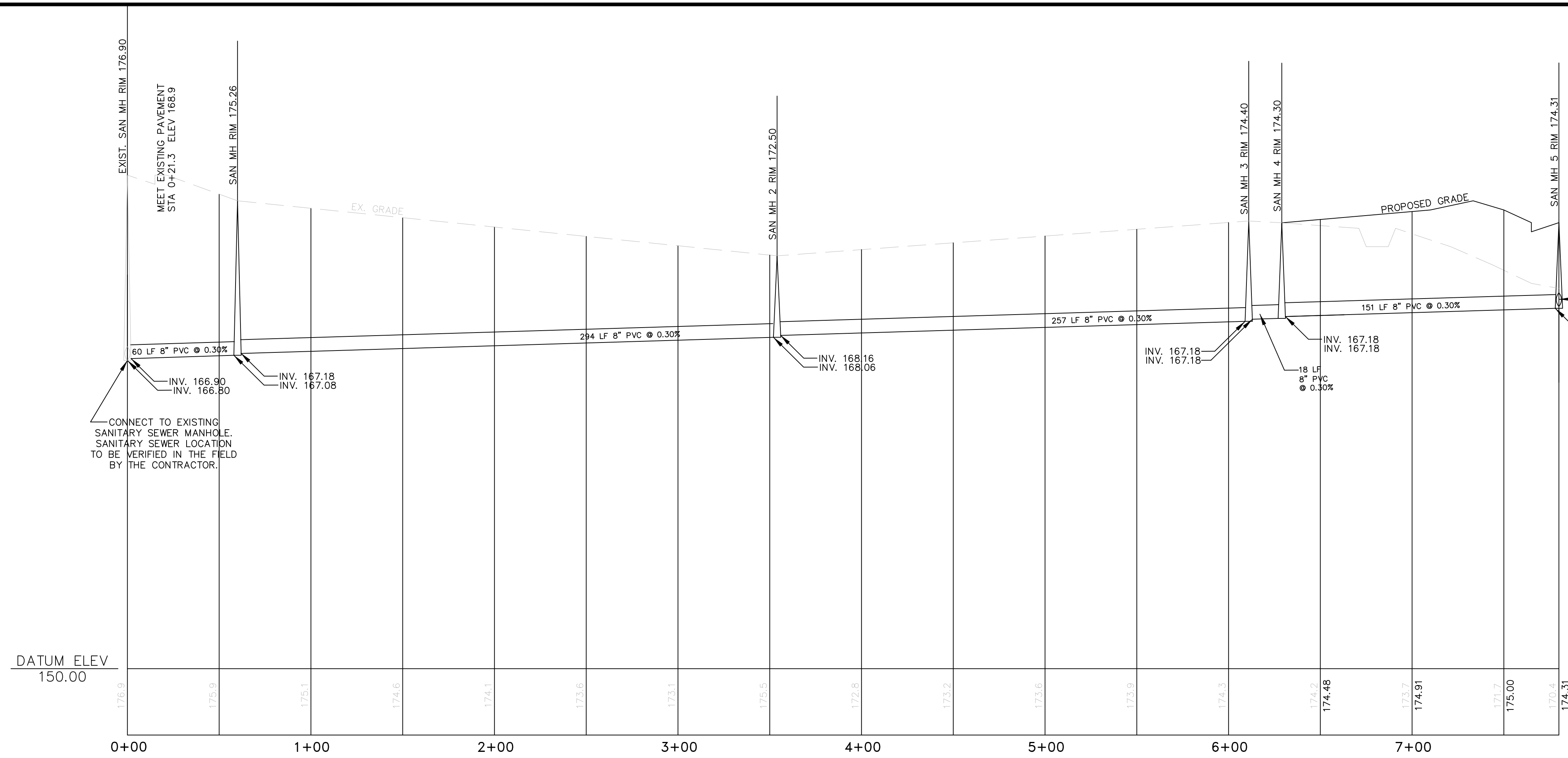
1. The Somerset-Union Soil Conservation District shall be notified in writing 48 hours in advance of any land disturbing activity.
2. All Soil Erosion and Sediment Control practices shall be installed prior to any major soil disturbances, or in their proper sequence and maintained until permanent protection is established.
3. Any Disturbed areas that will be left exposed more than 30 Days and not subject to construction traffic, will immediately receive a temporary seeding. If the season prevents the establishment of a temporary cover, the disturbed areas will be mulched with straw, or equivalent material, at a rate of two (2) tons per acre, according to NJ State Standards.
4. Permanent Vegetation shall be seeded or sodded on all exposed areas within ten (10) days after final grading. Mulch will be used for protection until seeding is established.
5. All work shall be done in accordance with the NJ State Standards for Soil Erosion and Sediment Control in New Jersey.
6. A sub-base course will be applied immediately following rough grading and installation of improvements in order to stabilize streets, roads, driveways and parking areas. In areas where no utilities are present, the sub-base shall be installed within 15 days or preliminary grading.
7. Immediately following initial disturbance or rough grading all critical areas subject to erosion (i.e.: steep slopes, roadway embankments) will receive a temporary seeding in combination with straw mulch or a suitable equivalent, at a rate of two (2) tons per acre, according to the NJ State Standards.
8. Any steep slopes receiving pipeline installation will be backfilled and stabilized daily, as the installation proceeds (i.e.: slopes greater than 3:1).
9. Traffic Control Standards require the installation of a 50'x30'x6" pad of 1 1/2" or 2" stone, at all construction driveways, immediately after initial site disturbance.
10. At the time when the site preparation for permanent vegetative stabilization is going to be accomplished, any soil that will not provide a suitable environment to support adequate vegetative ground cover, shall be removed or treated in such a way that will permanently adjust the soil conditions and render it suitable for vegetative ground cover. If the removal or treatment of the soil will not provide suitable conditions, non-vegetative means of permanent ground stabilization will have to be employed.
11. In that NJSA 4:24-39 et seq., requires that no Certificate of Occupancy be issued before the provisions of the Certified Plan for Soil Erosion and Sediment Control have been complied with for permanent measures, all site work for site plans and all work around individual lots in subdivisions, will have to be completed prior to the District Issuing a Report of Compliance for the Issuance of a Certificate of Occupancy by the Municipality.
12. Conduit Outlet Protection must be installed at all required outfalls prior to the drainage system becoming operational.
13. Any changes to the Certified Soil Erosion and Sediment Control Plan will require the submission of revised Soil Erosion and Sediment Control Plans to the District for re-certification. The revised plans must meet all current NJ State Soil Erosion & Sediment Control Standards.
14. The Somerset-Union Soil Conservation District shall be notified of any changes in ownership.
15. Mulching to the NJ Standards is required for obtaining a Conditional Report of Compliance. Conditionals are only issued when the season prohibits seeding.
16. Contractor is responsible for keeping all adjacent roads clean during life of construction project.
17. The developer shall be responsible for remedying any erosion or sediment problems that arise as a result of ongoing construction at the request of the Somerset-Union Soil Conservation District.
18. Hydro seeding is a two-step process. The first step includes seed, fertilizer, lime, etc., along with minimal amounts of mulch to provide consistency, good seed to soil contact, and give a visual indication of coverage. Upon completion of seeding operation, hydro-mulch should be applied at a rate of 1500 lbs. per acre in second step. The use of hydro-mulch, as opposed to straw, is limited to optimum seeding dates as listed in the NJ Standards.
19. Unfiltered dewatering is not permitted. Necessary precautions must be taken during all dewatering operations to minimize soil transfer. Any dewatering methods used must be in accordance with the Standard for Dewatering.
20. TOPSOIL STOCKPILE PROTECTION
 - a) Apply ground limestone at a rate of 90 lbs/1000 S.F.
 - b) Apply fertilizer (10-20-10) at a rate of 11 lbs/1000 S.F.
 - c) Apply Perennial Ryegrass seed at a rate of 1 lb/1000 S.F. and Annual Ryegrass at 1 lb/1000 S.F.
 - d) Mulch stockpile with straw or hay at a rate of 90 lbs/1000 S.F.
 - e) Apply a liquid mulch binder or tack to straw or hay mulch.
 - f) Properly entrench a silt fence at the bottom of the stockpile.
21. TEMPORARY STABILIZATION SPECIFICATIONS
 - a) Apply ground limestone at a rate of 90 lbs/1000 S.F.
 - b) Apply fertilizer (10-20-10) at a rate of 11 lbs/1000 S.F.
 - c) Apply Perennial Ryegrass at 1 lb/1000 S.F. and Annual Ryegrass at 1 lb/1000 S.F.
 - d) Mulch stockpile with straw or hay at a rate of 90 lbs/1000 S.F.
 - e) Apply a liquid mulch binder or tack to straw or hay mulch.
22. PERMANENT STABILIZATION SPECIFICATIONS
 - a) Apply topsoil to a depth of 6 inches.
 - b) Apply ground limestone at a rate of 90 lbs/1000 S.F. and work four inches into soil.
 - c) Apply fertilizer (10-20-10) at a rate of 11 lbs/1000 S.F.
 - d) Apply Hard Fescue seed at 2.7 lbs/1000 S.F. and Creeping Red Fescue seed at 0.7 lbs/1000 S.F. and Perennial Ryegrass seed at 0.25 lbs/1000 S.F.
 - e) Mulch stockpile with straw or hay at a rate of 90 lbs/1000 S.F.
 - f) Apply a liquid mulch binder or tack to straw or hay mulch.
23. Detention Basins shall be seeded with Seed Mix #9 in the NJ Soil Erosion and Sediment Control Standards, which consists of 0.45 lbs/1000 S.F. of Deertounge, 0.05 lbs/1000 S.F. of Redtop, 0.35 lbs/1000 S.F. of Wild Rye, and 0.60 lbs/1000 S.F. of Switchgrass.

SOIL EROSION AND SEDIMENT CONTROL DETAILS
BUNKER HILL DEVELOPMENT
11 BUNKER HILL ROAD - BLOCK 11.06, LOT 11.01
3523 ROUTE 27 - BLOCK 20.01, LOT 16.01
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

PREPARED FOR
DEVIN DEVELOPERS, LLC
ACCURATE ENGINEERING, PC
12 Concord Drive
Kendall Park, New Jersey 08824
732-951-2385

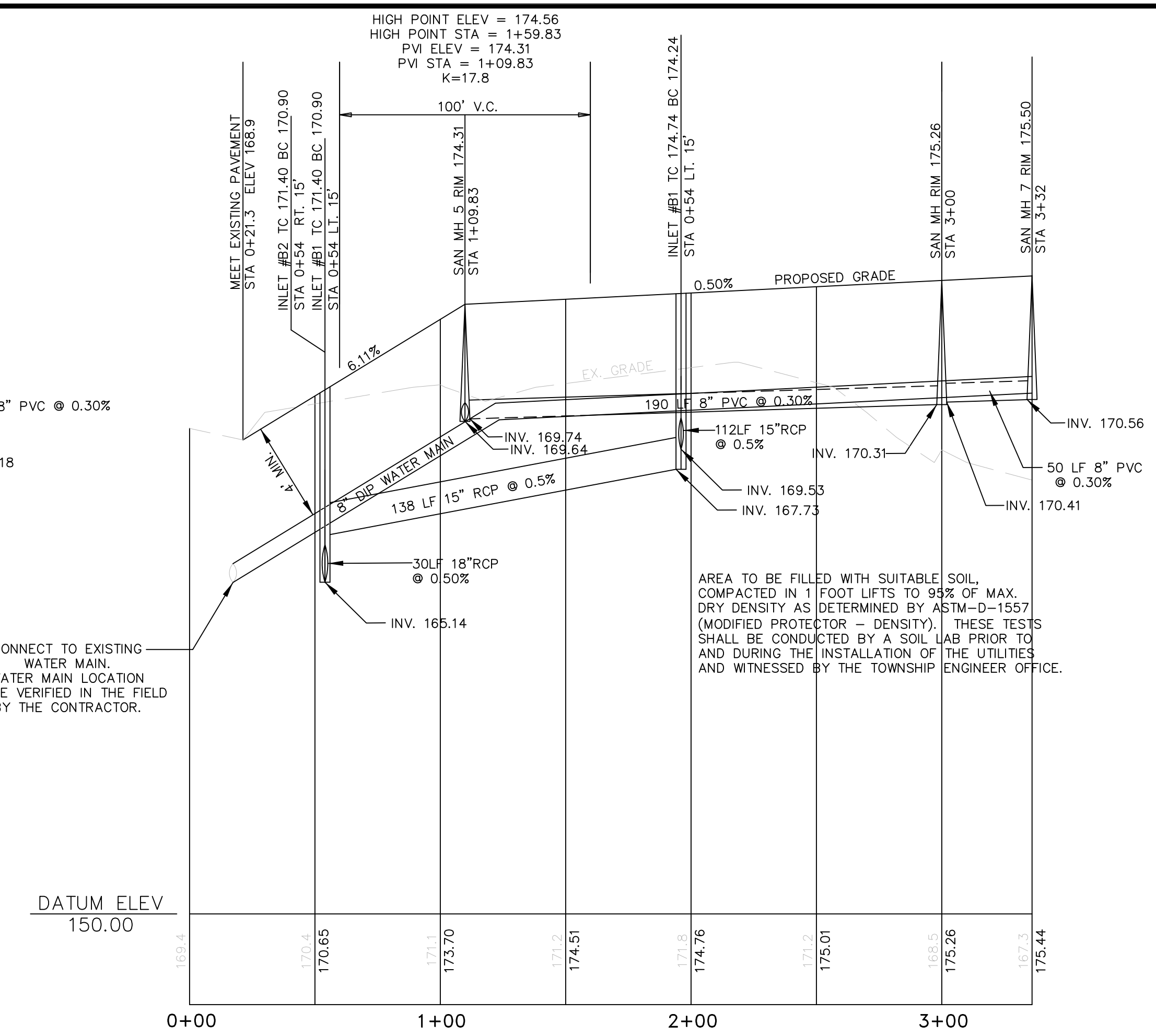
Date: 7/21/2021 File: 2021-011
Scale: AS SHOWN Tax Map: 16.02
Revised To: Sheet: 8 OF 12

Frank T. Antisell PROFESSIONAL ENGINEER
N.J. LICENSE No. 38739



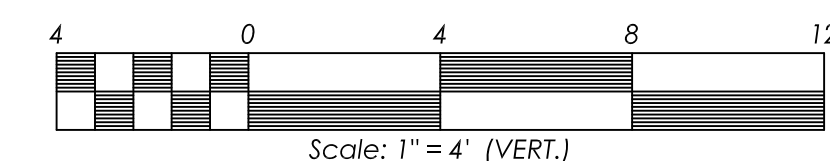
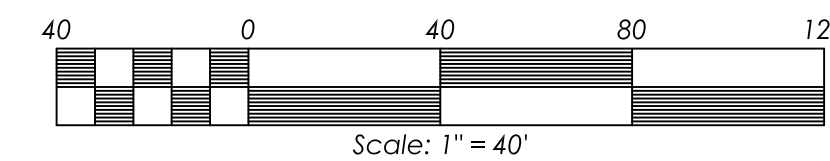
SANITARY SEWER EASEMENT PROFILE

SCALE:
1"=40' HOR.
1"=4' VERT.



PROPOSED ROAD CENTER LINE PROFILE

SCALE:
1"=40' HOR.
1"=4' VERT.



THE LOCATION OF UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE, BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME OF PLAN PREPARATION. THE ACCURACY AND COMPLETENESS OF THIS INFORMATION IS NOT GUARANTEED BY THE ENGINEER. THE CONTRACTOR IS ADVISED TO VERIFY IN THE FIELD, ALL FACTS CONCERNING THE LOCATION OF THE FACILITIES TO HIS OWN SATISFACTION PRIOR TO PROCEEDING WITH HIS WORK.

NO.	DESCRIPTION OF REVISION	DATE
1	PER 11/1/21 STAFF COMMENTS	11/22/21

PROFILES
BUNKER HILL DEVELOPMENT
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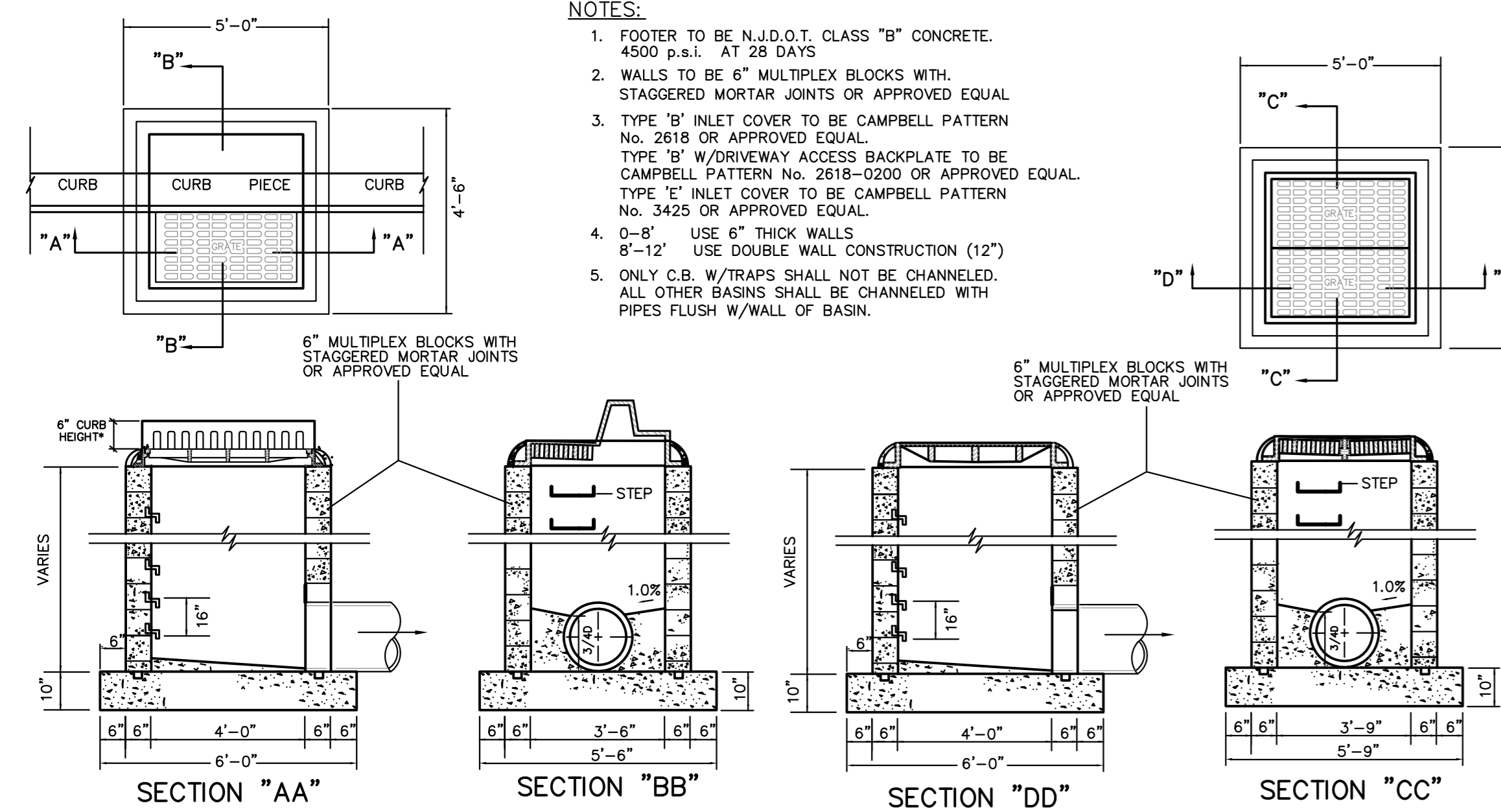
Frank T. Antisell
PROFESSIONAL ENGINEER
N.J. LICENSE No. 38739

Date: 6/1/2021
Scale: AS SHOWN
Revised To: 9 OF 12

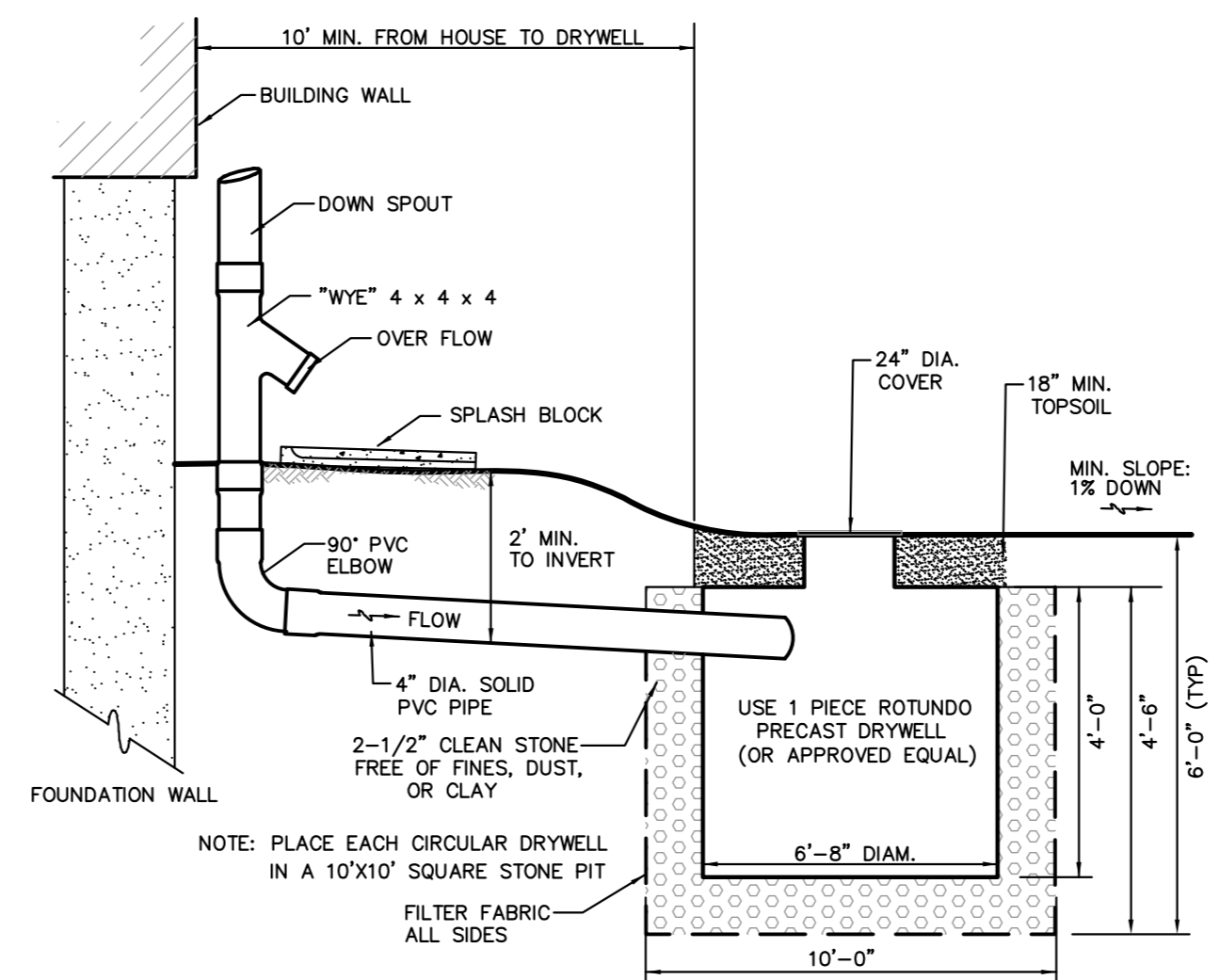
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Tox Mpp: 16.02
Sheet: 9 OF 12

NOTES:

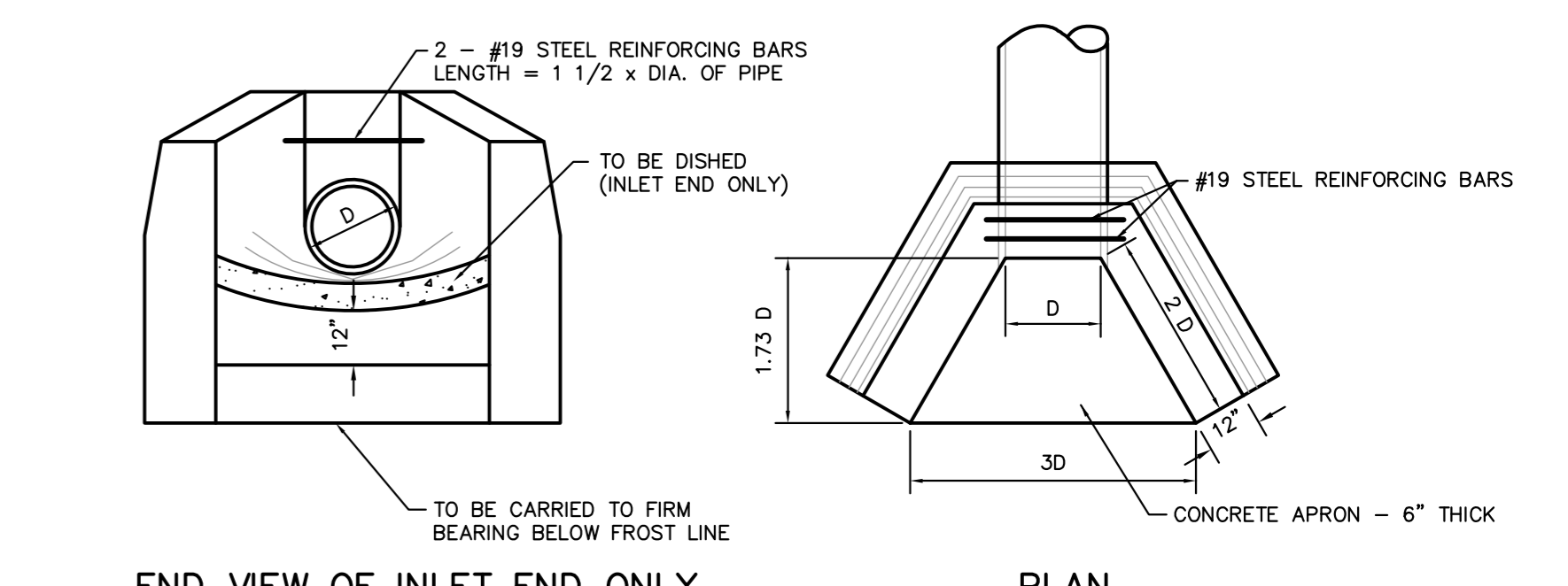
- FOOTER TO BE N.J.D.O.T. CLASS "B" CONCRETE. 4500 p.s.i. AT 28 DAYS
- WALLS TO BE 6" MULTIPLEX BLOCKS WITH STAGGERED MORTAR JOINTS OR APPROVED EQUAL
- TYPE "B" INLET COVER TO BE CAMPBELL PATTERN No. 2618 OR APPROVED EQUAL. TYPE "B" W/DRIVEWAY ACCESS BACKPLATE TO BE CAMPBELL PATTERN No. 2618-0200 OR APPROVED EQUAL. TYPE "E" INLET COVER TO BE CAMPBELL PATTERN No. 3425 OR APPROVED EQUAL.
- 0-8" USE 6" THICK WALLS. 8-12" USE DOUBLE WALL CONSTRUCTION (12")
- ONLY C.B. W/TRAPS SHALL NOT BE CHanneled. ALL OTHER BASINS SHALL BE CHanneled WITH PIPES FLUSH W/WALL OF BASIN.



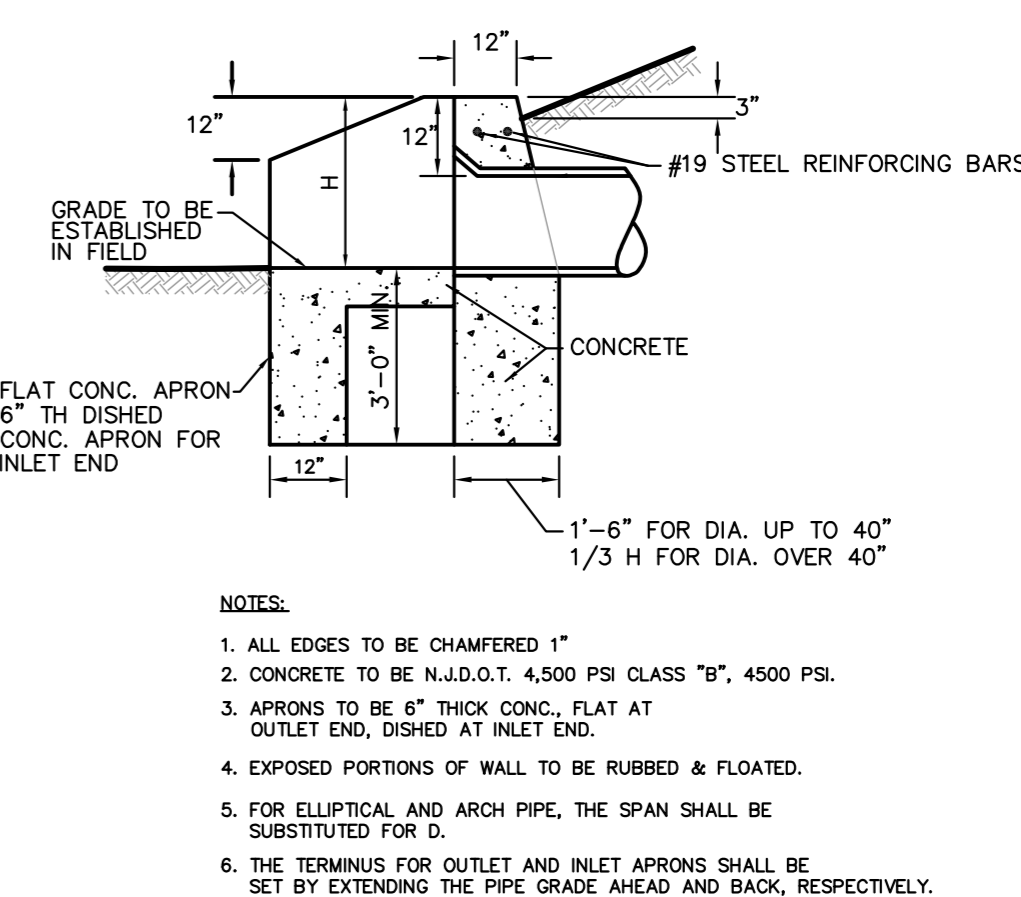
TYPICAL BICYCLE GRATE
N.T.S. SR-016



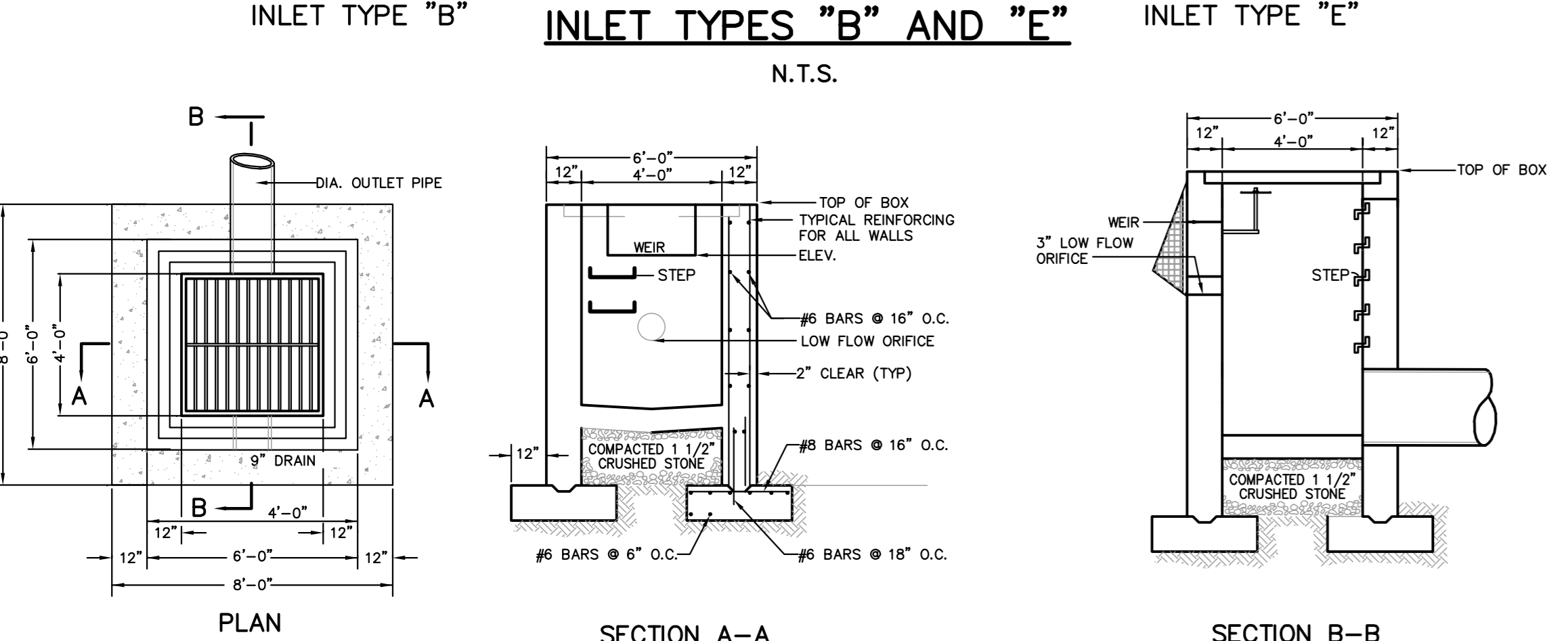
ROOF LEADER TO DRYWELL DETAIL
N.T.S.



PIPE SIZE	CORE MAT. 1.4 CY	REIN CONC. 1.4 CY	APRONS (IN CY) 0.2 CY
12"	1.7	1.8	0.2
15"	2.1	2.1	0.3
18"	2.5	2.5	0.4
21"	2.9	2.9	0.5
24"	3.3	3.4	0.6
27"	3.7	3.9	0.7
30"	4.7	4.9	0.9
36"	5.8	6.4	1.2
42"	7.6	8.3	1.5
48"	9.7	10.8	1.8
54"	12.2	13.3	2.1
60"	15.0	16.4	2.5
66"	18.1	19.9	3.0
72"			

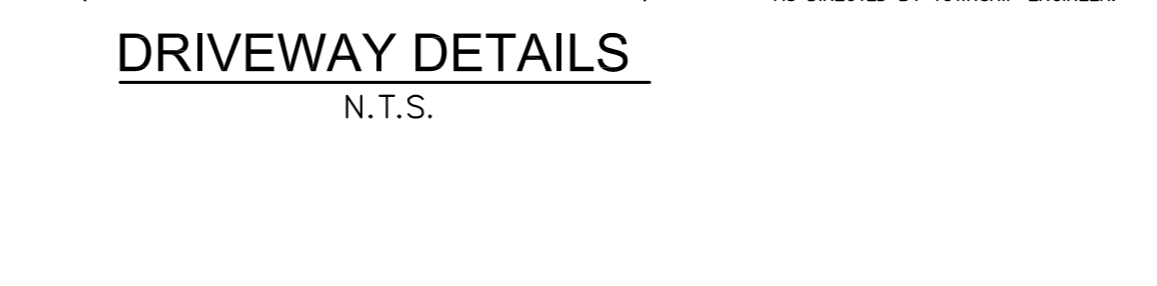


CONCRETE HEADWALL
N.T.S. SR-01c

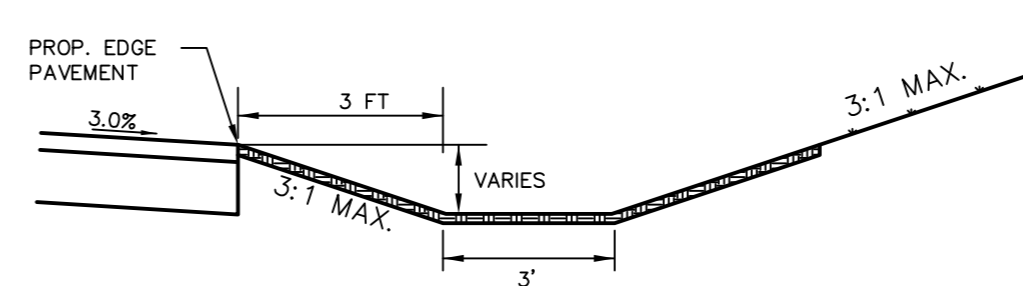


RETENTION BASIN OUTLET STRUCTURE No. 29
N.T.S.

DRIVEWAY DETAILS
N.T.S.

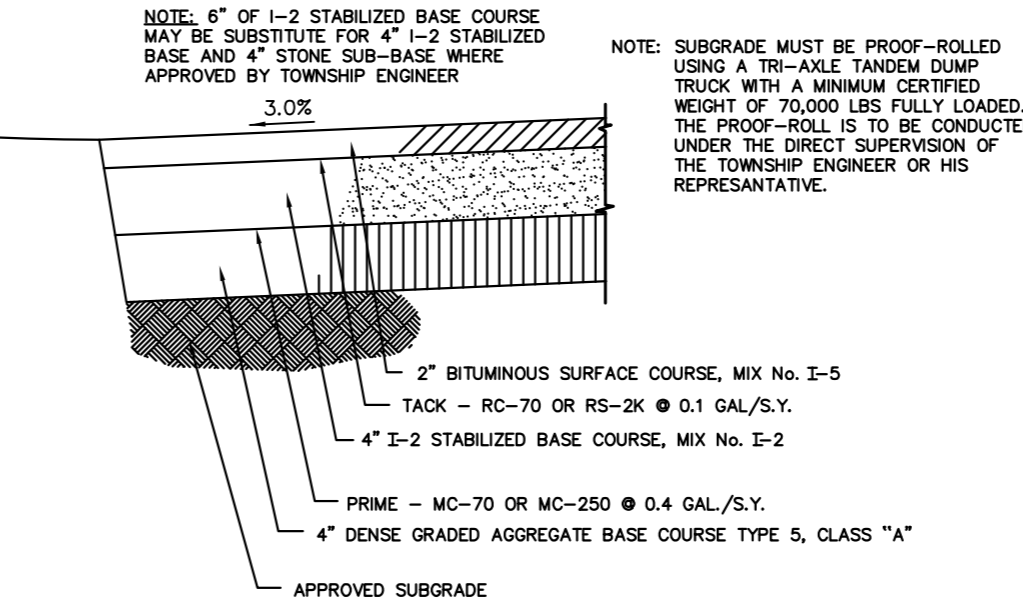


DRIVEWAY DETAILS
N.T.S.

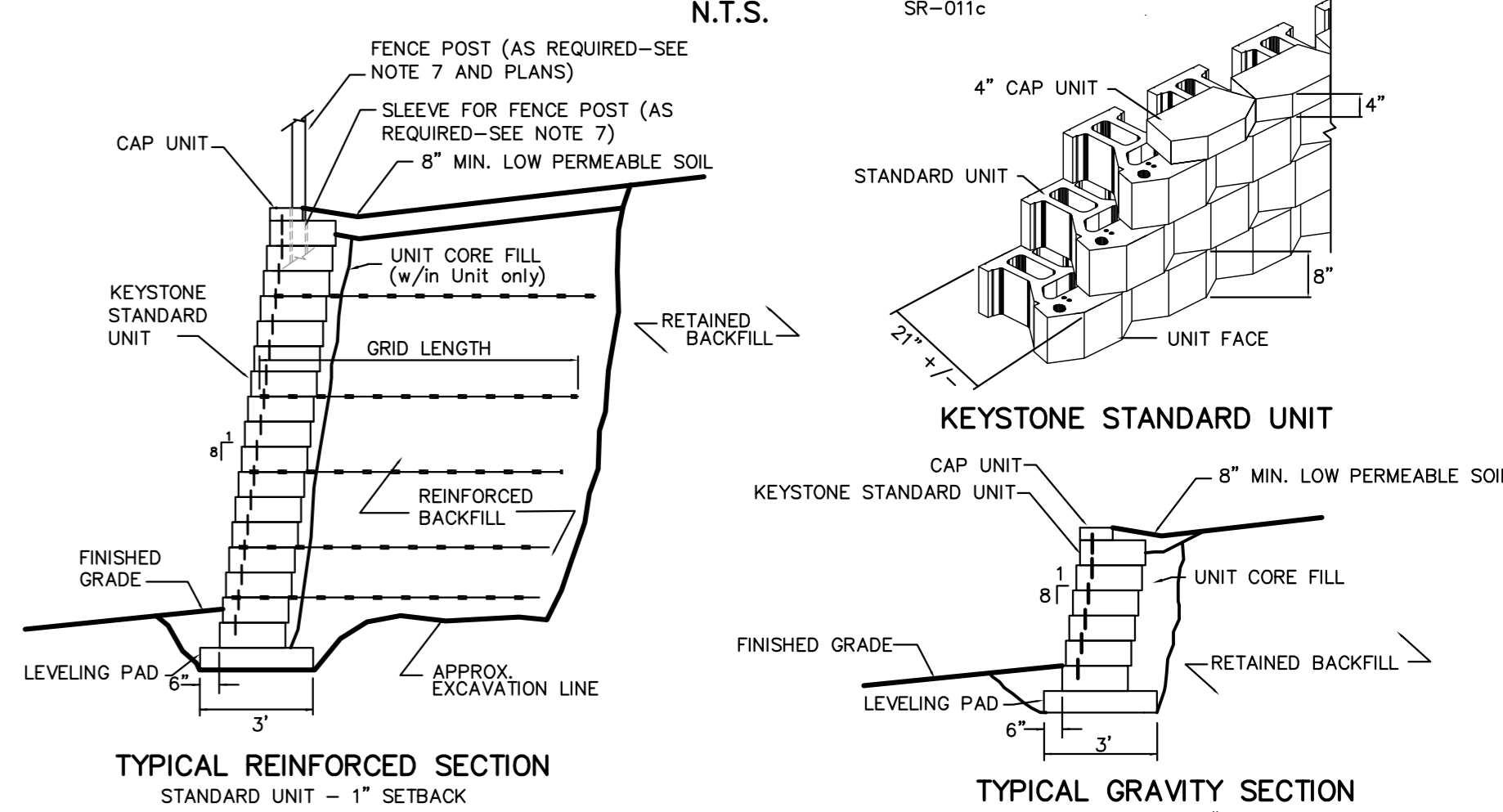


TYPICAL ROADSIDE SWALE
N.T.S.

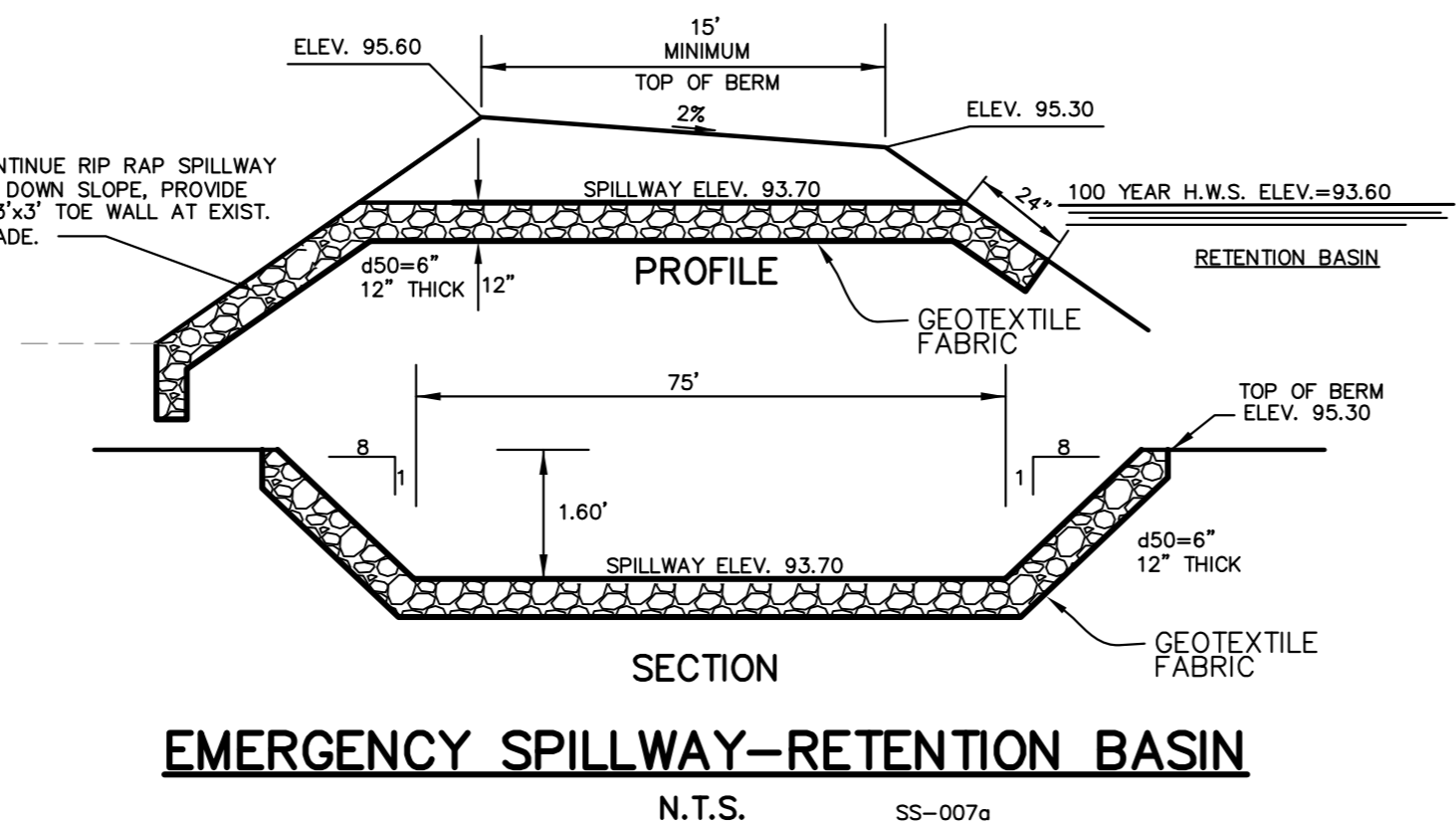
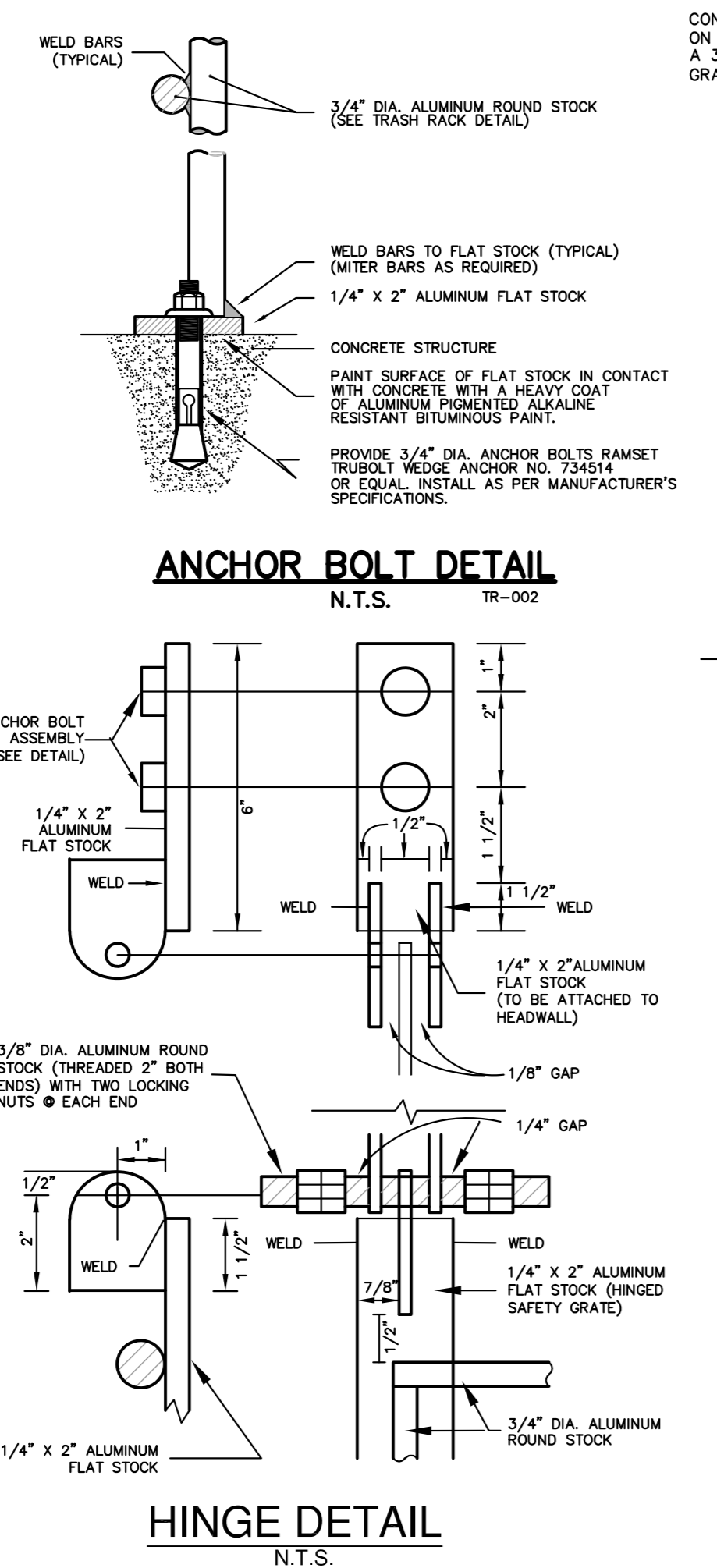
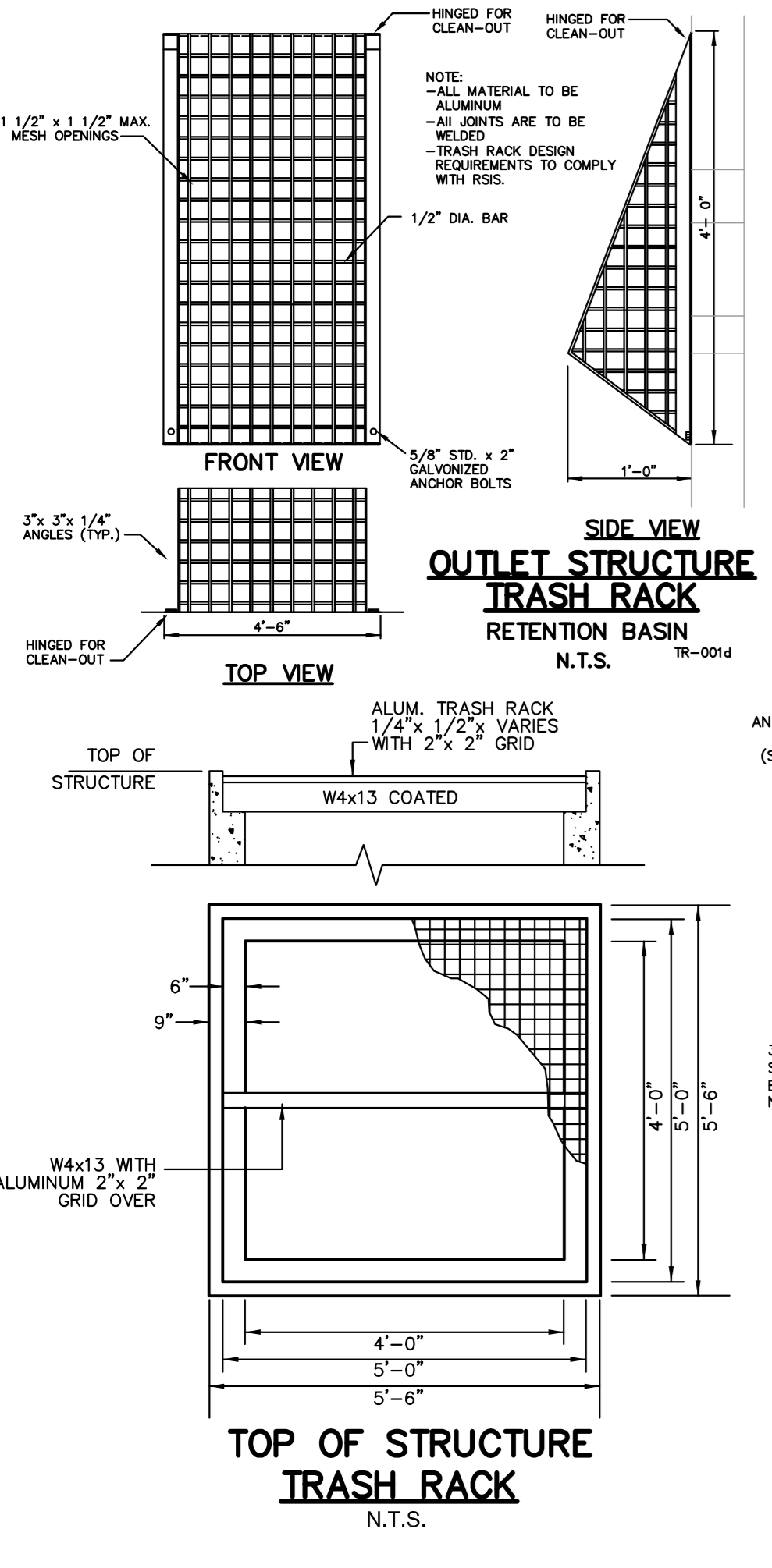
- OUTLET STRUCTURE NOTES:**
- ALL CONCRETE TO BE CLASS B AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT THE END OF 28 DAYS.
 - ALL REINFORCING STEEL SHALL BE INTERMEDIATE GRADE DEFORMED BARS CONFORMING TO THE LATEST A.S.T.M. STANDARD, 17 - 60,000 PSI.
 - ALL CONCRETE AND CONCRETE WORK SHALL BE IN ACCORDANCE WITH "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE," (A.C.I. 318).
 - ALL REINFORCING SHALL BE LAPPED A MINIMUM OF 2'-0" AT SPLICES WITH SPLICES OF ADJACENT BARS STAGGERED.
 - MINIMUM CLEAR DISTANCE OF REINFORCEMENT IN CONCRETE SHALL BE 2".
 - EXPOSED PORTIONS OF WALLS TO BE RUBBED AND FLOATED.
 - SHOP DRAWINGS FOR WALLS SHALL BE PROVIDED PRIOR TO CONSTRUCTION.



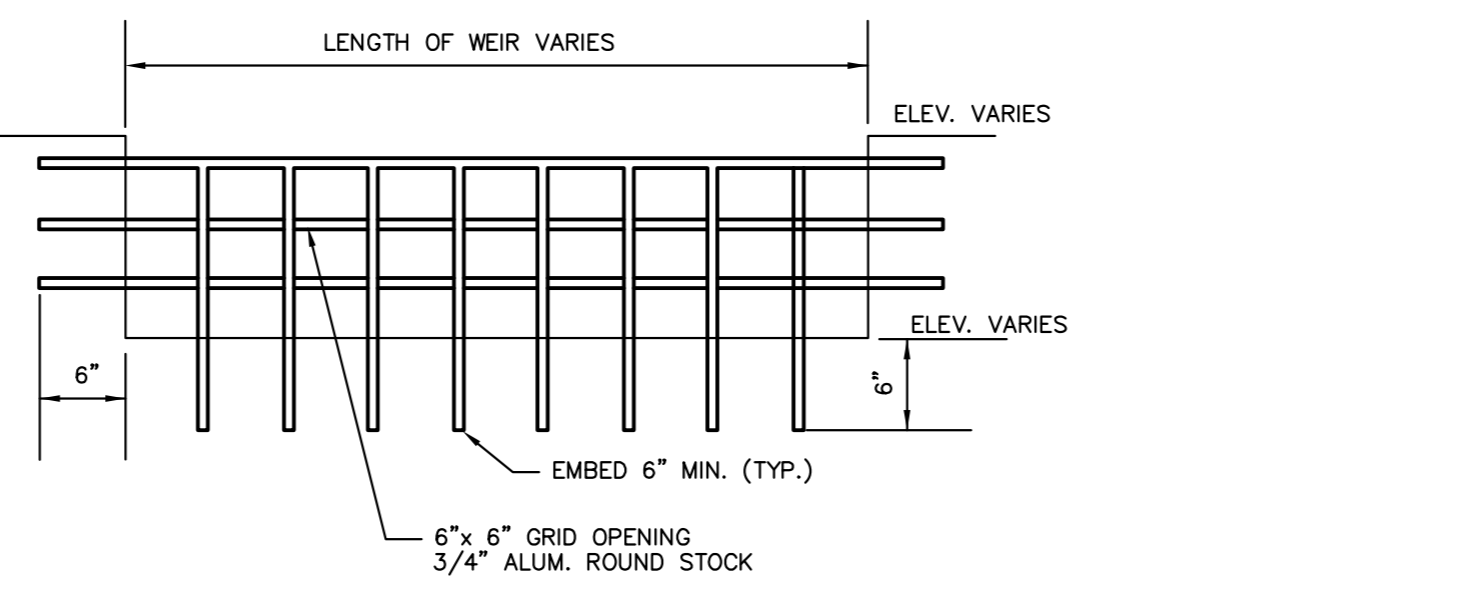
ROADWAY PAVEMENT DESIGN
N.T.S.



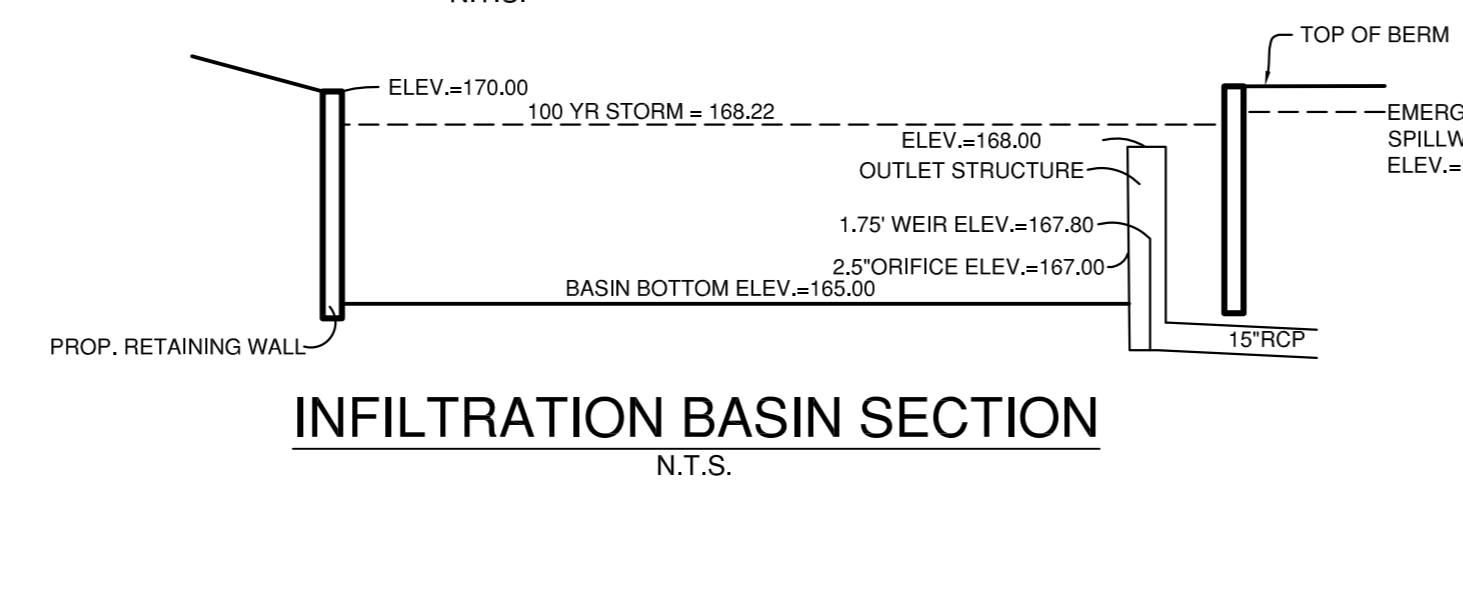
KEYSTONE RETAINING WALL
N.T.S.



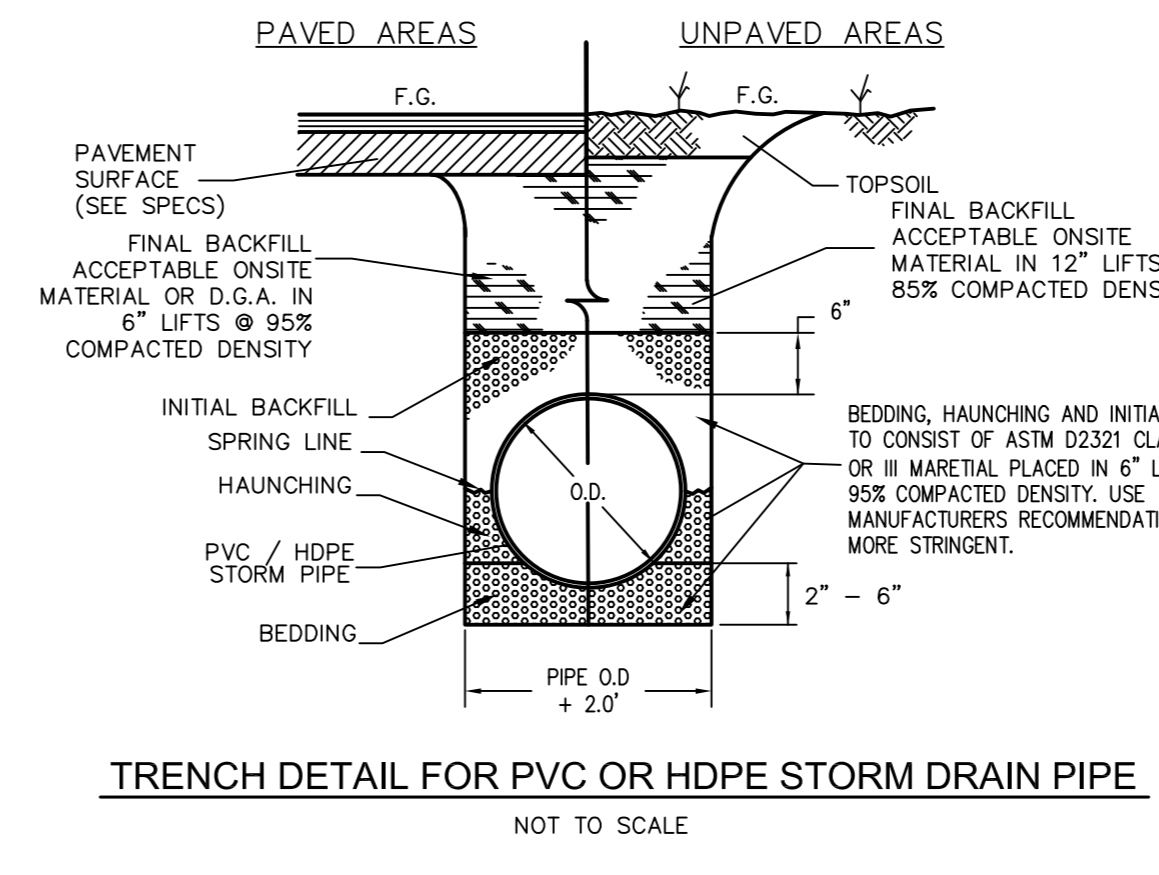
EMERGENCY SPILLWAY-RETENTION BASIN
N.T.S.



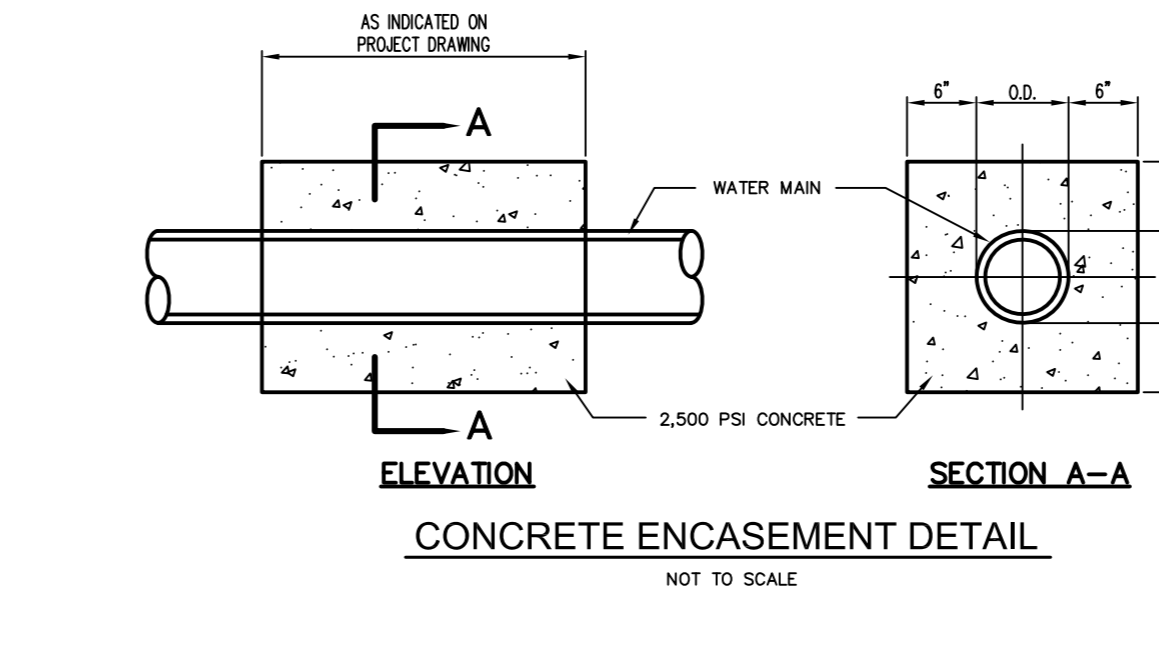
WEIR TRASH RACK
N.T.S.



INFILTRATION BASIN SECTION
N.T.S.



TRENCH DETAIL FOR PVC OR HDPE STORM DRAIN PIPE
NOT TO SCALE



CONCRETE ENCASEMENT DETAIL
NOT TO SCALE

NO.	PER 11/11/21 STAFF COMMENTS	11/22/21
1	DESCRIPTION OF REVISION	DATE

CONSTRUCTION DETAILS
BUNKER HILL DEVELOPMENT
11 BUNKER HILL ROAD - BLOCK 11.06, LOT 11.01
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FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

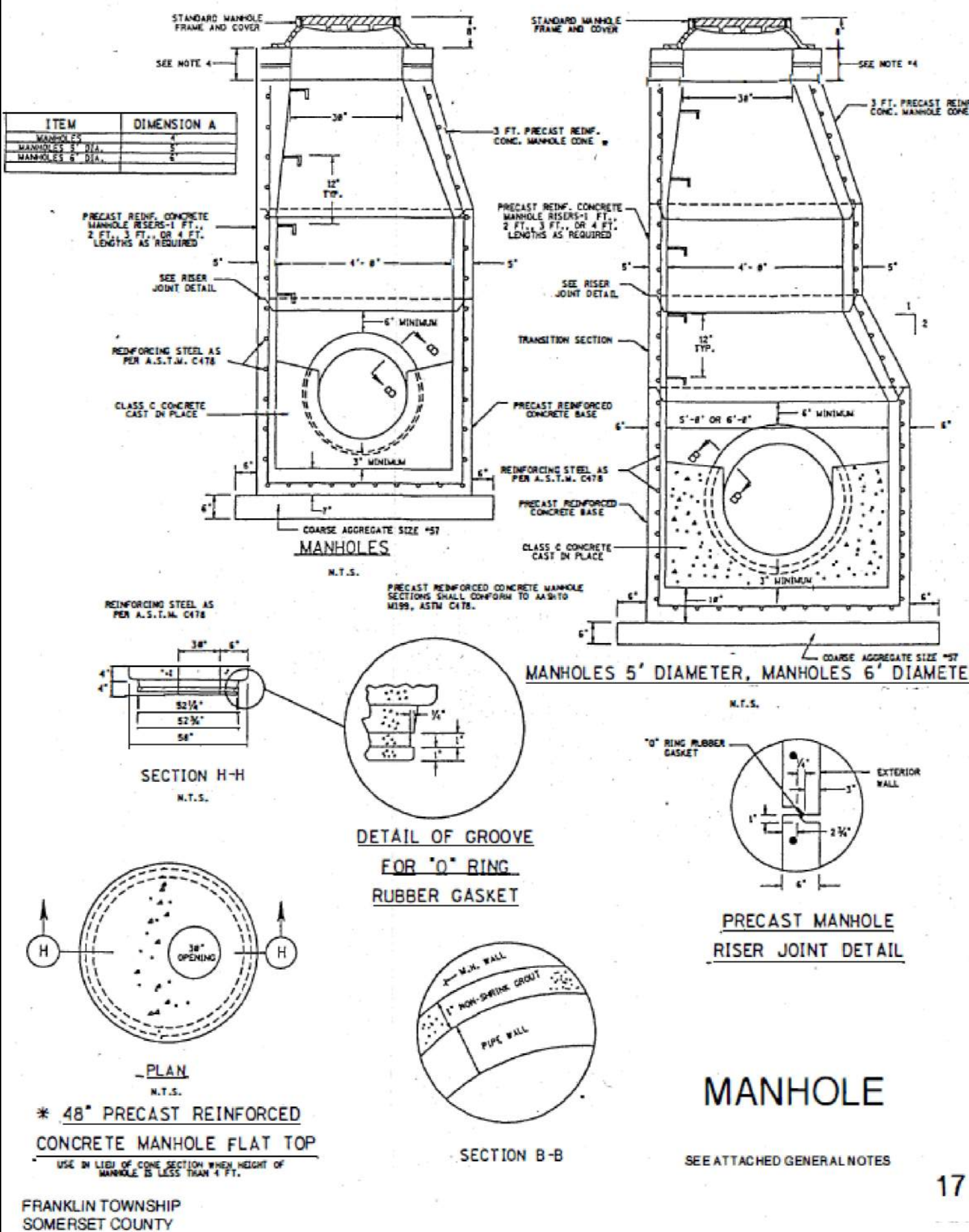
PREPARED FOR
DEVIN DEVELOPERS, LLC
ACCURATE ENGINEERING, PC
12 Concord Drive
Kendall Park, New Jersey 08824
732-951-2385

DATE: 7/21/2021
SCALE: AS SHOWN
REVISED TO: 16.02

FILE: 2021-01
TAX MAP: 16.02
SHEET: 10 OF 12

Frank T. Antisell PROFESSIONAL ENGINEER
N.J. LICENSE No. 38739

WATER PIPING, FITTINGS AND APPURTENANCES



FRANKLIN TOWNSHIP SOMERSET COUNTY

Service	Material	Jointing	Lining	Manufacturer	Standard
Water Main Under Ground	Ductile Iron Class 52	Push-on Joint or Mechanical Joint	Cement Lined	U.S. Pipe Co. or approved equal	AWWA C151 ANSI A21.51
Gate Valves	Ductile Iron resilient seated gate valves	Mechanical joints with retaining glands	Epoxy coating	U.S. Pipe Co. or approved equal	AWWA C509
Valve Boxes	Cast Iron two-piece 5 1/2" shaft			U.S. Pipe Co. or approved equal	
Mechanical Joint	Ductile Iron Class 52	Mechanical Joint with retaining glands	Cement Lined	U.S. Pipe Co. or approved equal	AWWA C111 ANSI A21.11
Retaining Glands	Ductile Iron	Mechanical Joint		U.S. Pipe Co. or approved equal	AWWA C111
Couplings	Sleeve	Ductile Iron		U.S. Pipe Co. or approved equal	ASTM A536
	Follower	Ductile Iron		U.S. Pipe Co. or approved equal	ASTM A536
	Gasket	Compounded Rubber		U.S. Pipe Co. or approved equal	ASTM D2000
	Bolts&Nuts	High strength Low alloy Steel		U.S. Pipe Co. or approved equal	AWWA C111
Service Line	Copper Type K	Compression	N/A		
Corporation Cock	Brass	Threaded or soldered	N/A	Mueller No. H-15000	
Interior Service 2-1/2" And smaller	Brass or copper type L	Threaded or soldered	N/A	Mueller or approved equal	

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GENERAL NOTES

MANHOLES MAY BE CONSTRUCTED OF BRICK, CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE.

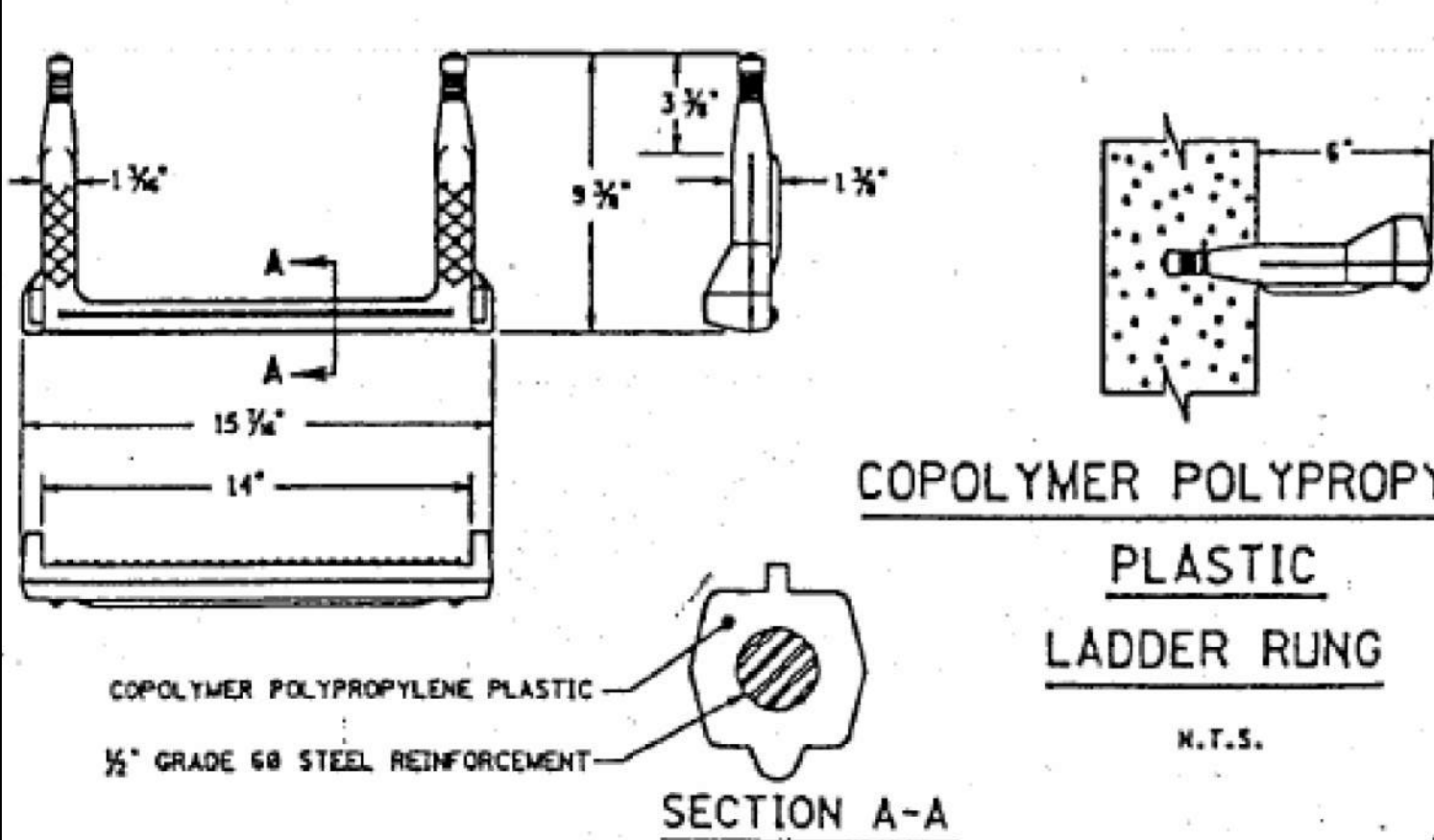
WHEN THE DEPTH OF A MANHOLE EXCEEDS 10 FT. AS MEASURED FROM TOP OF COVER TO CENTER OF MANHOLE, WALLS OF BRICK, CONCRETE OR CONCRETE BLOCK BELOW A DEPTH OF 8 FT. SHALL BE 12" THICK. THE OVERALL HORIZONTAL DIMENSIONS SHALL BE INCREASED 12" AND THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED. THE THICKNESS OF PRECAST CONCRETE MANHOLE WALLS DOES NOT HAVE TO BE INCREASED IF THE DEPTH OF THE MANHOLE EXCEEDS 10 FEET.

CASTINGS OF PRECAST MANHOLES SHALL BE ADJUSTED TO GRADE WITH COURSES OF BRICK OR CONCRETE BLOCK, AS REQUIRED, 12" MAXIMUM.

AS AN ALTERNATE TO THE STANDARD MANHOLE FRAME AND COVER A 39" DIAMETER FRAME WITH 4" FLANGE MAY BE FURNISHED WITH ALL OTHER DIMENSIONS AND WEIGHTS REMAINING THE SAME.

IN BRICK, CONCRETE OR CONCRETE BLOCK MANHOLES, INVERTS SHALL BE CONSTRUCTED IN TWO STAGES.

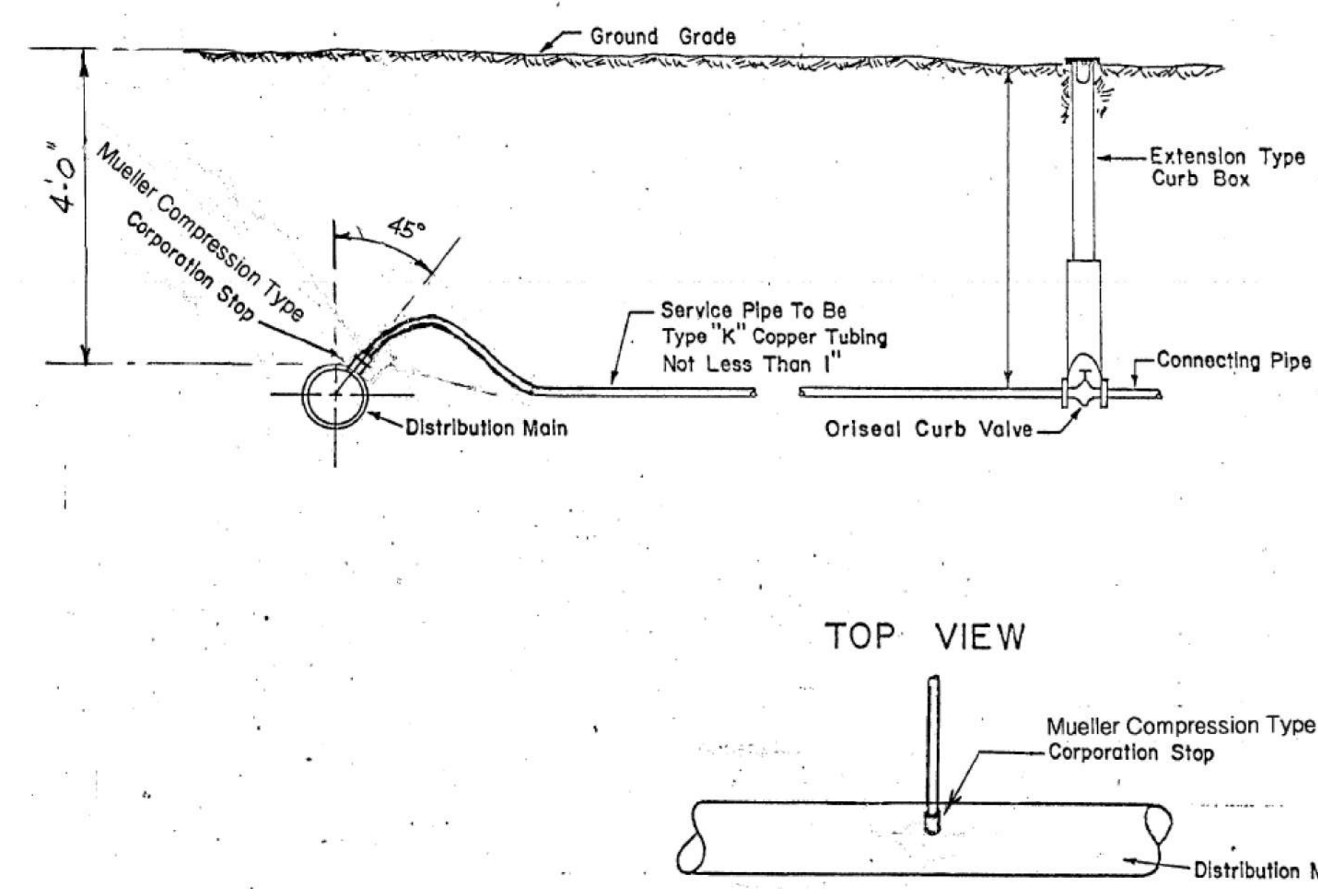
AS AN ALTERNATE, COPOLYMER POLYPROPYLENE PLASTIC LADDER RUNGS MAY BE FURNISHED IN PRECAST MANHOLES AND INLETS.



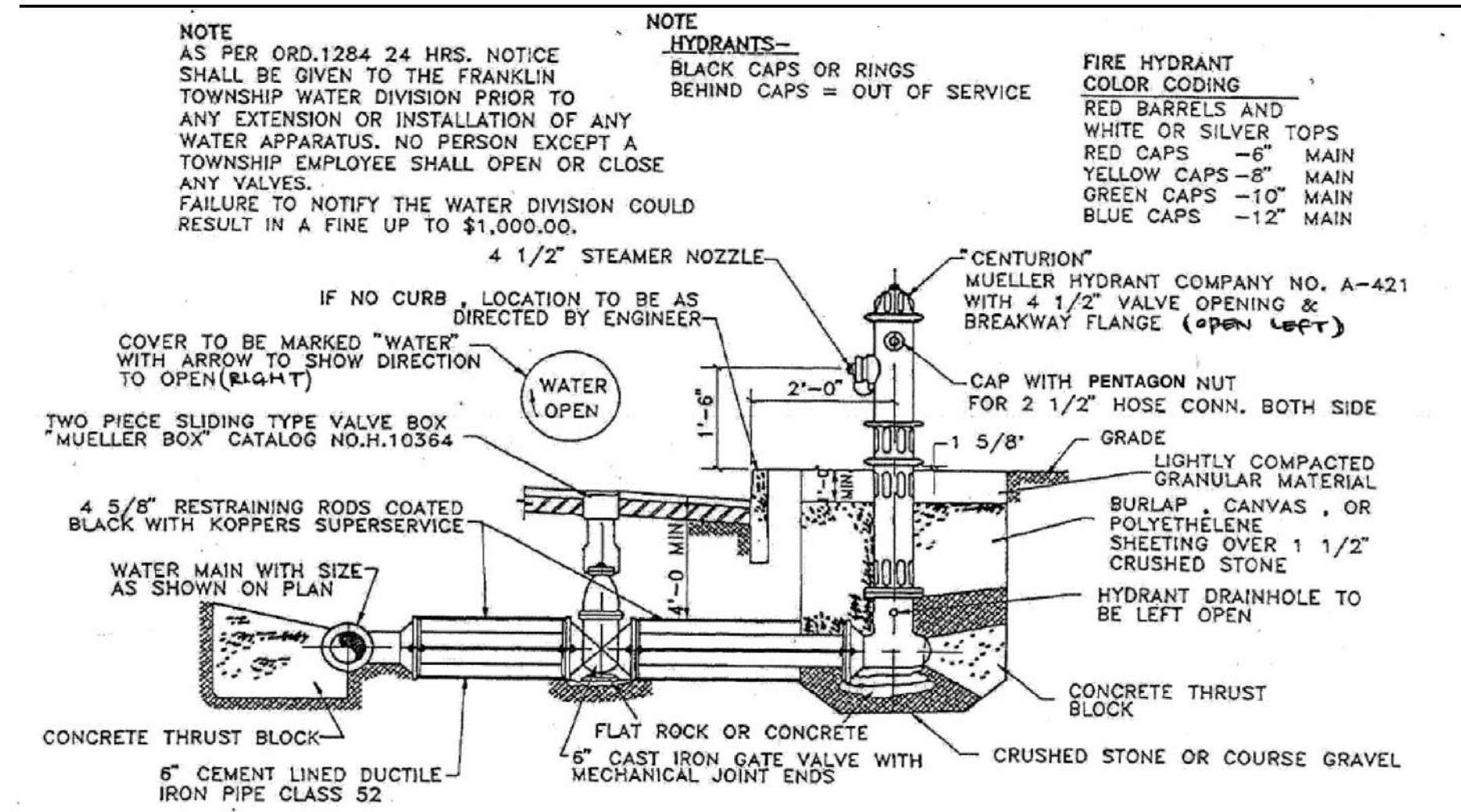
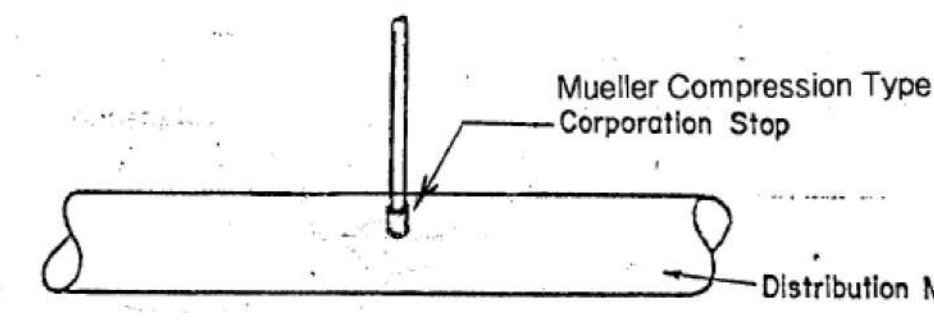
CD - 15.3

MANHOLE CASTING, NOTES & LADDER RUNGS

HOUSE SERVICE CONNECTION



TOP VIEW



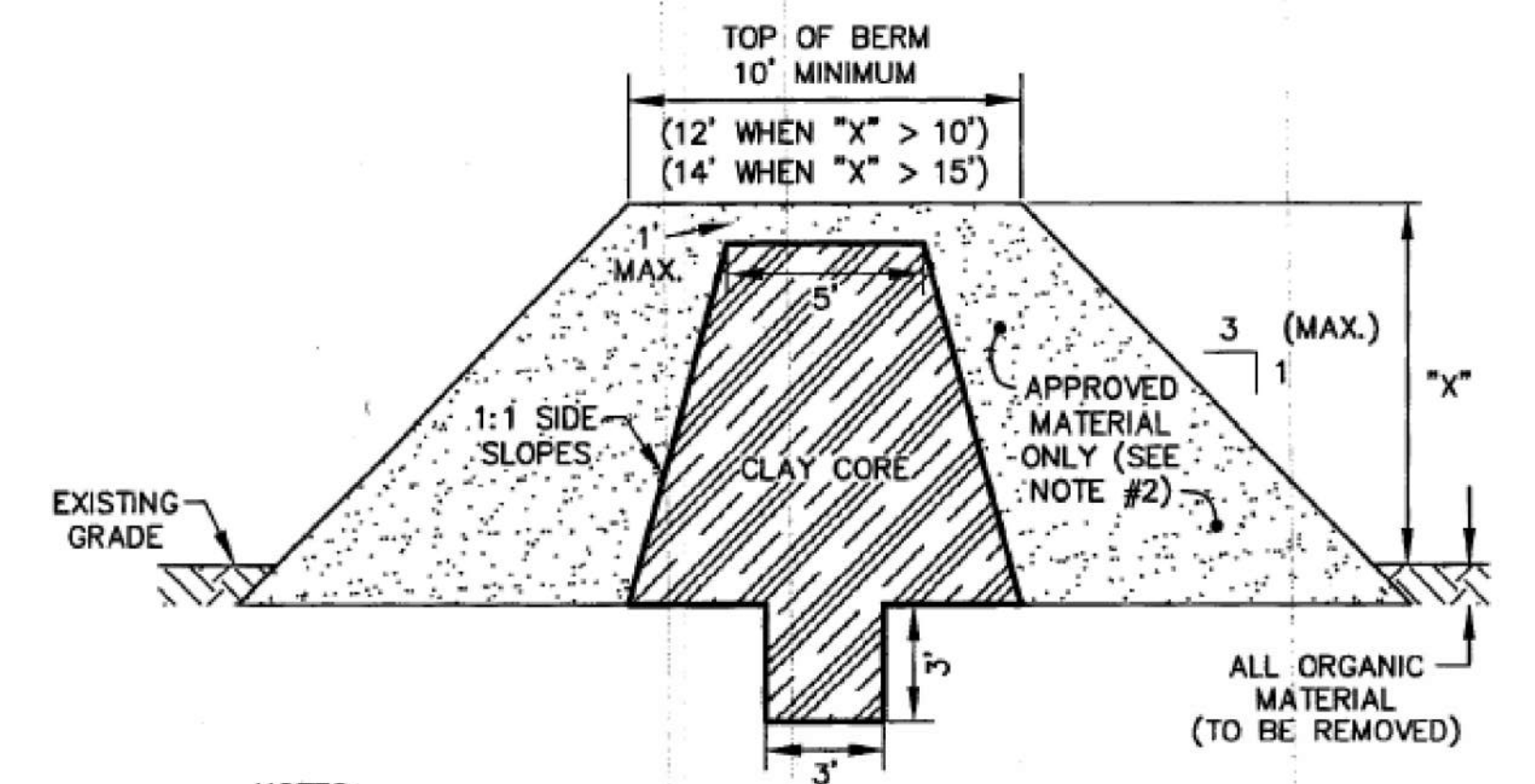
TYPICAL HYDRANT & VALVE INSTALLATION

NOTE: AS PER ORD. 1284 24 HRS. NOTICE SHALL BE GIVEN TO THE FRANKLIN TOWNSHIP WATER DIVISION PRIOR TO ANY EXTENSION OR INSTALLATION OF ANY WATER APPARATUS. NO PERSON EXCEPT A TOWNSHIP EMPLOYEE SHALL OPEN OR CLOSE ANY VALVES. FAILURE TO NOTIFY THE WATER DIVISION COULD RESULT IN A FINE UP TO \$1,000.00.

NOTE: HYDRANTS—BLACK CAPS OR RINGS BEHIND CAPS = OUT OF SERVICE

FIRE HYDRANT COLOR CODING: RED BARRELS AND WHITE OR SILVER TOPS — 6" MAIN; RED CAPS — 8" MAIN; YELLOW CAPS — 10" MAIN; GREEN CAPS — 12" MAIN; BLUE CAPS — 12" MAIN

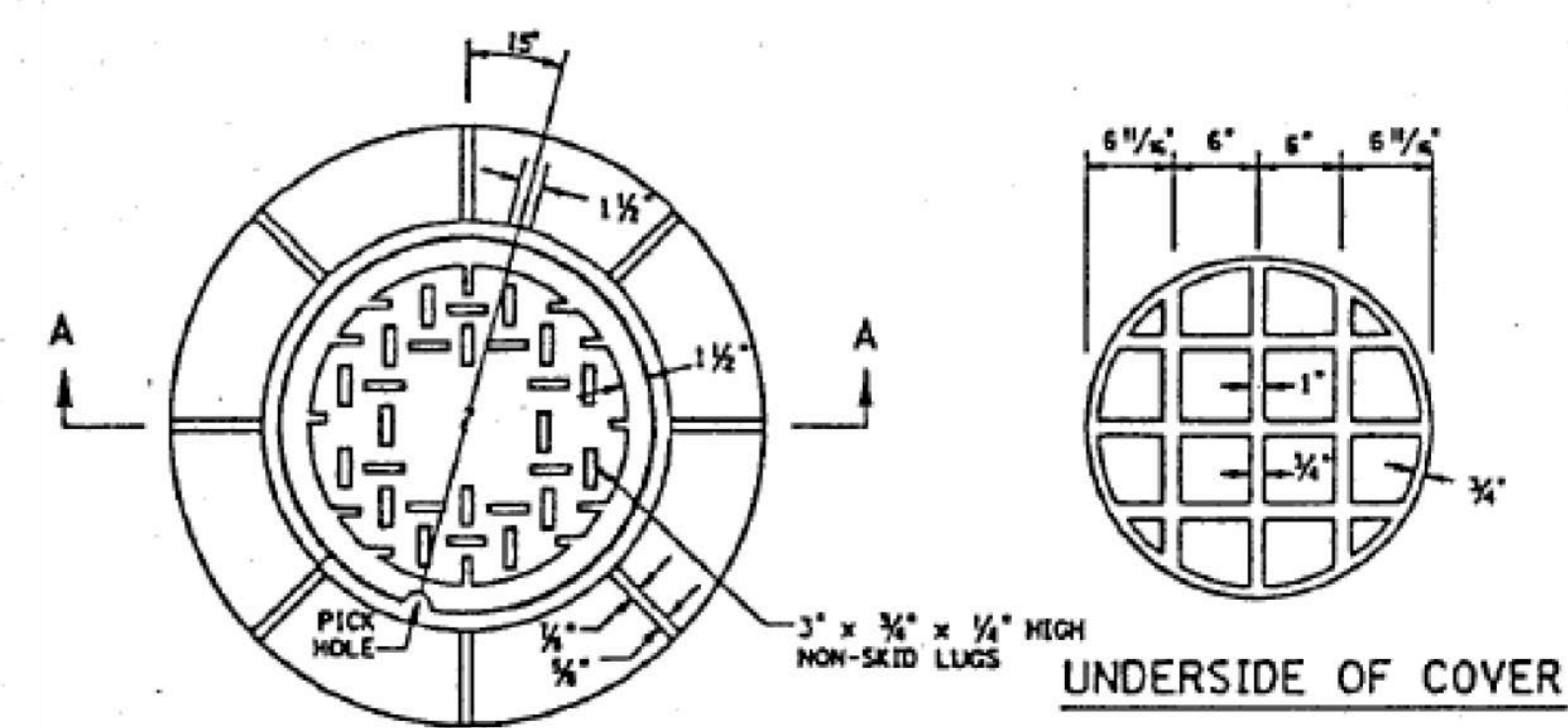
FRANKLIN TOWNSHIP SOMERSET COUNTY



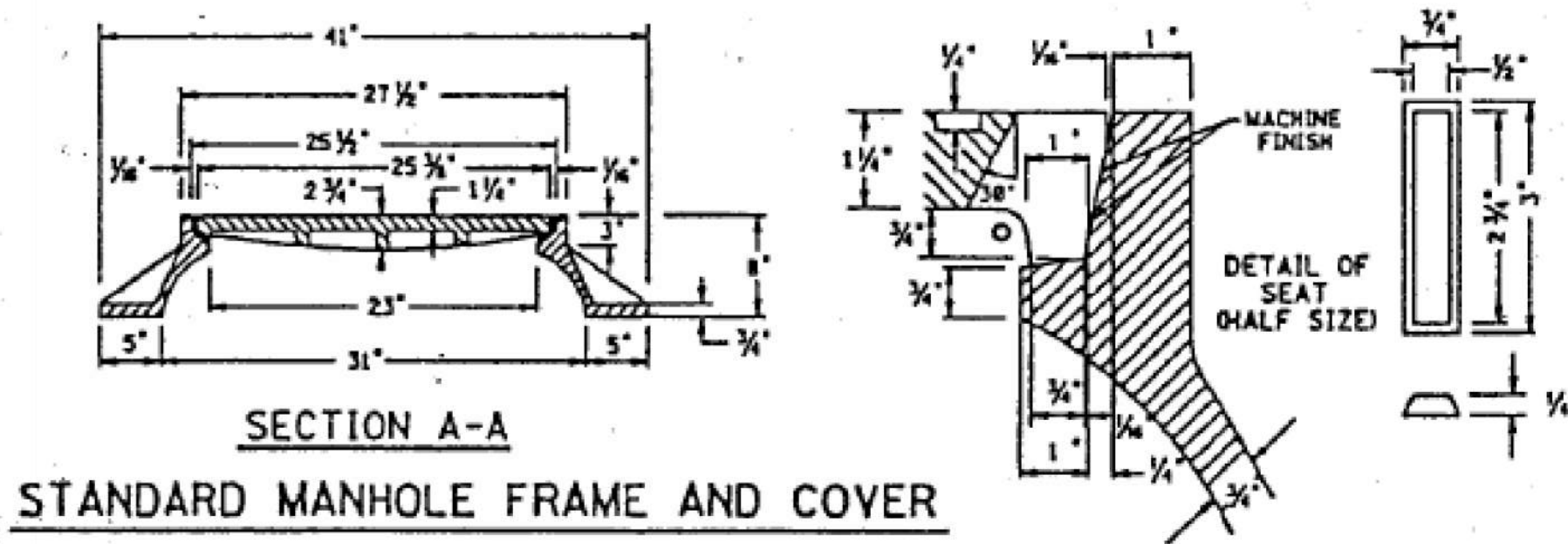
- NOTES:**
- The Clay Core shall consist of compacted clay material (unified soil classification "CL"). The material shall be certified by a licensed New Jersey professional Engineer. The material shall be approved by the Township prior to installation. A Soil Importation Permit will be required, if the material is not from a certified source.
 - The fill material in all earth dams and embankments shall be compacted to at least 95% of the maximum density obtained from compaction tests performed by the appropriate method in ASTM D698.
 - Trees and other vegetation with large extensive root structure shall not be permitted on any dam or embankment.
 - The basin is to be topped with a minimum of 4" of topsoil and seeded, including the bottom, side slopes and all earthen dams and embankments. "Topsoil" is defined as the natural, undisturbed surface layer of soil having more organic matter than subsequent layers suitable for satisfactory growth and maintenance of permanent, locally adapted vegetation. The material must be friable, loamy soil reasonably free of debris, objectionable weeds, lumps, roots, stones, or similar objects larger than 1-inch in any dimension; have a natural pH of 5.0 to 7.5; have an organic matter content greater than 2.00 percent; and contain no toxic substances which may be harmful to plant growth the seeding shall, as a minimum, conform to type "A" grass seed mixture as defined in the NJDOT standard specifications for road and bridge construction.
 - Slope to be maximum of 3:1 or as directed by the Township Engineer.

EMBANKMENT AND DETENTION BASIN CLAY CORE

(TO BE USED ON ALL EMBANKMENT AREAS WITH FILL GREATER THAN TWO FEET)



MINIMUM WEIGHTS
WEIGHT OF FRAME + 265"
WEIGHT OF COVER + 175"



CD - 15.1

FITTING	RESTRAINING LENGTH SCHEDULE					
	MINIMUM LENGTH OF RESTRAINED JOINTS ON EACH SIDE OF FITTING					
	DUCTILE IRON PIPE (FT.)	CONCRETE LCP (FT.)				
90° BEND, VALVES, CAPS AND PLUGS	NA	90	120	145	190	270
45° BENDS	NA	30	35	45	60	80
22 1/2° BENDS	NA	10	10	15	15	25
11 1/4° BENDS	NA	5	5	5	5	5
5 5/8° BENDS	NA	NA	NA	NA	5	5
TEES		6" Ø	8" Ø	12" Ø	16" Ø	24" Ø
		8" Ø	12" Ø	16" Ø	24" Ø	42" Ø
		12" Ø	16" Ø	24" Ø	42" Ø	42" Ø

NOTE: CONTRACTOR SHALL USE THE ABOVE SCHEDULE AND THE CONTRACT PLAN AND PROFILE SHEETS TO DETERMINE ACTUAL RESTRAINED LENGTHS REQUIRED. FITTINGS IN CLOSE PROXIMITY TO ONE ANOTHER MAY REQUIRE ADDITIONAL RESTRAINT. FOR EXAMPLE TWO 22 1/2° BENDS LOCATED WITHIN SEVERAL FEET OF EACH OTHER WILL HAVE THE SAME REACTION AS A 45° BEND AND AS SUCH WILL REQUIRE THE LENGTHS OF RESTRAINT SHOWN FOR 45° BENDS.

RESTRAINING LENGTH SCHEDULE

PER 11/21 STAFF COMMENTS

CONSTRUCTION DETAILS
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