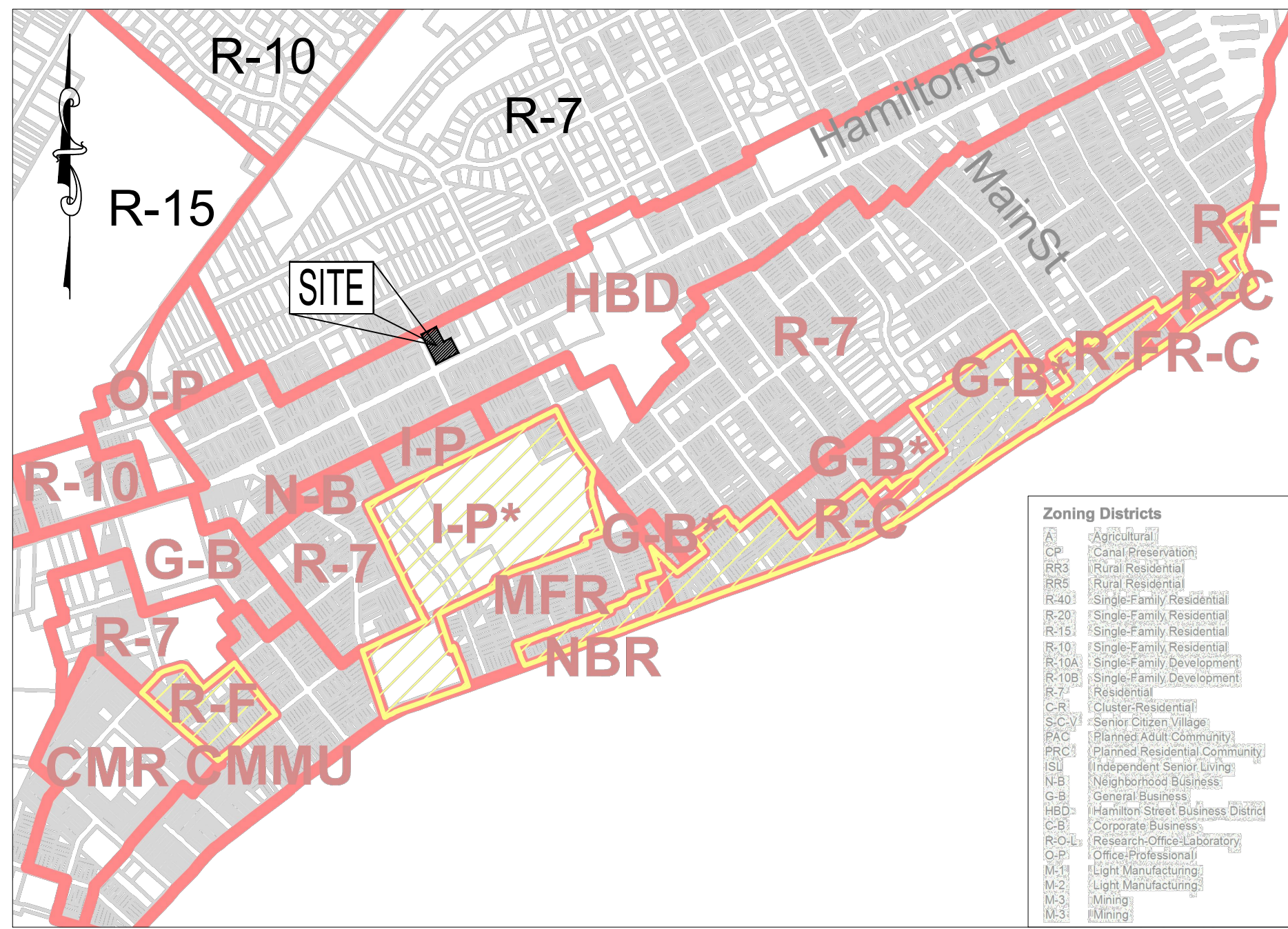


# RELIMINARY AND FINAL SITE PLAN

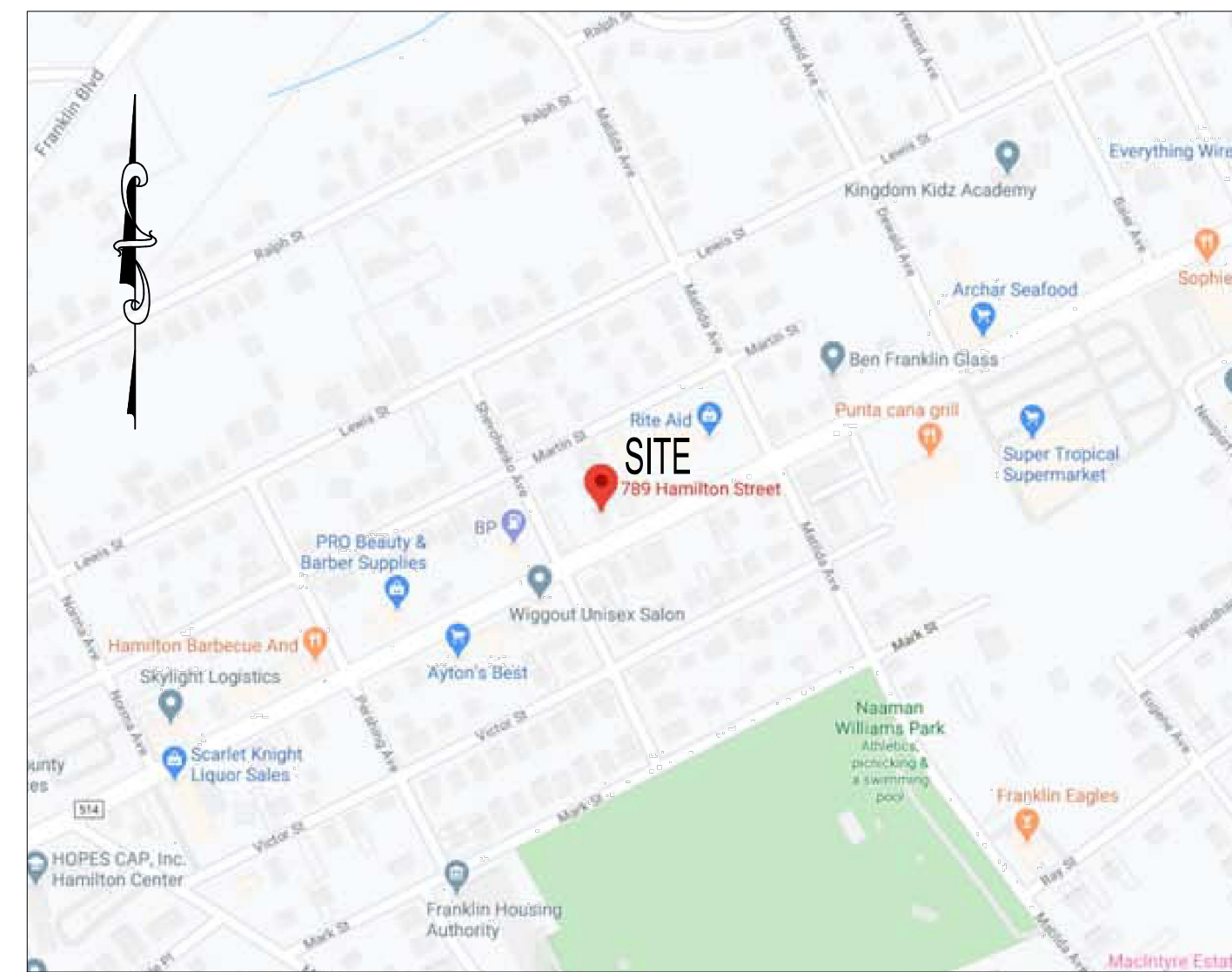
## 789 HAMILTON STREET TAX LOTS 6-15, BLOCK 225 TOWNSHIP OF FRANKLIN SOMERSET COUNTY, NEW JERSEY

BLOCK LOT	200 FEET OWNERS LIST PROPERTY LOCATION	PROPERTY OWNER & ADDRESS
145	18	802 HAMILTON STREET FASTLANE MGMT LLC 802 HAMILTON STREET SOMERSET, NJ 08873
145	17	802 HAMILTON STREET FASTLANE MGMT LLC 802 HAMILTON STREET SOMERSET, NJ 08873
147	14	774 HAMILTON STREET SOMERSET, NJ 08873 GURMAN, JOHN A & LINDA D 774 HAMILTON STREET SOMERSET, NJ 08873
226	38	61 MARTIN STREET LEWIS, EVANILLO 61 MARTIN STREET SOMERSET, NJ 08873
226	35	61 MARTIN STREET LEWIS, EVANILLO 61 MARTIN STREET SOMERSET, NJ 08873
226	2	143 SHEVCHENKO AVENUE DAVIS, MICHELLE 143 SHEVCHENKO AVENUE SOMERSET, NJ 08873
226	40	71 MARTIN STREET LEWIS, EVANILLO 61 MARTIN STREET SOMERSET, NJ 08873
226	4	138 SHEVCHENKO AVENUE SOMERSET, NJ 08873 FRANKLIN FIRE DISTRICT #3 P.O. BOX 348
147	11	774 HAMILTON STREET GURMAN, JOHN A & LINDA D 774 HAMILTON STREET SOMERSET, NJ 08873
226	100	773 HAMILTON STREET RTE SOMERSET, LLC NARTE AID CORP. P.O. BOX 318
226	12	390 LEWIS STREET HASSER, PAUL B 390 LEWIS STREET SOMERSET, NJ 08873
226	11	390 LEWIS STREET HASSER, PAUL B 390 LEWIS STREET SOMERSET, NJ 08873
226	18	62 MARTIN STREET BURBON APPLIANCES, INC. 86 CONNOLLY DRIVE MILLTOWN, NJ 08860
226	37	61 MARTIN STREET LEWIS, EVANILLO 61 MARTIN STREET SOMERSET, NJ 08873
147	28	117 CHESTER AVENUE ROBERTS, CHRISTINA S 8 MONTICELLO AVENUE SOMERSET, NJ 08873
147	2	790 HAMILTON STREET U.S. BANK TRUST N.A. N. RESCAP 308 PEACHREE ROAD NE-1500 ATLANTA, GA 30328
147	7	790 HAMILTON STREET P.O. BOX 348
226	9	394 LEWIS STREET SOMERSET, NJ 08873 HUBBARD, PHILIP R & JENNIFER P 394 LEWIS STREET SOMERSET, NJ 08873
226	39	71 MARTIN STREET LEWIS, EVANILLO 61 MARTIN STREET SOMERSET, NJ 08873
147	40	117 CHESTER AVENUE ROBERTS, CHRISTINA S 8 MONTICELLO AVENUE SOMERSET, NJ 08873
226	29-30	83 MARTIN STREET AP REALTY GROUP, LLC 260 STILTON ROAD, STE. 5 PISCATAWAY, NJ 08854
226	22-24	158 SHEVCHENKO AVENUE AP REALTY GROUP, LLC 260 STILTON ROAD, STE. 5 PISCATAWAY, NJ 08854
226	36	61 MARTIN STREET LEWIS, EVANILLO 61 MARTIN STREET SOMERSET, NJ 08873
147	6	790 HAMILTON STREET SOMERSET, NJ 08873 790 HAMILTON STREET, LLC P.O. BOX 348
226	34	61 MARTIN STREET SOMERSET, NJ 08873 COSTERSON, STEPHEN 34 MILLBURN DRIVE HILLSBOROUGH, NJ 08844
226	38	88 MARTIN STREET CARTERET, NJ 07008 DANZ, ARNELIS 100 ROCKWELL AVENUE APT V9 MILLTOWN, NJ 08860
226	6	158 SHEVCHENKO AVENUE CORSON, CALVIN J 158 SHEVCHENKO AVENUE SOMERSET, NJ 08873
226	3	138 SHEVCHENKO AVENUE FRANKLIN FIRE DISTRICT #3 P.O. BOX 348
226	28	142 SHEVCHENKO AVENUE BETANCOURT, ROCCO C 142 SHEVCHENKO AVENUE SOMERSET, NJ 08873
226	5-8	790 HAMILTON STREET GUL PETROLEUM, INC. 883 HIGHWAY 35 SOUTH MILLSBORO, NJ 08064
147	31	128 VICTOR STREET SOMERSET, NJ 08873 SOMERSET, NJ 08873 DEJESUS, MIGUEL 133 VICTOR STREET SOMERSET, NJ 08873
147	36	133 VICTOR STREET SOMERSET, NJ 08873 133 VICTOR STREET SOMERSET, NJ 08873
147	3	794 HAMILTON STREET SOMERSET, NJ 08873 794 HAMILTON STREET SOMERSET, NJ 08873
226	40	86 MARTIN STREET PIERRE, MARIE M 86 MARTIN STREET SOMERSET, NJ 08873
147	13	774 HAMILTON STREET GURMAN, JOHN A & LINDA D 774 HAMILTON STREET SOMERSET, NJ 08873

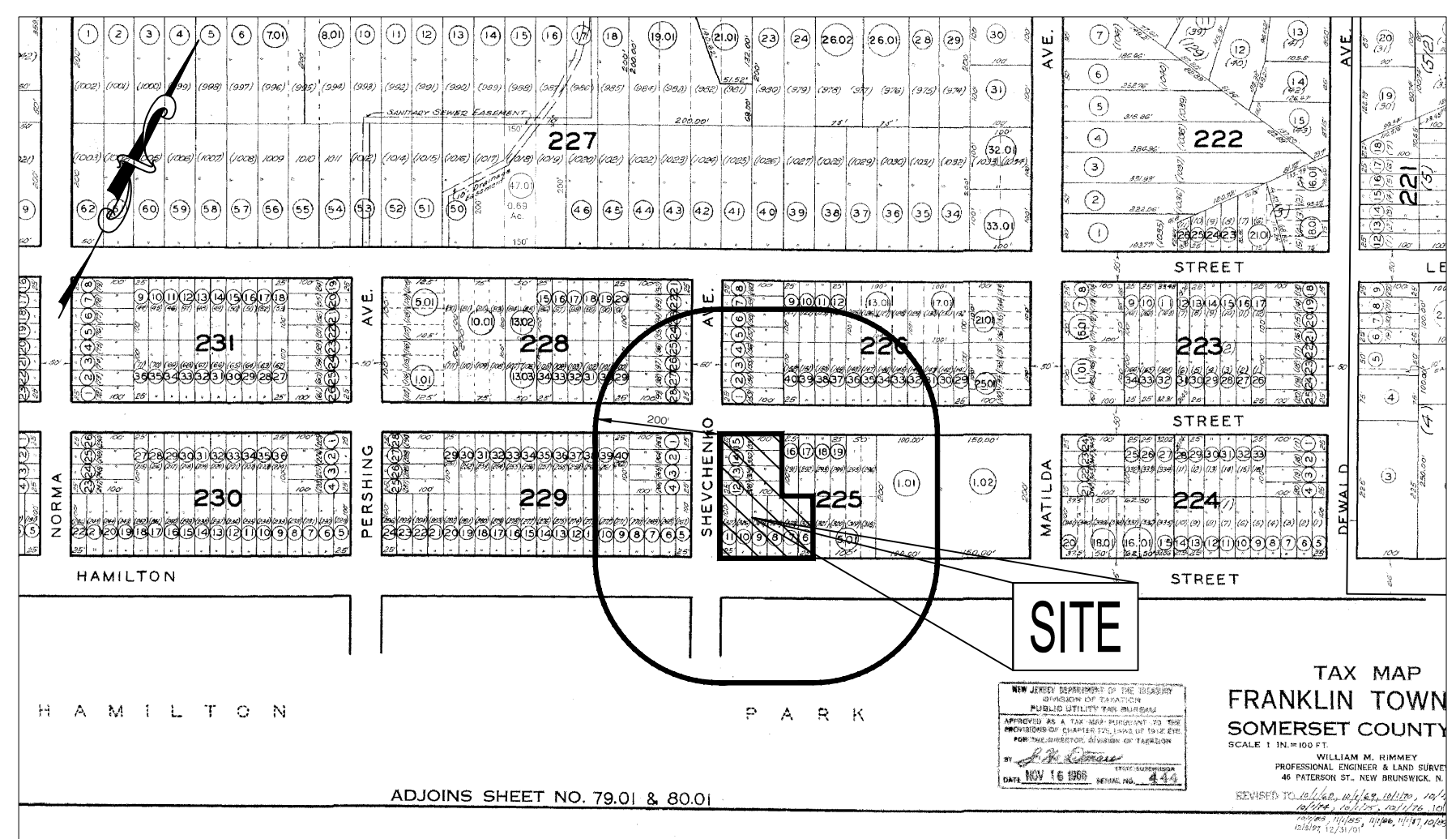
226	39	86 MARTIN STREET PIERRE, MARIE M 86 MARTIN STREET SOMERSET, NJ 08873
147	12	774 HAMILTON STREET GURMAN, JOHN A & LINDA D 774 HAMILTON STREET SOMERSET, NJ 08873
226	33	61 MARTIN STREET SOMERSET, NJ 08873 COSTERSON, STEPHEN 34 MILLBURN DRIVE HILLSBOROUGH, NJ 08844
147	34	133 VICTOR STREET SOMERSET, NJ 08873 133 VICTOR STREET SOMERSET, NJ 08873
226	17	64 MARTIN STREET BROWN, GENAIA 64 MARTIN STREET SOMERSET, NJ 08873
226	4	143 SHEVCHENKO AVENUE DAVIS, MICHELLE 143 SHEVCHENKO AVENUE SOMERSET, NJ 08873
226	1	143 SHEVCHENKO AVENUE DAVIS, MICHELLE 143 SHEVCHENKO AVENUE SOMERSET, NJ 08873
226	27	142 SHEVCHENKO AVENUE SOMERSET, NJ 08873 BETANCOURT, ROCCO C 142 SHEVCHENKO AVENUE SOMERSET, NJ 08873
147	9	790 HAMILTON STREET SOMERSET, NJ 08873 790 HAMILTON ST. LLC P.O. BOX 348
147	35	133 VICTOR STREET SOMERSET, NJ 08873 133 VICTOR STREET SOMERSET, NJ 08873
147	30	127 VICTOR STREET SOMERSET, NJ 08873 127 VICTOR STREET SOMERSET, NJ 08873
226	3	143 SHEVCHENKO AVENUE SOMERSET, NJ 08873 143 SHEVCHENKO AVENUE SOMERSET, NJ 08873
140	15	808 HAMILTON STREET SOMERSET, NJ 08873 JACOBI, ALLESHA 808 HAMILTON STREET SOMERSET, NJ 08873
226	13-01	384 LEWIS STREET SOMERSET, NJ 08873 BUTLER, TYRONNE & RHONDA KINLEY 384 LEWIS STREET SOMERSET, NJ 08873
226	1	138 SHEVCHENKO AVENUE FRANKLIN FIRE DISTRICT #3 P.O. BOX 348
146	21	135 VICTOR STREET SOMERSET, NJ 08873 FULL GOSPEL TEMPLE OF PRAISE 135 VICTOR STREET SOMERSET, NJ 08873
147	33	133 VICTOR STREET SOMERSET, NJ 08873 DEJESUS, MIGUEL 133 VICTOR STREET SOMERSET, NJ 08873
146	16	808 HAMILTON STREET SOMERSET, NJ 08873 JACOBI, ALLESHA 808 HAMILTON STREET SOMERSET, NJ 08873
226	5	155 SHEVCHENKO AVENUE SOMERSET, NJ 08873 DOBSON, CALVIN J 155 SHEVCHENKO AVENUE SOMERSET, NJ 08873
226	10	384 LEWIS STREET HUBBARD, PHILIP R & JENNIFER P 384 LEWIS STREET SOMERSET, NJ 08873
147	8	790 HAMILTON STREET SOMERSET, NJ 08873 790 HAMILTON ST. LLC P.O. BOX 348
147	10	774 HAMILTON STREET SOMERSET, NJ 08873 774 HAMILTON STREET SOMERSET, NJ 08873
226	25	142 SHEVCHENKO AVENUE SOMERSET, NJ 08873 BETANCOURT, ROCCO C 142 SHEVCHENKO AVENUE SOMERSET, NJ 08873
146	20	802 HAMILTON STREET SOMERSET, NJ 08873 802 HAMILTON STREET SOMERSET, NJ 08873
226	16	64 MARTIN STREET SOMERSET, NJ 08873 64 MARTIN STREET SOMERSET, NJ 08873
147	4	794 HAMILTON STREET SOMERSET, NJ 08873 794 HAMILTON STREET SOMERSET, NJ 08873
226	5-01	781 HAMILTON STREET SOMERSET, NJ 08873 BURBON APPLIANCES, INC. 86 CONNOLLY DRIVE MILLTOWN, NJ 08860
147	32	129 VICTOR STREET SOMERSET, NJ 08873 129 VICTOR STREET SOMERSET, NJ 08873
147	1	790 HAMILTON STREET SOMERSET, NJ 08873 790 HAMILTON STREET SOMERSET, NJ 08873
147	5	794 HAMILTON STREET SOMERSET, NJ 08873 794 HAMILTON STREET SOMERSET, NJ 08873
226	26	142 SHEVCHENKO AVENUE SOMERSET, NJ 08873 142 SHEVCHENKO AVENUE SOMERSET, NJ 08873
226	2	138 SHEVCHENKO AVENUE SOMERSET, NJ 08873 138 SHEVCHENKO AVENUE SOMERSET, NJ 08873
226	19	62 MARTIN STREET SOMERSET, NJ 08873 62 MARTIN STREET SOMERSET, NJ 08873



ZONING/ 200' RADIUS MAP  
SCALE: ±1"=800'



SITE MAP  
SCALE: ±1"=150'



200' TAX MAP  
SCALE: 1"= ± 250'

SCHEDULE OF GENERAL ZONING REQUIREMENTS (ZONE HBD, HAMILTON STREET BUSINESS DISTRICT)				
Regulation	BLOCK 225 TOWNSHIP OF FRANKLIN - SOMERSET COUNTY			Comment
	General Requirements	Existing Lots 6-15	Proposed Lots 6-15	
Principal Uses	Retail, Mixed-Use Building*, Restaurants*, Professional Offices*, Single Family Dwellings**	Single Family Dwelling	Mixed-Use Building	Conforming
Min. Lot Area***	10,000 sf	25,000 sf	25,000 sf	Conforming
Min. Lot Frontage	100 ft.	100 ft.	100 ft.	Conforming
Min. Front Yard (Principal)	0 ft.***	20.88 ft.	0.00 ft.	Conforming
Front Yard Lines That Meet Hamilton Street ROW (Hamilton Street)	0 ft.***	9.62 ft.	0.00 ft.	Conforming
Min. Front Yard (Principal)	0 ft.***	9.62 ft.	0.00 ft.	Conforming
All Front Yard Lines That Meet Secondary Streets Parallel to Hamilton Street (Martin Street)	10 ft.***	52.45 ft.	10.00 ft.	Conforming
Max. Front Yard (Principal)	10 ft.***	21.16 ft. (e)	0.00 ft.	Conforming
Min. One Side Yard (Principal)	0 ft./5 ft.****	24.38 ft.	5.00 ft.	Conforming
Min. Two Sides Yard (Principal)	15 ft.	63.82 ft.	25.00 ft.	Conforming
Min. Rear (Principal)	20 ft.	N/A	N/A	Not Applicable
Min. Side Yard (Accessory)	5 ft.	8.15 ft.	N/A	Not Applicable
Min. Rear (Accessory)	5 ft.	N/A	N/A	Not Applicable
Min. Side Yard (Garden Shed)*****	5 ft.	5.30 ft.	N/A	Not Applicable
Min. Rear (Garden Shed)*****	5 ft.	N/A	N/A	Not Applicable
Max. Building Height	2 1/2 Stys./40 ft.*****	1 1/2 Stys./40 ft.	3 Stys./40 ft.	Conforming
Max. Lot Coverage (Building Coverage)	50%	10.02%	61.99% (V)	Variance is Required
Max. Impervious Coverage 30%	8%	17.48%	84.78% (V)	Variance is Required
Max. Floor Area Ratio	-	-	-	-

Notes:  
 \*\* Only for lots with frontage on Hamilton Street.  
 \*\*\* Only for lots not fronting on Hamilton Street.  
 \*\*\*\* Every lot created for one- or two-family use shall be capable of containing an "effective square" as indicated in § 112-33.4 for the district in which the lot is located.  
 \*\*\*\*\* Minimum front building setback shall be as follows:  
 (a) Zero feet from front yard lines that meet the Hamilton Street right-of-way, provided that adequate sight lines are maintained at all intersections per Institute of Transportation Engineers (ITE) standards.  
 (b) Zero feet from front yard lines along street rights-of-way intersecting Hamilton Street, provided adequate sight lines are maintained at all intersections per ITE standards.  
 (c) Ten feet from all front yard lines that meet secondary streets parallel to Hamilton Street, provided adequate sight lines are maintained at all intersections per ITE standards.  
 (d) Maximum front yard setback shall be 10 feet from front yard lines that meet the Hamilton Street and intersecting street rights-of-way.  
 \*\*\*\*\* The side yard setbacks may be reduced to zero feet along any portion of a side lot line where a building on an adjacent lot is built at a zero-foot setback to the same side lot line. In such an instance, either the minimum five-foot minimum side setback or the reduction to zero feet shall be permitted.  
 \*\*\*\*\* Maximum permitted building height shall be increased to 3 stories and 40 feet, provided all residential units contain no more than 2 bedrooms and no less than 1/3 of the residential units contain no more than 1 bedroom. Maximum permitted building height shall be increased to 4 stories and 50 feet, provided all residential units contain no more than 2 bedrooms; no less than 1/3 of the residential units contain no more than 1 bedroom; the development site is at least 40,000 square feet in size; and the development site has a lot frontage and lot depth each equal to at least 200 feet.

DESIGN WAIVER SCHEDULE			
Code Regulation	Required	Proposed	Comment
Off-street parking and loading space - within required setbacks	112-33.4 (b) The parking area shall be provided on the same lot as the building. No parking area shall be permitted between front building and the required setbacks.	None	Parking located in setback area. (Please see site plan sheet).
112-33.4 (c) For every space not provided by alternative in Subsection B(2)(a) and/or (b) above, an in-lieu contribution shall be made to a capital improvement fund dedicated by the Township for the purpose of constructing on-street and off-street public parking facilities to serve the needs of the HBD. The amount of the contributions shall be equivalent to the costs of constructing the parking spaces on site, as calculated by the Township Engineer.	None	None	8 required parking spaces for commercial use not provided.

PROPOSED SIGNAGE			
Description	Required	Existing	Comment
Wall-mounted attached sign	None	None	Proposed sign(s) will comply with zoning requirements.
Max. number per ground floor business	1	None	
Location	Main public entrance	None	
Max. height from ground level to the top of the sign	10 feet	None	
Min. height from ground level to the bottom of the sign	4 feet	None	
Max. area	120 square feet of building frontage occupied by the sign	None	
Max. horizontal sign dimension	175% of the width of the building frontage occupied by the sign	None	
Min. vertical sign dimension	5 feet	None	
Secondary wall-mounted signs - Ground floor business uses located on corner lots and having a second facade with a display window fronting on a public street	None	None	Proposed sign(s) will comply with zoning requirements.
Max. number per ground floor business	1	None	
Location	Corner above the secondary public entrance	None	
Max. height from ground level to the top of the sign	15 feet	None	
Min. height from ground level to the bottom of the sign	4 feet	None	
Max. area	120 square feet of building frontage occupied by the sign	None	
Max. horizontal sign dimension	175% of the width of the building frontage occupied by the sign	None	
Min. vertical sign dimension	5 feet	None	
Freestanding signs	Not permitted	None	

PARKING ANALYSIS IN HBD DISTRICT			
Description	Required	Proposed	Comment
Commercial and other nonresidential uses	None	None	
3 parking spaces per 1,000 square feet of floor area (§ 112-33.4)	8 Spaces*	0 Spaces	Non-Conforming*
Residential portions of mixed-use buildings - (RISIS) - Mid rise apartment	None	None	
1 Bedroom, 1.8 spaces (8 Units)	16 Spaces*	16 Spaces	Conforming
2 Bedrooms, 2.1 spaces (14 Units)	32 Spaces*	32 Spaces	Conforming
3 Bedrooms, 2.1 spaces	None	None	Not Applicable
Total Required	48 Spaces	48 Spaces	Conforming

Notes:  
 \* 112-33.4 Fractional spaces required.  
 When units of measurement determined the number of required off-street parking and off-street loading spaces result in the requirement of a fractional space, such fraction shall be disregarded.  
 \*\* 112-33.4 Existing in HBD Districts & Parking Location. (2)  
 Parking for commercial and other nonresidential uses shall be provided by one of the following means:  
 (a) Providing the required spaces on site.  
 (b) Providing the required spaces on other properties within 1,500 feet walking distance to the site.  
 (c) For every space not provided by alternatives in Subsection B(2)(a) and/or (b) above, an in-lieu contribution shall be made to a capital improvement fund dedicated by the Township for the purpose of constructing on-street and off-street public parking facilities to serve the needs of the HBD. The amount of the contributions shall be equivalent to the costs of constructing the parking spaces on site, as calculated by the Township Engineer.

**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.

**OWNER / APPLICANT:**  
 789 HAMILTON, LLC  
 15 STOCKTON ROAD  
 KENDALL PARK, NJ 08824

APPROVED BY ZONING BOARD OF ADJUSTMENT - TOWNSHIP OF FRANKLIN

BOARD SECRETARY: \_\_\_\_\_ DATE: \_\_\_\_\_

BOARD CHAIRMAN: \_\_\_\_\_ DATE: \_\_\_\_\_

BOARD ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_

SHEET	INDEX OF DRAWINGS	ISSUED	REVISED
1	COVER SHEET	07/27/20	N/A
2	SITE DEVELOPMENT PLAN	07/27/20	10/27/20
3	GRADING PLAN	07/27/20	N/A
4	UTILITY PLAN	07/27/20	N/A
5	LIGHTING AND LANDSCAPE PLAN	07/27/20	10/27/20
6	TRAFFIC CIRCULATION PLAN	07/27/20	N/A
7	CONSTRUCTION DETAILS	07/27/20	N/A
8	CONSTRUCTION DETAILS	07/27/20	N/A
9	CONSTRUCTION DETAILS	07/27/20	N/A
10	CONSTRUCTION DETAILS	07/27/20	N/A
11	SOIL EROSION AND SEDIMENT CONTROL PLAN	07/27/20	N/A
12	SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS	07/27/20	N/A

**ADNAN A. KHAN, P.E., C.M.E.**  
 PROFESSIONAL ENGINEER  
 DATE: 02/25/20  
 DESIGNED BY: AK  
 DATE: 10/27/20  
 APPROVED BY: AK  
 DATE: 02/25/20

**AWZ ENGINEERING, INC.**  
 ENGINEERS • SCIENTISTS • CONSULTANTS  
 Main Office: 150 River Road, Suite B3, Montville, NJ 07045  
 Pennsylvania Office: Scranton, PA 18504  
 Tel: 973-588-7080 Fax: 973-588-7079  
 www.awzeng.com e-mail: info@awzeng.com  
 New Jersey Certificate of Authorization No.: 24EA28118400  
 Pennsylvania Certificate of Authority No.: 3711354

**TAX LOTS 6-15**  
 789 HAMILTON STREET  
 TOWNSHIP OF FRANKLIN  
 SOMERSET COUNTY, NEW JERSEY

**COVER SHEET**

**JOB NUMBER:**  
 20-0203

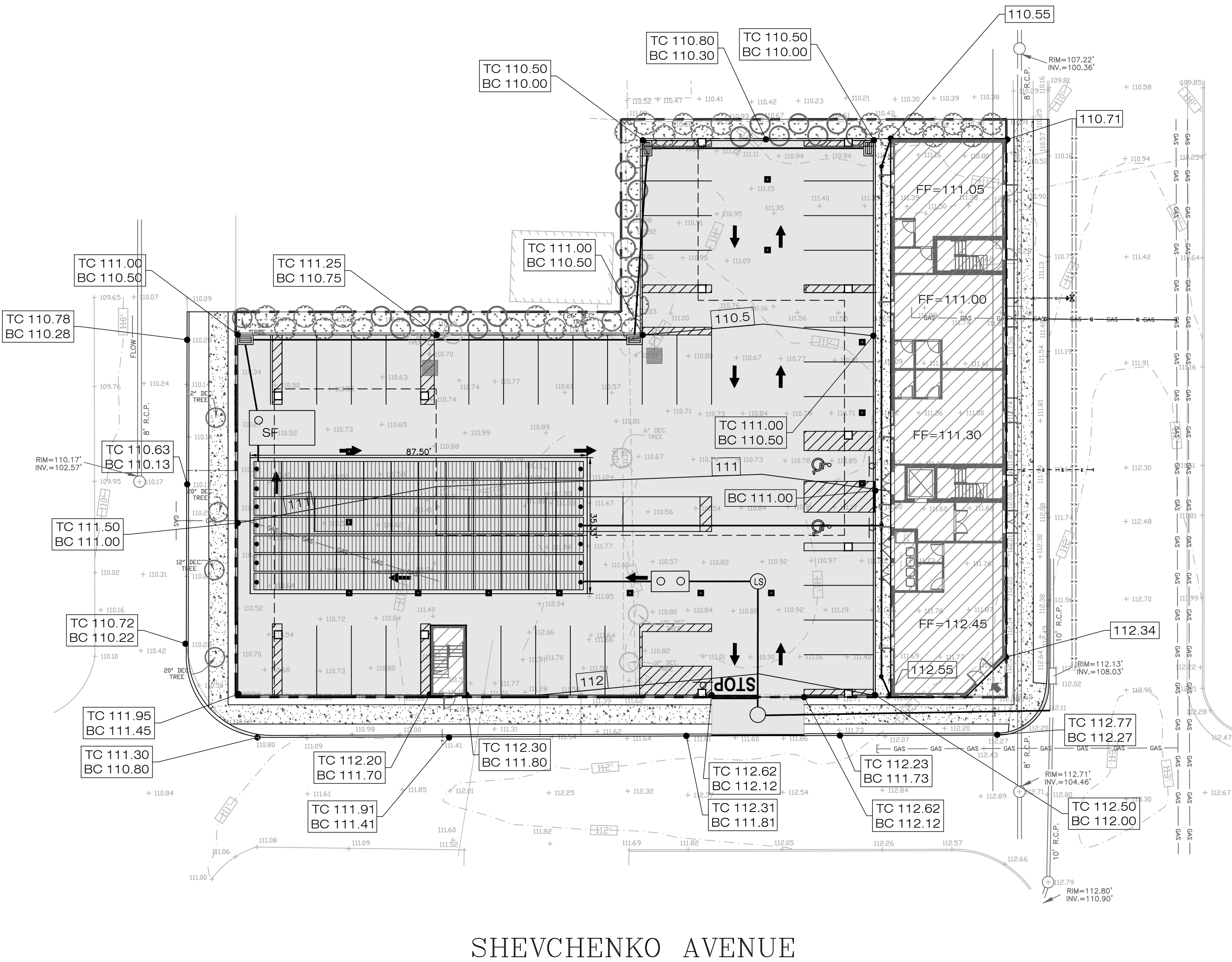
**SCALE:** AS SHOWN

**C-01**  
 SHEET 1 OF 10









HAMILTON STREET

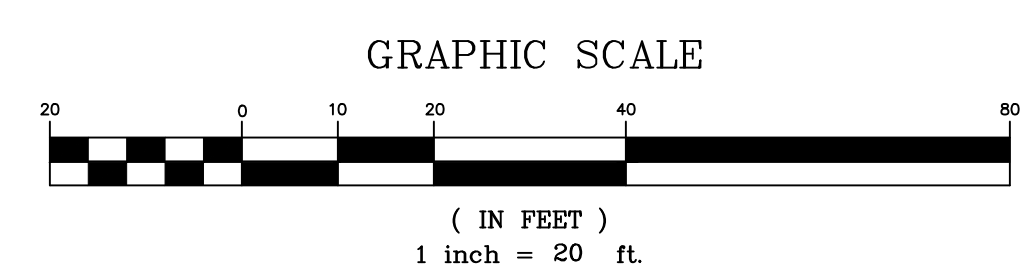
SHEVCHENKO AVENUE

**GRADING NOTES**

1. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH HEREIN.
2. COMPLETELY FILL BELOW GRADE AREAS AND VOIDS RESULTING FROM THE DEMOLITION OF STRUCTURES AND FOUNDATIONS. PRIOR TO PLACEMENT OF FILL MATERIALS, UNDERTAKE ALL NECESSARY ACTION IN ORDER TO INSURE THAT AREAS TO BE FILLED ARE FREE OF STANDING WATER, FROST, FROZEN MATERIAL, TRASH AND DEBRIS. THE MATERIAL FROM DEMOLITION SHALL NOT BE USED AS FILL MATERIAL.
3. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. PROCEEDING WITH CONSTRUCTION WITH DESIGN DISCREPANCIES IS DONE SOLELY AT THE CONTRACTOR'S OWN RISK.
4. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 6" ABOVE EXISTING LOCAL ASPHALT GRADE UNLESS OTHERWISE NOTED.
5. SUB-BASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIAL. SHOULD SUB-BASE BE DEEMED UNSUITABLE, SUB-BASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED 95% OPTIMUM DENSITY (AS DETERMINED BY MODIFIED PROCTOR METHOD).
6. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF FINISHED GRADES AT THE BUILDING EXTERIOR WITH THE ARCHITECT. ANY DISCREPANCIES WITH THE GRADING PLAN SHALL BE IDENTIFIED TO THE ENGINEER IN WRITING PRIOR TO PLACEMENT OF FILL.
7. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY CONSTRUCTION MANAGER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES.
8. SITE GRADING AND UTILITY WORK ARE TO BE PERFORMED IN A MANNER TO MINIMIZE DAMAGE TO EXISTING VEGETATION AND TREES. ALL AREAS NOT AFFECTED BY CONSTRUCTION ARE TO REMAIN NATURAL AND UNDISTURBED.
9. CONSTRUCTION EQUIPMENT ENTRANCE AND/OR STORAGE OF MATERIAL, SUPPLIES OR STOCKPILING WITHIN THE FOOTPRINT OF THE PROPOSED STORMWATER INFILTRATION SYSTEM IS PROHIBITED.

**LEGEND**

	- EXISTING SPOT ELEVATION
	- EXISTING CONTOUR
	- PROPOSED CONTOUR
	- PROPOSED SPOT ELEVATION



<p><b>AWZ ENGINEERING, INC.</b>          ENGINEERS • SCIENTISTS • CONSULTANTS          Main Office: 150 River Road, Suite B3, Montville, NJ 07045          Pennsylvania Office: Scranton, PA 18504          Tel: 973-588-7080 Fax: 973-588-7079          www.awzeng.com e-mail: info@awzeng.com          New Jersey Certificate of Authorization No.: 24EA28118400          Pennsylvania Certificate of Authority No.: 37171354</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DRAWN BY: ADNAN A. KHAN, P.E., C.M.E.</td> <td style="width: 50%;">DATE: 02/25/20</td> </tr> <tr> <td>DESIGNED BY: PROFESSIONAL ENGINEER</td> <td>DATE: 10/27/09</td> </tr> <tr> <td>APPROVED BY: <i>Adnan A. Khan</i></td> <td>DATE: 02/25/20</td> </tr> <tr> <td>NO.:</td> <td>REVISIONS:</td> </tr> <tr> <td>BY: APE</td> <td>DATE:</td> </tr> </table>	DRAWN BY: ADNAN A. KHAN, P.E., C.M.E.	DATE: 02/25/20	DESIGNED BY: PROFESSIONAL ENGINEER	DATE: 10/27/09	APPROVED BY: <i>Adnan A. Khan</i>	DATE: 02/25/20	NO.:	REVISIONS:	BY: APE	DATE:
DRAWN BY: ADNAN A. KHAN, P.E., C.M.E.	DATE: 02/25/20										
DESIGNED BY: PROFESSIONAL ENGINEER	DATE: 10/27/09										
APPROVED BY: <i>Adnan A. Khan</i>	DATE: 02/25/20										
NO.:	REVISIONS:										
BY: APE	DATE:										
<p><b>TAX LOTS 6-15</b>    <b>BLOCK 225</b>  <b>789 HAMILTON STREET</b>  <b>TOWNSHIP OF FRANKLIN</b>  <b>SOMERSET COUNTY, NEW JERSEY</b></p>											
<p><b>GRADING PLAN</b></p>											
<p>JOB NUMBER: 20-0203</p>											
<p>SCALE: AS SHOWN</p>											
<p><b>C-03</b> SHEET 3 OF 10</p>											





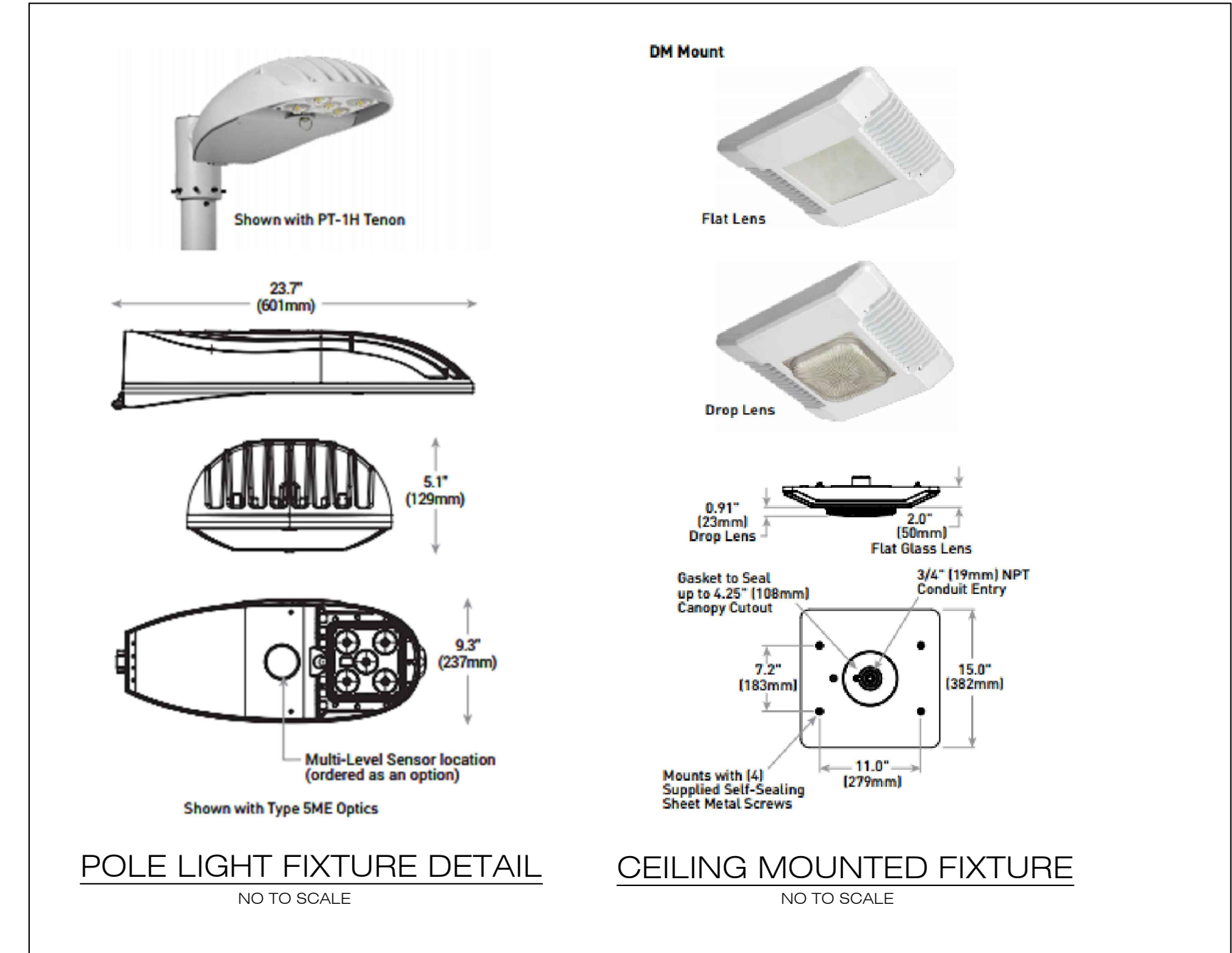
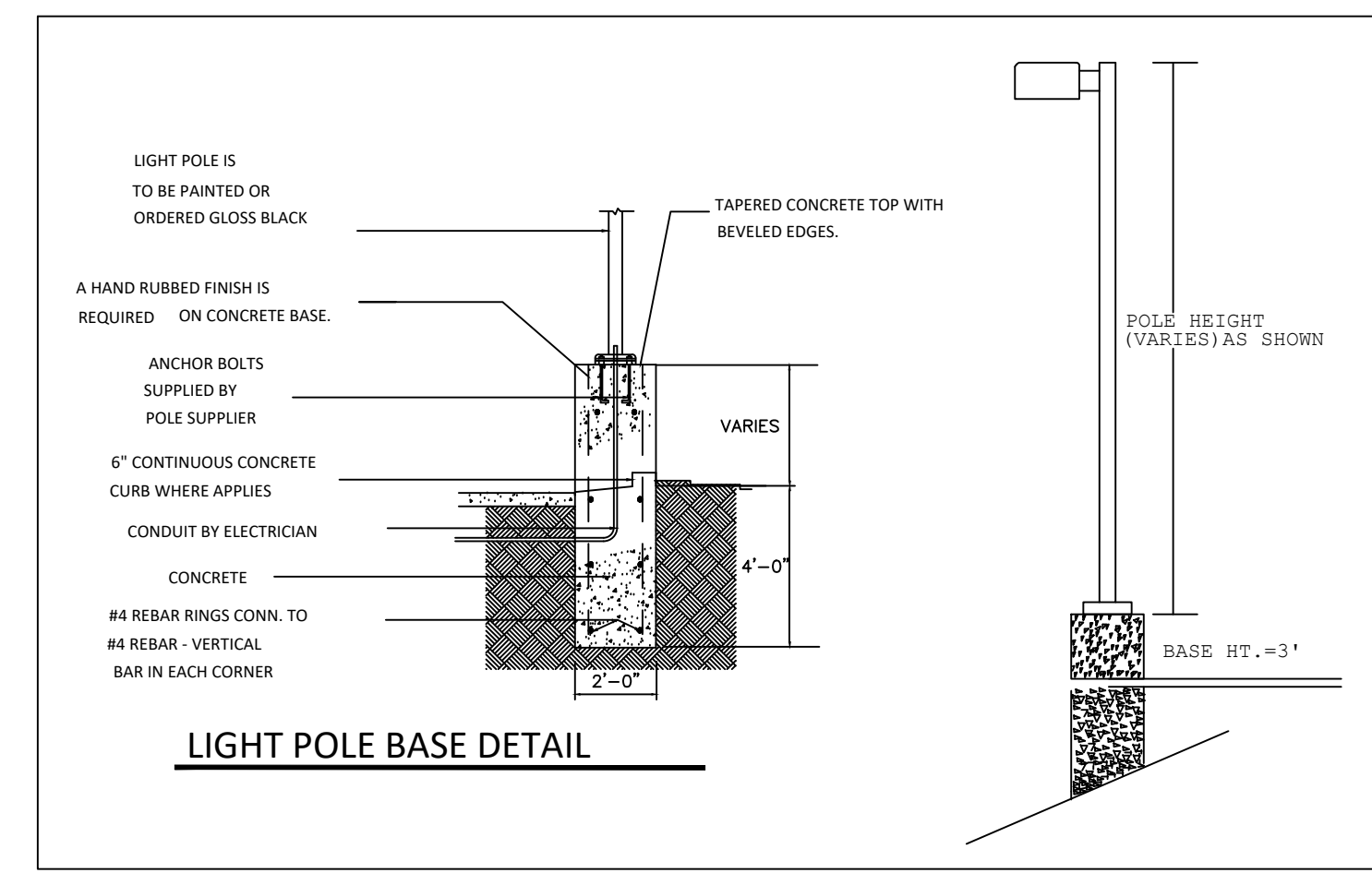
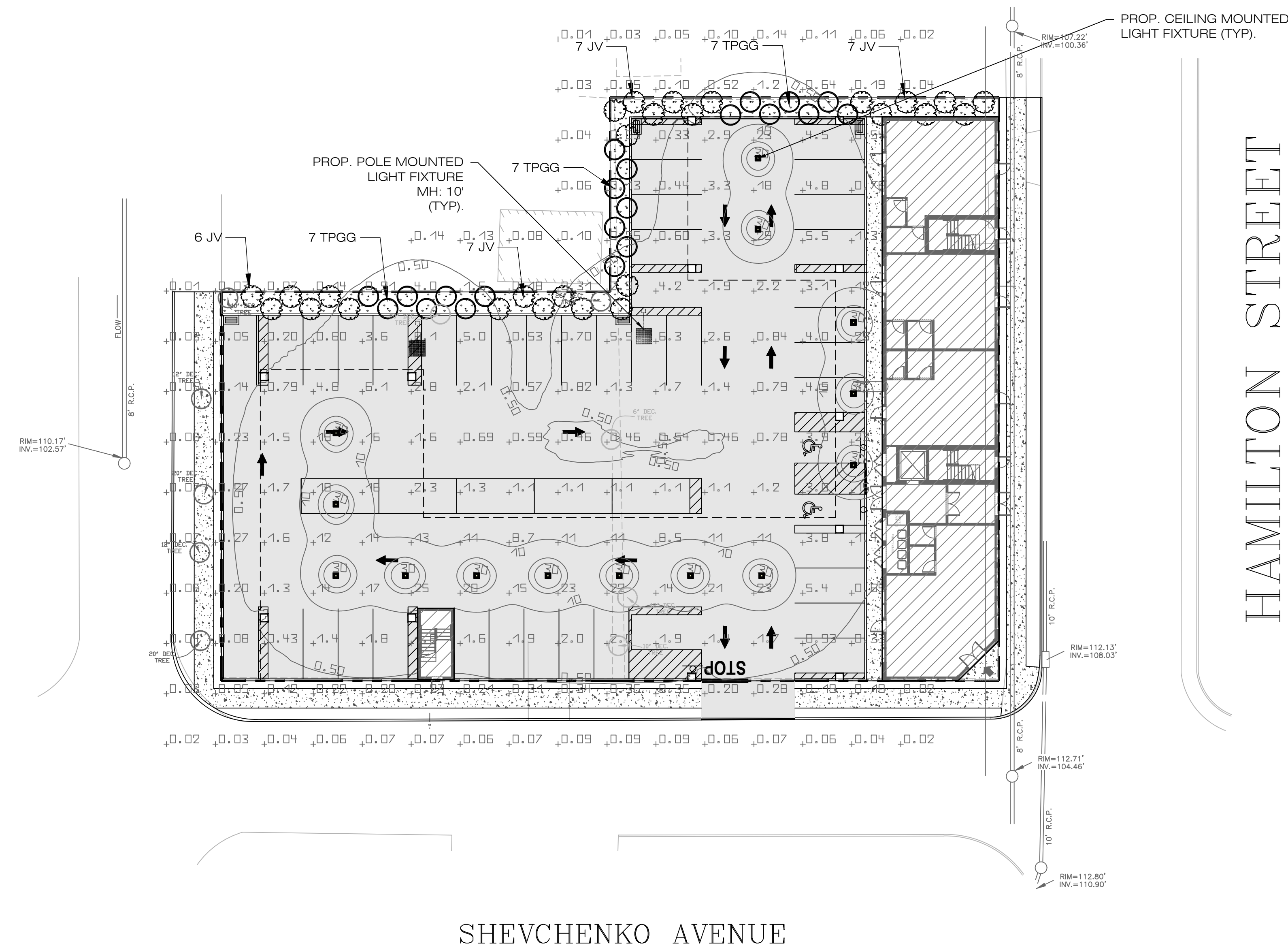






**NOTE:**  
 MAINTENANCE OF ALL PLANT WITHIN ALL BUFFER AREAS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER/APPLICANT.

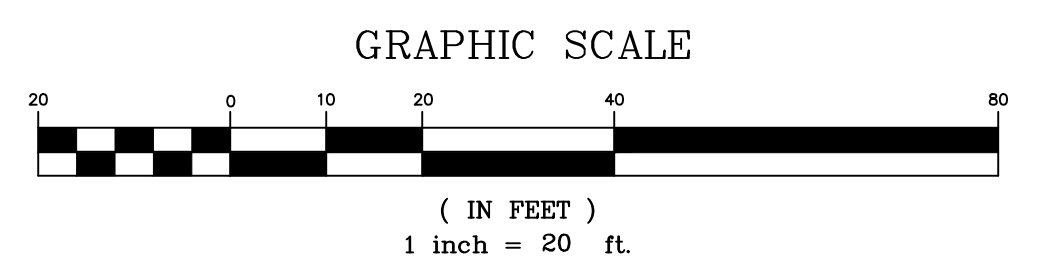
**PLANTING NOTE:**  
 ALL PLAN RELOCATIONS/SUBSTITUTIONS SHALL BE SUBMITTED TO THE TOWNSHIP FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.



SHEVCHENKO AVENUE

HAMILTON STREET

- LIGHTING NOTES:**
1. LIGHT POLE MOUNTING HEIGHT FOR THE PROPOSED FIXTURES IS 10 FEET FROM PROPOSED FINISH GRADE.
  2. THE LED LIGHTING THROUGHOUT THE SITE SHOULD BE DIRECTED DOWNWARD ONLY.
  3. ALL LIGHT FIXTURES SHALL BE SHIELDED TO AVOID ANY SPILLAGE ONTO ADJOINING PROPERTIES.
  4. LIGHT FIXTURES LOCATIONS TO BE VERIFIED IN FIELD.
  5. LIGHT POLE FOUNDATION BASE SHALL BE AT MINIMUM 30" IN HEIGHT.



**PROPOSED PLANTING SCHEDULE**

KEY	QTY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
<b>EVERGREEN TREE(S)</b>						
JV	27	○	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	12-14'	B-B
TPGG	21	○	THUJA PLICATA 'GREEN GIANT'	GREEN GIANT 'ARBORVITAE'	12-14'	B-B
<b>TOTAL</b>	<b>48</b>					

**NOTE:**  
 1. IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.

**Luminaire parts list**

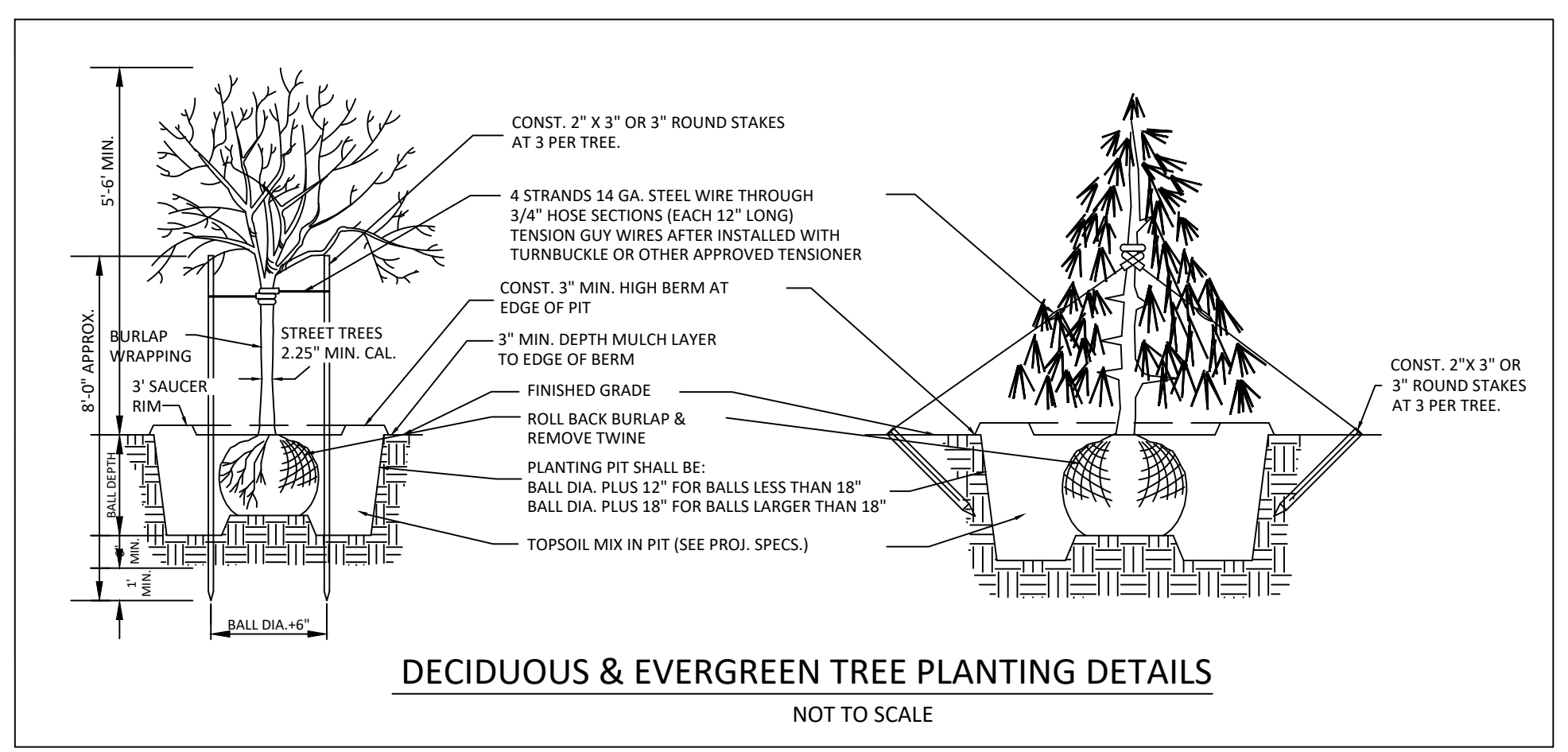
Index	Manufacturer	Luminaire type	Item number	Fitting	Luminous flux	Light loss factor	Connected load	Quantity
1	Cree Inc	Cree CPY250 Canopy / Soffit Luminaire w. Flat Lens, 122W, 4000K	BXCCAx08-Ux7 CPY250-A-xx-F-A-U L-xx-40K	1x72 type XTE AWT LEDs on white square PCB, 4000K color temperature.	8239 lm	0.95	81.4 W	14
2	Cree Inc	CONFIGURED FROM Cree XSP Series Area/Street Luminaire, Single Module, Type IV Medium, 4000K, A Input Power Designator	BXSPBxx4MEA57K-UL CONFIGURED FROM BXSPBxx4MEA40K-xxxxxx or XSPBxx4MEA40K-xxxxxx	1xCONFIGURED FROM Five type MDA LEDs	5329 lm	0.95	53 W	2

#	Name	Parameter	Min	Max	Average	Mean/Min	Max/Min
1	Calculation surface 1	Perpendicular Illuminance (Adaptive)	0.00 fc	37.35 fc	3.4 fc	/	/

**TREE REPLACEMENT SCHEDULE (Sec.222-5.1)**  
**BLOCK 225 - 789 HAMILTON STREET**  
**TOWNSHIP OF FRANKLIN**

Regulation	Required Replacement Trees	Removed Lots 6-15	Required Tree Replacement
Existing Tree Removed			Number of Replacement Trees (Min. Size 2.5" Caliper)
Less than 16" *	75% (3)	3	3
Less than 21"	4	1	4
<b>TOTAL</b>		<b>4</b>	<b>7</b>

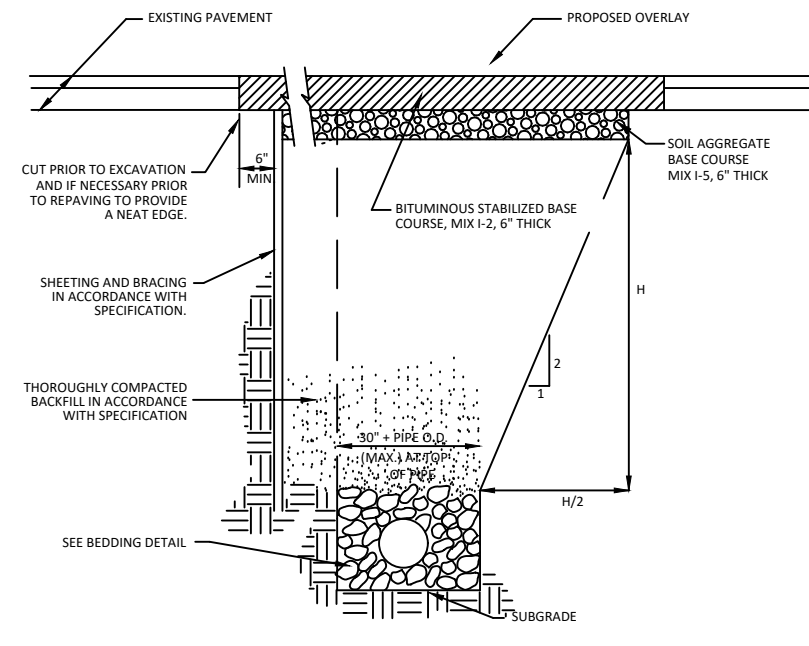
**Notes:**  
 \* Percentage of Trees Removed from Entire Development (60% to 79%) - Percentage of Trees to be Replaced (60%).  
 Approximately 48, 3" - 4" caliper replacement trees are proposed for the site.



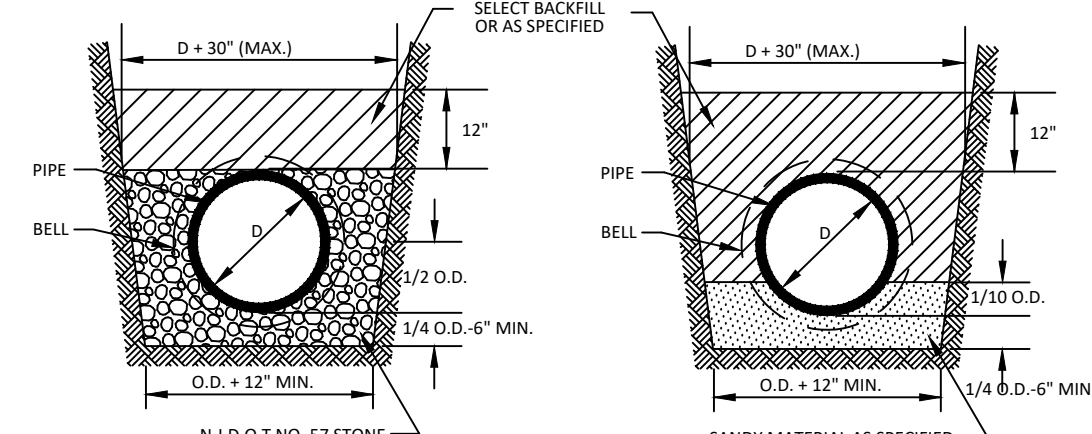
THIS PLAN TO BE USED FOR LIGHTING & LANDSCAPING PURPOSE ONLY

<p><b>AWZ ENGINEERING, INC.</b>          ENGINEERS • SCIENTISTS • CONSULTANTS          Main Office: 150 River Road, Suite B3, Montville, NJ 07045          Pennsylvania Office: Scranton, PA 18504          Tel: 973-588-7080 Fax: 973-588-7079          www.awzeng.com e-mail: info@awzeng.com          New Jersey Certificate of Authorization No.: 24EA2818400          Pennsylvania Certificate of Authority No.: 3771354</p>	<p><b>ADNAN A. KHAN, P.E., C.M.E.</b>          PROFESSIONAL ENGINEER  <i>Adnan A. Khan</i>          P.A. LICENSE NO. 4895E          N.Y. LICENSE NO. 08645 M.D. LICENSE NO. 4183</p>	<p>DATE: 02/25/20          DESIGNED BY: AK          DATE: 02/25/20          APPROVED BY: AK          DATE: 02/27/20</p>	<p>REVISIONS          NO. DATE BY: APE</p>
<p><b>TAX LOTS 6-15</b>  <b>BLOCK 225</b>  <b>789 HAMILTON STREET</b>  <b>TOWNSHIP OF FRANKLIN</b>  <b>SOMERSET COUNTY, NEW JERSEY</b>  <b>LIGHTING AND LANDSCAPE PLAN</b></p>			
<p>JOB NUMBER: 20-0203          SCALE: AS SHOWN</p>			
<p><b>C-06</b>          SHEET 6 OF 10</p>			

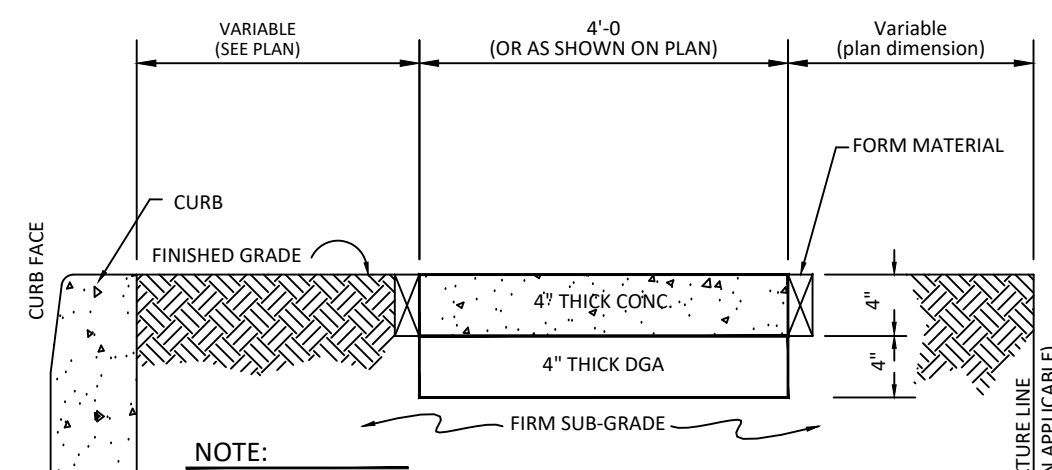




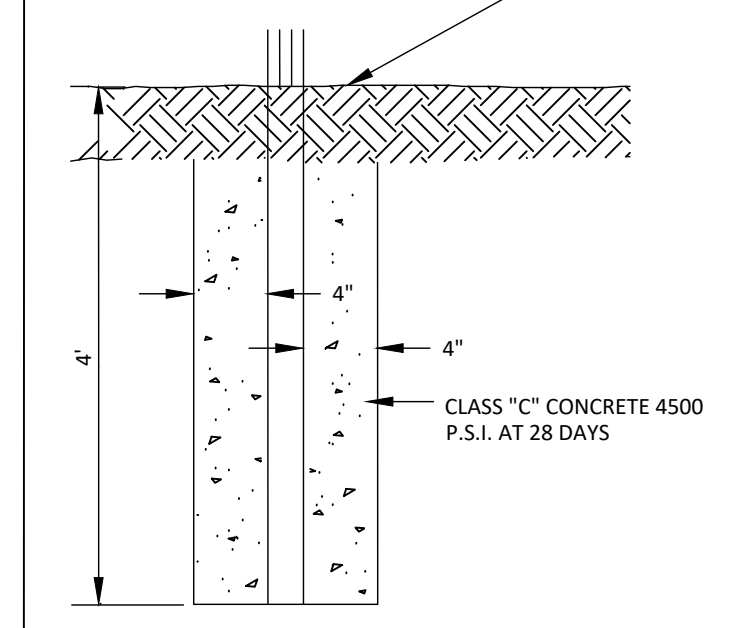
**TRENCH AND TEMPORARY PAVEMENT REPAIR**  
NOT TO SCALE



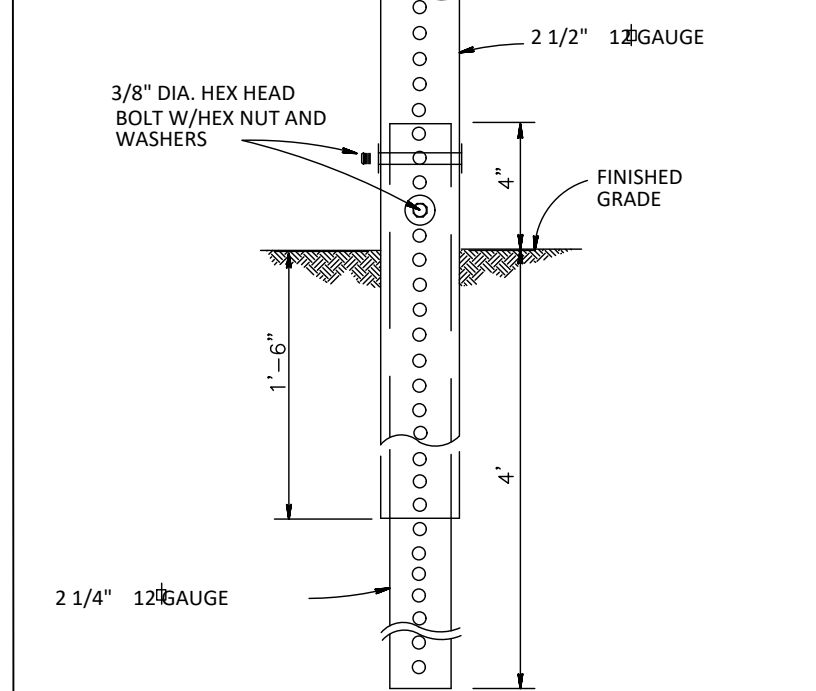
**SANITARY SEWER PIPE BEDDING DETAIL**  
NOT TO SCALE



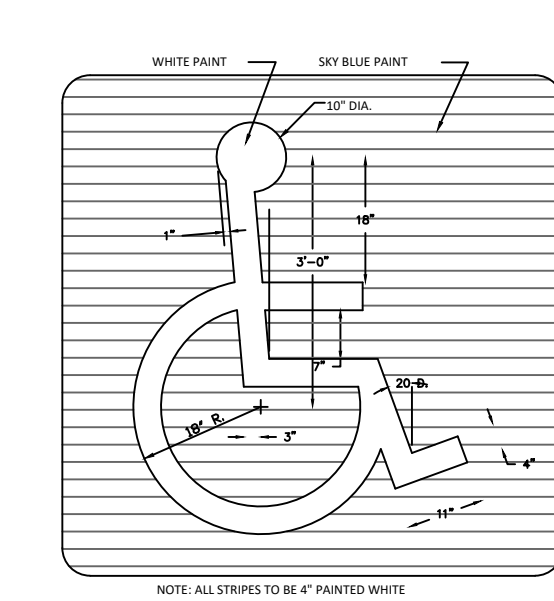
**CONCRETE SIDEWALK DETAIL**  
NOT TO SCALE



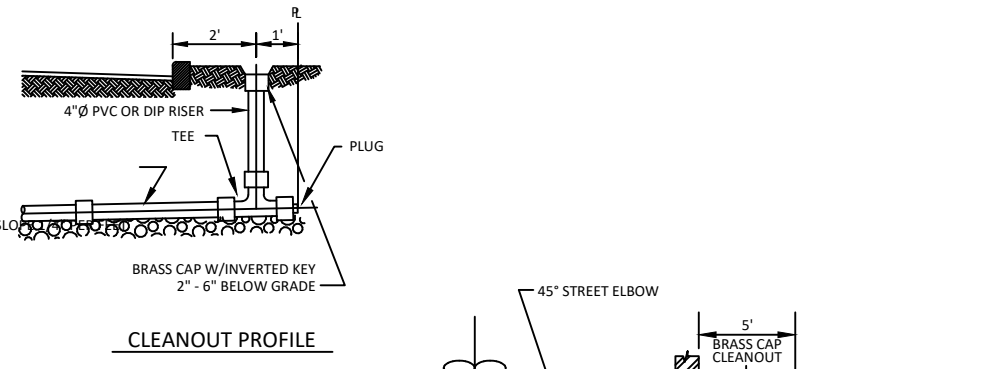
**SIGN FOOTING**  
NOT TO SCALE



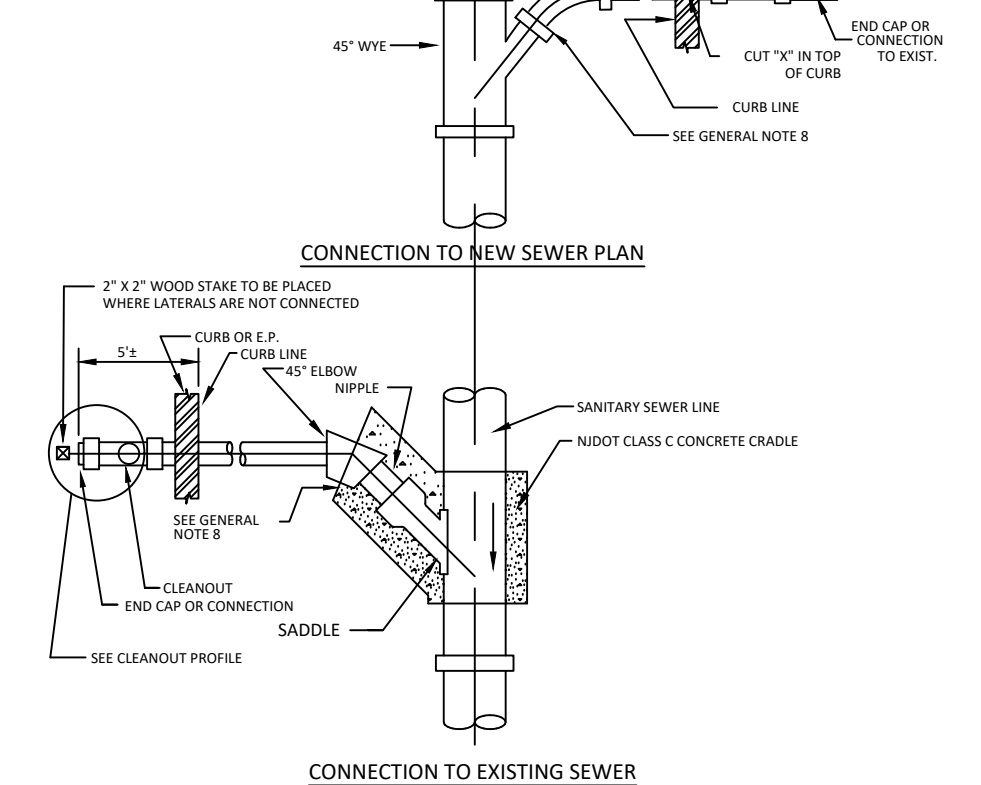
**BREAK-AWAY POST DETAIL**  
NOT TO SCALE



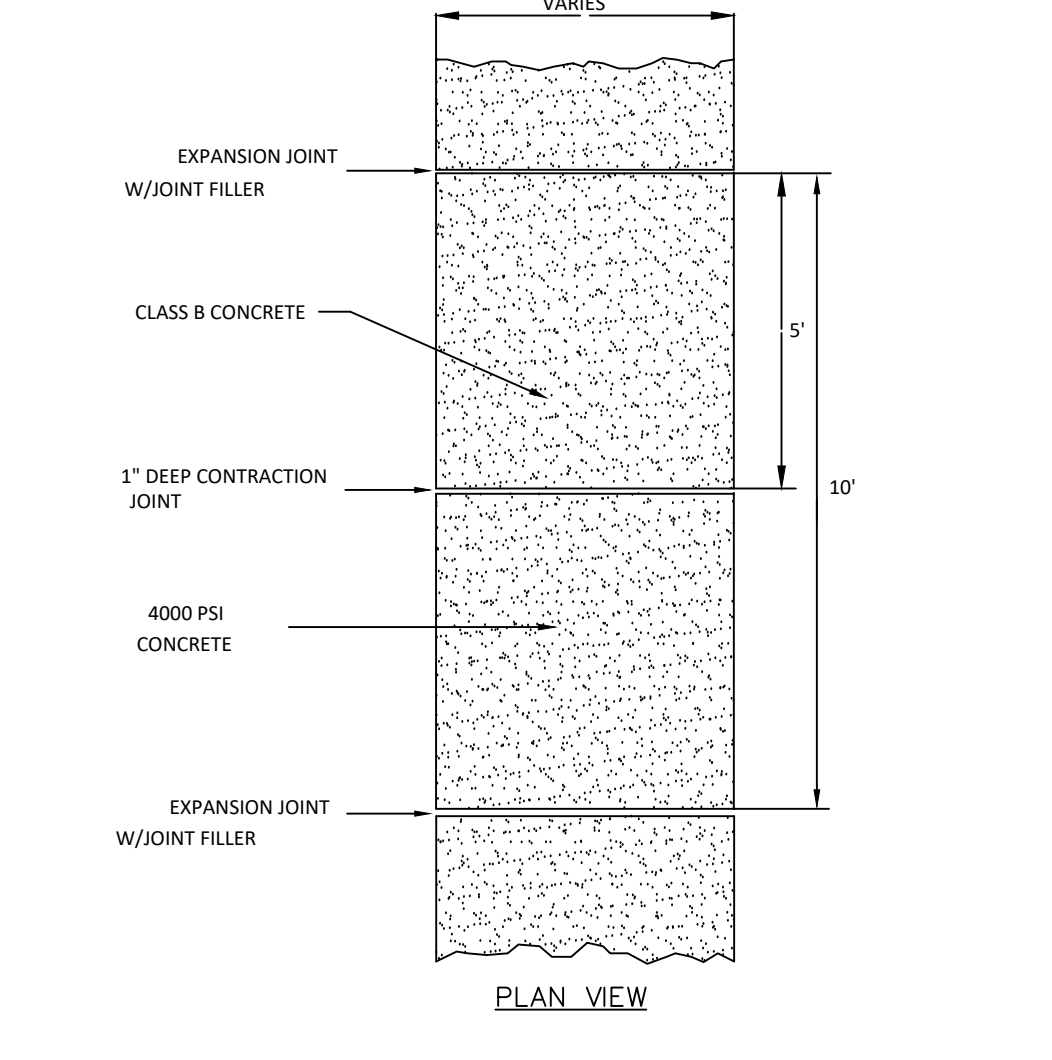
**HANDICAPPED PARKING SYMBOL DETAIL**  
NOT TO SCALE



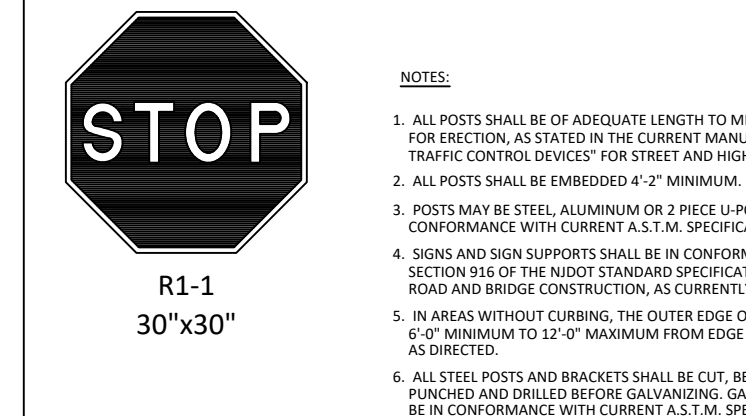
**CLEANOUT PROFILE**



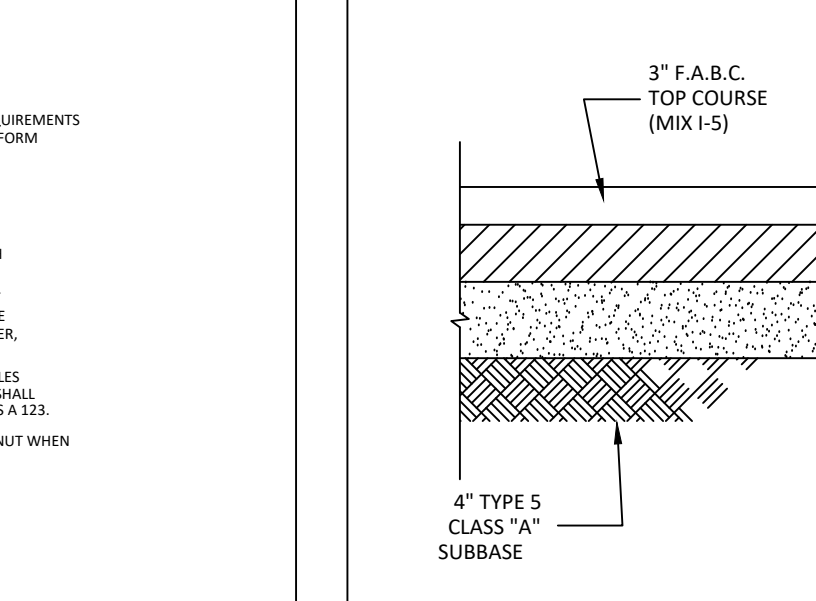
**SERVICE CONNECTION SCHEMATIC**  
NOT TO SCALE



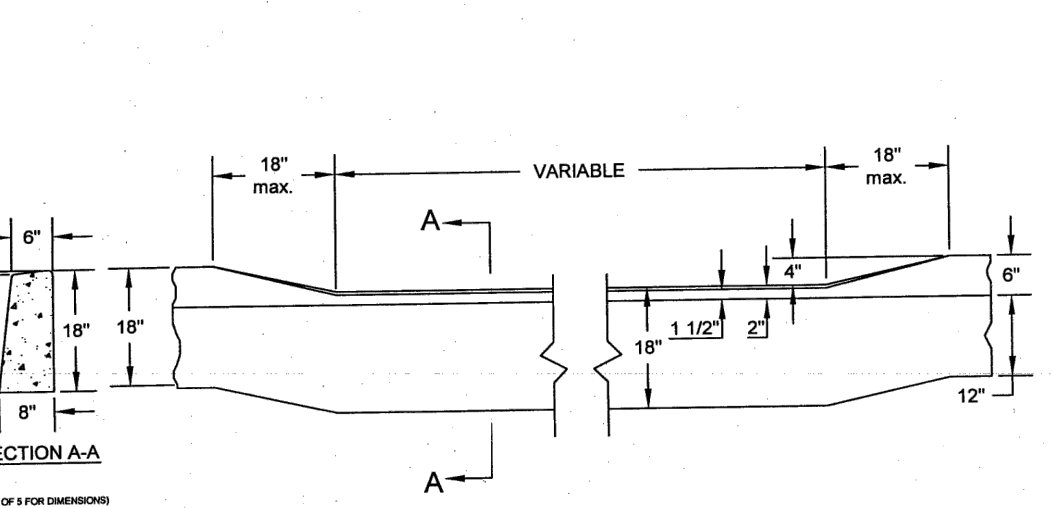
**CONCRETE SIDEWALK DETAIL**  
NOT TO SCALE



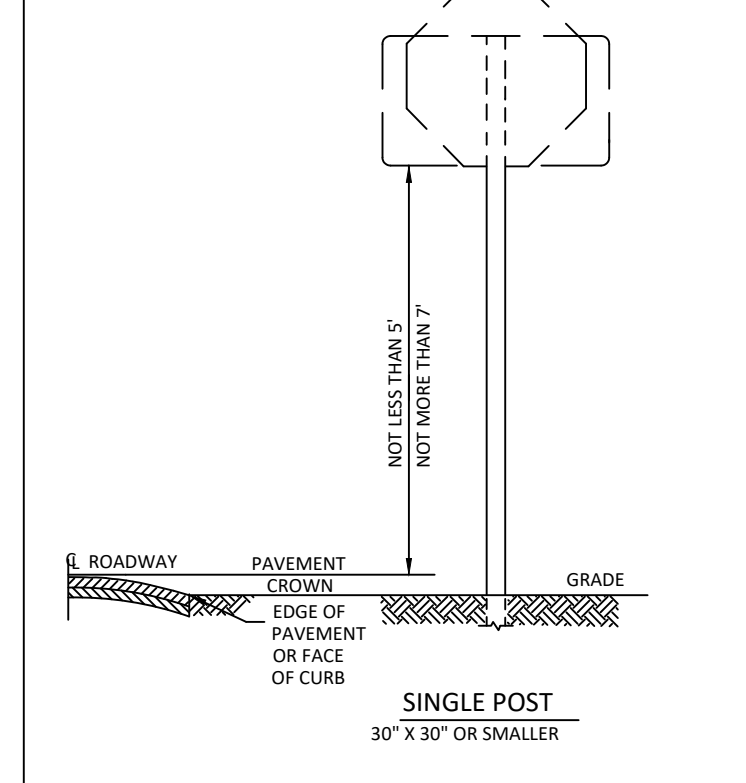
**STOP SIGN**  
R1-1 30"x30"



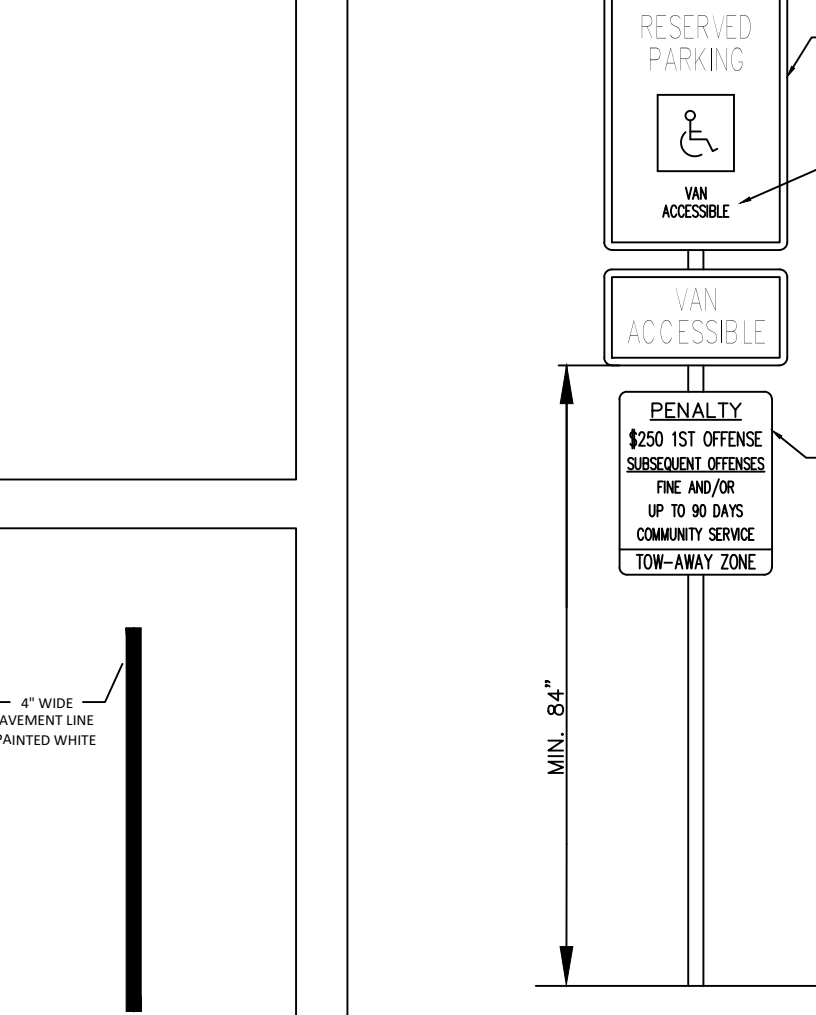
**TYPICAL PAVEMENT SECTION**  
NOT TO SCALE



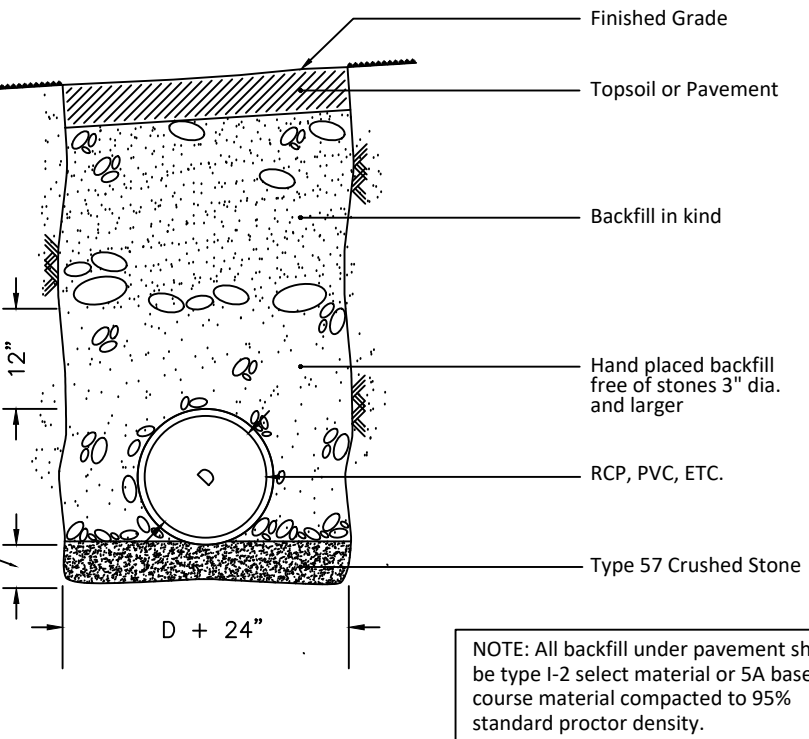
**DROP CURB AT DRIVEWAYS**  
DETAIL SHOWN IS FOR CONCRETE CURB. DETAIL FOR GRANITE BLOCK CURB SHALL FOLLOW SAME DIMENSIONS IN THE DRIVEWAY AREA.



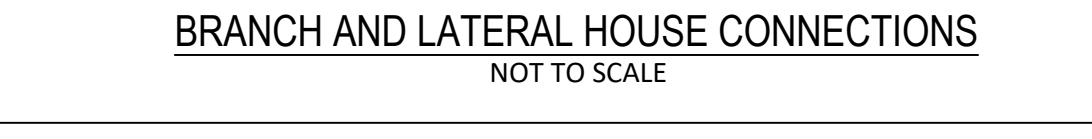
**SIGN MOUNTING DETAIL**  
NOT TO SCALE



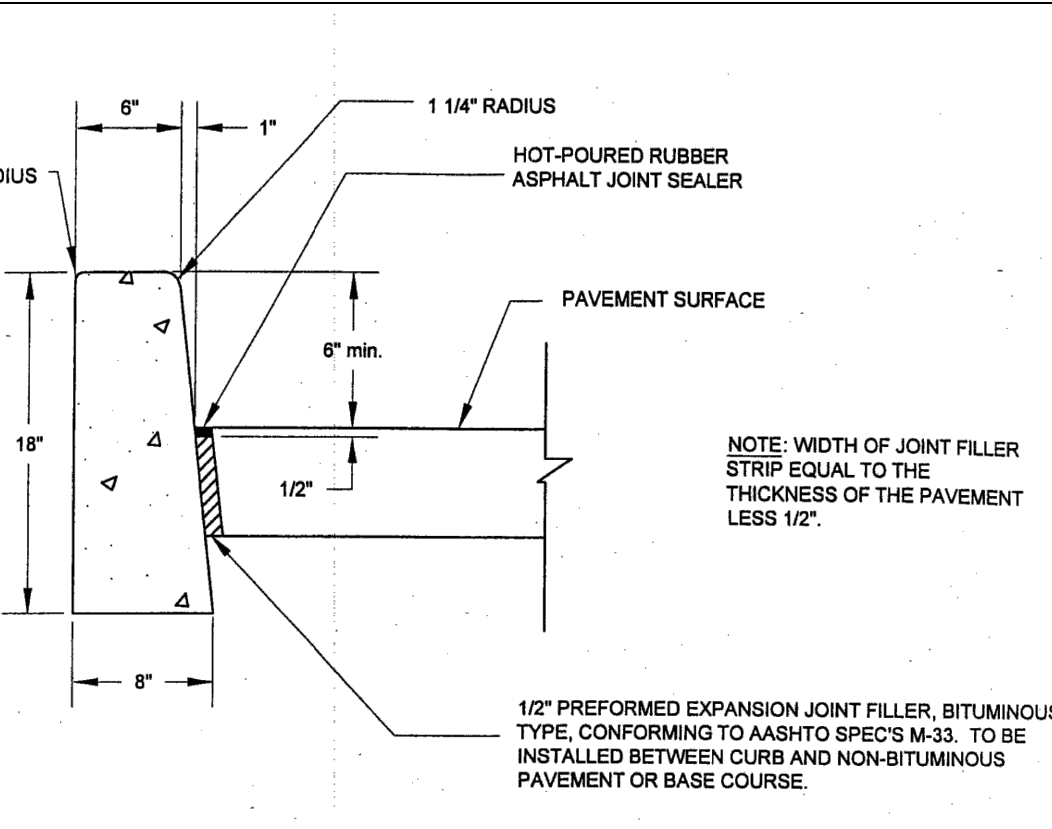
**HANDICAPPED PARKING SIGN**  
NOT TO SCALE



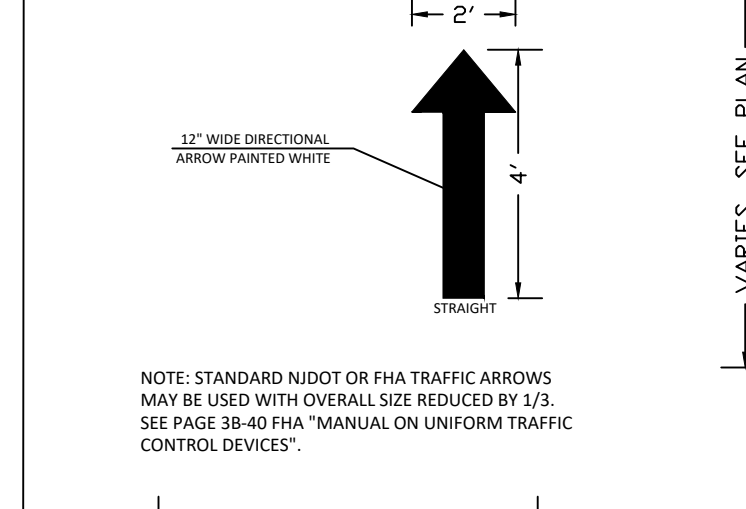
**PIPE BEDDING AND BACKFILL DETAIL**  
NOT TO SCALE



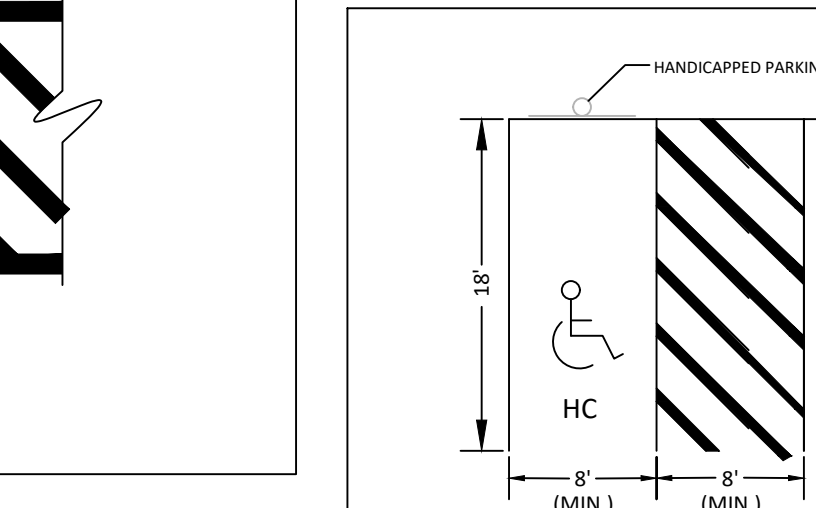
**BRANCH AND LATERAL HOUSE CONNECTIONS**  
NOT TO SCALE



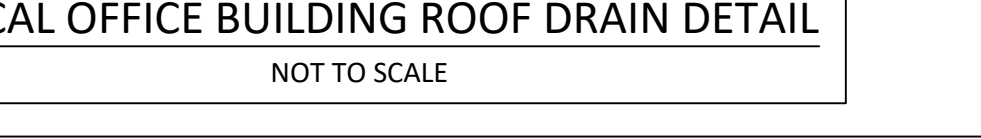
**CONCRETE VERTICAL CURB**  
NOT TO SCALE



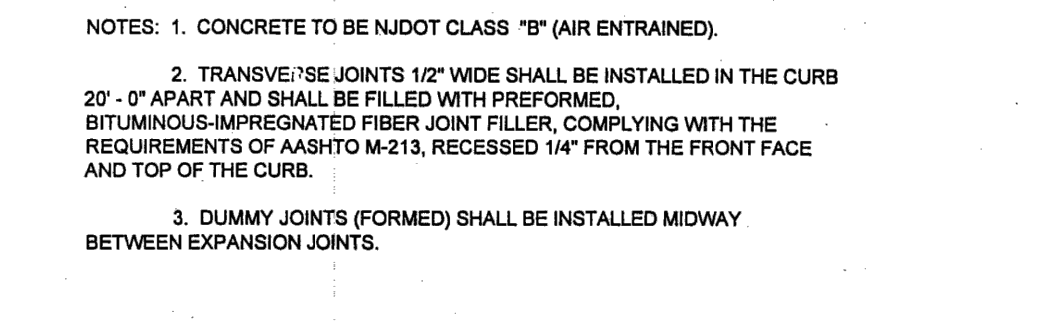
**SIGN MOUNTING DETAIL**  
NOT TO SCALE



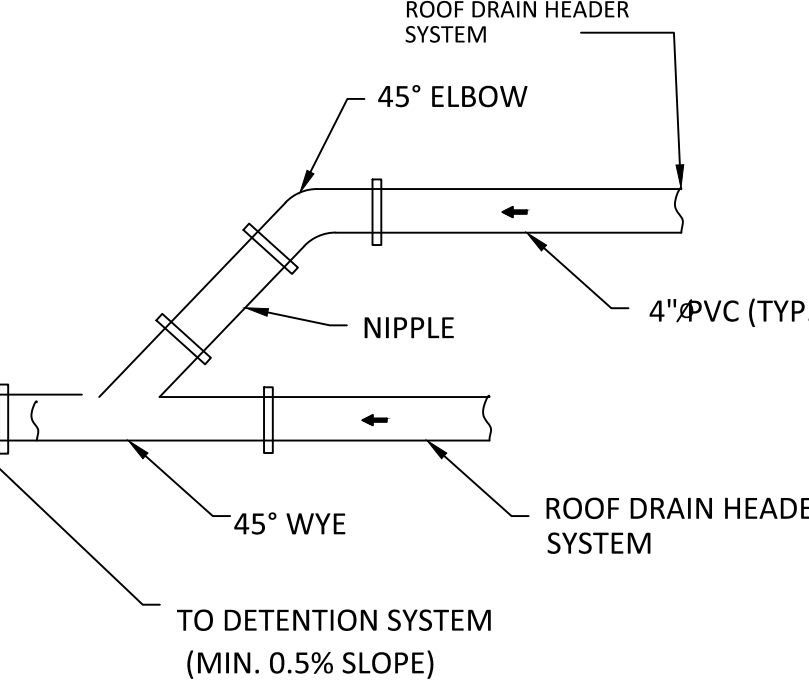
**HANDICAPPED PARKING SPACE DETAIL**  
NOT TO SCALE



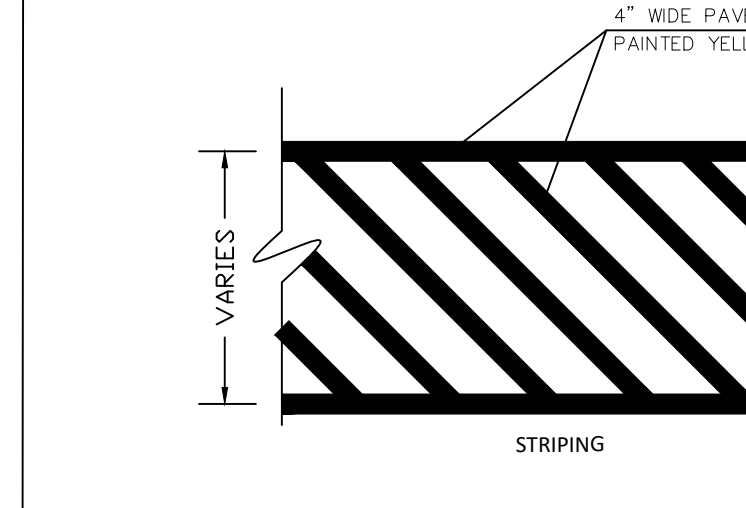
**TYPICAL OFFICE BUILDING ROOF DRAIN DETAIL**  
NOT TO SCALE



**STORM DISCHARGE PIPE SEWER CONNECTION DETAIL**  
NOT TO SCALE



**ROOF DRAIN CONNECTION**  
NOT TO SCALE



**PAVEMENT MARKINGS**  
NOT TO SCALE

**AWZ ENGINEERING, INC.**  
ENGINEERS • SCIENTISTS • CONSULTANTS  
Main Office: 150 River Road, Suite B3, Montville, NJ 07045  
Pennsylvania Office: Scranton, PA 18504  
Tel: 973-588-7080 Fax: 973-588-7079  
www.awzeng.com e-mail: info@awzeng.com  
New Jersey Certificate of Authorization No.: 24EA28118400  
Pennsylvania Certificate of Authority No.: 3771354

**ADNAN A. KHAN, P.E., C.M.E.**  
PROFESSIONAL ENGINEER  
DATE: 02/25/20  
DESIGNED BY: AK  
DATE: 02/25/20  
APPROVED BY: AK  
DATE: 02/25/20

**TAX LOTS 6-15**  
**BLOCK 225**  
**789 HAMILTON STREET**  
**TOWNSHIP OF FRANKLIN**  
**SOMERSET COUNTY, NEW JERSEY**

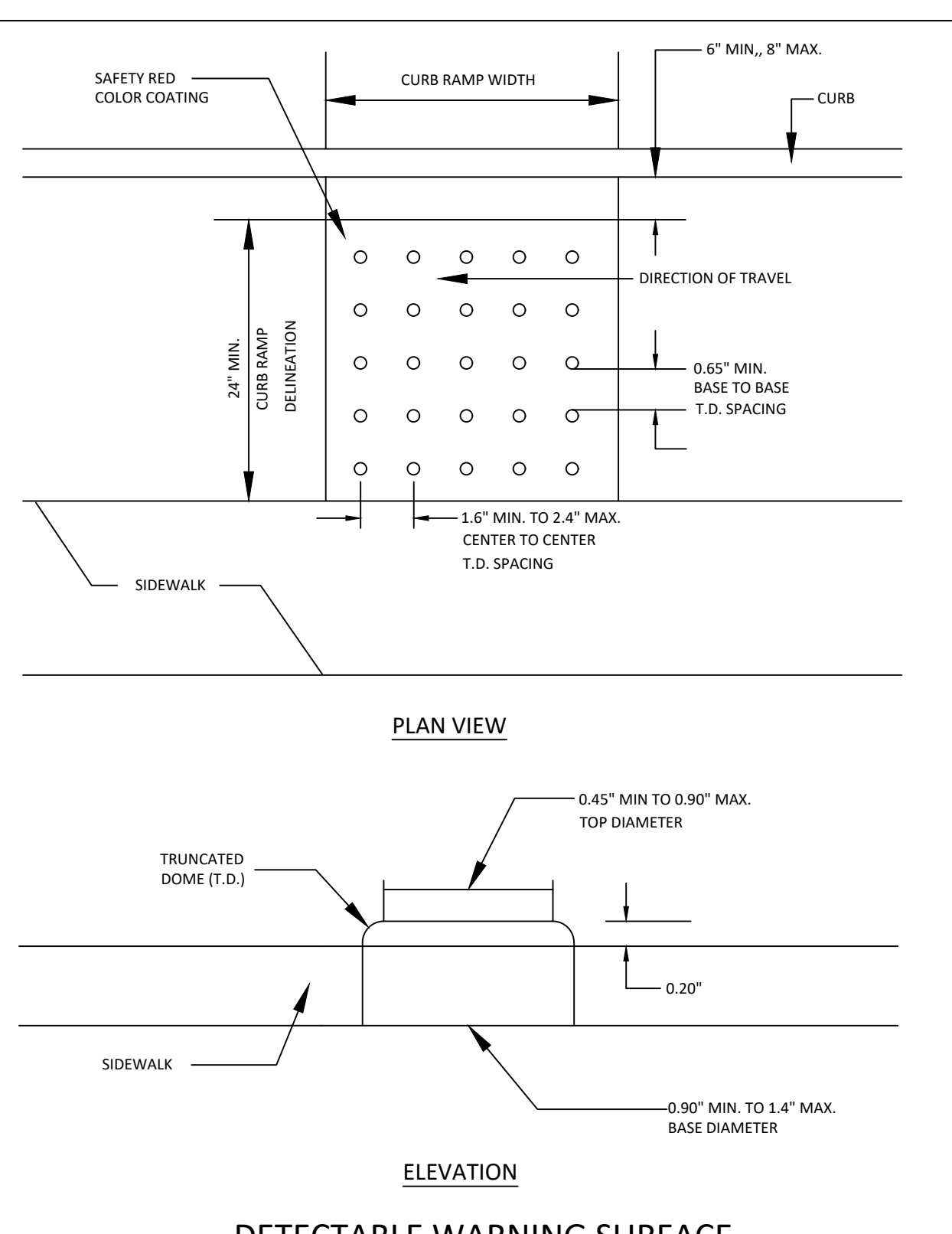
**CONSTRUCTION DETAILS**

**JOB NUMBER:**  
20-0203

**SCALE:** AS SHOWN

**C-07**  
SHEET 7 OF 10

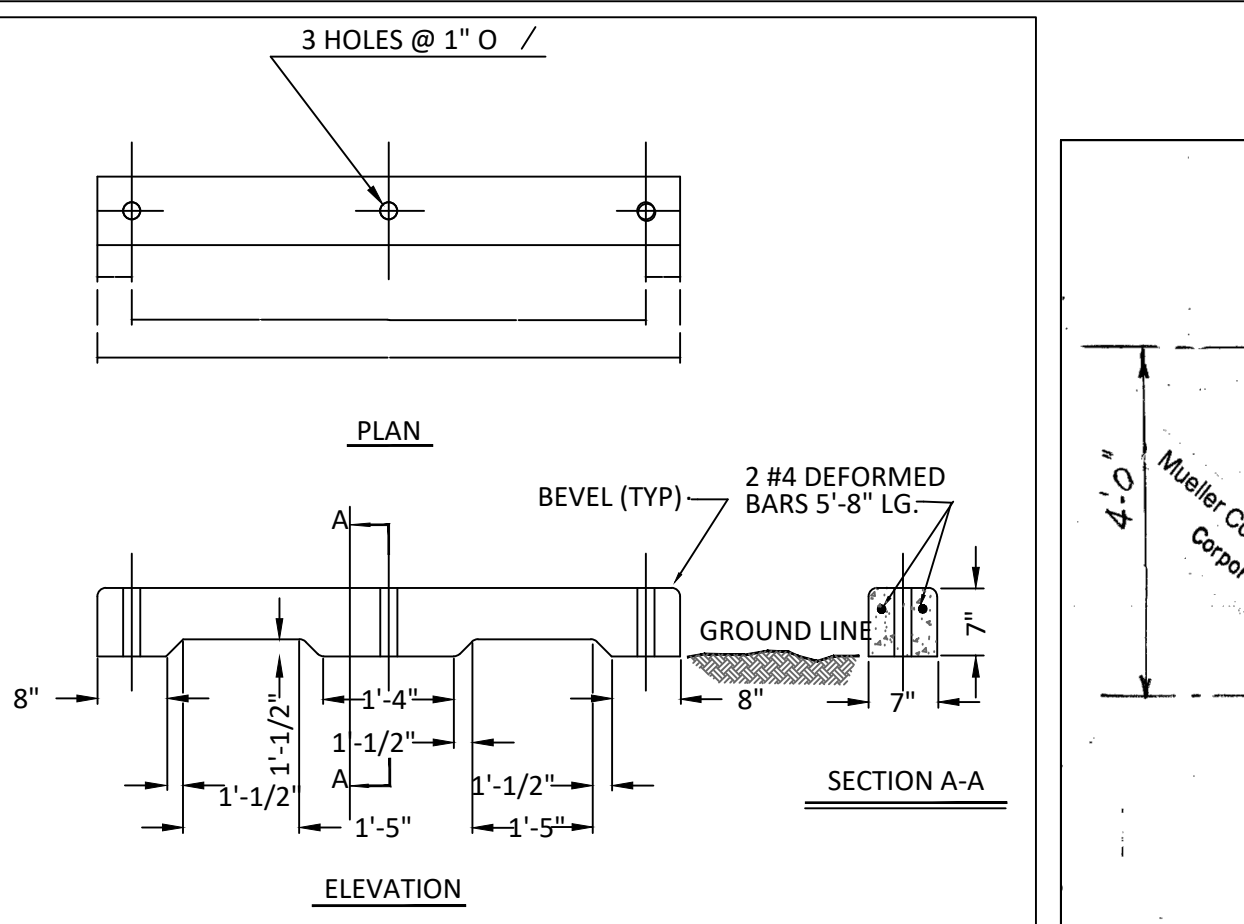




**DETECTABLE WARNING SURFACE AT SIDEWALK RAMPS DETAIL**  
NOT TO SCALE

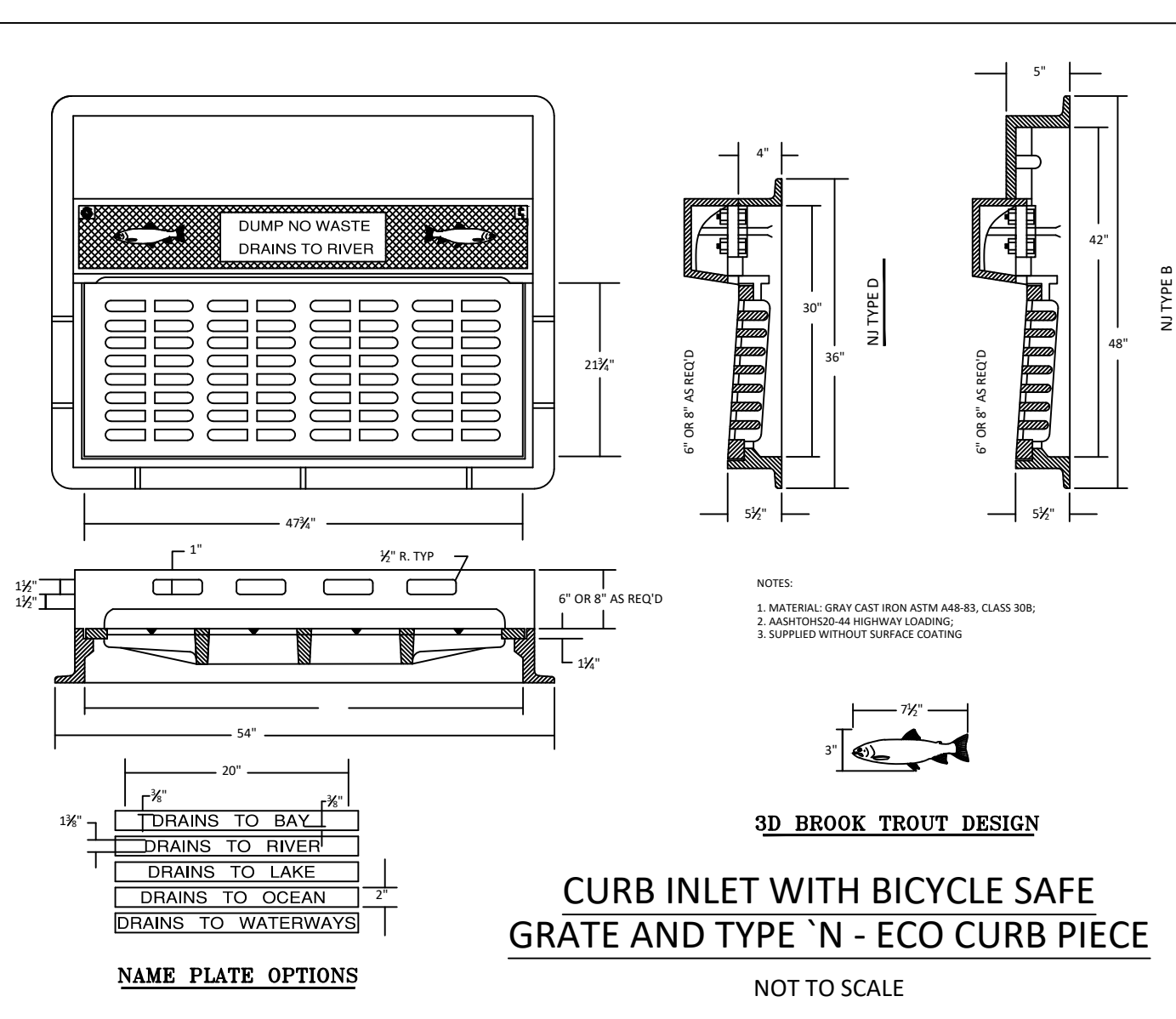
**DETECTABLE WARNING SURFACE APPLICATION INSTRUCTIONS**

- CLEAN MAT(S) WITH RUBBING ALCOHOL AND LET DRY. LAY MAT(S) FLAT, AWAY FROM THE ACTUAL FINAL PLACEMENT. (IF NECESSARY, BEND THEM SLIGHTLY TO MAKE THEM LIE FLAT.)
- CLEAN THE SURFACE USING A PRESSURE WASH OF AT LEAST 2,500 PSI. IF THERE IS GUM OR OTHER CONTAMINANTS ON THE SURFACE, CLEAN WITH A WIRE BRUSH. ALTERNATIVELY, NEW CONCRETE WILL REQUIRE ONLY A CITRIC CLEANER APPLICATION. AGITATE WITH A DECK BRUSH, RINSE OFF THOROUGHLY AND DRY THOROUGHLY.
- PLACE MAT(S) ONTO THE APPLICATION SURFACE.
- MASK OFF AREA AROUND THE MAT(S) WITH A GOOD-QUALITY DUCT TAPE (THE DUCT TAPE BONDS BETTER TO THE CONCRETE THAN REGULAR MASKING TAPE).
- REMOVE THE MAT(S) FROM THE WORKING AREA, REMEMBERING THE EXACT POSITION THEY WERE IN.
- PLACE THE ADHESIVE IN THE CAULK GUN. CUT OFF 3/4\"/>

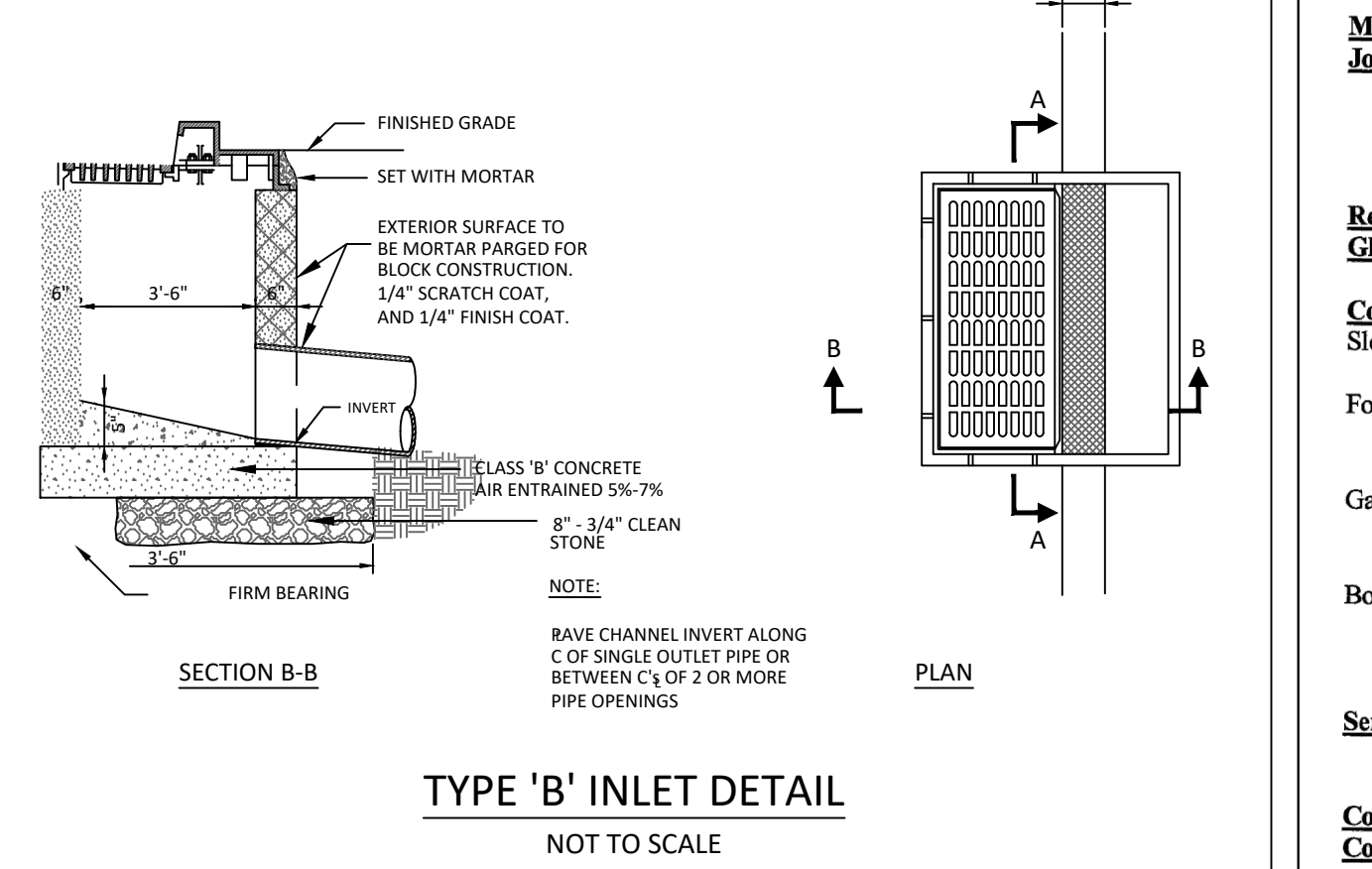
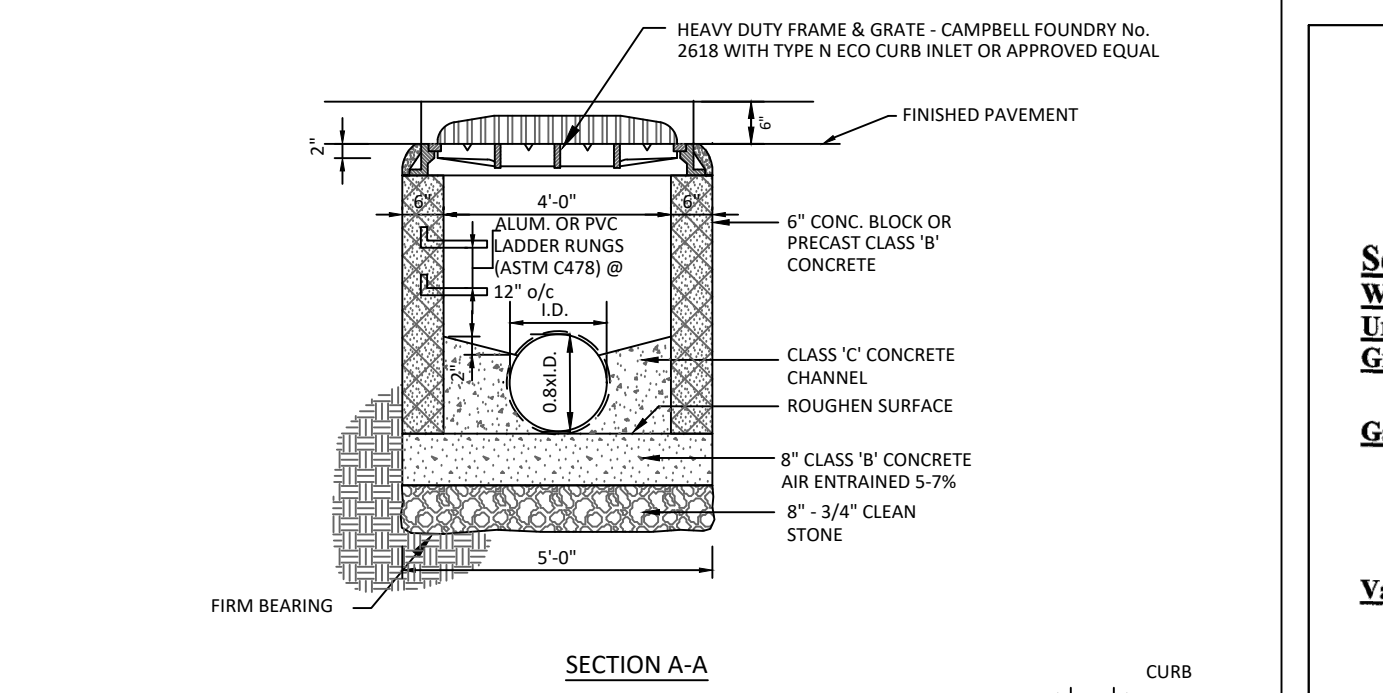


**PRECAST BUMPER CURB**  
NOT TO SCALE

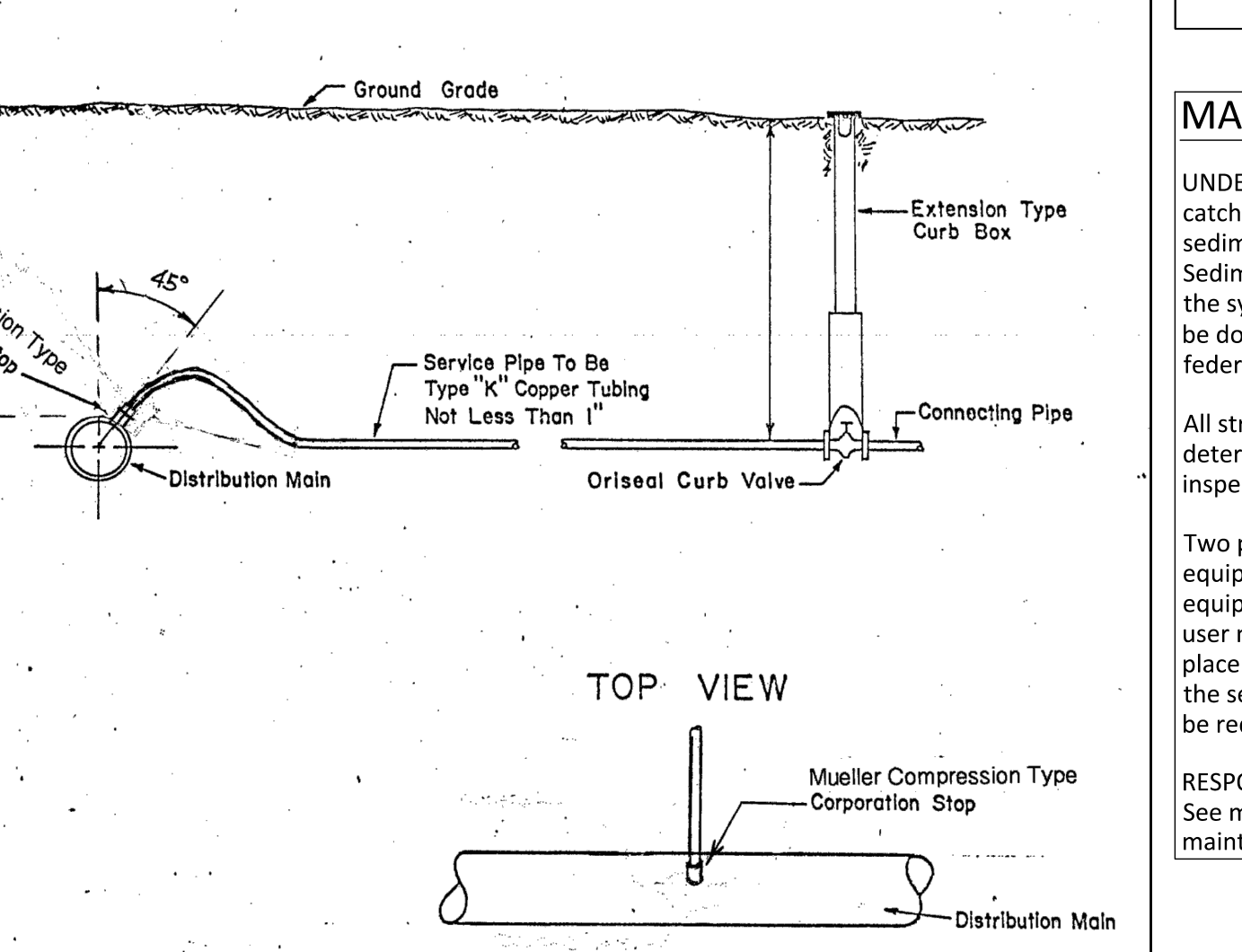
- GENERAL NOTES:
- CONCRETE SHALL HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4500 P.S.I.
  - UNIT TO BE PINNED TO SURFACE WITH 3/4\"/>



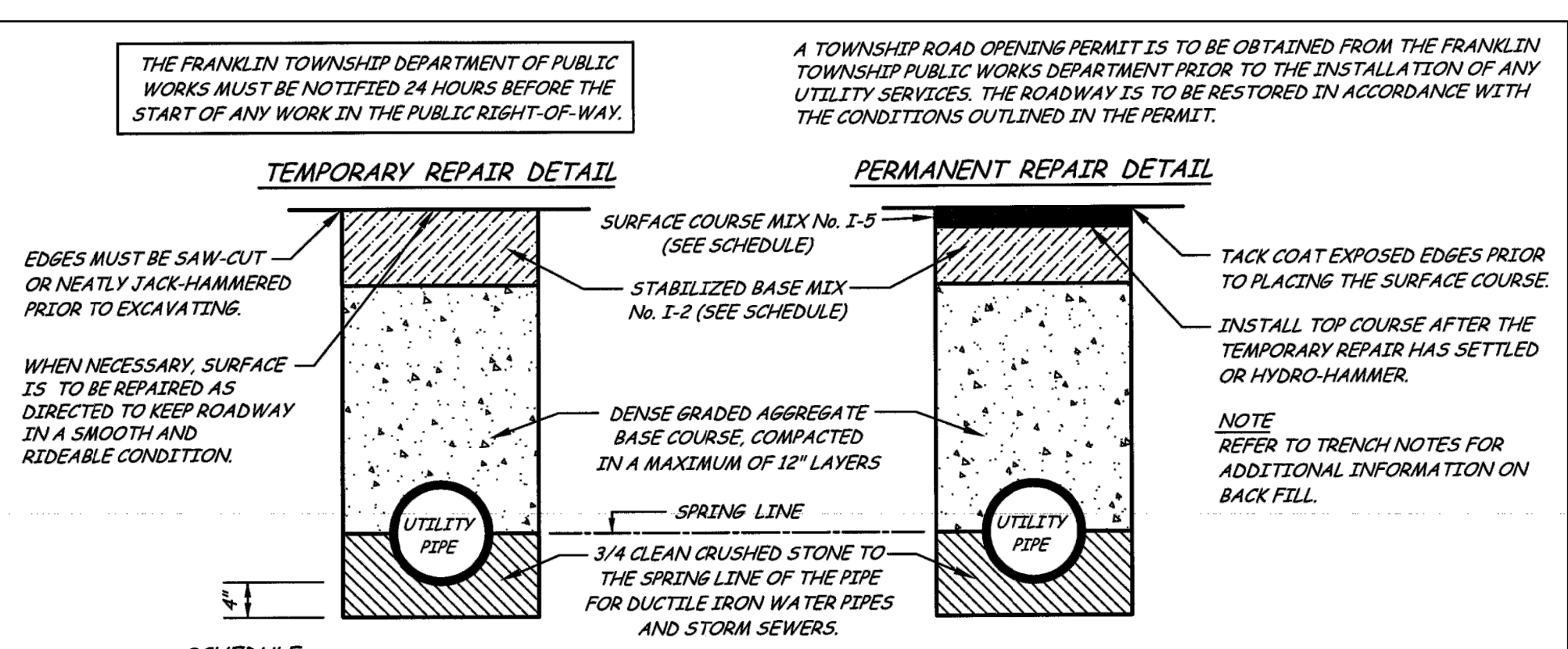
**3D BROOK TROUT DESIGN**  
**CURB INLET WITH BICYCLE SAFE GRATE AND TYPE 'N' - ECO CURB PIECE**  
NOT TO SCALE



**TYPE 'B' INLET DETAIL**  
NOT TO SCALE



**HOUSE SERVICE CONNECTION**



**SCHEDULE:**

ROAD CLASS	USUAL PAV'T WIDTH	R.O.W. WIDTH	STABILIZED BASE	SURFACE COURSE	USE
LOCAL RESIDENTIAL	30 FEET	50 FEET	4"	1 1/2"	
LOCAL NONRESIDENTIAL	40 FEET	60 FEET	6"	1 1/2"	
COLLECTOR RESIDENTIAL	36 FEET	60 FEET	6"	2"	
COLLECTOR NONRESIDENTIAL	42 FEET	68 FEET	7"	2"	
MAJOR COLLECTOR	48 FEET	72 FEET	7"	2"	
ARTERIAL	50 FEET	80 - 100 FEET	7"	2"	

**RESTORATION OF STREET OPENINGS**  
N.T.S.

**WATER PIPING, FITTINGS AND APPURTENANCES**

Service	Material	Joining	Lining	Manufacturer	Standard
<b>Water Main Under Ground</b>	Ductile Iron Class 52	Push-on Joint or Mechanical Joint	Cement Lined	U.S. Pipe Co. or approved equal	AWWA C151 ANSI A21.51
<b>Gate Valves</b>	Ductile Iron resilient seated gate valves open clockwise	Mechanical joints with retaining glands	Epoxy coating	U.S. Pipe Co. or approved equal	AWWA C509
<b>Valve Boxes</b>	Cast Iron two-piece 5 1/4" shaft			U.S. Pipe Co. or approved equal	
<b>Mechanical Joint</b>	Ductile Iron Class 52	Mechanical Joint with retaining glands	Cement Lined	U.S. Pipe Co. or approved equal	AWWA C111 ANSI A21.11
<b>Retaining Glands</b>	Ductile Iron	Mechanical Joint		U.S. Pipe Co. or approved equal	AWWA C111
<b>Couplings</b>	Ductile Iron			U.S. Pipe Co. or approved equal	ASTM A536
<b>Followers</b>	Ductile Iron			U.S. Pipe Co. or approved equal	ASTM A536
<b>Gasket</b>	Compounded Rubber			U.S. Pipe Co. or approved equal	ASTM D2000
<b>Bolts&amp;Nuts</b>	High strength Low alloy Steel			U.S. Pipe Co. or approved equal	AWWA C111
<b>Service Line</b>	Copper Type K	Compression	N/A		
<b>Corporation Cock</b>	Brass	Threaded or soldered	N/A	Mueller No. H-15000	
<b>Interior Service 2-1/2" And smaller</b>	Brass or copper type L	Threaded or soldered	N/A	Mueller or approved equal	

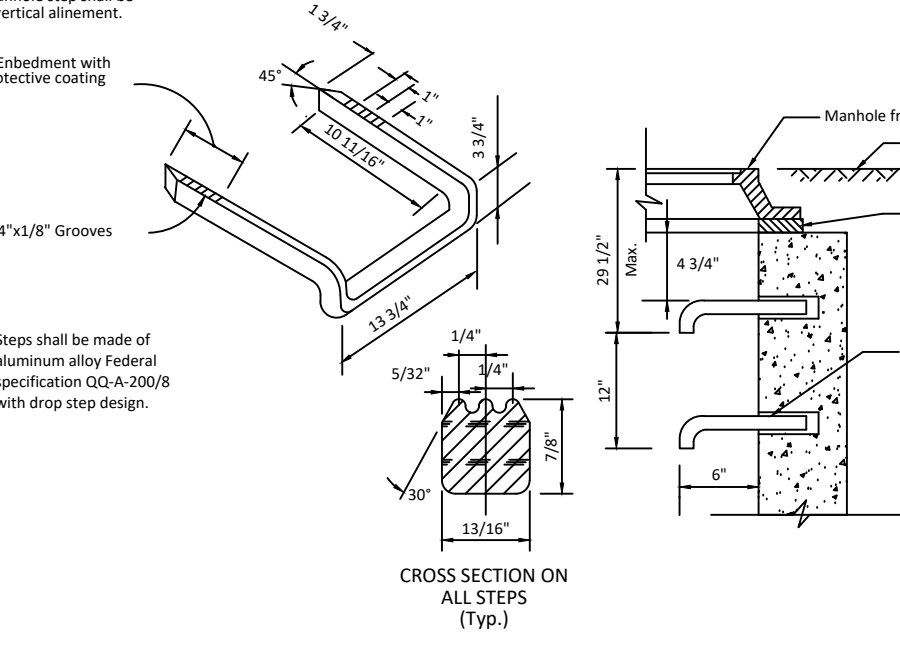
**MAINTENANCE OF UNDERGROUND STORM FACILITIES:**

**UNDERGROUND STORM SYSTEM** - The underground drainage system, including all pipes, manholes, catch basins, inlets and appurtenances must be inspected for clogging and excessive debris and sediment accumulation at least annually as well as after every storm exceeding 2 inches of rainfall. Sediment removal should take place when all runoff has drained from the conveyance network and the systems are reasonably dry. Disposal of debris, trash, sediment, and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state, and federal waste regulations.

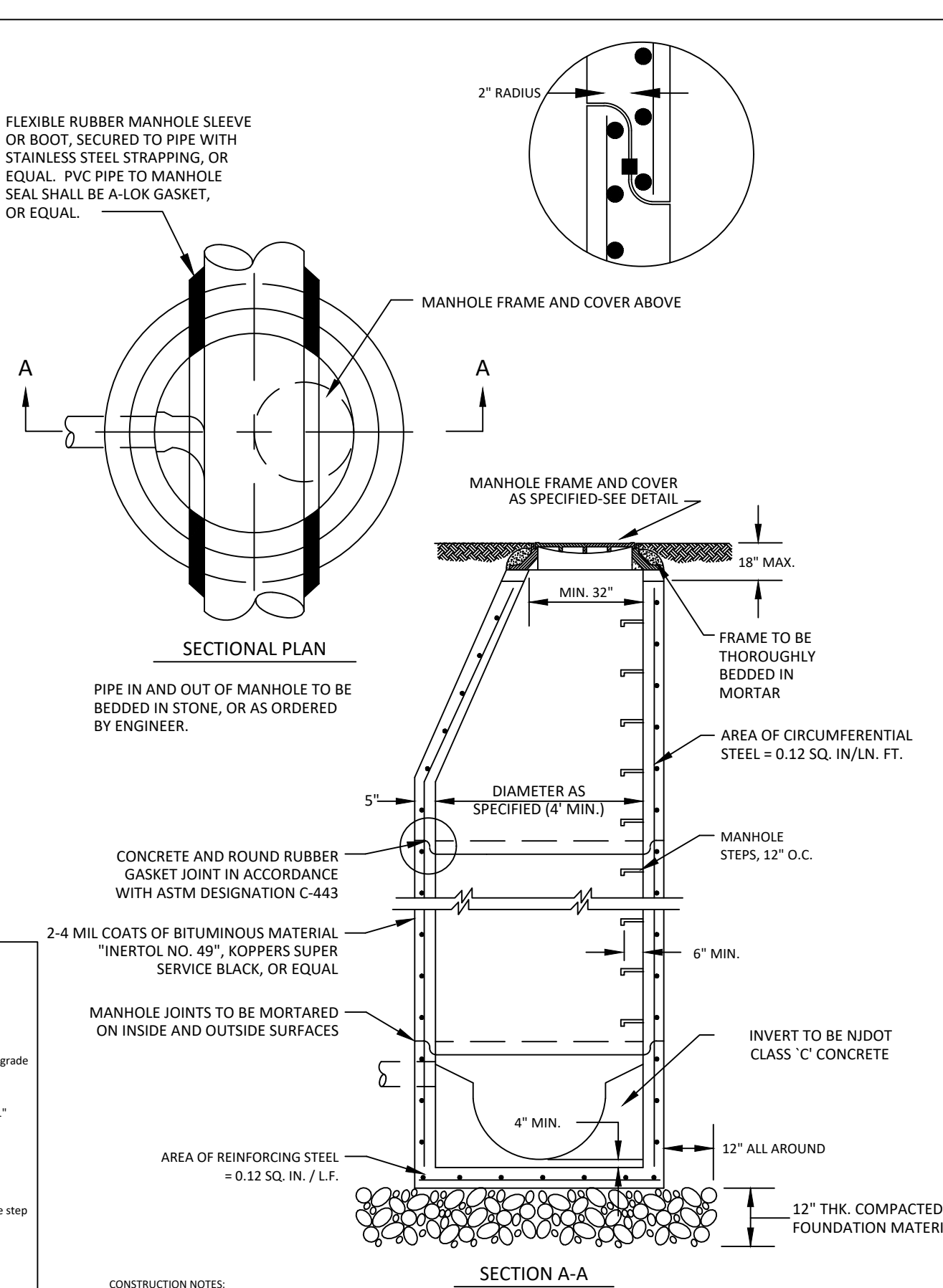
All structural components must be inspected for cracking, subsidence, breaching, wearing, and deterioration at least annually. The condition of surrounding and above lying materials shall be inspected for evidence of potential failures or deterioration.

Two people will be needed to perform routine maintenance of the conveyance systems. The routine equipment to be utilized for the maintenance tasks include a jet vacuum vehicle, shovels, lighting equipment and a wheel barrel or truck for the hauling off of debris. No manufacturer's instructions or user manuals are available for maintenance of these components. Maintenance would only take place in the adjacent components of the system, i.e. the catch basins, pipes, and other units outside the seepage pit system. Water, mosquito control chemicals, and concrete repair materials may also be required depending on the condition of the structure.

RESPONSIBLE PARTY FOR ALL STORM STRUCTURE MAINTENANCE  
See maintenance agreement for information regarding responsible parties for all storm structure maintenance.



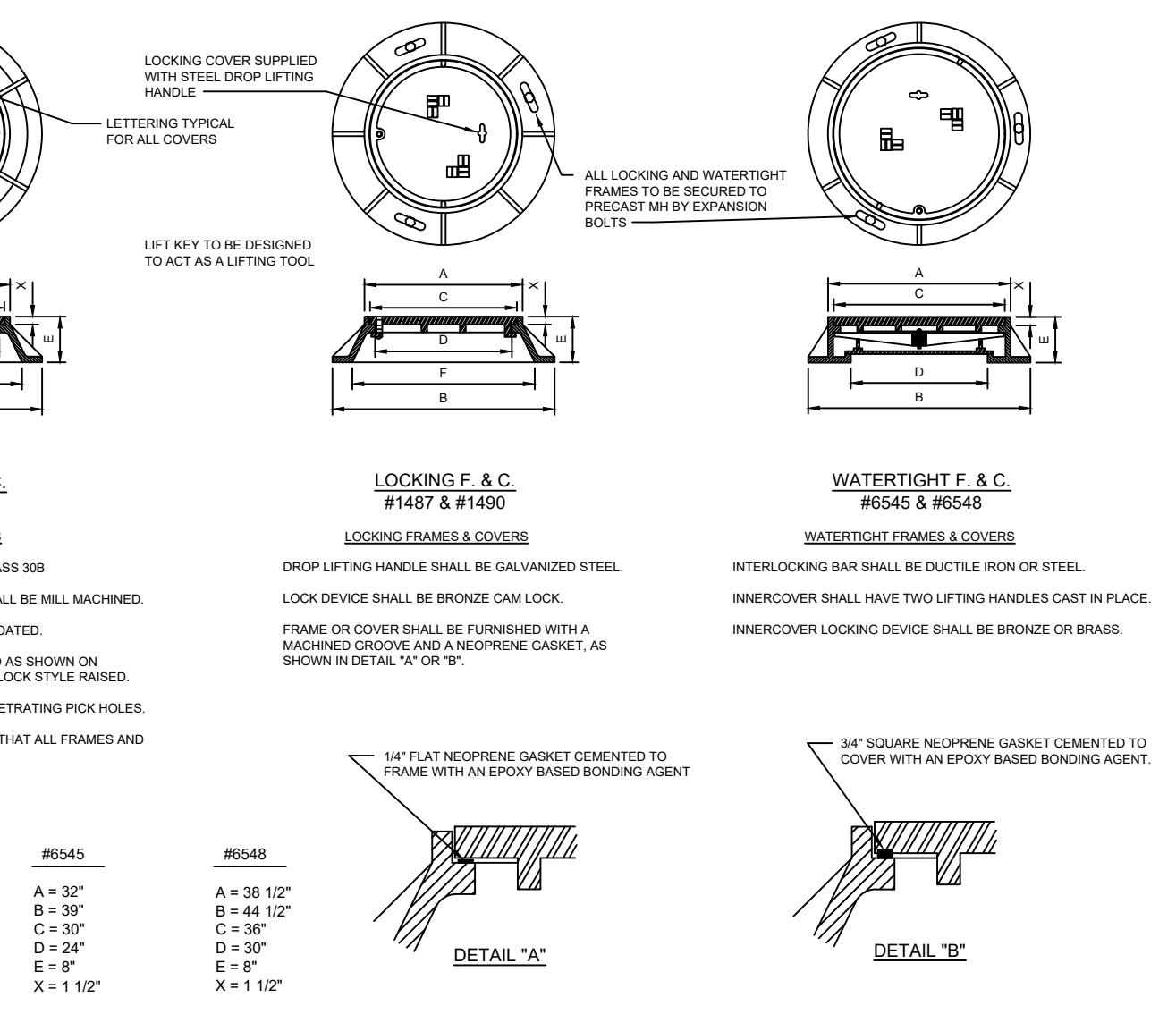
**MANHOLE STEP DETAILS**  
NOT TO SCALE



**STANDARD PRECAST STORM MANHOLE**  
NOT TO SCALE

**STANDARD F&C**

MANHOLE FRAMES SHALL BE FURNISHED WITH A MACHINED GROOVE TO ACCEPT A 1/4" FLAT NEOPRENE GASKET AS MANUFACTURED BY CAMPBELL FOUNDRY COMPANY OR EQUAL (SEE DETAIL "A"). AS AN OPTION, COVER MAY BE FURNISHED WITH A MACHINED GROOVE TO ACCEPT A FLOW SEAL GASKET AS MANUFACTURED BY CAMPBELL FOUNDRY COMPANY OR EQUAL (SEE DETAIL "B").



**TYPICAL MANHOLE FRAME AND COVER**  
NOT TO SCALE

**ADNAN A. KHAN, P.E., C.M.E.**  
PROFESSIONAL ENGINEER

DESIGNED BY: AK  
DATE: 02/25/20

APPROVED BY: AK  
DATE: 02/25/20

REVISIONS: NO. DATE: BY: APE  
07/27/20

**AWZ ENGINEERING, INC.**  
ENGINEERS • SCIENTISTS • CONSULTANTS

Main Office: 150 River Road, Suite B3, Montville, NJ 07045  
Pennsylvania Office: Scranton, PA 18504

Tel: 973-588-7080 Fax: 973-588-7079  
www.awzeng.com e-mail: info@awzeng.com  
New Jersey Certificate of Authorization No.: 24EA28118400  
Pennsylvania Certificate of Authority No.: 3771354

**TAX LOTS 6-15**  
**BLOCK 225**  
**789 HAMILTON STREET**  
**TOWNSHIP OF FRANKLIN**  
**SOMERSET COUNTY, NEW JERSEY**

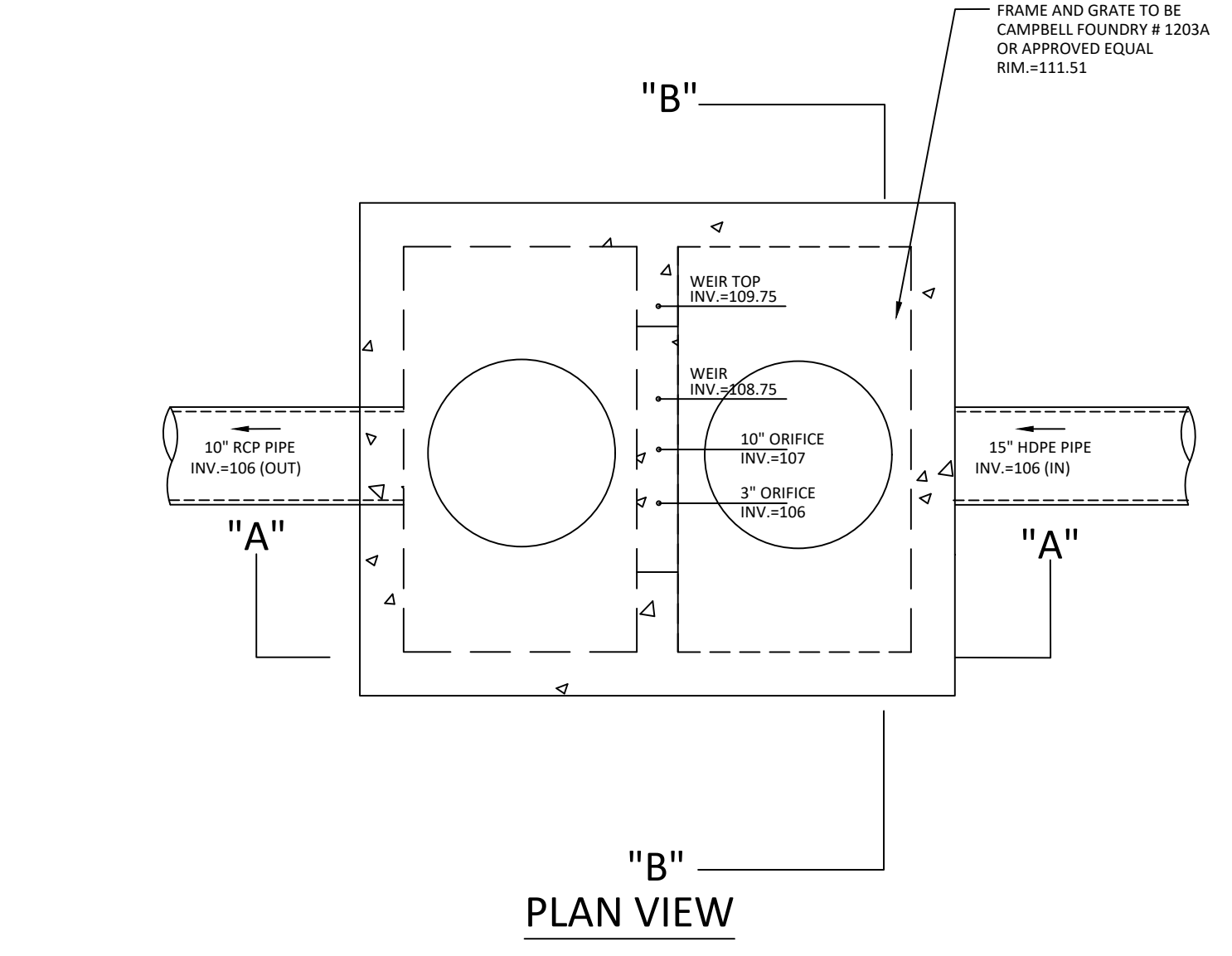
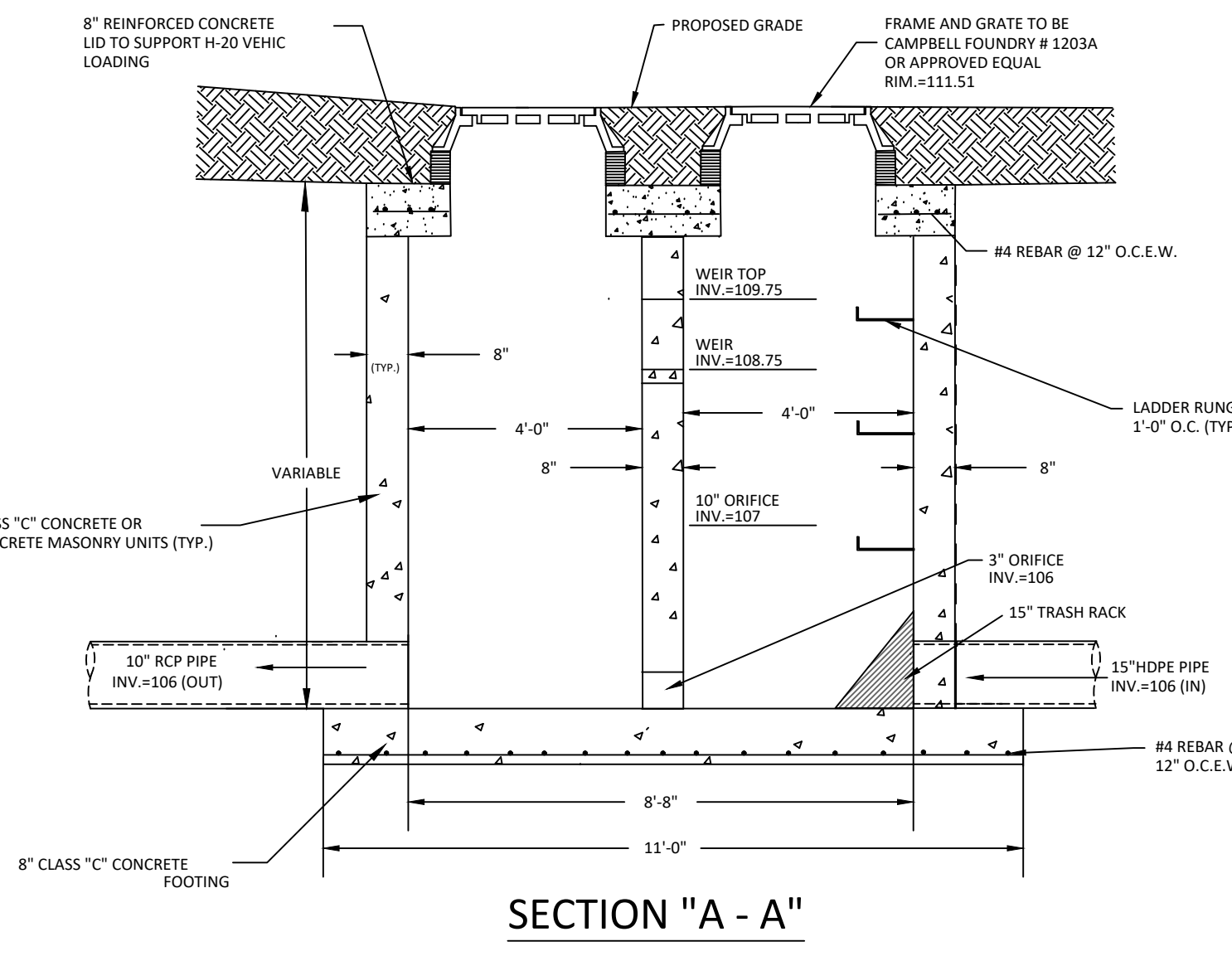
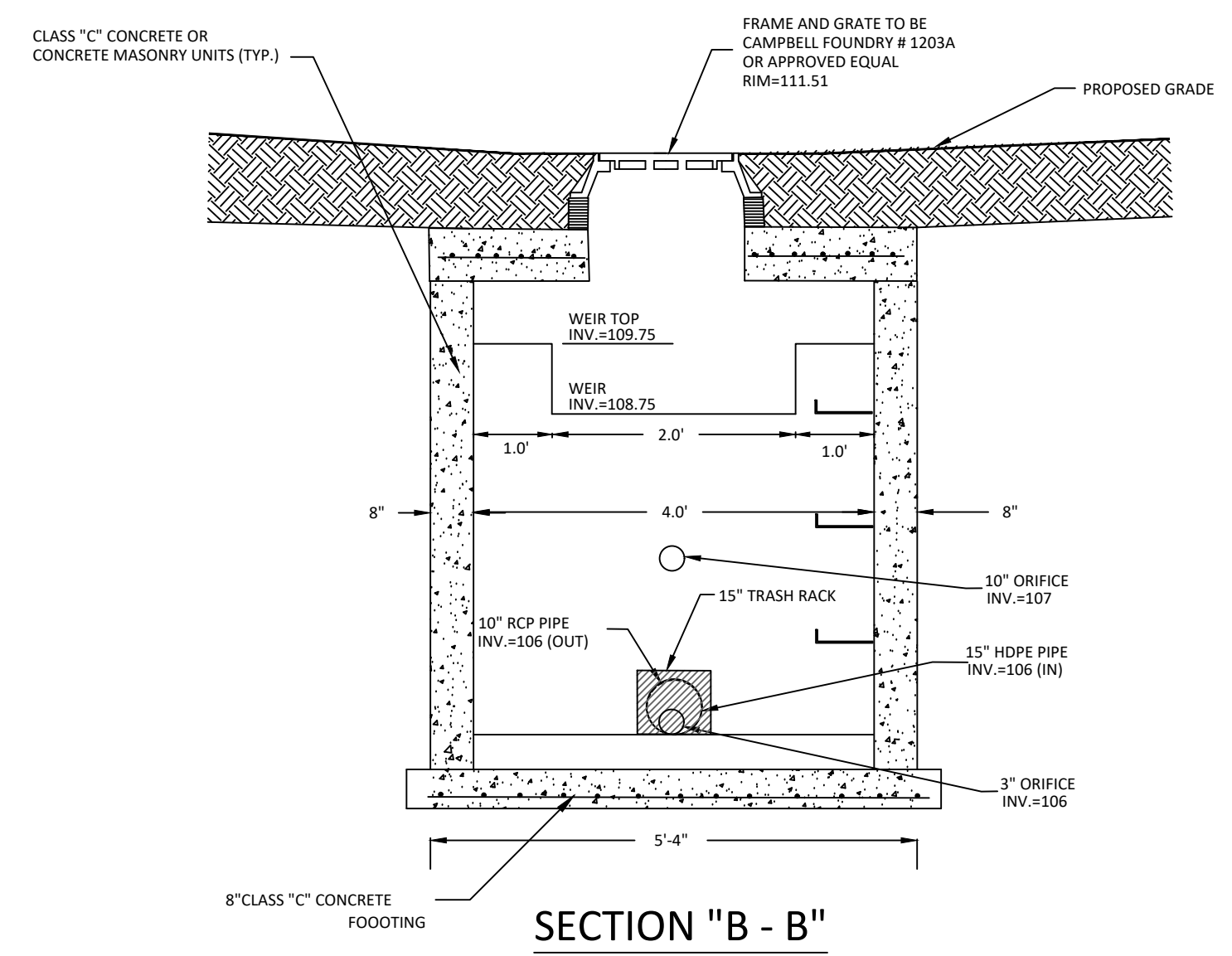
**CONSTRUCTION DETAILS**

JOB NUMBER:  
20-0203

SCALE: AS SHOWN

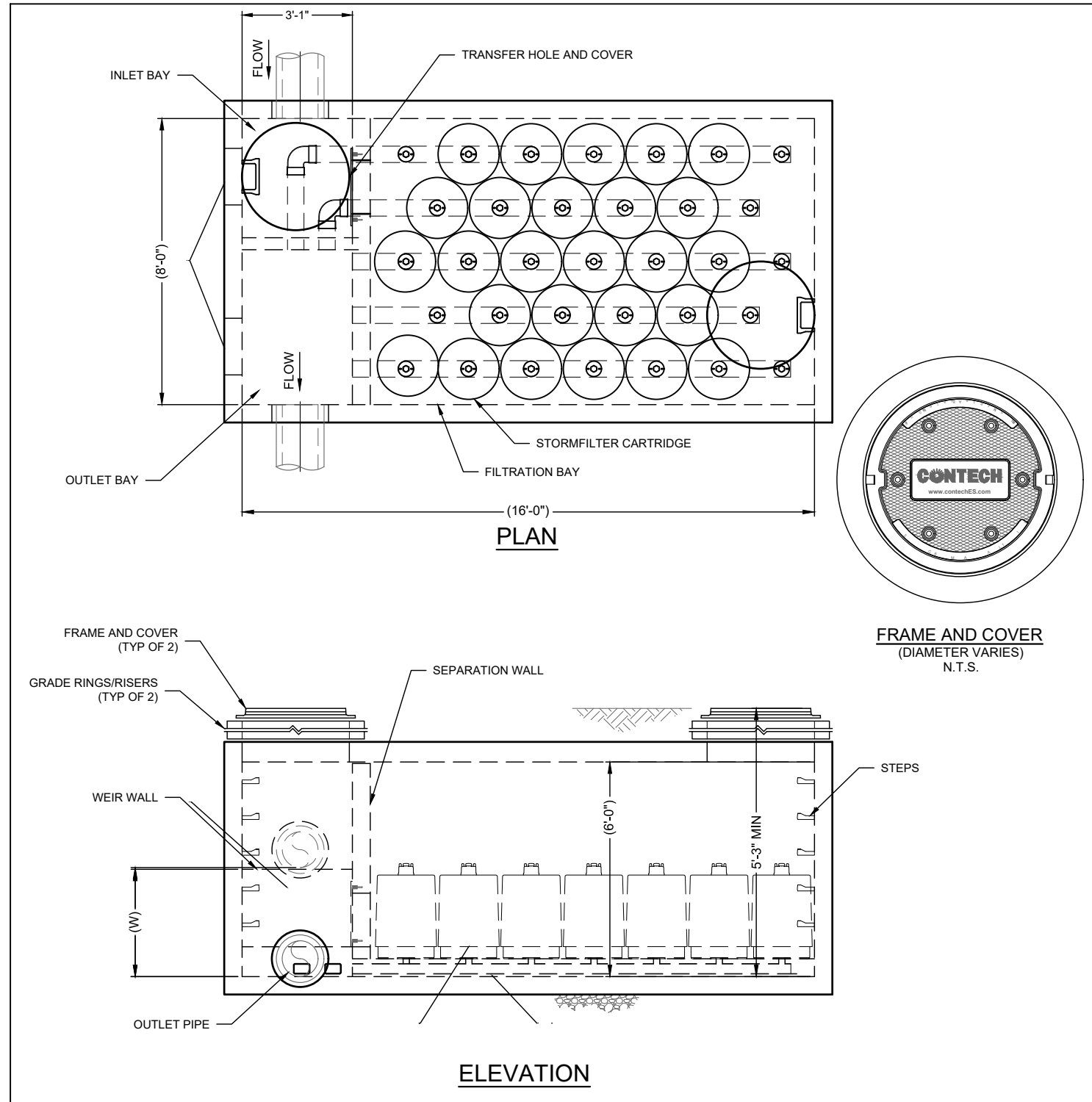
**C-08**  
SHEET 8 OF 10





**OUTLET STRUCTURE DETAIL**  
NOT TO SCALE

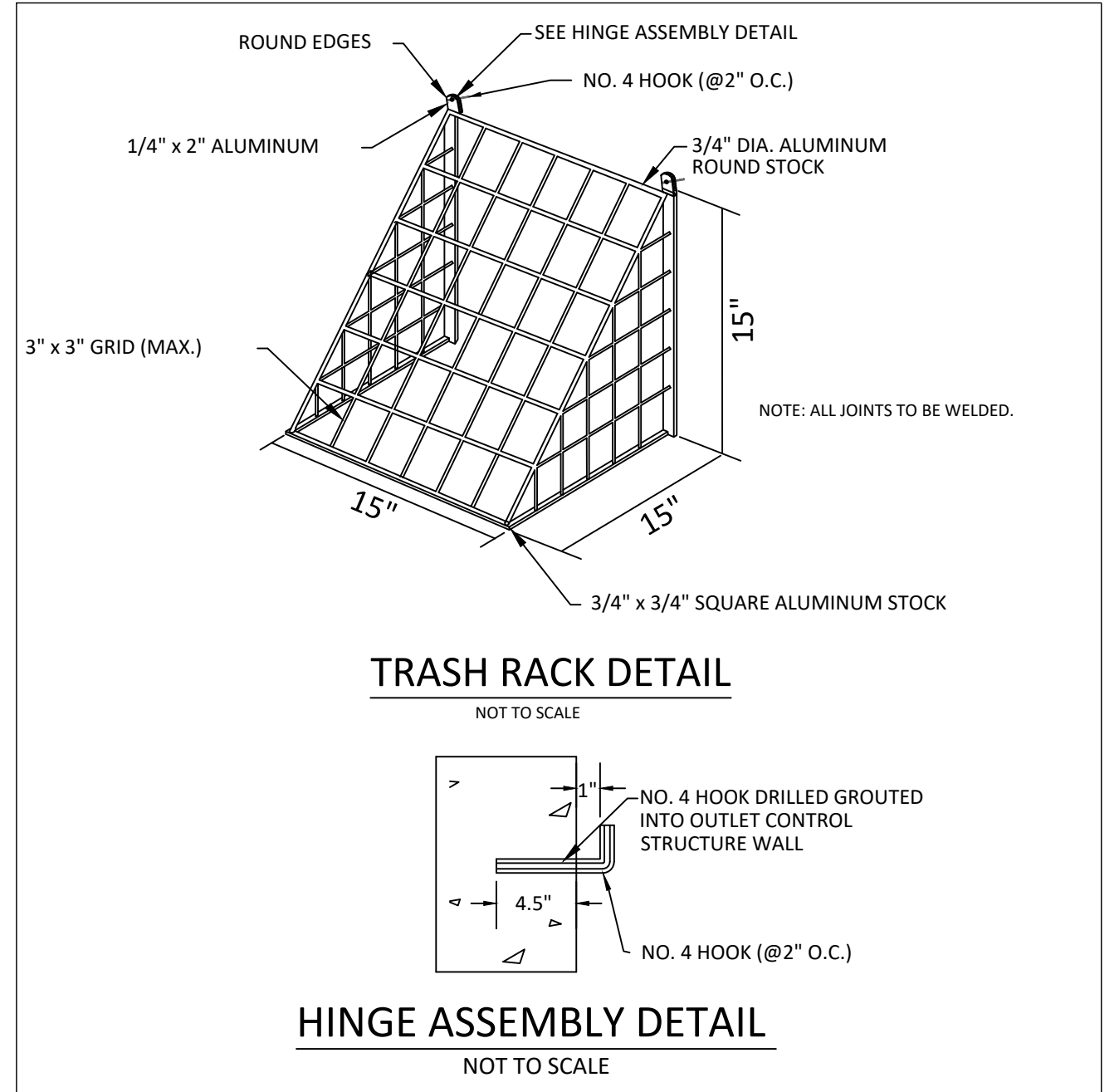
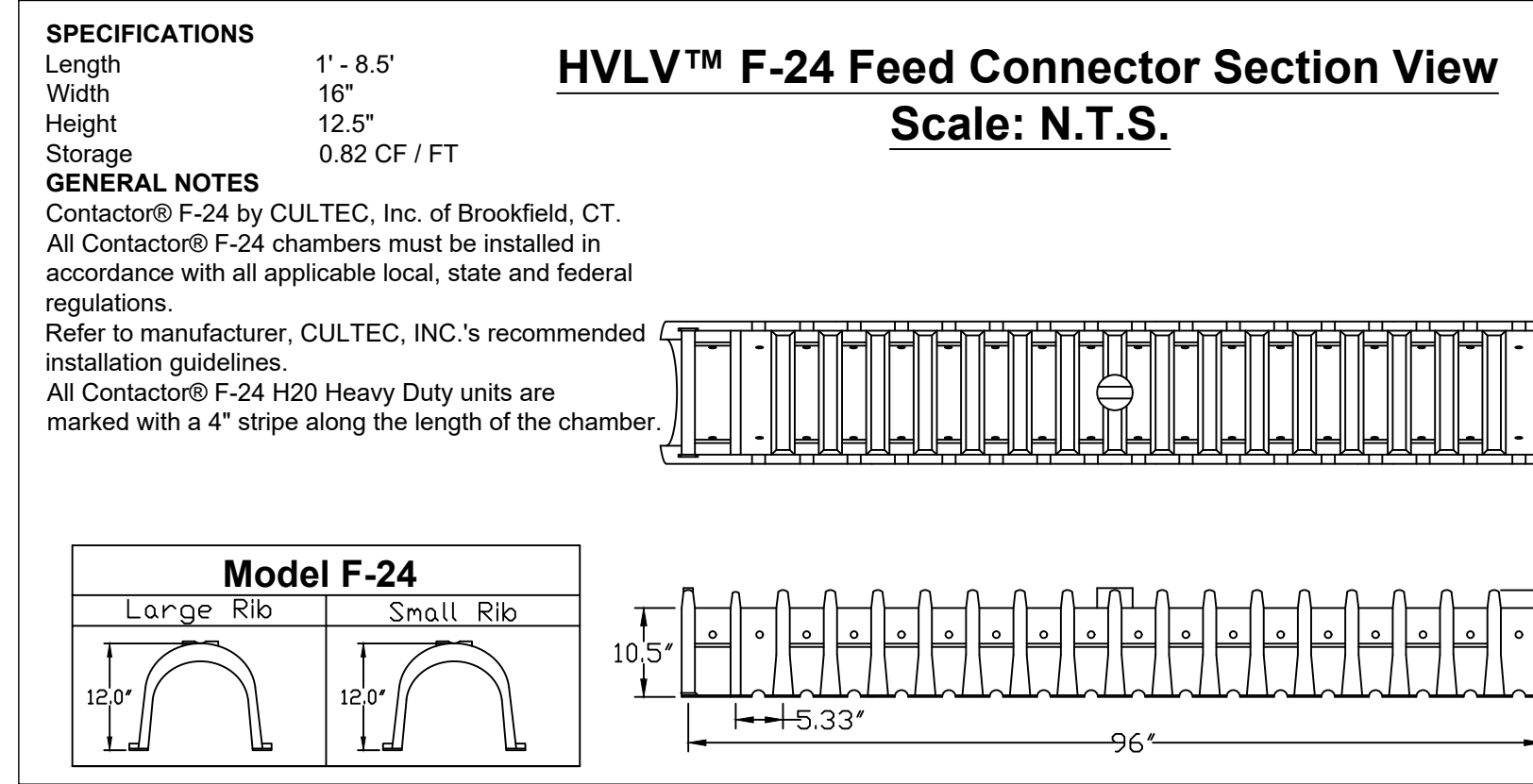
NOTES:  
1. FOR BLOCK/BRICK CONSTRUCTION PROVIDE MINIMUM OF 1/2-INCH OF MORTAR TROWELED TO A SMOOTH FINISH ON THE OUTSIDE OF THE STRUCTURE.  
2. PROVIDE MINIMUM OF 6-INCH COMPACTED FOUNDATION MATERIAL (DOT NO. 57 STONE) ON UNDISTURBED SOIL.



**STORMFILTER DESIGN NOTES**

CARTRIDGE SELECTION	27"	18"	LOW DROP
CARTRIDGE HEIGHT	27"	18"	1.6"
RECOMMENDED HYDRAULIC DROP (H)	3.05'	2.3'	1.75'
HEIGHT OF WEIR (W)	2 gpm/sf	1.67 gpm/sf	1 gpm/sf
SPECIFIC FLOW RATE (gpm/sf)	22.5	18.75	11.25
CARTRIDGE FLOW RATE (gpm)	15	12.53	7.5
	10	8.35	5

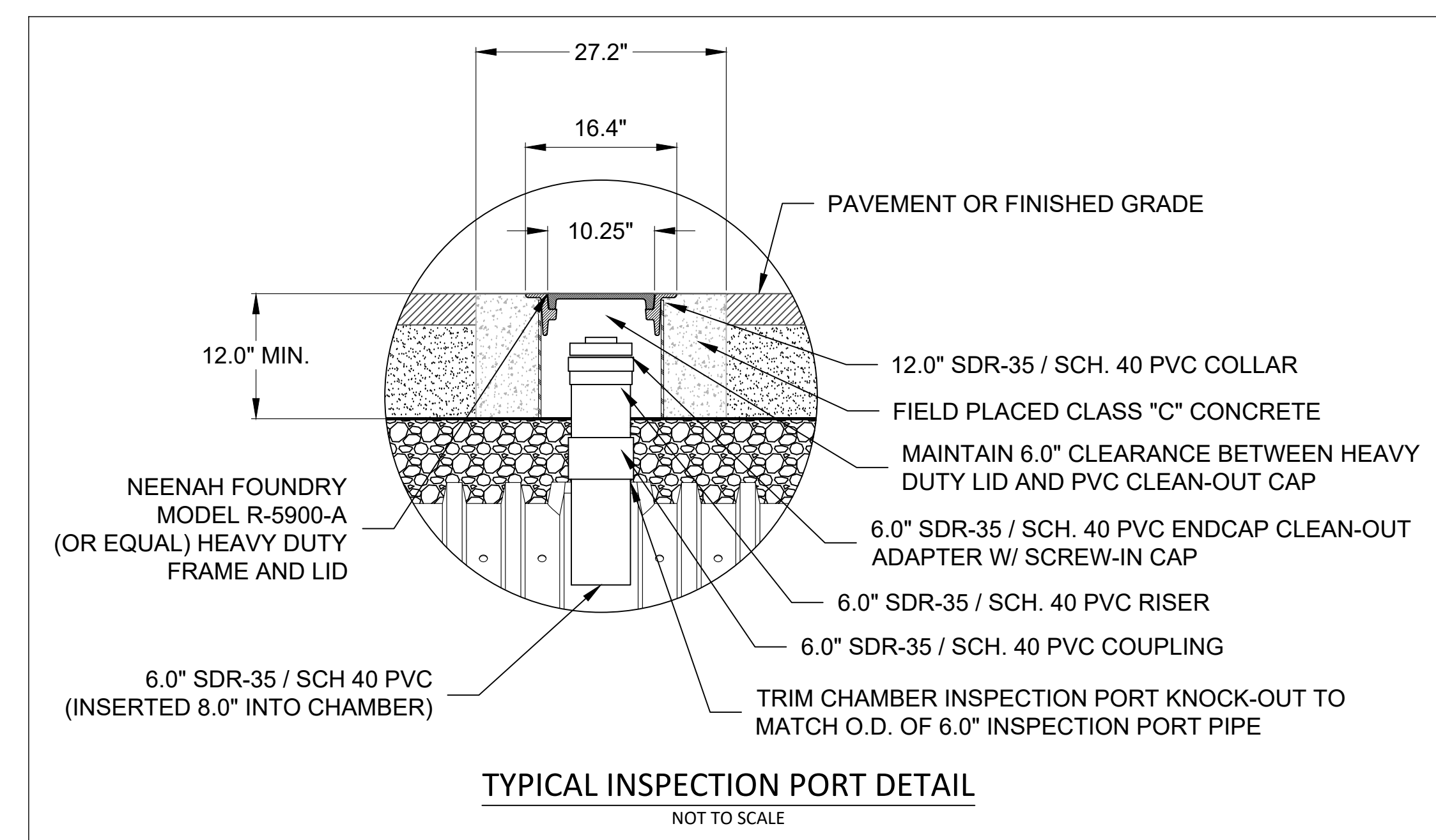
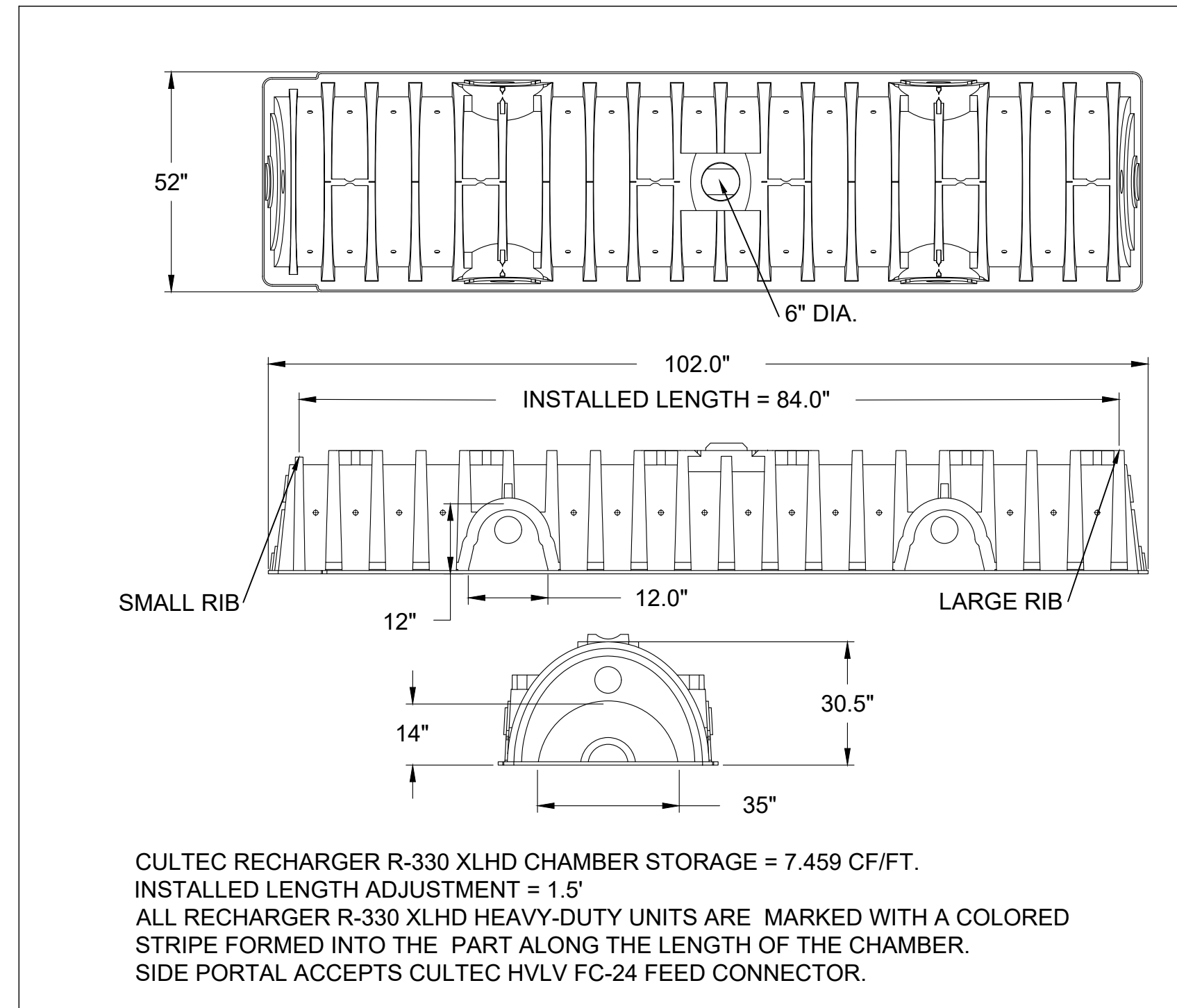
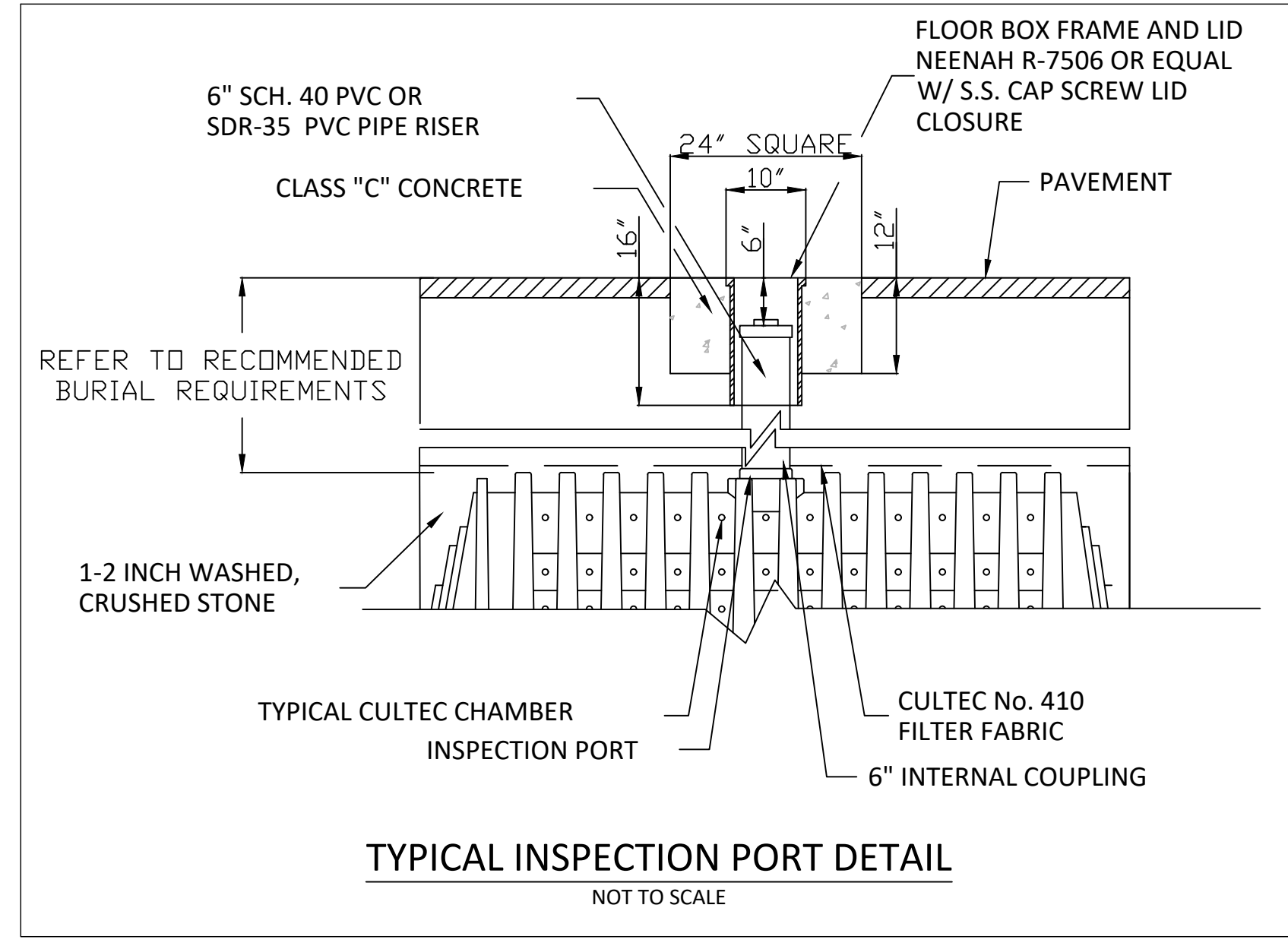
\* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



**PERFORMANCE SPECIFICATION**  
FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON-ACTUATED, RADIAL FLOW AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 7 INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 30 SECONDS. SPECIFIC FLOW RATE SHALL BE 4 GPM/SF (MAXIMUM). SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE 6 GPM/CF OF MEDIA (MAXIMUM).

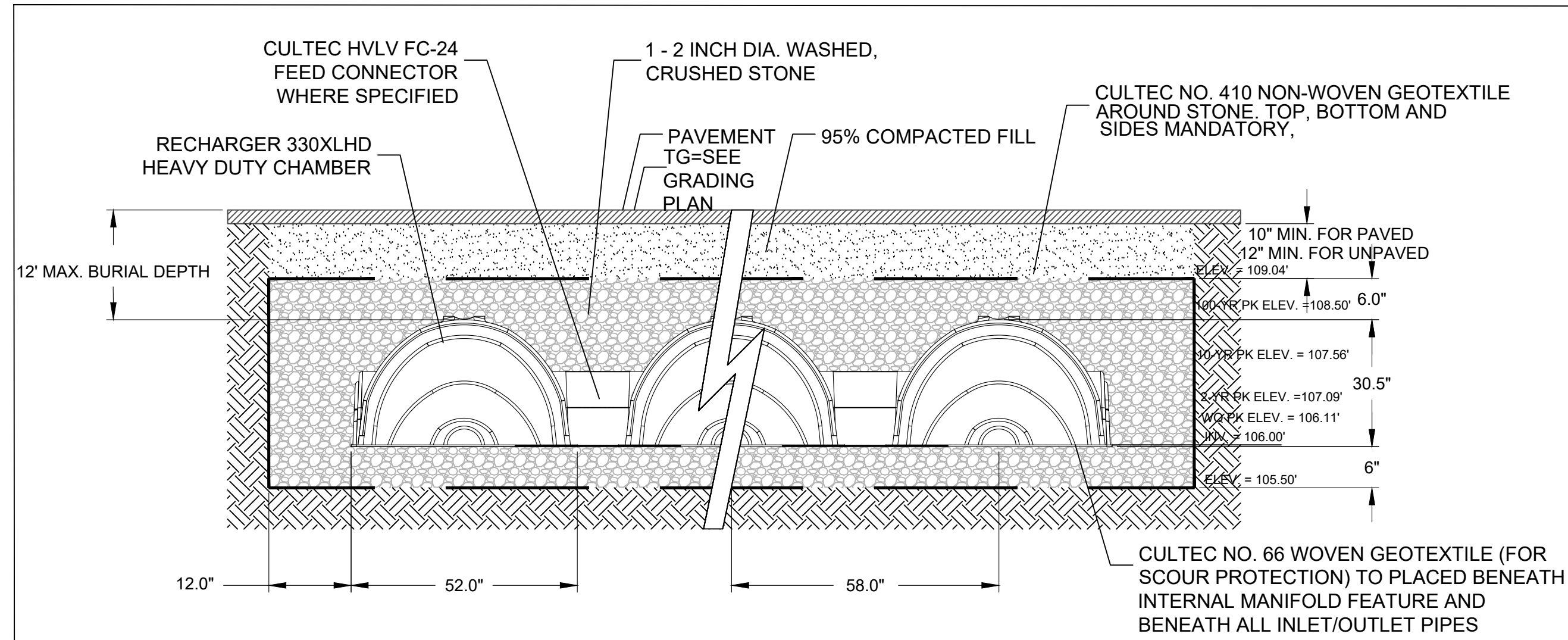
**GENERAL NOTES**  
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.  
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.  
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.contechES.com  
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.  
5. STRUCTURE SHALL MEET AASHTO #III LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

**INSTALLATION NOTES**  
A. ANY SUB-BASE BACKFILL DEPTH, AND/OR ANTI-FLOATATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.  
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).  
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.  
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.  
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.  
F. CONTRACTOR TO REMOVE THE TRANSFER HOLE COVER WHEN THE SYSTEM IS BROUGHT ONLINE.



<p><b>ADNAN A. KHAN, P.E., C.M.E.</b> PROFESSIONAL ENGINEER</p> <p><i>Adnan A. Khan</i></p> <p>P.A. LICENSE NO. 4895E N.Y. LICENSE NO. 08645 M.B. LICENSE NO. 41803</p>	<p><b>AWZ ENGINEERING, INC.</b> ENGINEERS • SCIENTISTS • CONSULTANTS</p> <p>Main Office: 150 River Road, Suite B3, Montville, NJ 07045 Pennsylvania Office: Scranton, PA 18504</p> <p>Tel: 974-588-7080 Fax: 974-588-7079 www.awzeng.com e-mail: info@awzeng.com New Jersey Certificate of Authorization No.: 24EA28118400 Pennsylvania Certificate of Authority No.: 3771354</p>
<p><b>TAX LOTS 6-15</b> BLOCK 225 789 HAMILTON STREET TOWNSHIP OF FRANKLIN SOMERSET COUNTY, NEW JERSEY</p>	<p><b>CONSTRUCTION DETAILS</b></p>
<p><b>JOB NUMBER:</b> 20-0203</p> <p><b>SCALE:</b> AS SHOWN</p>	<p><b>C-09</b> SHEET 9 OF 10</p>



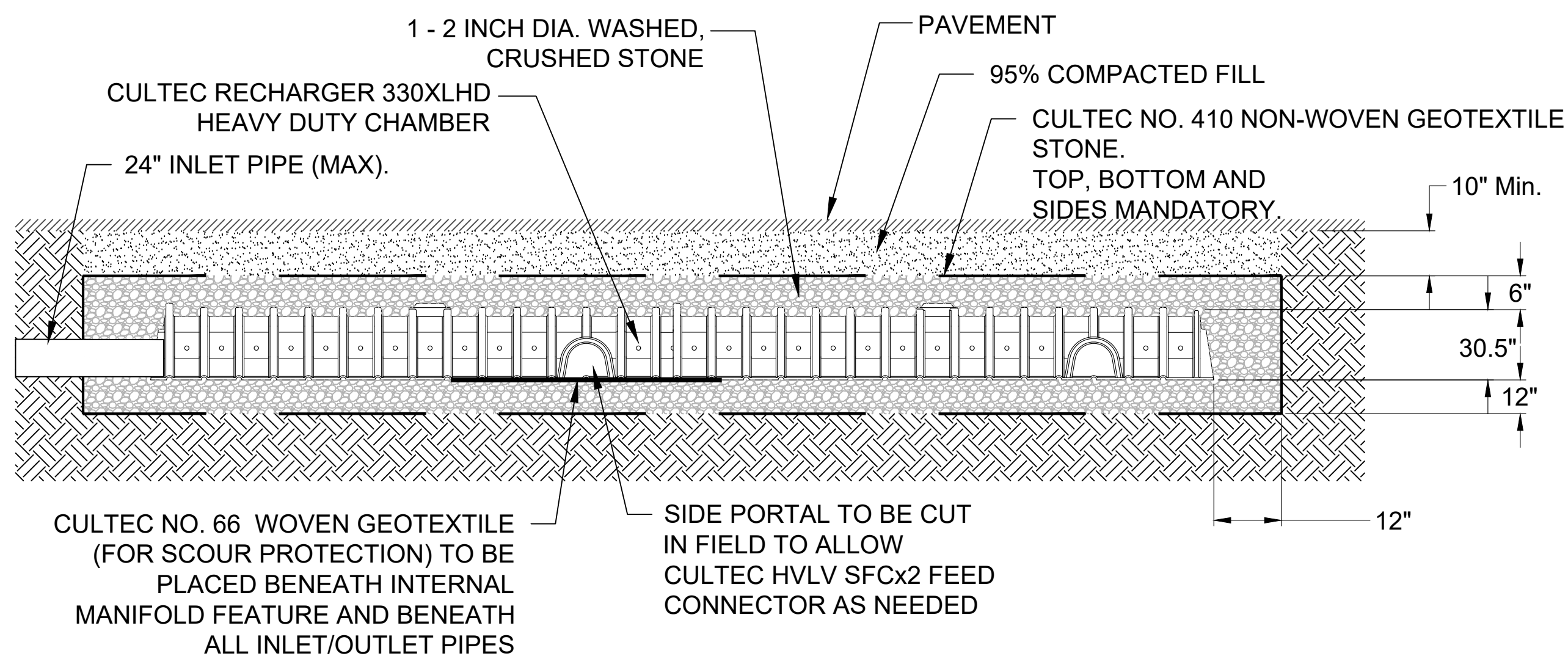


**GENERAL NOTES**

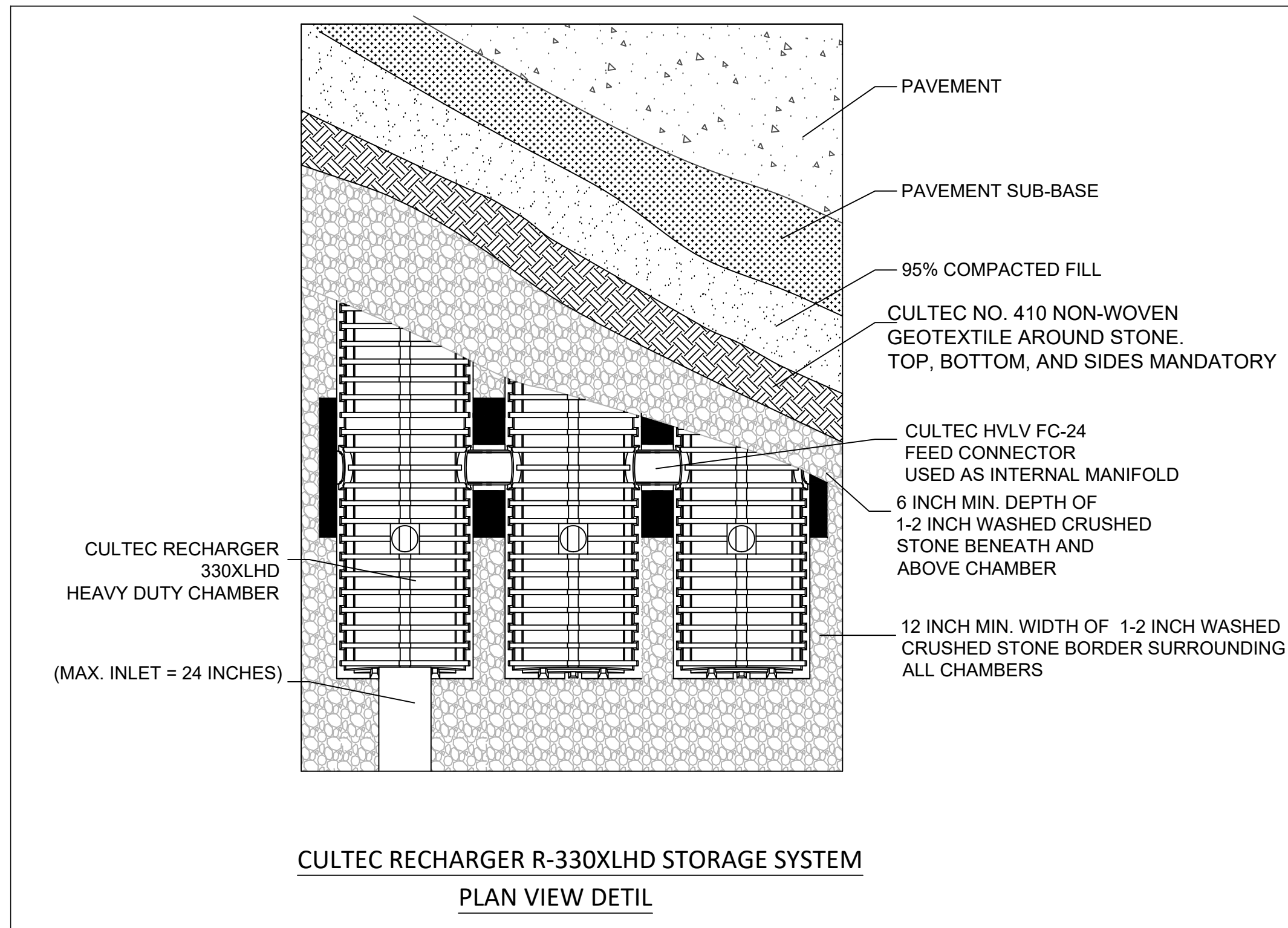
RECHARGER 330XLHD BY CULTEC, INC. OF BROOKFIELD, CT. STORAGE PROVIDED = 7.459 CF/FT PER DESIGN UNIT. REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES. MAXIMUM ALLOWED COVER OVER TOP OF UNIT SHALL BE 12'. THE CHAMBER WILL BE DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS.

ALL RECHARGER 330XLHD HEAVY-DUTY UNITS ARE MARKED WITH A COLORED STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER. ALL RECHARGER 330XLHD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

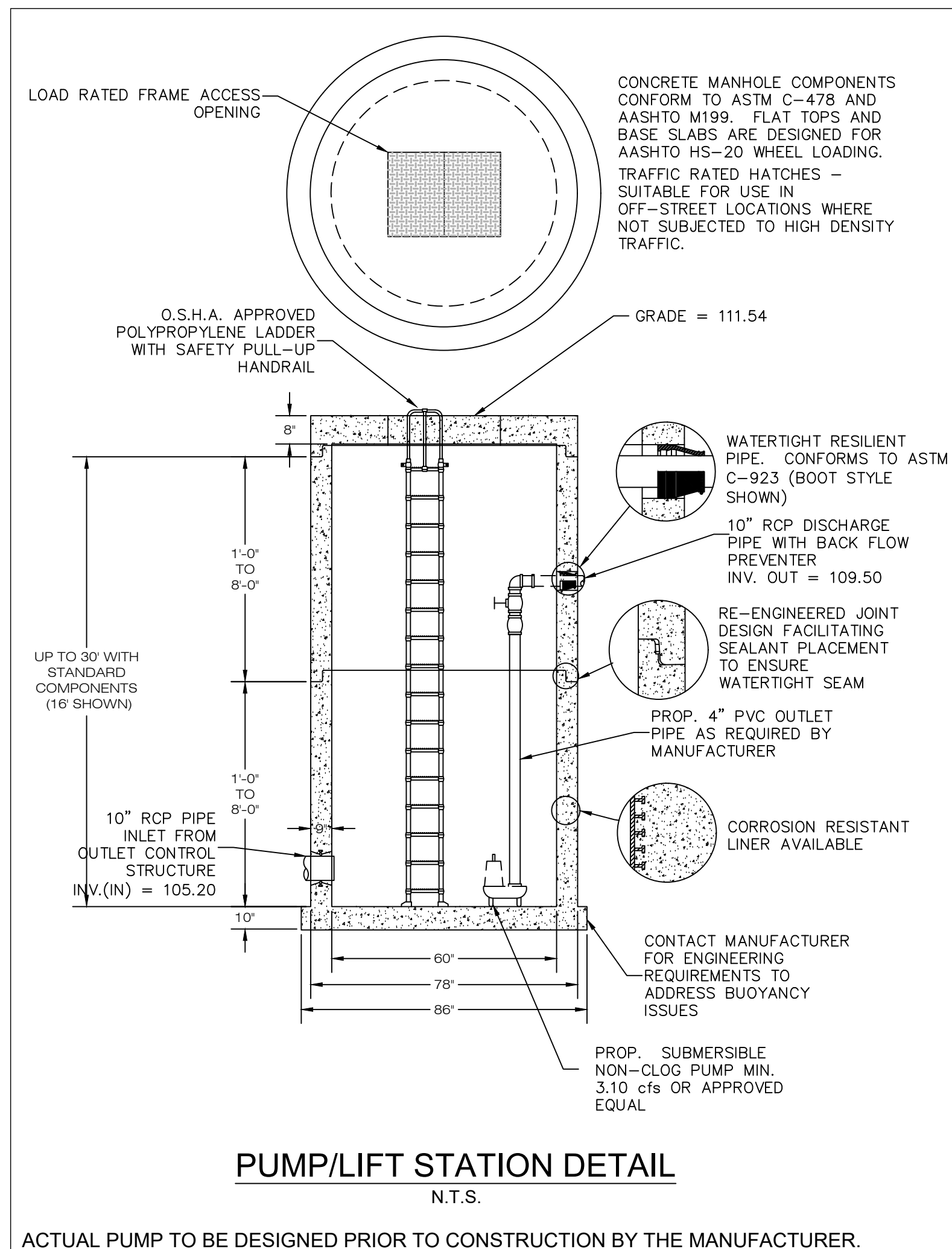
**CULTEC RECHARGER 330XLHD TYPICAL CROSS SECTION**



**CULTEC MANIFOLD DETAIL**



**CULTEC RECHARGER R-330XLHD STORAGE SYSTEM PLAN VIEW DETAIL**



**PUMP/LIFT STATION DETAIL N.T.S.**

ACTUAL PUMP TO BE DESIGNED PRIOR TO CONSTRUCTION BY THE MANUFACTURER.

DESIGNED BY	DATE	APPROVED BY	DATE
AK	02/25/20	AK	02/25/20
DESIGNED BY	DATE	APPROVED BY	DATE
AK	10/27/20	AK	02/25/20
REVISIONS	NO.	DATE	BY
			AK
			02/25/20

**ADNAN A. KHAN, P.E., C.M.E.**  
PROFESSIONAL ENGINEER

*Adnan A. Khan*

**AWZ ENGINEERING, INC.**  
ENGINEERS • SCIENTISTS • CONSULTANTS  
Main Office: 150 River Road, Suite B3, Montville, NJ 07045  
Pennsylvania Office: Scranton, PA 18504  
Tel: 973-588-7080 Fax: 973-588-7079  
www.awzeng.com e-mail: info@awzeng.com  
New Jersey Certificate of Authorization No.: 24EA28118400  
Pennsylvania Certificate of Authority No.: 3771354

**TAX LOTS 6-15 BLOCK 225**  
789 HAMILTON STREET  
TOWNSHIP OF FRANKLIN  
SOMERSET COUNTY, NEW JERSEY

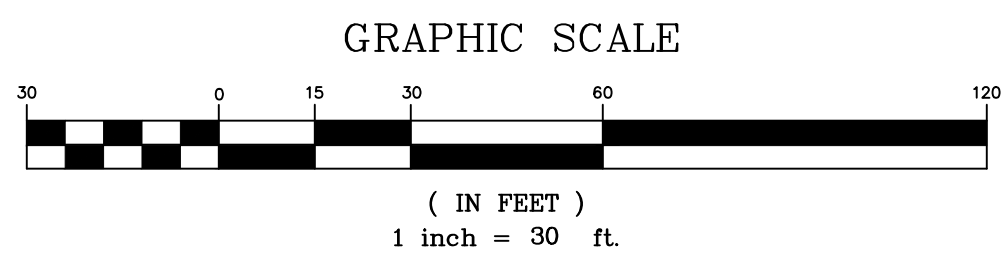
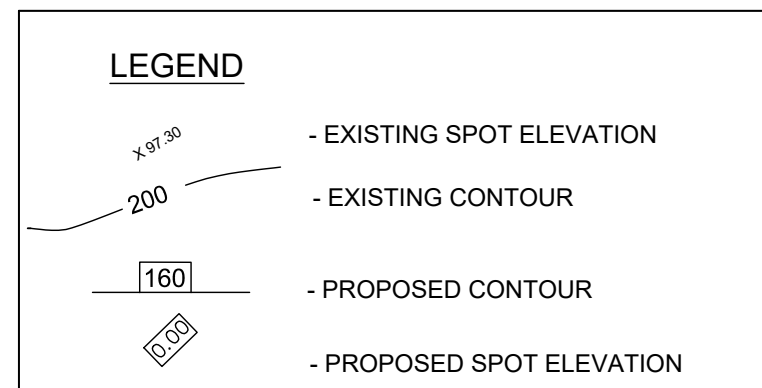
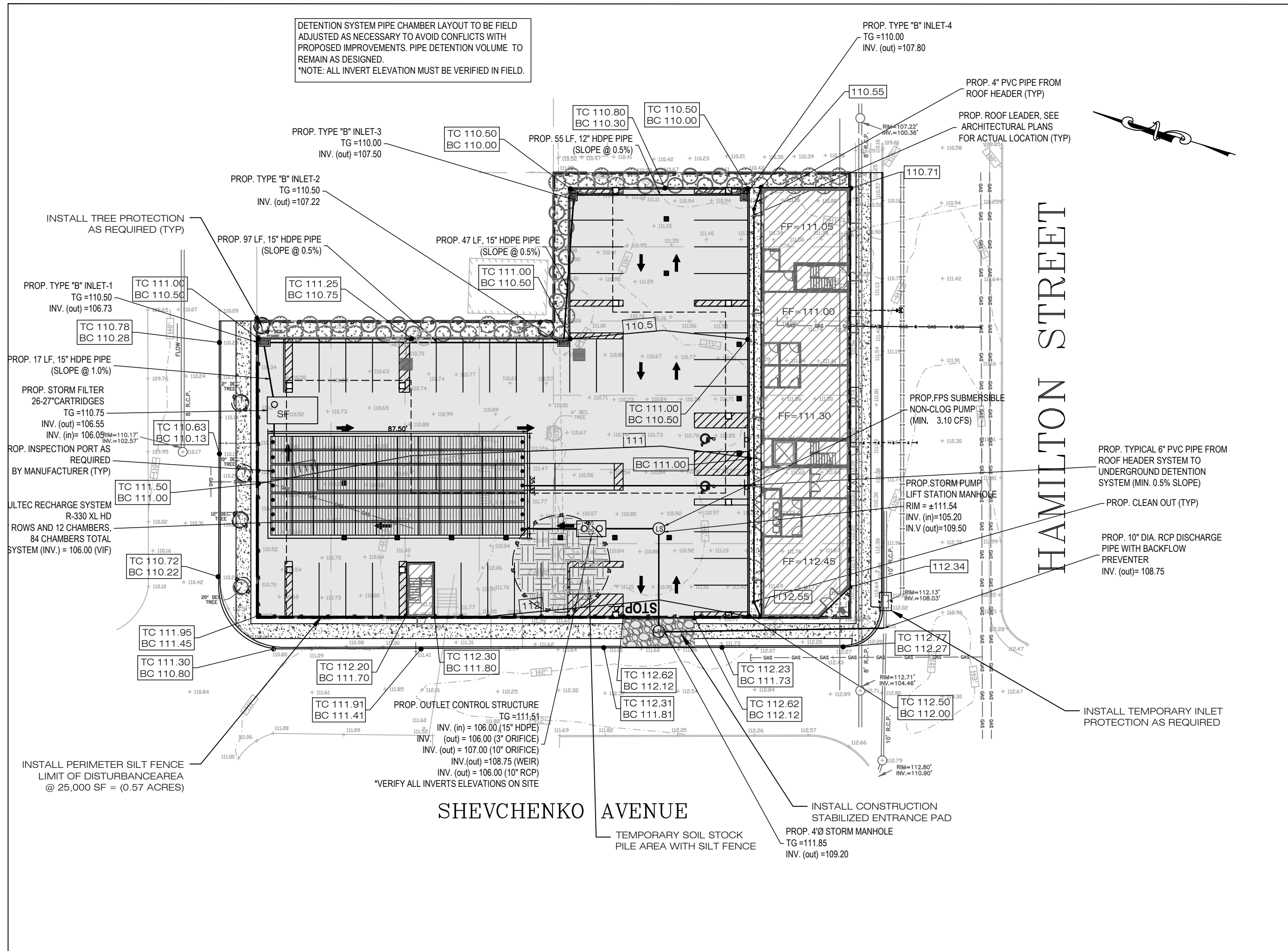
**CONSTRUCTION DETAILS**

JOB NUMBER:  
20-0203

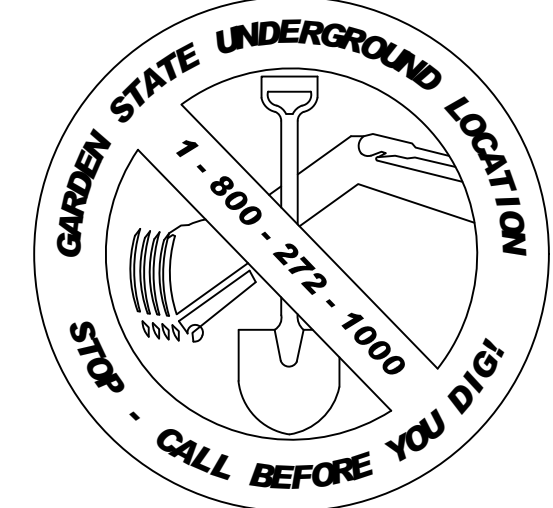
SCALE: AS SHOWN

**C-10**  
SHEET 10 OF 10

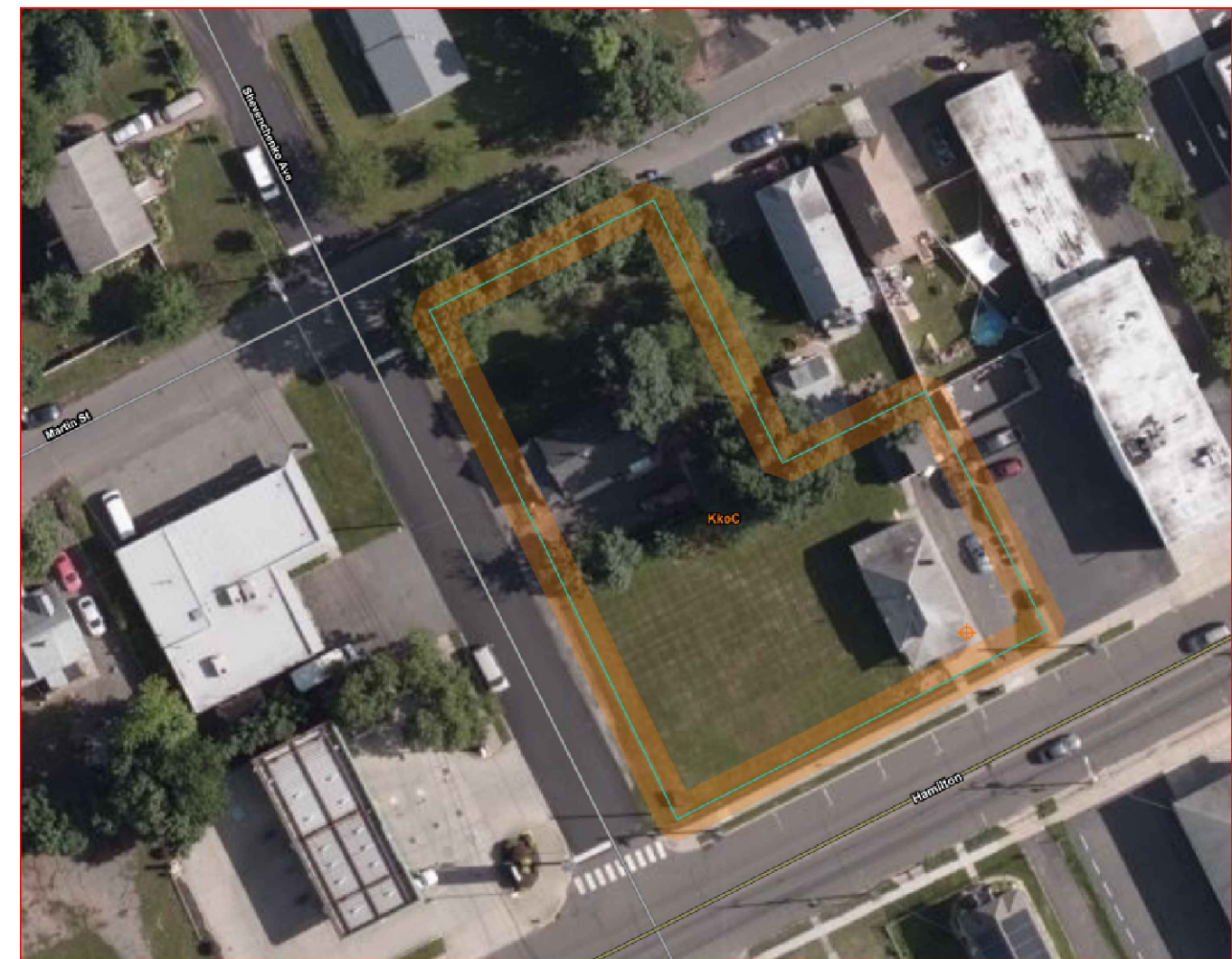




**PROTECT YOURSELF**  
A PHONE CALL  
CAN BE YOUR INSURANCE POLICY



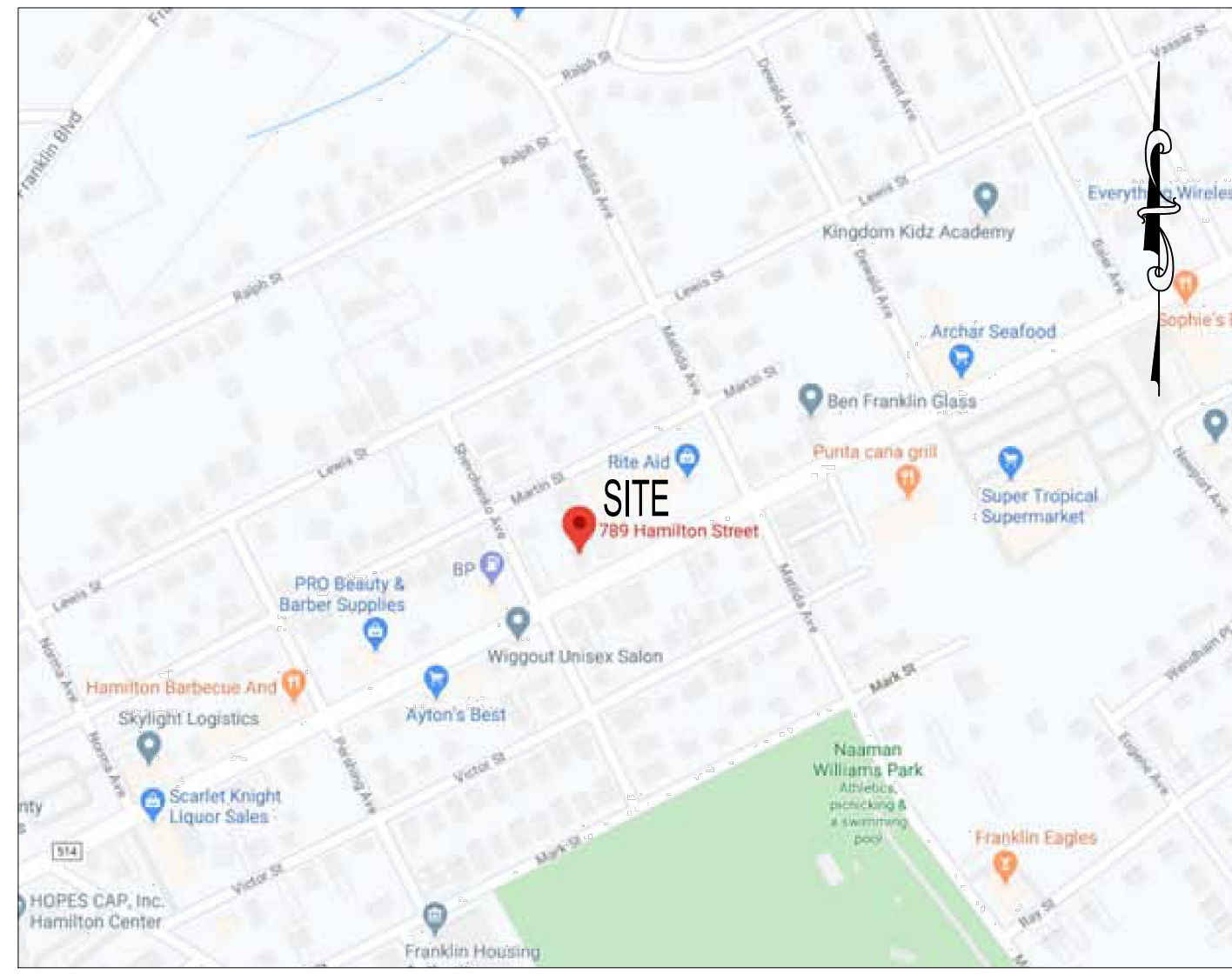
WHAT YOU DON'T KNOW CAN HURT YOU.  
THE STATE OF NEW JERSEY REQUIRES NOTIFICATION OF EXCAVATORS,  
DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S  
SURFACE ANYWHERE IN THE STATE.



**USDA WEB SOIL SURVEY MAP**  
N.T.S.

ACCORDING TO USDA WEB SOIL SURVEY,  
THE MAP UNIT SYMBOL FOR THE ENTIRE  
SITE IS "KkoC" (KLINESVILLE CHANNERY  
LOAM, 6 TO 12 PERCENT SLOPES).

SOIL MANAGEMENT NOTE:  
ACCORDING TO STATE OF NEW JERSEY  
LAND USE CLASSIFICATION SYSTEM, THE  
SITE IS UNDER URBAN REDEVELOPMENT  
AREA, LAND USE CODE 1,110. THEREFORE,  
THE PROPOSED PROJECT DOES NOT  
REQUIRE COMPACTION REMEDIATION, AS  
PER EXEMPTION #6 UNDER SOIL  
MANAGEMENT AND PREPARATION  
STANDARDS FOR SOIL AND SEDIMENT  
CONTROL IN NEW JERSEY.



**DUST CONTROL NOTES**

THE FOLLOWING METHODS SHOULD BE CONSIDERED FOR CONTROLLING DUST: MULCHES - SEE STANDARD FOR STABILIZATION WITH MULCHES ONLY (PG. 5-1) OF STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY. NOTE: ALL PAGE REFERENCES ARE FOR ABOVE DOCUMENT DATED 7/99. VEGETATIVE COVER - SEE STANDARD FOR TEMPORARY VEGETATIVE COVER (PG. 7-1). PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION (PG. 4-1). AND PERMANENT STABILIZATION WITH SOD (PG. 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	APPLY GALLONS/ACRE
ANIONIC ASPHALT EMULSION	7:1	COARSE SPRAY	1200
LATEX EMULSION	12.5:1	FINE SPRAY	235
BASIN IN WATER	4:1	FINE SPRAY	300
POLYACRYLAMIDE (PAM) - SPRAY ON	APPLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS		
POLYACRYLAMIDE (PAM)-SDRY SPRAY	MAY ALSO BE USED AS AN ADDITIVE TO SEDIMENT BASINS TO FLOCCULATE AND PRECIPITATE SUSPENDED COLLOIDS. SEE SEDIMENT BASIN STANDARD (PG.26-1)		
ACIDULATED SOY BEAN SOAP STICK	NONE	COARSE SPRAY	1200

TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING 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 GRANULATES 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.  
STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

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

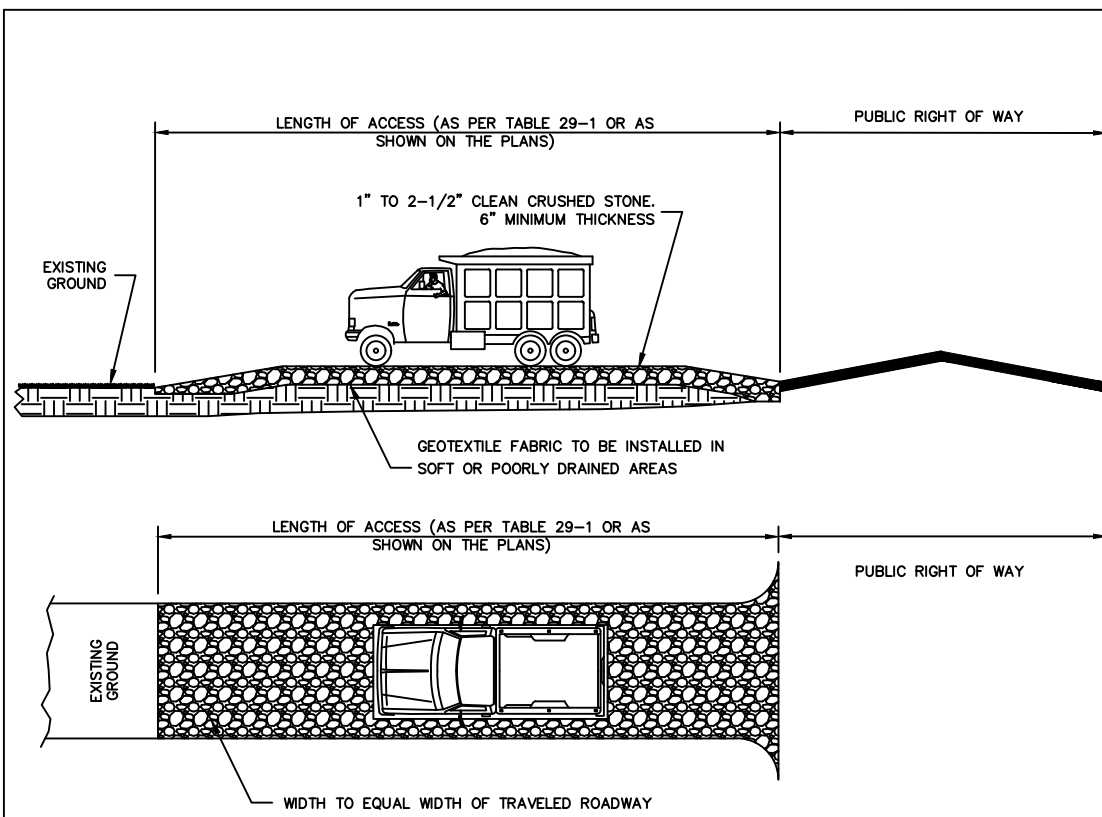
- ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
- ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN 30 DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC WILL 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 STATE STANDARDS.
- PERMANENT VEGETATION SHALL BE SEEDING OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. MULCH WILL BE USED FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
- 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 OF PRELIMINARY GRADING.
- 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 STATE STANDARDS.
- ANY STEEP SLOPES RECEIVING PIPELINE INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY, AS THE INSTALLATION PROCEEDS (I.E. SLOPES GREATER THAN 3:1).
- TRAFFIC CONTROL STANDARDS REQUIRE THE INSTALLATION OF A 50'X30'X1" PAD OF 1 1/2" OR 2" STONE, AT ALL CONSTRUCTION DRIVEWAYS, IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
- THE SOMERSET-UNION COUNTY SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING 48 HOURS IN ADVANCE OF ANY LAND DISTURBING ACTIVITY.
- AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE 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 OR PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
- 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.
- CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
- 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 STATE SOIL EROSION AND SEDIMENT CONTROL STANDARDS.
- THE SOMERSET-UNION COUNTY SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED OF ANY CHANGES IN OWNERSHIP.
- MULCHING IN THE STANDARDS IS REQUIRED FOR OBTAINING A CONDITIONAL REPORT OF COMPLIANCE. CONDITIONS ARE ONLY ISSUED WHEN THE SEASON PROHIBITS SEEDING.
- THE CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL ADJACENT ROADS CLEAN DURING THE LIFE OF THE CONSTRUCTION PROJECT.
- THE DEVELOPER SHALL BE RESPONSIBLE FOR REMEDIATING ANY EROSION OR SEDIMENT PROBLEMS THAT ARISE AS A RESULT OF ONGOING CONSTRUCTION AT THE REQUEST OF THE SOMERSET-UNION COUNTY SOIL CONSERVATION DISTRICT.
- HYDROSEEDING IS A TWO-STEP PROCESS. THE FIRST STEP INCLUDES SEED, FERTILIZER, LIME, ETC., ALONG WITH MINIMAL AMOUNTS OF MULCH TO PROMOTE CONSISTENCY. GOOD SEED TO SOIL CONTACT, AND GIVE A VISUAL INDICATION OF COVERAGE. UPON COMPLETION OF THE SEEDING OPERATION, HYDRO-MULCH SHOULD BE APPLIED AT A RATE OF 1500 LBS. PER ACRE IN THE SECOND STEP. THE USE OF HYDRO-MULCH, AS OPPOSED TO STRAW, IS LIMITED TO OPTIMUM SEEDING DATES AS LISTED IN THE STANDARDS.

<p><b>AWZ ENGINEERING, INC.</b> ENGINEERS • SCIENTISTS • CONSULTANTS Main Office: 150 River Road, Suite B3, Montville, NJ 07045 Pennsylvania Office: Scranton, PA 18504 Tel: 973-588-7080 Fax: 973-588-7079 www.awzeng.com e-mail: info@awzeng.com New Jersey Certificate of Authorization No.: 24EA28118400 Pennsylvania Certificate of Authority No.: 37713154</p>	<p>ADNAN A. KHAN, P.E., C.M.E. PROFESSIONAL ENGINEER DATE: 02/25/20 DESIGNED BY: AK DATE: 10/27/09 APPROVED BY: AK DATE: 02/25/20</p>
<p>TAX LOTS 6-15 BLOCK 225 789 HAMILTON STREET TOWNSHIP OF FRANKLIN SOMERSET COUNTY, NEW JERSEY SOIL EROSION AND SEDIMENT CONTROL PLAN</p>	<p>JOB NUMBER: 20-0203 SCALE: AS SHOWN</p>
<p><b>S-01</b> SHEET 1 OF 2</p>	

*THIS PLAN IS TO BE USED FOR SOIL EROSION CONTROL PURPOSES ONLY*



**THIS PLAN IS TO BE USED FOR SOIL EROSION CONTROL PURPOSES ONLY**



**LENGTH OF STABILIZED CONSTRUCTION ACCESS (TABLE 29-1)**

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED
0 TO 2%	50 FT	10 TO 15%	100 FT
2 TO 5%	100 FT	15 TO 20%	200 FT
>20%	Entire surface stabilized with FABC base course per governing authority requirements.		

**NOTES:**

1. ALL INDIVIDUAL LOT INGRESS/EGRESS POINTS SHALL REQUIRE STABILIZED CONSTRUCTION ENTRANCE ACCESS.
2. PLACE STABILIZED CONSTRUCTION ENTRANCE AT LOCATIONS 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 ENTRANCE 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 ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT INTO THE ROAD/PAVEMENT. THIS REQUIREMENT PERIODIC TOP DRESSING WITH ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY RESIDUE USED TO TRAP SEDIMENT.
7. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO THE PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
8. WHERE TRACKING OF SOIL INTO ROADWAYS IS A CONTINGUAL OCCURRENCE, ALL CONTRACTORS BOTH SITE AND DRAINAGE CONTRACTORS SHALL BE REQUIRED TO BROAD SWEEP THE ROADWAY AT 2 HOUR INTERVALS MINIMUM AND PRIOR TO LEAVING THE CONSTRUCTION SITE AT THE END OF THE DAY.

**STABILIZED CONSTRUCTION ACCESS**

**PROPOSED SEQUENCE OF DEVELOPMENT**

- Installation of all sediment and erosion control devices (including silt fences and stabilized construction access) prior to any major soil disturbances or in their proper sequence and maintenance until permanent protection is established. **1 Week**
- Site demarcation, clearing, clear and remove all debris as necessary. All remaining vegetation to be properly protected and to remain in its natural state. **1 Week**
- General and preliminary grading of all pavement areas to grade. **1 Week**
- Layout and location of all proposed utilities. **1 Week**
- Construction of all proposed utilities and drainage facilities. Installation of all erosion control measures affected by said facilities such as inlet sediment barriers, building construction. **35 Weeks**
- Pavement subbase course to be applied immediately following preliminary grading and construction of improvements in order to stabilize pavement areas. **1 Week**
- Installation of all pavement base material. **1 Week**
- Fine grading of all lot areas including construction of all soil erosion control as necessary. **1 Week**
- Stabilization of all off pavement areas. **1 Week**
- Complete all landscaping and vegetative cover. **1 Week**
- Removal of all temporary sediment and erosion control devices. **upon completion**

**STANDARD FOR TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION**

**DEFINITION**  
Establishment of temporary vegetative cover on soils exposed for periods of two to six months which are not being graded, not under active construction or not scheduled for permanent seeding within 60 days.

**PURPOSE**  
To temporarily stabilize the soil and reduce damage from wind and water erosion until permanent stabilization is accomplished.

**WATER QUALITY ENHANCEMENT**  
Provides temporary protection against the impacts of wind and rain, slows the over land movement of stormwater runoff, increases infiltration and retains soil and nutrients on site, protecting streams or other stormwater conveyances.

**WHERE APPLICABLE**  
On exposed soils that have the potential for causing off-site environmental damage.

**METHODS AND MATERIALS**

- SITE PREPARATION**
1. Grade as needed and feasible to permit the use of conventional equipment for seeded preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standards for Land Grading, page 19-1.
  2. Immediately prior to seeding and topsoil application, the surface should be scarified 6" to 12" where there has been soil compaction. This practice is permissible only where there is no danger to underground utilities (cables, irrigation systems, etc.).
  3. Topsoil should be handled only when it is dry enough to work without damaging the soil structure. A storm application (a depth of 5 inches (unsettled) is required on all sites. Topsoil shall be amended with organic matter, as needed, in accordance with the STANDARD FOR TOPSOILING.
  4. Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways. See Standards 11 through 42.

**SEEDBED PREPARATION**

1. Apply limestone and fertilizer according to soil test recommendations such as offered by Rutgers Co-operative Extension. Soil sample materials are available from the local Rutgers Cooperative Extension office. Fertilizer shall be applied at the rate of 500 pounds per acre of 11 lbs. per 1000 square feet of 10-20-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise. Calcium carbonate is the equivalent and standard for measuring the ability of liming materials to neutralize soil acidity and supply calcium magnesium to grasses and legumes.

2. Work lime and fertilizer into the soil as nearly as practical to a depth of 4 inches with a disc, springtooth harrow, or other suitable equipment. The final harrowing or discing operation should be the general contour. Continue tillage until a reasonable uniform seedbed is prepared.
3. Install seedbed just before seeding. If traffic has left the soil compacted, the area must be retiled in accordance with the above.
4. Soils high in sulfides or having a pH of 4 or less refer to Standard for Management of High Acid Producing Soils, pg. 11.

**TEMPORARY VEGETATIVE STABILIZATION GRASSES, SEEDING RATES, DATES AND DEPTH.**

SEED SELECTIONS	PER Acre	SEEDING RATE* (pounds)	OPTIMUM SEEDING DATE*			OPTIMUM SEEDING DEPTH* (inches)
			ZONE 5b,6a	ZONE 6b	ZONE 7a,b	
<b>COLD SEASON GRASSES</b>						
1. Perennial ryegrass	100	1.0	3/15-6/1	3/1-5/15	2/15-5/1	0.5
2. Spring oats	86	2.0	3/15-6/1	3/1-5/15	2/15-5/1	1.0
3. Winter Barley	96	2.2	8/1-9/15	8/15-10/1	8/15-10/15	1.0
4. Annual ryegrass	110	1.0	3/15-6/1	3/1-5/15	2/15-5/1	0.5
5. Winter Cereal Rye	112	2.8	8/1-11/1	8/1-11/15	8/1-12/15	1.0
<b>WARM SEASON GRASSES</b>						
6. Pearl Millet	20	0.5	6/1-8/1	5/15-8/15	5/1-9/1	1.0
7. Millet (German or Hungarian)	30	0.7	6/1-8/1	5/15-8/15	5/1-9/1	0.25

1. Seeding rate for warm season grass selections 5-7 shall be adjusted to reflect the amount of Pure Live Seed (PLS) as determined by a germination test result. No adjustment is required for cool season grasses.
2. May be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
3. Plant Hardiness Zone (see figure 7-1, pg. 7-4).
4. Twice the depth for sandy soils.

5. Conventional Seeding. Apply seed uniformly by hand, cyclone (centrifugal) seeder, drop seeder, drill or cultipacker seeder. Except for drilled, hydroseeded or cultipacked seedings, seed shall be incorporated into the soil, to a depth of 1/4 to 1/2 inch, by raking or dragging. Depth of seed placement may be 1/4 inch deeper on coarse textured soil.
6. Hydroseeding is a broadcast seeding method usually involving a truck or trailer mounted tank, with an agitation system and hydraulic pump for mixing seed, water and fertilizer and spraying the mix onto the prepared seedbed. Mulch shall not be included in the tank with seed. Short fibered mulch may be applied with a hydroseeder following seeding. (also see Section IV Mulching) Hydroseeding is not a preferred seeding method because seed and fertilizer are applied to the surface and not incorporated into the soil. Poor seed to soil contact occurs reducing seed germination and growth. Hydroseeding may be used for areas too steep for conventional equipment to traverse or too obstructed with rocks, stumps, etc.
7. After seeding, firming the soil with a corrugated roller will assure good seed-to-soil contact, restore capillary, and improve seeding emergence. This is the preferred method. When performed on the contour, sheet erosion will be minimized and water conservation on site will be maximized.

- MULCHING**
- Mulching is required on all seeding. Mulch will insure against erosion before grass is established and will promote faster and earlier establishment. The existence of vegetation sufficient to control soil erosion shall be deemed compliance with this mulching requirement.
- Straw or Hay. Unrotted small grain straw, hay free of seeds, or salt hay to be applied at the rate of 1-1/2 to 2 tons per acre (70 to 90 pounds per 1,000 square feet), except that where a crimper is used instead of a liquid mulch-binder (locking) or adhesive agent, the rate of application is 3 tons per acre. Mulch chopper-blowers must not grind the mulch. Hay mulch is not recommended for establishing fine turf or lawns due to the presence of weed seed.
- Application. Spread mulch uniformly by hand or mechanically so that approximately 85% of the soil surface will be covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 square feet sections and distribute 70 to 90 pounds within each section.
- Anchoring shall be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area, steepness of slopes, and costs.
- Peg and Twine. Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross and a square pattern. Secure twine around each peg with two or more round turns.
- Mulch Nettings. Staple paper, jute, cotton, or plastic nettings to the soil surface. Use a degradable netting in areas to be mowed.
- Liquid Mulch-Binders. May be used to anchor soil, hay or straw mulch.
- a. Applications should be heavier at edges where wind may catch the mulch, in valleys, and at crests of banks. The remainder of the area should be uniform in appearance.

- Use one of the following:
- (1) Organic and Vegetable Based Binders - Naturally occurring, powder based, hydrophilic materials when water formulates a gel and when applied to mulch under satisfactory curing conditions will form membrane networks of insoluble polymers. The vegetable gel shall be physiologically harmless and not result in a phytotoxic effect or impede growth of turf-grass. Use at rates and weather conditions as recommended by the manufacturer to anchor mulch materials. Many new products are available, some of which may need further evaluation for use in this state.
  - (2) Synthetic Binders - High polymer synthetic emulsion, miscible with water when diluted and following application to mulch, drying and curing shall no longer be soluble or dispersible in water. It shall be applied at rates recommended by the manufacturer and remain tacky until germination of grass.
- Note: All names given above are registered trade names. This does not constitute a recommendation of these products to the exclusion of other products.

- WOOD-FIBER OR PAPER-FIBER MULCH.** Shall be made from wood, plant fibers or paper containing no growth or germination inhibiting materials, used at the rate of 1,500 pounds per acre (or as recommended by the product manufacturer) and may be applied by a hydroseeder. This mulch shall not be mixed in the tank with seed. Use is limited to flatter slopes and during optimum seeding periods in spring and fall.
- Peletized mulch. Compressed and extruded paper and/or wood fiber product, which may contain co-polymers, tackifiers, fertilizers and coloring agents. The dry pellets, when applied to a seeded area and watered, form a mulch mat. Peletized mulch shall be applied in accordance with the manufacturer's recommendations. Mulch may be applied by hand or mechanical spreader at the rate of 60-75 lbs./1,000 square feet and activated with 0.2 to 0.4 inches of water. This material has been found to be beneficial for use on small lawn or renovation areas, seeded areas where weed-seed free mulch is desired or on sites where straw mulch and tackifier agent are not practical or desirable.
- Applying the full 0.2 to 0.4 inches of water after spreading peletized mulch on the seed bed is extremely important for sufficient activation and expansion of the mulch to provide soil coverage.

**STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION**

**DEFINITION**  
Establishment of permanent vegetative cover on exposed soils where perennial vegetation is needed for long term protection.

**PURPOSE**  
To permanently stabilize the soil, assuring conservation of soil and water, and to enhance the environment.

**WATER QUALITY ENHANCEMENT**  
Slows the over land movement of stormwater runoff, increases infiltration and retains soil and nutrients on site, protecting streams or other stormwater conveyances.

**WHERE APPLICABLE**  
On exposed soils that have the potential for causing off-site environmental damage.

**METHODS AND MATERIALS**

- SITE PREPARATION**
1. Grade as needed and feasible to permit the use of conventional equipment for seeded preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standards for Land Grading.
  2. Immediately prior to seeding and topsoil application, the surface should be scarified 6" to 12" where there has been soil compaction. This practice is permissible only where there is no danger to underground utilities (cables, irrigation systems, etc.).
  3. Topsoil should be handled only when it is dry enough to work without damaging the soil structure. A storm application (a depth of 5 inches (unsettled) is required on all sites. Topsoil shall be amended with organic matter, as needed, in accordance with the STANDARD FOR TOPSOILING.
  4. Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways. See Standards 11 through 42.

**SEEDBED PREPARATION**

1. Uniformly apply ground limestone and fertilizer to topsoil which has been spread and firmed, according to soil test recommendations such as offered by Rutgers Co-operative Extension office. Fertilizer shall be applied at the rate of 500 pounds per acre of 11 lbs. per 1000 square feet of 10-20-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise. Calcium carbonate is the equivalent and standard for measuring the ability of liming materials to neutralize soil acidity and supply calcium magnesium to grasses and legumes.

2. Work lime and fertilizer into the soil as nearly as practical to a depth of 4 inches with a disc, springtooth harrow, or other suitable equipment. The final harrowing or discing operation should be the general contour. Continue tillage until a reasonable uniform seedbed is prepared.
3. High acid producing soils. Soils having a pH of 4 or less or containing iron sulfide shall be covered with a minimum of 12 inches of soil having a pH of 5 or more before infilling seedbed preparation. See Standard for Management of High Acid-Producing Soils for specific requirements.

**SEEDING**

1. Select a mixture from Table 4-3 or use mixture recommended by Rutgers Cooperative Extension or Natural Resources Conservation Service which is approved by the Soil Conservation District. Seed germination shall have been tested within 12 months of the planting date. No seed shall be accepted with a germination test date more than 12 months old unless retested.
- (1) Seeding rates specified are required when a report of compliance is requested prior to actual establishment of permanent vegetation. Up to 50% reduction in rates may be used when permanent vegetation is established prior to a report of compliance inspection. These rates apply to all methods of seeding. Establishing permanent vegetation means 80% vegetative coverage with the specified seed mixture for the seeded area and mowed once.
- (2) Warm season mixtures or grasses and legumes which maximize growth at high temperatures, generally 85F and above. See Table 4-3, mixtures 1 to 7. Planting rates for warm season grasses shall be the amount of Pure Live Seed (PLS) as determined by germination testing results.
- (3) Cool Season Mixtures are grasses and legumes which maximize growth at temperatures below 85F. Warm season grasses are active at 85F. See Table 3, mixtures 8-20. Adjustment of planting rates to compensate for the amount of Pure Live Seed is not required for cool season grasses.

2. Conventional Seeding is performed by applying seed uniformly by hand, cyclone (centrifugal) seeder, drop seeder, drill or cultipacker seeder. Except for drilled, hydroseeded or cultipacked seedings, seed shall be incorporated into the soil within 24 hours of seeded preparation to a depth of 1/4 to 1/2 inch, by raking or dragging. Depth of seed placement may be 1/4 inch deeper on coarse textured soil.
3. After seeding, firming the soil with a corrugated roller will assure good seed-to-soil contact, restore capillary, and improve seeding emergence. This is preferred method. When performed on the contour, sheet erosion will be minimized and water conservation on site will be maximized.
4. Hydroseeding is a broadcast seeding method usually involving a truck or trailer mounted tank, with an agitation system and hydraulic pump for mixing seed, water and fertilizer and spraying the mix onto the prepared seedbed. Mulch shall not be included in the tank with seed. Short fibered mulch may be applied with a hydroseeder following seeding. (also see Section IV Mulching) Hydroseeding is not a preferred seeding method because seed and fertilizer are applied to the surface and not incorporated into the soil. Poor seed to soil contact occurs reducing seed germination and growth. Hydroseeding may be used for areas too steep for conventional equipment to traverse or too obstructed with rocks, stumps, etc.

**MULCHING**

- Mulching is required on all seeding. Mulch will insure against erosion before grass is established and will promote faster and earlier establishment. The existence of vegetation sufficient to control soil erosion shall be deemed compliance with this mulching requirement.
- Straw or Hay. Unrotted small grain straw, hay free of seeds, or salt hay to be applied at the rate of 1-1/2 to 2 tons per acre (70 to 90 pounds per 1,000 square feet), except that where a crimper is used instead of a liquid mulch-binder (locking) or adhesive agent, the rate of application is 3 tons per acre. Mulch chopper-blowers must not grind the mulch. Hay mulch is not recommended for establishing fine turf or lawns due to the presence of weed seed.
- Application. Spread mulch uniformly by hand or mechanically so that approximately 85% of the soil surface will be covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 square feet sections and distribute 70 to 90 pounds within each section.
- Anchoring shall be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area, steepness of slopes, and costs.
- Peg and Twine. Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross and a square pattern. Secure twine around each peg with two or more round turns.
- Mulch Nettings. Staple paper, jute, cotton, or plastic nettings to the soil surface. Use a degradable netting in areas to be mowed.
- Liquid Mulch-Binders. May be used to anchor soil, hay or straw mulch.
- a. Applications should be heavier at edges where wind may catch the mulch, in valleys, and at crests of banks. The remainder of the area should be uniform in appearance.

- Use one of the following:
- (1) Organic and Vegetable Based Binders - Naturally occurring, powder based, hydrophilic materials when water formulates a gel and when applied to mulch under satisfactory curing conditions will form membrane networks of insoluble polymers. The vegetable gel shall be physiologically harmless and not result in a phytotoxic effect or impede growth of turf-grass. Use at rates and weather conditions as recommended by the manufacturer to anchor mulch materials. Many new products are available, some of which may need further evaluation for use in this state.
  - (2) Synthetic Binders - High polymer synthetic emulsion, miscible with water when diluted and following application to mulch, drying and curing shall no longer be soluble or dispersible in water. It shall be applied at rates recommended by the manufacturer and remain tacky until germination of grass.
- Note: All names given above are registered trade names. This does not constitute a recommendation of these products to the exclusion of other products.

- WOOD-FIBER OR PAPER-FIBER MULCH.** Shall be made from wood, plant fibers or paper containing no growth or germination inhibiting materials, used at the rate of 1,500 pounds per acre (or as recommended by the product manufacturer) and may be applied by a hydroseeder. This mulch shall not be mixed in the tank with seed. Use is limited to flatter slopes and during optimum seeding periods in spring and fall.
- Peletized mulch. Compressed and extruded paper and/or wood fiber product, which may contain co-polymers, tackifiers, fertilizers and coloring agents. The dry pellets, when applied to a seeded area and watered, form a mulch mat. Peletized mulch shall be applied in accordance with the manufacturer's recommendations. Mulch may be applied by hand or mechanical spreader at the rate of 60-75 lbs./1,000 square feet and activated with 0.2 to 0.4 inches of water. This material has been found to be beneficial for use on small lawn or renovation areas, seeded areas where weed-seed free mulch is desired or on sites where straw mulch and tackifier agent are not practical or desirable.
- Applying the full 0.2 to 0.4 inches of water after spreading peletized mulch on the seed bed is extremely important for sufficient activation and expansion of the mulch to provide soil coverage.

- IRRIGATION (where feasible)**
- If soil moisture is deficient, and mulch is not used, supply new seedlings with adequate water (a minimum of 1/4 inch twice a day until vegetation is well established). This is especially true when seedlings are made in abnormally dry or hot weather or on droughty sites.
- TOPDRESSING**
- Since soil organic matter content and soil fertilizer (water insoluble) are prescribed in Section 2A, Standard Preparation, the following topdressing is mandatory. Topdressing shall be applied in accordance with the manufacturer's recommendations. An exception may be made where gross nitrogen deficiency exists to the extent that turf failure may develop. In that instance, topdress with 10-10-10 or equivalent at 300 pounds per acre or 7 pounds per 1,000 square feet every 3 to 5 weeks until the gross nitrogen deficiency in the turf is ameliorated.

**ESTABLISHING PERMANENT VEGETATIVE STABILIZATION**

The quality of permanent vegetation rests with the contractor. The timing of seeding, preparing the seedbed, applying nutrients, mulch and other management are essential. The seed application rates in Table 4-3 are required when a Report of Compliance is requested prior to actual establishment of permanent vegetation. Up to 50% reduction in application rates may be used when permanent vegetation is established prior to requesting a Report of Compliance from the district. These rates apply to all methods of seeding. Establishing permanent vegetation means 80% vegetative cover of the seeded species and mowed once. Note this designation of mowed once does not guarantee the permanency of the turf should other maintenance factors be neglected or otherwise mismanaged.

**TABLE 4-2 PERMANENT STABILIZATION MIXTURES FOR VARIOUS USES**

Application	PLANTING MIXTURES BY SOIL DRAINAGE CLASS/ (See Table 4-3)		
	Excessively Drained	Moderately Well Drained	Somewhat Poorly to Poorly Drained
Residential/commercial lots	10, 12, 15	6, 10, 12, 13, 14, 15	16
Pond and channel banks, ditches, basins, and ditches	2, 5, 6, 10	5, 6, 7, 8, 9, 15	2, 8, 16, 17
Drainage ditches, swales, detention basins	2, 9, 11	2, 7, 9, 11, 12, 17	2, 9, 16, 17
Filter Strips	12	11, 12	11, 12
Grasses waterway, spillways	2, 3, 9, 10, 12	6, 7, 9, 10, 11, 12	2, 9, 11, 12
Recreation areas, athletic fields	5, 12, 15, 18	12, 13, 14, 15, 18	16
Special Problem Sites	Well to Poorly Drained		
Steep slope and banks, roadsides, borrow areas	2, 3, 6, 8	2, 3, 5, 7, 8, 9, 10, 15	2, 9, 10, 11, 12
Sand and gravel pits, sand dunes	1, 2, 3, 4, 6, 21	1, 2, 3, 4, 5, 6, 8, 15, 20	2, 8
Dredged material, spoilbanks, borrow areas	2, 3, 6, 20	2, 3, 6, 11	2, 8
Streambanks & shorelines <sup>1</sup>	2, 8, 20, 21a	2, 8, 19b, 20, 21a, 21b	2, 8, 19a, 21a,b,c,d
Utility rights-of-way	3, 7, 18b	3, 7	8, 9, 17

1. Refer to Soil Surveys for drainage class descriptions.
2. Refer to Soil Bioengineering Standard for additional seed mixtures.
3. Spills only.
4. See Appendix E for description of turf grasses and cultivars

**TABLE 4-3 PERMANENT VEGETATIVE MIXTURES, PLANTING RATES AND PLANTING DATES<sup>1</sup>**

SEED MIXTURE <sup>2</sup>	PLANTING RATE <sup>3</sup> (lb./1000 sq. ft.)	PLANTING DATES									REMARKS	
		O = Optimal Planting period			A = Acceptable Planting period			MAINTENANCE LEVEL <sup>4</sup>				
		PLANT HARDINESS ZONES (see Figure 4-1)	Zone 5b, 6a	Zone 6b	Zone 7a, 7b	Zone 5b, 6a	Zone 6b					Zone 7a, 7b
		3/15-6/1	3/1-5/1	2/15-5/1	3/15-6/1	3/1-5/1	2/15-5/1	3/15-6/1	3/1-5/1	2/15-5/1		
		5/31	7/31	10/1	4/30	8/4	10/15	4/30	8/4	11/30		
<b>WARM SEASON SEED MIXTURES</b>												
1. A. FOR PINELANDS (NATURAL RESOURCES CONSERVATION SERVICE SEED MIXTURES SEE TABLE 4-2) USE SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY												
1. SWITCHGRASS	15	.35										C-D
2. COMPENSATE AND COMPENSATE PLUS OR FLATIRA	20	.45										
2. BENTONITE/RED SWITCHGRASS	15	.35										C-D
3. SWITCHGRASS	15	.35										C-D
4. SWITCHGRASS	10	.25										C-D
5. BLUEBERYER LITTLE BLUESTEM	5	.10										
6. BERMUDAGRASS (SEED)	10	.25										A-D
7. BERMUDAGRASS (SEED)	30	.70										
8. BERMUDAGRASS (SEED)	10	.25										A-D
9. BERMUDAGRASS (SEED)	30	.70										
10. BERMUDAGRASS (SEED)	10	.25										A-D
11. BERMUDAGRASS (SEED)	30	.70										
12. BERMUDAGRASS (SEED)	10	.25										A-D
13. BERMUDAGRASS (SEED)	30	.70										
14. BERMUDAGRASS (SEED)	10	.25										A-D
15. BERMUDAGRASS (SEED)	30	.70										
16. BERMUDAGRASS (SEED)	10	.25										A-D
17. BERMUDAGRASS (SEED)	30	.70										
18. BERMUDAGRASS (SEED)	10	.25										A-D
19. BERMUDAGRASS (SEED)	30	.70										
20. BERMUDAGRASS (SEED)	10	.25										A-D
21. BERMUDAGRASS (SEED)	30	.70										
22. BERMUDAGRASS (SEED)	10	.25										A-D
23. BERMUDAGRASS (SEED)	30	.70										
24. BERMUDAGRASS (SEED)	10	.25										