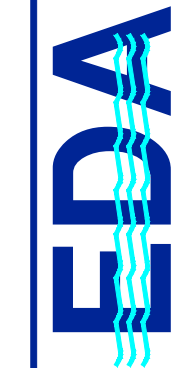


EXISTING CONDITIONS & DEMOLITION PLAN



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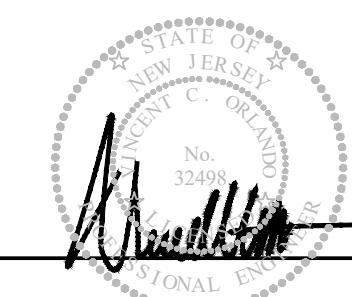


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EXISTING CONDITIONS & DEMOLITION PLAN
BLOCK 60.03 LOT 17 (PROPOSED LOT 17.01)
CITY OF SEA ISLE CITY
CAPE MAY COUNTY, NEW JERSEY

VINCENT C. ORLANDO

PROFESSIONAL ENGINEER
N.J.P.E. LIC. #32498



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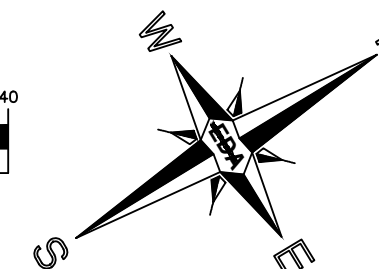
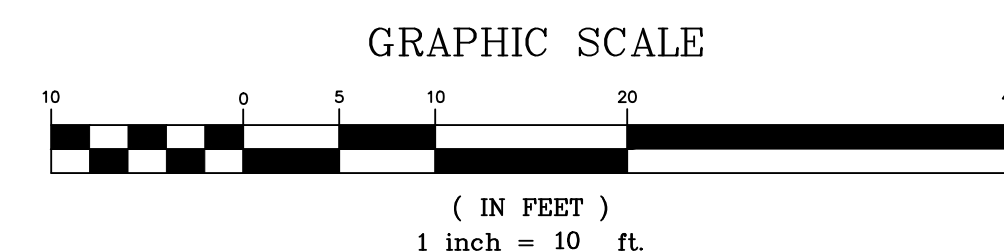
REV.	TITLE/BLOCK	DATE	BY
11/17/25	NEW		



DATE: 08/26/25 DRAWN BY: NEW

SCALE: 1"=10' CHECKED BY: VCO

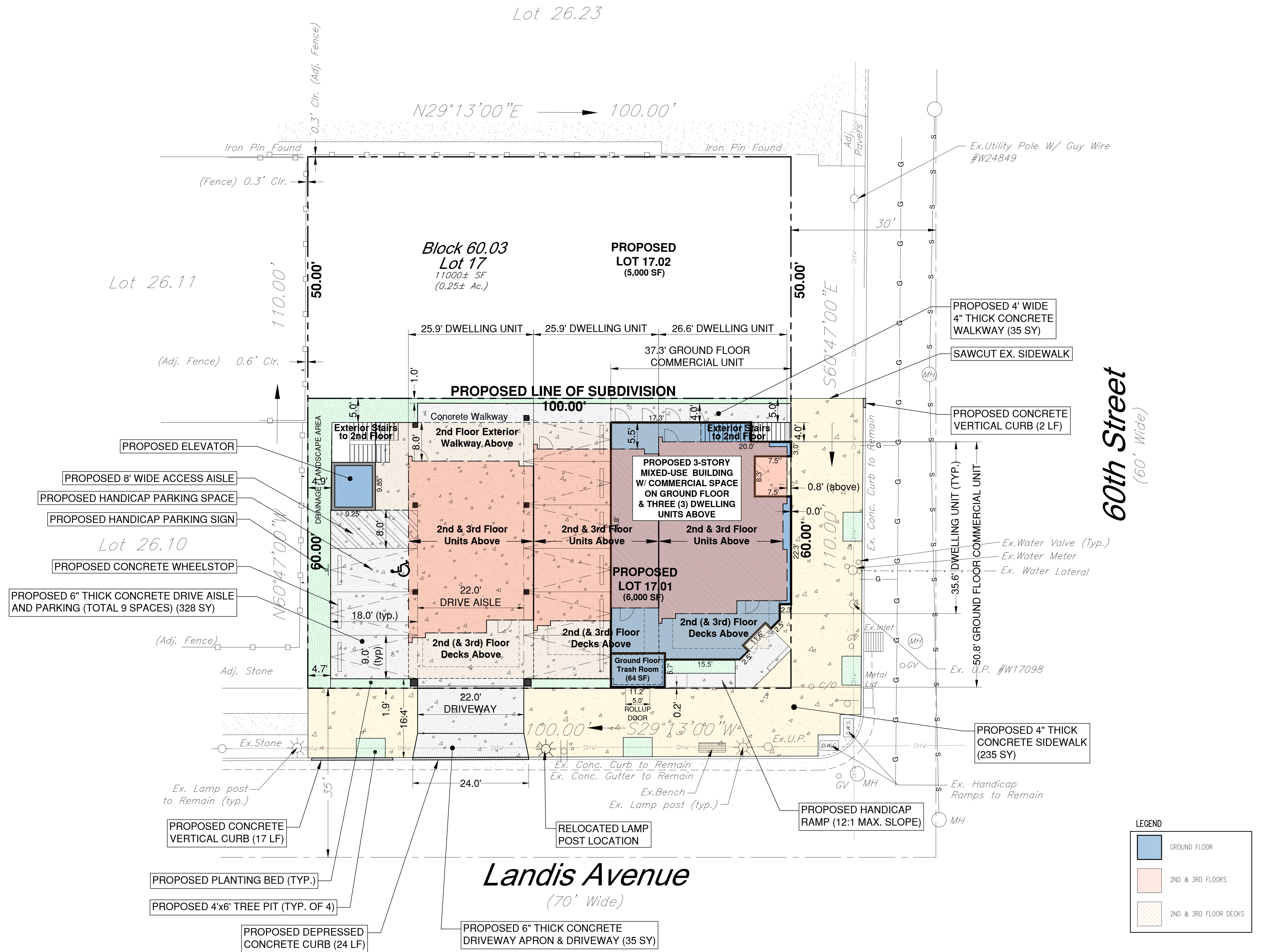
PROJECT #: 10430 SHEET: 2 OF 7



SITE PLAN



Engineers - Landscape Architects - Planners



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Engineers Environmental Planners Landscape Architects
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Cambridge, MA 02142
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SITE PLAN
BLOCK 60.03 LOT 17 (PROPOSED LOT 17.01)
CITY OF SEA ISLE CITY
CAPE MAY COUNTY, NEW JERSEY

VINCENT C. ORLANDO

PROFESSIONAL ENGINEER
N.J.P.E. LIC. #32498



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REV. PER ARCH. 11/17/25 NEW
REVISION DATE BY



DATE: 8/26/25 DRAWN BY: NEW
SCALE: 1"=10' CHECKED BY: VCO
PROJECT #: 10430 SHEET: 3 OF 7

DEPTH	DESCRIPTION
0"- 3"	10YR 4/2 Dark Grayish Brown, Sandy Loam, Subangular Blocky, Friable
3"- 18"	10YR 5/4 Yellowish Brown, Loamy Sand, Subangular Blocky, Friable
18"- 29"	10YR 5/3 Brown, Sand, Single Grain, Loose
29"- 37"	10YR 6/2 Light Brownish Gray, Sand, Single Grain, Loose
37"- 55"	10YR 6/6 Brownish Yellow, Common, Medium, Distinct w/mottles of 10YR 6/6 Brownish Yellow, Common, Medium, Distinct
	10YR 6/2 Light Brownish Gray, Sand, Single Grain, Loose

Depth of Seasonal High Water: 29"
 Depth of Groundwater: 43"
 Date Performed: 8/26/2025
 Performed By: Piotr Jaros

SOIL BORING #1

Stormwater Management Calculations

Jamie Sofrony - Block 60.03, Prop Lot 17.01
 City of Sea Isle, Cape May County, NJ

The 11,000 SF property, located on Landis Ave is currently an existing commercial building. The applicant intends to construct a new mixed-use building with retail on the first floor and a total of three (3) dwelling units on the 2nd and 3rd floors above on Proposed Lot 17.01. The existing lot will be subdivided and this construction will take place on only the 6,000 SF lot. A stormwater trench with one 18" perforated PVC pipe surrounded by stone has been proposed to mitigate runoff. The design is to encompass only proposed lot 17.01. The design is also for 30% of the 25 year storm in proposed conditions only, pre-development runoff is not utilized.

Pre-Development Runoff Calculation

Q=cIA
 c = 0.25 (Grass/Landscape) A = 394 SF
 c = 0.57 (Stone) A = 2184 SF
 c = 0.99 (Impervious) A = 3422 SF
 c(avg) = $\frac{(25 \times 394) + (57 \times 2184) + (99 \times 3422)}{6,000}$
 c(avg) = 0.79
 i = 7.26 in/hr (Tc = 5 Min.)

A = 6,000 SF = .138 Ac
 Q = $(0.78) \times (7.26) \times (.138)$
 Q = 0.781 cfs
 V = (Q) T_t
 T_t = 2.5(T_c) where (T_c) is 5 minutes
 V = $(0.781 \text{ CFS})(12.5 \text{ min.})(60 \text{ sec./min})$
 V = 595 CF

Post-Development Runoff Calculation

Q=cIA
 c = 0.99 (assume all impervious)
 i = 7.26 in/hr (Tc = 5 Min.)
 A = 6,000 SF = .138 Ac
 Q = $(0.99) \times (7.26) \times (.138)$
 Q = 0.99 CFS

V = (Q) T_t
 T_t = 2.5(T_c) where (T_c) is 5 minutes
 V = $(0.99 \text{ CFS})(12.5 \text{ min.})(60 \text{ sec./min})$
 V = 743 CF

Volume Calculation

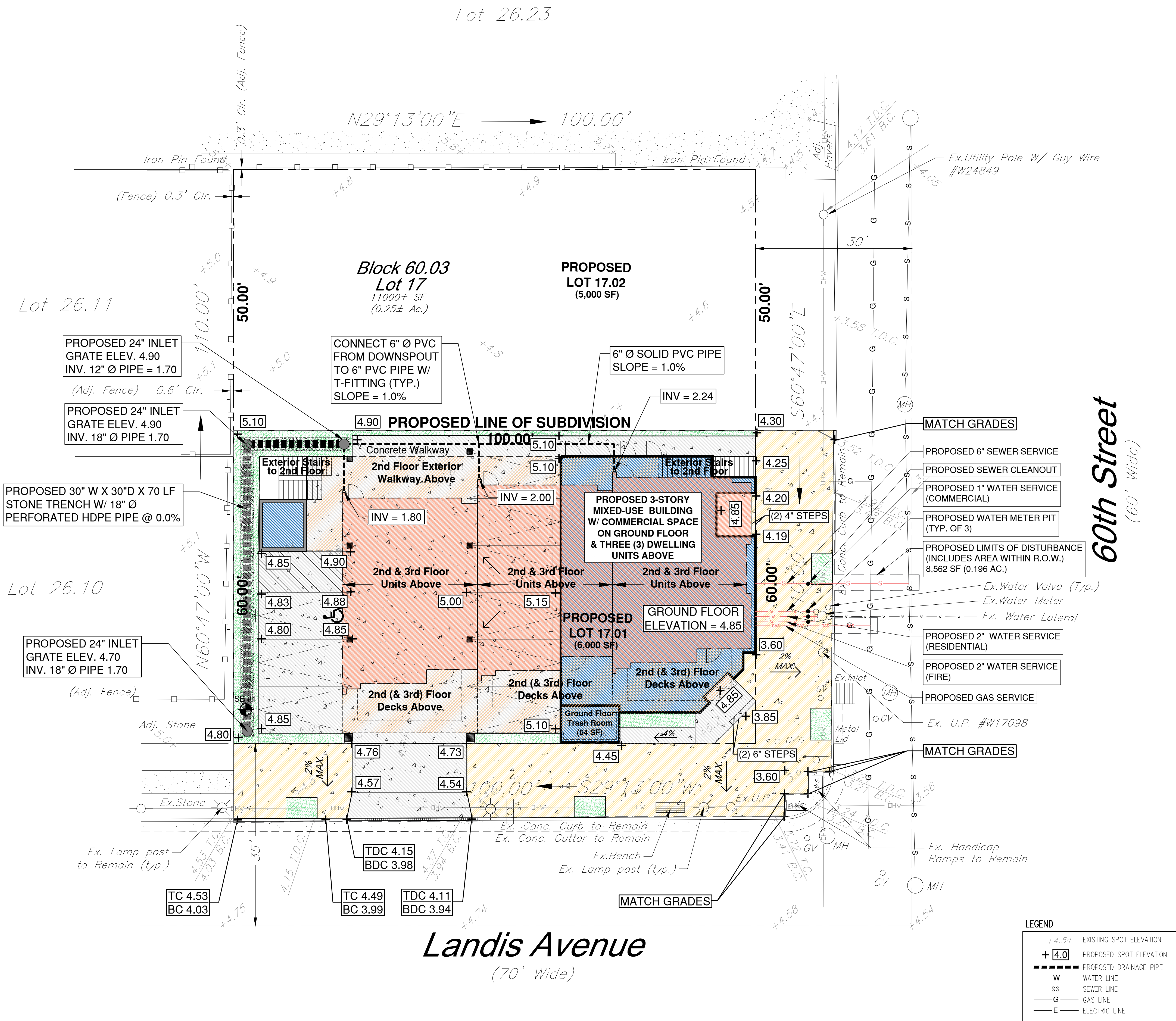
(Post-Development Runoff) = 743 CF
 30% Volume = 222 CF

Storage Calculation

One 18" Pipe @ 70 LF
 3.14 x (.75)² x 70 = 123 CF
 2.5' x 2.5' x 70' Stone Trench
 [(2.5' x 2.5' x 70') - 123] (0.35) = 110 CF
Total = 233 CF > 222 CF Required

Summary:

The 25 year design storm generates approximately 743 CF of stormwater runoff from all improvements, of which 222 CF (30%) is required to be stored. The infiltration system has been designed to store approximately 233 CF of runoff. If the quantity of runoff exceeds the capacity of the trench, runoff will flow out of the proposed inlet and towards existing drainage patterns on the existing roadway.



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GRADING, DRAINAGE & UTILITY PLAN

BLOCK 60.03 LOT 17 (PROPOSED LOT 17.01)
 CITY OF SEA ISLE CITY
 CAPE MAY COUNTY, NEW JERSEY

VINCENT C. ORLANDO

PROFESSIONAL ENGINEER
 N.J.P.E. LIC. #32498

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REV. PER ARCH	11/17/25	NEW
REVISION	DATE	BY

DATE: 8/26/25		DRAWN BY: NEW	
SCALE: 1"=10'		CHECKED BY: VCO	
PROJECT #: 10430		SHEET: 4 OF 7	

Lot 26.23

Lot 26.11

Lot 26.10

Block 60.03
Lot 17
11000± SF
(0.25± Ac.)

PROPOSED
LOT 17.02
(5,000 SF)

PROPOSED 3-STORY
MIXED-USE BUILDING
W/ COMMERCIAL SPACE
ON GROUND FLOOR
& THREE (3) DWELLING
UNITS ABOVE

PROPOSED
LOT 17.01
(6,000 SF)

Landis Avenue
(70' Wide)

60th Street
(60' Wide)

LANDSCAPE NOTES:

- DRAWINGS TO BE SCALED FOR PURPOSES OF LOCATING SOIL BERMS, PLANT MATERIAL, PLANTING BEDS, GROUND COVER AREAS AND OTHER SITE AMENITIES SHOWN. DRAWINGS ARE DIAGRAMATIC; PLANT MATERIAL SUBJECT TO FIELD ADJUSTMENT.
- ALL PLANT MATERIAL TO BE SET IN PREPARED MULCH BEDS. FINAL BED LINES TO BE APPROVED IN THE FIELD BY THE LANDSCAPE ARCHITECT OR HIS REPRESENTATIVE.
- LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL PLANT MATERIAL QUANTITIES. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. PLAN HOLDS PRECEDENT.
- LANDSCAPE CONTRACTOR SHALL PROVIDE IRRIGATION AS NEEDED.

GRASSES

AREAS TO BE SEEDED SHALL CONSIST OF THE FOLLOWING SEED MIXTURES TO INSURE A HIGH QUALITY GRASS.
REBEL II TALL FESCUE - 8 LBS PER 1000 SF
ECLIPSE KENTUCKY BLUE GRASS - 4 LBS PER 1000 SF
FERTILIZING AND LIMING SHALL BE COMPLETED PRIOR TO SEEDING LAWN AREAS TWICE PER YEAR.

PLANTING BED

PLANTING BED TO BE CONSTRUCTED AS SHOWN ON DETAIL. BED TO BE CONSTRUCTED USING THE FOLLOWING SPECIFICATIONS OR AN APPROVED EQUAL.

- A. MULCH - BEDS TO BE FILLED WITH A 4" LAYER OF LICORICE ROOT MULCH (RIGHT DRESS INC.)
B. WEED BARRIER - MULCH TO BE PLACED OVER TERRA TOP LS WEED CONTROL FABRIC OR 4 MIL. BLACK POLYETHYLENE.

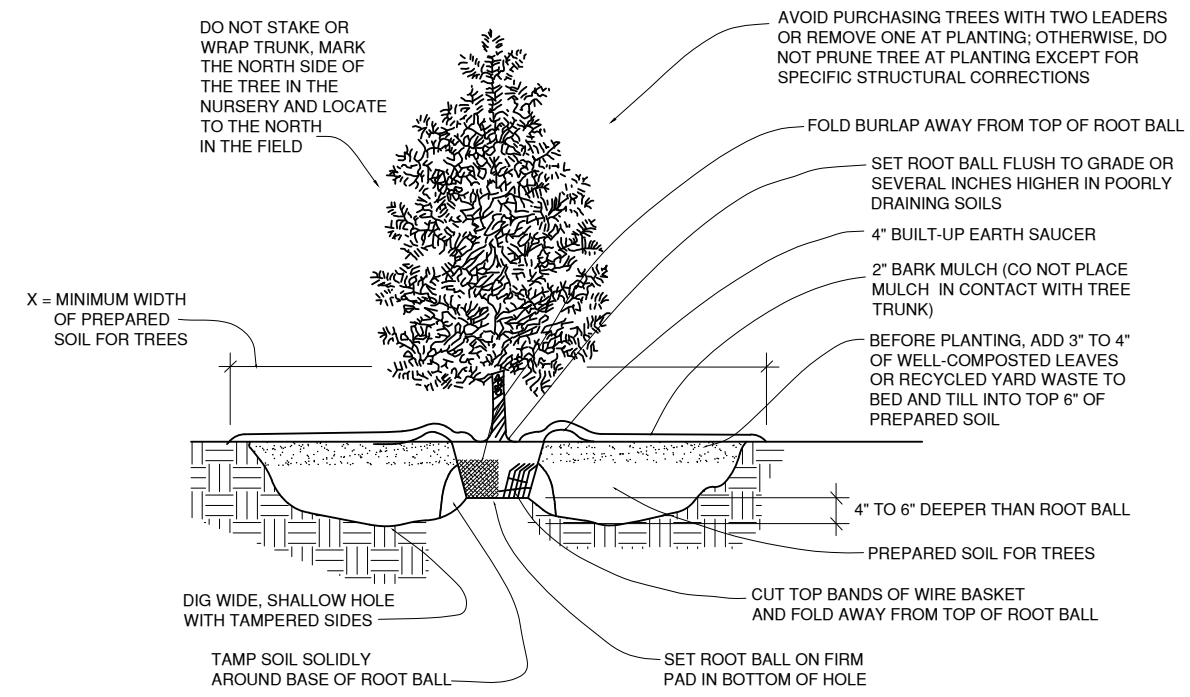
LANDSCAPE NOTES

LANDSCAPE PLAN

PLANTING SCHEDULE

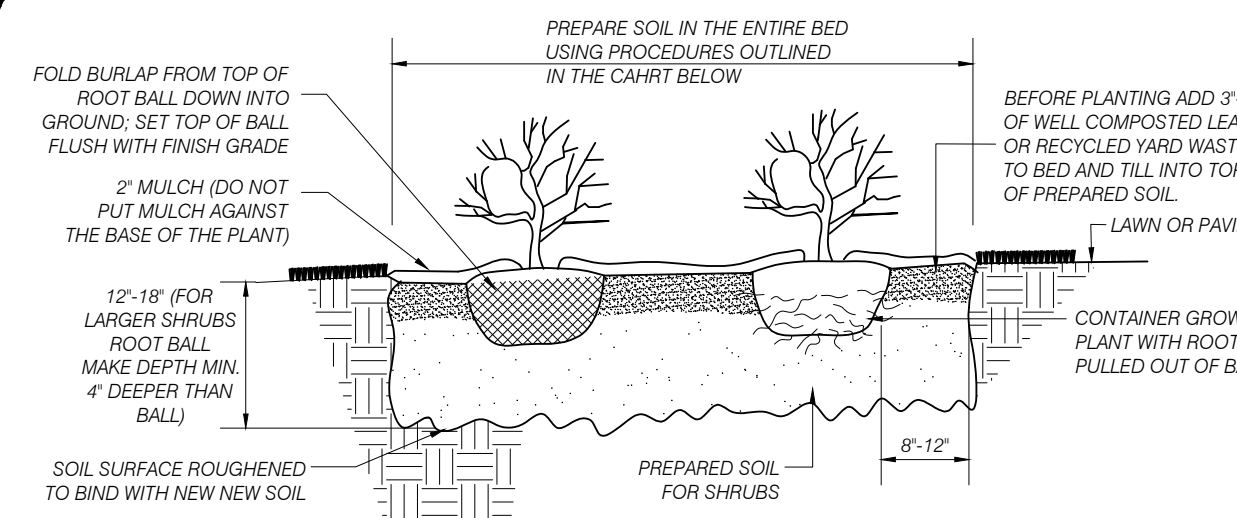
ABRV	BOTANICAL NAME	COMMON NAME	SIZE	NOTES	QTY
CA	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#3	CONT.	40
FA	FRANKLINIA ALATAMAHA	FRANKIN TREE (SINGLE TRUNK)	6'-7'	B&B	4
IC	ILEX CRENATA 'SKY PENCIL'	SKY PENCIL JAPANESE HOLLY	#5	CONT.	16
IG	ILEX GLABRA 'GEM BOX'	GEM BOX INKBERRY HOLLY	#3	CONT.	10
OP	OPHIPOGON PLANISCAPUS 'NIGRESCENS'	BLACK MONDO GRASS	#1	CONT.	78
RR	RHODODENDRON 'ROBLEZ'	AUTUMN FIRE ENCORE AZALEA	#5	CONT.	5
SS	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	#1	CONT.	20

NOTE: ALL LANDSCAPED AREAS SHALL BE IRRIGATED. IRRIGATION SYSTEM TO HAVE RAIN SENSOR.
IRRIGATION DESIGN TO BE PROVIDED BY LANDSCAPE CONTRACTOR & SUBMITTED TO CONSTRUCTION OFFICE.



TREE PLANTING DETAIL

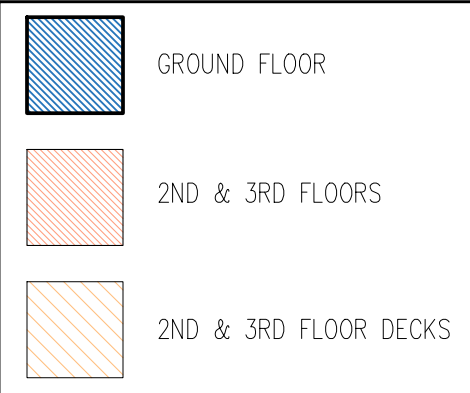
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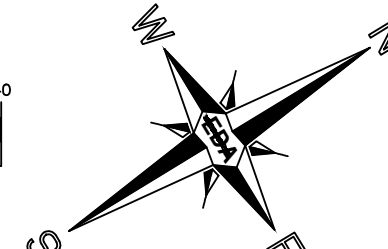
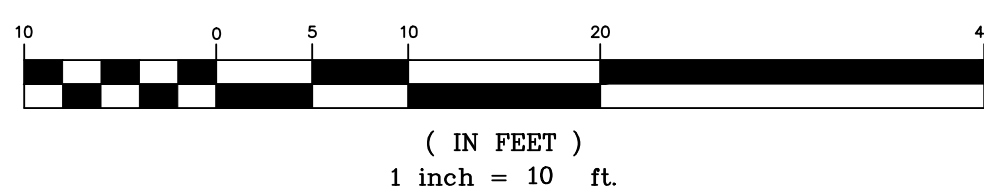
SHRUB PLANTING DETAIL

N.T.S.

LEGEND



GRAPHIC SCALE

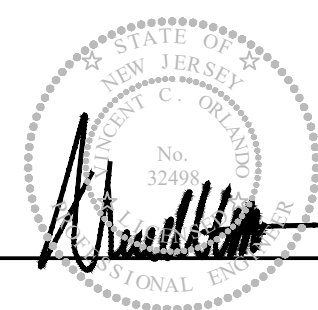


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LANDSCAPE PLAN
BLOCK 60.03 LOT 17 (PROPOSED LOT 17.01)
CITY OF SEA ISLE CITY
CAPE MAY COUNTY, NEW JERSEY

VINCENT C. ORLANDO

PROFESSIONAL ENGINEER
N.J.P.E. LIC. #32498



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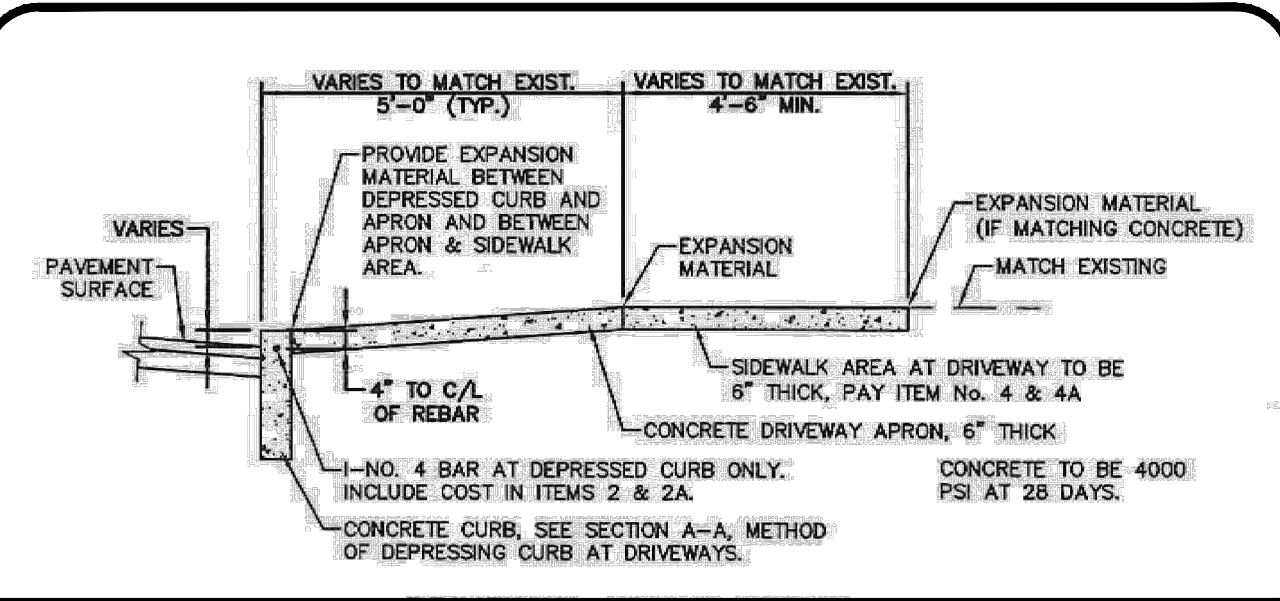
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SCALE: 1"=10' CHECKED BY: VCO

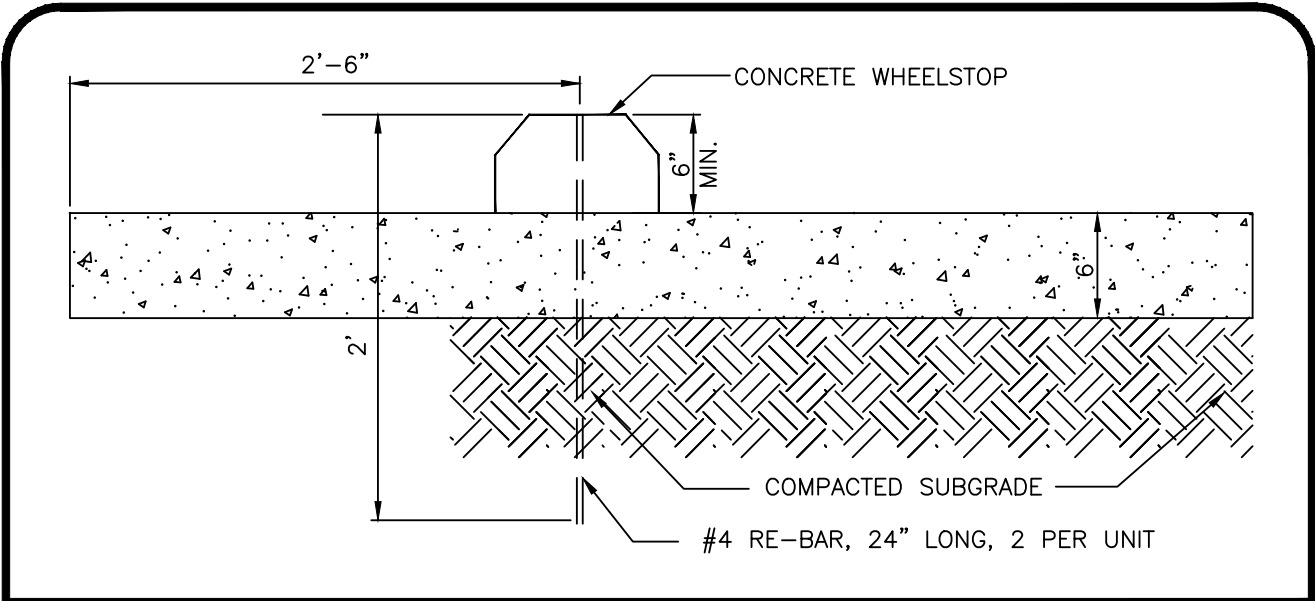
PROJECT #: 10430 SHEET: 5 OF 7



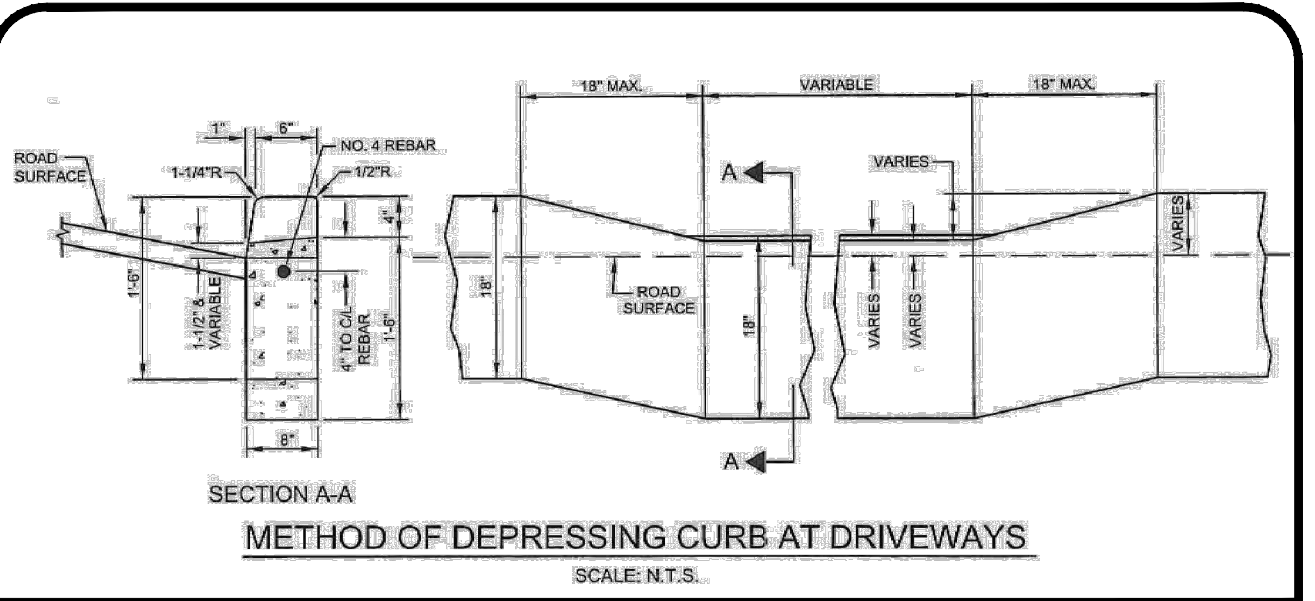
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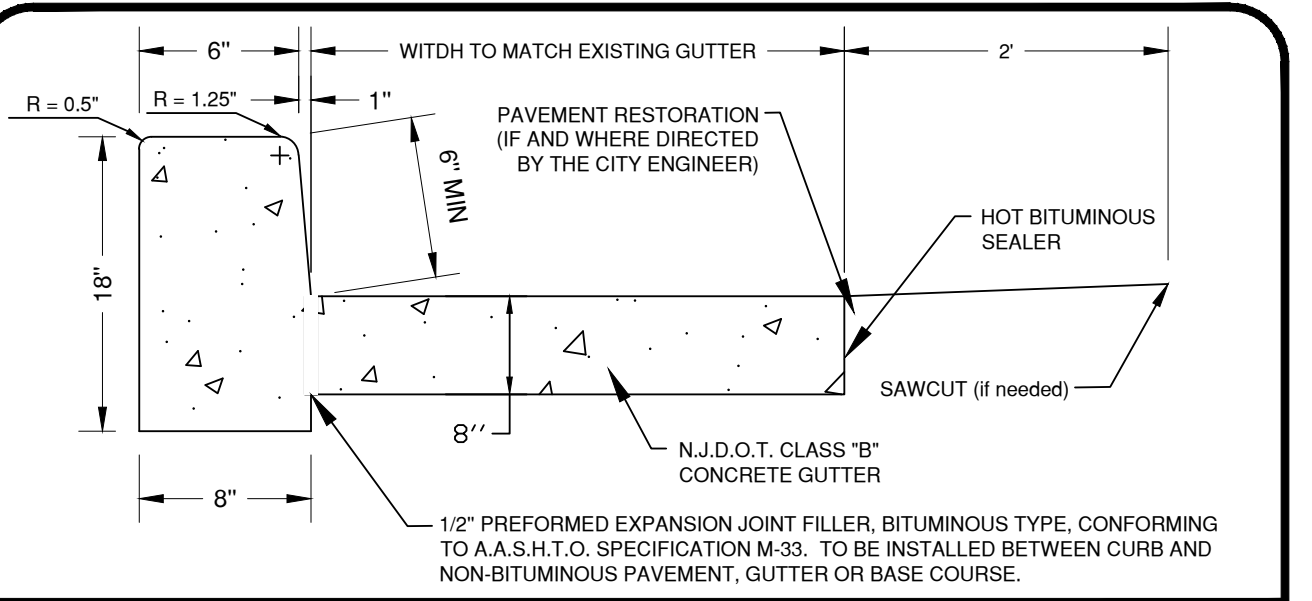
DRIVEWAY APRON DETAIL
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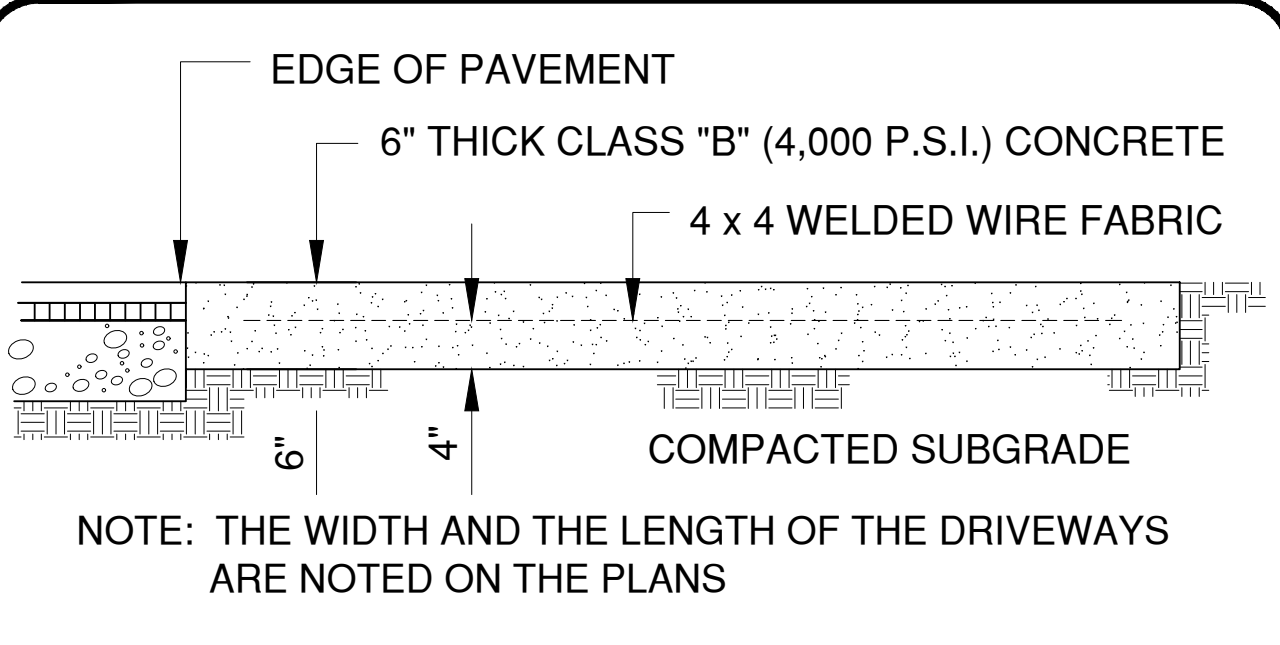
CONCRETE WHEELSTOP DETAIL
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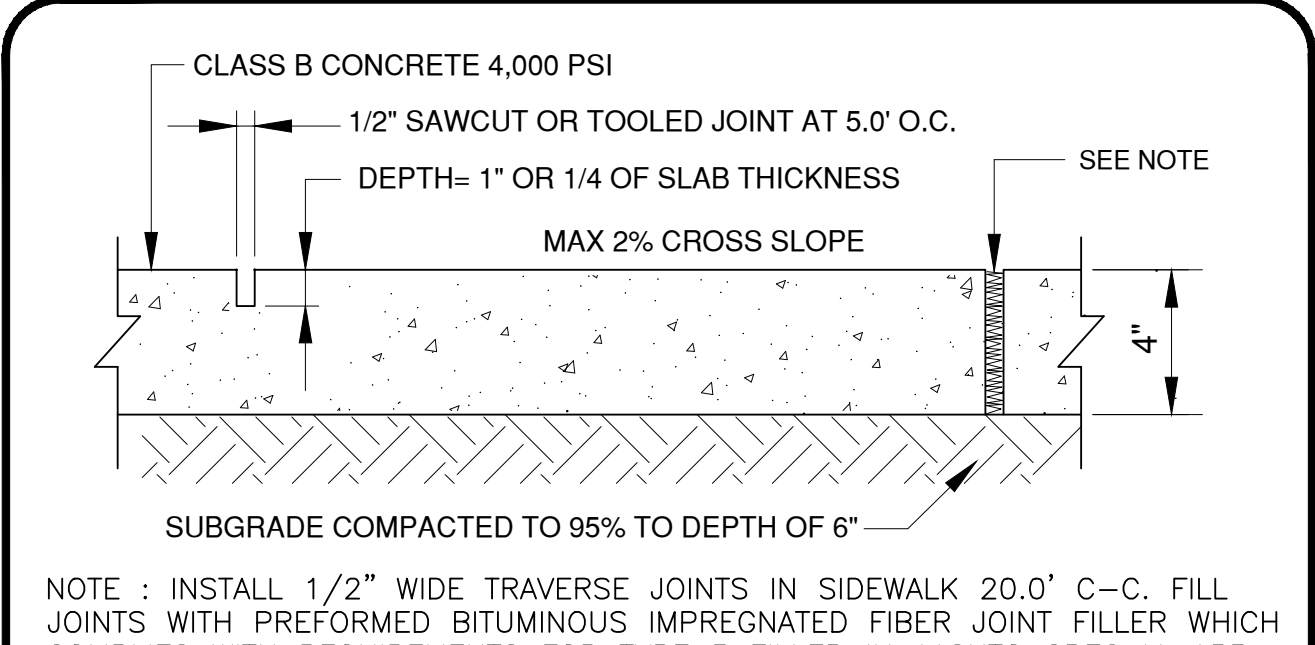
DEPRESSED CURB DETAIL
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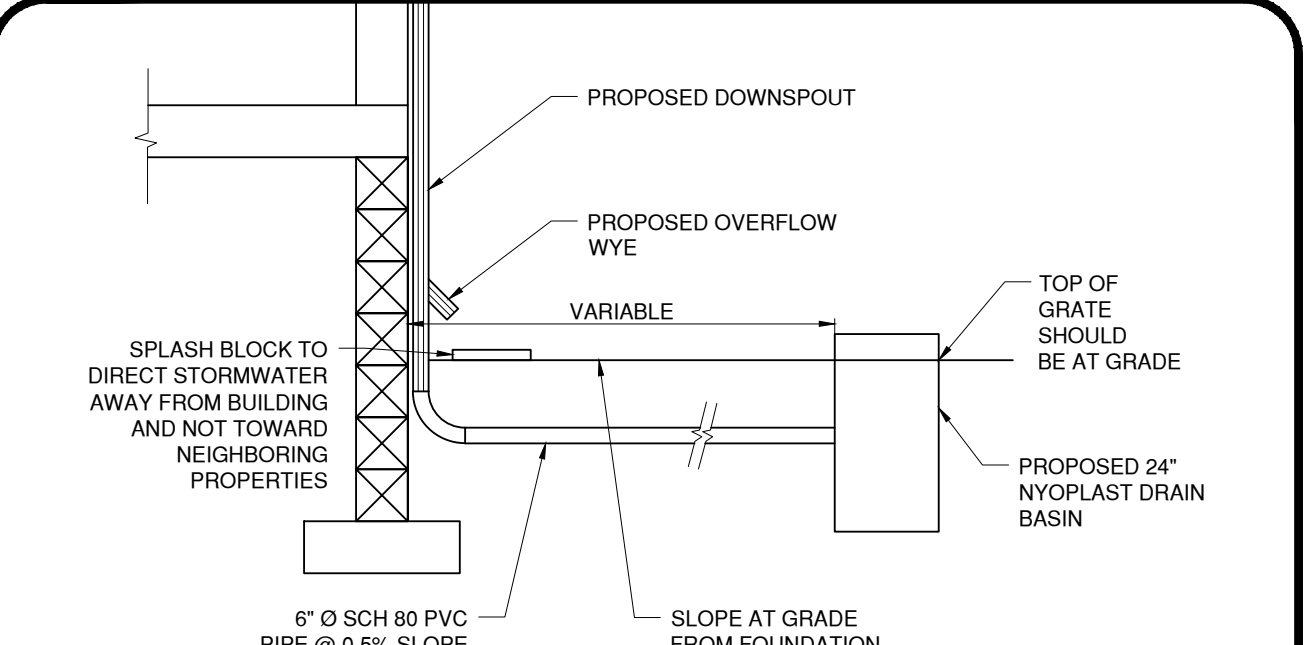
CONCRETE CURB DETAIL
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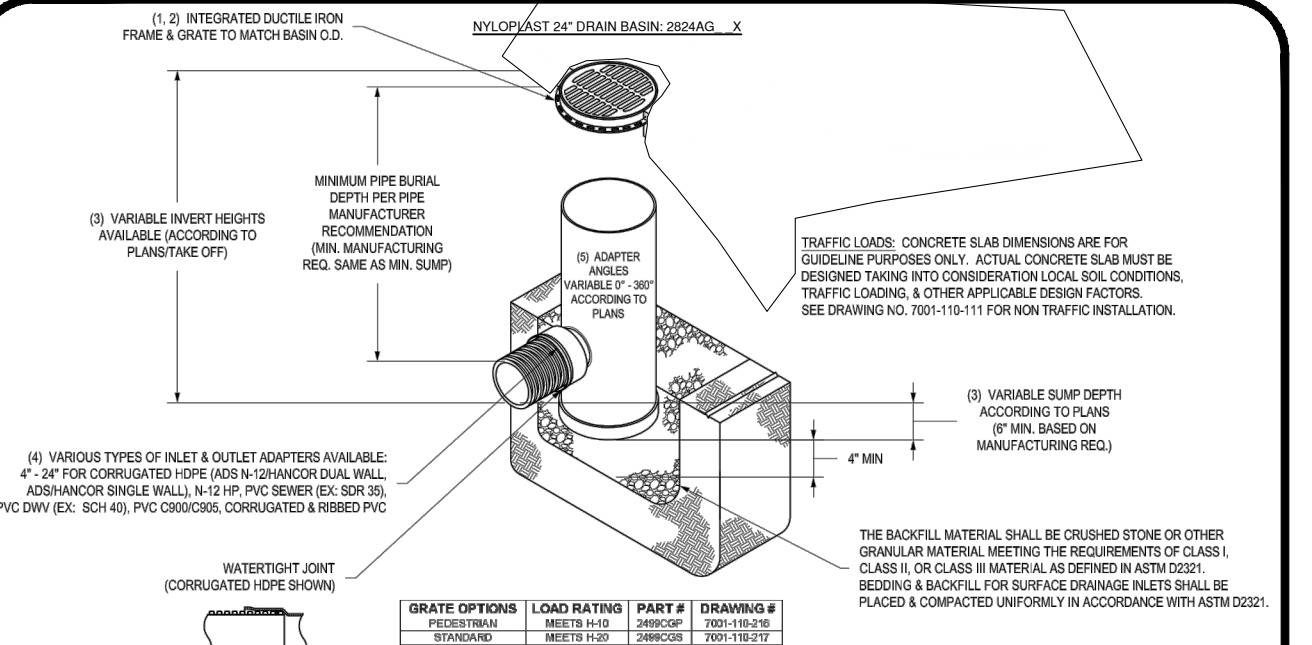
CONCRETE PAVING DETAIL
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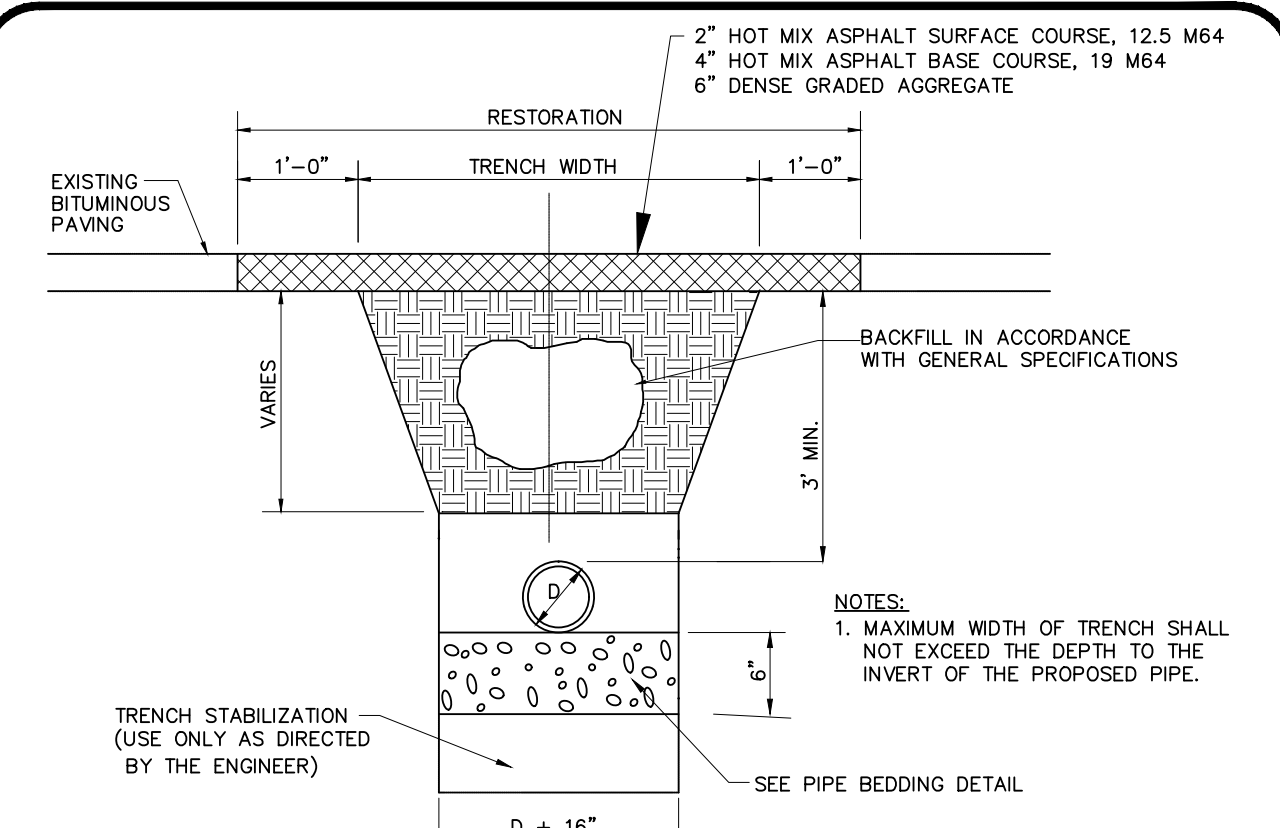
CONCRETE SIDEWALK DETAIL
N.T.S.



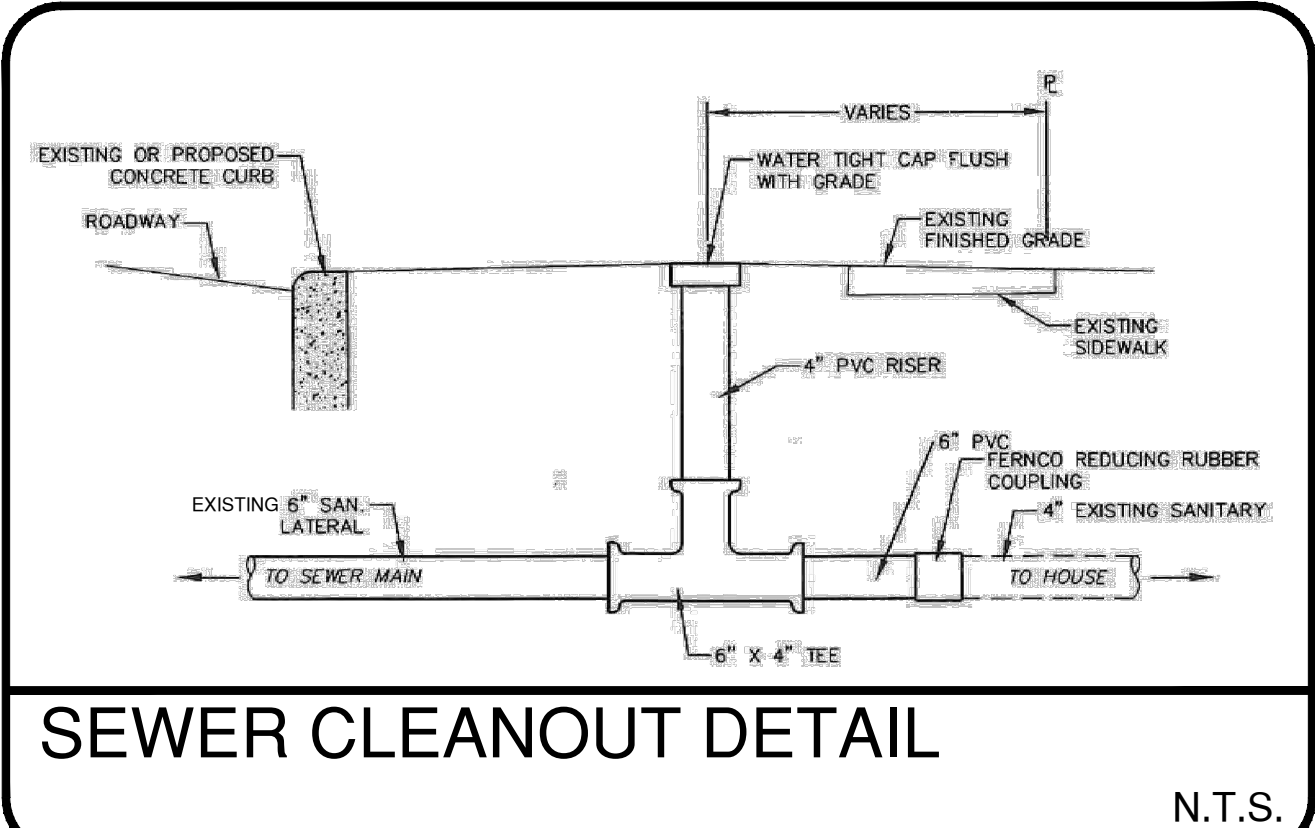
DOWNSPOUT OVERFLOW DETAIL
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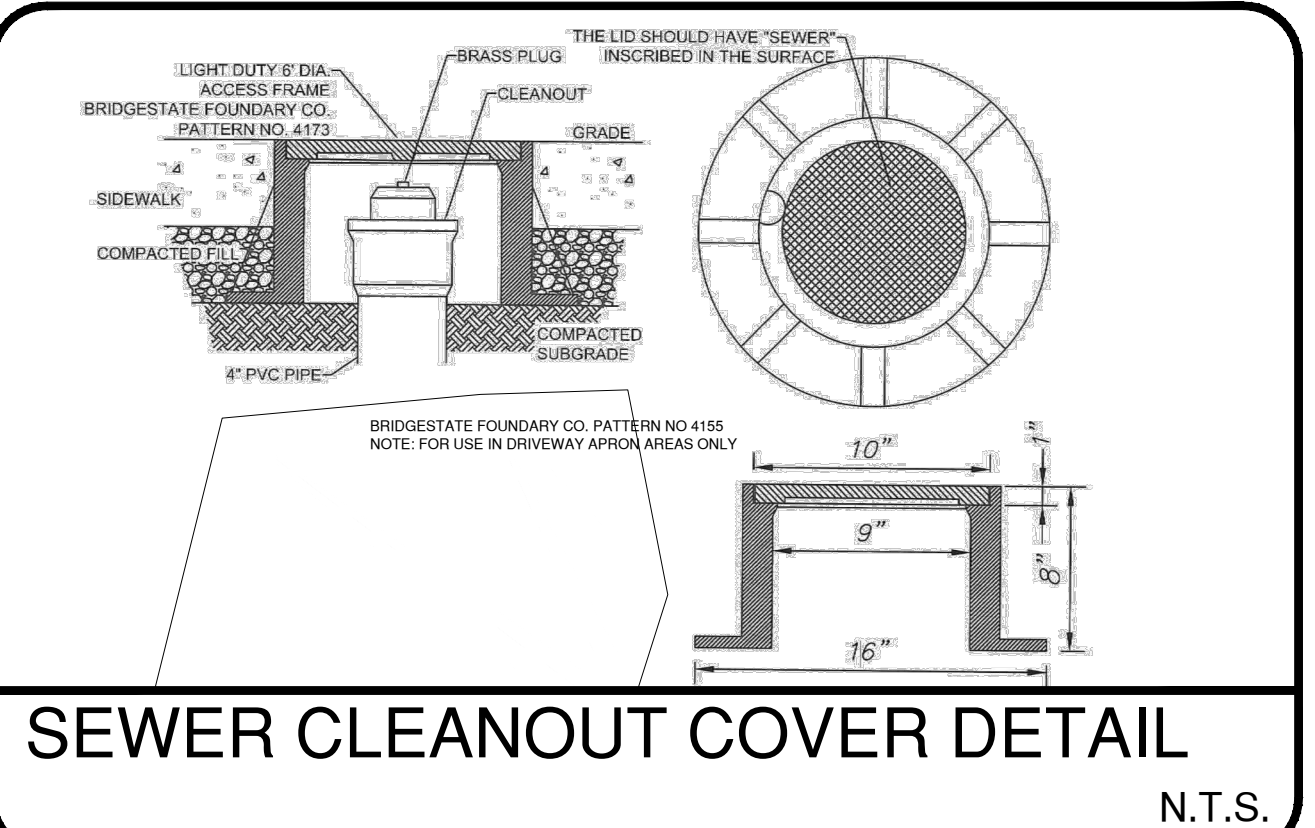
24" DRAINAGE INLET DETAIL
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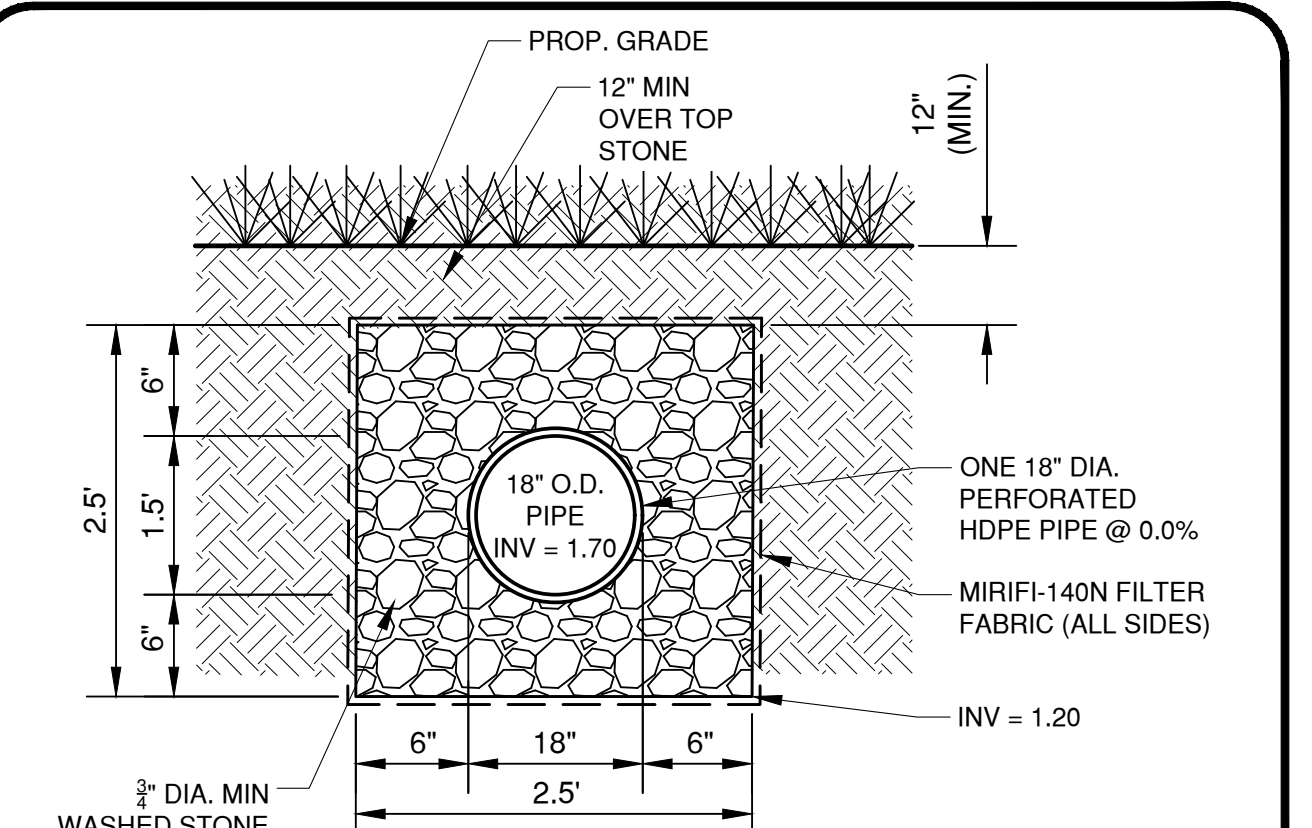
ROADWAY RESTORATION DETAIL
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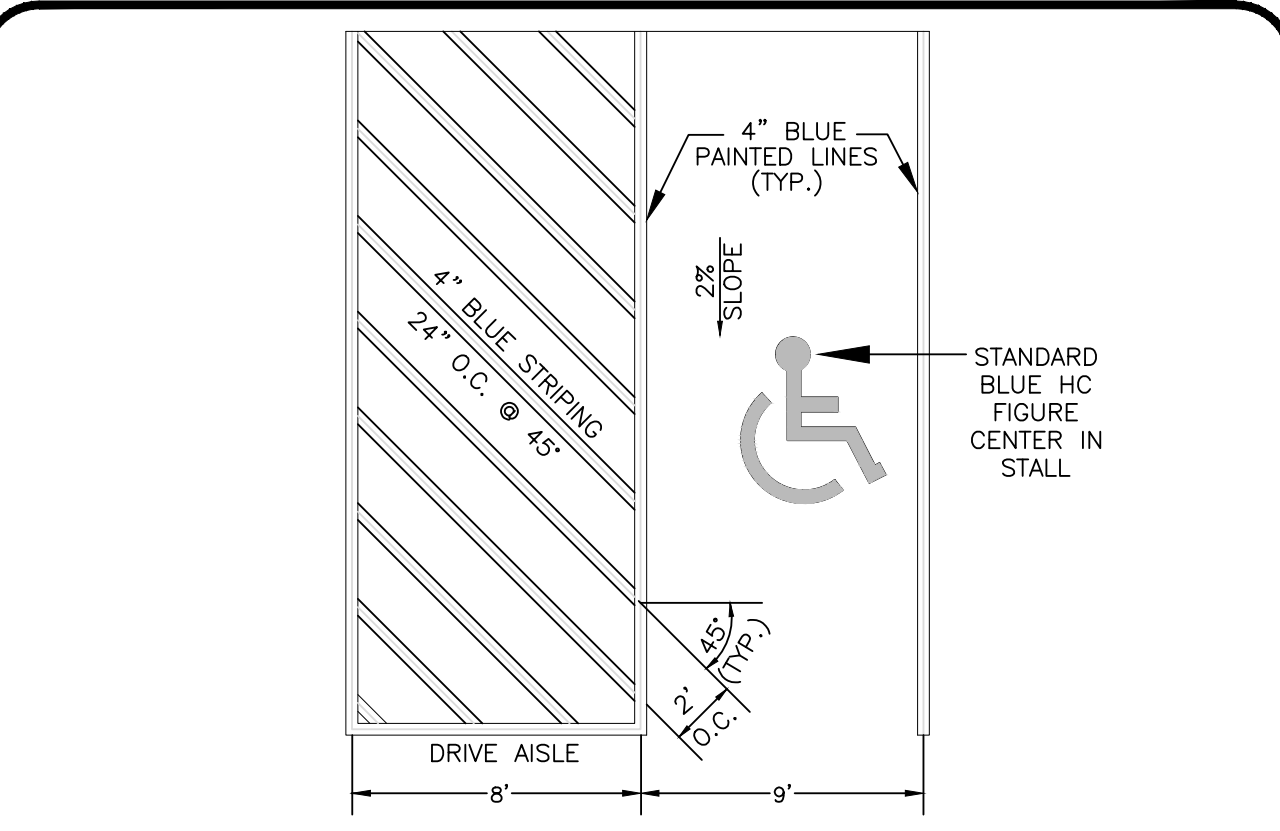
SEWER CLEANOUT DETAIL
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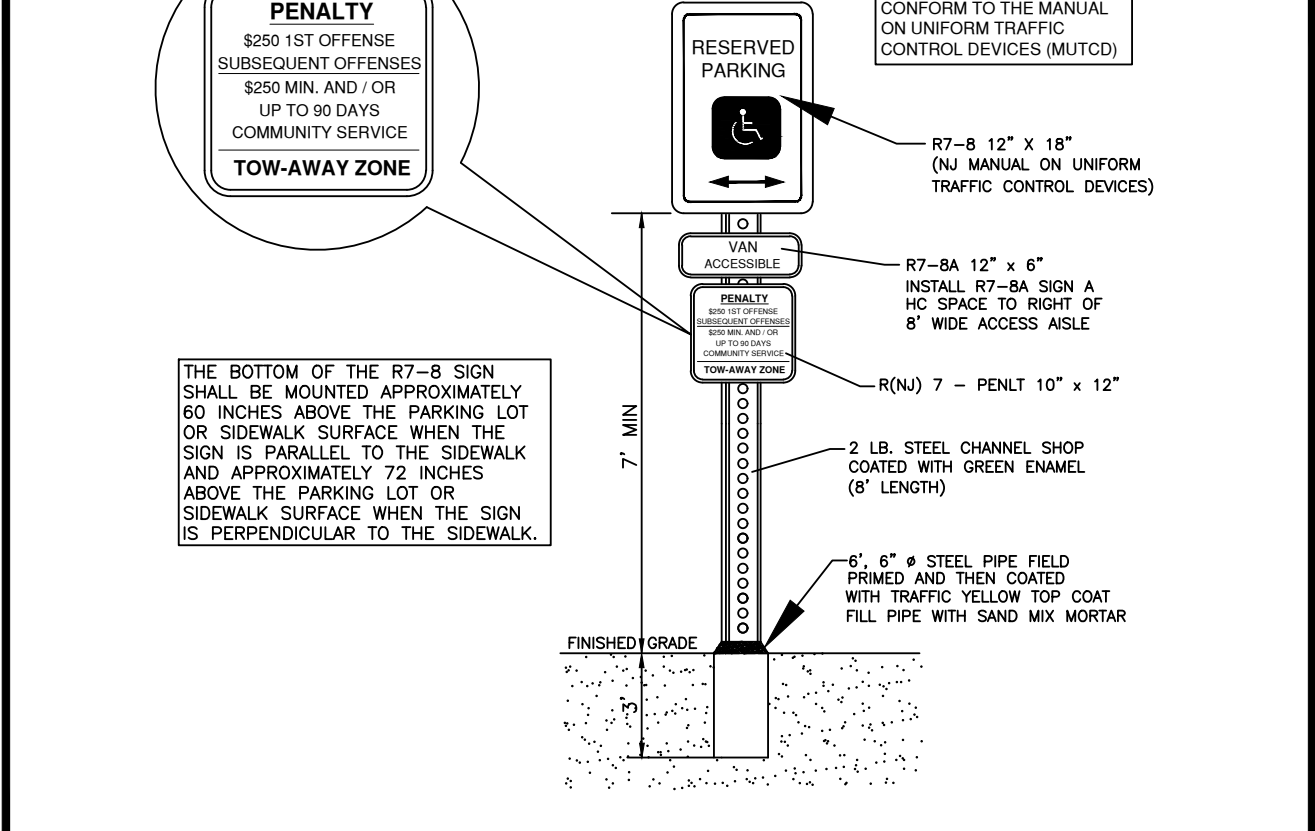
SEWER CLEANOUT COVER DETAIL
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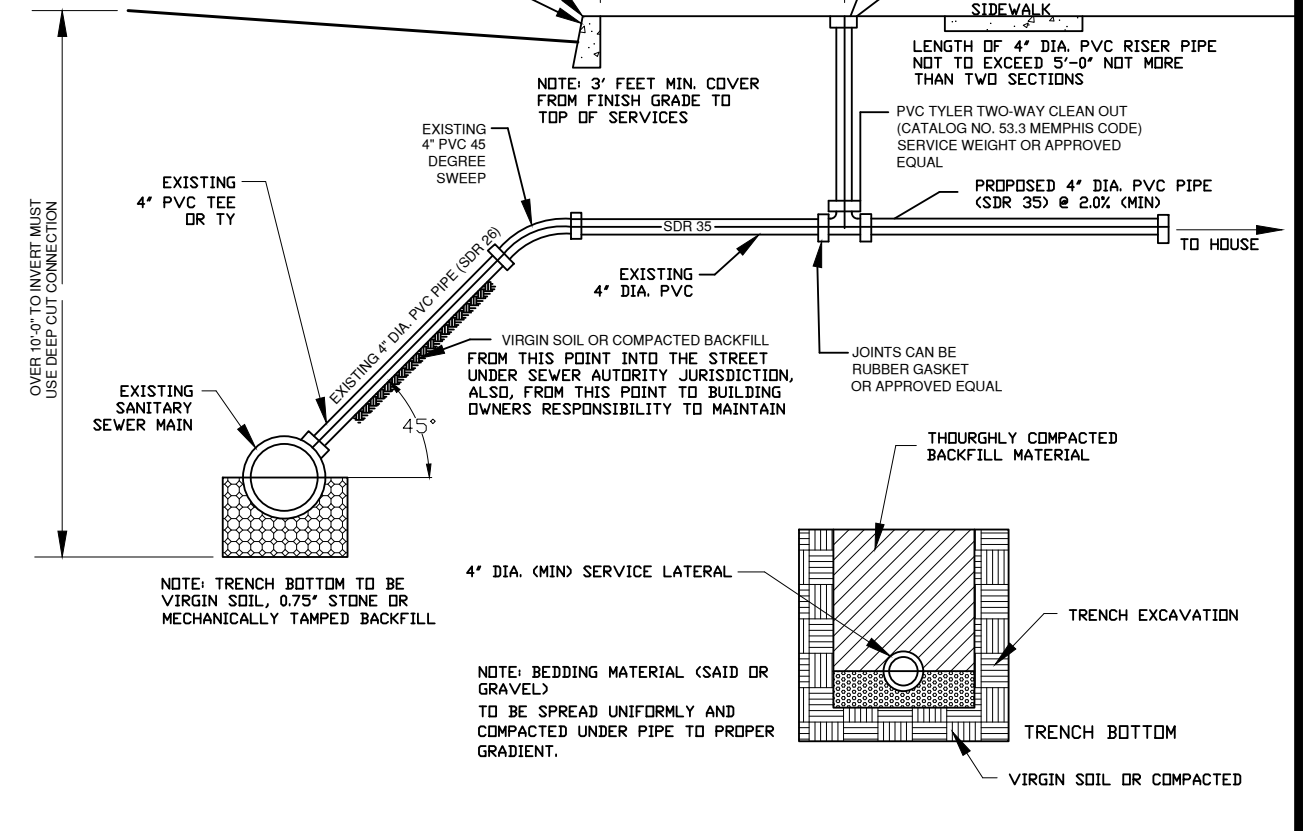
DRAINAGE TRENCH DETAIL
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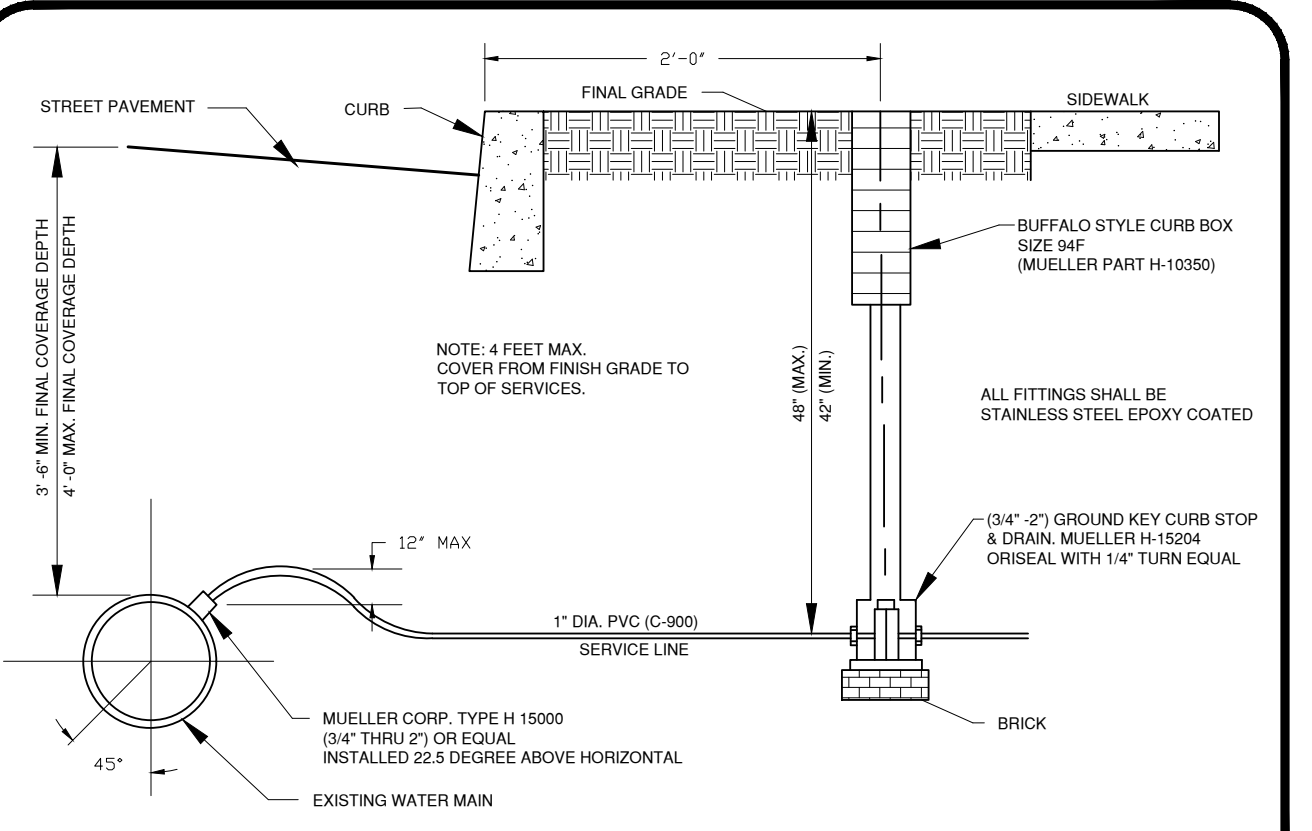
HANDICAP PARKING DETAIL
N.T.S.



HANDICAP PARKING SIGN DETAIL
N.T.S.



SANITARY SEWER DETAIL
N.T.S.



WATER SERVICE DETAIL
N.T.S.

ENGINEERING DETAILS

BLOCK 60.03 LOT 17 (PROPOSED LOT 17.01)

CITY OF SEA ISLE CITY

CAPE MAY COUNTY, NEW JERSEY

Engineering Design Associates, P.A.

Environmental Planners, Landscape Architects

CAMBRIDGE PROFESSIONAL OFFICES

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REVISION	DATE	BY	



DATE: 8/26/25	DRAWN BY: NEW
SCALE: AS NOTED	CHECKED BY: VCO
PROJECT #: 10430	SHEET: 6 OF 7

SOIL EROSION AND SEDIMENT CONTROL PLAN	
1.	The soil erosion inspector may require additional erosion measure to be installed, in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey, 7th Edition, January 2014, Revised July 2017.
2.	The property owner shall be responsible for any erosion or sedimentation that may occur below stormwater outfalls or otherwise as a result of the construction project.
3.	The soil conservation district shall be notified 48 hours prior to any land disturbance.
4.	All applicable erosion and sediment control practices shall be in place prior to any grading or installation of proposed structures or utilities.
5.	Soil Erosion and Sediment Control Practices shall be installed in accordance with the standards for Soil Erosion and Sediment Control in New Jersey.
6.	Applicable erosion and sediment control practices shall be left in place until construction is completed and the area is stabilized.
7.	The contractor shall perform all work, furnish all materials and install all measures required to reasonably control soil erosion resulting from construction operations and prevent excessive flow of sediment from the construction site.
8.	Any disturbed area that is to be left exposed for more than sixty (60) days and not subject to construction traffic shall immediately receive a temporary seeding and fertilization in accordance with the New Jersey Standards and their rates should be included in the narrative. If the season prohibits temporary seeding, the disturbed areas will be mulched with salt hay or equivalent and anchored in accordance with the New Jersey Standards. (i.e., peg and twine, mulch netting or liquid mulch binder).
9.	It shall be the responsibility of the developer to provide a temporary seeding of live, (i.e., grass), seed and seed application and rates of application at the request of the Soil Conservation District.
10.	All critical areas subject to erosion will receive a temporary seeding in combination with straw mulch at a rate of 2 tons per acre, according to the New Jersey Standards immediately following rough grading.
11.	The site shall at all times be graded and maintained such that all stormwater runoff is diverted to soil erosion and sediment control facilities.
12.	All sedimentation structures will be inspected and maintained on a regular basis and after every storm event.
13.	A crushed stone, six inch deep and well installed, will be installed according to the standards for stabilized construction access.
14.	All driveways must be stabilized with 1/2" crushed stone or sub-base prior to individual lot construction.
15.	Remove any sediment that may be spilled, dropped, or tracked off the project site. All paved rights of way adjacent to the project site must be maintained in a clean, swept condition throughout construction.
16.	All catch basin inlets will be protected according to the certified plan.
17.	All storm drainage outlets will be stabilized, as required, before the discharge points become operational.
18.	All dewatering operations must discharge directly into a sediment filter area. The sediment filter should be composed of a suitable sediment filter fabric. (see detail). The basin must be dewatered to normal pool level within 10 days of the design storm.
19.	N.J.S.A. 24-29.5b, Erii Sea, requires that no certificate of occupancy be issued before all provisions of the certified soil erosion and sediment control plan have been complied with for a permanent measures. All site work for the project must be completed prior to the district issuing a report of compliance as a prerequisite to the issuance of a certificate of occupancy by the municipality.
20.	A copy of the certified Soil Erosion and Sediment Control Plan must be maintained on the project site during construction.
21.	Any conveyance of this project prior to its completion will transfer full responsibility for compliance with the certified plan to any subsequent owners.
22.	Immediately after the completion of stripping and stockpiling of topsoil, the stockpile must be stabilized according to the standard for temporary vegetative cover. Stabilize topsoil with straw mulch for protection if the season does not permit the application and establishment of temporary seeding. All soil stockpiles are not to be located within fifty (50) feet of a floodplain, water body, or drainage facility and the basin must be protected with a sediment barrier.
23.	Any changes to the site plan will require the submission of a revised Soil Erosion and Sediment Control Plan to the Soil Conservation District. The revised plan must be in accordance with the current New Jersey Standards for Soil Erosion and Sediment Control.
24.	Methods for the management of high acid producing soils shall be in accordance with the standards. High acid producing soils are those found to contain sulfides or have a pH of 4 or less.
25.	Maximum slope sides of all exposed surfaces shall not be constructed steeper than 3:1 unless otherwise approved by the district.
26.	Dust is to be controlled by an approved method according to the New Jersey Standards and may include watering with a solution of calcium chloride and water.
27.	Adding properties shall be protected from excavation and soil filling operations on the proposed site.
28.	Use standard construction methods to minimize exposed surfaces, where applicable.
29.	All vegetative material shall be selected in accordance with American Standards for Nursery Stock of the American Association of the Nurserymen and in accordance with the New Jersey Standards for Soil Erosion and Sediment Control in New Jersey.
30.	Natural vegetation and species shall be retained where specified in the Landscaping Plan.
31.	The permanent vegetative cover such as sod or sodding on all areas shall be accomplished within 10 days after final grading operations have been completed.
32.	Excavated soil material shall not be placed adjacent to rivers, streams, or bodies of water in a manner that will cause it to be washed away by high water or runoff. Excess borrow material removed from the construction site shall be stabilized at the site of placement.
33.	This certification is limited to the controls specified in this plan. It is not authorization to engage in the proposed land use unless such use has been previously approved by the municipality, county, state agency or other controlling agency.

STORMWATER MANAGEMENT MAINTENANCE PROGRAM	
In order to ensure that all retention and detention basins function properly, a maintenance program must be followed. The following are the minimum requirements for the maintenance of all basins.	
Annual visual inspection of outfalls and structures.	
a. Inspection of outlet structures to include checking for obstructions of outfall pipes and the accumulation of silts and sediments.	
b. Inspection of outlet structures to include the removal of debris and accumulated particles such as silts and sediments.	
For maintenance of vegetative cover:	
a. Mowing of grass is required regularly to ensure the aesthetic quality of the site. All mowing shall be rated and bagged to avoid trash buildup.	
b. A dense turf, with extensive root growth, is encouraged to reduce erosion and enhance infiltration throughout the bottom and the side of the basin. Well-established turf of the floor and sides will grow through sediment deposits, thus forming a porous turf and preventing the formation of an impermeable layer.	
c. Grasses of the fescue family are recommended for seeding, primarily due to their adaptability to dry weather, drought resistance, hardiness, and ability to withstand bird damage. Fescues will also permit longer intervals between mowings.	
d. Seed type: The minimum of the following special water-tolerant seed will ensure a high quality grass for retention basins.	
INGREDIENTS	
Mixture 9	SEEDING RATE
Fescue	2.1 lb./1,000 SF
Perennial Ryegrass	0.25 lb./1,000 SF
Kentucky Bluegrass	0.25 lb./1,000 SF
White Clover	0.10 lb./1,000 SF
e. Fertilizing and liming: Bi-annually	
Fertilize with 10-20-20 at a rate of 11 lbs./1,000 SF	
Lime with pulverized dolomite limestone at a rate of 90 lbs./1,000 SF	
f. Long Term Maintenance	
a. In order to ensure proper function of all basins, every seven years each basin bottom shall be scarified to a depth of 4" to remove sediments and silts. Then 4" of topsoil must be added and reseeded.	


STORM WATER STRUCTURE MAINTENANCE	
Maintenance is the work required to keep structures in practice, or restore them to their original physical and functional condition. Maintenance as it applies to this situation shall be divided into two stages: that which is necessary to allow for continuing performance during the construction period and long term maintenance following construction. Both stages are necessary for the life of the storm water structures and systems.	
MINIMUM REQUIREMENTS FOR MAINTENANCE	
a. TRENCHES/SWALES	
Trenches/swales to be inspected for debris or channel obstructions, bank failure/accumulation of silts and sediments, undesirable vegetative growth, rodents, and overall system function.	
b. OUTLET STRUCTURE/CONDUIT	
Inspect and conduct to include checking for destruction of pipe, accumulation of silts and sediments, cracking, corrosion, deterioration from freezing, salt or chemicals, excessive wear or damage from floating debris.	
c. SPILLWAYS/INLETS/TANKS/LAKES	
Inspect to include checking for cracking, rodents, obstructions (all sediment, trash or other). Check any gates, racks, or gates for damage from corrosion, ice debris. Check for unauthorized modifications, tampering or vandalism.	
d. LONG TERM MAINTENANCE	
As noted, any basin, pipe, pit, trench or inlet not functioning as designed will be thoroughly as prescribed. Any system that continues to remain inoperable after thorough clearing must be removed and replaced.	
RESPONSIBILITY	
All on-site retention facilities shall be the sole responsibility of the developer/owner. His assigns and/or heir. The responsibility shall include but not be limited to installation, inspection, and maintenance.	
DETENTION FACILITY MAINTENANCE	
The primary mechanical equipment used in the Annual Maintenance of the Basins will be for lawn cutting. The exact type and size of this equipment is to be determined by the maintenance service under contract for the project.	

STANDARDS FOR STABILIZATION WITH MULCH	
METHODS AND MATERIALS	
1. Site Preparation	
a. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standards for Land Grading.	
b. 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.	
2. Protective Materials	
a. Unstaked small grain straw, 2 to 2.5 tons per acre, is spread uniformly at 10 to 15 pounds per 1,000 square feet and anchored with a mulch anchoring tool. Liquid mulch binders, or netting to wind them. Other suitable material may be used if approved by the Soil Conservation District. The approved rates above have been met when the mulch covers the ground completely upon visual inspection, i.e., the soil cannot be seen below the mulch.	
b. Synthetic or organic soil stabilizers may be used under suitable conditions and in quantities as recommended by the manufacturer.	
c. Wood fiber or paper fiber mulch at a rate of 1,500 pounds per acre (or according to the manufacturer's requirements) may be applied by a hydroseeder.	
d. Mulch netting, such as paper, jute, excelsior, cotton, or plastic, may be used.	
e. Woodchips applied uniformly to a minimum depth of 2 inches may be used. Woodchips will not be used on areas where flowing water could wash them into an inlet and plug it.	
f. Gravel, crushed stone, or a rate of 100 lbs. of material per 1,000 square feet is recommended.	
3. Mulch Anchoring	
a. Applications should be accomplished immediately after placement of hay or straw mulch to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area and steepness of slopes, and costs.	
A. Peg and Twine - Drive 1/8 to 1/4 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 cross or cross and a square pattern. Secure twine around each peg with two or more round turns.	
b. Mulch Netting - Staple paper, cotton, or plastic netting in areas to be mowed. Netting is usually available in 14's and wide in 30's and up to 300 feet long.	
c. Cramper Mulch Anchoring Cramper Tool - A tractor-drawn implement especially designed to punch and anchor mulch into the soil surface. This practice affords maximum erosion control, but its use is limited to those slopes upon which the tractor can operate safely. Soil penetration should be about 3 to 4 inches. On steep slopes, the operation should be on the contour.	
d. Liquid Mulch Binders - May be used to anchor hay or straw mulch.	
e. 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.	
f. Use one of the following:	
a. Organic and Vegetable Based Binders - Naturally occurring, powder-based, hydrophilic materials when mixed with 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. Vegetable based gel shall be applied at rates and weather conditions as recommended by the manufacturer.	
b. Synthetic Binders - High polymer synthetic emulsion, miscible with water when diluted and following application to mulch, drying and curing should no longer be soluble or dispersible in water. It shall be applied at rates and weather conditions recommended by the manufacturer and remain tacky until germination of grass.	

STANDARDS FOR TOPSOILING	
METHODS AND MATERIALS	
1. Materials	
a. Topsoil should be friable, loamy, free of debris, objectionable weeds and stones, and contain no toxic substance or adverse chemical or physical condition that may be harmful to plant growth. Topsoil should not be excessive conductivity nor excessive salt content. More than 0.5 millimole may designate sodic soils and adversely impact growth. Imported topsoil shall have a minimum organic matter content of 2.75 percent. Organic matter content may be raised by additives.	
b. Topsoil substituted as a soil material which may be amended with sand, silt, clay, organic matter, fertilizer or lime and has the appearance of topsoil. Topsoil substitutes may be utilized on sites with insufficient topsoil for establishing permanent vegetation. All topsoil substitute materials shall meet the requirements of topsoil noted above. Soil tests shall be performed to determine the components of sand, silt, clay, organic matter, soluble salts and pH levels.	
2. Stripping and Stockpiling	
a. Field exploration should be made to determine whether quantity and/or quality of surface soil justifies stripping.	
b. Stripping shall be confined to the immediate construction area.	
c. Where feasible, lime may be applied before stripping at a rate determined by soil tests to bring the soil pH to approximately 6.5.	
d. A 4-6 inch stripping depth common, but may vary depending on the particular soil.	
e. Stockpiles of topsoil should be situated so as not to obstruct natural drainage or cause off-site environmental damage.	
f. Stockpiles should be vegetated in accordance with standards previously described herein; see standards for Permanent (pg. 4-1) or Temporary (pg. 7-1) Vegetative Cover for Soil Stabilization. Weeds should not be allowed to grow on stockpiles.	
3. Site Preparation	
a. Grade at the onset of the optimal seeding period so as to minimize the duration and area of exposure of disturbed soil to erosion. Immediately proceed to establish vegetative cover in accordance with the specified seed mixture. Time is of the essence.	
b. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application and anchoring, and maintenance.	
c. As guidance for ideal conditions, subsoil should be tested for time requirement. Limestone, if needed, should be applied to bring soil to a pH of approximately 6.5 and incorporated into the soil as nearly as practical to a depth of 4 inches.	
d. Prior to topsoiling, the subsoil shall be in compliance with the Standard for Land Grading, pg. 19-1.	
e. Empty needed erosion control practices such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways. See Standards 11 through 42.	
4. Applying Topsoil	
a. Topsoil should be handled only when it is dry enough to work without damaging soil structure; i.e., less than field capacity (see glossary).	
b. A uniform application of 4 to 6 inches, limited in place is required. Alternated in place is considered where special regulatory and industry design standards are appropriate such as on golf courses, parks, landfills, landfill capping, etc. Soils with a pH of 4.0 or less and/or containing iron sulfide shall be covered with a minimum depth of 12 inches of soil having a pH of 5.0 or more, in accordance with the Standard for High Acid Producing Soil (pg. 1-1).	
c. Pursuant to the requirements in Section 7 of the Standard for Permanent Vegetative Stabilization, the erosion control measures shall be established where permanent vegetation becomes established at not less than 80% of the soils to be stabilized with vegetation. Failure to achieve the minimum coverage may require additional quality to be performed by the contractor to include some or all of the following: supplemental seeding, re-application of lime and fertilizers, and/or the addition of organic matter (i.e. compost) as top dressing. Such additional measures shall be based on soil tests such as those offered by Rutgers Cooperative Extension Service or other approved laboratory facilities qualified to test soil samples for agronomic properties.	

STANDARDS FOR PERMANENT VEGETATIVE COVER	
METHODS AND MATERIALS	
1. Site Preparation	
a. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standard for Land Grading.	
b. Immediately prior to seeding and topsoil application, the subsoil shall be evaluated for compaction in accordance with the Standard for Land Grading.	
c. Topsoil should be handled only when it is dry enough to work without damaging the soil structure. A uniform application to 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.	
d. Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways.	
2. Seedbed Preparation	
a. Uniformly apply ground limestone and fertilizer to topsoil which has been spread and firm, according to soil test recommendations as offered by Rutgers Co-operative Extension Soil sample materials are available from the local Rutgers Cooperative Extension office (http://nj.rutgers.edu/extension). Fertilizer shall be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-10-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise and incorporated into the surface 4 inches. If fertilizer is incorporated, apply one-half the rate described above during seedbed preparation and repeat another one-half rate application of the same fertilizer within 3 to 5 weeks after seeding.	
b. Work lime and fertilizer into the topsoil as nearly as practical to a depth of 4 inches with a disc, spring-tillage implement, or other suitable equipment. The final harrowing or disking operation should be on the general contour. Continue tillage until a reasonable uniform seedbed is prepared.	
c. High acid producing soils, Soil having a pH of 4 or less and/or containing iron sulfide shall be covered with a minimum of 12 inches of soil having a pH of 5 or more before initiating seed preparation. See Standard for Management of High Acid Producing Soils for specific requirements.	

SOIL CONSERVATION NOTES



Engineers - Landscape Architects - Planners

2. Seeding	
A. Select a mixture from Table 4-3 or use a 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 tested.	
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 within 12 months of the planting date. The use of these rates apply to all methods of seeding. Establishing permanent vegetation means 80% vegetative cover with the specified seed mixture for the seeded area and no erosion.	
2. Warm-season mixtures are grasses and legumes which maximize growth at high temperatures, generally 80° F 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 80° F. Many grasses become active at 65° F. See Table 4-3, mixtures 8-20. Adjustment of planting rates to compensate for the difference in PLS is not required for cool-season grasses.	
B. Conventional Seeding - Seeding shall be performed by applying seed by hand, cylinder (conventional) seeder, drop seeder, drill or cultipacker seeder. Except for drilled, hydroseeded or cultipacker seedings, seed shall be incorporated into the soil within 24 hours of seedbed 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.	
C. After seeding, firming the soil with a corrugated roller will assure good seed-to-soil contact, restore capillarity, and improve seedling emergence. This is the preferred method. When performed on the contour, sheet erosion will be minimized and water conservation on site will be maximized.	
D. 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 broad-bladed mulch may be applied with a hydroseeder following seeding (also see Section 4-Mulching below). Hydroseeding is not a preferred seeding method because seed and fertilizer are incorporated into the soil and not incorporated into the soil. When poor seed to soil contact occurs, there is reduced seed germination and growth.	
4. Mulching	
Mulching is required on all seedings. Mulch will protect 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.	
A. Straw or Hay - Unstaked small grain straw, hay free of seeds, 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 mulch machine (backing or adhesive agent), the rate of application is 3 tons per acre. Mulch chopper-blown must not grind the mulch. Hay mulch is not recommended for establishing live turf or lawns due to the presence of weed seeds.	
Application - Spread mulch uniformly by hand or mechanically so that at least 85% of the soil surface is covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 square foot 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.	
1. Peg and Twine - Drive 1/8 to 1/4 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 cross-or cross and a square pattern. Secure twine around each peg with two or more round turns.	
2. Mulch Netting - Staple paper, cotton, or plastic netting in areas to be mowed. Netting is usually available in 14's and wide in 30's and up to 300 feet long.	
3. Cramper (mulch anchoring tool) - A tractor-drawn implement, somewhat like a disc harrow, especially designed to push or cut some of the broadest long fiber mulch 3 to 4 inches into the soil so as to anchor it and leave part standing upright. This technique is limited to areas traversable by a tractor, which must operate on the contour of slopes. Straw mulch rate must be 3 tons per acre. No tacking or adhesive agent is required.	
4. Liquid Mulch Binders - May be used to anchor hay or straw mulch.	
e. 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.	
f. Use one of the following:	
a. Organic and Vegetable Based Binders - Naturally occurring, powder-based, hydrophilic materials when mixed with 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. Vegetable based gel shall be applied 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.	
b. Synthetic Binders - High polymer synthetic emulsion, miscible with water when diluted and following application to mulch, drying and curing should no longer be soluble or dispersible in water. Binder 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, applied 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 optimal seeding periods in spring and fall.	
c. Pelletized 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. Pelletized 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 mulch 0.2 to 0.4 inches of water after spreading pelletized mulch on the seed bed is extremely important for sufficient aeration and expansion of the mulch to provide soil coverage.	
d. Irrigation (where feasible)	
If soil moisture is deficient apply new seeding with adequate water (a minimum of 1/4 inch applied up to twice a day until vegetation is well established). This is especially true where seedlings are made in abnormally dry or hot weather on or droughty sites.	
Topdressing	
Once soil organic matter content and slow release nitrogen fertilizer (water insoluble) are prescribed in Section 24 - Seedbed Preparation in this Standard, no follow-up topdressing is mandatory. An exception may be made where gross nitrogen deficiency exists in the soil so the extent that turfgrass 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.	
7. 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 erosion prevention is essential. The seed application rates in Table 4-3 are required when a Report of Compliance is required prior to actual establishment of permanent vegetation. Up to 50% reduction in application rates may be used when permanent vegetation is established within 12 months of the planting date. 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 diminished.	

The quality of permanent vegetation works with the contractor. The timing of seeding, preparing the seedbed, applying nutrients, mulch and other ground amendments are essential. The seed application rates in Table 4-3 are required when a Report of Compaction is requested prior to actual establishment of permanent vegetation. Up to 50% reduction in application rates may be used if the contractor can demonstrate that the seedbed is suitable for the methods of seeding. Establishing permanent vegetation with the methods of seeding and application of nutrients and 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.

STANDARDS FOR TEMPORARY VEGETATIVE COVER

METHODS AND MATERIALS

1. Site Preparation

- Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standards for Land Grading, pg. 19-1.
- 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.
- Immediately prior to seeding, the surface should be scarified 1/2" to 1" where there has been soil compaction. This practice is permissible only where there is no danger to underground utilities (cables, irrigation systems, etc.).

2. Seedbed Preparation

- Apply ground 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 offices. Fertilizer shall be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-20-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise. Apply limestone at the rate of 2 tons per acre unless soil testing indicates otherwise. Calcium carbonate is the equivalent and standard for measuring the ability of liming materials to neutralize soil acidity and supply calcium and magnesium to grasses and legumes.
- Work lime and fertilizer into the soil as nearly as practical to a depth of 4 inches with a disc, spring-tillage implement, or other suitable equipment. The final harrowing or disking operation should be on the general contour. Continue tillage until a reasonable uniform seedbed is prepared.
- Inspect seedbed just before seeding. If traffic has left the soil compacted, the area must be retiled in accordance with the above.
- Soils high in sulfides or having a pH of 4 or less for Standard for Management of High Acid Producing Soils, pg. 1-1.