SOIL EROSION & SEDIMENTATION CONTROL PLAN NOTES:

1. SOIL EROSION & SEDIMENT CONTROL PLAN NOTES;
   a.) AREA TO BE DISTURBED: ±110,000 sq.ft. (2.53 ac.)
   b.) PROVIDE A GROUNDCOVER (TEMPORARY OR PERMANENT) ON ALL SLOPES 3:1 OR STEEPER WITHIN 7 CALENDAR DAYS AND ALL SLOPES FLATTER THAN 3:1 WITHIN 14 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING. PROVIDE A PERMANENT GROUND COVER FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT
   c.) IF LAND DISTURBING ACTIVITIES OCCUR OUTSIDE THE PERMANENT VEGETATION SEEDING DATES (APR. 1– SEP.30) THEN TEMPORARY VEGETATION SEEDING SPECIFICATIONS SHALL BE FOLLOWED FOR PLANTING UNTIL THE NEXT APPROPRIATE PERMANENT SEEDING PERIOD, AT WHICH TIME PERMANENT VEGETATION SHALL BE ESTABLISHED ACCORDING TO PERMANENT VEGETATION SEEDING SPECIFICATIONS (SEE PERM. & TEMP. SEEDING SPECIFICATIONS ONSHEET ES2).
   d.) IF EXCESSIVE WIND EROSION OR STORMWATER RUNOFF EROSION DEVELOPS DURING TIME OF CONSTRUCTION ANY LOCATION ON THE PROJECT SITE, ADDITIONAL SILT FENCING OR OTHER MEASURES SHALL BE INSTALLED AS DIRECTED BY ENGINEER SO AS TO PREVENT DAMAGE TO ADJACENT PROPERTY. SEE SILT FENCE DETAIL ON THIS SHEET.
   e.) SOIL EROSION AND SEDIMENTATION CONTROLS ARE TO BE INSPECTED WEEKLY AND AFTER ANY SIGNIFICANT RAINFALL PRODUCING EVENT AND SHALL BE MAINTAINED AND REPAIRED AS NECESSARY UNTIL PERMANENT CONTROLS ARE ESTABLISHED.
   f.) CONSTRUCTION SCHEDULE:
      1) OBTAIN PLAN APPROVAL AND OTHER APPLICABLE PERMITS. NO WORK SHALL BE PERFORMED IN WETLAND AREAS PRIOR TO ISSUANCE OF ALL APPLICABLE USACE PERMITS.
      2) FLAG AND/OR ROUGH STAKE WORK LIMITS.
      3) HOLD PRECONSTRUCTION CONFERENCE (OWNER, CONTRACTOR, ENGINEER, AND APPROPRIATE GOVERNMENT OFFICIALS) AT LEAST ONE WEEK PRIOR TO START OF CONSTRUCTION ACTIVITIES.
      4) INSTALL SILT FENCING AT LOCATIONS SHOWN ON PLAN
      5) COMPLETE CLEARING AND GRUBBING PROCEDURES.
      6) GRADE SITE ACCORDING TO PLAN
      7) INSTALL INFILTRATION BASINS AND STORM SEWER. DROP INLETS TO BE PROTECTED WITH INLET PROTECTION UNTIL CONTRIBUTING DRAINAGE AREAS ARE STABILIZED. PIPE ENDS AT INFILTRATION BASINS SHALL BE PROTECTED WITH OUTLET PROTECTION.
      8) INSTALL PERMEABLE PAVEMENT GRAVEL BASE. BASE LAYER TO BE PROTECTED FROM SEDIMENT AT ALL TIMES. CONSTRUCTION TRAFFIC TO BE RESTRICTED TO SPECIFIC AREAS WITHIN THE BASE (STAGIING / WORK AREA TO BE DEFINED BY CONTRACTOR AND CLEARLY DEMARCATED UTILIZING BARRIERS/CONES/TAPE). ONCE HEAVY BUILDING CONSTRUCTION IS COMPLETE, STAGING / WORK AREA BASE MATERIAL WILL BE INSPECTED BY ENGINEER AND IF FOUND TO BE DEGRADED, IT SHALL BE REMEDIATED AT THE EXPENSE OF THE CONTRACTOR. INSTALLATION OF PERMEABLE CONCRETE PAVEMENT SHALL NOT TAKE PLACE UNTIL ALL EARTHWORK ACTIVITIES AND ALL HEAVY BUILDING CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. INSTALLED PERMEABLE CONCRETE SHALL BE PROTECTED FROM SEDIMENT AND FROM HEAVY CONSTRUCTION EQUIPMENT AT ALL TIMES.
      9) ALL EROSION & SEDIMENTATION CONTROL PRACTICES WILL BE INSPECTED WEEKLYAND AFTER HEAVY RAINFALL EVENTS. NEEDED REPAIRS WILL BE MADE IMMEDIATELY.
      10) ONCE SITE IS FULLY STABILIZED; REMOVE INLET AND OUTLET PROTECTION, CLEAN STORM SEWER OF ANY SEDIMENT, FINE–GRADE AND SEED OR LANDCSCAPE INFILTRATION BASINS.

TOWN OF KILL DEVIL HILLS ORDINANCE CHAPTER 153 – SECTION 153.071
Whenever land–disturbing activity is undertaken on a tract comprising more than 1/2 acre, the person conducting the land–disturbing activity shall install such sedimentation and erosion control devices and practices as are sufficient to retain the sediment generated by the land–disturbing activity within the boundaries of the tract during construction upon and development of said tract and shall plant or otherwise provide a permanent ground cover sufficient to restrain erosion after completion of construction or development within 15 working days or 90 calendar days, whichever is shorter.

MINIMUM EROSION CONTROL MEASURES:

1. SUBMIT SEDIMENTATION AND EROSION CONTROL PLAN ALONG WITH FINANCIAL RESPONSIBILITY FORM TO OBTAIN TOWN APPROVAL. APPROVAL REQUIRED BEFORE PROCEEDING WITH LAND DISTURBING ACTIVITIES. REFERENCE TOWN CODE 153.071 FOR ADDITIONAL INFORMATION.
2. INSTALL SILT FENCING IN LOCATIONS NOTED ON PLAN SHEET 7. USE METAL FENCE POSTS AND TRENCH IN TOE OF FENCING IN 6" MINIMUM FOR MAXIMUM EFFICIENCY AND DURABILITY.
3. INSTALL CONSTRUCTION ENTRANCE IN LOCATION AS SHOWN ON SHEET 7.
4. PLACE CLEAN TYPE 1 SAND FILL TO ELEVATIONS NOTED ON STORMWATER AND GRADING PLAN SHEET 2.
5. FILL SLOPES SHALL MAINTAIN 3:1 OR FLATTER.
6. INSTALL CONSTRUCTION ENTRANCE PAD AS DEPICTED ON STORMWATER PLAN, LOCATION MAY BE ADJUSTED TO MEET BUILDERS NEEDS.
7. INSTALL FINAL STABILIZATION WITHIN 15 WORKING DAYS OF FINAL COMPLETION. FULL STABILIZATION MUST BE ACCOMPLISHED WITH 90 DAYS OF PROJECT COMPLETION.
8. IF THE PROJECT IS DELAYED INSTALL TEMPORARY STABILIZATION WITHIN 15 WORKING DAYS.
9. FINAL STABILIZATION SHALL BE BERMUDA SOD OR OUTER BANKS COMPATIBLE SEED BLEND. IRRIGATE AS REQUIRED TO ESTABLISH A VIABLE STABILIZING CROP. SILT FENCING SHALL REMAIN IN PLACE UNTIL FULL STABILIZATION IS ACHIEVED.
10. INSPECT ALL SEDIMENTATION AND EROSION CONTROL MEASURES DURING CONSTRUCTION PARTICULARLY FOLLOWING SIGNIFICANT STORMWATER EVENTS. REPAIR ALL EROSION GULLIES ALONG WITH SILT FENCING IMMEDIATELY.
11. ADDITIONAL MEASURES MAY BE REQUIRED IF EXCESSIVE STORMWATER RUNOFF OR EROSION OCCURS PARTICULARLY THAT WHICH AFFECT ADJOINING PROPERTIES.

PERMANENT VEGETATION

SEEDING DATES: APRIL 1– SEPT 30

SEED MIXTURE	APPLICATION RATES/ACRE
BAHIA	50 LBS.
COMMON BERMUDA (UNHULLED)	50 LBS.
GERMAN MILLETT	15 LBS.
FESCUE	20 LBS.

FERTILIZER
26–13–13 @ 500 LB/ACRE

MULCH
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

TEMPORARY VEGETATION

SEEDING DATES: OCT. 1 – MARCH 31

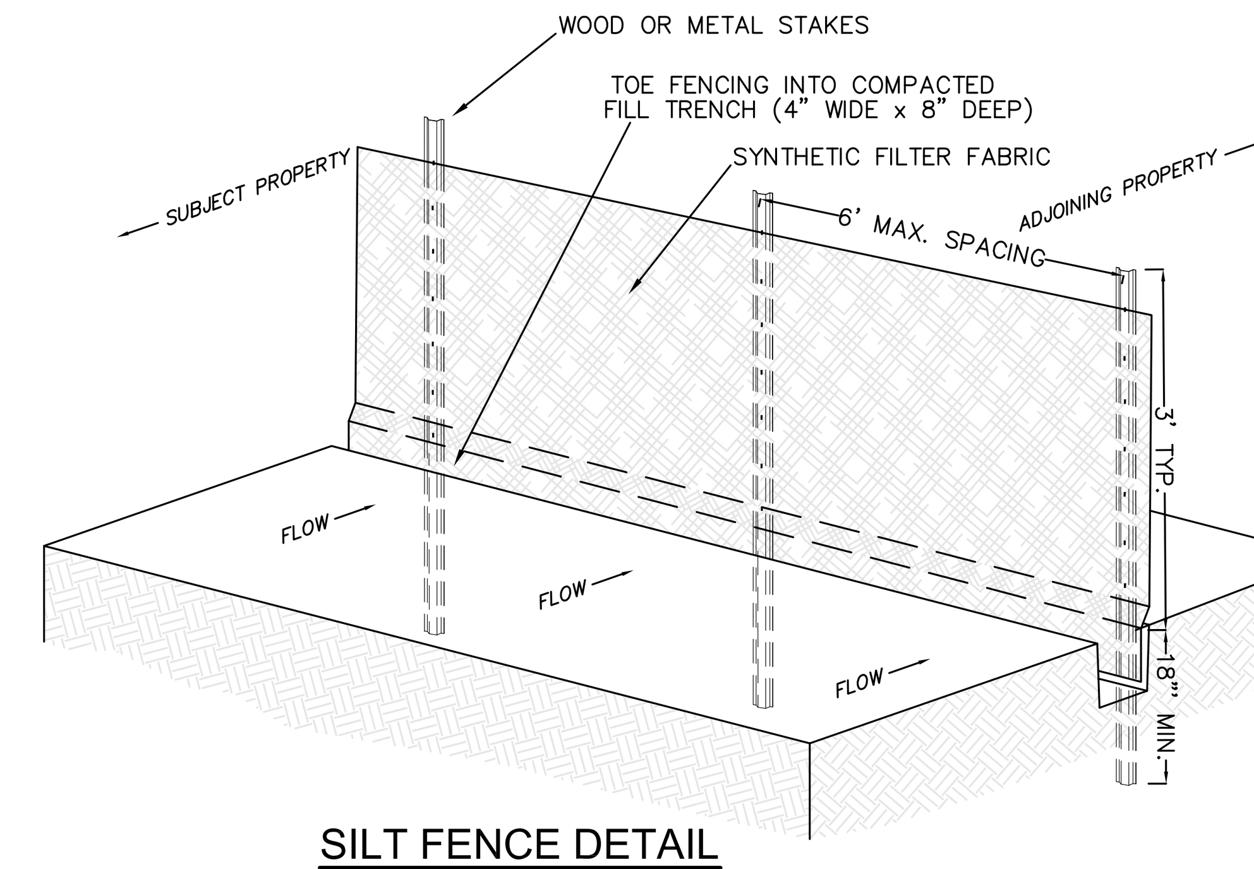
SEED MIXTURE	APPLICATION RATES/ACRE
RYE GRAIN	175 LBS.

FERTILIZER
10–10–10 @ 1000 LB/ACRE

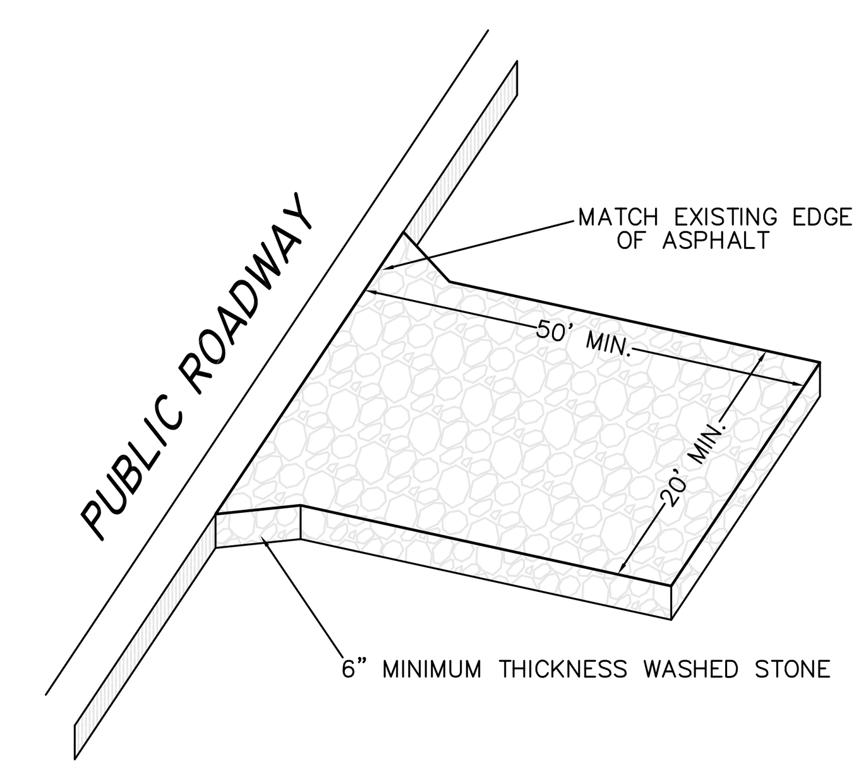
MULCH
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

GENERAL: FERTILIZER RATES SHOWN ARE GENERAL RECOMMENDATIONS; FREQUENCY AND AMOUNT OF FERTILIZATION CAN BEST BE DETERMINED THROUGH SITE SPECIFIC SOIL TESTING.
MAINTENANCE: SATISFACTORY STABILIZATION AND EROSION CONTROL REQUIRES A COMPLETE VEGETATIVE COVER. EVEN SMALL BREACHES IN VEGETATIVE COVER CAN EXPAND RAPIDLY AND, IF LEFT UNATTENDED, CAN ALLOW SERIOUS SOIL LOSS FROM AN OTHERWISE STABLE SURFACE. A SINGLE HEAVY RAIN IS OFTEN SUFFICIENT TO GREATLY ENLARGE BARESPOTS, AND THE LONGER REPAIRS ARE DELAYED, THE MORE COSTLY THEY BECOME. PROMPT ACTION WILL KEEP SEDIMENT LOSS AND REPAIR COST DOWN.
NEW SEEDLINGS SHOULD BE INSPECTED FREQUENTLY AND MAINTENANCE PERFORMED AS NEEDED. IF RILLS AND GULLIES DEVELOP, THEY MUST BE FILLED IN, RE–SEEDED,AND MULCHED AS SOON AS POSSIBLE. DIVERSIONS MAY BE NEEDED UNTIL NEW PLANTS TAKE HOLD.
MAINTENANCE REQUIREMENTS EXTEND BEYOND THE SEEDING PHASE.
WEAK OR DAMAGED SPOTS MUST BE RELIMED, FERTILIZED, MULCHED, AND RESEEDED AS PROMPTLY AS POSSIBLE. REFERTILIZATION MAY BE NEEDED TO MAINTAIN PRODUCTIVE STANDS.

SEEDING SPECIFICATIONS



SILT FENCE DETAIL
NOT TO SCALE



GRAVEL CONSTRUCTION ENTRANCE DETAIL
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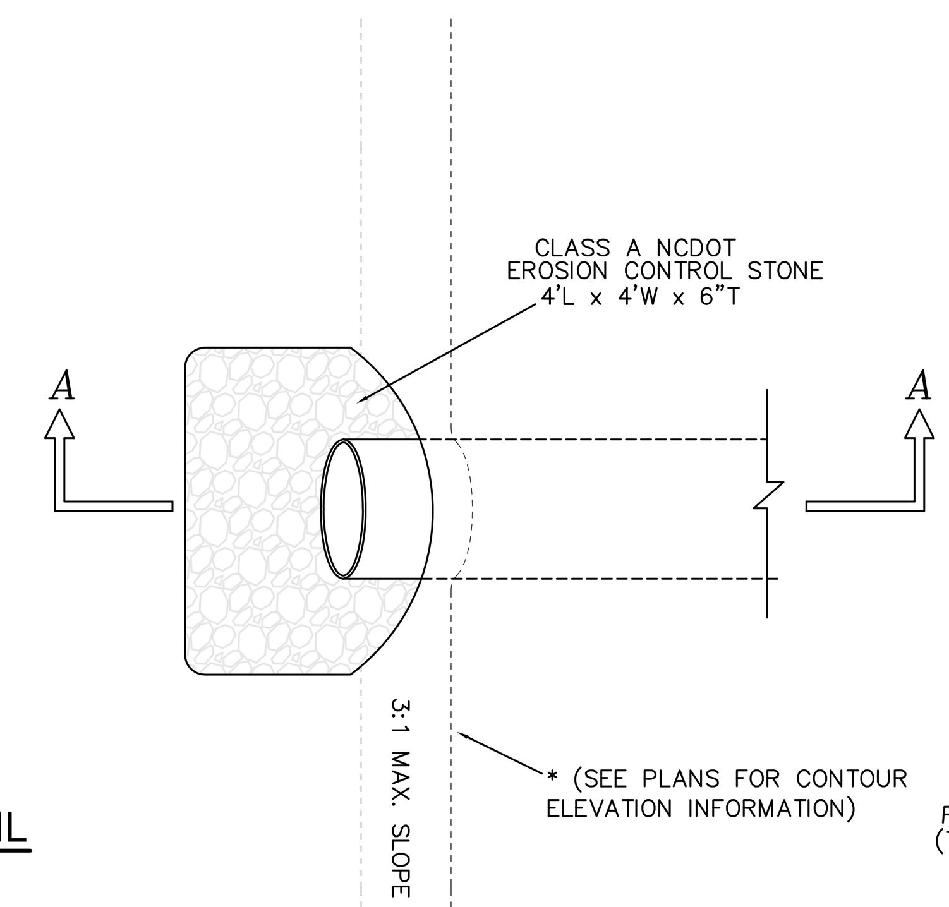
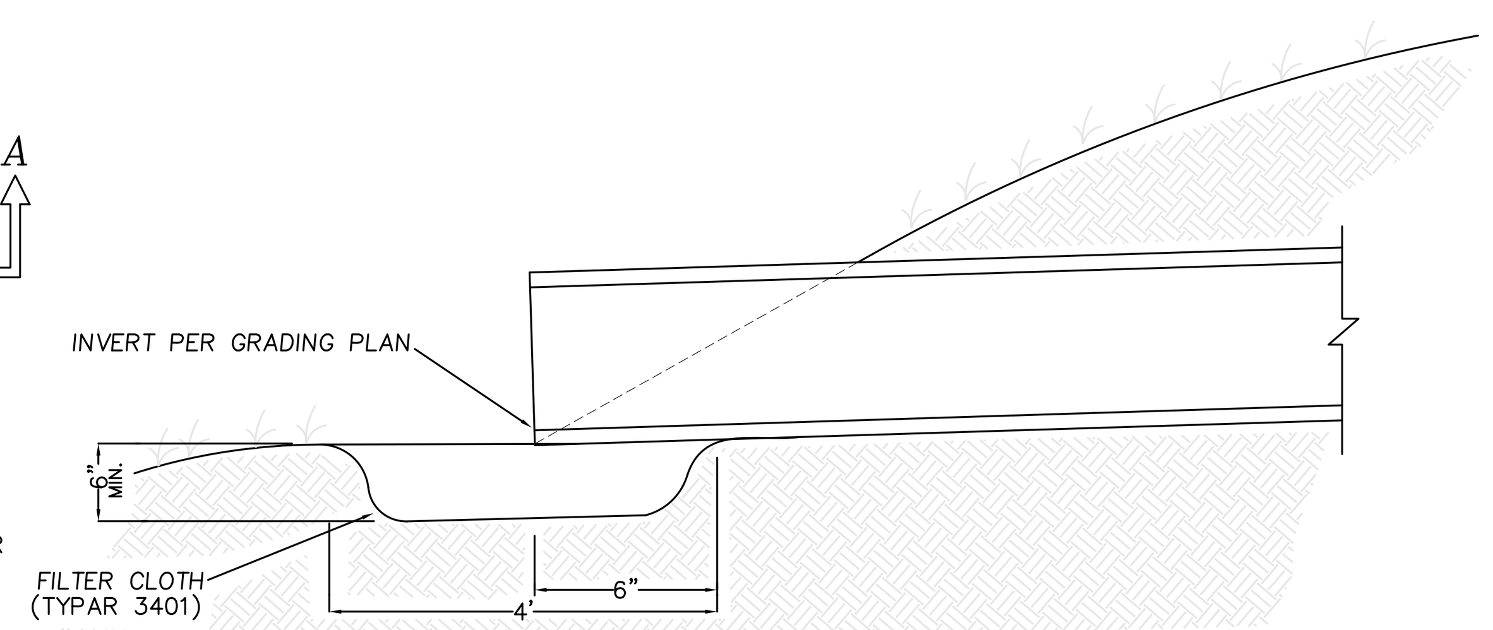


PLAN VIEW



SECTION A-A

STORM PIPE OUTLET DETAIL
(APPLIES TO ALL PROPOSED STORM PIPE OUTLETS)
NOT TO SCALE

STORMWATER CALCULATIONS:

STORMWATER MANAGEMENT CALCULATIONS:	
DESIGN DATA	DESIGN STORM: 4.3 INCH RAINFALL EVENT OVER A 2 HOUR PERIOD
	INFILTRATION RATE = 20 INCHES PER HOUR
	INTERSTITIAL SOIL VOID (POROSITY): 20%
	GRAVEL VOID (POROSITY): 40%
	RUNOFF COEFFICIENT = 1.0

DRAINAGE AREA 1 – PARKING AND DRIVES

DRAINAGE AREA 1: BUILT UPON AREA	
Concrete Border, Curbing, Drives, Walks and Entrances = 6,049 sq.ft.	
Roadway Paver Inserts = 11,511 sq.ft.	
Dumpster Pad = 109 sq.ft.	
TOTAL BUILT UPON AREA	17,669 sq.ft.

STORMWATER GENERATED DRAINAGE AREA 1 BUILT UPON AREA:
17,669 sq.ft. X 4.3/12 = 6,342 cu.ft.

TOTAL STORAGE REQUIRED IN PARKING AND DRIVE DRAINAGE AREA 1 = 6,342 cu.ft

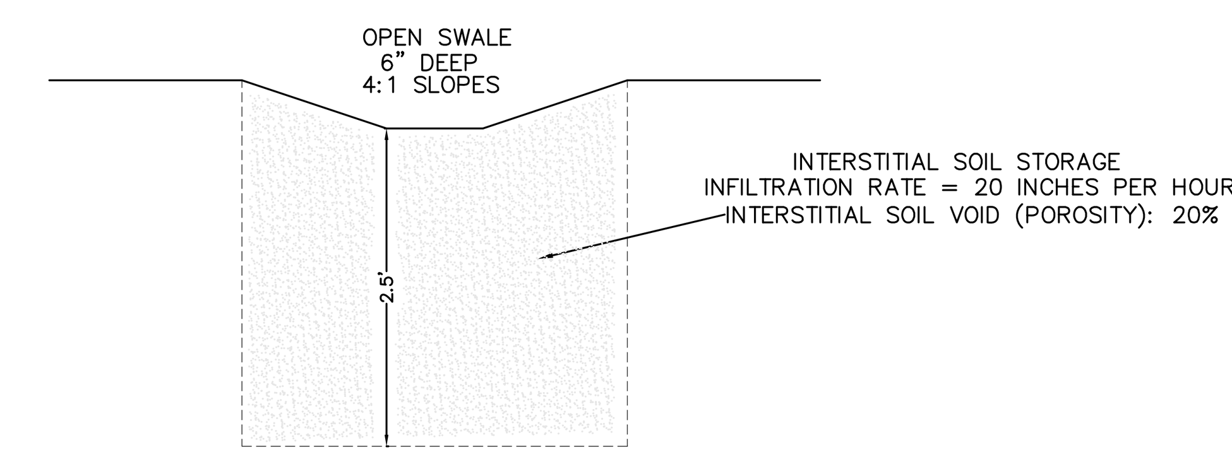
DRAINAGE AREA 2– BUILDINGS AND POOL AREA

DRAINAGE AREA 1: BUILT UPON AREA	
Residential Units – 13 at 1,239 sq.ft. = 16,107 sq.ft.	
Community Pool and Concrete Decking (–pool surface) = 1,131 sq.ft.	
Pool Bath House and Pool Equipment Building = 176 sq.ft.	
TOTAL BUILT UPON AREA	17,414 sq.ft.

STORMWATER GENERATED DRAINAGE AREA 2 BUILT UPON AREA:
17,414 sq.ft. X 4.3/12 = 6,240 cu.ft.

TOTAL STORAGE REQUIRED IN BUILDING AND POOL DRAINAGE AREA 2 = 6,240 cu.ft

INFILTRATION BASIN 1 – STORAGE VOLUME
STORMWATER STORAGE VOLUME IN SWALE AND INTERSTITIAL SOILS BELOW

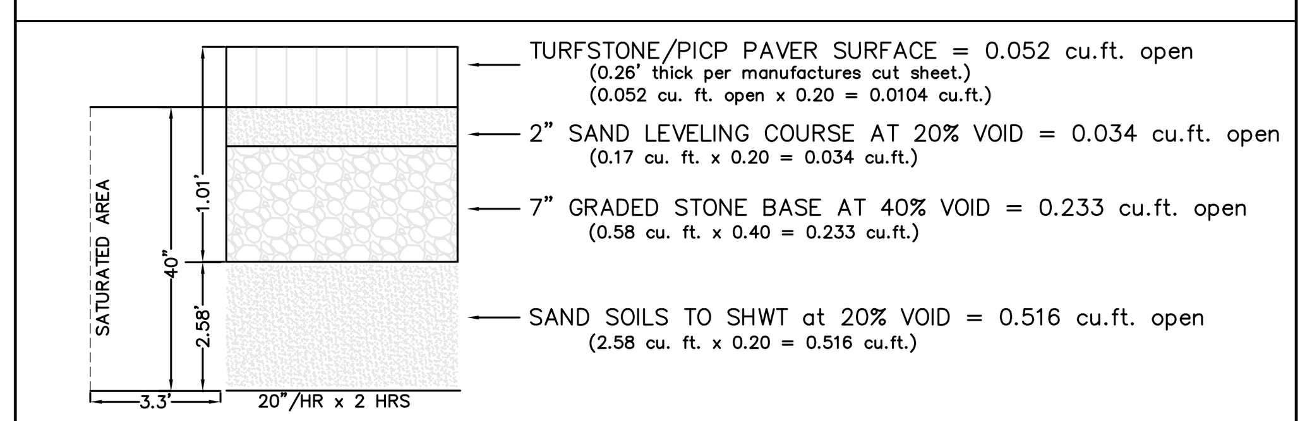


STORMWATER STORAGE VOLUME IN SWALE:
STORMWATER SWALE TOP AREA = 12,100 sq.ft.
STORMWATER SWALE BOTTOM AREA = 5,800 sq.ft.
OPEN VOLUME = 4,475 cu.ft.
(TOP AREA + BOTTOM AREA)/2) X 0.5'
INTERSTITAL SOIL VOLUME = 5,155 cu.ft.
(SWALE TOP AREA x 2.5') – OPEN VOLUME) x 0.2

TOTAL STORAGE IN INFILTRATION BASIN 1 = 10,955 cu.ft.

PERMEABLE PAVERS – STORAGE VOLUME
STORMWATER STORAGE VOLUME IN SWALE AND INTERSTITIAL SOILS BELOW

TURFSTONE PAVING AREA	11,511 sq.ft.



TOTAL STORAGE VOLUME PER SQ. FT. OF PAVING SURFACE = 0.835 cu.ft. PER SQ. FT.
TURFSTONE PAVING AREA = 11,511 sq.ft.
TOTAL STORAGE VOLUME IN TURFSTONE PAVING SURFACE = 11,511 x 0.835 = 9,612 cu.ft.

TOTAL STORAGE AVAILABLE IN PARKING AND DRIVE DRAINAGE AREA 1 = 9,612 cu.ft

STORAGE VOLUME SUMMARY
STORMWATER VOLUME REQUIRED AND PROVIDED FOR DESIGN STORM

TOTAL STORAGE REQUIRED IN PARKING AND DRIVE DRAINAGE AREA 1 = 6,342 cu.ft
TOTAL STORAGE REQUIRED IN BUILDING AND POOL DRAINAGE AREA 2 = 6,240 cu.ft
TOTAL COMBINED STORAGE REQUIRED IN DRAINAGE AREA 2 AND DRAINAGE AREA 2 = 12,582 cu.ft

TOTAL STORAGE PROVIDED IN INFILTRATION BASIN 1 = 10,955 cu.ft
TOTAL STORAGE AVAILABLE IN PARKING AND DRIVE DRAINAGE AREA 1 = 9,612 cu.ft
TOTAL COMBINED STORAGE PROVIDED IN INFILTRATION BASIN 1 AND PARKING AREA = 20,567 cu.ft

STORAGE PROVIDED IS 63% GREATER THAN STORAGE REQUIRED

LANDSCAPE BUFFER TABLE

Tree and Shrub counts noted are minimum requirements

PROPERTY CORNER	TO	PROPERTY CORNER	TYPE OF BUFFER	BUFFER WIDTH	BUFFER REQUIREMENTS	LENGTH OF PROPERTY LINE OR RIGHT OF WAY	NUMBER OF PLANTINGS REQUIRED (MIN)	SPECIES
Ⓐ		Ⓑ	Ornamental Landscaping along Fifth Street East R/W Buffer along right of way for commercial zone dev.	10'	1 tree per 10 l.f. of property line and 1 shrub per 10 l.f. property line	169 l.f.	17 trees and 17 shrubs	Use Wax Leaf Ligustrum (as shrubs), along with mix of Hollywood Junipers and Black Pines.
Ⓑ		Ⓒ	Ornamental Landscaping along Fifth Street North R/W Buffer along right of way for commercial zone dev.	10'	1 tree per 10 l.f. of property line and 1 shrub per 10 l.f. property line	487 l.f.	49 trees and 49 shrubs	Use Wax Leaf Ligustrum (as shrubs), along with mix of Hollywood Junipers and Black Pines.
Ⓒ		Ⓓ	Ornamental Landscaping along N. Croatan Highway Buffer along right of way for commercial zone dev.	10'	1 tree per 10 l.f. of property line and 1 shrub per 10 l.f. property line	120 l.f.	12 trees and 12 shrubs	Use Wax Leaf Ligustrum (as shrubs), along with mix of Hollywood Junipers and Black Pines.
Ⓓ		Ⓐ	Dense Vegetative Screen along North Property Line with Fence Buffer between incompatible uses.	5'	1 tree per 30 l.f. of property line and 1 shrub per 10 l.f. property line	601 l.f.	21 trees and 61 shrubs	Alternate groups of 4 Russian Olives and Wax Leaf Ligustrum along property line
LAWN AREAS:	FINAL GROUND COVER INCLUDING BERMS AND SWALES SHALL BE SEEDED OR SODDED BERMUDA OR HEAT TOLERANT FESCUE TURF GRASS WITH IRRIGATION							

LANDSCAPE BUFFER TABLE - NOTES

Note 1 – Ornamental landscaping need not be evenly spaced, but rather dispersed throughout the landscape area to create a natural appearance. In all cases where a fence is constructed, the required landscaped area shall be located between the fence and property line.

Note 2 – Dense vegetative screens shall contain shrubs at least 30 inches high at the time of installation planted two–and–one–half feet on center. The type of shrub used needs to be capable of attaining a height of at least six feet at maturity.

Note 3 –Specific planting subject to change due to availability and lansdsapers preferences. All planing changes will submitted for review and approval by the Town Planning department.

REFER TO KILL DEVIL HILLS TOWN CODE, SECTION 153.073 "LANDSCAPING REQUIREMENTS" FOR ADDITIONAL INFORMATION

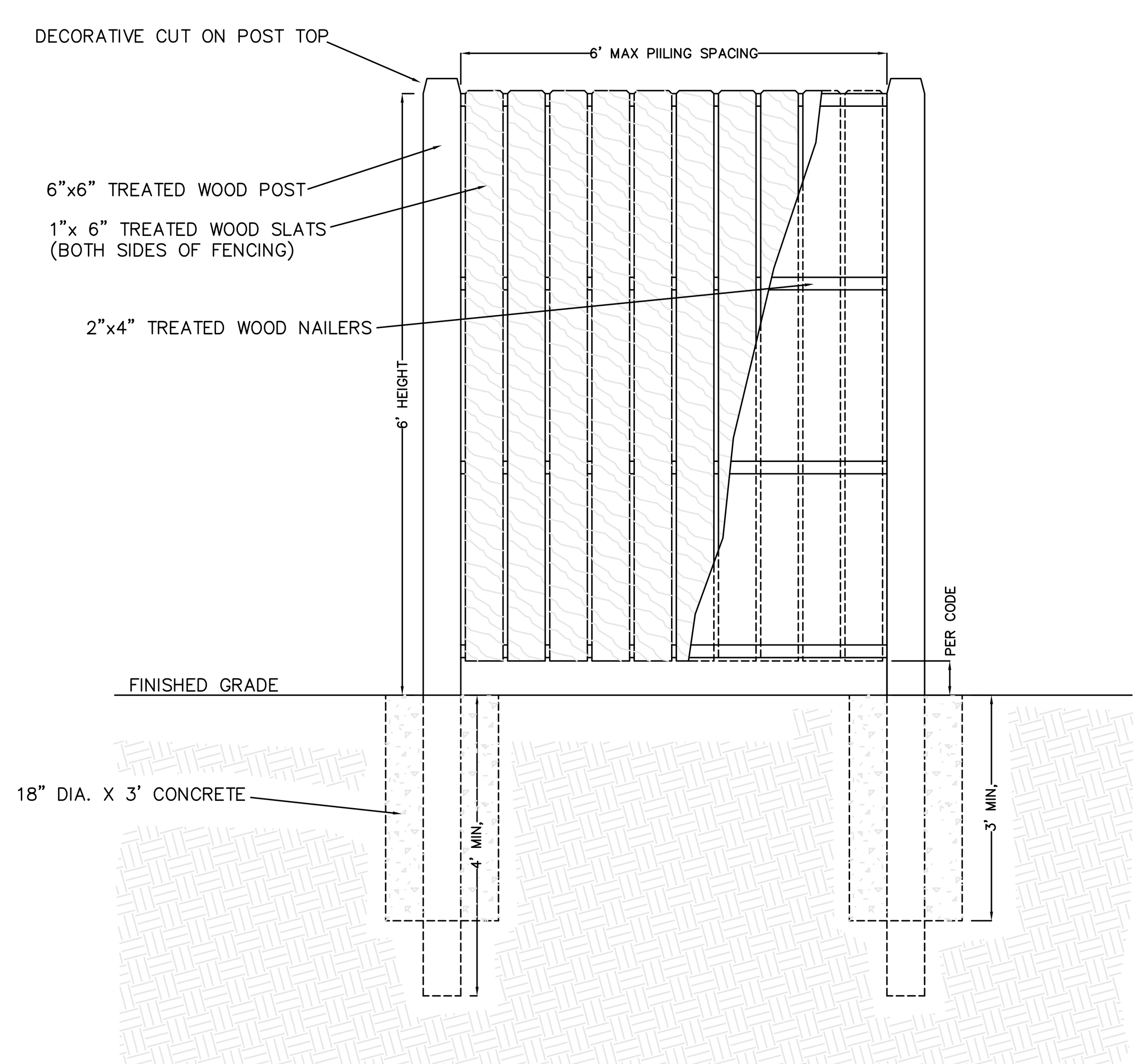
MINIMUM PLANT SIZE

REFER TO KILL DEVIL HILLS TOWN CODE, APPENDIX A FOR ADDITIONAL INFORMATION

Plant Material	Perimeter Landscaping Areas, Abutting Vacant Lands,Fences and Berms	All Other Planting
TREE: Deciduous	1½ inches (diam.) 5 feet (hgt)	2 inches (diam.) 8 feet (hgt)
TREE: Evergreen	1½ inches (diam.) 3 feet	1½ inches (diam.) 5 feet
SHRUB: Deciduous	15 inches (hgt)	24 inches (hgt)
SHRUB: Evergreen	12 inches (hgt)	18 inches (hgt)

Important Notice!!!

Buffer Species noted on this sheet are preliminary and subject to be changed by the Landscape Installer based on plant availability and owner preference. Prior to final species selection, the contractor shall submit written landscape species and counts for approval by the Engineer and the Town of Kill Devil Hills Planning Department. The Contractor shall not proceed with ordering plant material or installing plants until written approval by Engineer and the Town Planning Department is received.
Tree and Shrub counts noted are minimum requirements



FENCE DETAIL
NOT TO SCALE

MICHAEL W. ROBINSON, P.E., P.L.S.
ENGINEERING AND SURVEYING
P.O. BOX 2852
KILL DEVIL HILLS, NC 27948
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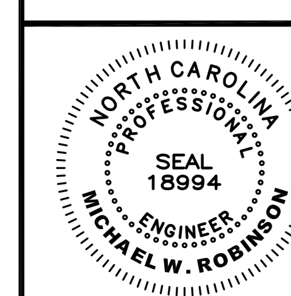
DETAIL SHEET
PRELIMINARY



REVISIONS

NO.	DATE	DESCRIPTION	BY
1	02–22–22	REV. FOR KDH BOC REVIEW	MWR

PROJECT:
FIFTH STREET COTTAGES
KILL DEVIL HILLS *DARE COUNTY* *NORTH CAROLINA*
A PORTION OF TRACT 4, WRIGHT'S SHORES

DATE:	SCALE:
01–31–22	1"=20'
DESIGNED: MWR	DRAWN: MWR

SHEET: 8 OF 9

CAD FILE: fifth street cottage court–kdh–base.dwg

PROJECT NO: 051121