TIME OF CONCENTRATION:
t = 4.68 MIN. => USE 5 MIN.

$t_c = \frac{\left|\frac{L}{H}\right|}{128}$ $t_c = \frac{\left|\frac{(450'-402')}{}\right|}{128}$

=> Rainfall Intensity for 25Year 5 Minute Storm = 8.14 in/hr.
1 => Q = C x I x A = 0.30 x 8.14 in/hr x 4.65 ac. = 11.35 cfs

=> Rainfall Intensity for 10 Year 10 Minute Storm = 6.78 in/hr.
=> Q = C x I x A = 0.30 x 6.78 in/hr x 4.65 ac. =9.45 cfs

SURFACE AREA CAPACITY
1 325 x Q25 =3688 SQ FT

MINIMUM STORAGE CAPACITY:

1,800 cf/acre x denuded drainage area = calculated cf
1 1800*1.40 =2520 CF

BASIN SCHEDULE

BASIN NO.	DENUDED AREA (AC.)	DRAINAGE AREA (AC.)	Q25	WEIR LTH (FT.)	LENGTH (FT.)	WIDTH (FT.)	DEPTH (FT.)	REQUIRED SURFACE SF	ACTUAL SURFACE SF	REQUIRED STORAGE	PROVIDED STORAGE (CF)
1	1.45	4.65	5.67	12	92	40	2	3688	3680	2520	7360

SKIMMER SIZING

BASIN NO.	SURFACE AREA	TIME FOR DRAW DOWN	ORIFICE SIZE	FLOW TYPE OUTLETS	#ORIFICE
1	3680	48 HR	1.5"	2"	1

SKIMMER CALCS FOR BASIN WITH FLASHBOARD RISER

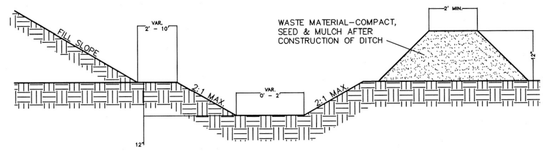
Temp Ditch 1 = .50% slope
1 V=1.49 x(1/n)xR^(2/3)xS^(1/2)
2 V=1.49x(1/.033)x.5^(2/3)x.005(1/2)
3 V=1.49x(30.30)x.6285x.70
4 V=1.96

where:
R=(bd+xd^2)/b+2Dx)
R=.5

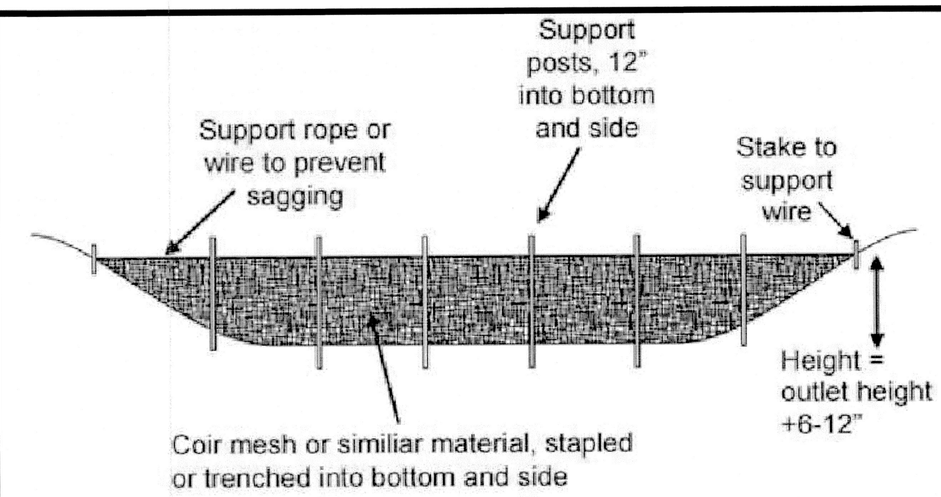
Temp Ditch 2 = 0.51% slope
1 V=1.49 x(1/n)xR^(2/3)xS^(1/2)
2 V=1.49x(1/.033)x.5^(2/3)x.0051(1/2)
3 V=1.49x(30.30)x.6285x.071
4 V=1.95

where:
R=(bd+xd^2)/b+2Dx)
R=.5

NOTES:
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.



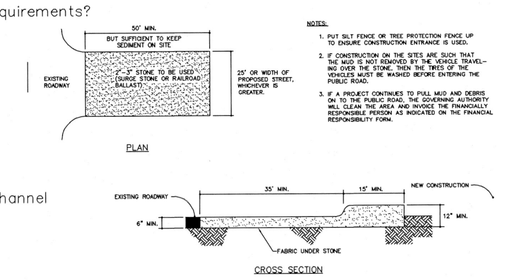
TEMPORARY DIVERSION DITCH DETAIL
NO SCALE
TEMPORARY DIVERSIONS/BERMS TO BE SEEDED AND MULCHED IMMEDIATELY AFTER CONSTRUCTION



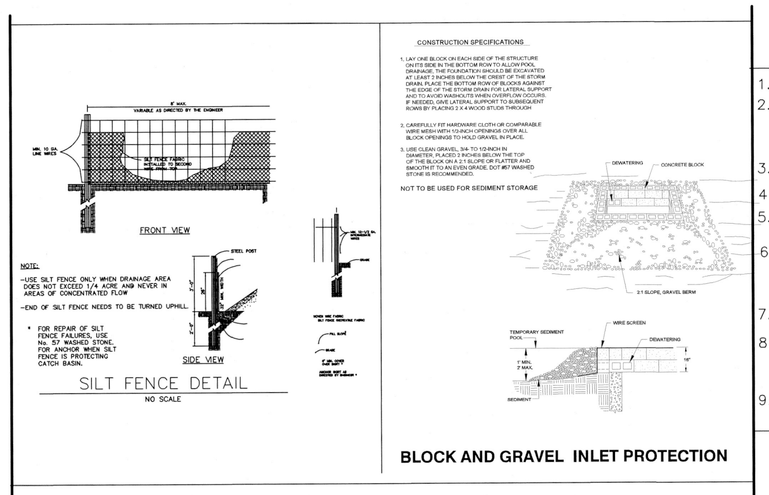
BAFFLE DETAIL

Erosion and Sediment Control Inspection Checklist*
- ▫Are all the practices specified in the approved plan installed in the proper location and do they meet the minimum requirements?
- ▫Are all practices working well and is the perimeter protected?
- ▫Do any practices require repair or cleanout?
- ▫Are there any bare areas that require temporary or permanent stabilization?
- ▫Do seeded areas require maintenance, reseeding or mulching?
- ▫Are cut and fill slopes stable and adequately protected from erosion?
- ▫Are channels and outlets stable?
- ▫Are storm inlets protected from sediment?
- ▫Are stream banks and stream crossings stable?
- ▫Are utility installations properly located with respect to erosion and sediment control?
- ▫Are construction roads and right-of-way access routes stable?
- ▫Is there evidence of sediment leaving the site or entering streams on the site through construction entrances/exits, channel outlets, storm drains, or by washing off slopes?
- ▫Is dust control needed?
- ▫Is there adequate buffer zone between the construction site and any water resource?
- ▫Is there evidence of sediment entering a stream buffer?

SELF INSPECTION CHECKLIST



CONSTRUCTION ENTRANCE DETAIL
NO SCALE

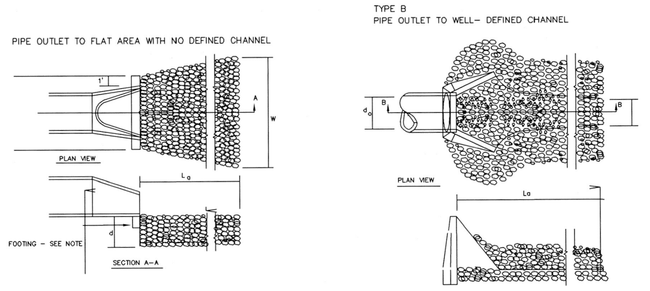


SILT FENCE DETAIL
NO SCALE

BLOCK AND GRAVEL INLET PROTECTION

BOUYANCY CALCULATION FOR RISER

LENGTH OF IMMERSED PIPE = MAX 12' DIAMETER OF PIPE =12"
VOLUME OF PIPE = [(1*1)*^2 *3.147]*12 = 37.76 cu ft
WEIGHT OF DISPLACEMENT = 37.76 * 62.4 = 2,356 LBS
WEIGHT OF SLAB = 1*4*4*180 LBS/CF= 2880
WEIGHT OF SOIL/STONE COVERING ROCK = 165 LBS/CU FT* 2CU FT = 330 LBS
TOTAL WEIGHT IS 2880 LBS+330 LBS= 3210 LBS > 2356 LBS
THEREFORE, PIPE DOES NOT FLOAT!!!



IF STONE DIA.> 8", PROVIDE GEOTEXTILE UNDERLINER OR 4" (MIN.) #57 WASHED STONE BEDDING MATERIAL.

IF STONE DIA.> 8", PROVIDE GEOTEXTILE UNDERLINER OR 4" (MIN.) #57 WASHED STONE BEDDING MATERIAL.

NOTES:
(1) d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6 INCHES.
(2) d = 1' ABOVE MAXIMUM TAILWATER OR TOP OF CHANNEL BANK (WHICH-EVER IS LESS).
(3) La =LENGTH OF RIPRAP APRON.

CALCS FOR DISSIPATOR

PIPE SIZE	WIDTH(V)	DEPTH(d)
18"	8'	12"

DISSIPATOR PAD DETAIL
NO SCALE

CONSTRUCTION SEQUENCE

1. Schedule a preconstruction conference with the NCDNR.
2. Install gravel construction pad, storm water swales, silt fencing, sediment basins or other measures as shown on the approved plan. Clear only as necessary to install these devices. Seed temporary diversions, berms and basins immediately after construction.
3. Call for onsite inspection by Environmental Inspector and
4. Begin clearing and grubbing. Maintain devices as needed.
5. Install storm sewer (if applicable) and protect inlets with block and gravel inlet controls, sediment traps or other approved measures as shown on the plan.
6. Stabilize site as areas are brought up to finish grade with permanent vegetation, paving, ditch lining mulch denuded areas within Seven (7) days of completion of any phase of construction. Storm water swales must be stabilized within Seven (7) days> and repaired when disturbed within 3 days
7. When construction is complete and all areas are stabilized completely, call for inspection by Environmental Engineer.
8. If site is approved, remove temporary diversions, silt fencing sediment basins, etc. , and seed out or pave any resulting bare areas. All remaining permanent erosion control devices (such as velocity dissipators) should then be installed.
9. When vegetation has become established, call for final site inspection by Environmental Engineer.

SEEDBED PREPARATION

1) Chisel compacted areas and spread topsoil 3 inches deep over adverse soil conditions, if available.
2) Rip the entire area to 6 inches depth.
3) Remove all loose rock, and other obstructions leaving surface reasonably smooth and uniform.
4) Apply agricultural lime, fertilizer, and superphosphate uniformly and mix with soil (see below).
5) Continue tillage until a well-pulverized, firm, reasonbly uniform seedbed is prepared 4 to 6 inches deep.
6) Seed on a freshly prepared seedbed and cover seed lightly with seeding equipment or cultipack after seeding.
7) Mulch immediately after seeding and anchor mulch.
8) Inspect all seeded areas and make necessary repairs or reseedings within the planting season, if possible. If stand should be over 60% damaged, reestablish following original lime, fertilizer and seeding rates.
9) Consult Conversation Inspector on maintenance treatment and fertilization after permanent cover is established.

* Apply : Agricultural Limestone – 2 Tons/Acre
Fertilizer – 10-10-10 Analysis at 800 – 1,000 lbs./acre
Superphosphate – 500 lbs./acre of 20% Analysis Superphosphate
Emulsified Asphalt at 300 gallons/acre
Mulch – 2 Tons (Approx. 80 Bales) Small Grain Straw/Acre
Anchor – Tack with Liquid Asphalt at 400 gallons/acre or

NOTE: PERMANENT GROUND COVER WILL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 60 CALENDER DAYS (WHICHEVER IS SHORTER)

SEEDING SCHEDULE

Shoulders, Side Ditches, Slopes, (Max. 3:1)

Date	Type	Planting Rate
Aug 15–Nov. 1	Tall Fescue	300 lbs/acre
Nov 1–Mar 1	Tall Fescue and Abruzzi Rye	300 lbs/acre 25 lbs/acre
Mar 1–Apr 15	Tall Fescue	300 lbs/acre
Apr 15–Jun 30	Hulled Common Bermudograss	25 lbs/acre
July 15–Aug 15	Tall Fescue and	120 lbs/acre
	***Browntop Millet	35 lbs/acre
	***or Sorghum-Sudan Hybrids	30 lbs/acre

Slopes (3:1 to 2:1)

Mar 1–Jun 1	Sericea Lespedeza (scarified) and	50 lbs/acre
(Mar 1–Apr 15)	Add Tall Fescue	120 lbs/acre
(Mar 1–Jun 30)	Or Add Hulled Common Bermudograss	25 lbs/acre
Jun 1–Sep 1	***Tall Fescue and	120 lbs/acre
	***Browntop Millet	35 lbs/acre
	***or Sorghum-Sudan Hybrids	30 lbs/acre
Sep 1– Mar 1	Sericea Lespedeza (unhulled–unscarified)	70 lbs/acre
(Nov 1–Mar 1)	and Tall Fescue	120 lbs/acre
	Add Abruzzi Rye	25 lbs/acre

Consult Conservation Engineer or Soil Conservation Service for additional information concerning other alternatives for vegetation of denuded areas. The above vegetation rates are those which do well under local conditions; other seeding combinations are possible.

***Temporary – Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow over 12" in height before mowing, otherwise fescue may be shaded out.

MAINTENANCE REQUIREMENTS

LAND GRADING

Periodically, check all graded areas and the supporting erosion and sedimentation control practices, especially after heavy rainfalls. Promptly remove all sediment from diversions and other water-disposal practices. If washouts or breaks occur, repair them immediately. Prompt maintenance of small eroded areas before they become significant gullies is an essential part of an effective erosion and sedimentation control plan.

CONSTRUCTION ENTRANCE

Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing with 2-inch stone. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary. Immediately remove all objectionable materials spilled, washed, or tracked onto public roadways.

PLANTED AREAS

Replant areas lost to erosion. Fertilize twice during the second growing season and once a year thereafter if needed. Replace American beachgrass that dies out with sea oats, bitter panicum, or seashore elder.

TEMPORARY DIVERSIONS WITH AND WITHOUT LINER

Inspect temporary diversions once a week and after every rainfall. Immediately remove sediment from the flow area and repair the diversion ridge. Carefully check outlets and make timely repairs as needed. When the area protected is permanently stabilized, remove the ridge and the channel to blend with the natural ground level and appropriately stabilize it. Check liners for slippage. replace or reset liner and pin as needed. to stabilize liner position.

ADDITIONAL MAINTAINANCE REQUIREMENTS FOR SEDIMENT BASINS.

1. THE SITE SHALL BE OBSERVED BY THE CONTRACTOR BI-WEEKLY TO DETERMINE THE NEED FOR ADJUSTING THE SILT FENCE OR CLEANING THE BASINS IN ORDER THAT THE SEDIMENT CONTROLS FUNCTION PROPERLY.
2. CONTRACTOR SHALL CHECK SEDIMENT CONTROLS AFTER EACH STORM EVENT AND MAKE REPAIRS AS NEEDED.
3. IN THE EVENT THAT THE ENVIRONMENTAL CONTROL OFFICIAL DEEMS THAT ADDITIONAL MEASURES ARE NEEDED, THE CONTRACTOR SHALL ADD SUCH MEASURES.

OUTLET DISSIPATORS

Inspect riprap outlet structures weekly and after significant (1/2 inch or greater) rainfall events to see if any erosion around or below the riprap has taken place, or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.

SEDIMENT BASINS

Inspect temporary sediment basins at least weekly and after each significant (½ inch or greater) rainfall event and repair immediately. Remove sediment and restore the basin to its original dimensions when it accumulates to one-half the design depth. Place removed sediment in an area with sediment controls.
Check the embankment, spillways, and outlet for erosion damage, and inspect the embankment for piping and settlement. Make all necessary repairs immediately. Remove all trash and other debris from the riser and pool area.

BAFFELS

Inspect baffles at least once a week and after each rainfall. Make any required repairs immediately.
Be sure to maintain access to the baffles. Should the fabric of a baffle collapse, tear, decompose, or become ineffective, replace it promptly.
Remove sediment deposits when it reaches half full to provide adequate storage volume for the next rain and to reduce pressure on the baffles. Take care to avoid damaging the baffles during cleanout. Sediment depth should never exceed half the designed storage depth. After the contributing drainage area has been properly stabilized, remove all baffle materials and unstable sediment deposits, bring the area to grade, and stabilize it.

SILT FENCE

Inspect sediment fences at least once a week and after each rainfall. Make any required repairs immediately.
Should the fabric of a sediment fence collapse, tear, decompose or become ineffective, replace it promptly.
Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence. Take care to avoid undermining the fence during cleanout.
Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

INLET PROTECTION

Inspect all inlet protections at least once a week and after each rainfall. Should the block and gravel be displaced, correct immediately. Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the protection. Take care to avoid undermining the gravel and block during clean out.

Project #:
Date:
Drawn/Design By:
Scale:

REVISIONS		
No.	Date:	Remarks
1		
2		
3		
4		

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DESIGN · PLANNING · SURVEYING · MAPPING
C. GREGORY BAGLEY ENGINEER

Client Name:
GREATER LIGHT BAPTIST CHURCH
FOR
BRETT MATTHEWS
Harnett County N.C.

S&E 1 DETAILS

Sheet Number
S&E 1
of 1