## NARRATIVE:

### PROJECT DESCRIPTION

The proposed project consists of constructing a Sonic Restaurant on a 0.708 acre parcel adjacent to Challenger Ave. Supporting infrastructure including water and sewer service, and parking areas will be installed. Drainage will be collected via curb and gutter and directed through pipes to the adjacent storm sewer. An increase of 22,096 SF of impervious area is shown. This project will disturbed no more than 0.78 acre (33,894 SF).

For areas less than 1.0 acre, NO VPDES general permit for stormwater discharges from construction activies is required.

For areas greater than 1.0 acre. the VPDES general permit registration statement, permit application, application fee, and stormwater pollution

The site will utilize a construction entrance, construction road stabilization, straw bale barrier, sitt fence, inlet protection, top soiling, temporary & permanent sedding, sodding and dust control.

Currently the property is an outparcel to a commercial development which has an existing Lowe's and Wal-Mart. The property is all grass, no trees and vacant structures. Slopes range from 2% to 10%.

Adjacent properties are developed and consist of residential to the south with large commercial developments to the north. No impacts to adjacent properties are anticipated. It is understood another restaurant is planned to the adjoining vacant outparcel.

The proposed development DOES NOT anticipate off-site waste areas; however, should the project require off-site waste areas or borrow areas, the location of these areas need to be submitted to the County of Roanoke and other local governing authorities where waste/borrow occurs. erosion control plans or measures may be required for these off-site locations.

Refer to Geotechnical report prepared by Giles Engineering Associates, Inc. dated December 23, 2005.

### CRITICAL EROSION AREAS

All Silt Fence is to be doubled on this site and placed as shown on plan to keep sediment off the adjacent properties and to be checked regularly. A construction entrance shall be installed at the proposed access road to keep sediment off the existing pavement. In addition to the construction entrance, straw bales are to be placed across the access road at the end of each days work as an added measure to prevent sediment from leaving the

### EROSION AND SEDIMENT CONTROL MEASURES

Inless otherwise stated all erosion and sediment control measures shall be constructed and maintained in accordance with minimum standards and specifications of the latest edition of the "Virginia Erosion and Sediment Control Handbook".

Listed and described below are various structural practices. Not all of the practices listed are used on this project. We have however included descriptions of all the practices because the Contractor, Engineer, or Approving Authority may chose to use a different method than what is shown on the plans to improve the control of erosion and sedimentation.

<u>Temporary Construction Entrance (3.02)</u> - A stone pad, located at points of vehicular ingress and egress on a construction site, to reduce the soil transported onto public roads and other paved areas.

A Temporary Construction Entrance has been included in this project and is shown on the drawings.

Construction Road Stabilization (3.03) - Temporary stabilization with stone of access roads, subdivision streets, parking areas and other traffic areas immediately after grading to reduce erosion caused by vehicles during wet weather, and to prevent having to regrade permanent roadbeds between initial grading and final stabilization.

Construction Road Stabilization has been included in this project and is shown on the drawings.

Straw Bale Barrier (3.04) - A temporary barrier consisting of a row of entrenched and anchored straw bales; applicable to decrease the velocity of sheet flow and to prevent sediment from leaving the construction site.

Straw Bale Barrier has been included in this project and is shown on the drawings.

Silt Fence (3.05) - A temporary sediment barrier constructed of posts, filter fabric and, in some cases, a wire support fence, placed across or at the toe of a slope or in a minor drainage way to intercept and detain sediment and decrease flow velocities from drainage areas of limited size; applicable where sheet and rill erosion or small concentrated flows may be a problem. Maximum effective life of 6 months,

Silt Fence will be used on this project and is shown on the drawings.

Storm Drain Inlet Protection (3.07) - The installation of various kinds of sediment trapping measures around drop inlets or curb inlet structures prior to permanent stabilization of the disturbed area; limited to drainage areas not exceeding one acre, and not intended to control large, concentrated

Storm Drain Inlet Protection will be used for this project and is shown on the drawings.

Topsoiling (3.30) - Preserving and using topsoil to provide a suitable growth medium for vegetation used to stabilize disturbed areas. Applicable where preservation or importation of topsoil is most cost-effective method of providing a suitable growth medium; not recommended for slopes steeper than 2:1 unless additional measures are taken to prevent sloughing and erosion.

Topsoil will be stockpiled, protected from erosion, and then redistributed for lawn areas.

Temporary Seeding (3.31) - Establishment of temporary vegetative cover on disturbed areas that will not be brought to final grade for periods of 30 days to one year by seeding with appropriate rapidly-growing pants.

Temporary Seeding will most likely not be necessary due to the timing of the project. Should a delay occur, Temporary Seeding will be used as

Permanent Seeding (3.32) - Establishment of perennial vegetative cover by planting seed on rough-graded areas that will not be brought to final grade for a year or more or where permanent, long-lived vegetative cover is needed on fine-graded areas.

Permanent Seeding will be used on all finished areas outside of the parking and driveway areas.

Sodding (3.33) - Stabilizing fine-graded areas by establishing permanent grass stands with sod. Provides immediate protection against erosion. and is especially effective in grassed swales and water-ways or in areas where an immediate aesthetic effect is desirable.

Sodding will be used on all finished areas outside of the parking and driveway areas.

Dust Control (3.39) - Reducing surface and air movement of dust during land disturbance, demolition or construction activities in areas subject t dust problems in order to prevent soil loss and reduce the presence of potentially harmful airborne substance.

Dust Control will be practiced to keep dust generation to reasonable levels.

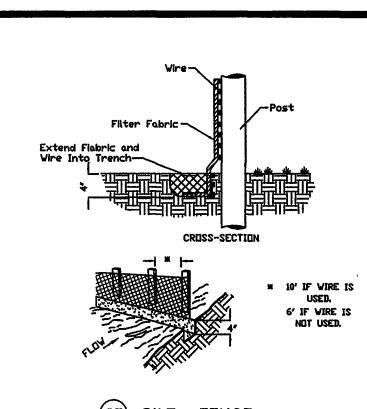
# PERMANENT STABILIZATION

All disturbed areas shall receive permanent stabilization accordance with the "Virginia Erosion and Sediment Control Handbook", STD and Spec. 3.32 as soon as those areas are brought to final grade. For permanent seeding mixture see the Erosion and Sediment Control detail sheet.

# STORMWATER RUNOFF CONSIDERATIONS

Stormwater Management for this site has been considered during the development of the adjacent lowe's facility. A underground detention facility has been installed, and has been sized to overdrain the contributing flow from this outparcel. The proposed Sonic consists of 70% coverage on 0.70 acre. The calculations prepared by Tysinger, Hampton, and Partners for the existing stormwater management facility under Lowe's parking lot took into consideration 90% impervious area of the buildable areas of the outparcels. Given our actual lot coverage is 20% less than the original projections; stormwater management compliance has been met.

For detailed calculations, see the Sonic Restaurant Submittal Package.



This method of inlet protection is applicable at curb inlets where ponding in front of the structure is not likely to cause inconvenience or danage to adjacent structures and unprotected areas.

Filtered Runoff

IP) GRAVEL CURB INLET SEDIMENT FILTER

CROSS-SECTION

STB) STRAW BALE BARRIER

CONSTRUCT A WASHBOARD OR

WASH RACK IF REQUIRED.

\* MUST EXTEND FULL WIDTH OF INGRESS

& EGRESS OPERATION

Stake and Entrench Bale

Prevent Piping

Sediment Laden Runoff

VDOT #1 Coarse

Aggregate

Ref. Table 3.02-A of

Virginia ESC Handbook

for regulrements.

SAFETY FENCE ROCK CHECK DAMS TEMPORARY GRAVEL LEVEL SPREADER CONSTRUCTION ENTRANCE CONSTRUCTION ROAD STABILIZATION STRUCTURAL STREAMBANK STRAW BALE BARRIER STABILIZATION EMPORARY VEHICULAR SILT FENCE STREAM CROSSING UTILITY STREAM CROSSING BRUSH BARRIER STORM DRAIN +=== DEWATERING STRUCTURE INLET PROTECTION CULVERT INLET PROTECTION(CIP) TURBIDITY CURTAIN TEMPORARY DIVERSION DIKE (DD) SUBSURFACE DRAIN \_\_\_\_\_ SURFACE ROUGHENING TEMPORARY FILL DIVERSION TEMPORARY RIGHT-OF-WAY TOPSOILING DIVERSION DIVERSION TEMPORARY SEEDING <del>----</del>(75)----PERMANENT SEEDING <del>----</del>(8)----TEMPORARY SEDIMENT TRAF SUDDING ----(s)------TEMPORARY SEDIMENT BASIN BERMUDA GRASS AND TEMPORARY SLOPE DRAIN DYSIAURASS ESTABLISHMENT <del>----(N)</del> PAVED FLUME MULCHING STORMWATER CONVEYANCE TREAT. 1 TREAT LANKETS AND MATTING OUTLET PROTECTION AND GROUND COVERS

SYMBOL TITLE TREE PRESERVATION AND PROTECTION

EROSION-SILTATION CONTROL COST ESTIMATE

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COS	
CONSTRUCTION ENTRANCE	EA	1	\$ 1,250.00	\$	1,250.0
SILT FENCE	LF	1000	4.00		4,00
INLET PROTECTION	EA	4	250.00		1,000.0
STAW BALE BARRIER	LS	1	100.00		100.0
CONSTRUCTION ROAD STABILIZATION	TON	200	15,00		3,000,
TEMPORARY SEEDING	AC.	0.181	1,000.00		181.0
PERMANENT SEEDING	AC.	0.181	1,500.00		272.0
^					
SUB-TOTAL .				\$	9,80
10% CONTINGENCY	ICY				980.3
TOTAL PROJECT COST				\$	10,783.3



TYPE A TYPE B (SLOPES 3:1 OR STEEPER) 15 OCTOBER TO 1 FEBRUARY CROWN VETCH @ 1/2 LB / 1000 SF

DUST CONTROL

RED TOP @ 1/8 LB / 1000 SF

K-31 FESCUE @ 5 LB / 1000 SF BURZY WINTER RYE @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF

WIRE MESH

FILTERED WATER

15 AUGUST TO 1 OCTOBER CROWN VETCH @ 1/2 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF 1 JUNE TO 1 SEPTEMBER RED TOP @ 1/8 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF

GERMAN MILLET @ 1/2 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF

**MANAGEMENT STRATEGIES** 

sediment control measures.

<u>MAINTENANCE</u>

have silt fence installed around the stockpile.

140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTINE

FERTILIZER: 5-20-10 @ 25 LB / 1000 S 38-0~0 € 7 LB / 1000 SF IF REQUIRED, SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE

AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN

THE VIRGINIA SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED.

1. Construction will be sequenced to begin and end grading operations as quickly as possible.

process. Topsoil should be stripped in all areas where a surface feature will be installed.

Topsoil may be stockpiled on site or hauled off site. It the topsoil is stockpiled on site, it should

2. All silt fence and the construction entrance will be installed as the first step of the grading

3. All areas shall be seeded with permanent stabilization as soon as they reach final grade.

4. The contractor shall be responsible for installation and maintenance of all erosion and

be removed and those areas brought to final grade and stabilized.

grass is maintained. Areas shall be fertilized and reseeded as required.

5. Once the site has been stabilized, the temporary erosion and sediment control measures may

All sediment and erosion control measures shall be checked daily and after all significant rainfall. In

1. Silt Fence shall be checked regularly to ensure that the fabric has not been undermined or has

2. Areas which have received seeding shall be checked regularly to ensure that a good stand of

deteriorated. Sediment shall be removed when level of buildup reaches halfway up the barrier.

MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

CONSTRUCTION NOTES

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. SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF ROANDKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS,

2. SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHED OR STEPPED PRIOR TO PLACING FILL ON THEM.

3. ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. FILL MATERIAL SUILS, IN GENERAL

SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT WHICH IS READILY CONTROLLED SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE

(SHRINKAGE OR SWELL) OR SETTLEMENT FILL MATERIALS CONTAINING ROCKS LARGER THAN SIX (6) INCHES (15.2 CM) SHALL NOT BE USED. THE UPPERMOST TWO (2) FEET (61 CM) SHALL NOT HAVE ANY ROCK LARGER THAN TWO (2) INCHES (5.1 CM) IN DIAMETER.

5, THE APPROVED FILL SHALL BE PLACED IN EIGHT (8) INCH (20 CM)
LOOSE LIFTS. EACH LIFT SHALL BE SPREAD IN UNIFORM LAYERS. FILL SOIL SHALL BE UTILIZED ONLY WITHIN A MOISTURE RANGE OF +/- 5% OF THE OPTIMUM MOISTURE CONTENT. COMPACTION OF THE FILL SHALL BE PERFORMED WITH APPROVED EQUIPMENT. COMPACTION

5. EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM 95% DENSITY IN ACCURDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.

'. FIELD DENSITY TESTS ARE TO BE CONDUCTED BY AN INDEPENDENT SOILS TESTING LABORATORY UNDER THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER. THE RESULTS OF THESE TESTS SHALL BE SUBMITTED TO THE COUNTY OF ROANOKE WITH AS-BUILT PLANS AS A CONDITION OF ACCEPTANCE OF THE FACILITY BY THE COUNTY. FIELD DENSITY TESTS, AS DIRECTED BY THE ENGINEER SHALL BE PERFORMED PERIODICALLY TO DETERMINE THE DEGREE OF COMPACTION. ANY AREAS FAILING TO MEET THE ABOVE REQUIREMENTS SHALL BE REWORKED AND/OR RECOMPACTED UNTIL THE REQUIRED DEGREE OF COMPACTION IS

R. ANTI-SEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

9. ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEEDED.

O. THE MINIMUM SLOPE OF THE BASIN "FLOOR SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY.

# GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.

3. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS

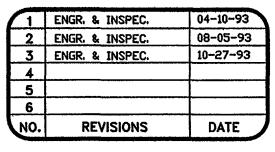
4. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN

5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.

5. FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THESE SYMBOLS AND KEYS ARE TO BE UTILIZED ON ALL EROSION CONTROL PLANS SUBMITTED TO ROANDKE COUNTY.

TOTAL DISTURBED AREA = 0.71 AC. = 33,928 SQ. FT.

# DEPARTMENT ENGINEERING AND INSPECTIONS



COUNTY OF ROANOKE

> FILTER CLOTH

WASH RACK DETAIL (IF REQUIRED)

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

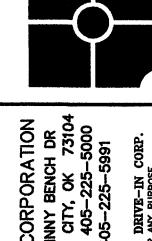
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APPROVED BY: GWS,III

**EROSION & SEDIMENT CONTROL** STORMWATER MANAGEMENT DETAILS

LTH OF SHELDON R. BOWER





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06-0033-04

WVWA ID# 6QZG8M

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APRIL 14, 2006