# TRASHGUARD WATER QUALITY "A"

# SEE DETAIL SHEET 1

Trashguard Calculations: Calculate Outflow with Perforated Trashguard:

Use 28° Trashguard, width = 28°, height = 30°, curved face = 31.7° Top of Trashguard = 572.13, Bott Elevation = 569.63 Starting Hole Elevation = 569.69 Area needed for 24 hr. dewatering: A = q/4.81 $\sqrt{h}$ 

Q = 9.25 cfs h = T-B/2, where T = Top Elevation, B = Bott Hole Elevation h = 572.13-569.69/2 = 1.22 A = 9.25/4.81 x  $\sqrt{1.22}$  A = 1.741 Sq Ft..

1.741 Sq. Ft. x 144 Sq. In./Ft. = 250.70 Sq. In.

Section 1: L =  $31.7^{\circ}$  H =  $10^{\circ}$ ,  $3/8^{\circ}$  dia. holes at  $\frac{3}{2}^{\circ}$  spacing = 12 rows 6 w/42 holes & 6 w/41 holes staggered Area of hole = 0.110 SI x 498 holes = 54.78 Sq. In. total area

Section 2: L = 31.7" H = 6", 3/4" dia. holes,  $\frac{3}{4}$ " vert. spacing = 7 rows 1.5" hor. Spacing = 20 & 21 holes staggered 4 rows w/21 holes & 3 rows w/20 holes Area of hole = 0.442 SI x 144 holes = 63.65 Sq. In. total area

Section 3: L =  $31.7^{\circ}$  H =  $6^{\circ}$ ,  $3/4^{\circ}$  dia. holes,  $\frac{3}{4}^{\circ}$  vert. spacing = 7 rows 1.5" hor. Spacing = 20 & 21 holes staggered 4 rows w/21 holes & 3 rows w/20 holes

Area of hole = 0.442 SI x 144 holes = 63.65 Sq. In. total area Section 4: L =  $31.7^{\circ}$  H =  $5^{\circ}$ ,  $3/4^{\circ}$  x  $4.5^{\circ}$  slots,  $1/4^{\circ}$  vert. spacing = 30 slots Area of slot = 3.375 SI x 30 slots = 101.25 Sq. In. total area

Total open area = 283.33 Sq. In. > 250.70 (OK)

HW = 571.85 Top of MH = 575.00 Freeboard = 3.15

## BIO-RETENTION AREA WATER QUALITY "B"

#### Water Quality Volume Required:

WQv = (P) Rv (A) / 12 = Water Quality Volume Required

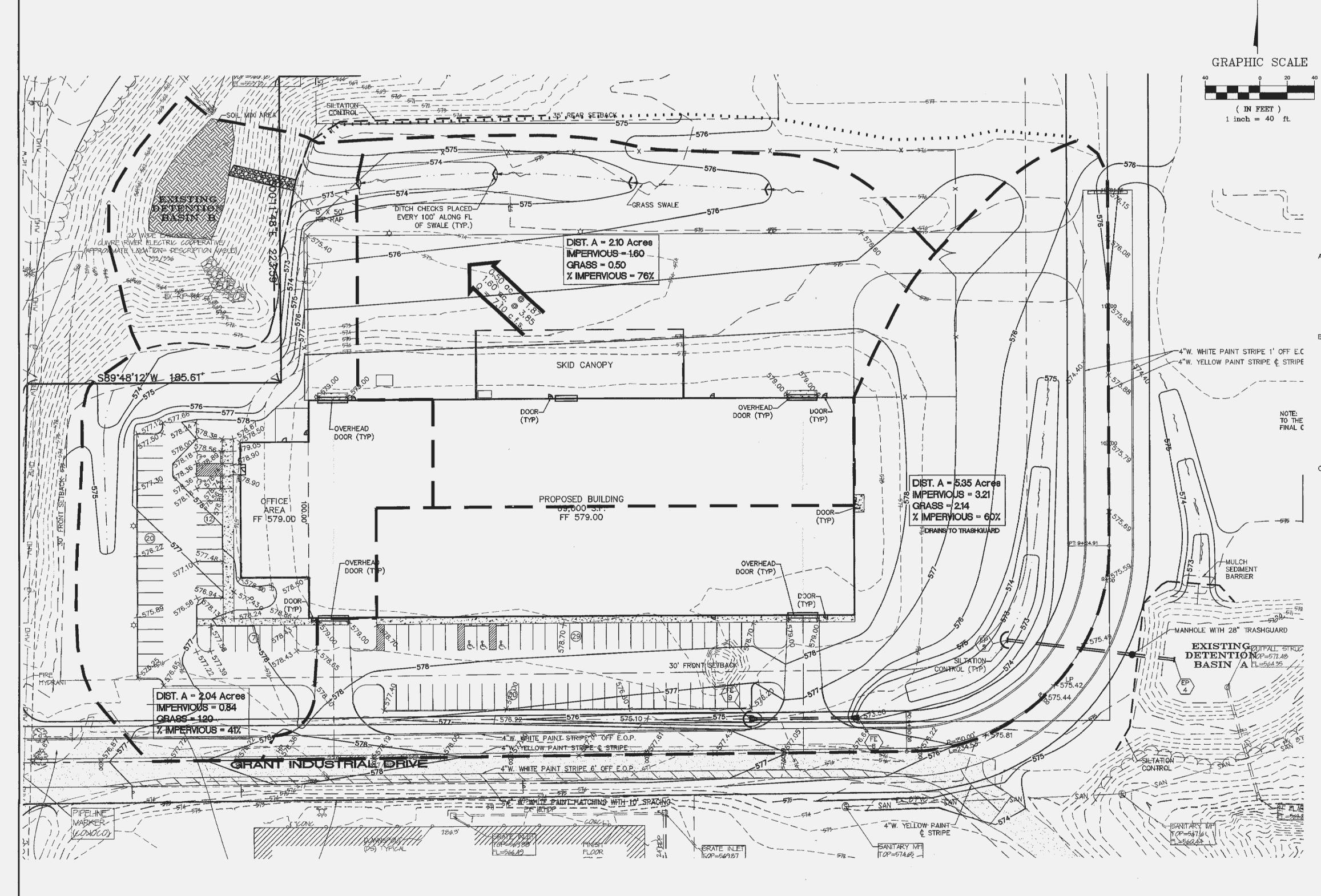
Rv = (0.05 + 0.009 (I))P = 1.14 Inches of Rainfall

A = 2.04 Acres

| = Percent Inpervious Cover WQv = ((1.14)(0.05 + 0.009 (41%))(2.04)(43,560)/12 = 3,537 ft<sup>3</sup> Required

#### Soli Mix Storage Volume:

SOIL MIX IN BOTTOM OF DETENTION BASIN IS BELOW THE 557 CONTOUR AND HAS A VOID RATIO OF 40% BY VOLUME. Vmix =  $(3630 (2.5 \text{ ft. deep})) (.4) = 3630 \text{ ft}^{*}$ 



## DRY SWALE WATER QUALITY "C"

### Water Quality Volume Required:

WQv = (P) Rv (A) / 12 = Water Quality Volume RequiredRv = (0.05 + 0.009 (I))

P = 1.14 Inches of Rainfall

A = 2.10 Acres I = Percent Inpervious Cover WQv = ((1.14)(0.05 + 0.009 (76%))(2.10)(43,560)/12 = 6,378 ft<sup>3</sup> Required

## Swale Water Quality Volume:

AREA FROM 573 TO 576 AT 12" DEPTH = 15,780 S.F. VOLUME = 15780 X 1.0'DP = 15,780 C.F.

# VOLUME ACHIEVED AT 0.40' (5")

#### **15 yr. 20 min. High Water Elevation** TQ15 = 7.10 cfs AT CHECK DAM 573

V = 0.65 fps D = 0.77' High Water = 573.77 Top of Bank = 575.0 Freeboard = 1.23'

# SPILL AND SITE POLLUTION:

Should an accidental spill occur refer to material safety data sheets. Any spills of hazardous materials in quantities in excess of reportable quantities as defined by EPA or the state agency regulations, shall be immediately reported to the EPA National Response Center (800–424–8802) and Missouri Department of Natural Resources (573–634–2436). Reportable spills for petroleum products is greater than 50 gallons. All other reportable hazardous materials and their quantities may be found on the web site at http://www.dnr.mo.gov an the local number is 573–840–9750. Federal law requires the responsible party to report any release of oil if it reaches or threatens a sewer, lake, creek, stream, river, groundwater, wetlands, or area like a road ditch, that drains into the above.

An emergency spill kit is required to be onsite for all potential spills.

## STORM WATER POLLUTION PREVENTION PLAN

#### A. PURPOSE:

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- The Storm Water Pollution Prevention Plan (SWPPP) shall meet the following objections:
- Prevent erosion where construction activities shall occur.
- Prevent pollutants from mixing with storm water.
- Prevent pollutants from being discharged by trapping them on—site, before they can affect the receiving waters.
- B. PROJECT DESCRIPTION:
- The project is located in the Peruque Creek watershed in St. Charles County, Missouri. The project disturbs approximately 8.3 acres.
- The project activities consist of clearing and grading the site for future industrial development. The site will be protected with the various erosion protection measures listed below:
- 1. Silt Barriers: The perimeter of the project that allows storm water to exit will have silt barriers installed. These barriers shall be composed of mulch from onsite clearing operations. Details of these devices are depicted on the construction plans prepared by Bax Engineering Company, Inc.
- <sup>5</sup>2.Re-vegetation: The site will consist of varying ground slopes upon completion of the grading activities and will be seeded and strawed to stabilize the slope and prevent erosion.
- 3.Storm Water Quality: Construction of Bio-Retention areas and Bio-Swales along with inlet filters will be utilized for storm water protection.
- C. MAINTENANCE AND INSPECTION:

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- <u>Regular Maintenance:</u> Weekly inspections of the project will include: (a) The repair of any sediment (silt) mulch barriers not well shaped or out of place; (b) The removal of any accumulated trash and/or debris: (c) The clearing of debris, weeds and wild growth and the removal of vegetation where necessary to allow the storm water quality items to perform effectively; and (d) The removal of any externally deposited waste materials.
- <u>Periodic Inspections:</u> Following each rain of more than 0.50 inch, the site will be inspected within 24 hours, and any necessary maintenance will be provided for a period of one year following the completion of the above remediation measures.
- <u>Maintenance and Inspections Summary</u>. Summaries of the maintenance and the inspections will be maintained and shall be available from the Owner. An inspection report should be filed and kept on site for every inspection. The report should detail the findings of the inspection and if any action was required. The inspection form needs to include; name of site, name of inspector, permit number, date of inspection, major observations, actions taken to correct problems and the signature of inspector. The inspection reports need to kept in an accessible onsite location. The reports must be kept on file by the permitee for three years after the project is completed.
- The field inspections will be conducted in a systematic manner to minimize the possibility of any significant feature being overlooked. A detailed checklist will be developed and followed for the examination. Particular attention will be given to detecting evidence of erosion, slope instability, undue settlement, displacement, and tilting. Photographs and drawings will be used freely to record conditions in order to minimize descriptions. The field inspection will include appropriate features and items, including potential hazards to human life or property.
- The condition of the slopes and vegetative cover will be evaluated and examined for erosion. If required basins will be examined for excessive sedimentation and increase in sediment loads, which will reduce the basins capacity.
- Measures will be taken to promote the growth of vegetation and repair of damage caused by erosion and sedimentation. The inspection will also provide recommendations for measures that need to be undertaken immediately, based on the experience and judgment of the inspector. Necessary follow up inspections will be made as necessary to verify that any maintenance, alteration, or repair measures are accomplished by methods acceptable by standard engineering practice.

Table 60-5 Soil Stabilization Schedule		
Soil Disturbance Activity or Condition	Required Stabilization Time	
Soil disturbance has ceased in areas greater than 2,000 square feet.	14 days	
After construction of dikes, swales, diversions, and other concentrated flow areas	5 days	
When slopes are steeper than 3 horizontal to1 vertical	7 days	
When slopes are greater than 3% and longer than 150 feet.	I4 days	
Perimeter controls around soil stockpiles.	End of workday	
Stabilization or covering of inactive stockpiles.	30 days	
When land disturbance is completed, permanent soil stabilization must be installed.	30 days	

PROJECT TITLE:	PHOENIX	METALS	Bax Project # 01-11691D   Issue Date: 09/06/2013	
	ENCINEERING PLANNING SURVEYING	221 Point West Blvd. St. Charles, MO 63301 636-928-5552	FAX 928-1718 Bex	
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Cirran Multimer Mann Civil Engineer 10 E29817 Copyright 2014 Bax Engineering Company, Inc. Engineering Authority No. 000655 Surveying Authority No. 000144 All Rights Reserved <b>REVISIONS</b> 01/29/14 CITY COMMENTS 02/03/14 CITY COMMENTS 02/03/14 CITY COMMENTS 05/06/14 REVISE UTILITY LAYOUT 08/27/14 REVISE RAIN GARDENS 09/25/14 OWNER REVISIONS 11/20/14 WATER QUAL REVISIONS 12/12/14 CITY COMMENTS 01/28/15 OWNER REVISIONS				
/ Owner:	<u>21/15</u> C11	ST. CHARLES, MO 63301 636-949-0680		
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