



Stormwater Management Plan

THE PURPOSE OF THIS REPORT IS TO DETERMINE AN ECONOMIC AND EFFECTIVE STORMWATER MANAGEMENT PLAN FOR SUBJECT SITE.

GENERAL:

THE DEVELOPMENT CONSISTS OF 0.799 ACRES AND IS LOCATED AT THE NORTHEAST CORNER OF UNIVERSITY BLVD. N.E. AND INDIAN SCHOOL RD. N.E. (SEE EXHIBIT I). PRESENTLY THE SITE SLOPES TO THE SOUTHWEST AND IS NOT LOCATED WITHIN A FLOOD PLAIN (SEE EXHIBIT II). THE SOIL ON SITE IS OF THE HYDROLOGIC SOIL GROUP TYPE A (CUT AND FILL LAND, SEE EXHIBIT III).

PER THE FINDINGS OF THE HYDROLOGY PRE-DESIGN CONFERENCE (REPORT ATTACHED), A FREE DISCHARGE SOLUTION WILL BE PURSUED WITH ALL RUNOFF BEING DIRECTED TO AN EXISTING STORMWATER INLET AT THE PROPERTY'S SOUTHERN MOST TIP VIA OVERLAND FLOW.

DRAINAGES:

THE SITE WILL BE GRADED SUCH THAT RUNOFF FROM 60% OF THE SITE WILL BE ROUTED THROUGH THE PARKING AREA AND DISCARDED ONTO UNIVERSITY BLVD. AT THE CURB CUT. FROM THIS POINT THE FLOW WILL TRAVEL VIA CURB & GUTTER TO THE EXISTING CATCH BASIN AT THE SITE'S SOUTHERN TIP. THE REMAINING 40% OF THE SITE SHALL DISCHARGE DIRECTLY TO UNIVERSITY BLVD. AND INDIAN SCHOOL RD. AS DIRECTED BY THE FINISHED CONTOURS. THESE FLOWS TOO WILL BE DELIVERED TO THE CATCH BASIN VIA EACH STREET'S RESPECTIVE CURB & GUTTER SYSTEM.

OFFSITE FLOWS FROM THE NORTH WILL BE PASSED THROUGH THE SITE VIA THE PARKING LOT SHALE. THE FLOWS WILL DISCHARGE THROUGH THE WESTERN DRIVEWAY ONTO UNIVERSITY BLVD.

THERE EXISTS A 0.25 ACRE STRIP OF RIGHT-OF-WAY ON INDIAN SCHOOL ROAD'S NORTHSIDE THAT IS BEING INCORPORATED INTO THE PROJECT'S SITE AND LANDSCAPING PLAN. AS INDICATED, THIS STRIP WILL BE COMPLETELY SLODED WITH A MEAN-RAINING STRIP FACILITATING PEDESTRIAN ACCESS TO THE OFFICE COMPLEX. ARRANGEMENTS HAVE BEEN MADE WITH STATE HIGHWAY DEPARTMENT TO UTILIZE THIS STRIP IN THIS MANNER.

CALCULATIONS:

UNDEVELOPED RUNOFF

PROJECT SITE
A = 0.799 ACRES (34,804 SF)
RIGHT OF WAY STRIP
A = 0.25 ACRES (10,890 SF)

$T_c = (10.0078) (L)^{0.77} (S)^{0.385}$
 $T_c = (10.0078) (250)^{0.77} (0.0149)^{0.385} = 5.68 \text{ MIN USE IN 10 MIN.}$

2.76 MINUTES USE 10.0 MINUTES

IMPERVIOUS SOIL TYPE A
C = 0.16
 $I = (12.2) (6.84) (10)^{-0.51} = 4.65 \text{ IN/H}$
 $Q = C I A = (0.16) (4.65) (10.89) = 0.78 \text{ CFS}$

DEVELOPED RUNOFF

AREA A
A = 0.48 AC (20,882 SF)
 $T_c = (10.0078) (L)^{0.77} (S)^{0.385}$
 $T_c = (10.0078) (250)^{0.77} (0.015)^{0.385} = 5.68 \text{ MIN USE IN 10 MIN.}$

USE 10.0 MINUTES

TOTAL AREA = 20,882 SF (0.48 AC)
PAVED AREA = 17,720 SF (0.41 AC)
PERVIOUS AREA = 3,162 SF (0.07 AC)

$17,720 / 20,882 = 85\% \text{ IMPERVIOUS}$
C = 0.70
 $I = (12.2) (6.84) (10)^{-0.51} = 4.65 \text{ IN/H}$
 $Q = C I A = (0.70) (4.65) (0.48) = 1.56 \text{ CFS}$

AREA B
A = 0.37 AC (16,229 SF) INCLUDES RIGHT OF WAY STRIP
 $T_c = (10.0078) (L)^{0.77} (S)^{0.385}$
 $T_c = (10.0078) (270)^{0.77} (0.034)^{0.385} = 2.14 \text{ MIN USE 10.0 MIN.}$

USE 10.0 MIN.

TOTAL AREA = 24,829 SF (0.57 AC)
PAVED AREA = 1,800 SF (0.04 AC)
PERVIOUS AREA = 23,029 SF (0.53 AC)

$1,800 / 24,829 = 7\% \text{ IMPERVIOUS}$
C = 0.19
 $I = (12.2) (6.84) (10)^{-0.51} = 4.65 \text{ IN/H}$
 $Q = C I A = (0.19) (4.65) (0.57) = 0.50 \text{ CFS}$

OFFSITE EXTRANEOUS FLOWS

A = 2.5 AC (108,900 SF)
 $T_c = (10.0078) (L)^{0.77} (S)^{0.385}$
 $T_c = (10.0078) (300)^{0.77} (0.006)^{0.385} = 4.5 \text{ MIN USE 10.0 MIN.}$

USE 10.0 MIN.

TOTAL AREA = 2.5 ACRES (108,900 SF)
PAVED AREA = 1.9 ACRES (82,764 SF)
PERVIOUS AREA = 0.6 ACRES (26,076 SF)

$82,764 / 108,900 = 76\% \text{ IMPERVIOUS}$
C = 0.61
 $I = (12.2) (6.84) (10)^{-0.51} = 4.65 \text{ IN/H}$
 $Q = C I A = (0.61) (4.65) (2.5) = 7.1 \text{ CFS}$

PARKING LOT SHALE CAPACITY

RAINFALLS: $Q = (1.486) (115) (1/2) (3600) = 31,211.3 \text{ GAL}$

$n = 0.017$
 $S = 0.0085$
 $A = 7.2$
 $F = 0.2$

$Q = (1.486) (115) (1/2) (3600) = 31,211.3 \text{ GAL}$
 $Q = 75.6 \text{ CFS} > 6.8 \text{ CFS}$

CONCLUSION:

DEVELOPED RUNOFF CONDITIONS WILL DELIVER 2.08 CFS OF RUNOFF TO THE CATCH BASIN VERSUS 0.78 CFS OF RUNOFF WHICH CURRENTLY IS DIRECTED TO THE CATCH BASIN. DUE TO THE EXTREMELY SMALL TIMES OF CONCENTRATION ASSOCIATED WITH THESE DEVELOPED FLOWS, THE EXISTING CATCH BASIN AND CORRESPONDING STORM SEWER WILL ABSORB THESE FLOWS BEFORE FLOW QUANTITIES ARRIVE AT THE CATCH BASIN FROM THE OUTER REACHES OF THE WATERSHED IN WHICH THE PROJECT SITE IS LOCATED.

Legend

Flow Arrows
Drainage Area Boundary
Existing Spot Grade
New Spot Grade

15/5/224

Outline Specification For Earthwork

REFER TO GEOTECHNICAL INVESTIGATION BY SERGEANT, HASKINS & RECKWITH. JOB # EGS-1051, MAY 10, 1985.

CLEARING & GRUBBING

CLEARING AND GRUBBING WILL BE REQUIRED FOR ENTIRE SITE. ALL VEGETATION SHALL BE REMOVED FROM SITE. GRASS AND TOPSOIL MAY BE STOCKPILED AND LATER USED IN TOP 6 INCHES OF FILLS OUTSIDE ROADWAYS AND BUILDING PAD.

FILL MATERIAL UNDER FOUNDATION AND WITHIN 3 FEET OF SLABS

THE FILL MATERIALS SHALL BE GRAVEL, SAND, SILT, OR CLAY MIXTURES WHICH HAVE A PLASTICITY INDEX NOT GREATER THAN 6 AND A LIQUID LIMIT NOT GREATER THAN 25. MATERIAL LARGER THAN 6 INCHES SHALL NOT BE PLACED IN THE FILL, AND MATERIAL LARGER THAN 4 INCHES SHALL NOT BE PLACED WITHIN 1 FOOT OF THE BEARING SURFACES OF SLABS OR FOUNDATIONS. MATERIALS SHALL BE APPROVED BY THE SOILS ENGINEER.

PREPARATION OF EXCAVATED SURFACES

THE EXCAVATED SURFACE UNDER THE AREAS TO BE FILLED SHALL BE SCARIFIED, BROUGHT TO OPTIMUM MOISTURE CONTENT (+/-2%) FOR A MINIMUM OF 10 INCHES, AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557.

PREPARATION OF BEARING SURFACES

PRIOR TO FOOTING PLACEMENT, THE PROPOSED BEARING SURFACES SHALL BE SCARIFIED, MOISTENED TO OPTIMUM MOISTURE CONTENT (+/-2%) FOR A MINIMUM OF 10 INCHES, AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557.

PREPARATION OF NATURAL GROUND FOR SLAB PAVING SUPPORT

PRIOR TO THE PLACEMENT OF FLOOR SLABS AND SIDEWALKS, THE NATURAL GROUND AT SLAB ELEVATION SHALL BE SCARIFIED, MOISTENED TO OPTIMUM MOISTURE CONTENT (+/-2%) FOR A MINIMUM OF 12 INCHES AND COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY.

BACKFILL AND SURFACE DRAINAGE

THE FOUNDATION SOILS SHOULD BE PREVENTED FROM BEING WETTED AFTER CONSTRUCTION TO PREVENT POST-CONSTRUCTION SETTLEMENT. BACKFILL AROUND THE FOUNDATIONS SHOULD BE FREE OF TRASH AND CONSTRUCTION DEBRIS. IT SHOULD BE MOISTENED AND COMPACTED TO A MINIMUM OF 90% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM-D 1557. ONLY ENOUGH WATER SHOULD BE ADDED TO THE BACKFILL MATERIAL TO ALLOW PROPER COMPACTION. THE BACKFILL SHOULD NOT BE FLOODED OR JETTED.

PLACING FILL

NO BRUSH, SOD, FROZEN MATERIAL, OR OTHER PERISHABLE OR UNSUITABLE MATERIAL SHALL BE PLACED IN THE FILL. DISTRIBUTION OF MATERIAL SHALL BE SUCH AS TO AVOID LENSES DIFFERING SUBSTANTIALLY FROM THE SURROUNDING MATERIAL. THE MATERIALS SHALL BE DELIVERED TO THE FILL IN SUCH A MANNER AS TO RESULT IN A WELL AND UNIFORMLY COMPACTED FILL. BEFORE COMPACTING, THE FILL MATERIAL SHALL BE SPREAD IN APPROXIMATELY HORIZONTAL LAYERS NOT GREATER THAN 8 INCHES THICK.

MOISTURE CONTROL

THE MATERIAL, WHILE BEING COMPACTED, SHALL CONTAIN THE OPTIMUM MOISTURE FOR COMPACTION DISTRIBUTED UNIFORMLY THROUGHOUT THE LAYERS. THE CONTRACTOR SHALL BE REQUIRED TO ADD MOISTURE TO THE MATERIAL IN THE EXCAVATION IF, IN THE OPINION OF THE SOILS ENGINEER, IT IS NOT POSSIBLE TO OBTAIN PROPER AND UNIFORM MOISTURE BY ADDING WATER ON THE FILL SURFACE.

COMPACTION

WHEN THE MOISTURE CONTENT AND CONDITION OF EACH INDIVIDUAL LAYER IS SATISFACTORY, IT SHALL BE COMPACTED BY METHODS APPROVED BY THE SOILS ENGINEER. A PROCTOR TEST SHOULD BE PERFORMED ON EACH TYPICAL FILL MATERIAL AND FREQUENT DENSITY TESTS OF THE FILL SHALL BE TAKEN. WHEN COMPACTING COHESIONLESS FREE MATERIALS SUCH AS SANDS AND GRAVELS, THE MATERIAL SHALL BE DEPOSITED IN LAYERS AND COMPACTED BY TREADS OF A CRAWLER-TYPE TRACTOR, SURFACE OR INTERNAL VIBRATORS. SMOOTH OR PNEUMATIC ROLLERS, HAND OR POWER TAMPERS OR BY ANY OTHER MEANS APPROVED BY THE SOILS ENGINEER. THE THICKNESS OF THE HORIZONTAL LAYERS AFTER COMPACTION SHALL NOT EXCEED 6 INCHES COMPACTED THICKNESS IF COMPACTION IS PERFORMED BY TRACTOR TREADS, SURFACE VIBRATORS OR SIMILAR EQUIPMENT, OR NOT MORE THAN THE PENETRATING LENGTH OF THE VIBRATOR HEAD IF COMPACTION IS PERFORMED BY INTERNAL VIBRATORS.

DENSITY REQUIREMENTS

FILL PLACED FOR FOUNDATION SUPPORT SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557. FILL PLACED FOR SLAB SUPPORT SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557.

August 20, 1985
August 27, 1985 PDV

CARY W. TIDWELL
1600 University
Grading & Drainage

Resubmitted to
slow change in
Robt Drain
CAM
7-3-86

Grading & Drainage
1" = 20'

Legal Description:
"Lot 4 Land of Bahut Ahyed Temple A.A.O.M.S. of Albuquerque, New Mexico within T10N, R1E, S1E, R.B.P.M. 78 the spot is shown and designated on the Plat thereof, filed for Public Record in the Office of the County Clerk of Bernalillo County, New Mexico on December 7, 1984 in Volume C-25, Folio 162."

RECEIVED
JUL 03 1986
HYDROLOGY SECTION

