

File Path: P:\DATA\2013\186\7\ENG\ Plot Date: 09-19-2014
File Name: 131867_SH6.DWG Plot Time: 12:43 pm

DRAINAGE PLAN

I. INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT, LOCATED IN THE UPPER SOUTH VALLEY OF THE ALBUQUERQUE METROPOLITAN AREA, REPRESENTS A MODIFICATION TO AN EXISTING APS SCHOOL SITE WITHIN AN INFILL AREA. THE PROPOSED BUS LANE IMPROVEMENTS ARE COMPRISED OF A NEW CONCRETE SIDEWALK AS AN IMPROVED STUDENT STAGING AREA, WITH ASSOCIATED SIDEWALK CULVERTS AND DRY STREAM BEDS FOR IMPROVED SITE DRAINAGE. THE DRAINAGE CONCEPT FOR THIS PROJECT WILL BE THE FREE DISCHARGE OF RUNOFF FROM THE PROJECT SITE TO MAE AVENUE SW, VIA BOTH SURFACE SHEET FLOW AND CONCENTRATED DISCHARGE VIA NEW SIDEWALK CULVERTS.

THIS SUBMITTAL IS MADE IN SUPPORT OF SO #19 PERMIT WITHIN THE JURISDICTION OF THE CITY OF ALBUQUERQUE.

II. PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THE SCHOOL SITE IS LOCATED ON THE SOUTH AND EAST SIDES OF MAE STREET SW, WEST OF ATRISCO DRIVE SW AND SOUTH OF GONZALES SW. CURRENT LEGAL DESCRIPTION IS A PORTION OF TRACT 23E1AC, MRGCD NO. 39. AS SHOWN BY PANEL 333 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS PUBLISHED BY FEMA FOR BERNALILLO COUNTY, NEW MEXICO, AUGUST 16, 1012, THIS SITE DOES NOT LIE WITHIN A DESIGNATED FLOOD HAZARD ZONE. FURTHERMORE, THE SITE DOES NOT APPEAR TO DISCHARGE TO A DOWNSTREAM DESIGNATED FLOOD HAZARD AREA.

III. BACKGROUND DOCUMENTS AND RESEARCH

THE PREPARATION OF THIS PLAN RELIED UPON THE FOLLOWING DOCUMENT:

- TOPOGRAPHIC SURVEY PREPARED BY HIGH MESA CONSULTING GROUP (NMPS 11184) DATED 7/31/2014. THIS REFERENCED SURVEY PROVIDES THE BASIS FOR THE EXISTING CONDITIONS OF THE PROJECT SITE.

IV. EXISTING CONDITIONS

THE OVERALL SITE IS DEVELOPED AS AN APS ELEMENTARY SCHOOL. THE PROJECT AREA CONSISTS OF A PORTION OF THE SITE IMMEDIATELY ADJACENT TO MAE AVENUE SW THAT SERVES AS A STUDENT STAGING AREA FOR BUS PICK-UP / DROP-OFF ALONG MAE AVENUE SW. ACCESS TO THE BUSES IS RESTRICTED BY ORNAMENTAL FENCING, WITH FOUR (4) ORNAMENTAL GATES THAT ACT AS QUEUE POINTS FOR THE STUDENTS. THIS AREA IS CURRENTLY LANDSCAPED, WITH NO PAVED ACCESS WITHIN THE SCHOOL PROPERTY SOUTH OF THE FENCE. THIS AREA GENERALLY DRAINS SOUTH TO NORTH, WITH RUNOFF SHEETFLOWING ACROSS THE PUBLIC SIDEWALK AND INTO MAE AVE SW. THREE (3) ROOF DRAINS DISCHARGE ONTO THE EXISTING LANDSCAPING, RESULTING IN EROSION WITHIN THE LANDSCAPED AREA AND STANDING WATER IN THE STUDENT STAGING AREAS.

THERE ARE NO OFFSITE FLOWS IMPACTING THIS PROJECT SITE; PERMANENT SCHOOL IMPROVEMENTS LIE TO THE THE WEST, SOUTH, AND EAST OF THE PROJECT SITE, AND MAE AVENUE TO THE NORTH IS TOPOGRAPHICALLY LOWER THAN THE PROJECT SITE.

V. DEVELOPED CONDITIONS

THE PROPOSED CONSTRUCTION CONSISTS OF PAVED SIDEWALK PEDESTRIAN IMPROVEMENTS TO ACCOMMODATE MORE EFFICIENT AND SAFER STAGING AND MOVEMENT OF STUDENTS, AS WELL AS THE ADDITION OF DRY STREAM BEDS AND SIDEWALK CULVERTS TO CONVEY ROOF RUNOFF NORTH TO MAE AVENUE SW, MITIGATING THE EROSION AND STANDING WATER WITHIN THIS AREA. A NEW HEADER CURB AT THE BACK OF THE PROPOSED SIDEWALKS WILL CONTAIN EXISTING GRAVEL LANDSCAPING, MITIGATING THE POTENTIAL MIGRATION OF GRAVEL ONTO THE NEW PAVED STUDENT STAGING AREA.

RUNOFF FROM THE PAVED IMPROVEMENTS WILL CONTINUE TO SHEETFLOW FROM SOUTH TO NORTH INTO MAE AVENUE SW. CONCENTRATED RUNOFF FROM THE THREE (3) ROOF DRAINS WILL BE CONVEYED VIA NEW DRY STREAM BED NORTH TO NEW SIDEWALK CULVERTS. FROM THIS POINT, THE NEW CULVERTS EXTENDING THROUGH BOTH THE EXISTING AND PROPOSED SIDEWALKS WILL DISCHARGE RUNOFF DIRECTLY TO MAE AVENUE SW. THE NEW SIDEWALK CULVERTS WILL BE CONSTRUCTED BY SO #19 PERMIT WITHIN THE PUBLIC RIGHT-OF-WAY.

THE PROPOSED IMPROVEMENTS WILL NOT ALTER OFFSITE FLOW CONDITIONS.

VI. GRADING PLAN

THE GRADING PLAN SHOWS 1.) EXISTING AND PROPOSED GRADES INDICATED BY SPOT ELEVATIONS 2.) THE LIMIT AND CHARACTER OF THE EXISTING AND PROPOSED IMPROVEMENTS, AND 3.) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES. AS SHOWN BY THIS PLAN, THE PROPOSED GRADING WILL MAINTAIN THE CURRENT DRAINAGE PATTERN OF RUNOFF FLOW FROM SOUTH TO NORTH WITH DISCHARGE TO MAE STREET SW.

VII. EROSION AND SEDIMENT CONTROL PLAN

THIS PROJECT DISTURBS LESS THAN ONE-ACRE OF LAND, THEREFORE A SEPARATE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) HAS NOT BEEN PREPARED. THE SMALL SIZE OF THIS PROJECT DOES NOT WARRANT THE PREPARATION OF A SITE SPECIFIC EROSION AND SEDIMENT CONTROL PLAN. SHOULD SEDIMENT BECOME MOBILIZED AND EXIT THE PROJECT SITE, THE CONTRACTOR SHALL BE REQUIRED TO CLEAN-UP AND REMOVE THE SEDIMENT THAT MIGRATES ONTO THE EXISTING PUBLIC SIDEWALK TO ENSURE NO SEDIMENT IS DEPOSITED INTO MAE AVENUE SW.

VIII. CALCULATIONS

THE CALCULATIONS CONTAINED HEREON ANALYZE THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT. THE PROCEDURE FOR 40 ACRE AND SMALLER BASINS, AS SET FORTH IN THE REVISION OF SECTION 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY 1993, HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED. AS DEMONSTRATED BY THESE CALCULATIONS, THE PROPOSED IMPROVEMENTS WILL RESULT IN A NEGLIGIBLE INCREASE (0.1 CFS) IN THE DEVELOPED RUNOFF GENERATED BY THIS PORTION OF THE SITE.

IX. CONCLUSIONS

THE FOLLOWING CONCLUSIONS HAVE BEEN ESTABLISHED AS A RESULT OF THE EVALUATIONS CONTAINED HEREIN:

- THE PROPOSED IMPROVEMENTS REPRESENT A MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA.
- THE PROPOSED IMPROVEMENTS WILL MAINTAIN THE EXISTING DRAINAGE PATTERNS OF THIS PORTION OF THE EXISTING ELEMENTARY SCHOOL SITE.
- THE PROPOSED IMPROVEMENTS WILL RESULT IN A MINOR INCREASE IN THE IMPERVIOUSNESS OF THIS PORTION OF THE SITE, HOWEVER IT WILL ENHANCE DISCONNECTED IMPERVIOUSNESS THROUGH THE USE OF DRYSTREAM BEDS TO MANAGE EXISTING ROOF RUNOFF.
- THE PROPOSED IMPROVEMENTS WILL RESULT IN A NEGLIGIBLE (0.1 CFS) INCREASE IN PEAK DISCHARGE GENERATED BY THIS PORTION OF THE SITE.
- THE PROPOSED IMPROVEMENTS WILL ACCEPT AND CONVEY ROOF DRAIN RUNOFF TO MAE AVENUE SW, MITIGATING EXISTING EROSION AND STANDING WATER WITHIN THE STUDENT STAGING AREA.
- NEW SIDEWALK CULVERTS PROPOSED WITHIN THE PUBLIC RIGHT-OF-WAY WILL BE CONSTRUCTED BY SO #19 PERMIT.
- THE PROPOSED IMPROVEMENTS WILL NOT ADVERSELY IMPACT DOWNSTREAM PROPERTIES OR DOWNSTREAM DRAINAGE CONDITIONS.
- THIS PROJECT IS NOT SUBJECT TO AN EPA NPDES PERMIT

CALCULATIONS

I. SITE CHARACTERISTICS

- A. PRECIPITATION ZONE = 1
- B. $P_{100, 6 \text{ HR}} = P_{360} = 2.20$
- C. TOTAL PROJECT AREA (A_T) = 8,530 SF
0.20 AC

D. LAND TREATMENTS

1. EXISTING LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
A		
B		
C	8,070 / 0.19	95
D	460 / 0.01	5

2. DEVELOPED LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
A		
B		
C	6,160 / 0.14	70
D	2,370 / 0.06	30

II. HYDROLOGY

A. EXISTING CONDITION

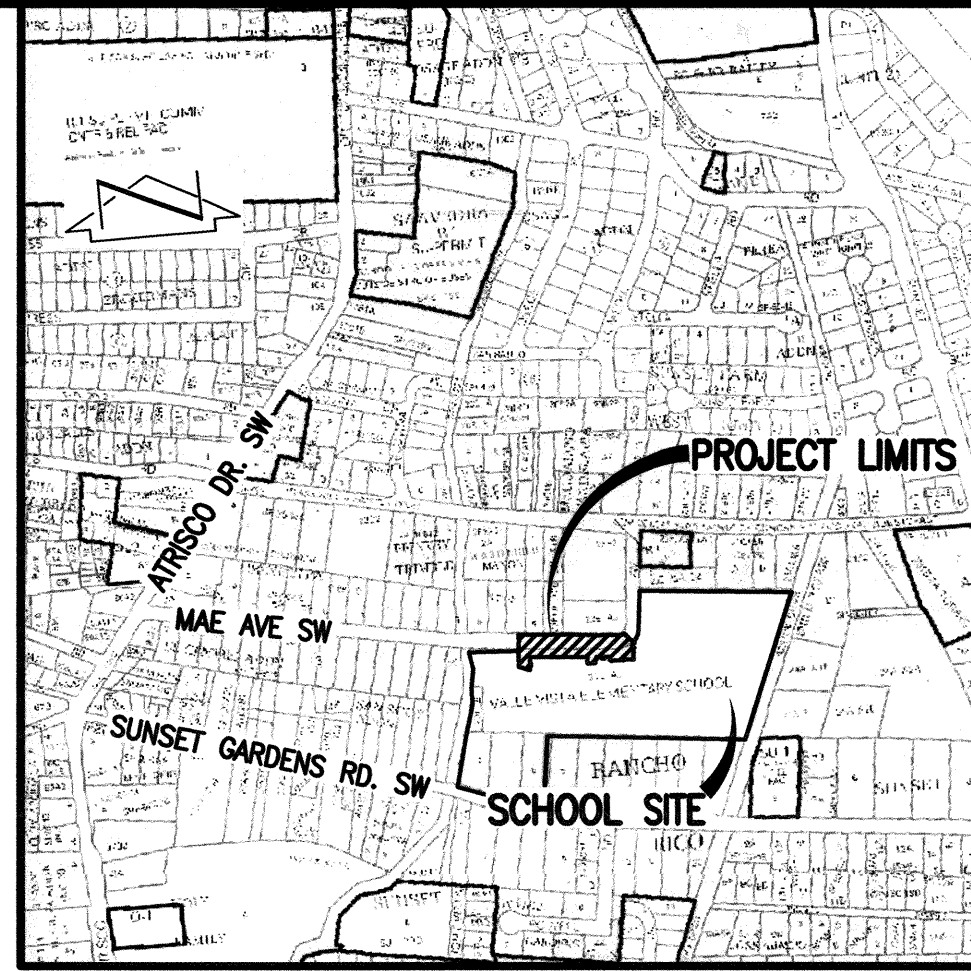
1. VOLUME
 $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$
 $E_W = (0.44 * 0.00) + (0.67 * 0.00) + (0.99 * 0.19) + (1.97 * 0.01) / 0.20 = 1.04 \text{ IN}$
 $V_{100, 6 \text{ HR}} = (E_W / 12) A_T = (1.04 / 12) 0.20 = 0.0170 \text{ AC-FT} = 740 \text{ CF}$
2. PEAK DISCHARGE
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = (1.29 * 0.00) + (2.03 * 0.00) + (2.87 * 0.19) + (4.37 * 0.01) = 0.6 \text{ CFS}$

B. DEVELOPED CONDITION

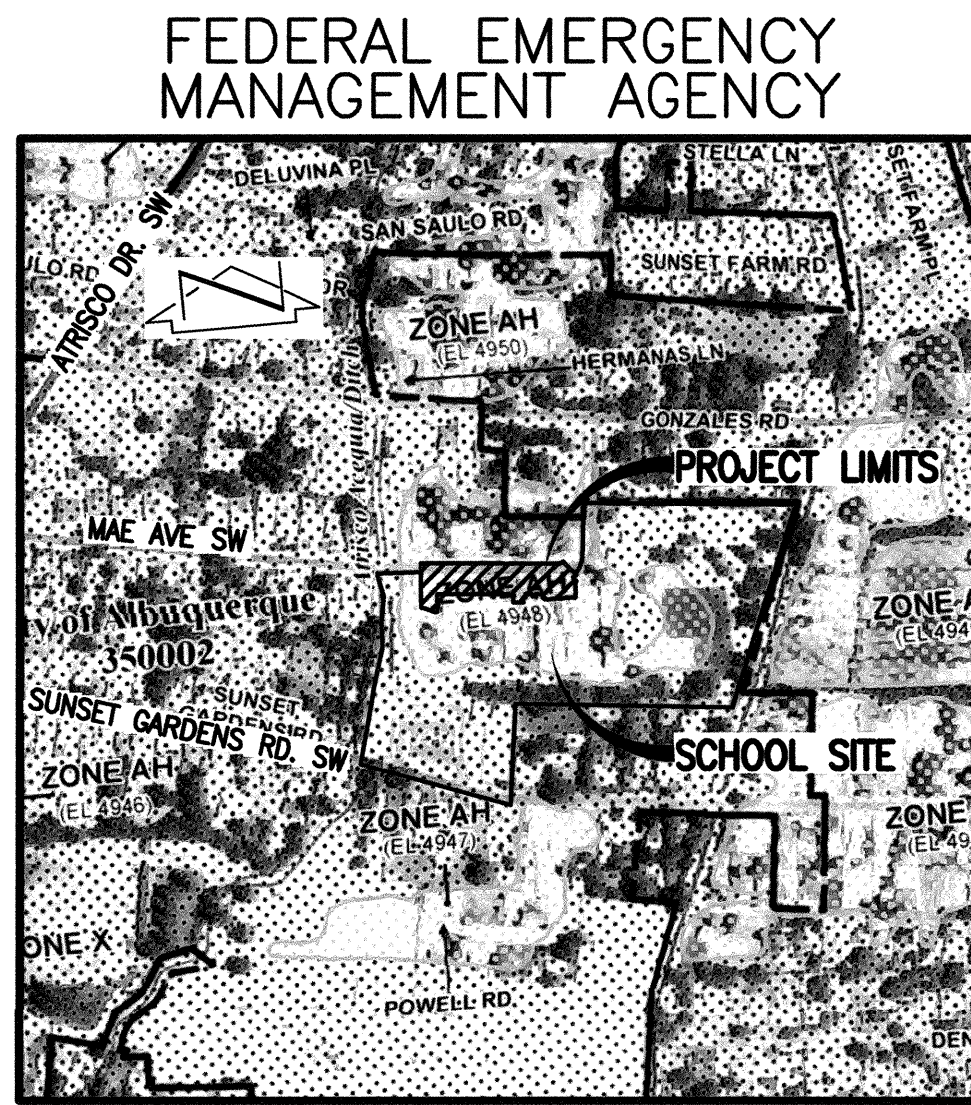
1. VOLUME
 $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$
 $E_W = (0.44 * 0.00) + (0.67 * 0.00) + (0.99 * 0.14) + (1.97 * 0.06) / 0.20 = 1.28 \text{ IN}$
 $V_{100, 6 \text{ HR}} = (E_W / 12) A_T = (1.28 / 12) 0.20 = 0.0215 \text{ AC-FT} = 940 \text{ CF}$
2. PEAK DISCHARGE
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = (1.29 * 0.00) + (2.03 * 0.00) + (2.87 * 0.14) + (4.37 * 0.06) = 0.7 \text{ CFS}$

C. COMPARISON

1. VOLUME
 $\Delta V_{100, 6 \text{ HR}} = 940 - 740 = 200 \text{ CF} \quad (\text{INCREASE})$
2. PEAK DISCHARGE
 $\Delta Q_{100} = 0.7 - 0.6 = 0.1 \text{ CFS} \quad (\text{INCREASE})$



D1 VICINITY MAP K-12
SCALE: 1" = 750'



C1 F.I.R.M. PANEL 333 OF 825
SCALE: 1" = 500'
DATE 08-16-2012

BENCHMARKS

PROJECT BENCHMARK

ACS 3 1/4" ALUMINUM DISC STAMPED "15-J12 1989"
RIVETED TO A PIPE 0.25 FEET ABOVE THE GROUND,
LOCATED ON THE SOUTH SIDE OF CENTRAL AVE. 32
FEET SOUTHWEST OF RIO GRANDE BRIDGE.
ELEVATION = 4965.627 FEET (NAVD 1988)

TEMPORARY BENCHMARK (T.B.M.) #1

A MAG NAIL IN ASPHALT, AS SHOWN ON SHEET 2.
ELEVATION = 4948.80 FEET (NAVD 1988)

TEMPORARY BENCHMARK (T.B.M.) #2

A MAG NAIL IN CONCRETE, AS SHOWN ON SHEET 2.
ELEVATION = 4947.62 FEET (NAVD 1988)

LEGAL DESCRIPTION

A PORTION OF TRACT 23E1A3, MRGCD NO. 39, ALSO
KNOWN AS VALLE VISTA ELEMENTARY SCHOOL

HIGH MESA Consulting Group

6010-B MIDWAY PARK BLVD. NE • ALBUQUERQUE, NEW MEXICO 87109
PHONE: 505.345.4250 • FAX: 505.345.4254 • www.highmesacg.com

DRAINAGE PLAN AND CALCULATIONS BUS LANE IMPROVEMENTS VALLE VISTA ELEMENTARY SCHOOL

DESIGNED BY J.D.S.

DRAWN BY J.Y.R.

APPROVED BY J.G.M.

REVISIONS				JOB NO.	
NO.	DATE	BY		2013.186.7	
				DATE 09-2014	
				SHEET 6 OF 6	



09-22-2014