

## DRAINAGE PLAN

## I. INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT, GENERALLY LOCATED AT THE NORTHEAST CORNER OF CANDELARIA ROAD NE AND ADAMS STREET NE, REPRESENTS A MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA. THE PROPOSED IMPROVEMENTS CONSIST OF ADDING TWO DOUBLE PORTABLE CLASSROOM BUILDINGS TO THE EXISTING P.A.P.A. CHARTER SCHOOL CAMPUS AT THE NORTHWEST CORNER OF THE BEL-AIR ELEMENTARY SCHOOL SITE. THE PROPOSED DRAINAGE CONCEPT IS TO CONTINUE THE FREE DISCHARGE OF RUNOFF FROM THIS PORTION OF THE SITE, BASIN 7, TO ADAMS STREET NE. THIS SUBMITTAL IS MADE IN SUPPORT OF FOUNDATION, GRADING AND PAVING PERMITS WITHIN THE JURISDICTION OF THE CITY OF ALBUQUERQUE.

## II. PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THIS PROJECT SITE IS LOCATED AT THE NORTHWEST CORNER OF THE BEL-AIR ELEMENTARY SCHOOL SITE AND COMPRISES A PORTION OF THE P.A.P.A. CHARTER SCHOOL CAMPUS. THE CURRENT LEGAL DESCRIPTION IS TRACTS H AND J, BEL-AIR ELEMENTARY SCHOOL, ALBUQUERQUE, NEW MEXICO, AS SHOWN BY PANELS 351 & 352 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS PUBLISHED BY FEMA FOR BERNALILLO COUNTY, NEW MEXICO, SEPTEMBER 26, 2008. THIS SITE DOES NOT LIE WITHIN A DESIGNATED FLOOD HAZARD ZONE. A PORTION OF THE OVERALL SCHOOL SITE DRAINS TO THE DESIGNATED FLOOD HAZARD (AO) ZONE CONTAINED WITHIN CANDELARIA ROAD NE. THIS PROJECT, HOWEVER, WILL NOT CONTRIBUTE RUNOFF TO THE FLOOD HAZARD ZONE AND INSTEAD DISCHARGES TO ADAMS STREET, FLOWING NORTH TO ULTIMATELY ENTER THE HAHN ARROYO WHERE CAPACITY IS NOT AN ISSUE.

## III. BACKGROUND DOCUMENTS AND RESEARCH

THE PREPARATION OF THIS SUBMITTAL RELIED UPON THE FOLLOWING DOCUMENT:

- DRAINAGE SUBMITTAL FOR THE P.A.P.A. CHARTER SCHOOL AT BEL-AIR ELEMENTARY SCHOOL PREPARED BY HIGH MESA CONSULTING GROUP, NMPS NO. 8547, DATED 10-16-2009 AND CERTIFIED 12-09-2009. THE SUBMITTAL PROVIDES THE BASIS FOR THE EXISTING CONDITION FOR THIS PORTION OF THE P.A.P.A. CHARTER SCHOOL CAMPUS. IN ADDITION, THE 2009 SUBMITTAL IDENTIFIED THAT THE PROPOSED IMPROVEMENTS LIE WITHIN BASIN 7 ON THE CHARTER SCHOOL CAMPUS. BASIN 7 IS ALLOWED FREE DISCHARGE TO ADAMS STREET NE; FROM THIS POINT THE RUNOFF FLOWS NORTH TO ULTIMATELY OUTFALL TO THE HAHN ARROYO.

## IV. EXISTING CONDITIONS

THIS PROJECT SITE IS LOCATED ON THE P.A.P.A. CHARTER SCHOOL CAMPUS AT THE NORTHWEST CORNER OF THE BEL-AIR ELEMENTARY SCHOOL SITE. THE PROJECT LIES ENTIRELY WITHIN BASIN 7 CONFIRMED BY THE 2009 DRAINAGE SUBMITTAL. THIS PORTION OF THE SITE CONSISTS PRIMARILY OF BARE GROUND COVER, WITH A PAVED ACCESS WALKWAY. RUNOFF GENERATED BY THE PROJECT SITE DRAINS FROM EAST TO WEST, DISCHARGING ONTO THE ADJACENT PAVED PARKING LOT. FROM THIS POINT, THE RUNOFF FLOWS NORTH ALONG THE PARKING LOT CURB AND GUTTER TO FREE DISCHARGE TO ADAMS STREET NE VIA EXISTING DRIVEPAD. RUNOFF THEN FLOWS NORTH WITHIN ADAMS STREET NE, A FULLY DEVELOPED PUBLIC STREET WITH CURB AND GUTTER AND ASPHALT PAVEMENT, TO ULTIMATELY DISCHARGE TO THE HAHN ARROYO, A PUBLIC DRAINAGE CHANNEL.

OFFSITE FLOWS DO NOT ENTER THE PROJECT SITE, AS CONFIRMED BY THE 2009 DRAINAGE SUBMITTAL. ONSITE RUNOFF FROM SCHOOL IMPROVEMENTS UPSTREAM SURFACE DRAIN ACROSS THE PROJECT SITE TO FREE DISCHARGE INTO ADAMS STREET NE AND ULTIMATELY OUTFALL TO THE HAHN ARROYO.

## V. DEVELOPED CONDITIONS

PROPOSED IMPROVEMENTS WITHIN THE PROJECT SITE CONSIST OF THE ADDITION OF TWO (2) DOUBLE PORTABLE CLASSROOM BUILDINGS ALONG WITH ADDITIONAL ASPHALT PAVING WITHIN BASIN 7. RUNOFF GENERATED BY THE NEW IMPROVEMENTS WILL CONTINUE TO DRAIN FROM EAST TO WEST, DISCHARGING ONTO THE EXISTING PARKING LOT. RUNOFF PROCEEDS TO FLOW NORTH ALONG THE EXISTING PARKING LOT CURB AND GUTTER TO FREE DISCHARGE INTO ADAMS STREET NE VIA EXISTING DRIVEPAD. FROM THIS POINT, THE RUNOFF FLOWS TO HAHN ARROYO AS DESCRIBED ABOVE.

THERE WILL BE A MINOR INCREASE IN IMPERVIOUS AREA DUE TO THE PROPOSED IMPROVEMENTS, RESULTING IN A MINOR INCREASE IN PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF FROM THE PROJECT SITE.

## VI. GRADING PLAN

THE GRADING PLAN SHOWS 1.) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'0" INTERVALS AS TAKEN FROM THE DRAINAGE CERTIFICATION DATED 12-09-2009, 2) PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS, 3) THE LIMIT AND CHARACTER OF EXISTING AND PROPOSED IMPROVEMENTS, AND 4) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES.

## VII. CALCULATIONS

CALCULATIONS ANALYZING THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT HAVE BEEN PREPARED FOR THAT PORTION OF THE PROJECT SITE AFFECTED BY THE PROPOSED IMPROVEMENTS. 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 MINOR INCREASE IN PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED BY THIS PROJECT.

## VIII. CONCLUSIONS

THE FOLLOWING CONCLUSIONS ARE PRESENTED AS A RESULT OF THE EVALUATIONS AND ANALYSES CONTAINED HEREIN:

- THE IMPROVEMENTS PROPOSED HEREIN REPRESENT MODIFICATIONS TO AN EXISTING SITE WITHIN AN INFILL AREA
- THE PROJECT SITE LIES WITHIN BASIN 7 CONFIRMED BY THE 2009 DRAINAGE SUBMITTAL
- BASIN 7 IS ALLOWED FREE DISCHARGE IN ACCORDANCE WITH THE 2009 DRAINAGE SUBMITTAL
- THE PROPOSED IMPROVEMENTS WILL MAINTAIN THE EXISTING DRAINAGE PATTERNS OF THIS PORTION OF THE SITE
- A MINOR INCREASE IN THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED BY THE PROJECT SITE IS EXPECTED AS A RESULT OF THE PROPOSED IMPROVEMENTS
- THE PROPOSED IMPROVEMENTS DO NOT LIE WITHIN A DESIGNATED FLOOD HAZARD ZONE AND WILL NOT IMPACT THE DESIGNATED FLOOD HAZARD ZONE WITHIN CANDELARIA ROAD NE
- THE PROPOSED IMPROVEMENTS WILL NOT ADVERSELY IMPACT DOWNSTREAM PROPERTIES OR DOWNSTREAM DRAINAGE CONDITIONS

## CALCULATIONS

## I. SITE CHARACTERISTICS

- A. PRECIPITATION ZONE = 2
- B.  $P_{100, 6 \text{ HR}} = P_{360} = 2.35$
- C. TOTAL PROJECT AREA ( $A_T$ ) = 8,100 SF  
0.19 AC

## D. LAND TREATMENTS

## 1. EXISTING LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
C	7,150 / 0.17	89
D	950 / 0.02	11

## 2. DEVELOPED LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
C	1,720 / 0.04	21
D	6,380 / 0.15	79

## II. HYDROLOGY

## A. EXISTING CONDITION

## 1. VOLUME

$$E_w = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$
$$E_w = (0.53 \times 0.00) + (0.78 \times 0.00) + (1.13 \times 0.17) + (2.12 \times 0.02) / 0.19 = 1.23 \text{ IN}$$
$$V_{100, 6 \text{ HR}} = (E_w / 12) A_T = (1.23 / 12) \times 0.19 = 0.0195 \text{ AC-FT} = 850 \text{ CF}$$

## 2. PEAK DISCHARGE

$$Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$$
$$Q_p = Q_{100} = (1.56 \times 0.00) + (2.28 \times 0.00) + (3.14 \times 0.17) + (4.70 \times 0.02) = 0.6 \text{ CFS}$$

## B. DEVELOPED CONDITION

## 1. VOLUME

$$E_w = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$
$$E_w = (0.53 \times 0.00) + (0.78 \times 0.00) + (1.13 \times 0.04) + (2.12 \times 0.15) / 0.19 = 1.91 \text{ IN}$$
$$V_{100, 6 \text{ HR}} = (E_w / 12) A_T = (1.91 / 12) \times 0.19 = 0.0302 \text{ AC-FT} = 1,320 \text{ CF}$$

## 2. PEAK DISCHARGE

$$Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$$
$$Q_p = Q_{100} = (1.56 \times 0.00) + (2.28 \times 0.00) + (3.14 \times 0.04) + (4.70 \times 0.15) = 0.8 \text{ CFS}$$

## C. COMPARISON

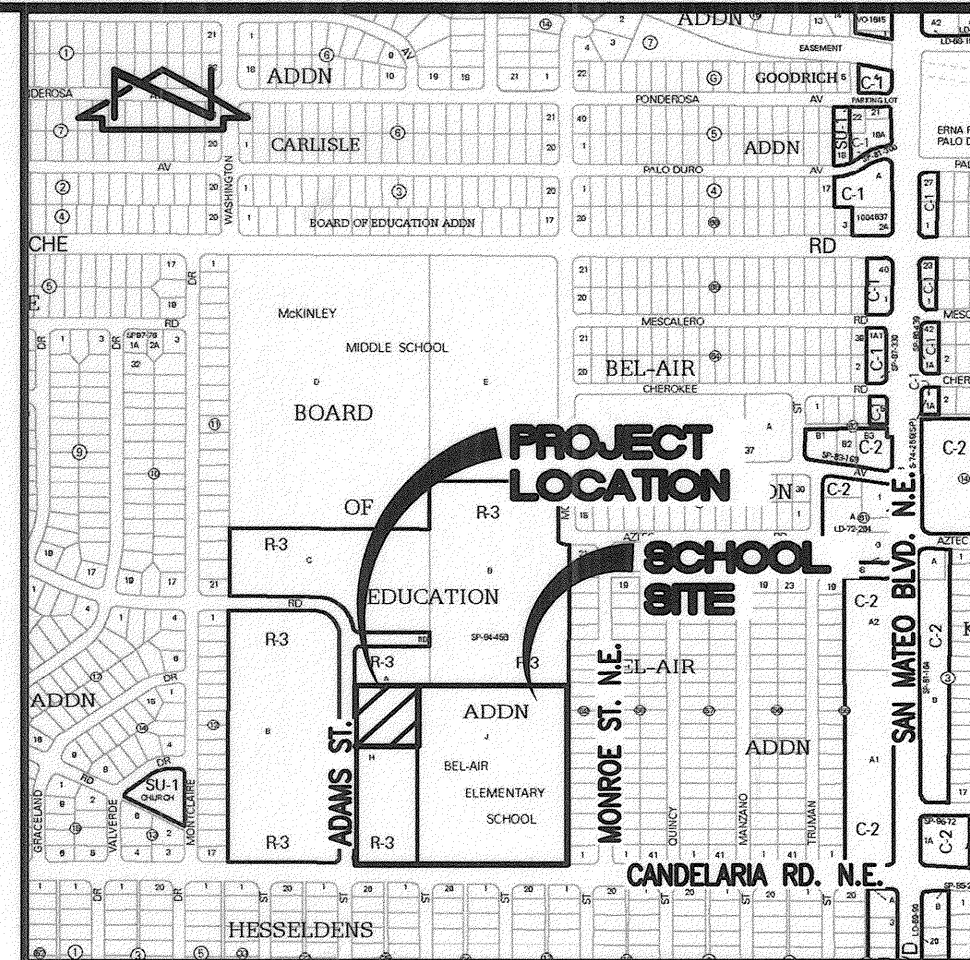
1. VOLUME	$\Delta V_{100, 6 \text{ HR}} = 1320 - 850 =$	470 CF	(INCREASE)
2. PEAK DISCHARGE	$\Delta Q_{100} = 0.8 - 0.6 =$	0.2 CFS	(INCREASE)

## CONSTRUCTION NOTES:

- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM 260-1990 (ALBUQUERQUE AREA), 1-800-321-ALERT(2537) (STATEWIDE), FOR LOCATION OF EXISTING UTILITIES AND ALBUQUERQUE PUBLIC SCHOOLS OR THEIR DESIGNATED SUBSURFACE UTILITY CONSULTANT FOR APS-OWNED UTILITIES.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INTERPRETATIONS IT MAKES WITHOUT FIRST CONTACTING THE ENGINEER AS REQUIRED ABOVE.
- ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
- ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
- IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS CONDUCTED ONLY PRELIMINARY INVESTIGATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THIS INVESTIGATION IS NOT CONCLUSIVE, AND MAY NOT BE COMPLETE, THEREFORE, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.
- THE DESIGN OF PLANTERS AND LANDSCAPED AREAS IS NOT PART OF THIS PLAN. ALL PLANTERS AND LANDSCAPED AREAS ADJACENT TO THE BUILDING(S) SHALL BE PROVIDED WITH POSITIVE DRAINAGE TO AVOID ANY PONDING ADJACENT TO THE STRUCTURE. FOR CONSTRUCTION DETAILS, REFER TO LANDSCAPING PLAN.

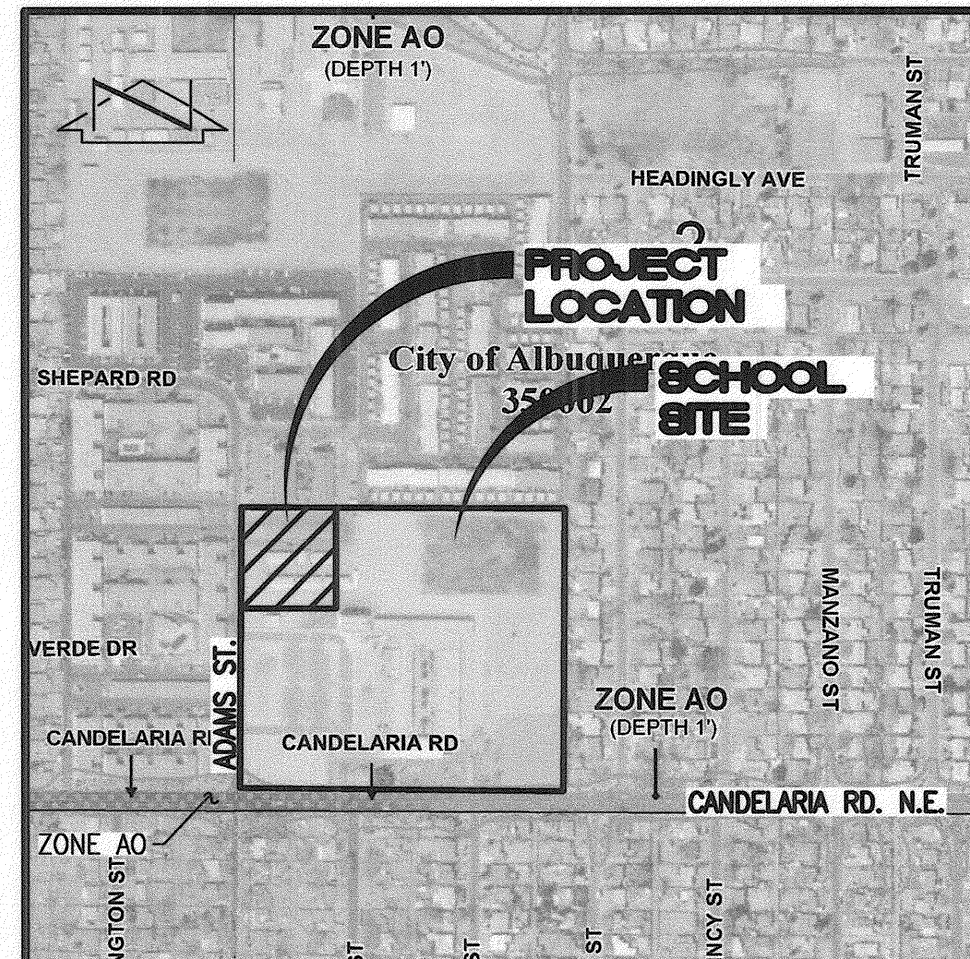
## EROSION CONTROL MEASURES:

- THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY.
- THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.
- WHEN APPLICABLE, CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" FROM THE CITY AND/OR FILE A NOTICE OF INTENT (N.O.I.) WITH THE EPA PRIOR TO BEGINNING CONSTRUCTION.



VICINITY MAP

SCALE: 1" = 750'



F.I.R.M. PANEL 351 &amp; 352

SCALE: 1" = 500'

OF 825

DATE: 9-26-2008

## LEGAL DESCRIPTION

TRACTS H AND J, BEL AIR ELEMENTARY SCHOOL, ALBUQUERQUE, NEW MEXICO.

## BENCHMARKS

## PROJECT BENCHMARK

ACS BENCHMARK 9-G17, "C" CUT CHISELED ON TOP OF CONCRETE CURB AT THE WNW CURB RETURN LOCATED IN THE NORTHWEST QUADRANT OF THE INTERSECTION OF CANDELARIA ROAD N.E. AND SAN MATEO BOULEVARD N.E.  
ELEVATION = 5204.30 FEET (NGVD 29)

## T.B.M. #1

A REBAR WITH CAP STAMPED "LS 7719" TAGGED WITH WASHER STAMPED "NMPS 11184", AT THE NORTHWEST CORNER OF THE PROPERTY, AS SHOWN ON SHEET 2.  
ELEVATION = 5171.37 FEET (NGVD 29)



RECORD DRAWING



DESIGNED BY	J.G.M.	NO.	DATE	BY	RECORD DRAWING	JOB NO.	2011.180.2
DRAWN BY	J.Y.R./E.J.S.		02/12	B.E.E.		DATE	08-2011
APPROVED BY	J.G.M.					SHEET	6 OF 11

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**DRAINAGE PLAN AND CALCULATIONS  
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BEL AIR ELEMENTARY SCHOOL  
3000 ADAMS NE**