

CITY OF ALBUQUERQUE



March 17, 2016

J. Graeme Means, PE
High Mesa Consulting Group
6010 -B Midway Park Blvd NE
Albuquerque, NM 87109

**Re: Onate E. S. Kindergarten Building
12415 Brentwood Hills NE
Request Permanent C.O. - Accepted
Engineer's Stamp dated: 6/17/2010 (H22D035)
Certification dated: 3-14-16**

Dear Mr. Graeme,

Based on the Certification received 3/15/2016, the site is acceptable for release of Certificate of Occupancy by Hydrology.

PO Box 1293

If you have any questions, you can contact me at 924-3695 or Totten Elliott at 924-3982.

Albuquerque

Sincerely,

New Mexico 87103

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

www.cabq.gov

TE/RH

C: email Clerk, Cordova, Camille C.; Miranda, Rachel; Sandoval, Darlene M.; Lois
Blocker

DRAINAGE PLAN

I. INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT, LOCATED IN THE FOOTHILLS AREA OF THE ALBUQUERQUE METROPOLITAN AREA, REPRESENTS A MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA. THE SITE IS LOCATED ON THE NORTH SIDE OF BRENTWOOD HILLS BLVD NE, EAST OF CHELWOOD PARK BLVD. NE. THE PROPOSED IMPROVEMENTS CONSIST OF A NEW FREE-STANDING KINDERGARTEN CLASSROOM BUILDING NEAR THE NORTHEAST CORNER OF THE SITE. IN ADDITION TO THE NEW BUILDING, OVERALL SITE IMPROVEMENTS WILL BE CONSTRUCTED BY APS IN ADVANCE OF AND IN CONJUNCTION WITH THE PROJECT INCLUDING A LOOPED PUBLIC WATER LINE FOR FIRE PROTECTION AND WATER SERVICE, AND A LOOPED FIRE / EMERGENCY ACCESS ROAD THAT WILL ALSO SERVE AS AN IMPROVED DRAINAGE CONVEYANCE. ALL EXISTING PORTABLE CLASSROOMS CURRENTLY LOCATED AT THE EASTERN END OF THE SITE WILL BE TEMPORARILY RELOCATED NEAR THE SOUTHWEST CORNER OF THE SITE DURING CONSTRUCTION AND SOME OF THEM WILL BE RETURNED FOLLOWING CONSTRUCTION WITH THE REMAINING ONES TAKEN AWAY AFTER BEING REPLACED BY THE NEW CLASSROOMS. THE INTERIM CONDITION, THE PORTABLE PARK AREA WILL BE REGRADED (LOWERED) TO PROMOTE ACCESSIBILITY AND ADVANCEMENT BETWEEN THE NEW, RELOCATED, AND EXISTING BUILDINGS. PAVED SURFACE DRAINAGE IMPROVEMENTS WILL ALSO BE CONSTRUCTED IN THIS AREA BY SEPARATE PROJECT TO ADDRESS EXISTING PROBLEMS. AT PRESENT, THE SITE GENERALLY DRAINS FROM EAST TO WEST AND EXHIBITS SIGNIFICANT TOPOGRAPHIC RELIEF. THERE IS A HISTORY OF DRAINAGE PROBLEMS AT THE EAST SIDE OF THE MAIN BUILDING WHERE RUNOFF FROM THE SLOPED TRANSITION AREA BETWEEN THE PORTABLE CLASSROOMS AND THE BUILDING HAS ENTERED THE BUILDING INSTEAD OF FLOWING SOUTH TO THE PARKING LOT. ALL RUNOFF IS VIA SURFACE FLOW AND THERE ARE NO PUBLIC STORM DRAINS IN THE SITE OR ADJACENT CITY STREET. THE UNIMPROVED AREAS OF THE SITE ARE SUBJECT TO EROSION AND SEDIMENT DEPOSITION. DUE TO THE INFILL STATUS, THE CONTINUED FREE DISCHARGE OF ONSITE RUNOFF TO THE ADJACENT STREET WILL BE MAINTAINED AND HAS BEEN ESTABLISHED BY PRIOR PLANS. THE DISCHARGE OF DEVELOPED RUNOFF FROM THE SITE WILL DISCHARGE DIRECTLY TO THE NEW EMERGENCY ACCESS ROAD WHICH WILL DISCHARGE DIRECTLY TO THE ADJACENT PUBLIC STREET. THE IMPROVED CONVEYANCE WILL REDUCE SITE EROSION AND SEDIMENT DEPOSITION. THIS PLAN IS SUBMITTED FOR BUILDING PERMIT APPROVAL FOR THE PROPOSED NEW CLASSROOM BUILDING AT THE NORTHEAST CORNER OF THE SITE. SEPARATE SUBMITTALS WILL BE MADE TO SUPPORT THE ACCESS ROAD, ACCESS AND DRAINAGE IMPROVEMENTS, AND PORTABLE CLASSROOM IMPROVEMENTS.

II. PROJECT DESCRIPTION

AS SHOWN BY THE CITY ZONE ATLAS PAGE H-22, THE SITE LIES ON NORTH SIDE OF BRENTWOOD HILLS BLVD NE, EAST OF CHELWOOD PARK BLVD. NE. THE PROPERTIES TO THE SOUTH, EAST AND NORTH ARE SINGLE FAMILY RESIDENCES. THE SITE TO THE WEST IS A PUBLIC CITY PARK. THE SITE IS UNPLATTED AND THE SOUTHERN PROPERTY LINE IS ACTUALLY LOCATED IN THE MIDDLE OF THE ADJACENT STREET. AS INDICATED BY PANEL 357 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. THE NEAREST FLOOD HAZARD ZONE LIES ½ MILE DOWNSTREAM OF THE SITE IS AT THE INTERSECTION OF BRENTWOOD HILLS BLVD NE AND JUAN TABO BLVD NE.

III. BACKGROUND DOCUMENTS & RESEARCH

THE FOLLOWING DOCUMENTS WERE REVIEWED AND REFERENCED IN THE PREPARATION OF THIS DRAINAGE NARRATIVE:

A. GRADING AND DRAINAGE PLAN – ONATE ELEMENTARY SCHOOL DATED 12-30-1983 BY HIGH MESA CONSULTING GROUP (FORMERLY TOM MANN & ASSOCIATES). THIS GRADING PLAN SUPPORTED CONSTRUCTION OF THE CYMARRUS BUILDING. THIS PLAN IDENTIFIED THE SITE DRAINING TO THE ADJACENT CITY STREET. NO APPARENT PORTION OF THE SITE HAS A GRADED FLOWLINE RUNNING FROM EAST TO WEST TO THE NORTHWEST CORNER OF THE SITE WHERE IT IS FORCED TO TURN SOUTH BY A CURB LOCATED AT THE WEST EDGE OF THE SITE AND GRADUALLY FLOW SOUTH TO THE STREET.

B. ONATE ELEMENTARY SCHOOL DRAINAGE STUDY DATED 04-22-1992, CITY HYDROLOGY FILE (H22/D35) BY HIGH MESA CONSULTING GROUP (FORMERLY JEFF MORTENSEN & ASSOCIATES) AND UPDATED 01-04-1994. THIS STUDY IDENTIFIED SEVERAL SITE AREAS WHERE POORLY DEFINED DRAINAGE PATTERNS RESULTED IN AREAS OF EROSION AND STANDING WATER WHICH RESULTED IN SITE MAINTENANCE AND PEDESTRIAN ACCESS PROBLEMS. RECOMMENDATIONS WERE PRESENTED AND PHASE I OF THE IMPROVEMENTS INCLUDED CONSTRUCTION OF A NEW PAVED TRACK AT THE WEST END OF THE SITE THAT ALSO SERVES AS A DRAINAGE CONVEYANCE TO CARRY SITE FLOWS SOUTH TO BRENTWOOD HILLS VIA NEW SIDEWALK CULVERTS CONSTRUCTED AS PART OF THE PHASE I PROJECT.

C. GRADING AND DRAINAGE PLAN – ONATE ELEMENTARY SCHOOL KITCHEN DATED 01-31-2001 BY HIGH MESA CONSULTING GROUP (FORMERLY JEFF MORTENSEN & ASSOCIATES). THIS PLAN SUPPORTED AN ADDITION TO THE KITCHEN. IT REFERENCES AND CONFORMS TO THE PREVIOUSLY APPROVED PLANS.

D. CONSTRUCTION PLANS FOR ONATE ELEMENTARY SCHOOL ACCESS IMPROVEMENTS DATED 4-26-2007 BY HIGH MESA CONSULTING GROUP (FORMERLY JEFF MORTENSEN & ASSOCIATES). THIS PLAN SET DESIGNED THREE IMPROVEMENTS BID LOTS OF WHICH TWO WERE CONSTRUCTED. THE NEW IMPROVEMENTS INCLUDED A DRIVEPAD FOR SERVICE ACCESS TO THE PLAYGROUND, DRAINAGE AND EROSION CONTROL WORK ON THE WEST SIDE OF THE NORTHWESTERMOST BUILDING, AND ALSO ADA ACCESS IMPROVEMENTS FROM THE CENTER OF THE CAMPUS TO THE PLAYGROUND / FIELD AREA. THE THIRD BID LOT WAS DESIGNED TO PROVIDE ADA ACCESS AND DRAINAGE IMPROVEMENTS IN THE SLOPED TRANSITION AREA EAST OF THE MAIN BUILDING AND WEST OF THE PORTABLE CLASSROOM AREA. THESE THIRD BID LOT IMPROVEMENTS WILL NOW BE CONSTRUCTED BY APS AS A SEPARATE PROJECT IN CONJUNCTION WITH THE NEW CLASSROOM BUILDING.

IV. EXISTING CONDITIONS

AT PRESENT, THE SITE IS DEVELOPED IS AN ACTIVE ELEMENTARY SCHOOL SITE CONTAINING PERMANENT AND PORTABLE BUILDINGS ALONG WITH PAVED PARKING, PLAYGROUND AND FIELD IMPROVEMENTS, AND LANDSCAPING. THE SITE GENERALLY SLOPES FROM NORTHEAST TO SOUTHWEST DISCHARGING RUNOFF TO THE ADJACENT CITY STREET. NO APPARENT OFFSITE FLOWS ENTER THE SITE FROM THE RESIDENTIAL PROPERTIES THAT SURROUND THE UPHILL (NORTH AND EAST) SIDES OF THE SITE WHICH HAVE BLOCK WALLS PREVENTING RUNOFF FROM IMPACTING THE SITE.

THE NEW CLASSROOM BUILDING PROPOSED HEREIN WILL BE LOCATED AT THE NORTHEAST CORNER OF THE SITE WHICH IS THE SITE'S HIGH POINT FROM WHICH DRAINAGE GENERALLY FLOWS FROM EAST TO WEST.

V. DEVELOPED CONDITIONS

THE PROPOSED CLASSROOM ADDITION WILL DISPLACE EXISTING PORTABLE CLASSROOMS AND AN AREA WEST OF THEM WHICH IS CURRENTLY BARE DIRT. AS SUCH, THIS PROPOSED CONSTRUCTION WILL SLIGHTLY INCREASE THE AMOUNT OF DEVELOPED RUNOFF GENERATED BY THE SITE. THE NEW BUILDING WILL HAVE ROOF DRAINS DISCHARGING DIRECTLY TO THE PROPOSED LOOPED EMERGENCY ACCESS ROAD WHICH WILL THEREBY REDUCE AND ELIMINATE EXISTING AND POTENTIAL EROSION PROBLEMS AND DOWNSTREAM SEDIMENT DEPOSITION. THE RESULT OF THIS PROJECT WILL BE AN OVERALL IMPROVEMENT IN DRAINAGE CONDITIONS FOR THE SITE AND DOWNSTREAM AREAS.

VI. GRADING PLAN

THE GRADING PLAN SHOWS 1.) EXISTING AND PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS, 2.) THE LIMIT AND CHARACTER OF THE EXISTING IMPROVEMENTS, 3.) THE LIMIT AND CHARACTER OF THE PROPOSED IMPROVEMENTS, AND 4.) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES. AS SHOWN BY THIS PLAN, THE PROPOSED IMPROVEMENTS WILL CREATE A MINOR INCREASE IN RUNOFF VOLUME AND PEAK DISCHARGE. EXISTING APPROVED OVERALL DRAINAGE PATTERNS WILL NOT BE ALTERED, AND THERE WILL BE NO ADVERSE IMPACT ON DOWNSTREAM CONDITIONS OR PROPERTIES.

VII. CALCULATIONS

CALCULATIONS ANALYZING THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT HAVE BEEN PREPARED FOR THIS PROJECT. 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 SHOWN BY THE RESULTS PRESENTED HEREON, THERE WILL BE A MINOR INCREASE IN PEAK DISCHARGE AND RUNOFF VOLUME ASSOCIATED WITH THE PROPOSED DEVELOPMENT THAT WILL HAVE NO ADVERSE IMPACT ON DOWNSTREAM CONDITIONS OR PROPERTIES.

VIII. CONCLUSION

THE FREE DISCHARGE OF RUNOFF FROM THIS PROJECT SITE TO BRENTWOOD HILLS BLVD NE AND THE CHELWOOD PARK BLVD NE PUBLIC STORM DRAIN IS APPROPRIATE DUE TO THE FOLLOWING FACTORS:

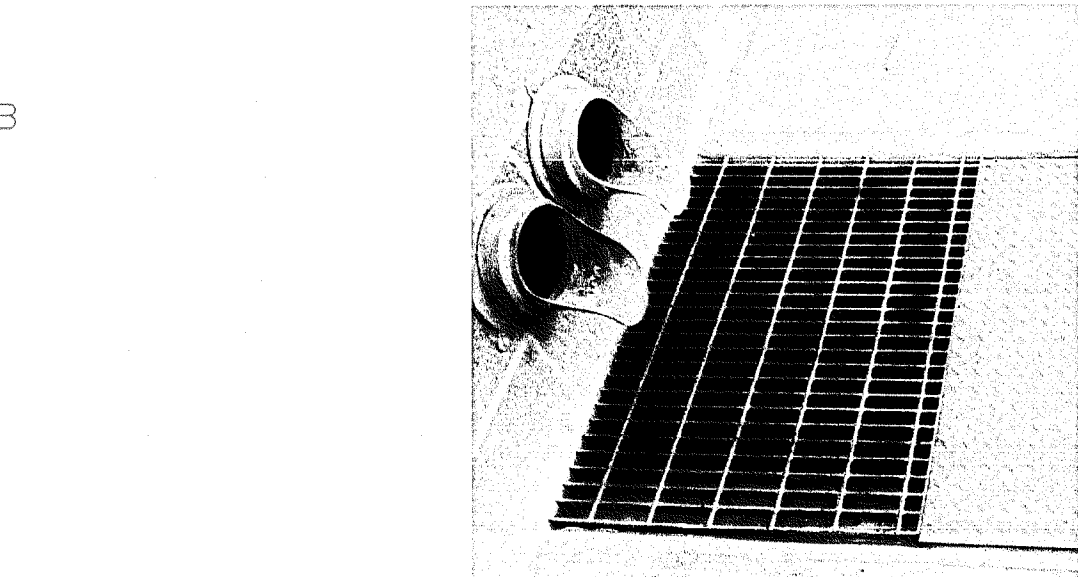
- MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA
- MINOR INCREASE IN RUNOFF VOLUME AND PEAK DISCHARGE
- PROPOSED DEVELOPMENT IS CONSISTENT WITH THE PREVIOUSLY APPROVED 1994 DRAINAGE PLAN REFERENCED ABOVE
- NO ADVERSE IMPACT ON DOWNSTREAM CAPACITY OR DOWNSTREAM PROPERTIES
- THE OVERALL EXISTING DRAINAGE PATTERNS WILL NOT BE ALTERED AND HENCE MAINTAINED
- IMPROVED SITE DRAINAGE CHARACTERISTICS
- REDUCED EROSION AND DOWNSTREAM SEDIMENT DELIVERY

ENGINEER'S CERTIFICATION

I, GRAEME MEANS, NMP# 15676, OF THE FIRM HIGH MESA CONSULTING GROUP HEREBY CERTIFY THAT THE SITE HAS BEEN CONSTRUCTED IN SUBSTANTIAL COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED GRADING PLAN DATED 06/17/2016. THIS SUBMITTAL IS MADE TO DOCUMENT THE AS-CONSTRUCTED CONDITION AND TO SUPPORT PERMANENT CERTIFICATE OF OCCUPANCY.

THE FOLLOWING DEVIATIONS FROM THE APPROVED PLAN THAT DO NOT PRECLUDE CERTIFICATION OF THE PLAN INTENT WERE NOTED ON THE PLAN AND ARE DOCUMENTED HEREIN:

- THE ROOF DRAINS ON THE NORTH SIDE OF THE BUILDING DAYLIGHT ABOVE GRADE AS OPPOSED TO DISHARGING DIRECTLY INTO THE SIDEWALK CULVERTS AS DESIGNED. HOWEVER, THE LOW SPOT BETWEEN THIS AREA AND THE SIDEWALK TO THE WEST WAS GRADED AS A FLOWLINE AS SHOWN BELOW THAT MEETS THE INTENT OF CAPTURING RUNOFF THAT LANDS IN THE LANDSCAPED AREA AND ALLOWING IT TO OVERFLOW TO THE SOUTH, THEREBY MEETING THE INTENT OF THE APPROVED PLAN.



- THE GRADES ON THE LOW SIDE OF THE RETAINING WALL ON THE WEST SIDE OF THE PLAYGROUND WERE CONSTRUCTED BETWEEN 0.3 AND 1.2 FEET HIGHER THAN DESIGNED. HOWEVER, THE LOW SPOT BETWEEN THIS AREA AND THE SIDEWALK TO THE WEST WAS GRADED AS A FLOWLINE AS SHOWN BELOW THAT MEETS THE INTENT OF CAPTURING RUNOFF THAT LANDS IN THE LANDSCAPED AREA AND ALLOWING IT TO OVERFLOW TO THE SOUTH, THEREBY MEETING THE INTENT OF THE APPROVED PLAN.



THE RECORD SURVEY INFORMATION EDITED ONTO THE APPROVED PLAN IS FROM A POST-CONSTRUCTION DRAINAGE VERIFICATION SURVEY CONDUCTED 05/06/2016 UNDER THE DIRECT SUPERVISION OF CHARLES G. CALA, JR., P.E. 11184, ALSO OF THE FIRM HIGH MESA CONSULTING GROUP. I FURTHER CERTIFY THAT I PERSONALLY VISITED THE PROJECT SITE ON NUMEROUS OCCASIONS AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE DATA PROVIDED APPEARS TO BE REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

THE RECORD INFORMATION PRESENTED HEREIN IS NOT NECESSARILY COMPLETE, AND DOES NOT ADDRESS COMPLIANCE WITH A.D.A. GUIDELINES, AND IS INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THIS PROJECT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

GRAEME MEANS
3/13/16
1 DATE



CALCULATIONS

I. SITE CHARACTERISTICS

- A. PRECIPITATION ZONE = 4
- B. $P_{6,100} = P_{360} = 2.90$
- C. TOTAL PROJECT AREA (A_T) = 286,620 SF
6.58 AC

D. LAND TREATMENTS

1. EXISTING LAND TREATMENT

a. BASIN A TREATMENT	134,590 SF =	3.09 AC	%
B	5,500 / 0.13		4
C	71,330 / 1.64		53
D	57,760 / 1.33		43

b. BASIN B TREATMENT	87,725 SF =	2.01 AC	%
B	12,140 / 0.28		14
C	13,185 / 0.30		15
D	62,400 / 1.43		71

a. BASIN C TREATMENT	64,305 SF =	1.48 AC	%
B	5,000 / 0.12		8
C	43,555 / 1.00		67
D	15,750 / 0.36		25

2. DEVELOPED LAND TREATMENT

a. BASIN A TREATMENT	134,590 SF =	3.09 AC	%
B	5,500 / 0.13		4
C	68,600 / 1.57		51
D	60,490 / 1.39		45

b. BASIN B TREATMENT	80,225 SF =	1.84 AC	%
B	12,140 / 0.28		15
C	5,875 / 0.13		7
D	62,210 / 1.43		78

c. BASIN C TREATMENT	71,805 SF =	1.65 AC	%
B	5,000 / 0.11		7
C	24,240 / 0.56		34
D	42,565 / 0.98		59

II. HYDROLOGY

A. EXISTING CONDITION

1. BASIN A

- a. VOLUME
 $E_w = (E_p A_A + E_p A_B + E_p A_C + E_p A_D) / A_T$
 $E_w = ((0.80^*0.00) + (1.08^*0.13) + (1.46^*1.64) + (2.64^*1.33)) / 3.09 = 1.95$ IN
 $V_{100} = (E_w / 12) A_T = (1.95 / 12) 3.09 = 0.5021$ AC-FT = 21,870 CF
- b. PEAK DISCHARGE
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = ((2.20^*0.00) + (2.92^*0.13) + (3.73^*1.64) + (5.25^*1.33)) = 13.4$ CFS

2. BASIN B

- a. VOLUME
 $E_w = (E_p A_A + E_p A_B + E_p A_C + E_p A_D) / A_T$
 $E_w = ((0.80^*0.00) + (1.08^*0.28) + (1.46^*0.30) + (2.64^*1.43)) / 2.01 = 2.25$ IN
 $V_{100} = (E_w / 12) A_T = (2.25 / 12) 2.01 = 0.3778$ AC-FT = 16,450 CF
- b. PEAK DISCHARGE
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = ((2.20^*0.00) + (2.92^*0.28) + (3.73^*0.30) + (5.25^*1.43)) = 9.5$ CFS

3. BASIN C

- a. VOLUME
 $E_w = (E_p A_A + E_p A_B + E_p A_C + E_p A_D) / A_T$
 $E_w = ((0.80^*0.00) + (1.08^*0.12) + (1.46^*1.00) + (2.64^*0.36)) / 1.48 = 1.72$ IN
 $V_{100} = (E_w / 12) A_T = (1.72 / 12) 1.48 = 0.2123$ AC-FT = 9,220 CF
- b. PEAK DISCHARGE
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = ((2.20^*0.00) + (2.92^*0.12) + (3.73^*1.00) + (5.25^*0.36)) = 6.0$ CFS

B. DEVELOPED CONDITION

1. BASIN A

- a. VOLUME
 $E_w = (E_p A_A + E_p A_B + E_p A_C + E_p A_D) / A_T$
 $E_w = ((0.80^*0.00) + (1.08^*0.13) + (1.46^*1.57) + (2.64^*1.39)) / 3.09 = 1.97$ IN
 $V_{100} = (E_w / 12) A_T = (1.97 / 12) 3.09 = 0.5072$ AC-FT = 22,100 CF
- b. PEAK DISCHARGE
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = ((2.20^*0.00) + (2.92^*0.13) + (3.73^*1.57) + (5.25^*1.39)) = 13.5$ CFS

2. BASIN B

- a. VOLUME
 $E_w = (E_p A_A + E_p A_B + E_p A_C + E_p A_D) / A_T$
 $E_w = ((0.80^*0.00) + (1.08^*0.28) + (1.46^*0.13) + (2.64^*1.43)) / 1.84 = 2.32$ IN
 $V_{100} = (E_w / 12) A_T = (2.32 / 12) 1.84 = 0.3561$ AC-FT = 15,510 CF
- b. PEAK DISCHARGE
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = ((2.20^*0.00) + (2.92^*0.28) + (3.73^*0.13) + (5.25^*1.43)) = 8.8$ CFS

3. BASIN C

- a. VOLUME
 $E_w = (E_p A_A + E_p A_B + E_p A_C + E_p A_D) / A_T$
 $E_w = ((0.80^*0.00) + (1.08^*0.11) + (1.46^*0.56) + (2.64^*0.98)) / 1.65 = 2.13$ IN
 $V_{100} = (E_w / 12) A_T = (2.13 / 12) 1.65 = 0.2926$ AC-FT = 12,750 CF
- b. PEAK DISCHARGE
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = ((2.20^*0.00) + (2.92^*0.11) + (3.73^*0.56) + (5.25^*0.98)) = 7.5$ CFS

C. COMPARISON

1. DEV BASIN A TO EXIST BASIN A

- a. VOLUME
 $\Delta V_{100} = 22,100 - 21,870 = 230$ CF (INCREASE)
- b. PEAK DISCHARGE
 $\Delta Q_{100} = 13.5 - 13.4 = 0.1$ CFS (INCREASE)

2. DEV BASIN B TO EXIST BASIN B

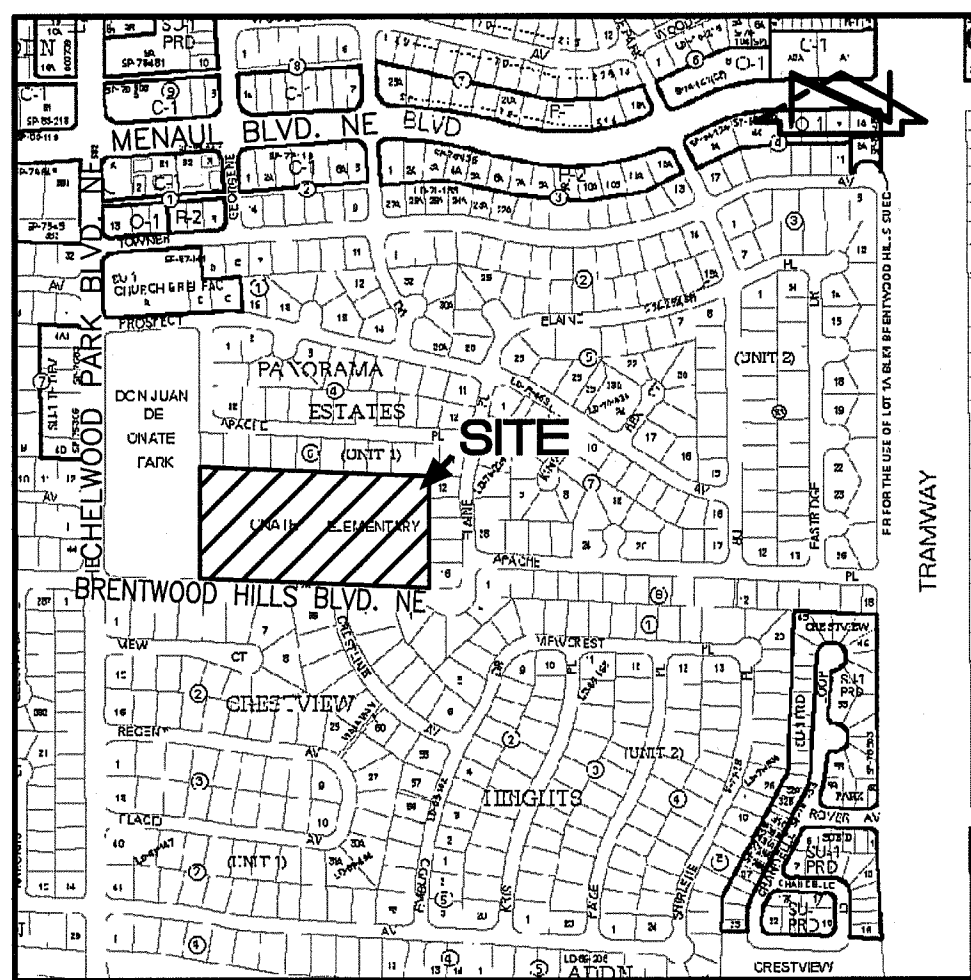
- a. VOLUME
 $\Delta V_{100} = 15,510 - 16,450 = -940$ CF (DECREASE)
- b. PEAK DISCHARGE
 $\Delta Q_{100} = 8.8 - 9.5 = -0.7$ CFS (DECREASE)

3. DEV BASIN C TO EXIST BASIN C

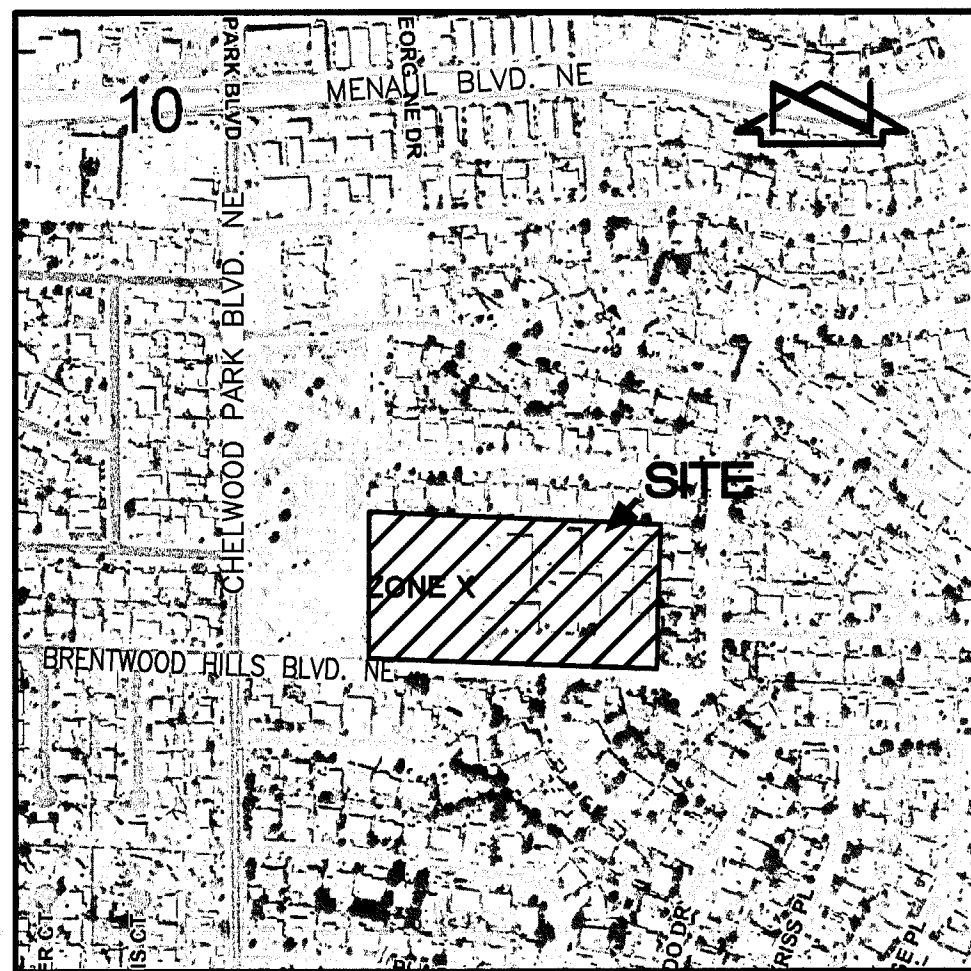
- a. VOLUME
 $\Delta V_{100} = 12,750 - 9,220 = 3,530$ CF (INCREASE)
- b. PEAK DISCHARGE
 $\Delta Q_{100} = 7.5 - 6.0 = 1.5$ CFS (INCREASE)

EXISTING LEGEND

ARD	ASPHALT RUNDOWN	O/HE (1)	OVERHEAD ELECTRIC (NO. OF LINES)
ASPH	ASPHALT	O/HW	OVERHEAD WATER LINE
BBG	BASKETBALL GOAL	OHEM	OVERHEAD ELECTRIC MAST
BOH	BUILDING OVERHANG	PB	PARKING BUMPER
BPM	BY PAINT MARK	PBH	PAINTED BENCH
C&G	CURB AND GUTTER	PI	PLAY EQUIPMENT
CBC	CONCRETE BUILDING COLUMN	PP/SLT	PAINTED ISLAND
CDP	CONCRETE DRIVE PAD	RD	ROOF DRAIN
CCP	CONCRETE GUARD POST	RRT	RAILROAD TIE
CI	CAST IRON	SCF	SPRINKLER CONTROL TIMER
CLD	CENTERLINE	SD	STORM DRAIN
CLD	CENTERLINE OF DOOR	SDF	SERVICE DROP POLE
CLD	CENTERLINE OF DOUBLE DOOR	SV	SEWER VENT PIPE
CLF	CHAINLINK FENCE	STD C&G	STANDARD CURB AND GUTTER
CMU	CONCRETE MASONRY UNIT	SV	SEWER VENT PIPE
CO	SANITARY SEWER SINGLE CLEANOUT	SVB	SPRINKLER VALVE BOX
CO/C	SANITARY SEWER SINGLE CLEANOUT IN CONCRETE	SW	TOP OF SIDEWALK
CPT	CONCRETE PICNIC TABLE	SWC	SIDEWALK CULVERT
CRD	CONCRETE RUNDOWN	TA	TOP OF ASPHALT
CSTEPS	CONCRETE STEPS	TC	TOP OF CURB
CTC	CONCRETE TRASH CAN	TCAB	TELEPHONE CABINET
CW	CONCRETE WALL	TCO	TOP OF CONCRETE
CWCR	CONCRETE WHEELCHAIR RAMP	TR	TOP OF RAILROAD TIE
EA	EDGE OF ASPHALT	TR	TYPICAL
EA	ELECTRIC CONDUIT	TYP	UNDERGROUND ELECTRIC
ECAB	ELECTRIC CABINET	U/G	UNDERGROUND GAS
ELEC	ELECTRIC ENCLOSURE WITH CMU WALL	U/GC	UNDERGROUND TELEPHONE
EP	ELECTRIC PANEL	U/GT	UNDERGROUND TELEPHONE
EPB	ELECTRIC PULLBOX	W BPM	WATER LINE BY PAINT MARK
EXMFR/C	ELECTRIC TRANSFORMER ON CONCRETE	W/MHR	WATER WITH METAL HANDRAIL
FBP	FLOCKERBALL POLE	WBC/C	WOOD BUILDING COLUMN ON CONCRETE
F.F	FURNISHED FLOOR ELEVATION	WBN	WOOD BENCH
F.F	FIRE HYDRANT	WBN	WOOD BENCH
FL	FLOWLINE	WBN	WOOD BENCH
FP/C	FLAG POLE ON CONCRETE	WBN	WOOD BENCH
GS	GAS SERVICE	WBN	WOOD BENCH
HCS	HANDICAP PARKING SIGN	WBN	WOOD BENCH
HTR	HEATER	WBN	WOOD BENCH
INV	INVERT	WBN	WOOD BENCH
LST	LANDSCAPE TIMBER	WBN	WOOD BENCH
MB	METAL BENCH	WBN/C	WOOD BENCH
MBC	METAL BUILDING COLUMN	WBN/C	WOOD BENCH
MCP	METAL COVER	WBN/C	WOOD BENCH
MCP	METAL GUARD POST	WBN/C	WOOD BENCH
MH	MANHOLE	X-WALK	CROSS WALK
MLP/C	METAL LIGHT POLE	+ 49.0	EXISTING SPOT ELEVATION
MP	METAL POST	- - - - -	EXISTING CONTOUR
MR /W/MHR	METAL RAMP WITH METAL HANDRAIL	(0.6'D)	EXISTING DECIDUOUS TREE (CALIPER SIZE)
MS	METAL SIGN (GENERAL)	(1.0'D)	EXISTING DECIDUOUS TREE (CALIPER SIZE)
MSL	METAL STEPS AND LANDING		
NE	NATURAL GROUND		
O/H/C (1)	OVERHEAD COMMUNICATIONS (NO. OF LINES)		



E6 VICINITY MAP H-22
SCALE: 1" = 750'



D6 F.I.R.M. PANEL 357G
SCALE: 1" = 500'

LEGAL DESCRIPTION

AN UNPLATTED TRACT OF LAND LOCATED WITHIN THE CORPORATE LIMITS OF THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, SECTION 10, TOWNSHIP 10 NORTH, RANGE 4 EAST, N.M.P.M., (A.K.A. ONATE ELEMENTARY SCHOOL, UIC #102205936416040517), AS DESCRIBED BY WARRANTY DEED FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON JULY 06, 1964, BOOK D 749, PAGE 989, DOCUMENT NO. 5644.

BENCHMARKS

PROJECT BENCHMARK

ACS 1 3/4" ALUMINUM DISK, STAMPED "ACS BM. 14-H22", EPOXIED ON TOP OF THE CONCRETE CURB ON THE NORTH SIDE OF SPACE FL 195 FT.± EAST OF THE CENTERLINE OF EASTRIDGE DR. N.E., 7.6 FT. WEST OF A GARD RAIL. ELEVATION = 5843.16 FEET (NGVD 1929)

T.B.M. #1

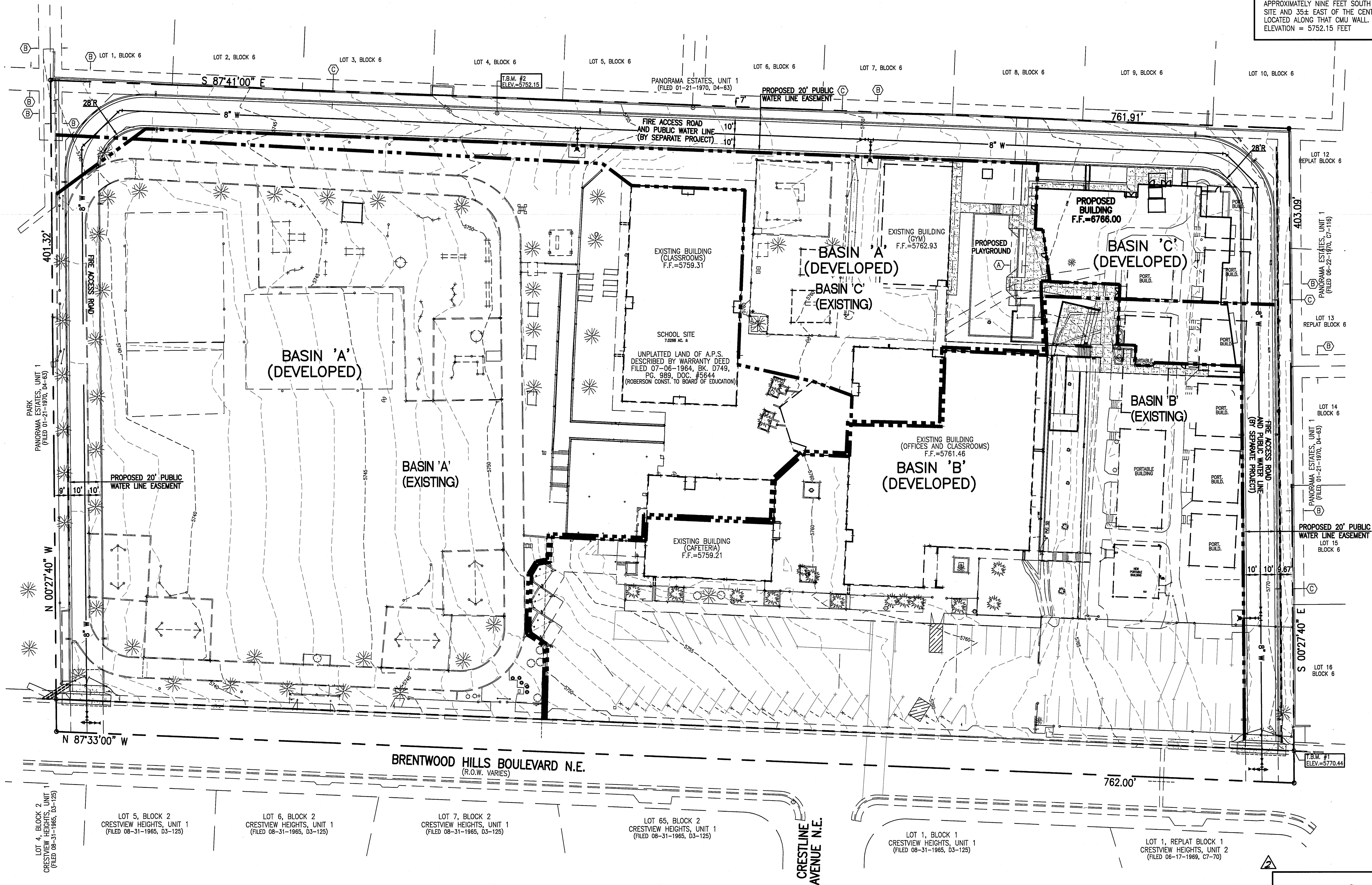
A CHISELED "C" ON TOP OF THE CURB AT THE SE CORNER OF THE SITE. ELEVATION = 5770.44 FEET

T.B.M. #2

File Path: \\P:\DWG\151826\151826-01.DWG Plot Date: 03-14-2016
File Name: 151826-01.DWG Plot Time: 12:15 pm

A1 OVERALL DRAINAGE IMPROVEMENTS PLAN (FOR INFORMATION ONLY)

SCALE: 1" = 30'



EASEMENT KEYED NOTES

EASEMENTS

- (A) 7' PNM AND M&T EASEMENT GRANTED BY DOCUMENT FILED 03-07-1991, BOOK 91-4, PAGES 1375-1376, DOC. #91016027
- (B) UTILITY EASEMENT GRANTED BY PLAT D4-63 - OFFSITE
- (C) UTILITY EASEMENT GRANTED BY PLAT D4-63, GRANT OF EASEMENT OUTSIDE OF SAID PLATTED BOUNDARY

SURVEY NOTE

THIS IS NOT A BOUNDARY SURVEY. DATA IS SHOWN FOR ORIENTATION ONLY. BOUNDARY INFORMATION DEPICTED BY THIS PLAN IS BASED UPON THE BOUNDARY SURVEY PREPARED BY HIGH MESA CONSULTING GROUP, NMPS NO. 11184, DATED 01/27/2006, JOB NO. 2005.182.3. THE TOPOGRAPHIC INFORMATION DEPICTED HEREON IS BASED UPON A TOPOGRAPHIC AND UTILITY SURVEY PREPARED BY HIGH MESA CONSULTING GROUP, NMPS NO. 11184, DATED 01/27/2006, JOB NO. 2005.182.3, AND UPDATED 04/30/2009, JOB NO. 2008.184.3.

BENCHMARKS

PROJECT BENCHMARK

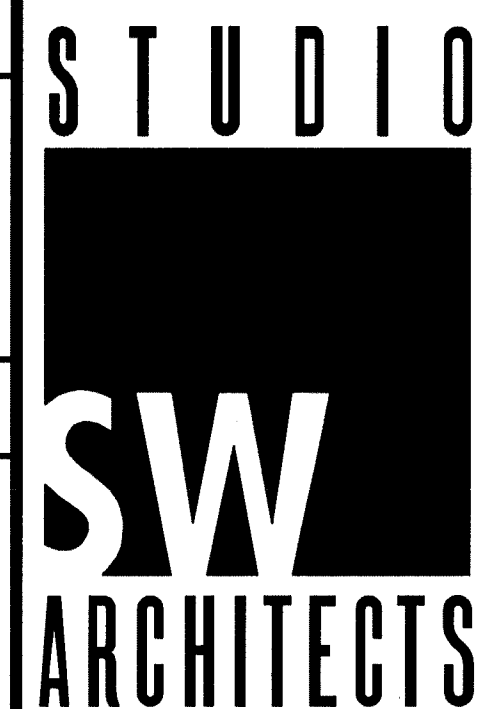
ACS 1 3/4" ALUMINUM DISK, STAMPED 'ACS BM, 14-H22', EPOXYED ON TOP OF THE CONCRETE CURB ON THE NORTH SIDE OF APACE PL., 195 FT.± EAST OF THE CENTERLINE OF EASTRIDGE DR. N.E., 7.6 FT. WEST OF A GUARD RAIL.
ELEVATION = 5843.16 FEET (NGVD 1929)

T.B.M. #1

A CHISELED "X" ON TOP OF THE CURB AT THE SE CORNER OF THE SITE.
ELEVATION = 5770.44 FEET

T.B.M. #2

A SPIKE WITH JMA RED CAP STAMPED 'JMA CONTROL NMPS 11184' LOCATED APPROXIMATELY NINE FEET SOUTH OF THE CMU WALL AT THE NORTH OF THE SITE AND 35± EAST OF THE CENTERLINE OF A ELECTRIC TRANSFORMER LOCATED ALONG THAT CMU WALL.
ELEVATION = 5752.15 FEET



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505.843.9639 fax 505.843.9683
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E-Mail: mail@studioswarch.com

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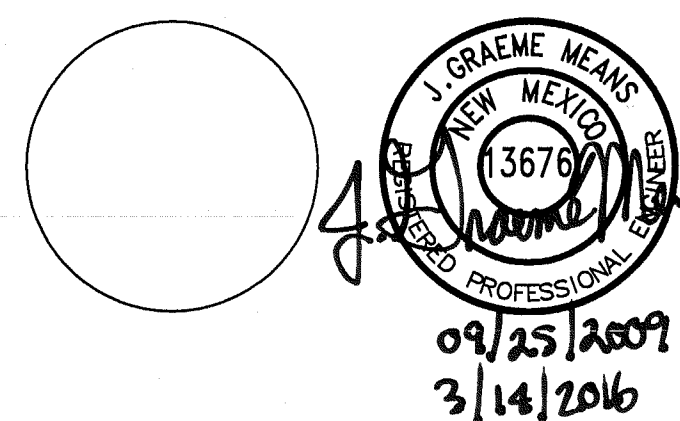
CONSULTANTS



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www.highmesacg.com

Architect

Engineer



ONATE ELEMENTARY SCHOOL

12415 BRENTWOOD HILLS, NE
ALBUQUERQUE, NM
87112

Key Plan

NTS

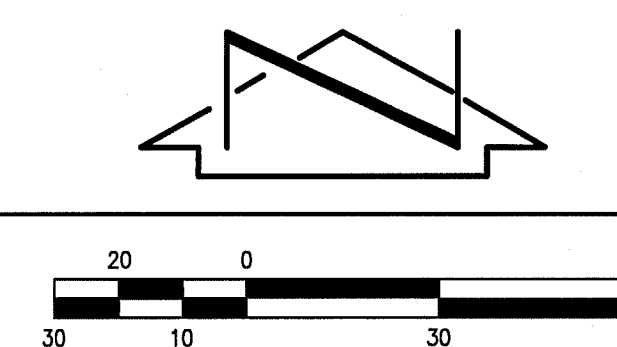
MARK	DATE	ENGINEER'S CERTIFICATION DESCRIPTION
ISSUE:	08/16	PERMIT SET
PROJECT NO:	0822	
CAD DWG FILE:	80471CS-101	
DRAWN BY:	BLE/DMH/CFA	
CHECKED BY:	G.M.	
DATE:	11/30/2009	

SHEET TITLE

OVERALL DRAINAGE IMPROVEMENTS PLAN
(FOR INFORMATION ONLY)

CS-101

RECORD DRAWING



HMCG PROJECT NO: 2008-047-1
2015.182.6



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: _____ **Building Permit #:** _____ **City Drainage #:** _____

DRB#: _____ **EPC#:** _____ **Work Order#:** _____

Legal Description: _____

City Address: _____

Engineering Firm: _____ **Contact:** _____

Address: _____

Phone#: _____ **Fax#:** _____ **E-mail:** _____

Owner: _____ **Contact:** _____

Address: _____

Phone#: _____ **Fax#:** _____ **E-mail:** _____

Architect: _____ **Contact:** _____

Address: _____

Phone#: _____ **Fax#:** _____ **E-mail:** _____

Other Contact: _____ **Contact:** _____

Address: _____

Phone#: _____ **Fax#:** _____ **E-mail:** _____

Check all that Apply:

DEPARTMENT:

- ☐ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ ARCHITECT CERTIFICATION
- ☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☐ DRAINAGE REPORT
☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ☐ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
- ☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☐ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
- ☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☐ Yes ☐ No

DATE SUBMITTED: _____ **By:** _____

COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: _____