

CITY OF ALBUQUERQUE



June 30, 2016

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

**Re: Kindergarten Classroom Addition-Storm Drain Extension
1100 Douglas MacArthur Rd NW
Engineer's Stamp dated: 5-20-2016 (F14D038)**

Dear Mr. Graeme,

Based upon information in your submittal received 5-20-16, the above-referenced Grading and Drainage Plan update is approved for Grading Permit. We understand that the larger addition has been completed and this update reflects the need for a small interior drain extension/connection.

PO Box 1293

Please submit an updated Certification for our records once the project is completed, and an updated Certificate of Occupancy approval will be issued.

Albuquerque

If you have any questions, you can contact me at 924-3986

Sincerely,

New Mexico 87103

www.cabq.gov

Abiel Carrillo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

Orig: Drainage file



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

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: _____

Surveyor: _____ Contact: _____

Address: _____

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

Contractor: _____ Contact: _____

Address: _____

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

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL G & D PLAN
- ☐ GRADING PLAN
- ☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ☐ ENGINEER'S CERT (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEER'S CERT (TCL)
- ☐ ENGINEER'S CERT (DRB SITE PLAN)
- ☐ ENGINEER'S CERT (ESC)
- ☐ SO-19
- ☐ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☐ SIA/FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D APPROVAL
- ☐ S. DEV. FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM)
- ☐ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ GRADING CERTIFICATION
- ☐ SO-19 APPROVAL
- ☐ ESC PERMIT APPROVAL
- ☐ ESC CERT. ACCEPTANCE
- ☐ OTHER (SPECIFY) _____

WAS A PRE-DESIGN CONFERENCE ATTENDED: _____ Yes _____ No _____ Copy Provided

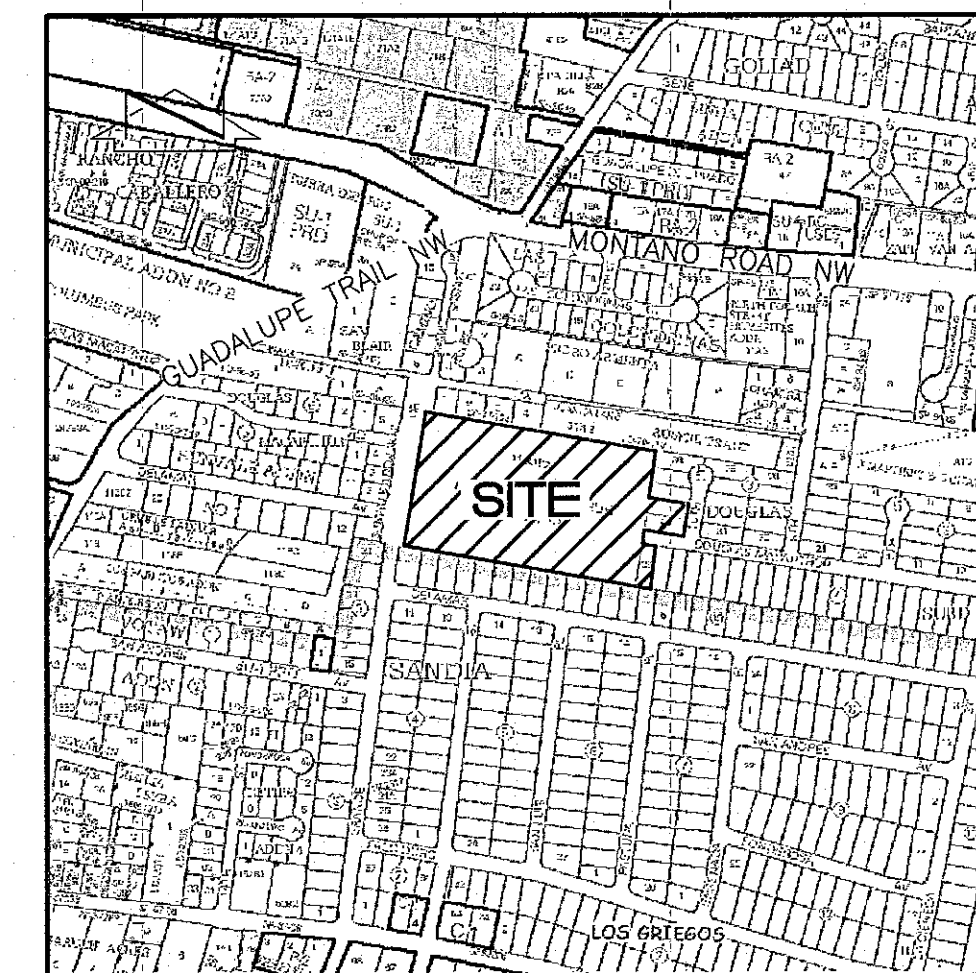
DATE SUBMITTED: _____ By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

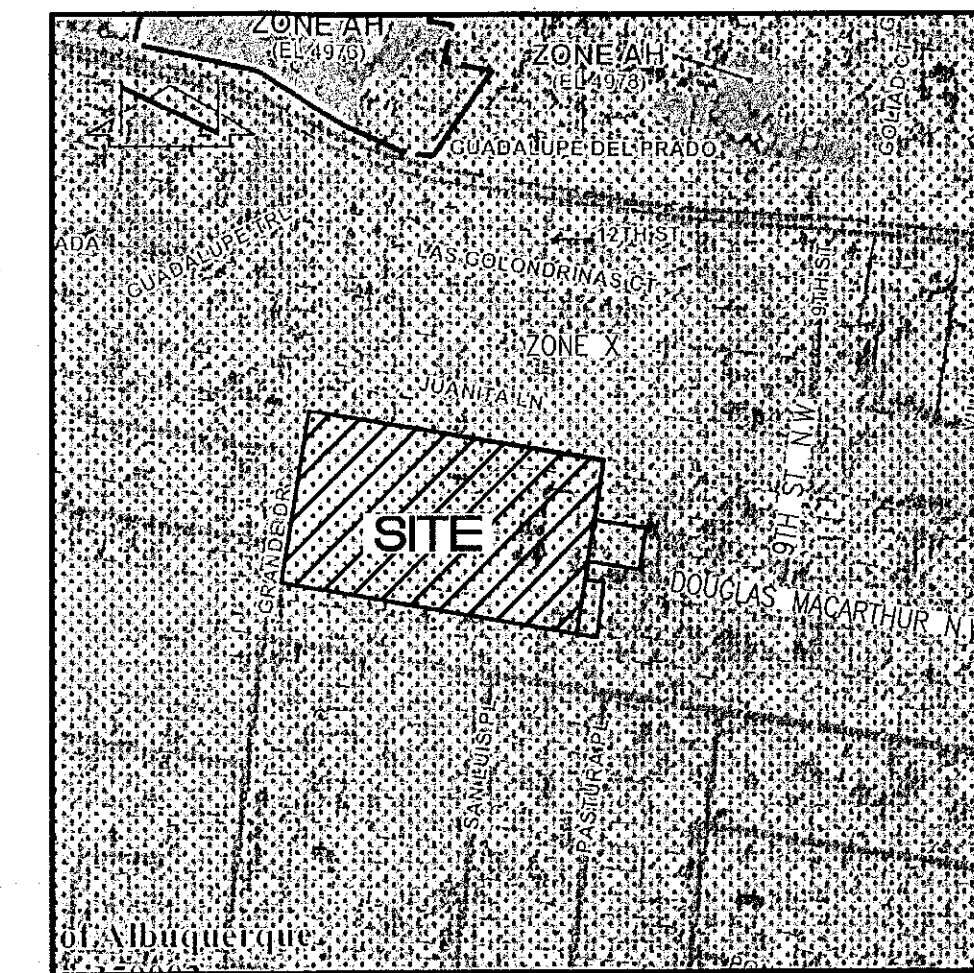
1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

DESIGN GRADING LEGEND:

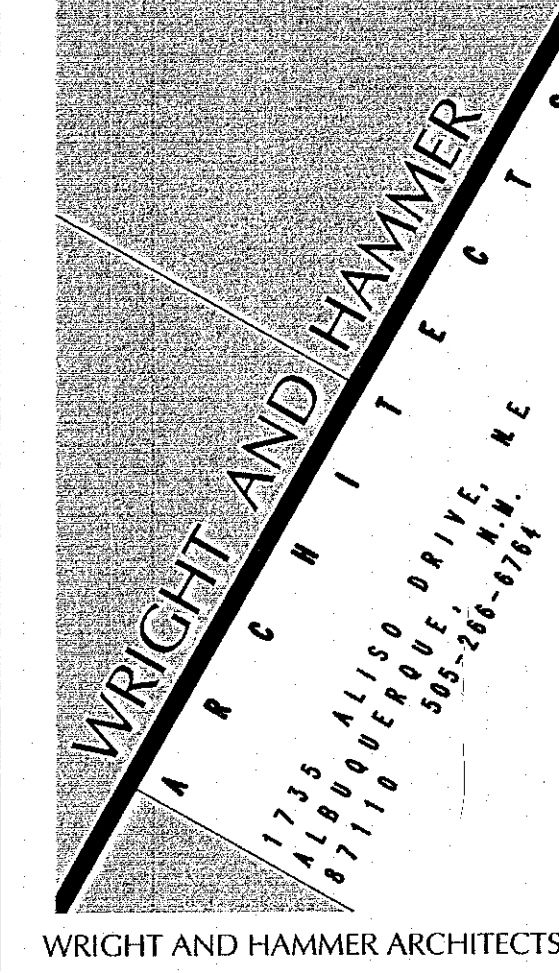
INV	INVERT
TA	TOP OF ASPHALT PAVEMENT
TC	TOP OF CURB
TG	TOP OF GRATE
+ 20.05	EXISTING SPOT ELEVATION
14.00	PROPOSED SPOT ELEVATION
---	EXISTING FLOWLINE
---	PROPOSED FLOWLINE
---	EXISTING CONTOUR
---	PROPOSED CONTOUR
---	EXISTING DIRECTION OF FLOW
---	PROPOSED DIRECTION OF FLOW
---	RIGHT OF WAY LINE
---	PUBLIC EASEMENT LINE
---	HIGH POINT / DVI
---	PROPOSED CONCRETE



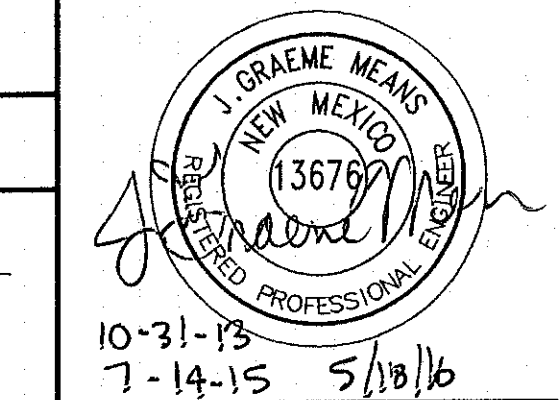
D4 VICINITY MAP F-14
SCALE: 1" = 750'



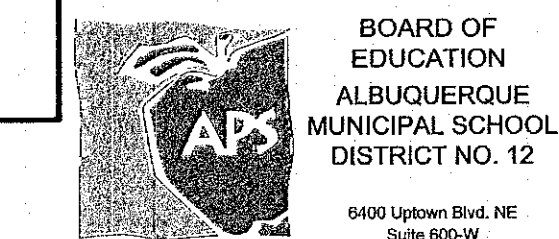
D5 FIRM 119 of 825
SCALE: 1" = 500' September 26, 2008



CONTACT INFORMATION:
DENISE HAMMER, PROJECT ARCHITECT
1735 ALISO DRIVE, NE
ALBUQUERQUE, NM 87110
505-266-6764
denise@wrightandhammer.com



HIGH MESA
Consulting Group
6010-8 MIDWAY PARK BLVD. NE
ALBUQUERQUE, NEW MEXICO 87109
PHONE: 505.345.4250 FAX: 505.345.4254
www.highmesacg.com



MacARTHUR ELEMENTARY SCHOOL
KINDERGARTEN ADDITION
CAFETERIA ADDITION & IMPROVEMENTS
RE-ROOFING

OWNER'S CONTACT:
MYRON JOHNSON, ARCHITECT
FACILITIES DESIGN & CONSTRUCTION
915 OAK STREET, SE
ALBUQUERQUE, NM 87106
505-848-8811

05/16	ADDED COURTYARD DRAIN
07/15	ENGINEER'S CERTIFICATION
01/15	PAVING TO BUS ROAD
11/13	ISSUE DATE
MARK	DATE DESCRIPTION
ISSUE INFORMATION	
PROJECT NO.:	0303.001.40105
COPYRIGHT	WRIGHT & HAMMER ARCHITECTS 2013

KINDERGARTEN
OVERALL GRADING
SITE PLAN

LEGAL DESCRIPTION

A TRACT OF LAND LOCATED WITHIN THE CORPORATE LIMITS OF THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO,

BENCHMARKS

PROJECT BENCHMARK

ACS 1 3/4" ALUMINUM DISK STAMPED "ACS BM, 17-F-13", EPOXIED ON TOP OF THE CONCRETE CURB RETURN, IN THE ENE QUADRANT OF THE INTERSECTION OF GREGOS ROAD AND GUADALUPE TRAIL N.W.
ELEVATION = 4973.334 FEET (NAVD 1988)

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

A #5 REBAR WITH CAP STAMPED "HMC CONTROL NMPS 11184", AS SHOWN ON THIS SHEET.
ELEVATION = 4975.05 FEET (NAVD 1988)

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

A P.K. NAIL IN ASPHALT PAVEMENT, AS SHOWN ON THIS SHEET.
ELEVATION = 4975.10 FEET (NAVD 1988)

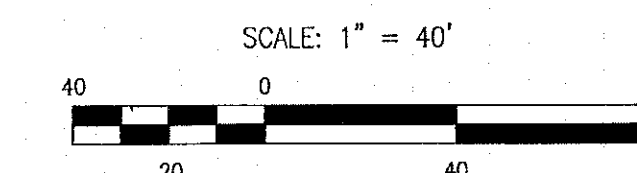
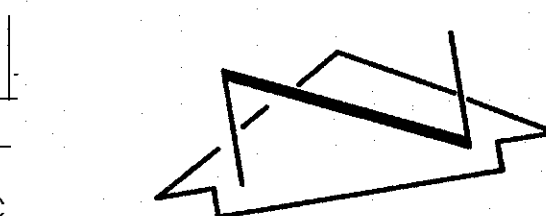
TEMPORARY BENCHMARK (T.B.M.) #3

USC&GS BRASS DISK STAMPED "DOUGLAS 1989", SET IN CONCRETE, POST 0.1' ABOVE GROUND, ON THE WEST SIDE OF THE DOUGLAS MACARTHUR ELEMENTARY SCHOOL AS SHOWN ON THIS SHEET.
ELEVATION = 4975.134 FEET (NAVD 1988)

DESIGN SURVEY NOTE:

THIS IS NOT A BOUNDARY SURVEY; DATA IS SHOWN FOR ORIENTATION ONLY. THE BOUNDARY INFORMATION DEPICTED BY THIS PLAN IS BASED UPON AN UNRECORDED BOUNDARY SURVEY PREPARED BY HIGH MESA CONSULTING GROUP, NMPS 11184, DATED 01/21/2010 (2008.194.4). THE TOPOGRAPHIC INFORMATION DEPICTED HEREON IS BASED UPON THE TOPOGRAPHIC SURVEY PREPARED BY HIGH MESA CONSULTING NMPS 11184, DATED 01/21/2010 (2008.194.4)

REFER TO SHEET C-302-C FOR
ADDED COURTYARD STORM DRAIN



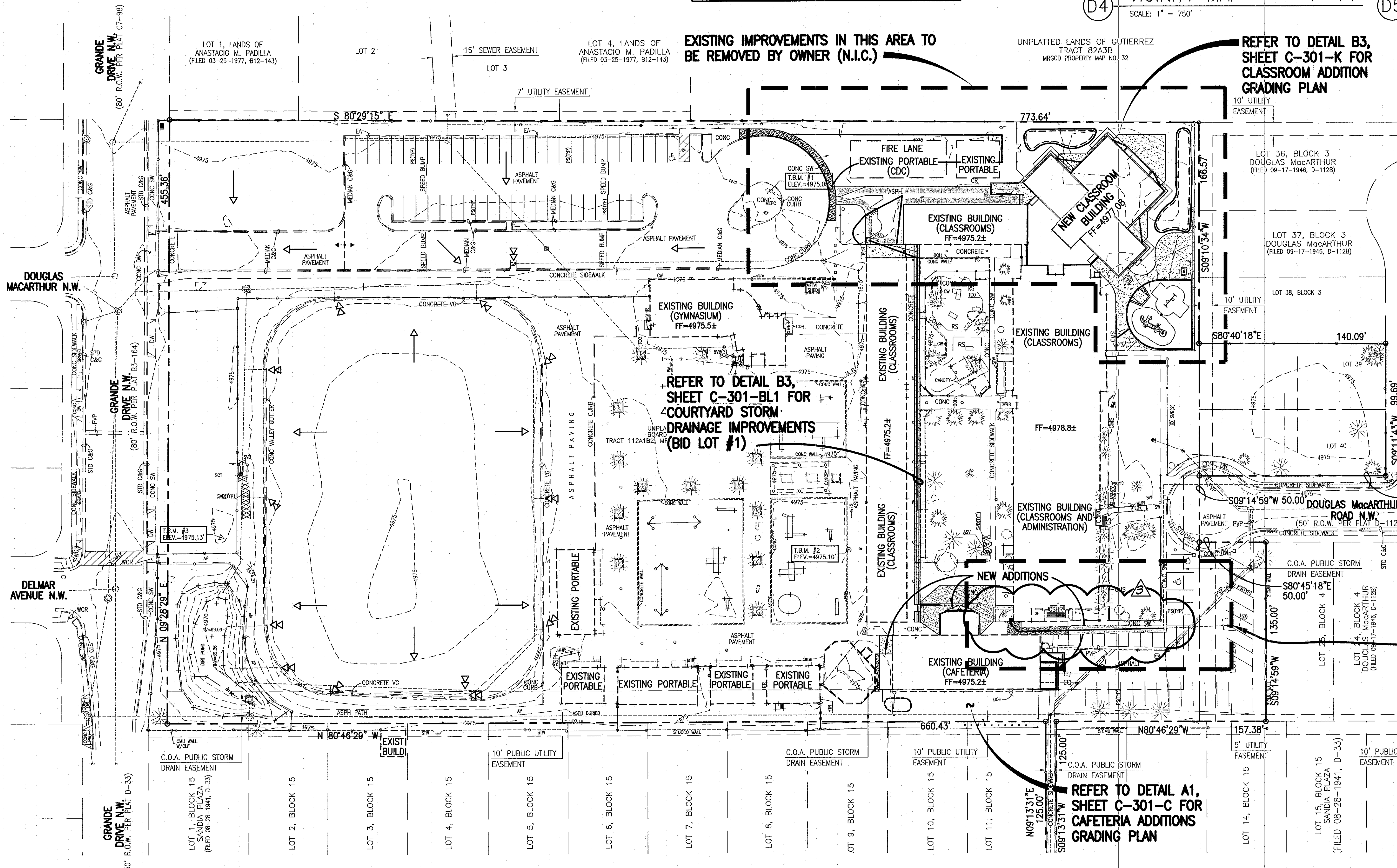
EXISTING IMPROVEMENTS IN THIS AREA TO
BE REMOVED BY OWNER (N.I.C.)

REFER TO DETAIL B3,
SHEET C-301-K FOR
CLASSROOM ADDITION
GRADING PLAN

UNPLATTED LANDS OF GUTIERREZ
TRACT 82A3B
MRCD PROPERTY MAP NO. 32

REFER TO DETAIL B3,
SHEET C-301-BL1 FOR
COURTYARD STORM
DRAINAGE IMPROVEMENTS
(BID LOT #1)

REFER TO DETAIL A1,
SHEET C-301-C FOR
CAFETERIA ADDITIONS
GRADING PLAN



A1 OVERALL GRADING SITE PLAN
SCALE: 1" = 40'

2015.181.7
2014.183.1
2010.030.1

DRAINAGE PLAN

I. INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT, LOCATED IN THE NORTH VALLEY OF THE ALBUQUERQUE METROPOLITAN AREA, REPRESENTS A MODIFICATION TO AN EXISTING ELEMENTARY SCHOOL SITE WITHIN AN INFILL AREA. THE PURPOSE OF THIS PROJECT IS TO PROVIDE IMPROVED DRAINAGE TO THE EXISTING COURTYARD, CONSTRUCT NEW ADDITIONS TO THE EXISTING CAFETERIA BUILDING, AND CONSTRUCT A NEW KINDERGARTEN CLASSROOM BUILDING ADDITION. THE DRAINAGE CONCEPT WILL BE TO MAINTAIN THE EXISTING DRAINAGE PATTERNS OF THE SITE AND RETAIN ANY INCREASE IN DEVELOPED RUNOFF GENERATED ONSITE.

THIS SUBMITTAL IS MADE IN SUPPORT OF BUILDING PERMIT WITHIN THE JURISDICTION OF THE CITY OF ALBUQUERQUE.

II. PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THE SCHOOL SITE IS LOCATED NEAR THE INTERSECTION OF DOUGLAS MACARTHUR NW AND GRANDE DRIVE NW. THE PROPERTY IS UNPLATTED. AS SHOWN BY PANEL 119 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 LIES WITHIN A DESIGNATED ZONE X FLOOD HAZARD ZONE, AN AREA OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS LESS THAN 1 FOOT.

III. BACKGROUND DOCUMENTS

THE PREPARATION OF THIS PLAN RELIED UPON THE FOLLOWING DOCUMENTS:

- TOPOGRAPHIC SURVEY PREPARED BY HIGH MESA CONSULTING GROUP (NMPS 11184) DATED 01-21-2010. THIS REFERENCED SURVEY PROVIDES THE BASIS FOR THE EXISTING CONDITIONS OF THE PROJECT SITE.

- GRADING AND DRAINAGE PLAN FOR DOUGLAS MACARTHUR SCHOOL PREPARED BY WILSON & COMPANY, DATED 06-17-1994. THIS PLAN SUPPORTED CONSTRUCTION OF THE MINI-GYMNASIUM AND PAVED BUS DROP OFF LOOP (NOW EXISTING) AND IDENTIFIED THE DRAINAGE BASINS 101, 102, AND 103 FOR THE SITE. THE PROPOSED IMPROVEMENTS LIE WITHIN BASIN 101 AND 102 OF THE 1994 PLAN.

IV. EXISTING CONDITIONS

THE PROPOSED PROJECT SITE INCLUDES THREE AREAS OF CONSTRUCTION, ALL WITHIN THE EASTERN PORTION OF THE SITE. THESE AREAS ARE 1) THE CAFETERIA BUILDING, 2) THE EXISTING COURTYARD, AND 3) THE EXISTING PLAYGROUND AND CLASSROOM PORTABLES AREA AT THE NORTHEAST CORNER OF THE SITE. THE ENTIRE SITE IS GENERALLY FLAT WITH MINIMAL TOPOGRAPHY, EXHIBITING POORLY DEFINED DRAINAGE PATTERNS.

RUNOFF FROM THE EXISTING CAFETERIA BUILDING LACKS WELL DEFINED DRAINAGE AS THE SITE IS GENERALLY FLAT. OVERFLOW APPEARS TO SHEET FLOW IN A WESTERLY DIRECTION TO ULTIMATELY DRAIN TO AN EXISTING DETENTION POND AT THE SOUTHWEST CORNER OF THE SCHOOL SITE THAT DISCHARGES TO THE EXISTING PUBLIC STORM DRAIN WITHIN GRANDE DRIVE NW.

THE EXISTING COURTYARD GRADUALLY SLOPES FROM EAST TO WEST, SHEET FLOWING RUNOFF TOWARD THE EXISTING BUILDING AND CAUSING FLOODING OF THE EXISTING BUILDING ENTRANCES. AN EXISTING STORM INLET LIES AT THE NORTHWEST CORNER OF THE MAIN CLASSROOM BUILDING; THIS INLET COLLECTS OVERFLOW RUNOFF FROM THE COURTYARD, AS WELL AS SURFACE FLOWS FROM THE NORTHEAST PORTABLE CLASSROOMS. RUNOFF THAT DRAINS TO THIS INLET IS CONVEYED VIA PRIVATE STORM DRAIN TO ULTIMATELY DISCHARGE TO A PUBLIC STORM DRAIN IN GRANDE DRIVE NW.

RUNOFF GENERATED WITHIN THE NORTHEAST PLAYGROUND APPEARS TO POND IN A LOW POINT IN THIS AREA, WITH OVERFLOW SHEETFLOWING TO THE SOUTHEAST TO AN ONSITE LOW AREA IMMEDIATELY NORTH OF DOUGLAS MACARTHUR ROAD NW; THIS AREA ULTIMATELY OVERFLOWS TO THE PUBLIC STORM DRAIN WITHIN DOUGLAS MACARTHUR ROAD NW.

THERE ARE NO OFFSITE FLOWS IMPACTING THE PROJECT; THE AREAS SURROUNDING THE SCHOOL EXHIBIT PARALLEL TOPOGRAPHY TO THE SCHOOL SITE AND THEREFORE DO NOT CONTRIBUTE OFFSITE FLOWS.

V. DEVELOPED CONDITIONS

THE PROPOSED CONSTRUCTION INCLUDES THREE AREAS: 1) BUILDING ADDITIONS TO THE CAFETERIA BUILDING, 2) DRAINAGE IMPROVEMENTS TO THE COURTYARD, AND 3) A NEW KINDERGARTEN CLASSROOM BUILDING ADDITION AND GRAVEL FIRE LANE AT THE NORTHEAST CORNER OF THE SITE.

THE SMALL ADDITIONS TO THE EXISTING CAFETERIA BUILDING WILL REPLACE IMPERVIOUS PAVEMENT WITH IMPERVIOUS BUILDING. NO CALCULATIONS WERE PREPARED FOR THIS AREA AS THERE IS NO INCREASE IN RUNOFF GENERATED BY THIS DEVELOPMENT. RUNOFF WILL CONTINUE TO DRAIN AWAY FROM THE BUILDING ON PAVED SURFACES.

THE DRAINAGE IMPROVEMENTS TO THE EXISTING COURTYARD CONSIST OF THE REMOVAL AND REPLACEMENT OF A PORTION OF THE EXISTING SIDEWALK WITH THE INCLUSION OF A NEW TRENCH DRAIN. THE NEW TRENCH DRAIN WILL INTERCEPT AND COLLECT THE EXISTING RUNOFF THAT CURRENTLY FLOODS THE EXISTING BUILDING ENTRANCES. RUNOFF COLLECTED WITHIN THE TRENCH DRAIN WILL BE CONVEYED VIA PRIVATE STORM DRAIN EXTENSION TO THE EXISTING STORM INLET AT THE NORTHWEST CORNER OF THE EXISTING BUILDING, AND ULTIMATELY DISCHARGED TO THE PUBLIC STORM DRAIN IN GRANDE DRIVE NW. NO CALCULATIONS WERE PREPARED FOR THIS AREA AS THERE IS NO INCREASE IN RUNOFF GENERATED BY THIS DEVELOPMENT.

A NEW KINDERGARTEN CLASSROOM BUILDING ADDITION AND GRAVEL FIRE LANE WILL REPLACE THE EXISTING PORTABLE CLASSROOMS AND PLAYGROUND LOCATED AT THE NORTHEAST CORNER OF THE SCHOOL SITE. THESE IMPROVEMENTS WILL RESULT IN A MINIMAL INCREASE IN DEVELOPED RUNOFF GENERATED BY THE SITE. TWO SHALLOW (6" +/-) WATER HARVESTING AREAS TO THE NORTHWEST AND EAST OF THE NEW ADDITION ARE SIZED TO RETAIN THE INCREASE IN RUNOFF GENERATED BY THE SITE. IN ADDITION, A NEW CURB AND GUTTER IS PROPOSED ALONG THE EASTERN EDGE OF THE SCHOOL SITE TO PROVIDE POSITIVE DRAINAGE OF OVERFLOW RUNOFF. THE CURB AND GUTTER WILL CONVEY OVERFLOW RUNOFF SOUTH TO THE EXISTING LOW AREA NORTH OF DOUGLAS MACARTHUR ROAD NW, MAINTAINING THE EXISTING DRAINAGE PATTERNS ALREADY ESTABLISHED FOR THIS AREA OF THE SITE.

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 AND PROPOSED IMPROVEMENTS, AND 3.) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES. AS SHOWN BY THIS PLAN, THE PROPOSED GRADING AND DRAINAGE IMPROVEMENTS WILL MAINTAIN AND IMPROVE THE CURRENT DRAINAGE PATTERNS FOR THE SITE, RETAINING ONSITE ANY INCREASE IN DEVELOPED RUNOFF GENERATED BY THE IMPROVEMENTS.

VII. CALCULATIONS

CALCULATIONS ANALYZING THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT HAVE BEEN PREPARED FOR THE PORTION OF THE SITE AFFECTED BY THE NEW KINDERGARTEN CLASSROOM ADDITION BUILDING AND FIRE LANE 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. IN ADDITION, THE AVERAGE END-AREA METHOD HAS BEEN USED TO QUANTIFY THE VOLUME OF RUNOFF RETAINED WITHIN THE PROPOSED WATER HARVESTING AREAS. AS DEMONSTRATED BY THESE CALCULATIONS, THE PROPOSED IMPROVEMENTS WILL RESULT IN A MINIMAL INCREASE IN PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED BY THIS PROJECT, WHICH WILL BE MITIGATED BY THE RETENTION OF THE INCREASE WITHIN THE NEW WATER HARVESTING AREAS.

VIII. CONCLUSIONS

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

- THE PROPOSED IMPROVEMENTS WILL MAINTAIN OR IMPROVE THE EXISTING DRAINAGE PATTERNS OF THIS PORTION OF THE EXISTING ELEMENTARY SCHOOL SITE.
- THE PROPOSED IMPROVEMENTS TO THE CAFETERIA AND COURTYARD WILL REPLACE EXISTING IMPERVIOUS LAND TREATMENT WITH NEW IMPERVIOUS LAND TREATMENT, MAINTAINING THE EXISTING VOLUME AND PEAK RATE OF DISCHARGE GENERATED BY THESE AREAS.
- THE PROPOSED IMPROVEMENTS TO THE KINDERGARTEN CLASSROOM ADDITION WILL RESULT IN A MINIMAL INCREASE IN VOLUME AND PEAK RATE OF DISCHARGE GENERATED BY THIS AREA.
- THE PROPOSED WATER HARVESTING AREAS ARE SIZED TO RETAIN THE INCREASE IN VOLUME OF RUNOFF GENERATED BY THE KINDERGARTEN CLASSROOM ADDITION.
- THE PROPOSED IMPROVEMENTS WILL NOT ADVERSELY IMPACT DOWNSTREAM PROPERTIES OR DOWNSTREAM DRAINAGE CONDITIONS.

MACARTHUR ES 2016 COURTYARD DRAIN

AS A FOLLOW-UP TO THE RECENTLY COMPLETED KINDERGARTEN AND CAFETERIA ADDITION PROJECTS, A NEW STORM DRAIN SERVING THE COURTYARD AREA IS PROPOSED TO PROTECT THE MECHANICAL ROOM AND CAFETERIA BUILDING FROM FLOODING ATTRIBUTABLE TO PRE-EXISTING ROOF DRAINAGE FROM THE MAIN CLASSROOM BUILDING. THE DOOR TO THE MECHANICAL ROOM IS SET BELOW THE SURROUNDING AREA, AND ROOF DRAINAGE THAT DISCHARGES TO GRADE IMMEDIATELY NEXT TO THE DOOR RE-ENTERS THE BUILDING. ALSO, LARGE RAINFALL EVENTS IN THE SUMMER OF 2015 OVERWHELMED THE NEW TRENCH DRAIN RESULTING IN WATER ENTERING THE NEW CAFETERIA ADDITION.

A NEW STORM INLET IS PROPOSED WITH A GRATE ELEVATION BELOW THE MECHANICAL ROOM DOOR. A NEW 12" STORM DRAIN WILL BE CONSTRUCTED UNDER THE COVERED WALKWAY THAT LEADS TO THE EAST PARKING AREA, WITH A CONNECTION TO AN EXISTING ON-SITE STORM DRAIN MANHOLE. THIS PLAN IS SUBMITTED AS A REVISION TO THE PREVIOUSLY APPROVED AND CERTIFIED PLAN.

CALCULATIONS

I. SITE CHARACTERISTICS

A. PRECIPITATION ZONE = 2

B. $P_{0.100} = P_{300} =$ 2.35

C. TOTAL PROJECT AREA (A_T) = 27,280 SF
0.63 AC

D. LAND TREATMENTS

1. EXISTING LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
A		
B	10,000 / 0.23	36
C	6,620 / 0.15	24
D	10,660 / 0.25	40

2. DEVELOPED LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
A		
B		
C	13,880 / 0.32	51
D	13,400 / 0.31	49

II. HYDROLOGY

A. EXISTING CONDITION

a. VOLUME

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$
$$E_W = ((0.00*0.53) + (0.23*0.78) + (0.15*1.13) + (0.25*2.12)) / 0.63 = 1.40 \text{ IN}$$
$$V_{100} = (E_W / 12) A_T = (1.40 / 12) 0.63 = 0.0732 \text{ AC-FT} = 3,170 \text{ CF}$$

b. PEAK DISCHARGE

$$Q_P = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$
$$Q_P = Q_{100} = ((0.00*1.56) + (0.23*2.28) + (0.15*3.14) + (0.25*4.7)) = 2.2 \text{ CFS}$$

B. DEVELOPED CONDITION

a. VOLUME

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$
$$E_W = ((0.00*0.53) + (0.00*0.78) + (0.32*1.13) + (0.31*2.12)) / 0.63 = 1.62 \text{ IN}$$
$$V_{100} = (E_W / 12) A_T = (1.62 / 12) 0.63 = 0.0849 \text{ AC-FT} = 3,680 \text{ CF}$$

b. PEAK DISCHARGE

$$Q_P = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$
$$Q_P = Q_{100} = ((0.00*1.56) + (0.00*2.28) + (0.32*3.14) + (0.31*4.7)) = 2.5 \text{ CFS}$$

c. WATER HARVESTING RETENTION PONDING (AVERAGE END-AREA METHOD)

i. NORTHWEST WATER HARVESTING AREA

ELEV	AREA (SF)	VOLUME (CF)	Σ VOLUME (CF)
4975.5	490		
		280	280

4976	660		
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ii. EAST WATER HARVESTING AREA

ELEV	AREA (SF)	VOLUME (CF)	Σ VOLUME (CF)
4975.5	840		
		490	490

4976	1120		
------	------	--	--

iii. TOTAL RETENTION CAPACITY

$$V_{POND} = 280 + 490 = 770 \text{ CF}$$

C. COMPARISON

a. VOLUME

$$\Delta V_{100} = 3680 - 3170 = 510 \text{ CF} \quad (\text{INCREASE})$$

b. PEAK DISCHARGE

$$\Delta Q_{100} = 2.5 - 2.2 = 0.3 \text{ CFS} \quad (\text{INCREASE})$$

c. RETENTION CAPACITY VS INCREASE IN VOLUME GENERATED

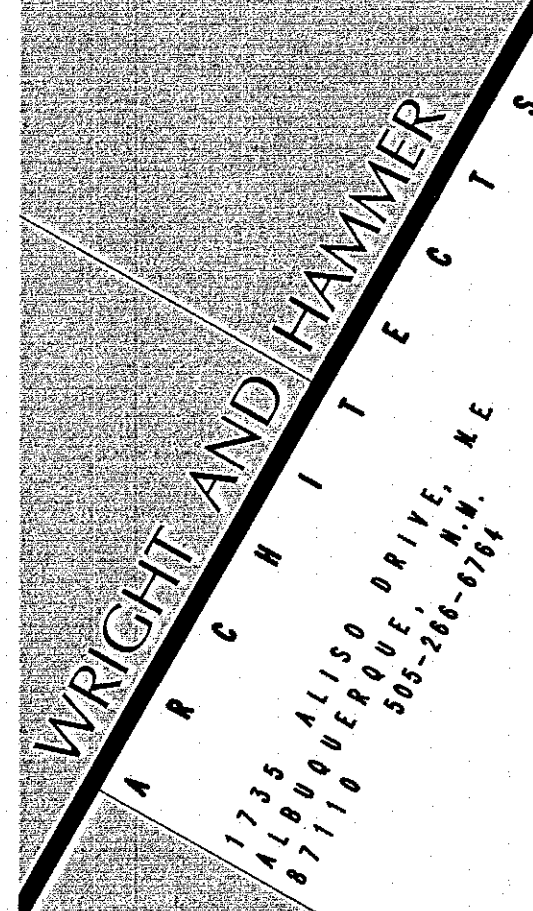
$$V_{POND} = 770 \text{ CF} > \Delta V_{100} = 510 \text{ CF}; \text{ THEREFORE DECREASE IN RUNOFF DISCHARGED}$$

CONSTRUCTION NOTES:

- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM 260-1990 FOR DESIGNATION (LINE-SPOTTING) OF EXISTING PUBLIC UTILITIES AND EXISTING UTILITIES OWNED AND OPERATED BY ALBUQUERQUE PUBLIC SCHOOLS.
- 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.
- UTILITY INFORMATION SHOWN HEREON IS BASED UPON ONSITE SURFACE EVIDENCE AND UTILITY LINE SPOTS WITH TEST HOLES PROVIDED BY ONPOINT UTILITY LOCATING SERVICES, SITE UTILITY REPORT DATED MAY 03, 2013 AND TEST HOLE REPORT DATED MAY 04, 2013. UTILITY LINES THAT APPEAR ON THESE DRAWINGS 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.
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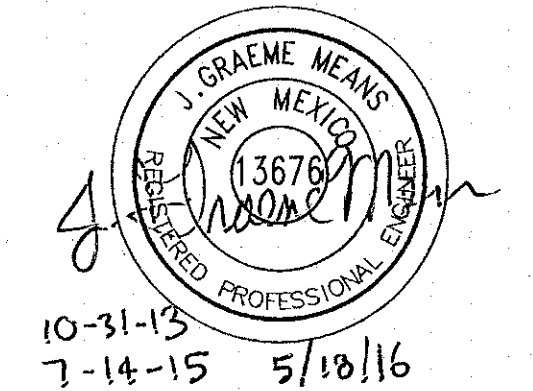
EROSION CONTROL MEASURES:

- 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.



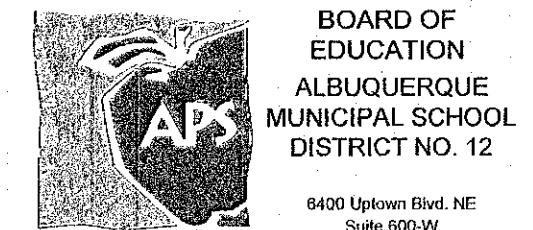
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CONTACT INFORMATION:
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MacARTHUR ELEMENTARY SCHOOL
KINDERGARTEN ADDITION
CAFETERIA ADDITION
& IMPROVEMENTS
RE-ROOFING

OWNER'S CONTACT:
MYRON JOHNSON, ARCHITECT
FACILITIES DESIGN & CONSTRUCTION
915 OAK STREET, SE
ALBUQUERQUE, NM 87106
505-848-8811

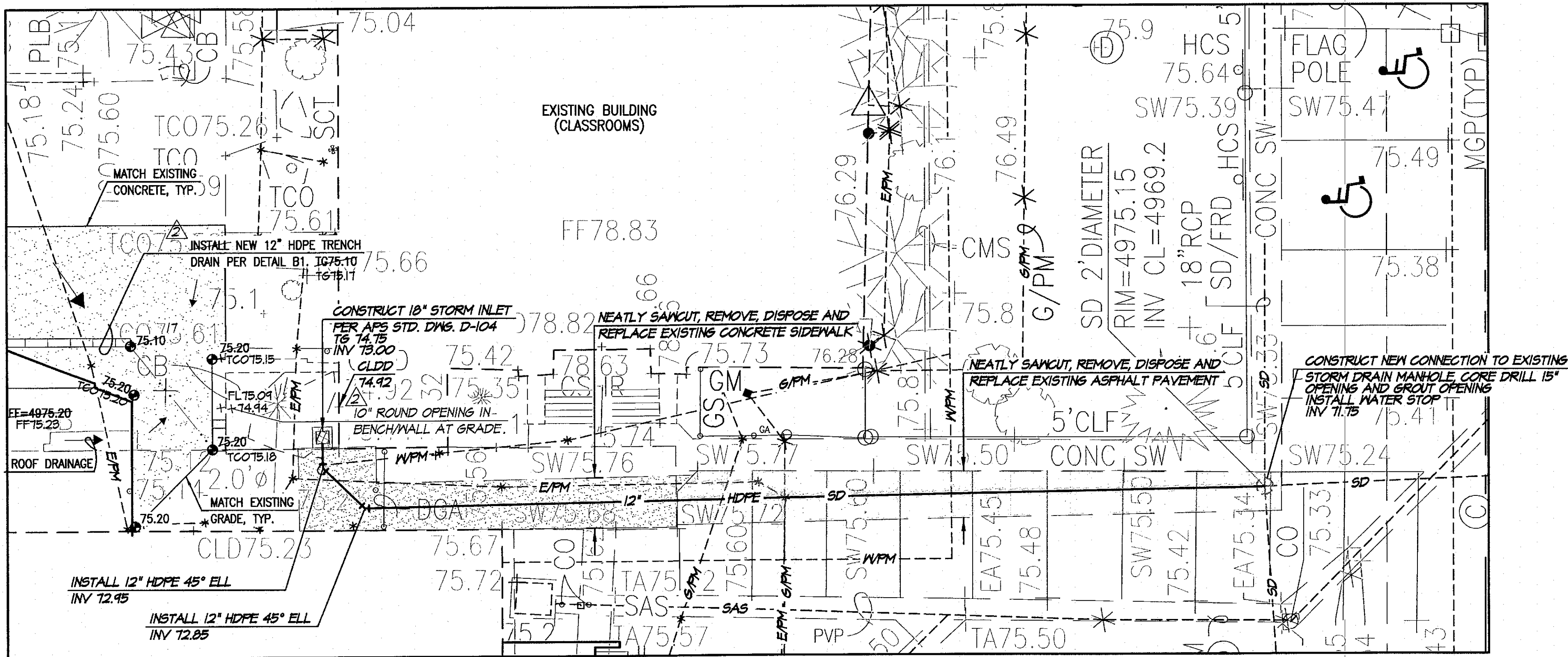
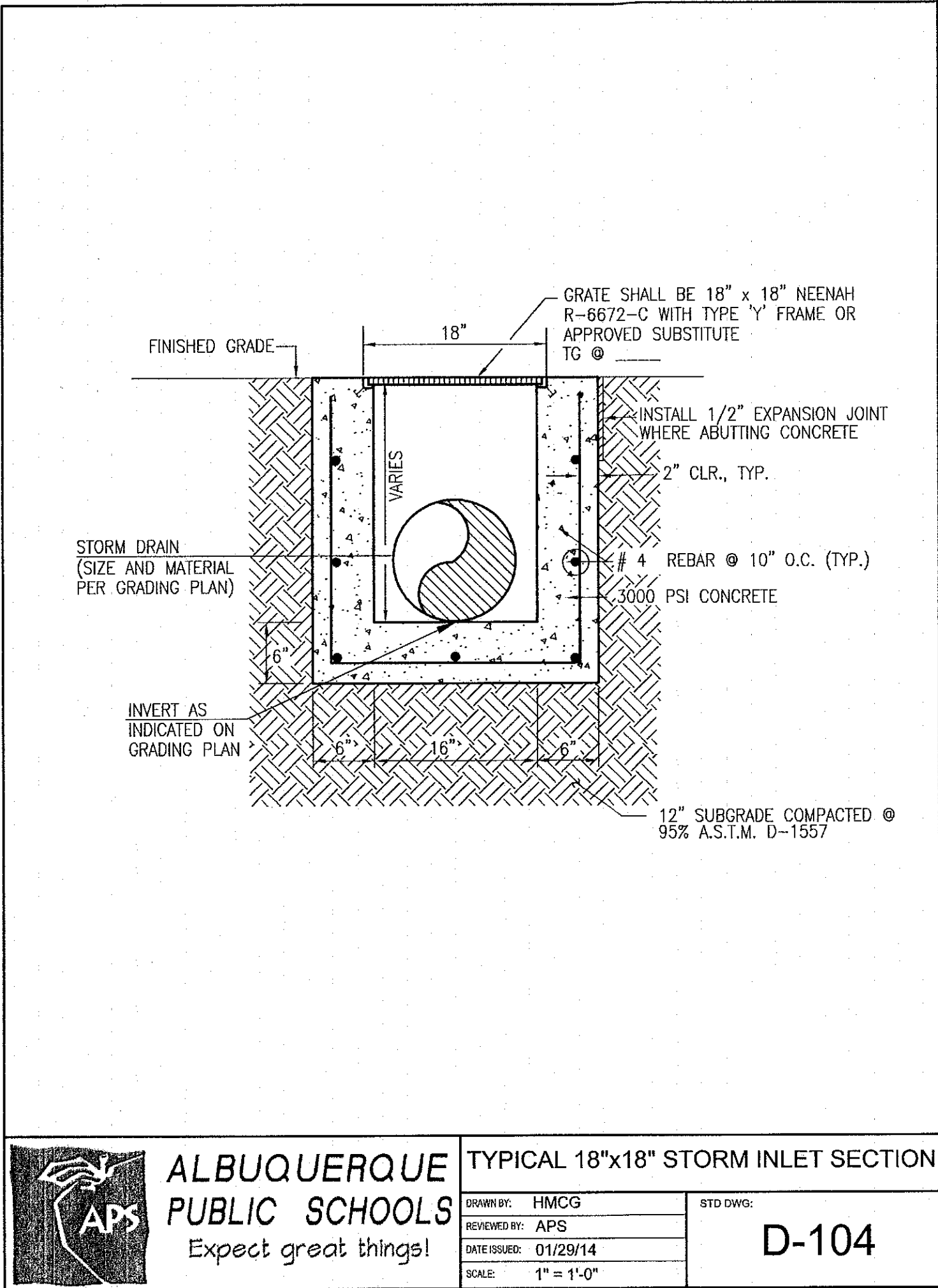
	05/16	ADDED COURTYARD DRAIN
	07/18	ENGINEER'S CERTIFICATION
	01/15	NO CHANGE THIS SHEET
	11/1/13	ISSUE DATE
MARK	DATE	DESCRIPTION
ISSUE INFORMATION		
PROJECT NO.: 0303.001.40105		
COPYRIGHT		
WRIGHT & HAMMER ARCHITECTS 2013		

GENERAL

DRAINAGE PLAN AND
CALCULATIONS

2015.181.7
2014.189.1
2010.030.1

C-102



COURTYARD STORM DRAIN
SCALE: 1" = 10'

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM 280-1990 FOR DESIGNATION (LINE-SPOTTING) OF EXISTING PUBLIC UTILITIES AND EXISTING UTILITIES OWNED AND OPERATED BY ALBUQUERQUE PUBLIC SCHOOLS.
2. 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.
3. 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.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
5. **UTILITY INFORMATION SHOWN HEREON IS BASED UPON ONSITE SURFACE EVIDENCE AND UTILITY LINE-SPOTS WITH TEST HOLES PROVIDED BY ONPOINT UTILITY LOCATING SERVICES. SITE UTILITY REPORT DATED MAY 08 2013 AND TEST HOLE REPORT DATED MAY 09 2013. UTILITY LINES THAT APPEAR ON THESE DRAWINGS 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.**
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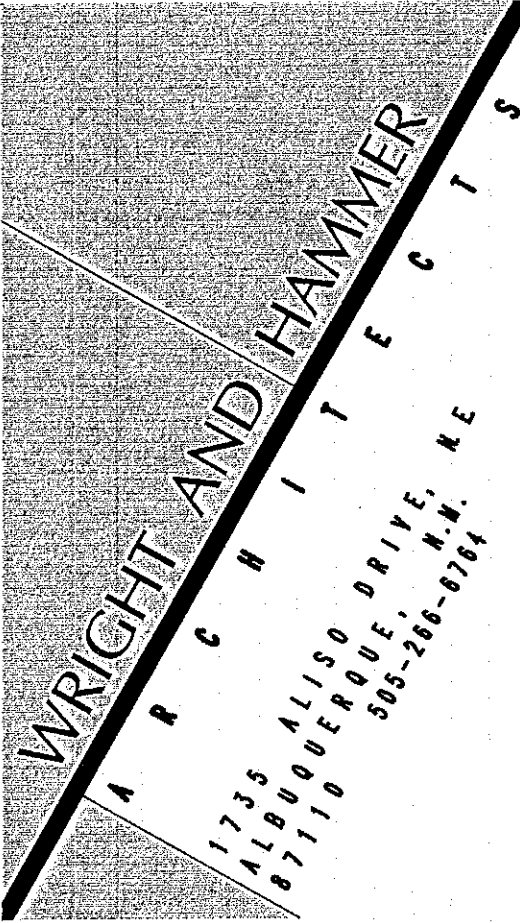
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DESIGN SURVEY NOTE:

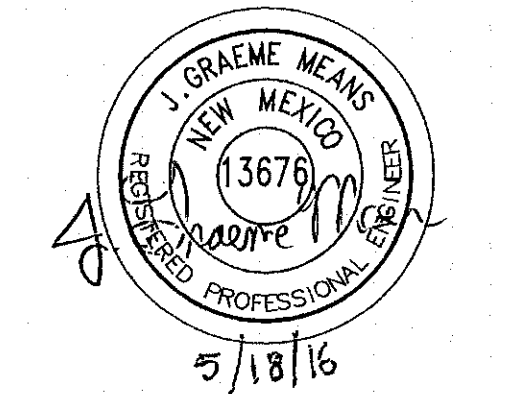
THIS IS NOT A BOUNDARY SURVEY; DATA IS SHOWN FOR ORIENTATION ONLY. THE BOUNDARY INFORMATION DEPICTED BY THIS PLAN IS BASED UPON A UNRECORDED BOUNDARY SURVEY PREPARED BY HIGH MESA CONSULTING GROUP, NMPS 11184, DATED 01/21/2010 (2008.194.4). THE TOPOGRAPHIC INFORMATION DEPICTED HEREON IS BASED UPON THE TOPOGRAPHIC SURVEY PREPARED BY HIGH MESA CONSULTING NMPS 11184, DATED 01/21/2010 (2008.194.4) WITH AS-BUILT INFORMATION FROM THE JULY 2013 CERTIFICATION AND SUPPLEMENTAL UTILITY INFORMATION DATED MAY 2013.

DESIGN DRAINAGE LEGEND:

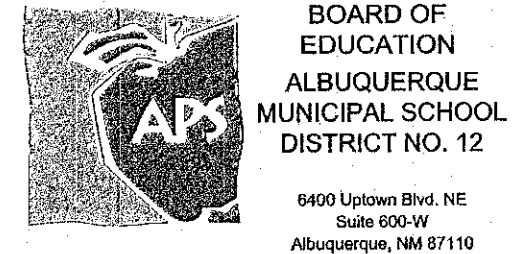
INV	INVERT
TA	TOP OF ASPHALT PAVEMENT
TC	TOP OF CURB
TG	TOP OF GRATE
	RIGHT OF WAY LINE
	EASEMENT LINE
	PROPOSED TRENCH DRAIN
	PROPOSED CONCRETE
	PROPOSED ASPHALT PAVING



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COURTYARD
ADDED
COURTYARD
DRAIN

C-302-C

2015.181.7
2014.185.1
2010.030.1