## CITY OF ALBUQUERQUE



November 14, 2014

Mr. Jeffrey Mortensen High Mesa Consulting Group 6010-B Midway Park Blvd NE Albuquerque, NM 87109

Re: Reginald Chavez Elementary Portables Grading and Drainage Plan Engineer's Stamp Date 11-5-14 (J12D009)

Dear Mr. Mortensen,

Based upon the information provided in your submittal received November 6, 2014, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required. Note the following:

PO Box 1293

1. On Sheet C-103, the end section, gravel infiltration, and chain link fence are described as being done by separate permit. These items will need to be completed with the earlier phase approved plans dated 8-4-14 or with this set of plans.

Albuquerque

If you have any questions, you can contact me at 924-3994.

New Mexico 87103

Sincerely,

www.cabq.gov

Amy L. D. Niese, P.E. Senior Engineer, Hydrology Planning Department

C: e-mail

#### INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT, LOCATED WITHIN THE OLD TOWN AREA OF THE CITY OF ALBUQUERQUE, REPRESENTS A MODIFICATION TO AN EXISTING APS SCHOOL SITE WITHIN AN INFILL AREA. THE PROPOSED IMPROVEMENTS CONSIST OF A NEW CLASSROOM BUILDING WITH ASSOCIATED SITE WORK. UPON COMPLETION OF THE NEW BUILDING, TWO EXISTING BUILDINGS WILL BE DEMOLISHED AND REPLACED WITH COURTYARD IMPROVEMENTS. THIS SUBMITTAL IS PART OF A PHASED DEVELOPMENT DISCUSSED IN MORE DETAIL BELOW. THE DRAINAGE CONCEPT FOR THIS PROJECT IS CONSISTENT WITH THE APPROVED MASTER DRAINAGE PLAN (N12/D009) DATED 09-28-2007. BASIN A WILL CONTINUE TO FREE DISCHARGE TO THE ADJACENT CITY STREETS. BASIN B WILL DRAIN TO AN EXISTING ONSITE PRIVATE RETENTION POND SIZED FOR THE V-10 DAY RUNOFF VOLUME. THIS SUBMITTAL IS MADE IN SUPPORT OF BUILDING PERMIT APPROVAL WITHIN THE JURISDICTION OF THE CITY OF ALBUQUERQUE

#### II. PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THE SCHOOL SITE IS LOCATED AT THE SOUTHWEST CORNER OF THE INTERSECTION OF MOUNTAIN AND MONTOYA ROADS NW. THE SITE IS DEVELOPED AS AN APS ELEMENTARY SCHOOL. THE SURROUNDING AREA IS ALSO DEVELOPED, MAINLY SINGLE FAMILY RESIDENTIAL, MAKING THIS A MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA. THE CURRENT LEGAL DESCRIPTION IS UNPLATTED LANDS OF THE ALBUQUERQUE PUBLIC SCHOOLS KNOWN AS REGINALD CHAVEZ ELEMENTARY SCHOOL. AS SHOWN BY PANEL 331 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS PUBLISHED BY FEMA FOR BERNALILLO COUNTY. NEW MEXICO, REVISED AUGUST 16, 2012, THIS SITE DOES NOT LIE WITHIN A DESIGNATED FLOOD HAZARD ZONE. FURTHER REVIEW OF THESE MAPS INDICATES THAT THIS SITE DOES NOT CONTRIBUTE RUNOFF TO A DOWNSTREAM DESIGNATED FLOOD HAZARD ZONE. THE PANEL ALSO IDENTIFIES THAT THE "1% ANNUAL CHANCE OR GREATER FLOOD HAZARD BY A LEVEE SYSTEM OVERTOPPING OR FAILURE OF ANY LEVEE SYSTEM IS POSSIBLE

#### III. BACKGROUND DOCUMENTS

THE PREPARATION OF THIS PLAN RELIED UPON THE FOLLOWING DOCUMENTS AND ACTIVITIES:

- PREDESIGN CONFERENCE RECAP DATED 03-04-2014 CONDUCTED WITH HIGH MESA CONSULTING GROUP. THE RECAP ALLOWED FOR THE CONTINUATION OF FREE DISCHARGE OF DEVELOPED RUNOFF FROM BASIN 'A' TO THE PUBLIC RIGHT-OF-WAY AND MODIFICATIONS TO THE BASIN 'B' POND SHALL MAINTAIN EXISTING VOLUME (V-10 DAY) PLUS ANY INCREASE IN RUNOFF ASSOCIATED WITH THE PROPOSED BUILDING PERMIT IMPROVEMENTS.
- TOPOGRAPHIC SURVEY PREPARED BY HIGH MESA CONSULTING GROUP (NMPS 11184) DATED 11-07-2013. THIS REFERENCED SURVEY PROVIDES THE BASIS FOR THE EXISTING CONDITIONS OF THE PROJECT SITE.
- MASTER DRAINAGE PLAN (MDP) FOR REGINALD CHAVEZ ELEMENTARY SCHOOL PREPARED BY HIGH MESA CONSULTING GROUP (NMPE 8547) DATED 09-28-2007. THE MDP ESTABLISHED THE CONCEPT OF FREE DISCHARGE FROM BASIN 'A' TO THE ADJACENT CITY STREETS COMBINED WITH THE ONSITE RETENTION OF RUNOFF FOR BASIN 'B.' THE 2007 MDP ALSO ESTABLISHED THE EXISTING BASIN B RETENTION POND VOLUME IN THE EXISTING CONDITION.
- CONSTRUCTION PLANS FOR REGINALD CHAVEZ ELEMENTARY SCHOOL PLAYGROUND AND DRAINAGE MODIFICATIONS PREPARED BY HIGH MESA CONSULTING GROUP (NMPE 8547) DATED 09-10-2008 AND CERTIFIED 04-24-2009; OF THE FOUR (4) TASKS IDENTIFIED BY THESE REFERENCE CONSTRUCTION PLANS, TASKS 1 AND 2 ARE COMPLETED TASK 3 LIES WITHIN THE FOOTPRINT OF THE NEW BUILDING ADDITION PROPOSED BY THIS SUBMITTAL AND AS SUCH IS NO LONGER APPLICABLE. THE COMPLETION OF TASKS 1 and 2 with the associated engineer's drainage certification indicates that there are no outstanding drainage requirements for this site.
- CONSTRUCTION PLANS FOR REGINALD CHAVEZ PORTABLE CLASSROOM RELOCATIONS PREPARED BY HIGH MESA CONSULTING GROUP (NMPE 8547) DATED 08-04-2014 HE REFERENCED PLANS DEFINE THE FIRST PHASE OF THIS PHASED PROJECT. IN THE FIRST PHASE, THE EXISTING PORTABLE CLASSROOM BUILDINGS WILL BE REMOVED AND RELOCATED IN ADVANCE OF THE PERMANENT BUILDING PROJECT. THE DEMOLITION OF THE EXISTING IMPROVEMENTS WITHIN THE FOOTPRINT OF THE NEW BUILDING WILL BE UNDERTAKEN IN PHASE 1. PHASE 1 WILL ALSO TEMPORARILY RELOCATE THE APS PORTABLE CLASSROOM BUILDINGS. THE YDI PORTABLE BUILDING WILL BE RELOCATED BY SEPARATE PERMIT BY OTHERS (NOT APS) CONCURRENT WITH THE FIRST PHASE OF WORK. THIS PLAN IS APPROVED FOR GRADING, PAVING AND BUILDING PERMIT. A SUPPORTING EROSION AND SEDIMENT CONTROL PLAN (ESCP) IS CURRENTLY UNDER REVIEW.

#### IV. EXISTING CONDITIONS

THIS SITE IS DEVELOPED AS AN ELEMENTARY SCHOOL OWNED, OPERATED, AND MAINTAINED BY APS. THE SCHOOL SITE CONSISTS OF PERMANENT AND PORTABLE CLASSROOM BUILDINGS, PAVED PARKING AREAS AND WALKWAYS, LANDSCAPING, TURF GRASS FIELD AND OTHER SITE IMPROVEMENTS APPLICABLE TO AN ELEMENTARY SCHOOL SITE. THE SITE IS CHARACTERIZED BY TWO DRAINAGE BASINS, BASINS A AND B. BASIN A DRAINS NORTH TO MOUNTAIN ROAD NW AND EAST TO MONTOYA ROAD NW WHILE BASIN B DRAINS SOUTH AND WEST TO AN ONSITE PRIVATE RETENTION POND AT THE SOUTHWEST CORNER OF THE SITE.

- BASIN A GENERALLY CONSISTS OF THE NORTH PORTION OF THE MAIN OFFICE AND CLASSROOM BUILDINGS (NO. 100 & 200), NORTHWEST AND NORTHEAST PAVED PARKING LOTS, PAVED BUS DROP-OFF LANE, AND MINOR AREAS OF BARE SOIL. THE RUNOFF GENERATED BY THIS BASIN FREELY DISCHARGES NORTH TO MOUNTAIN ROAD NW AND EAST TO MONTOYA ROAD NW, BOTH FULLY DEVELOPED PUBLIC STREETS WITH CURB AND GUTTER AND PERMANENT PAVING. MOUNTAIN ROAD NW DRAINS TO THE EAST AND WEST DUE TO AN EXISTING HIGHPOINT IN THE STREET PROFILE. MOUNTAIN ROAD NW IS SERVED BY A PUBLIC STORM DRAIN SYSTEM WITH STREET RUNOFF COLLECTED VIA CURB INLETS. MONTOYA ROAD NW DRAINS TO THE NORTH, WHERE RUNOFF IS ALSO COLLECTED VIA CURB INLETS INTO THE PUBLIC STORM DRAIN SYSTEM.
- BASIN B IS COMPRISED OF THE CENTRAL AND SOUTH HALF OF THE SITE CONSISTING OF THE SOUTH PORTION OF THE MAIN OFFICE AND CLASSROOM BUILDINGS (NO. 200, 300, & 400), PORTABLE BUILDINGS, PAVED WALKWAYS, LANDSCAPING, PLAY AREAS, BARE SOIL PLAY AREAS AND A TURF GRASS FIELD AT THE SOUTHWEST CORNER OF THE THIS PORTION OF THE SITE GENERALLY DRAINS TO THE SOUTH AND WEST WHERE RUNOFF IS CAPTURED WITHIN AN EXISTING ONSITE PRIVATE RETENTION POND AT THE SOUTHWEST CORNER OF THE SITE. THE EXISTING POND RETAINS IN EXCESS OF THE V-10 DAY RUNOFF VOLUME. AS ESTABLISHED BY THE 2007 MDP, THERE ARE NEGLIGIBLE OFFSITE FLOWS DISCHARGING ONTO THE SITE FROM THE ADJACENT RESIDENTIAL LOTS TO THE SOUTH AND EAST OF

#### V. DEVELOPED CONDITIONS

THE SCHOOL SITE.

THE PROPOSED CONSTRUCTION CONSISTS OF A NEW CLASSROOM BUILDING WITH ASSOCIATED SITE WORK IN BOTH DRAINAGE BASINS A AND B. UPON COMPLETION OF THE NEW CLASSROOM BUILDING, TWO SMALLER EXISTING CLASSROOM BUILDINGS, 300 & 400, WILL BE REMOVED (DEMOLISHED). IN ADDITION TO SITE WORK ASSOCIATED WITH THE NEW BUILDING, SITE WORK WILL ALSO INCLUDE REGRADING AND LANDSCAPING THE EXISTING POND IN BASIN B. THE MAJORITY OF THE PROPOSED CONSTRUCTION WILL OCCUR IN

THE PROPOSED WORK WITHIN BASIN A WILL BE LIMITED. THE NORTH END OF THE NEW BUILDING, THE LIBRARY, WILL GENERATE ROOF RUNOFF THAT WILL DISCHARGE INTO THE NORTHWEST PARKING LOT WHERE IT WILL BE ROUTED THROUGH AN EXISTING WATER HARVESTING POND PRIOR TO DISCHARGE NORTH INTO MOUNTAIN ROAD NW. THIS PORTION OF THE PROJECT IS NOT ANTICIPATED TO GENERATE A SIGNIFICANT INCREASE IN THE PEAK DISCHARGE OF RUNOFF TO MOUNTAIN ROAD NW. IN ADDITION, THE RUNOFF WILL ROUTE THROUGH AN EXISTING WATER HARVESTING POND.

THE MAJORITY OF THE PROPOSED CONSTRUCTION WILL OCCUR WITHIN BASIN B CONSISTING OF THE CLASSROOM PORTION OF THE NEW BUILDING, FIRE TRUCK ACCESS, COURTYARD AND PLAYGROUND IMPROVEMENTS, RELOCATED BASKETBALL COURTS, AND MODIFICATIONS TO THE EXISTING POND. THE SOUTH END OF THE NEW CLASSROOM WING ENCROACHES INTO THE V-10 DAY POND LIMITS. IN RESPONSE, A PORTION OF THE EXISTING POND WILL BE REGRADED BY FILL. RUNOFF FROM THE EXISTING ONSITE PRIVATE STORM DRAIN WILL BE PIPED AROUND THE SOUTH END OF THE NEW BUILDING TO THE WEST END OF THE EXISTING POND. THE WEST END OF THE EXISTING POND WILL BE DEEPENED TO COMPENSATE FOR THE DISPLACED VOLUMES AND TO ENSURE THE V-10 DAY RUNOFF REMAINS CONTAINED ON THE SITE. ROOF RUNOFF FROM THE NEW CLASSROOM WING WILL BE COLLECTED VIA ROOF DRAINS AND DIRECTED VIA PRIVATE STORM DRAIN TO THE ONSITE PRIVATE RETENTION POND.

UPON COMPLETION OF THE NEW BUILDING TWO EXISTING CLASSROOM BUILDINGS, SOUTH OF THE MAIN OFFICE & CLASSROOM BUILDING, WILL BE REMOVED. THE OLD BUILDING FOOTPRINTS WILL BE REPLACED WITH TREE WELLS AND PERVIOUS PAVING. THE BASKETBALL COURTS WILL ALSO BE RELOCATED AND RECONSTRUCTED AT THE EAST EDGE OF THE SCHOOL SITE WITH THE EXISTING PLAYGROUND. THIS AREA WILL ALSO SURFACE DRAIN TO THE ONSITE PRIVATE RETENTION POND. IN ADDITION TO SITE LANDSCAPING, THE DEVELOPED POND WILL BE LANDSCAPED. IT WILL ALSO BE FENCED AS IT WILL BE DEEPER THAN 18 INCHES.

THE NEGLIGIBLE OFFSITE FLOWS ENTERING THE SITE FROM THE ADJACENT RESIDENTIAL PROPERTIES WILL NOT BE BLOCKED AND WILL CONTINUE TO BE ACCEPTED AND CONVEYED THROUGH THE SITE AS IN THE EXISTING CONDITION.

#### VI. PHASING

THIS PROJECT WILL BE CONSTRUCTED IN PHASES AS FOLLOWS:

PHASE 1: REMOVE AND RELOCATE EXISTING PORTABLE CLASSROOM BUILDINGS INCLUDING THE DEMOLITION OF THE EXISTING IMPROVEMENTS WITHIN THE FOOTPRINT OF THE PROPOSED PERMANENT BUILDING. THE APS PORTABLE CLASSROOM BUILDINGS WILL TEMPORARILY BE LOCATED TO THE IMMEDIATE WEST OF THE NEW BUILDING IN THE PROXIMITY OF THE EXISTING BASKETBALL COURTS.

PHASE 2A: CONSTRUCT NEW PERMANENT CLASSROOM BUILDING

PHASE 2B: DEMOLISH EXISTING BUILDINGS 300 AND 400 AND CONSTRUCT NEW COURTYARD IMPROVEMENTS

PHASE 2C: REMOVE EXISTING APS PORTABLE CLASSROOM BUILDINGS FROM SITE.

PHASE 2D: CONSTRUCT NEW PLAYGROUND IMPROVEMENTS FOR THE YDI PROGRAM (PORTABLE TO REMAIN) AND THE APS KINDERGARTEN CLASSROOMS (NEW BUILDING) PHASE 3: RELOCATE PORTABLE BUILDINGS FOR AFTER SCHOOL PROGRAMS TO EAST SIDE OF CAMPUS. THIS WILL COVERED BY SEPARATE PERMIT AND HENCE SEPARATE SUBMITTAL.

## VI. GRADING PLAN

THE GRADING PLAN SHOWS THE 1.) EXISTING AND PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS, 2.) THE LIMIT OF THE EXISTING AND PROPOSED IMPROVEMENTS, AND 3.) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES. AS SHOWN BY THIS PLAN, THE LIMITS OF BASIN A WILL DECREASE SLIGHTLY IN RESPONSE TO THE NEW CLASSROOM BUILDING ROOF DRAINAGE. THE MAJORITY OF THE SITE AND THIS PROJECT LIES WITHIN BASIN B. THE DEVELOPED RUNOFF IN BASIN B ASSOCIATED WITH THE NEW CLASSROOM BUILDING, FIRE LANE DRIVE, PERVIOUS PAVING IMPROVEMENTS, RELOCATED AND RECONSTRUCTED BASKETBALL COURTS WILL CONTINUE TO DRAIN TO AND BE CONTAINED WITHIN THE EXISTING RETENTION POND AT THE SOUTHWEST CORNER OF THE SITE.

## VII. EROSION & SEDIMENT CONTROL AND LOW IMPACT DEVELOPMENT

DURING THE DEMOLITION, BUILDING, AND SITE CONSTRUCTION PHASES, BEST MANAGEMENT PRACTICES (BMPS) WILL BE IMPLEMENTED AND MAINTAINED FOR THE ENTIRE SITE UNTIL FINAL STABILIZATION MEASURES ARE INSTALLED. PREVENTION OF SEDIMENT DISCHARGE INTO THE PUBLIC RIGHT OF WAY AND/OR DOWNSTREAM INTO THE EXISTING STORM DRAIN SYSTEM IS REQUIRED BY THE CONSTRUCTION GENERAL PERMIT. A COMBINATION OF COMMON BMPS WILL PREVENT SEDIMENT DISCHARGE FROM THE SITE; SUCH AS: STABILIZED CONSTRUCTION ENTRANCE, STRAW WATTLES, PERIMETER SILT FENCE, AND SEDIMENT DETENTION PONDING. PERMANENT STABILIZATION WILL BE ACHIEVED BY MEANS OF PERVIOUS AND IMPERVIOUS PAVING, NEW CLASSROOM BUILDING, LANDSCAPING (GRAVEL MULCH & PLANTINGS), AND SEDIMENT DETENTION PONDING WITHIN ONSITE PONDS. BASIN A INCLUDES AN EXISTING WATER HARVESTING AREA THAT WILL REMAIN. BASIN B INCLUDES AN ONSITE PRIVATE RETENTION POND THAT WILL BE DEEPENED AND IMPROVED IN CONJUNCTION WITH THIS PROJECT.

LOW IMPACT DEVELOPMENT IN BASIN A WILL BE ACHIEVED DUE TO THE MINOR DEVELOPMENT IT WILL RECEIVE. A SMALL VOLUME OF ROOF RUNOFF WILL DISCHARGE TO AN EXISTING SIDEWALK CULVERT AND COLLECT INTO AN EXISTING WATER HARVESTING POND. THE MAJORITY OF THE SUSPENDED SOLIDS WILL SETTLE BEFORE DISCHARGING INTO MOUNTAIN ROAD NW. THE LOW IMPACT NATURE OF BASIN B WILL BE MAINTAINED WHERE RUNOFF COLLECTS AND IS RETAINED IN THE EXISTING RETENTION POND. NEW PERVIOUS PAVING AND NEW LANDSCAPING WILL ALLOW RAINFALL TO INFILTRATE WITHIN THE SITE WHILE THE REMAINING RUNOFF WILL CONTINUE TO BE COLLECTED AND RETAINED WITHIN THE MODIFIED RETENTION POND.

## 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 AN INCREASE IN DEVELOPED RUNOFF GENERATED BY BASIN A, AND AN INCREASE IN THE DEVELOPED RUNOFF GENERATED BY BASIN B OF THE REGINALD CHAVEZ SCHOOL SITE. IN ADDITION, THE FIRST FLUSH WILL BE 100% RETAINED ONSITE IN THE DEVELOPED REGINALD CHAVEZ SCHOOL SITE WITHIN THEIR RESPECTIVE BASINS A & B. THE VOLUME OF THE EXISTING WATER HARVESTING POND IN BASIN A PROVIDES ADEQUATE CAPACITY TO RETAIN THE FIRST FLUSH RUNOFF GENERATED BY THE DEVELOPED BASIN A. SIMILARLY, THE REGRADED RETENTION POND WITHIN BASIN B WILL PROVIDE MORE THAN ENOUGH CAPACITY REQUIRED TO RETAIN THE FIRST FLUSH RUNOFF.

## IX. CONCLUSIONS

THE FOLLOWING CONCLUSIONS HAVE BEEN ESTABLISHED AS A RESULT OF THE EVALUATIONS CONTAINED HEREIN: 1. THE PROPOSED IMPROVEMENTS REPRESENT THE MODIFICATION OF AN EXISTING SITE WITHIN AN INFILL AREA.

- THE PROPOSED IMPROVEMENTS WILL MAINTAIN AND NOT ALTER THE EXISTING DRAINAGE PATTERNS OF THE SITE AND BE CONSISTENT WITH THE APPROVED MASTER DRAINAGE PLAN.
- THE PROPOSED IMPROVEMENTS WILL COMPLEMENT THE PORTABLE CLASSROOM RELOCATION PROJECT THAT WILL PRECEDE THE BUILDING PERMIT FOR THE PERMANENT BUILDING CONSTRUCTION AND IMPROVEMENTS PROPOSED HEREIN.
- THE FREE DISCHARGE OF DEVELOPED RUNOFF FROM BASIN A TO THE ADJACENT CITY STREETS IS CONSISTENT WITH THE MASTER DRAINAGE PLAN FOR THE SCHOOL SITE. THE PROPOSED IMPROVEMENTS WILL HAVE A MINOR INCREASE IN THE DEVELOPED RUNOFF, FREELY DISCHARGING TO MOUNTAIN ROAD NW, GENERATED BY BASIN A. THIS
- RUNOFF, HOWEVER, WILL BE ROUTED THROUGH AN EXISTING WATER HARVESTING AREA THAT WILL MITIGATE THE MINOR INCREASE.
- THE PROPOSED IMPROVEMENTS WILL RESULT IN A MINOR INCREASE IN THE DEVELOPED RUNOFF GENERATED FOR BASIN B; THIS INCREASE WILL BE MITIGATED VIA THE INCREASED STORAGE CAPACITY OF THE ONSITE RETENTION POND. THE PROPOSED IMPROVEMENTS WILL ENCROACH UPON THE EXISTING ONSITE PRIVATE RETENTION POND. CAPACITY OF THE POND, HOWEVER, WILL BE PRESERVED BY REGRADING AND DEEPENING THE POND TO PROVIDE FOR ADEQUATE STORAGE VOLUME. THE DEEPER PORTIONS OF THE EXISTING POND WILL BE FENCED TO RESTRICT PUBLIC
- THE V-10 DAY RUNOFF VOLUME WILL CONTINUE TO BE CONTAINED ON SITE IN BASIN B, CONSISTENT WITH THE MASTER DRAINAGE PLAN.
- 9. A GRAVEL INFILTRATION TRENCH WILL BE CONSTRUCTED AT THE BOTTOM OF THE ONSITE PRIVATE RETENTION POND IN BASIN B TO PROMOTE INFILTRATION. 10. THE PROPOSED IMPROVEMENTS WILL NOT ADVERSELY IMPACT DOWNSTREAM PROPERTIES OR DOWNSTREAM DRAINAGE CONDITIONS.
- 11. THE PROPOSED IMPROVEMENTS WILL NOT BLOCK OFFSITE FLOWS.

**CALCULATIONS** 

I. SITE CHARACTERISTICS A. PRECIPITATION ZONE = 2.35 IN B.  $P_{100, 6 HR} = P_{360 MIN} =$ 3.95 IN  $P_{100, 10DAY} = P_{10 DAY} =$ 

 $P_{1440 \text{ MIN}} =$ C. LAND TREATMENTS & AREAS

1. TOTAL PROJECT AREA  $(A_T) = 390,300 \text{ SF } (8.96 \text{ AC})$ 

a. EXISTING LAND TREATMENT (FROM 2007 APPROVED MASTER DRAINAGE PLAN) i. BASIN'A' AREA (SF/AC) TREATMEN

2.75 IN

0 / 0.00 5,982 / 0.14 17,780 / 0.41 86,880 / 1.99 110,642 / 2.54

ii. BASIN 'B' TREATMENT AREA (SF/AC) 0 / 0.00 61,420 / 1.41 135,472 / 3.11 82.764 / 1.90

TOTAL 279,656 / 6.42 b. DEVELOPED LAND TREATMENT

i. BASIN'A TREATMENT AREA (SF/AC) 0 / 0.00 0 / 0.00 18,644 / 0.43 85,480 / 1.96 104,124 / 2.39 ii. BASIN 'B' AREA (SF/AC) TREATMEN' 0 / 0.00 61,420 / 1.41

115,990 / 2.66

106,670 / 2.45

284,080 / 6.52

30

100

II. HYDROLOGY

A. EXISTING CONDITION (FROM 2007 APPROVED MDP)

1. BASIN 'A' a. VOLUME

 $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$ (0.53\*0.00) + (0.78\*0.14) + (1.13\*0.41) + (2.12\*1.99)/2.54 =

0.4000 AC-FT = 17,430 CF $V_{100,6 HR} = (E_W/12)A_T =$ (1.89/12)2.54 =b. PEAK DISCHARGE

 $Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$ 11.0 CFS  $Q_P = Q_{100} = (1.56*0.00) + (2.28*0.14) + (3.14*0.41) + (4.70*1.99) =$ c. WATER HARVESTING (AVERAGE END AREA METHOD)

AREA (SF) VOL (CF) ΣVOL (CF) **ELEV** 4956.7

 $V_{WH} = 190 \text{ CF} = 0.0043 \text{ AC-FT}$ 

2. BASIN 'B'

a. VOLUME  $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$ 

(0.53\*0.00) + (0.78\*1.41) + (1.13\*3.11) + (2.12\*1.90)/6.42 = $V_{100,6 HR} = (E_W/12)A_T = (1.35/12)6.42 =$ 0.7223 AC-FT = 31.460 CF

0.9756 AC-FT = 42,500 CF

21.9 CFS

 $V_{10-DAY} = V_{100.6 HR} + A_D(P_{10} - P_{360})/12$  $V_{10-DAY} = 0.7223 + 1.90 * (3.95 - 2.35)/12 =$ 

b. PEAK DISCHARGE  $Q_{P} = Q_{PA}A_{A} + Q_{PB}A_{B} + Q_{PC}A_{C} + Q_{PD}A_{D}$ 

 $Q_P = Q_{100} = (1.56*0.00) + (2.28*1.41) + (3.14*3.11) + (4.70*1.90) =$ c. RETENTION POND (AVERAGE END AREA METHOD) AREA (SF) VOL (CF) ΣVOL (CF)

4953 13,925 18700 19,480 53,540

 $V_{@4956}$  = 55,210 CF = 1.27 AC-FT >  $V_{10-DAY}$  = 42,500 CF :  $V_{10-DAY}$  WSL BETWEEN 4955 AND 4956; LET V<sub>10-DAY</sub> WSL = 4955.5

## B. <u>DEVELOPED CONDITION</u>

1. BASIN 'A'

a. VOLUME  $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$ 

(0.53\*0.00) + (0.78\*0.00) + (1.13\*0.43) + (2.12\*1.96)/2.39 = $V_{100,6 HR} = (E_W/12)A_T =$ 0.3864 AC-FT = 16,830 CF(1.94/12)2.39 =

b. PEAK DISCHARGE

 $Q_{P} = Q_{PA}A_{A} + Q_{PB}A_{B} + Q_{PC}A_{C} + Q_{PD}A_{D}$  $Q_P = Q_{100} = (1.56*0.00) + (2.28*0.00) + (3.14*0.43) + (4.70*1.96) =$ 10.6 CFS

c. WATER HARVESTING - NO CHANGE

d. FIRST FLUSH (REQ'D FOR INCREASED IMPERVIOUS AREA)

 $E_W = (E_{FF}A_D)/A_D$  $E_{FF} = 0.44 IN$ 

 $A_D = A_{D, DEV} - A_{D, EXIST} = 1.96 AC - 1.99 AC$ A<sub>D</sub> = -0.03 AC = DECREASE IN IMPERVIOUS AREA THEREFORE; NO FIRST FLUSH CALCULATIONS ARE REQ'D

2. BASIN 'B'

a. VOLUME  $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$ 

(0.53\*0.00) + (0.78\*1.41) + (1.13\*2.66) + (2.12\*2.45)/6.52 =1.43 IN 0.7772 AC-FT = 33,850 CF $V_{100,6 HR} = (E_W/12)A_T =$ (1.43/12)6.52 =

 $V_{10-DAY} = V_{100, 6HR} + A_D(P_{10} - P_{360})/12$  $V_{10-DAY} = 0.7772 + 2.45 * (3.95 - 2.35)/12 =$ 

1.1037 AC-FT = 48,080 CFb. PEAK DISCHARGE

 $Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$  $Q_P = Q_{100} = (1.56*0.00) + (2.28*1.41) + (3.14*2.66) + (4.70*2.45) =$ 

23.1 CFS

ELEV AREA (SF) VOL (CF) ΣVOL (CF) 2,560 3,350 3,350 4,140 8,380 5,030 7,910 9,900 13,125 29,415 16,350 39,300  $V_{@4956} = 57,240 \text{ CF} >> V_{10-DAY} = 46,730 \text{ CF} : OK$ d. FIRST FLUSH (REQ'D FOR INCREASED IMPERVIOUS AREA)  $E_W = (E_{FF}A_D)/A_D$  $E_{FF} = 0.44 IN$  $A_D = A_{D, DEV} - A_{D, EXIST} = 2.45 AC - 1.90 AC$ A<sub>D</sub> = 0.55 AC = INCREASE IN IMPERVIOUS AREA (0.44\*0.55)/0.55 =0.44 IN  $V_{FF} = (E_W/12)A_T =$ 0.0202 AC-FT =880 CF (0.44/12)0.55 =  $V_{FF} = 880 \text{ CF} < V_{@4956} = 57,240 \text{ CF} : \text{OK}$ C. COMPARISON 1. BASIN 'A' a. VOLUME (V<sub>DEV</sub> - V<sub>EXIST</sub> - V<sub>WH</sub>)  $\Delta V_{100.6 \text{ HR}} = 16,830 - 17,430 - 190 =$ (DECREASE) -790 CF b. PEAK DISCHARGE (PDEV - PEXIST)  $\Delta Q_{100} = 10.6 - 11.0 =$ -0.4 CFS (DECREASE) c. FIRST FLUSH (VFF vs VWH) NO FIRST FLUSH CALCULATIONS AS IMPERVIOUS AREA IN BASIN DECREASED 2. BASIN 'B' a. Δ VOLUME GENERATED (V<sub>DEV</sub> - V<sub>EXIST</sub>)  $\Delta V_{100.6 \text{ HR}} = 33,850 - 31,460 =$ 2.390 CF (INCREASE)  $\Delta V_{10 DAY} = 48,080 - 42,500 =$ 5,580 CF (INCREASE) b. DEVELOPED VOLUME GENERATED vs PONDING (RETENTION @ WSL = 4956)  $V_{DEV 100, 6HR} = 33,850 \text{ CF} < V_{@4956} = 57,240 \text{ CF} : OK$  $V_{DEV 10 DAY} = 48,080 CF < V_{@4956} = 57,240 CF : OK$ c. PEAK DISCHARGE (PDEV - PEXIST) 1.2 CFS (INCREASE)  $\Delta Q_{100} = 23.1 - 21.9 =$ d. FIRST FLUSH (V<sub>FF</sub> vs V<sub>@4956</sub>)

c. RETENTION POND (AVERAGE END AREA METHOD)

LEGEND

CND

GTS

IVB

MHR

PAINTED FOUR SQUARE OVERHEAD ELECTRIC OF LINES) ASPHALT RAMP ÖVERHEAD UTILITY MAST ASPHALT RUNDOWN OHWL ASPHAL 1 OVERHEAD WALL OVERHEAD WATER LINE ANTI-SIPHON VALVE BASKETBALL GOAL CONCRETE WHEEL STOP **BUILDING OVERHANG** PLAYGROUND EQUIPMENT BICYCLE RACK UTILITY PAINT MARK ATHLETIC BACKSTOP PAINTED PARKING STRIPE CURB AND GUTTER PICNIC TABLE POLYVINYL CHLORIDE PIPE COMMUNICATION LINE RY PAINT MARK REINFORCED CONCRETE PIPE COMMUNICATION CABINET COMMUNICATION CONDUIT ROOF DRAIN TO CCW CONCRETE CONTAINMENT WALL UNDERGROUND CONCRETE DRIVE PAD REFUSE ENCLOSUE LANDSCAPING CRUSHER FINES ROW ROW OF CONCRETE CHC CONCRETE HEADER CURB WHEEL STOPS CONCRETE HEAD WALL LANDSCAPING RAILROAD TIFS RRT CAST IRON PIPE SAS SAS/PM CENTERLINE DOOR SANITARY SEWER CENTERLINE DOUBLE DOOR SANITARY SEWER LINE CHAIN LINK FENCE RY PAINT MARK COMMUNICATION RISER PAINTED STOP BAR

 $V_{FF}$  = 880 CF <  $V_{@4956}$  = 57,240 CF.: FIRST FLUSH RETAINED IN RETENTION POND

CONCRETE BLOCK WALL STEEL COVER ELECTRIC CONDUIT STORM DRAIN STORM DRAIN/FRENCH DRAIN CI FANOUT CONCRETE STORM DRAIN LINE CURB OPENING BY PAINT MARK CONCRETE PIPE STORM DRAIN INLET COMMUNICATION PULLBOX SERVICE DROP POLE ELECTRIC SWITCH GEAR COMMUNICATION PANEL COMMUNICATION POLE SGP STEEL GUARD POST CONCRETE PLANTER WALL TRAFFIC SIGNAL

COP CPB CPN · CPO CPW CONCRETE RAMP CRS BUILDING CRAWL SPACE CRW CONCRETE RETAINING WALL CS CSP CSW CONCRETE STEPS CONCRETE SPLASH PAD CONCRETE SIDEWALK CVC COVERED CONCRETE

CONCRETE WALL DCO DOUBLE CLEANOU DPG DUMP DOUBLE PIPE GATE CONCRETE DUMPSTER PAD PAINTED DOUBLE YELLOW STRIPE E/PM ELECTRIC LINE BY PAINT MARK E/UNK ELECTRIC LINE BY UNKNOWN SOURCE PAINT MARK EDGE OF ASPHALT **ECAB** ELECTRIC CABINET

FLECTRIC METER FLECTRIC OUTLET ELECTRIC PANEL ELECTRIC PULLBOX FIRE HYDRANT FI OWI INF FLAG POLE FROM RECORD DRAWING GAS LINE BY PAINT MARK GUY WIRE ANCHOR

GAS MFTFR GUARD POST GRATED RIM GREASE TRAP GAS SERVICE GATE STOP POST HCP HANDICAPPED PARKING SIGN HOP PAINTED HOPSCOTCH HOT WATER LINE HOT WATER RETURN LINE HWR IRRIGATION CONTROL TIMER

PIPE INVERT IRRIGATION VALVE BOX KEYSTONE BLOCK WALL PLASTIC LANDSCAPE DIVIDER METAL BUILDING COLUMN METER CAN WITH LINE METER CAN WITH VALVE MANHOLE METAL HAND RAIL METAL LANDING

METAL LIGHT POLE ON CONCRETE BASE MOUNTABLE METAL RAMP METAL STEPS METAL TRASH CAN

OVERHEAD COMMUNICATION

METAL STEPS

SMALL DECIDUOUS TREE SMALL GROUP OF TREES SMALL SHRUB SHRUB  $\bigcirc$ LANDSCAPING BOULDER TREE STUMP

(FLASHING BEACONS)

CONCRETE SIDEWALK

SIDEWALK CULVERT

TOP OF ASPHALT

TOP OF CONCRETE

**ELECTRIC TRANSFORMER** 

VITRIFIED CLAY PIPE

DRINKING FOUNTAIN

WATER HOT BOX

WATER LINE FROM

RECORD DRAWING

WATER METER BOX

WOOD POWER POLE

WOOD POWER POLE

WITH STREET LIGHT

WATER VALVE BOX

PAINTED CROSSWALK

PAINTED UTILITY MARKER

HANDICAPPED PARKING SPACE

WATER LINE PAINT MARK

FROM UNKNOWN SOURCE

WATER LINE

WOOD POLE

WOOD SHED

0.5'ø TREE TRUNK DIAMETER

DECIDUOUS TREE

CONCRETE VALLEY GUTTER

WATER LINE BY PAINT MARK

CONCRETE WHEELCHAIR RAMP

TOP OF CURB

TOP OF GRATE

TRAFFIC SIGN

TOP OF WALL

TYPICAL

VENT PIPE

PAINTED SOLID WHITE STRIPE

CONCRETE TURNDOWN SIDEWALK

STANDARD -

STUCCO WALL

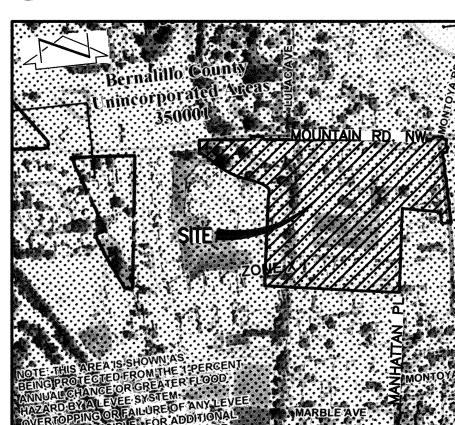
STD STW

VCP

**WCR** 

WL/UNK

MOUNTAIN RD SU-1 WITRY CLUB GOU COURSE CENTIES TE EIOLOG. J — 1



PANEL 331

DATED: 08-16-2012

# LEGAL DESCRIPTION

UNPLATTED LANDS OF ALBUQUERQUE PUBLIC SCHOOLS KNOWN AS REGINALD CHAVEZ ELEMENTARY SCHOOL.

# BENCHMARKS

PROJECT BENCHMARK

ACS 3 1/4" ALUMINUM CAP STAMPED. "13-J12. 1989". RIVETED TO A PIPE 0.2' ABOVE GROUND, IN THE NORTHEAST QUADRANT OF THE INTERSECTION OF NEW YORK AVENUE N.W. AND CENTRAL AVENUE. ELEVATION = 4955.431 FEET (NAVD 88)

TEMPORARY BENCHMARK #1 (T.B.M.) A MAG NAIL W/WASHER IN THE CONCRETE SIDEWALK

ON THE NORTH SIDE OF MOUNTAIN ROAD N.W., AS SHOWN ON SHEET C-102. ELEVATION = 4957.53 FEET (NAVD 88) TEMPORARY BENCHMARK #2 (T.B.M.)

A MAG NAIL W/WASHER IN THE CONCRETE SIDEWALK AT THE NORTHEAST QUADRANT OF THE INTERSECTION OF MOUNTAIN ROAD AND MONTOYA ROAD N.W., AS SHOWN ON SHEET C-102. ELEVATION = 4957.17 FEET (NAVD 88)

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

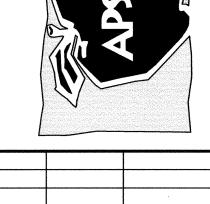
A #5 REBAR W/CAP STAMPED "HMCG CONTROL NMPS 11184" AT THE EASTERN EDGE OF A GRASS FIELD, AS SHOWN ON SHEET C-103 ELEVATION = 4957.44 FEET (NAVD 88)

HYDROLOGY FILE # J12/D009

AND

12. THE FIRST FLUSH RUNOFF IN THE DEVELOPED PORTIONS OF BASINS A & B WILL BE CAPTURED AND MANAGED.

2013.061.1



CHERRY/SEE/REAMES

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MARK DATE DESCRIPTION

MANAGEMENT BLOCK

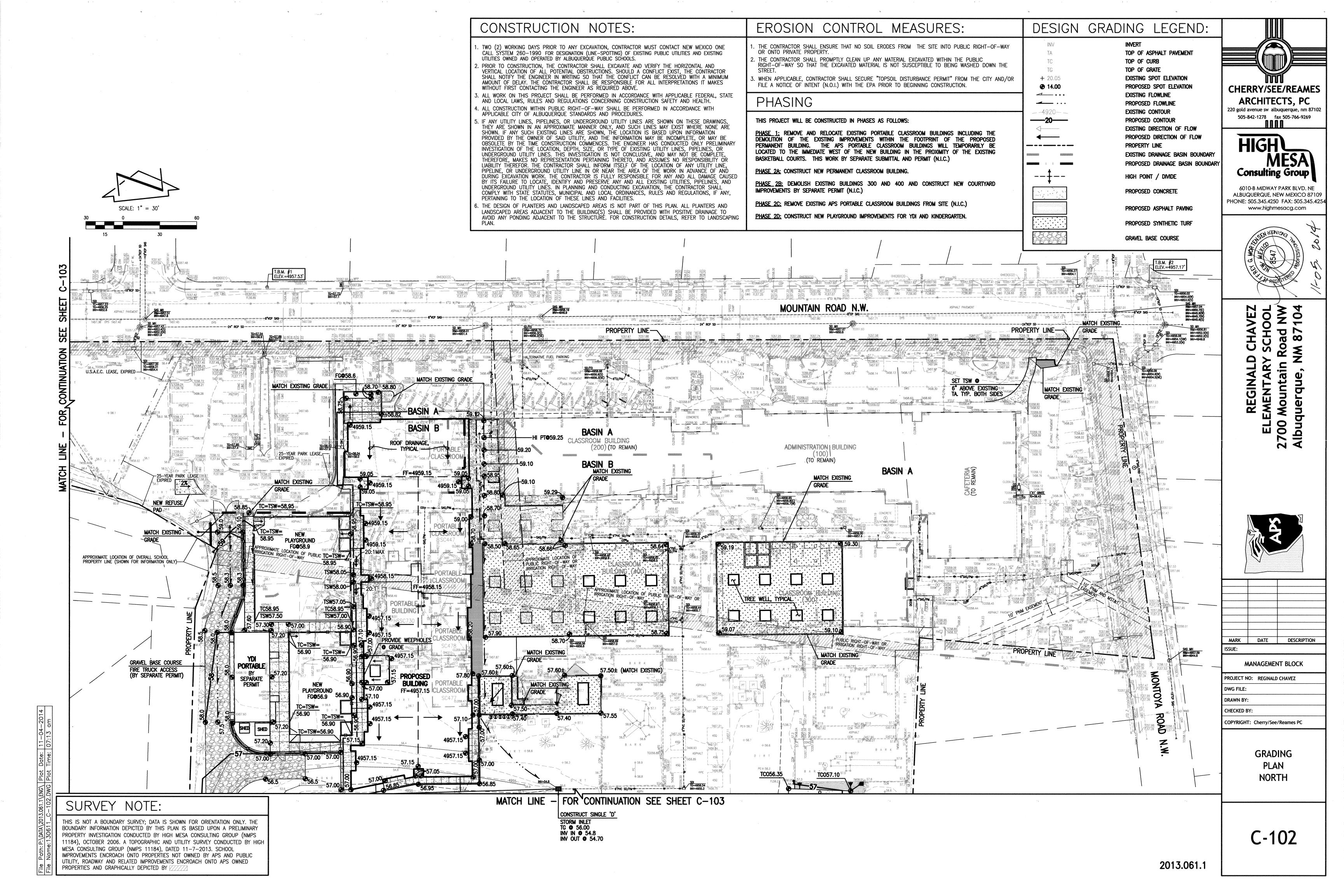
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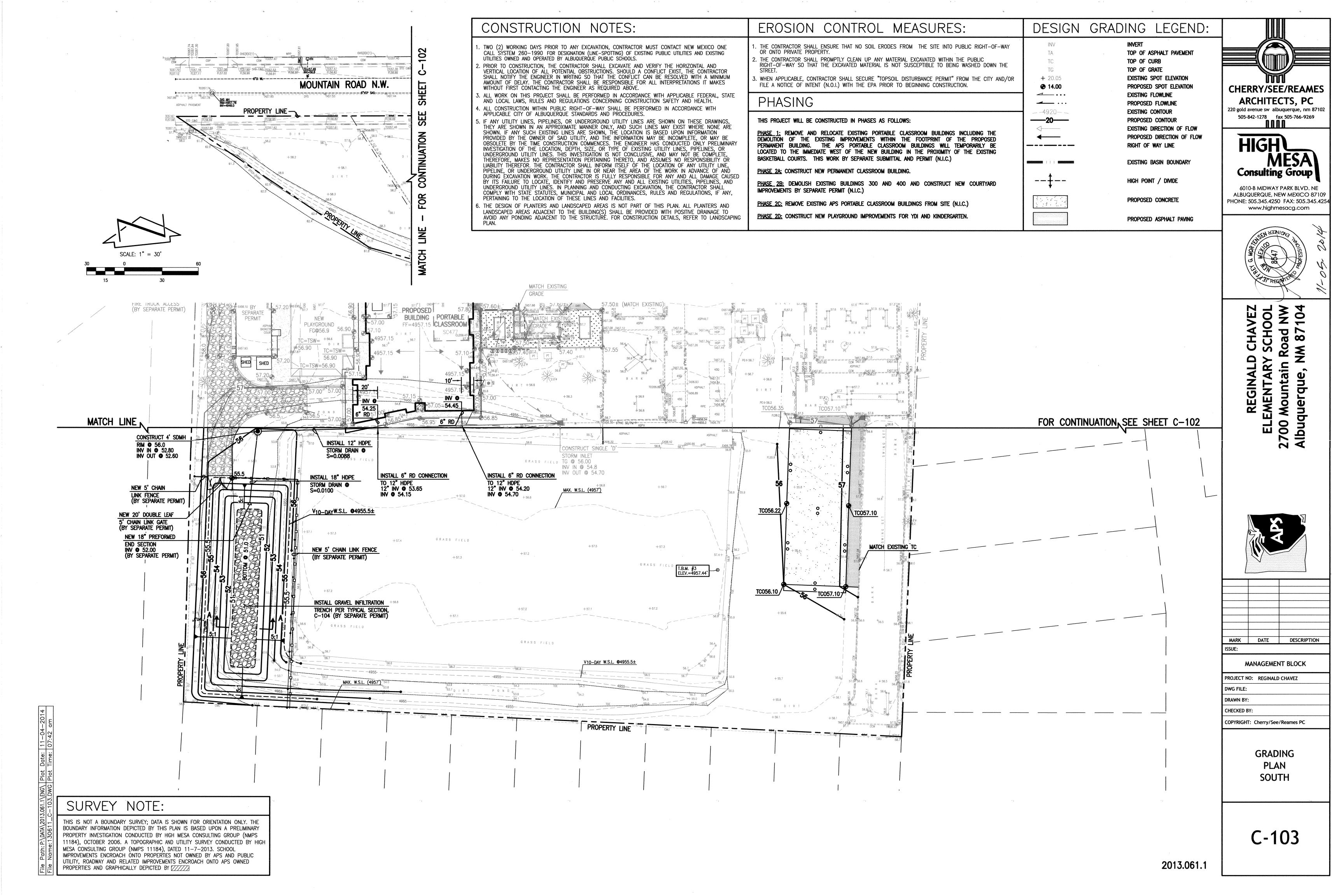
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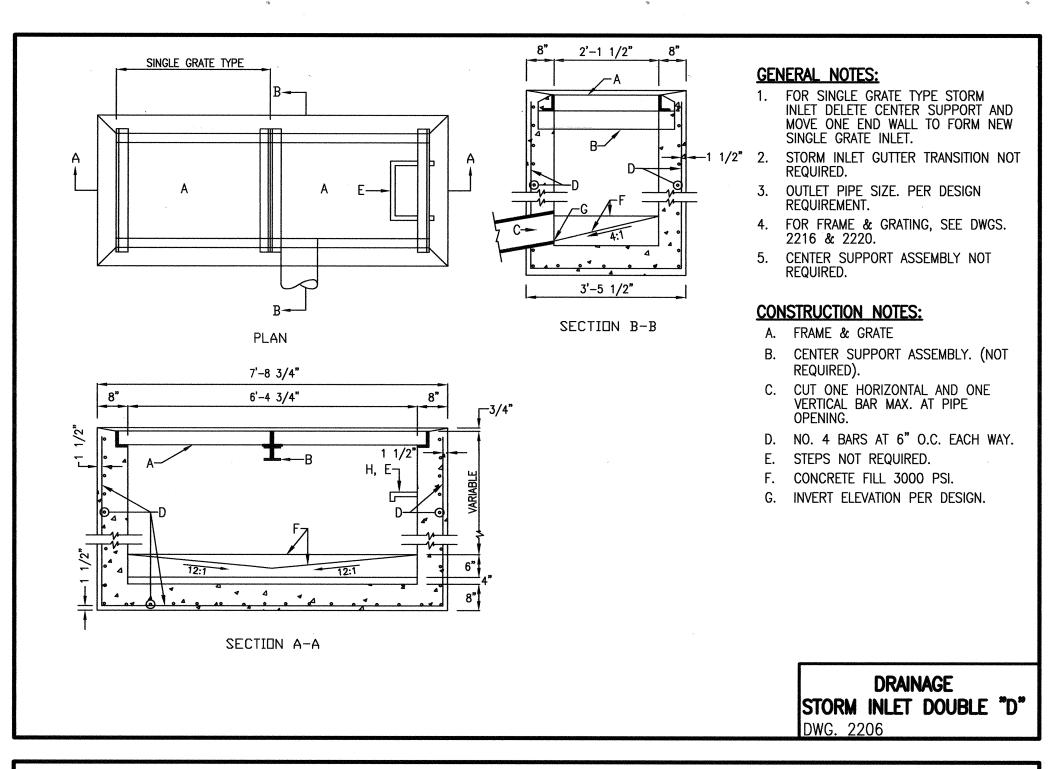
DRAINAGE PLAN

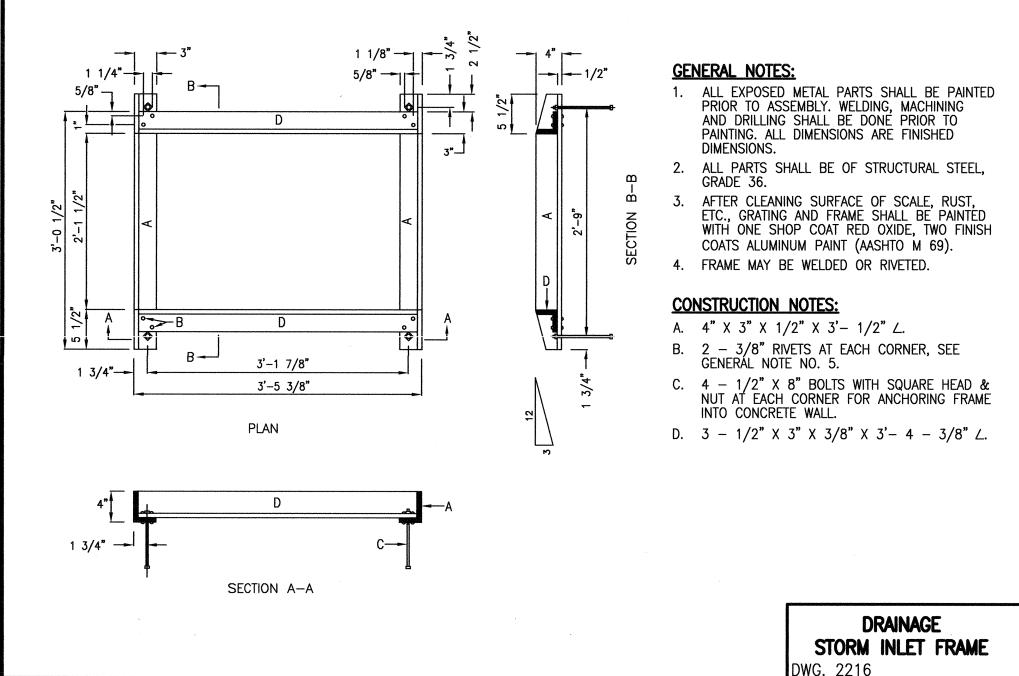
**CALCULATIONS** 

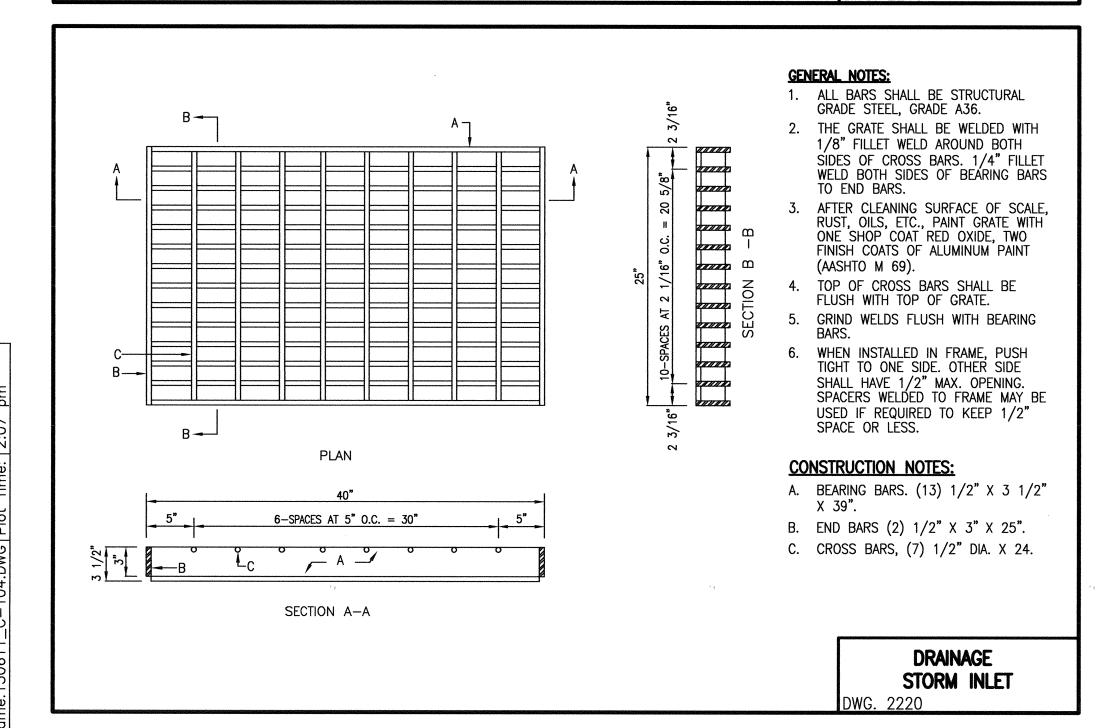
C-101

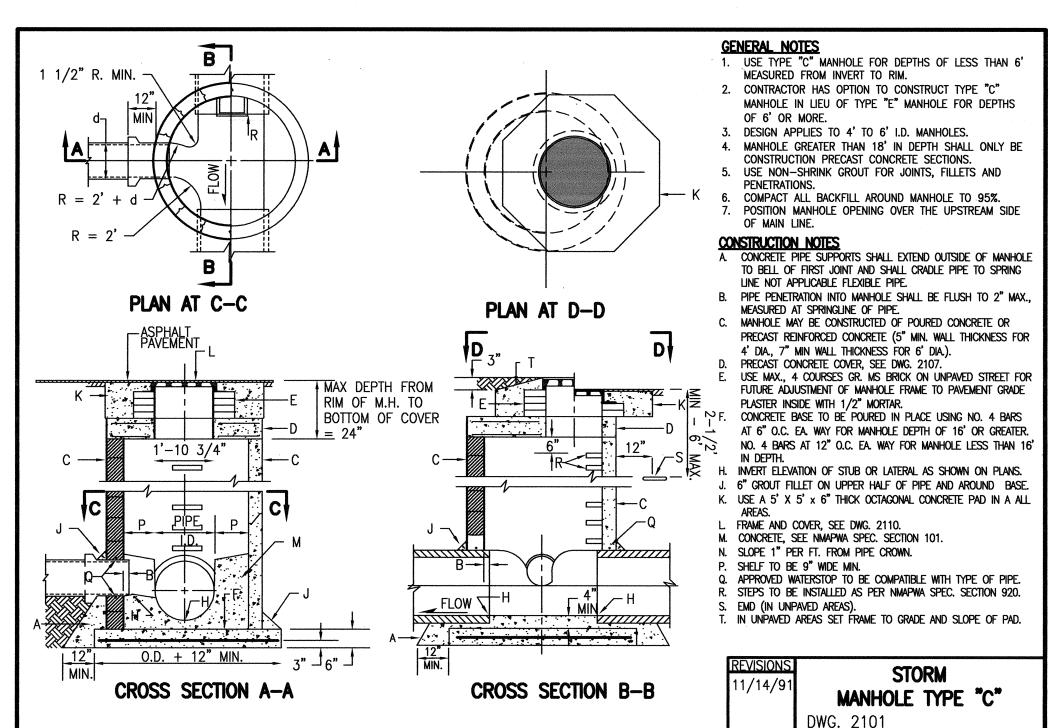


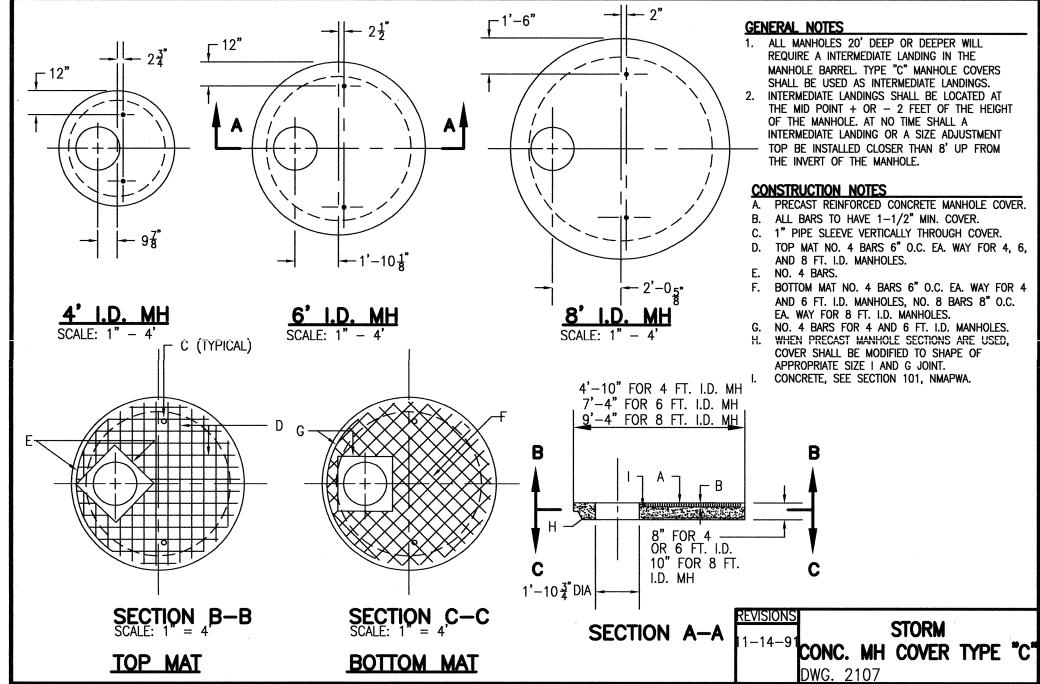


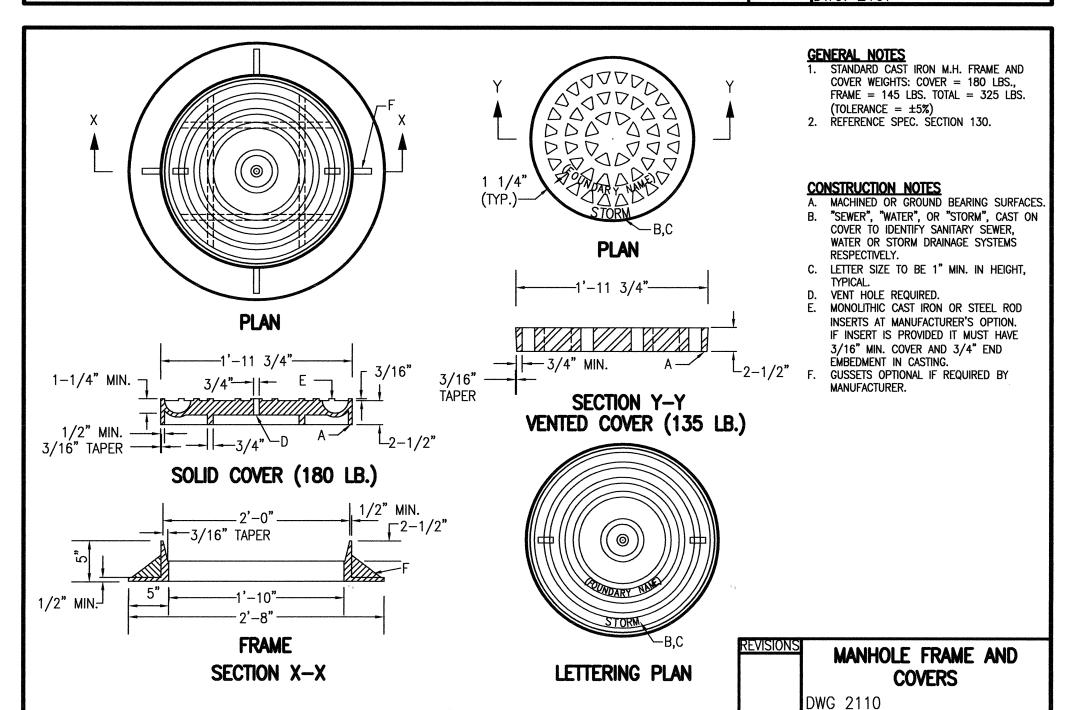


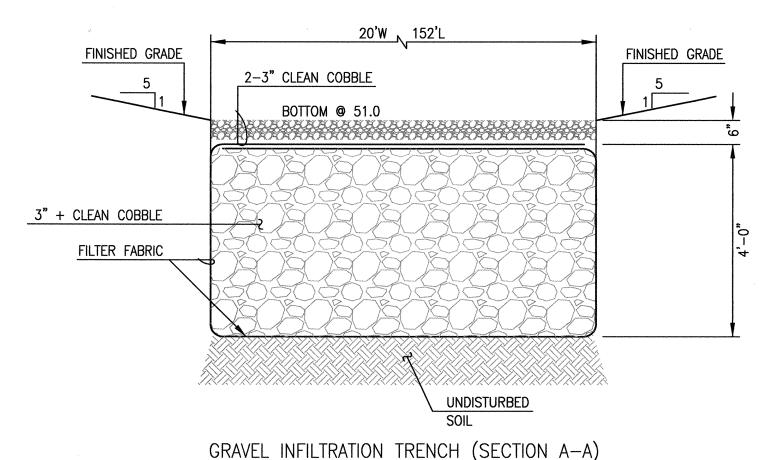






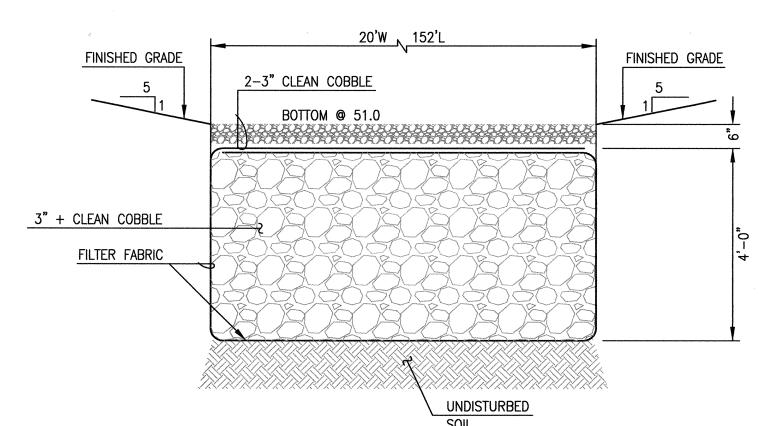






SCALE: 1" = 2'-0"

(BY SEPARATE PERMIT; N.I.C.)



CHAVEZ SCHOOL

 $\infty$ Mountain 2700 Mounta Albuquerque

CHERRY/SEE/REAMES

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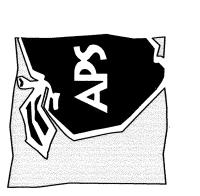
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MANAGEMENT BLOCK

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DRAINAGE

**SECTIONS** AND **DETAILS** 

C-104