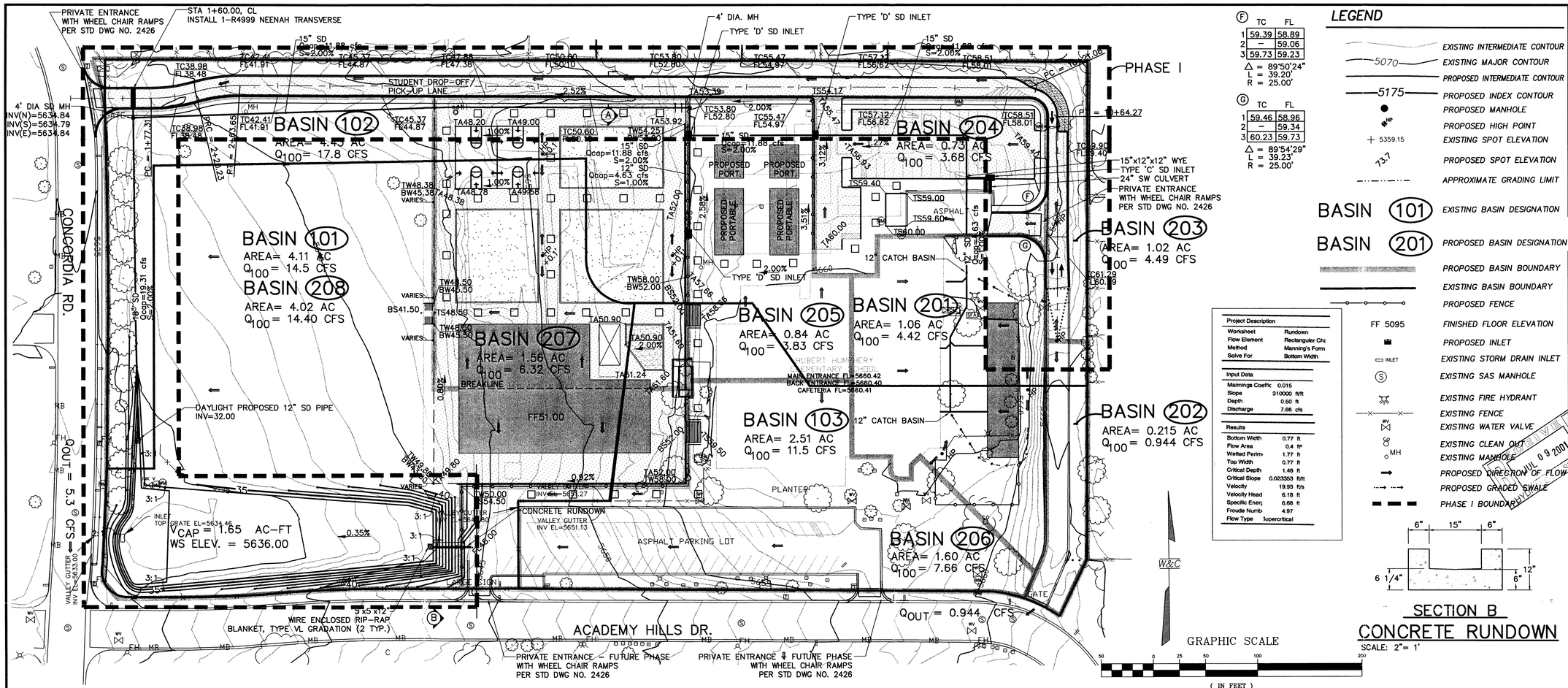


F	TC	FL
1	59.39	58.89
2	–	59.06
3	59.73	59.23

△ = 89°50'24" L = 39.20' R = 25.00'

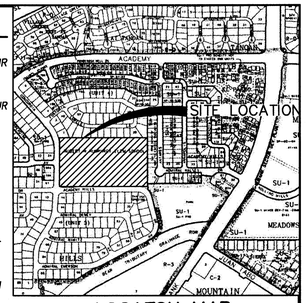
G	TC	FL
1	59.46	58.96
2	–	59.34
3	60.23	59.73

△ = 89°54'29" L = 39.23' R = 25.00'

Project Description	
Worksheet	Rundown
Flow Element	Rectangular Chl
Method	Manning's Form
Solve For	Bottom Width
Input Data	
Mannings Coeffic	0.015
Slope	310000 ft/ft
Depth	0.50 ft
Discharge	7.66 cfs
Results	
Bottom Width	0.77 ft
Flow Area	0.4 ft²
Wetted Perim	1.77 ft
Top Width	0.77 ft
Critical Depth	1.46 ft
Critical Slope	0.023353 ft/ft
Velocity	19.93 ft/s
Velocity Head	6.18 ft
Specific Energ	6.68 ft
Froude Numb	4.97
Flow Type	Supercritical

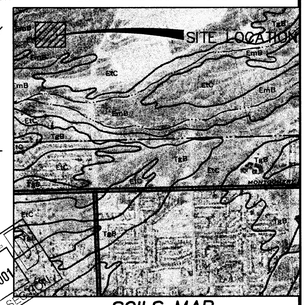
LEGEND

- EXISTING INTERMEDIATE CONTOUR
- 5070 EXISTING MAJOR CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- 5175 PROPOSED INDEX CONTOUR
- PROPOSED MANHOLE
- HP PROPOSED HIGH POINT
- + 5359.15 EXISTING SPOT ELEVATION
- 73.7 PROPOSED SPOT ELEVATION
- APPROXIMATE GRADING LIMIT
- BASIN (101) EXISTING BASIN DESIGNATION
- BASIN (201) PROPOSED BASIN DESIGNATION
- PROPOSED BASIN BOUNDARY
- EXISTING BASIN BOUNDARY
- PROPOSED FENCE
- FF 5095 FINISHED FLOOR ELEVATION
- PROPOSED INLET
- INLET EXISTING STORM DRAIN INLET
- (S) EXISTING SAS MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING FENCE
- WV EXISTING WATER VALVE
- EXISTING CLEAN OUT
- MH EXISTING MANHOLE
- PROPOSED DIRECTION OF FLOW
- PROPOSED GRADED SWALE
- PHASE I BOUNDARY



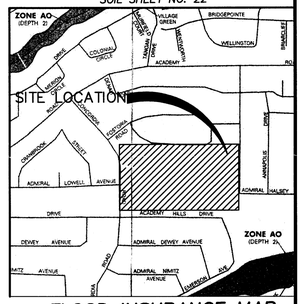
LOCATON MAP

ZONE ATLAS MAP NO. E-21



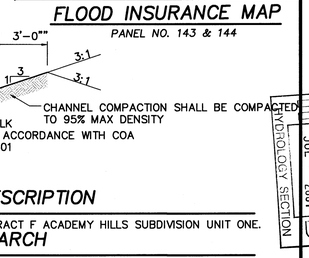
SOILS MAP

REF: SCS BERNALILLO COUNTY SOIL SOIL SHEET NO. 22



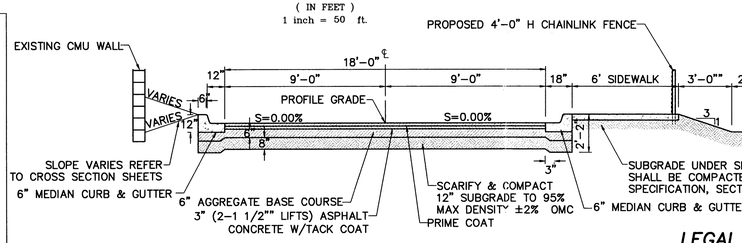
FLOOD INSURANCE MAP

PANEL NO. 143 & 144



SECTION B
CONCRETE RUNDOWN

SCALE: 2"= 1'



SECTION A
TYPICAL ROADWAY SECTION (PHASE I)

SCALE: 1"= 4'

LEGAL DESCRIPTION

A PORTION OF TRACT F ACADEMY HILLS SUBDIVISION UNIT ONE.

BENCH MARCH

THE STATION MARK IS A STANDARD ACS BRASS TABLET STAMPED "4-E21-B" SET FLUSH WITH THE CURB. THE STATION IS LOCATED 8.8 MILES NORTHEAST OF DOWNTOWN ALBUQUERQUE, NEAR THE INTERSECTION OF ACADEMY HILLS DR. AND CONCORDIA RD. ELEV. 5663.48

HUBERT HUMPHREY ELEMENTARY SCHOOL

Master Drainage Report

Site Location: Hubert Humphrey Elementary School is located on Academy Hills Drive east of Concordia Boulevard. Master site development includes a new bus lane, student drop-off/pick-up lane, playground sandboxes and equipment, classroom addition, and a new staff parking lot. The bus lane and parking lot additions will include paving and concrete curb and gutter.

Methodology: Section 22.2 of City of Albuquerque DMP was followed to calculate the design volume. The charts and formulas in Part A were followed using the 100-year frequency 24-hour rainfall as the design storm. The site is located in Zone 3 as determined from Table A-1. The total storm volume was calculated as per section A.5. The peak discharge was calculated as per section A.6. No down stream capacity analysis was completed as part of this report. Early discussions with city hydrologist indicated that pre-existing discharge rate could be maintained for master site build-out.

Existing Conditions: The site is comprised of three major land treatments, irrigated lawn, vacant playground and impervious areas. The site slopes east to west between 1.3% and 12.0%. The terrain is terraced tree tier with the east being the high tier, and the west and the lower tier. The site is subdivided into three (3) basins; Basins 101 through 103. Each basin is designated as shown on the grading & drainage plan and discharged as described below.

Basin 101 encompasses the baseball field, existing pond, the three playground sandboxes located east of the baseball field and surrounding area. Also, 50% of the basketball court is included in this basin. All drainage from this basin sheet flows into the existing detention pond located in the southwest corner of the site.

Basin 102 encompasses the area north of the baseball field, all the portables located in the northeast corner of the site, the northern halves of the main building and existing roadway located on the east side of the site. Drainage from this basin sheet flows west through a swale located on the north end of the site and then south into the detention pond located on the southwest corner of the site.

Basin 103 encompasses the southern halves of the main building and existing roadway located on the east side of the site, the parking lot located on the south side of the site and the other 50% of the basketball court. All drainage from this basin sheet flows south into Academy Hills Drive and routed west to Concordia Boulevard.

Existing volumetric runoff and peak discharge quantities are as shown below:

Table 1 – Existing Conditions

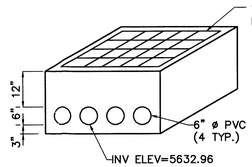
		Treatment					
Basin	Area (ac)	A (%)	B (%)	C (%)	D (%)	V_{360}(ac-ft)	Q_p(cfs)
101	4.11	0	6.77	86.7	6.53	0.457	14.4
102	4.43	0	5.6	55.5	38.9	0.622	17.8
103	2.51	0	0	28.0	72.0	0.431	11.5
Total	11.05					1.510	43.7

Table 1 - provides a breakdown of existing volumetric runoff and peak discharge of the site.

The existing detention pond collects Basins 101 and 102 runoff; Basin 103 is not collected. Basin 103 drains directly onto Academy Hills Drive, approximately 0.431 acre-ft. The pond has a control outlet discharge onto Concordia Drive. Hence, total volumetric runoff onto right-of-way is approximately 43.7 cfs or 1.510 acre-ft.

The existing detention pond has an approximate capacity of 0.047acre-ft. Presently, the pond drains onto Concordia Boulevard in the following manner: (1) A type 'D' inlet with top of grate elevation = 5634.46 has 4 – 6" diameter pipes set at approximate elevation = 5632.96, (2) flows are conveyed west through 2-24" sidewalk culverts and discharged freely onto Concordia Drive right-of-way. The high contour elevation is along the west end of the pond and is equal to 5634.0. Hence, the maximum head available at the outlet structure is approximately 0.5ft measured from high contour elevation to center of pipe (see Figure 1 for existing outlet structure). Employing the orifice equation, $Q = CA(2gh)^{1/2}$, the outflow through the outlet pipe structure is approximately 5.3 cfs (i.e. 1.3 cfs per pipe). Beyond the 5634.0 contour elevation, runoff begins to overtop the sidewalk and spills onto Concordia Drive. Drainage into Concordia Drive sheet flows into Layton Avenue, south to Estrellita Del Norte, and is collected in the Bear Arroyo.

FIGURE 1



TYPE 'D' OUTLET STRUCTURE

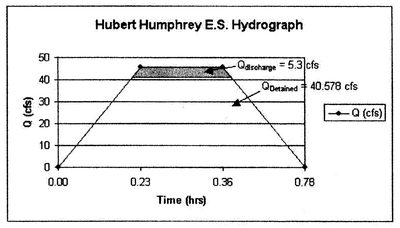
SCALE 1" = 1'

Proposed Conditions: With the master site development all existing culvert crossings will eliminated along the north and west fence of the school. The detention pond will be regarded to accommodate post conditions by increasing the cross-sectional area. The west berm will be raised making the high contour elevation 5636.0. The outlet structure will be salvaged and modified. Orifice plates will be installed at the outlet structure to accommodate increased head and control 5.3 cfs outflow. The required detention pond capacity is 1.606 acre-ft (see Hydrograph below).

Proposed improvements to the site will increase the volumetric runoff from 1.51 ac-ft to 1.641 ac-ft. Hence, an increase of 8.68% (0.131 ac-ft). Peak discharge will also increase from 43.7 cfs to 45.7 cfs or an increase of 4.58%. All basins, except Basin 202, contribute runoff to the detention pond. Approximately 1.606 acre-ft will be detained by the pond. The total pond capacity is 1.65 acre-ft.

Given:		Find:	
t_c (hr) =	0.2	t_p (hr) =	0.232111
A_D (ac) =	5.469	Peak Time (hr) =	0.123666
A_T (ac) =	11.056	t_B (hr) =	0.783025
Q_p (cfs) =	45.758		
E (in) =	1.781		

Time (hrs)	Q (cfs)
0.00	0
0.23	45.758
0.36	45.758
0.78	0



The proposed basin boundaries, Basins 201 thru 208 changed from the existing boundaries as follows: Basin 201 encompasses the eastern half of the main building and all playground equipment located on the east side of the site. Local drains collect surface runoff. Building roof drains will tie to an underground storm drain and routed to the pond.

Basin 202 encompasses 75% of the existing driveway located in the southeast corner of the site. Drainage from this basin discharges directly onto Academy Hills Drive and south to Concordia Road.

Basin 203 encompasses the remaining 25% of the existing driveway; located in the northeast corner of the site. Also, included is the proposed bus lane located on the north end of the site. Drainage from this basin sheet flows west, is collected by a transverse inlet, and conveyed by underground storm drain to the pond.

Basin 204 encompasses the proposed parking lot to be located at the northeast corner of the site. Drainage sheet flows west into a storm drain inlet and conveyed to the pond.

Basin 205 includes the portables area and the northern portion of the main building. Drainage from this basin is collected with local drain inlet and routed to the pond.

Basin 206 includes the southern portion of the main building and the southern parking lot. This basin drains in a westerly direction into the existing detention pond through a concrete rundown.

Basin 207 encompasses all of the proposed playground area and the northern half of the proposed new classroom building. Drainage from this basin sheet flows west to the pond.

Basin 208 includes the baseball field, the southern half of the proposed new classroom building and the existing detention pond. This drainage sheet flows directly into the existing detention pond.

Phase I improvements includes the construction of the student drop-off/pick-up lane, pond, and a portion of the underground storm drain (see Grading & Drainage Plan). A manhole will be constructed as part of phase I near the Northwest corner of the site. This manhole will accommodate expansion of underground storm drain for future construction phases.

Proposed volumetric runoff and peak discharge quantities are as shown below:

Table 2 – Proposed Conditions

		Treatment					
Basin	Area (ac)	A (%)	B (%)	C (%)	D (%)	V_{360}(ac-ft)	Q_p(cfs)
201	1.06	0	24.5	17.4	58.1	0.161	4.42
202	0.215	0	0	40.0	60.0	0.035	0.944
203	1.02	0	0	39.5	60.5	0.165	4.49
204	0.733	0	0	0	100.0	0.144	3.68
205	0.842	0	0	29.8	70.2	0.143	3.83
206	1.60	0	0	14.9	85.1	0.293	7.66
207	1.56	0	40.3	0	59.7	0.232	6.32
208	4.02	0	6.3	81.6	12.1	0.468	14.41
Total	11.05					1.641	45.7

Table 2 - provides a breakdown of proposed volumetric runoff and peak discharge of the site.

Conclusion: It will be necessary to increase the storage capacity of the existing detention pond from 0.047 acre-ft to approximately 1.65 acre-ft. The pond will be constructed as part of Phase I. Construction will require the pond be extended further to the east, deeped and stabilized with 3:1 slopes. The pond floor drains east to west at 0.35%. The site is located near the foothills of the eat mountains making the terrain relatively steep. Minimizing the slope of the pond floor, allows for construction of pond without constructing retaining walls and or impacting future expansion of the parking lot along Academy Hills. In addition, orfice plates will be installed as part of Phase I. The outlet structure will be modified to accommodate future expansion of the site. Full build-out water surface elevation will be 5636.0. The pond will continue to discharge at a controlled rate of 5.3 cfs, equal to historical outflow. All local drainage is collected and conveyed by the Bear Arroyo as shown on Exhibit A.

HUBERT HUMPHREY ELEMENTARY SCHOOL
9801 ACADEMY HILLS DR N.E.
DROP-OFF / PICK-UP LANE ADDITION

MASTER GRADING & DRAINAGE PLAN

DESIGN	DRAWN
MJI	JLB

CHRISTOPHER M. PEREA NEW MEXICO 13686 REGISTERED PROFESSIONAL ENGINEER 7-9-01

WILSON & COMPANY
4900 LANG AVENUE N.E.
ALBUQUERQUE, NEW MEXICO
87109
(505) 348-4000

DATE: JULY 2001

FILE NO. XO-218-023

SHEET NO. 1 OF 2

C-1

H
635.70
)=5627.30

Y MH
L=5635.55
: TO OPEN)

X 5635.6

GATE

MH

CMH

5645

PLAYGROUND EQUIPMENT

PLAYGROUND EQUIPMENT

ASPHALT

MB

MB

5635

5640

X 5634.7

PLAYGROUND EQUIPMENT

X 5648.5

5650

X 5651.6

PLAYGROUND EQUIPMENT

X 5651.9

ASPHALT BASKETBALL COURT

X 5653.8

14 15 16 17 18 19 20 21

GREENHOUSE

ASPHALT WALKS

X 5658.7

CP 105

ASPHALT

ASPHALT

MH CP 104

5660

ASPHALT

CP 106

5660

PLAYGROUND EQUIPMENT

HUBERT HUMPHERY
ELEMENTARY SCHOOL
MAIN ENTRANCE FL=5660.42
BACK ENTRANCE FL=5660.40
CAFETERIA FL=5660.41

BASEBALL FIELD

PLAYGROUND EQUIPMENT

FH

MB

CP 103

ASPHALT

UNK V

5635

INLET
TOP GRATE EL=5634.46

X 5633.8

X 5634.5

Y MH
.=5633.54
TO OPEN)

VALLEY GUTTER
INV EL=5633.00

VALLEY GUTTER
INV EL=5647.80

VALLEY GUTTER
INV EL=5651.27

VALLEY GUTTER
INV EL=5651.13

PLANTER

FLAG POLE

CB 102

ASPHALT PARKING LOT

5650

5645

5640

LARGE SIGN

5655

X 5665.3

X 5664.7

GATE

X 5632.5

NITARY MH
RIM EL=5632.51
INV EL(8")=5623.98
INV EL(8")=5624.51

SANITARY MH
N RIM EL=5644.21
E INV EL(8")=5635.66
W INV EL(8")=5635.60

SANITARY MH
N RIM EL=5652.32
E INV EL(8")=5644.01
W INV EL(8")=5643.93

SANITARY MH
N RIM EL=5659.68
NE INV EL(8")=5651.10
E INV EL(8")=5650.83
W INV EL(8")=5650.82

SANITARY MH
N RIM EL=5660.93
S INV EL(4")=5651.74
W INV EL(8")=5652.05

ENGINEER'S CERTIFICATION

I, SCOTT M. MCGEE, LICENSED UNDER THE LAWS OF THE STATE OF NEW MEXICO, DO HEREBY CERTIFY THAT THIS PROJECT WAS CONSTRUCTED IN SUBSTANTIAL COMPLIANCE WITH THE APPROVED PLAN (CITY APPROVAL LETTER DATED 06/09/04). WITH THE FOLLOWING EXCEPTS:

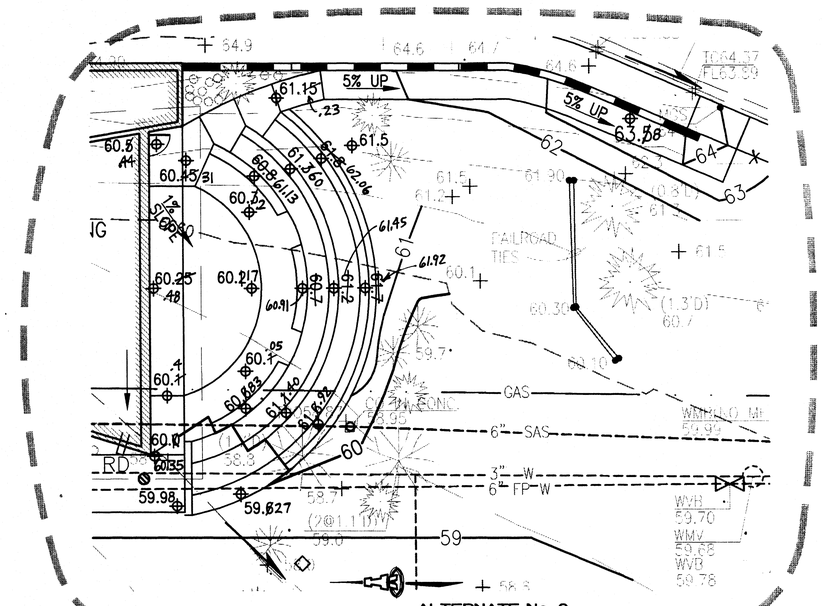
- THE SIDEWALK EAST OF THE BUILDING AND STEPS NORTH OF THE BUILDING WERE NOT BUILT.
- ROOF DRAINS WERE PIPED BELOW GRADE AS SHOWN AND DISCHARGE AT OUTFALL POINTS PER PLAN.

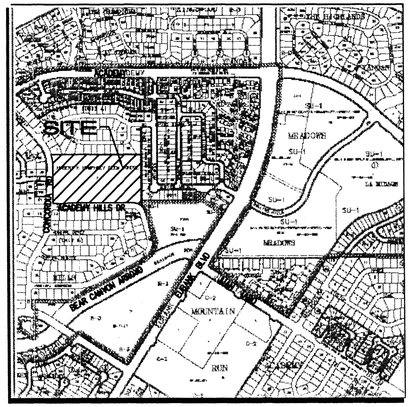
AS-BUILT GRADES WERE FIELD VERIFIED BY JEFF MORTENSEN & ASSOCIATES, INC., NMLS NO. 11184 ON 11/03/05 IN ACCORDANCE WITH THE "NEW MEXICO ENGINEERING AND SURVEYING ACT" SECTION 61-23-1 THROUGH 61-23-32 NMSD (1978).

Scott M McGee
SCOTT M. MCGEE, NMPE NO. 10519

SCOTT M. McGEE NEW MEXICO 10519 REGISTERED PROFESSIONAL ENGINEER

11/18/05
DATE





E21 1"=750'±

VICINITY MAP

LEGAL DESCRIPTION: A PORTION OF TRACT F ACADEMY HILLS SUBDIVISION UNIT ONE.

BENCH MARK: A STANDARD ACS BRASS TABLET STAMPED "4-E21-B" SET FLUSH WITH THE CURB. THE STATION IS LOCATED NEAR THE INTERSECTION OF ACADEMY HILLS DR. AND CONCORDIA RD. ELEV=5663.48

FLOOD ZONE DESIGNATION: THIS SITE IS NOT WITHIN A FLOODPLAIN - AS DESIGNATED ON PANELS #143 & #144 OF 825 OF THE FEMA FLOOD INSURANCE RATE MAP DATED SEPTEMBER 20, 1996.

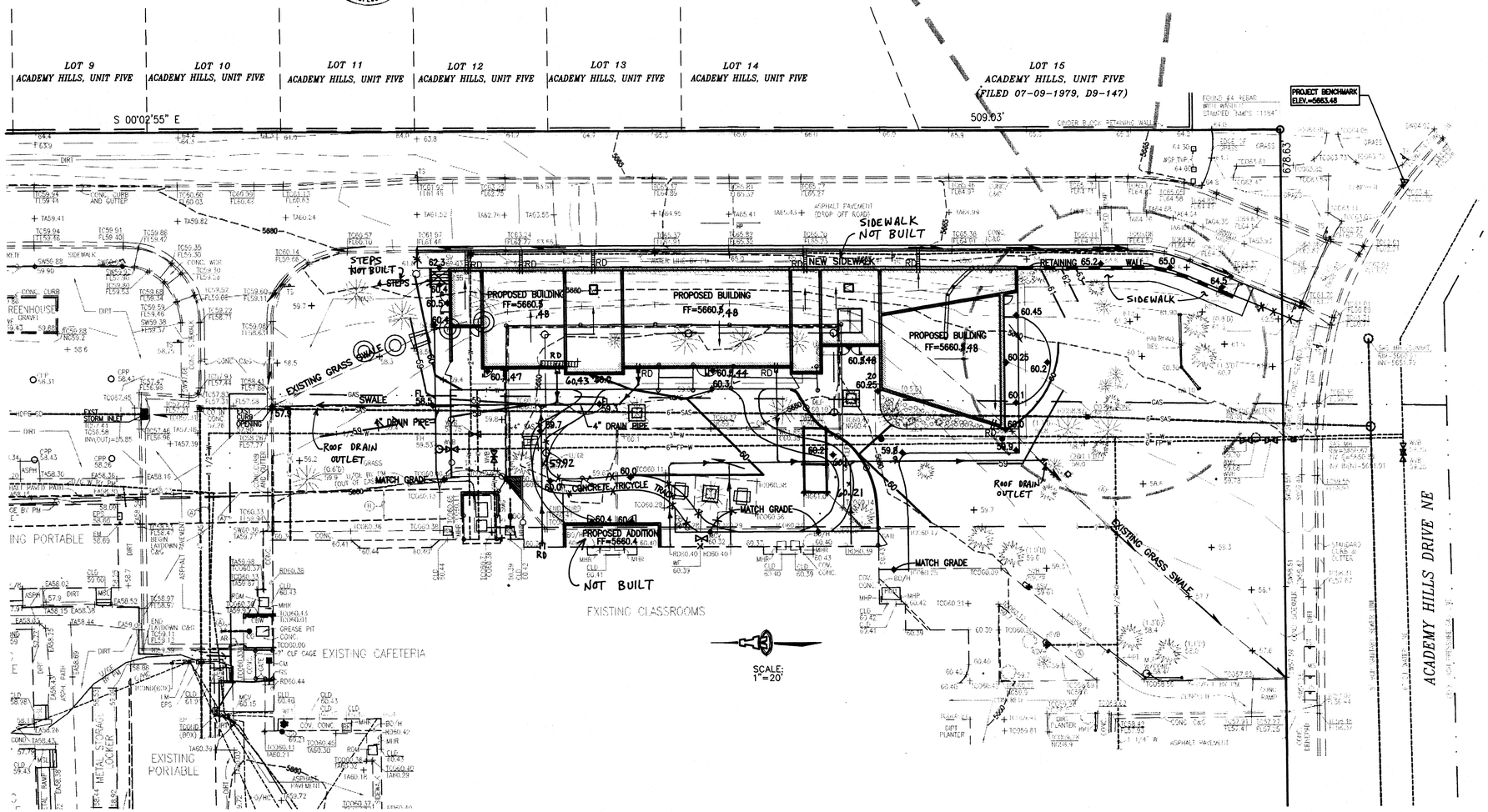
EXISTING CONDITIONS: THE APPROVED MASTER DRAINAGE PLAN (WILSON & COMPANY DATED 08-09-G1), INDICATES BASIN 201 INCLUDES THE AREA OF THE PROPOSED ADDITION. THE BASIN RUNOFF IS COLLECTED BY TWO 12" CATCH BASINS AND THEN DIRECTED TO AN EXISTING 1.65 AC-FT DETENTION BASIN ON THE WEST SIDE OF THE SITE.

AREA= 1.06 ACRE
Q_{100}= 4.42 CFS
24.5% B, 17.4% C, & 58.1% D

PROPOSED CONDITIONS: THE NEW 6,200 SF ADDITION WILL DRAIN BOTH TO THE WEST & TO THE EAST. A ROOF AREA OF 3,000 SQUARE FEET DISCHARGES EAST TO AN EXISTING ROAD WHICH THEN DRAINS SOUTH TO ACADEMY HILLS DRIVE NE. APPROXIMATELY 5,400 SQUARE FEET OF EXISTING IMPERVIOUS SURFACING IS TO BE REMOVED, WHICH WILL OFFSET THIS SOMEWHAT. PROPOSED HYDROLOGY IS BASED ON THE FOLLOWING:

PRECIPITATION ZONE: 3
18% B, 27% C, & 55% D
Q_{100}= (.191)(2.60)+(.286)(3.45)+(.583)(5.02)
Q_{100}= 4.41 CFS

THE FREE DISCHARGE TO ACADEMY HILLS DRIVE NE INCREASES BY: Q= (.098)(5.02) = 0.49 CFS
THIS RUNOFF INCREASE WILL HAVE A VERY MINOR IMPACT.



RECEIVED NOV 28 2005 HYDROLOGY SECTION

LEGEND

—5460—	EXISTING CONTOUR
x 58.6	EXISTING SPOT ELEVATION
	ROOF FLOW ARROW
	FLOW ARROW
FF=5660.5	FINISH FLOOR ELEVATION
◆36.8	PROPOSED SPOT ELEVATION
RD	ROOF DRAIN WITH SIDEWALK CULVERT (SEE ARCHITECTUAL B-5/C1-201)
x60.48	AS-BUILT ELEVATION

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque New Mexico
1306GRD.DWGthor 05/19/04

ARCHITECT

SCOTT M. McGEE NEW MEXICO 10519 LICENSED PROFESSIONAL ENGINEER

5/21/04

ENGINEER

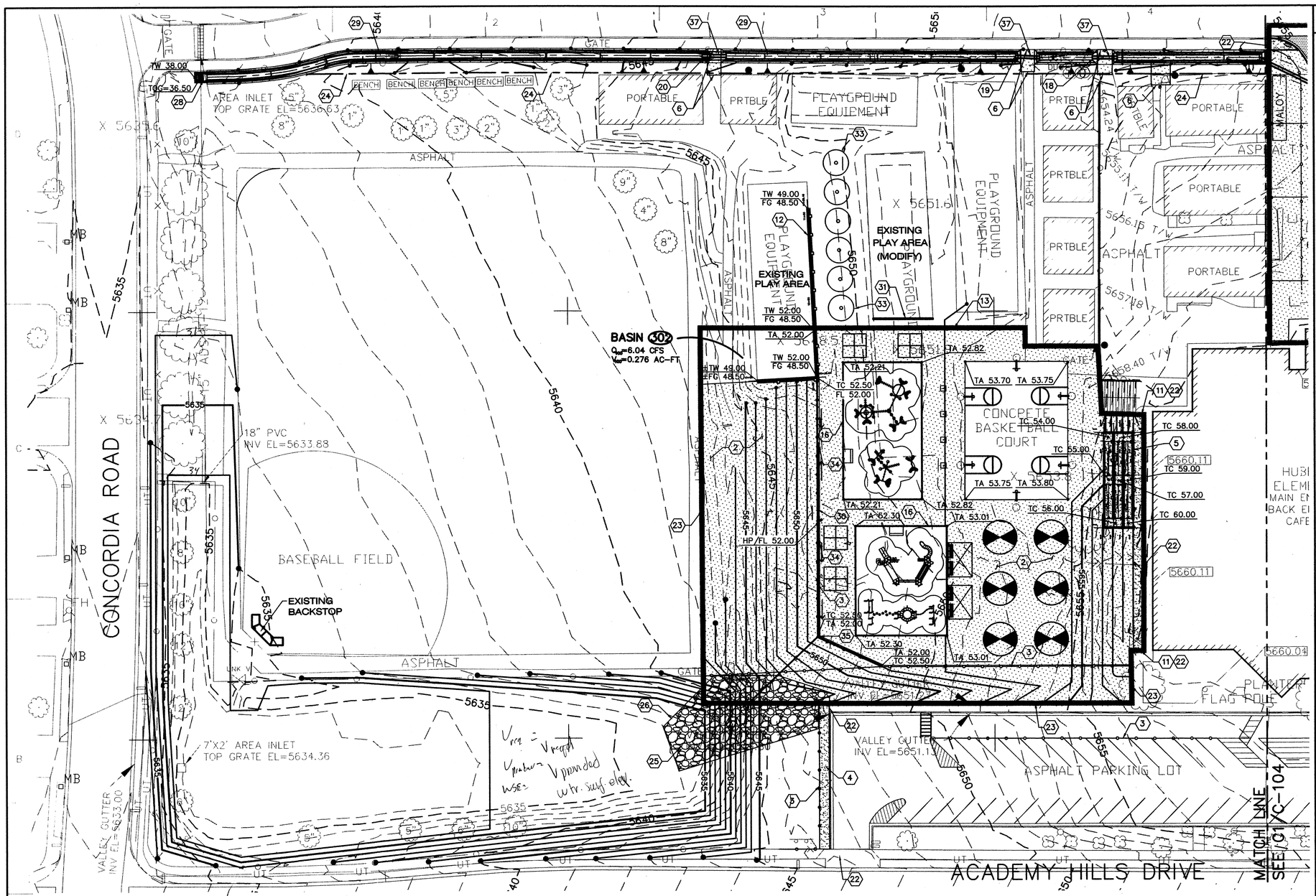
KINDERGARTEN CLASSROOM ADDITION
HUBERT H. HUMPHREY ELEMENTARY SCHOOL
9801 ACADEMY HILLS DRIVE NE, ALBUQUERQUE, NEW MEXICO
EDITH CHERRY / D. JAMES SEE ARCHITECTS
220 A GOLD AVE. SW. ALBUQUERQUE, NEW MEXICO, 87102 505 842 1278

TITLE OF SHEET

GRADING PLAN

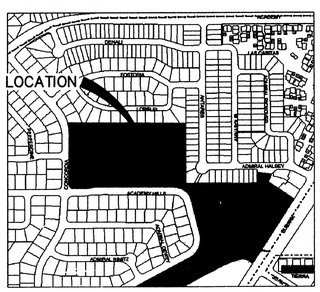
DATE
05/21/04
REVISIONS

SHEET NUMBER
C-002
5 OF 57



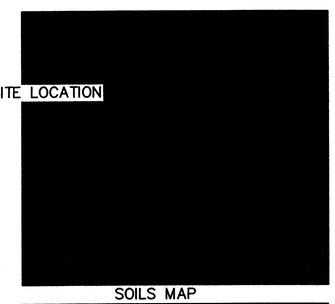
B1 GRADING & DRAINAGE PLAN

SCALE: 1"=30'



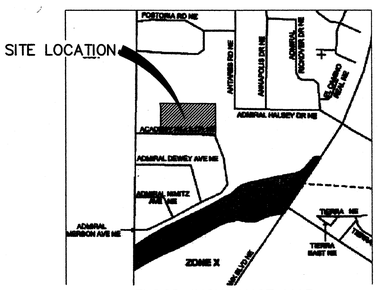
LOCATION MAP

ZONE ATLAS NUMBER: E-21



SOILS MAP

REFERENCE: SCS BERNALILLO COUNTY SOIL SURVEY



FLOOD INSURANCE MAP

REFERENCE: FLOOD INSURANCE STUDY
MAP NUMBER 35001C0144F, PANEL 144

BENCH MARK

CONTROL STATION "4-E21B" DATA:
ALBUQUERQUE SURVEY CONTROL
STANDARD BRASS TABLET SET
FLUSH WITH THE CURB,
STAMPED "4-E21-B".
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE),
X=416,779.25, Y=1,510,097.22
ELEV=5663.48' (SLD 1929)
GROUND-TO-GRID FACTOR=0.99963705
DELTA ALPHA=00°09'37"

LEGAL DESCRIPTION

TRACT F ACADEMY HILLS SUBDIVISION.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

SHEET KEY NOTES

1. INSTALL 3" ASPHALT SECTION, PER DETAIL B2/C-501.
2. INSTALL 2" ASPHALT SECTION, PER DETAIL C2/C-501.
3. INSTALL 4'-0" CHAINLINK FENCE, PER DETAIL A3/C-501.
4. INSTALL 4" PCC SIDEWALK, PER DETAIL A2/C-501.
5. INSTALL ADA RAMP, PER PLAN & PROFILE SHEET C-401.
6. MATCH NEW ASPHALT TO EXISTING GRADE.
7. INSTALL UNIDIRECTIONAL WHEELCHAIR RAMP, PER DETAIL D2/C-502.
8. INSTALL ADA WHEELCHAIR RAMP, PER DETAIL D2/C-501.
9. INSTALL MEDIAN CURB & GUTTER, PER DETAIL D5/C-501.
10. LANDSCAPE AREA, SEE SHEET L-101.
11. MATCH NEW 4" SIDEWALK TO EXISTING SIDEWALK.
12. INSTALL RETAINING WALL, SEE SHEET C-403.
13. SLOPE NEW ASPHALT 5% INTO EXISTING GRADE.
14. INSTALL TYPE 'C' INLET, SEE DETAIL A3/C-502. TIE EXISTING 12" PIPE TO PROPOSED INLET. INV=±53.83
15. INSTALL ROLLED CURB, PER DETAIL C1/C-501.
16. SEE LANDSCAPE SHEET L-101 FOR TOP OF WALL ELEVATIONS.
17. INSTALL 15" ADS PIPE.
    INV (OUT)=53.35
18. INSTALL 15" ADS PIPE.
    INV (IN)=51.95
    INV (OUT)=51.51
19. INSTALL 15" ADS PIPE.
    INV (IN)=50.78
    INV (OUT)=50.31
20. INSTALL 15" ADS PIPE.
    INV (IN)=45.35
    INV (OUT)=44.91
21. MATCH TOP OF ASPHALT ELEVATION TO BOTTOM OF FLANGE ELEVATION. (TYP.)
22. INSTALL ½" BITUMINUOUS EXPANSION JOINT BETWEEN EXISTING & NEW 4" PCC SIDEWALK. RECESS ½" VERTICALLY & INSTALL SIKA-FLEX POLYMER SEALANT OR APPROVED EQUAL.
23. TACK COAT BETWEEN EXISTING & NEW ASPHALT PAVING OR SIDEWALK.
24. APPROXIMATE GRADING LIMITS
25. INSTALL NON-WIRE ENCLOSED 6" CLASS 'B' RIP-RAP
26. APPROXIMATE RIP-RAP LIMITS
27. INSTALL ADS STANDARD END SECTION
    INV=5644.00
28. CONTRACTOR TO FIELD VERIFY INLET LOCATION & CLEAN, SEE CHANNEL TRANSITION DETAIL D1 SHEET C-501.
    TOG=36.50
    INV=34.84
29. INSTALL 2" ASPHALT CHANNEL, SEE DETAIL B5/C-503.
30. INSTALL PEDESTRIAN FENCE OPENING, SEE DETAIL D3/C-502.
    INSTALL MEDIAN CURB & GUTTER DIRECTLY BELOW FENCE.
31. SEE LANDSCAPE SHEET L-101, CONTRACTOR TO FIELD VERIFY LOCATION OF PLAYGROUND WALL.
32. RELOCATE EXISTING MALOY STORAGE UNIT.
33. RESET EXISTING TETHERBALL POLES, SEE LANDSCAPING SHEET L-101 FOR LOCATION.
34. INSTALL 12" ADS INLET, PER DETAIL B2/C-502
    TOG=5651.75
    INV=5649.75
35. INSTALL 12" ADS INLET, PER DETAIL B2/C-502
    TOG=5651.75
    INV=5649.00
36. INSTALL 15" SDR 35 PVC STORM DRAIN
37. INSTALL PEDESTRIAN CROSSING DETAIL, SEE DETAIL D4/C-501.

LEGEND

- FENCE
- BUILDING
- LIGHT POLE
- UTILITY POLES
- GUY WIRE
- CULVERT
- TREE
- TREE & BRUSH LINE
- SIGN
- POST
- MB MAILBOX
- MH MANHOLE
- WV WATER VALVE
- FH FIRE HYDRANT
- X621.6 SPOT ELEVATION
- 6410 INDEX CONTOUR
- INTERMEDIATE CONTOUR
- LOCATED OBJECT
- PICTURE CENTER
- EXISTING BASIN BOUNDARY
- PROPOSED ASPHALT PAVING
- PROPOSED 4" PCC
- PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- PROPOSED CHAIN LINK FENCE
- PROPOSED HYDRANT
- FLOW ARROW

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AUG 19 2008
HYDROLOGY SECTION

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NEW MEXICO
13340
LICENSED PROFESSIONAL ENGINEER
8/19/08

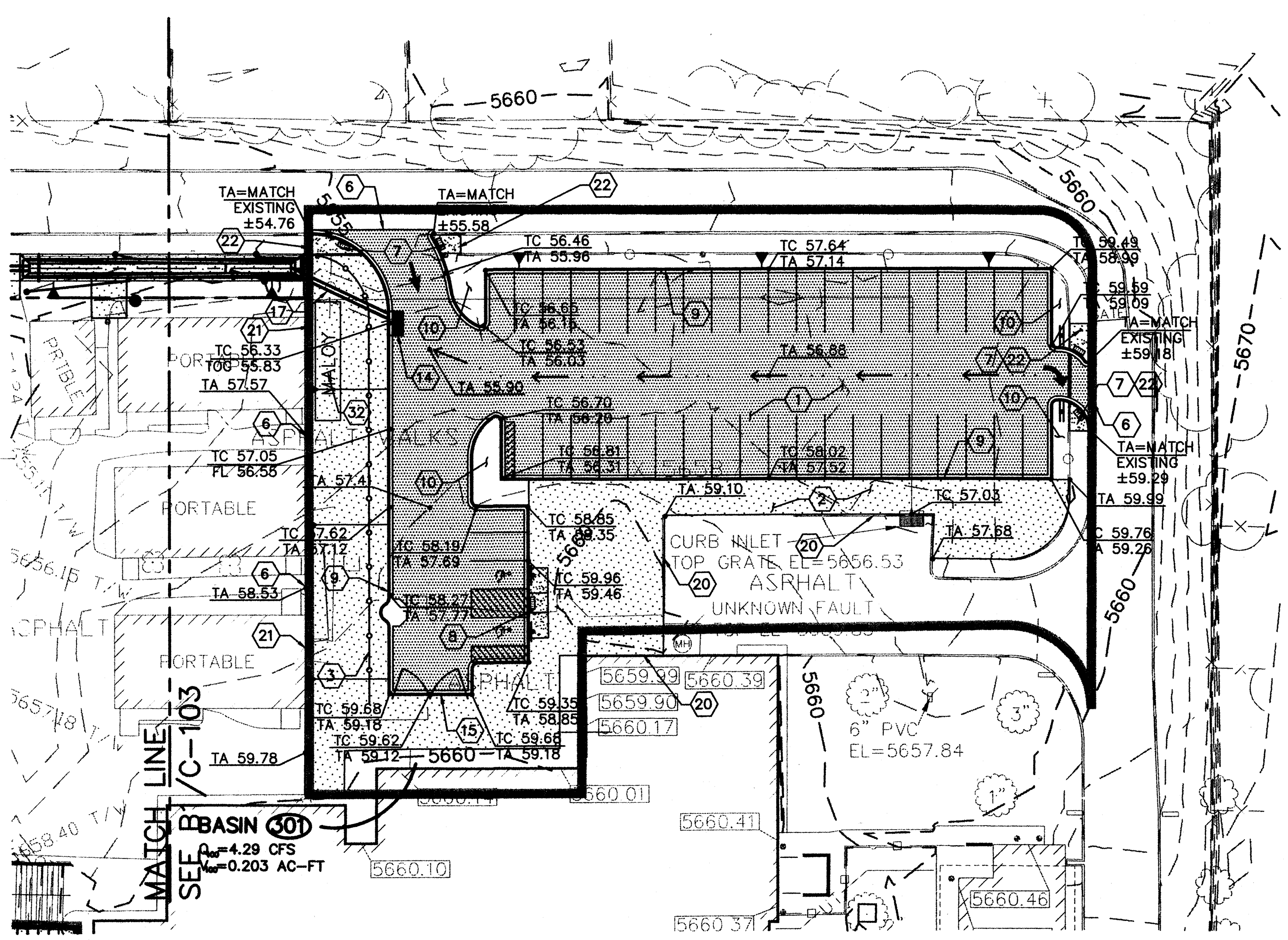
PROJECT NAME
HUBERT HUMPHREY
ELEMENTARY SCHOOL
SITE IMPROVEMENTS

MARK	DATE	DESCRIPTION

PROJECT NO:
07-600-074-00
DRAWN BY: JEL
CHECKED BY: MJI

SHEET TITLE
GRADING & DRAINAGE PLAN

SHEET
C-103



C1 SECTION A

SCALE: 1"=30'

Hubert Humphrey Elementary School

Grading and Drainage Report

Site Location: Hubert Humphrey School (HHS) is located at 9801 Academy Hills Drive. This school is bounded by: Concordia Boulevard to the west, Academy Hills Drive to the south, Lorelei Lane to the north, and Antares Road to the east. A master grading and drainage report (MGD) for Hubert Humphrey School was approved on 8/9/01. The proposed site development includes: construction of an asphalt channel, asphalt parking lot, improvement to the existing playground facility, and grading of pond. The parking lot improvements include asphalt paving and concrete curb and gutter.

Methodology: Section 22.2 of the City of Albuquerque Development Process Manual (DPM) was followed to calculate the design volume. The tables and formulas in Part A were followed using the, 100-year/6_{hour} & 24_{hour} storm event frequencies. The site is located in Zone 3 as designated in Table 1 of Albuquerque DPM. The total volumetric runoff was computed as per section A.5. Peak discharges were computed as per section A.6.

Existing Conditions: From the MGD, all proposed drainage improvements have not been constructed. Basin 204 from the MGD is designated as an asphalt parking lot with storm drain inlets capturing runoff and discharging into a 12" SD. Currently this basin stands as an unpaved parking lot. A proposed building was planned in parts of Basin 207 and 208, but currently contains playground equipment. On-site runoff discharges to an existing pond located at the southwest corner, which further discharges to Concordia Road.

Volumetric runoff and peak discharges from Hubert Humphrey the MGD for Basins 204, 207, & 208 are shown below.

Table-1 MGD Proposed Conditions							
		Treatment					
Basin	Area(ac)	A (%)	B (%)	C (%)	D (%)	V_{360} (ac-ft)	Q_p (cfs)
204	0.733	0	0	0	100.0	.144	3.68
207	1.56	0	40.3	0	59.7	0.232	6.32
208	4.02	0	6.3	81.6	12.1	0.468	14.41
Total	11.05					1.641	45.7

Table 1- provides a breakdown of proposed volumetric runoff and peak discharge from Hubert Humphrey Master Grading and Drainage Plan.

The total amount of volume produced from the entire site under the MGD is 1.641 Ac-Ft. Using the hydrograph provide in report, the amount of storage needed is approximately 1.568 Ac-ft by discharging 5.3 cfs from the upper portion of the hydrograph. If the hydrograph released 5.3 cfs from the lower portion, then the volume needed would be approximately 1.4 Ac-ft.

Basin 301 & 302 are the two basins within the MGD Basins 204, 207, and 208. Existing volumetric runoff and peak discharge quantities may be found in Table 2 below.

Table-2 Existing Conditions							
		Treatment					
Basin	Area(ac)	A%	B%	C%	D%	V_{1440}(ac-ft)	Q_p (cfs)
301	0.865	0	0	60	40	0.138	3.52
302	1.263	0	0	91	9	0.150	4.53
Total	2.128					0.288	8.05

Table 2- provides a breakdown of existing volumetric runoff and peak discharge of the site.

Proposed Conditions:

Proposed conditions are slightly modified from the MGD proposed conditions and are summarized below:

Basin 301 is comprised of Basin 204 and extends into parts of Basins 201, 203, and 205 from the MGD. An asphalt parking lot will be constructed in this area. Runoff in Basin 301 is proposed to be collected by a Single 'D' inlet, which will discharge into a proposed asphalt channel.

Basin 302 comprises of Basin 207 and portion of Basin 208 from MGD. It encompasses all of the proposed playground area. Drainage from this basin flows southwest to the pond. The proposed playground equipment has shifted south from the MGD, where the proposed building was located.

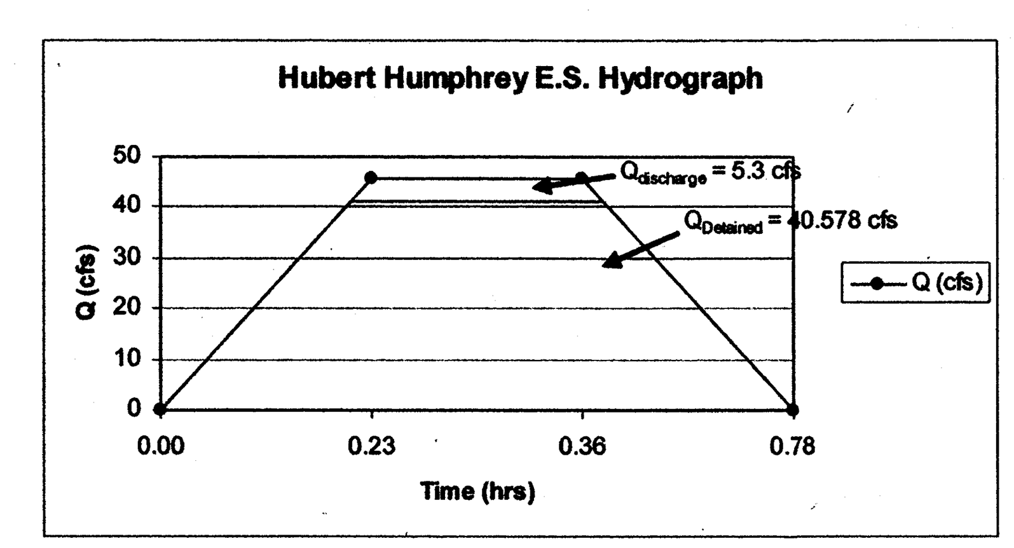
Proposed volumetric runoff and peak discharge quantities are as shown below.

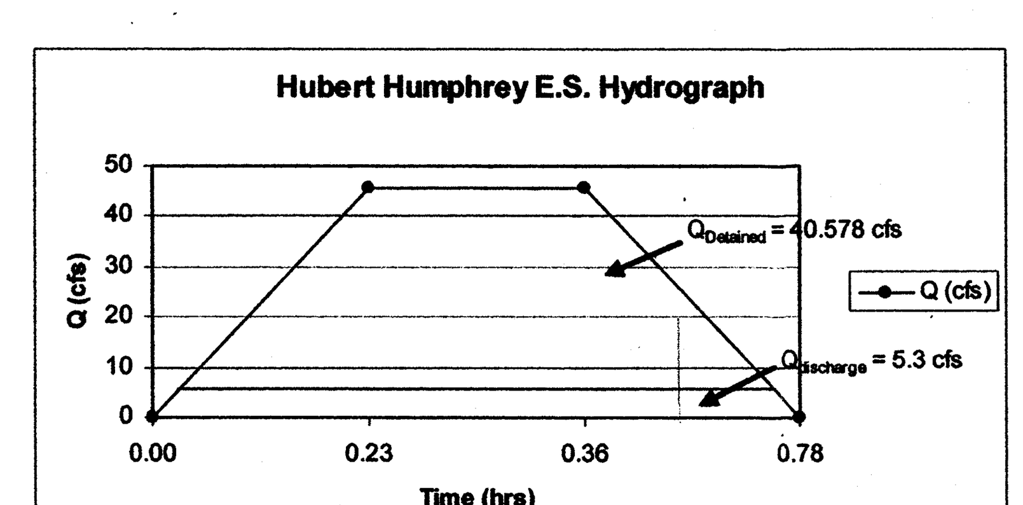
Table-3 Proposed Conditions							
		Treatment					
Basin	Area(ac)	A%	B%	C%	D%	V_{1440}(ac-ft)	Q_p (cfs)
301	0.865	0	3	0	97	0.203	4.29
302	1.263	0	0	15	85	0.276	6.04
Total	2.128					0.479	10.33

Table 3- provides a breakdown of proposed volumetric runoff and peak discharge of the site.

Conclusion:

Basin 301 abides by the MGD. Basin 302 has altered the location of the playground equipment, but also abides by the MGD. Future development north of Basin 302 will need to adjust for Land Treatment Type B to satisfy Basin 207 and Basin 208 from the MGD. Therefore, no volumetric volume has increase from these basins in relation to the MGD. The total amount of volume required for this pond is 1.40 Ac-Ft, when releasing 5.3 cfs from the bottom of the MGD hydrograph. The pond will be re-graded similar to the proposed pond in the MGD. Maximum water surface elevation will remain at 5636' and the inlet will not be altered. From the MGD and under current conditions, there is about 6 inches of standing runoff in the pond before it starts to discharge through the inlet. This concept was necessary to accommodate the storage required within the pond designation. This pond will contain a volume provided of 1.601 Ac-Ft, and the volume required for this pond is 1.40 Ac-Ft.





A1 DRAINAGE REPORT

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

SHEET KEY NOTES

1 INSTALL 3" ASPHALT SECTION, PER DETAIL B2/C-501.
2 INSTALL 2" ASPHALT SECTION, PER DETAIL C2/C-501.
3 INSTALL 4'-0" CHAINLINK FENCE, PER DETAIL A3/C-501.
4 INSTALL 4" PCC SIDEWALK, PER DETAIL A2/C-501.
5 INSTALL ADA RAMP, PER PLAN & PROFILE SHEET C-401.
6 MATCH NEW ASPHALT TO EXISTING GRADE.
7 INSTALL UNIDIRECTIONAL WHEELCHAIR RAMP, PER DETAIL D2/C-502.
8 INSTALL ADA WHEELCHAIR RAMP, PER DETAIL D2/C-501.
9 INSTALL MEDIAN CURB & GUTTER, PER DETAIL D5/C-501.
10 LANDSCAPE AREA, SEE SHEET L-101.
11 MATCH NEW 4" SIDEWALK TO EXISTING SIDEWALK.
12 INSTALL RETAINING WALL, SEE SHEET C-403.
13 SLOPE NEW ASPHALT 5% INTO EXISTING GRADE.
14 INSTALL TYPE 'C' INLET, SEE DETAIL A3/C-502. TIE EXISTING 12" PIPE TO PROPOSED INLET. INV= 53.83
15 INSTALL ROLLED CURB, PER DETAIL C1/C-501.
16 SEE LANDSCAPE SHEET L-101 FOR TOP OF WALL ELEVATIONS.
17 INSTALL 15" ADS PIPE. INV (OUT)=53.35
18 INSTALL 15" ADS PIPE. INV (IN)=51.95 INV (OUT)=51.51
19 INSTALL 15" ADS PIPE. INV (IN)=50.78 INV (OUT)=50.31
20 INSTALL 15" ADS PIPE. INV (IN)=45.35 INV (OUT)=44.91
21 MATCH TOP OF ASPHALT ELEVATION TO BOTTOM OF FLANGE ELEVATION. (TYP.)
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23 TACK COAT BETWEEN EXISTING & NEW ASPHALT PAVING OR SIDEWALK.
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26 APPROXIMATE RIP-RAP LIMITS
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32 RELOCATE EXISTING MALOY STORAGE UNIT.
33 RESET EXISTING TETHERBALL POLES, SEE LANDSCAPING SHEET L-101 FOR LOCATION.
34 INSTALL 12" ADS INLET, PER DETAIL B2/C-502 TOG=5651.75 INV=5649.75
35 INSTALL 12" ADS INLET, PER DETAIL B2/C-502 TOG=5651.75 INV=5649.00
36 INSTALL 15" SDR 35 PVC STORM DRAIN
37 INSTALL PEDESTRIAN CROSSING DETAIL, SEE DETAIL D4/C-501.

LEGEND

- FENCE
- BUILDING
- LIGHT POLE
- UTILITY POLES
- GUY WIRE
- CULVERT
- TREE
- TREE & BRUSH LINE
- SIGN
- POST
- MAILBOX
- MANHOLE
- WATER VALVE
- FIRE HYDRANT
- SPOT ELEVATION
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- LOCATED OBJECT
- PICTURE CENTER
- EXISTING BASIN BOUNDARY
- PROPOSED ASPHALT PAVING
- PROPOSED 4" PCC
- PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- PROPOSED CHAIN LINK FENCE
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SEAL
MARIO G. JUAREZ-INFANTE
15340
8/18/08
LICENSED PROFESSIONAL ENGINEER

PROJECT NAME
HUBERT HUMPHREY ELEMENTARY SCHOOL SITE IMPROVEMENTS

MARK	DATE	DESCRIPTION

PROJECT NO: 07-600-074-00
DRAWN BY: JEL
CHECKED BY: MJI
SHEET TITLE
DRAINAGE REPORT

SHEET
C-104

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HYDROLOGY