

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 20, 2003

Scott McGee, P.E.
Isaacson & Arfman, P.A.
128 Monroe NE
Albuquerque, New Mexico 87108

RE: LA MESA ELEMENTARY SCHOOL ADDITION (K-19/D90)
(7500 Copper Ave NE)
ENGINEERS CERTIFICATION FOR CERTIFICATE OF OCCUPANCY
ENGINEERS STAMP DATED 2/1/2002
ENGINEERS CERTIFICATION DATED 5/19/2003

Dear Scott:

Based upon the information provided in your Engineers Certification submittal dated 5/19/2003, and based upon the approval of the SO19 by the City's Storm Drainage Maintenance inspector, the above referenced site is approved for Permanent Certificate of Occupancy.

If I can be of further assistance, please contact me at 924-3981.

Sincerely,

Teresa A. Martin
Hydrology Plan Checker
Development & Bldg. Ser. Division

BUB

C: Certificate of Occupancy Clerk, COA
approval file
drainage file



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 15, 2002

Scott McGee, PE
Isaacson & Arfman, P.A.
128 Monroe Street NE
Albuquerque, NM 87108

**Re: La Mesa Elementary Addition Grading and Drainage Plan
Engineer's Stamp Dated 2-01-02, (K19/D90)**

Dear Mr. McGee,

Based on the information contained in your submittal dated 4-15-02, the above referenced plan is approved for Building Permit and SO-19 Permit.

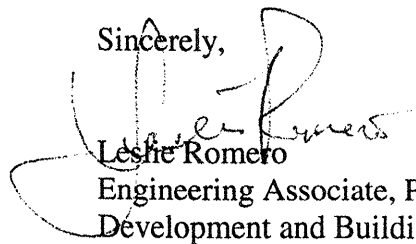
Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

A separate permit is required for construction within city R/W. Sign-off by the city's field inspector for the SO-19 Permit is required for Hydrology final approval.

Also, prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3984.

Sincerely,


Leslie Romero
Engineering Associate, PWD
Development and Building Services

c: Terri Martin, Hydrology
Pam Lujan
Matt Cline w/attachment
File (2)

INTRODUCTION

La Mesa Elementary is located at the southeast corner of Copper Avenue and Espanola NE. Fifteen portable and two permanent buildings are located at the western end of the site along with a parking area. Most of the ground surface between the portable buildings is paved with asphalt, and the site runoff is discharged to Espanola Street and to Copper Avenue. The floodplain map indicates flooding in the street along the length of Copper Avenue adjacent to the school. The proposed improvements include a building addition, a building expansion and added paved parking.

II. SITE CHARACTERISTICS

EXISTING CONDITIONS: Fifteen portable and two permanent buildings are located at the western end of the site along with a parking area for 42 cars. Most of the ground surface between the portable buildings is paved with asphalt. The site slopes at 1.0 to 1.5% to the northwest corner of the site. Runoff is discharged to Espanola Street via an existing drivepad and to Copper Avenue via existing drivepads and a sidewalk culvert. The floodplain map indicates flooding in the street along the length of Copper Avenue adjacent to the school. There are no public storm drains in the abutting streets.

OFFSITE FLOWS: Two offsite areas contribute flows to the site as follows:

- Basin Offsite 1. A 1.74-acre residential area to the south of the site—north of Domingo Rd., east and west of San Pablo Street—discharges 7.7 cfs to the existing public rundown at the southerly end of the site.
- Basin Offsite 2. The existing parking area adjacent to Copper Avenue and to the east of Basin D generates 0.8 cfs, which will be added to flows from Basins B, D and F.

PROPOSED CONDITIONS: The proposed development consists of a new 28,000 SF building with a courtyard, a 1500 SF building addition, and added paved parking at the west end.

Site drainage is routed to Espanola Street and Copper Avenue through drain pipes, concrete rundowns and sidewalk culverts.

The Drainage Map on the following page indicates the flow patterns and locations of rundowns, sidewalk culverts, drain pipes and inlet along with the 100-year flows at each point, as calculated in Appendix A. The developed flow rate is 12.8 cfs, which does not exceed the existing rate of 12.9 cfs.

Runoff from Basin A (4.3 cfs) will flow along the west edge of the parking lot, being contained by median curb and gutter. These flows will be collected in a 24-inch rundown and discharged to Espanola Street via a proposed driveway.

The runoff from Basin B will be collected in a Type D inlet and conveyed to a 24-inch concrete rundown via four 6-inch pipes. Flows from Basins D and E and Offsite Basin 1 will also discharge into the rundown. These combined flows (5.4 cfs) will be released to Copper Avenue through a 24-inch sidewalk culvert.

Basin C will discharge 1.7 cfs into an existing concrete rundown along the south property line. Flows from the building rundowns will be conveyed through four 12-inch rundowns.

Flows from Basin F (0.5 cfs) will enter Copper Avenue through an existing sidewalk culvert.

Basin G will discharge 1.2 cfs to Espanola Street from the proposed driveway, and 0.5 cfs from Basins H and I will sheetflow onto Espanola Street.

Appendix B contains capacity calculations for concrete rundowns, sidewalk culverts, drain pipes and the Type D inlet.

III. SUMMARY

The site runoff will be discharged to Copper Avenue and Espanola Street through existing and proposed concrete rundowns, an inlet, drain pipes, and through existing and proposed sidewalk culverts.

The developed flow rate of 12.8 cfs is less than the existing rate of 12.9 cfs. Existing offsite flows will continue to be accepted onsite, routed to the adjacent public streets, and will remain unchanged by this development.

RUNOFF CALCULATIONS FOR OFFSITE AREAS (Q₁₀₀)

100-YEAR, 6-HOUR STORM

Per the City of Albuquerque D.P.M. Section 22.2

PROJECT NAME: LA MESA ELEMENTARY SCHOOL

JOB NUMBER: 1190

PRECIP ZONE	Q ₁₀₀ RUNOFF RATES (cfs/Ac)			
	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.70
3	1.87	2.60	3.45	5.02
4	2.20	2.92	3.73	5.25

% LAND TREATMENTS				
	TREAT TYPE 1	TREAT TYPE 2	TREAT TYPE 3	TREAT TYPE 4
A	0	0	0	0
B	0	0	0	0
C	40	0	0	0
D	60	100	0	0
Σ% =	100	100	0	0

PRECIPITATION ZONE:

3

TREATMENT TYPE 1					
BASIN #	LAND TREATMENT AREAS (Ac)				REMARKS
	A _{TOTAL}	A _A	A _B	A _C	A _D
OFF-1	1.742	0	0	0.70	1.05
					7.7
					To existing public drainage channel

TREATMENT TYPE 2					
BASIN #	LAND TREATMENT AREAS (Ac)				REMARKS
	A _{TOTAL}	A _A	A _B	A _C	A _D
OFF-2	0.151	0	0	0	0.15
					0.8
					To Type D inlet & four 6" pipes

RUNOFF CALCULATIONS FOR DEVELOPED CONDITIONS (Q₁₀₀)

100-YEAR, 6-HOUR STORM

Per the City of Albuquerque D.P.M. Section 22.2

PROJECT NAME: LA MESA ELEMENTARY SCHOOL

JOB NUMBER: 1190

PRECIP ZONE	Q ₁₀₀ RUNOFF RATES (cfs/Ac)			
	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.70
3	1.87	2.60	3.45	5.02
4	2.20	2.92	3.73	5.25

PRECIPITATION ZONE: 3

% LAND TREATMENTS											
	TREAT TYPE 1	TREAT TYPE 2	TREAT TYPE 3	TREAT TYPE 4	TREAT TYPE 5	TREAT TYPE 6	TREAT TYPE 7	TREAT TYPE 6	TREAT TYPE 7	TREAT TYPE 6	TREAT TYPE 7
A	0	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0
C	1	6	18	0	14	24	5	37	100	100	100
D	99	94	82	100	86	76	95	63	0	0	0
Σ% =	100	100	100	100	100	100	100	100	100	100	100

TREATMENT TYPE 1				
BASIN #	LAND TREATMENT AREAS (Ac)			REMARKS
	A _{TOTAL}	A _A	A _B	
A	0.867	0	0	0.86
				Q ₁₀₀ (cfs) 4.3
				To 24" rundown by Espanola

P

TREATMENT TYPE 2				
BASIN #	LAND TREATMENT AREAS (Ac)			REMARKS
	A _{TOTAL}	A _A	A _B	
B	0.626	0	0	0.59
				Q ₁₀₀ (cfs) 3.1
				To Type D inlet & four 6" pipes

TREATMENT TYPE 3				
BASIN #	LAND TREATMENT AREAS (Ac)			REMARKS
	A _{TOTAL}	A _A	A _B	
C	0.366	0	0	0.30
				Q ₁₀₀ (cfs) 1.7
				To existing rundown

TREATMENT TYPE 4						
BASIN #	LAND TREATMENT AREAS (Ac)				Q ₁₀₀ (cfs)	REMARKS
	A _{TOTAL}	A _A	A _B	A _C	A _D	
D	0.186	0	0	0	0.19	To 24" rundown & 24" SW culvert by Copper

TREATMENT TYPE 5						
BASIN #	LAND TREATMENT AREAS (Ac)				Q ₁₀₀ (cfs)	REMARKS
	A _{TOTAL}	A _A	A _B	A _C	A _D	
E	0.116	0	0	0.02	0.10	To 24" rundown & 24" SW culvert by Copper

TREATMENT TYPE 6						
BASIN #	LAND TREATMENT AREAS (Ac)				Q ₁₀₀ (cfs)	REMARKS
	A _{TOTAL}	A _A	A _B	A _C	A _D	
F	0.118	0	0	0.03	0.09	To existing SW culvert in Copper

TREATMENT TYPE 7						
BASIN #	LAND TREATMENT AREAS (Ac)				Q ₁₀₀ (cfs)	REMARKS
	A _{TOTAL}	A _A	A _B	A _C	A _D	
G	0.234	0	0	0.01	0.22	To Espanola via driveway

TREATMENT TYPE 8						
BASIN #	LAND TREATMENT AREAS (Ac)				Q ₁₀₀ (cfs)	REMARKS
	A _{TOTAL}	A _A	A _B	A _C	A _D	
H	0.080	0	0	0.03	0.05	To Espanola

TREATMENT TYPE 9						
BASIN #	LAND TREATMENT AREAS (Ac)				Q ₁₀₀ (cfs)	REMARKS
	A _{TOTAL}	A _A	A _B	A _C	A _D	
I	0.04	0	0	0.04	0	To Espanola

Σ BASIN

AREAS = 2.633 ac.

Σ Q₁₀₀ =

12.8 cfs =

La Mesa Elementary School--6" Pipe
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	6" Pipe
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Capacity

Input Data	
Mannings Coefficient	0.009
Channel Slope	0.005000 ft/ft
Diameter	6.00 in

Results		
Depth	0.50	ft
Discharge	0.57	cfs
Flow Area	0.20	ft ²
Wetted Perimeter	1.57	ft
Top Width	0.00	ft
Critical Depth	0.39	ft
Percent Full	100.00	
Critical Slope	0.005648	ft/ft
Velocity	2.92	ft/s
Velocity Head	0.13	ft
Specific Energy	FULL	ft
Froude Number	FULL	
Maximum Discharge	0.62	cfs
Full Flow Capacity	0.57	cfs
Full Flow Slope	0.005000	ft/ft

12" Concrete Rundown
Worksheet for Rectangular Channel

Project Description	
Project File	j:\c4-active\genny\haestad\fmw\la_mesa.fm2
Worksheet	12" Concrete Rundown
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Mannings Coefficient	0.013
Channel Slope	0.020000 ft/ft
Depth	0.50 ft
Bottom Width	1.00 ft

Results	
Discharge	3.21 cfs ✓
Flow Area	0.50 ft ²
Wetted Perimeter	2.00 ft
Top Width	1.00 ft
Critical Depth	0.68 ft
Critical Slope	0.008821 ft/ft
Velocity	6.41 ft/s
Velocity Head	0.64 ft
Specific Energy	1.14 ft
Froude Number	1.60
Flow is supercritical.	

24" Concrete Rundown
Worksheet for Rectangular Channel

Project Description	
Project File	j:\c4-active\genny\haestad\fmw\la_mesa.fm2
Worksheet	24" Concrete Rundown
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.020000	ft/ft
Depth	0.50	ft
Bottom Width	2.00	ft

Results		
Discharge	7.77	cfs ✓
Flow Area	1.00	ft ²
Wetted Perimeter	3.00	ft
Top Width	2.00	ft
Critical Depth	0.78	ft
Critical Slope	0.005766	ft/ft
Velocity	7.77	ft/s
Velocity Head	0.94	ft
Specific Energy	1.44	ft
Froude Number	1.94	
Flow is supercritical.		

24" Sidewalk Culvert
Worksheet for Rectangular Channel

Project Description	
Project File	j:\c4-active\genny\haestad\fmw\la_mesa.fm2
Worksheet	24" Sidewalk Culvert
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Mannings Coefficient	0.013
Channel Slope	0.020000 ft/ft
Depth	0.67 ft
Bottom Width	2.00 ft

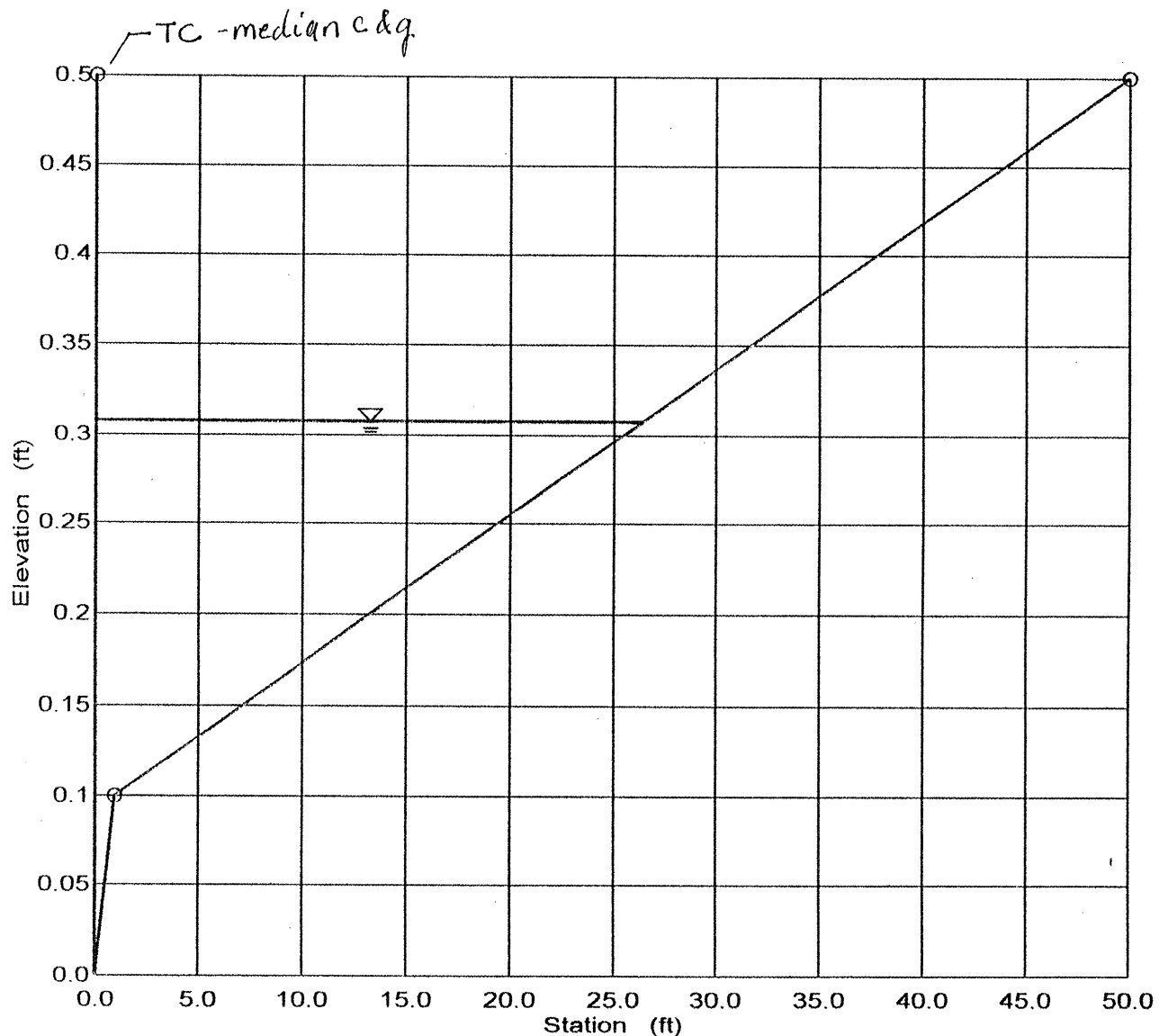
Results		
Discharge	11.78	cfs ✓
Flow Area	1.34	ft ²
Wetted Perimeter	3.34	ft
Top Width	2.00	ft
Critical Depth	1.03	ft
Critical Slope	0.006259	ft/ft
Velocity	8.79	ft/s
Velocity Head	1.20	ft
Specific Energy	1.87	ft
Froude Number	1.89	
Flow is supercritical.		

La Mesa Elementary--Basin A
Cross Section for Irregular Channel

Basin A -
swale along west
edge of parking

Project Description	
Project File	j:\c4-active\genny\haestad\fmw\la_mesa2.fm2
Worksheet	LA MESA ELEMENTARY
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.016
Channel Slope	0.005000 ft/ft
Water Surface Elevation	0.31 ft ✓
Discharge	4.30 cfs ✓



TYPE D SINGLE INLET CAPACITY

Grate open area:

Gross: (25 in. x 40 in.)/144 in./ft =	6.92 ft ²
Less bearing bars: (.5/12)(3.33)(13)=	-1.80 ft ²
Less cross bars: (.5/12)(7)((25/12)-(13)(.5/12))	<u>-0.45 ft²</u>

$$4.67 \text{ ft}^2$$

Orifice Equation:

$$Q = CA (2gH)^{1/2}$$

$$G=32.2 \text{ ft/s}^2$$

$$C = 0.67$$

$$H = \text{water depth above flowline}$$

$$A = 4.67 \text{ ft}^2 * 0.5 = 2.34 \text{ ft}^2 \text{ (assuming 50\% clogging factor)}$$

$$Q = 0.67(2.34)(64.4H)^{1/2}$$

$$Q = 12.5815(H)^{1/2} \text{ cfs}$$

At a water depth of H=0.1', Q=4.0 cfs



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 11, 1993

Jeff Mortensen, P.E.
Jeff Mortensen & Assoc.
6010-b Midway Park Blvd NE
Albuquerque, N.M. 87109

RE: GRADING & DRAINAGE PLAN FOR LA MESA ELEM SCHOOL (K-19/D90)
RECEIVED MAY 21, 1993 FOR GRADING/PAVING PERMIT
ENGINEER'S STAMP DATED 05-21-93

Dear Mr. Mortensen:

Based on the information included in the submittal referenced above, City Hydrology APPROVES this project for Grading/Paving Permit.

A Topsoil Disturbance Permit must be approved prior to construction.

Engineer's Certification of Grading & Drainage per DPM checklist is required for this project.

If you have any questions about this project, you may contact me at 768-2727.

Sincerely,

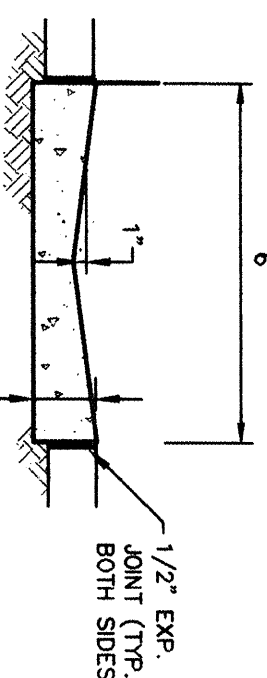
John P. Curtin, P.E.
Civil Engineer/Hydrology

xc: Alan Martinez

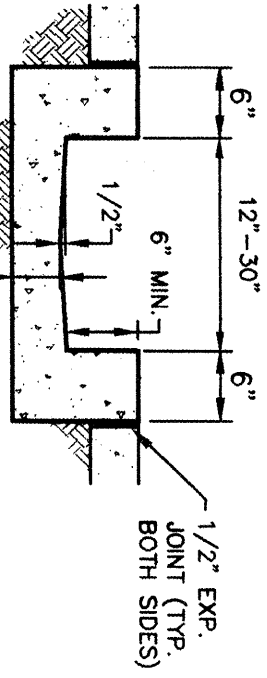
WPHYD+7792;jpc

PUBLIC WORKS DEPARTMENT

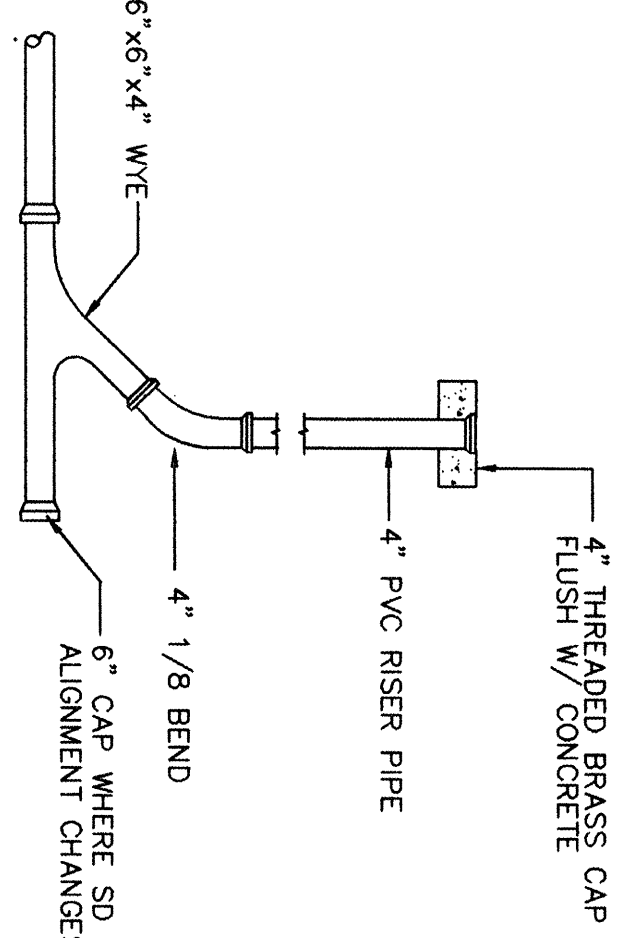
- KEYED CONSTRUCTION NOTES**
1. BUILD 24 LF MOUNTABLE CURB PER COA STD DWG #2415.
 2. MATCH EXISTING PAVEMENT.
 3. REMOVE EXISTING DRIVEWAY CUT & CONSTRUCT STD CURB & GUTTER PER COA STD DWG #2415.
 4. DRIVEPAD PER COA STD DWG #2425.
 5. 24" SIDEWALK CULVERT PER COA STD DWG #2236.
 6. 2-FOOT CURB OPENING.
 7. 30" CONCRETE SWALE PER SECTION B-B.
 8. 4-6" DIA. PVC DRAIN PIPES, 118 LF @ 0.5% SLOPE.
 9. 1-CATCH BASIN PER SECTION C-C.
 10. 6" CONCRETE SWALE PER SECTION A-A.
 11. 12" CONCRETE SWALE PER SECTION B-B.
 12. TRANSITION FROM MOUNTABLE CURB TO MOUNTABLE CURB OVER 5 LF.
 13. ADJUST EXISTING MANHOLE RIM TO ELEV=5338.5 PER COA STD DWG #2101.
 14. 4-CLEANOUTS TO GRADE PER DETAIL THIS SHEET.
 15. 6" MEDIAN CURB & GUTTER PER COA STD DWG #2415.
 16. 1-8" DRAIN BASIN (NXP/AST) WITH 4" OUTLET, BUILD 32 LF 4" PVC OUTLET LINE @ 1% THROUGH CURB FACE



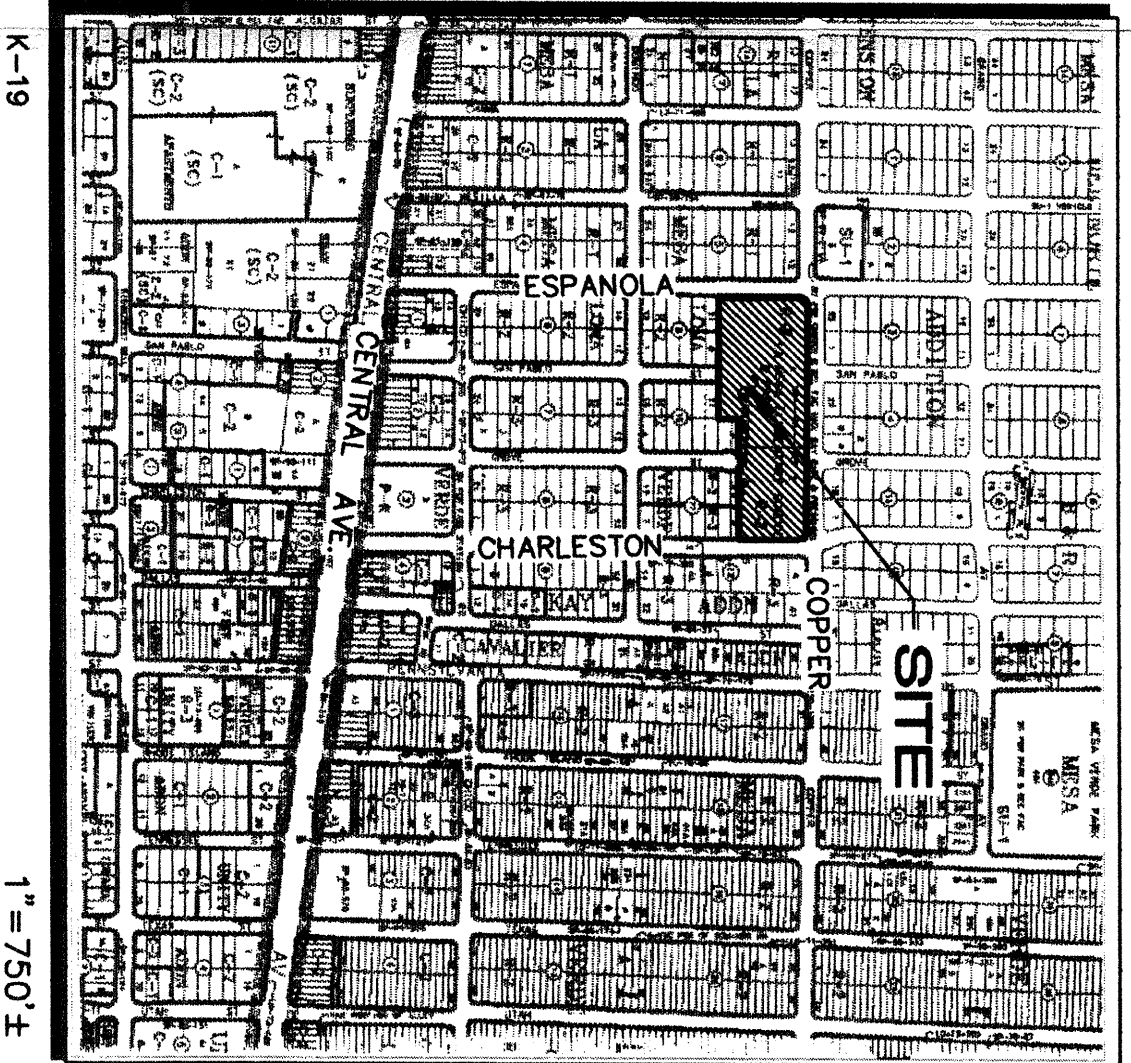
SECTION A-A
CONCRETE SWALE
N/S



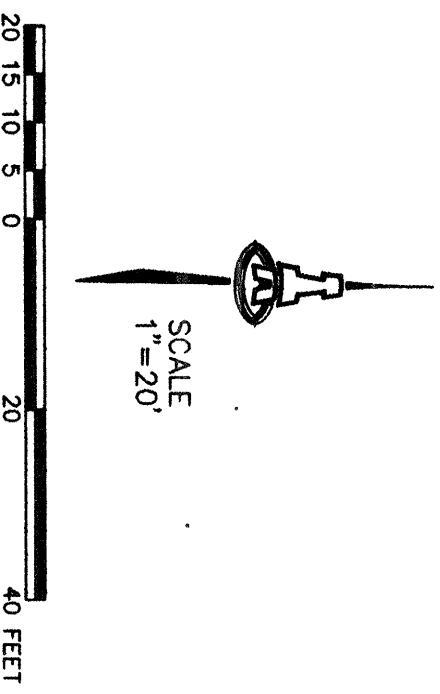
SECTION B-B
CONCRETE SWALE
N/S



CLEANOUT DETAIL
N/S



VICINITY MAP
1"=750'±



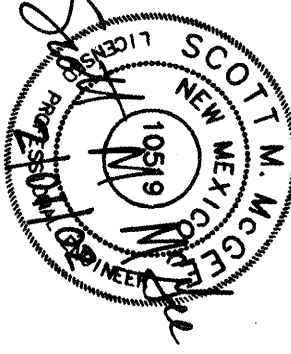
NOTE:
FOR CLARITY, EXISTING UTILITY LINES
ARE SHOWN IN RED.
NEW CONSTRUCTION, SEE DEMOLITION
PLAN.

LEGEND

- 5300 --- EXISTING CONTOUR
- 36 --- PROPOSED CONTOUR
- ◆ 78.3 PROPOSED SPOT ELEVATION
- FLOW ARROW
- FF=5338.00 FINISH FLOOR ELEVATION
- S/W --- SIDEWALK CULVERT
- T/SW --- TOP OF SLOPE ELEVATION
- T/A --- TOP OF ASPHALT ELEVATION
- T/SW --- TOP OF GRADE ELEVATION
- T/SW --- TOP OF SIDEWALK ELEVATION
- INV=35.22 --- INVERT ELEVATION
- NEW ASPHALT
- ROD
- ROOF DRAIN
- BASIN BOUNDARY ---
- FLOODPLAIN LIMIT ---
- 37.06 --- 45-BUILT ELEVATION

PUBLIC ROW CONSTRUCTION NOTES

1. ALL WORK DETAIL ON THESE PLANS TO BE AS SHOWN, UNLESS OTHERWISE NOTED. ANY CHANGES TO BE MADE BY THE ENGINEER OR ARCHITECT, OR OTHERWISE STATED OR PROVIDED FOR HEREIN, BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY.
2. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL BE REQUIRED TO OBTAIN A PERMIT FROM THE CITY OF ALBUQUERQUE, NEW MEXICO, FOR THE EXCAVATION.
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL LOCATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS, INCLUDING BUT NOT LIMITED TO, UTILITIES, STRUCTURES, AND OTHER OBSTRUCTIONS, AND SHALL BE RESPONSIBLE FOR THE LOCATION OF ANY OBSTRUCTIONS THAT THE CONTRACTOR CAN BE RESOLVED WITH A MINIMUM OF DELAY.
4. BACKFILL COMPACTATION SHALL BE ACCORDING TO THE SPECIFICATIONS OF THE CITY OF ALBUQUERQUE, NEW MEXICO.
5. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY.
6. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED FROM THE CITY OF ALBUQUERQUE, NEW MEXICO, FOR THE EXCAVATION. PLANS MUST BE SUBMITTED FOR APPROVAL OF THESE PLANS PRIOR TO ANY EXCAVATION.



DATE: MAY 19 2003
DRAWN BY: ANV
CHECKED BY: SHM

LA MESA ELEMENTARY SCHOOL Renovations and Additions

7500 COPPER AVENUE NE, ALBUQUERQUE NEW MEXICO 87108

GRADING & DRAINAGE PLAN

GARRETT SMITH LTD
DESIGN, ARCHITECTURE & DEVELOPMENT

514 CENTRAL SW
ALBUQUERQUE
NEW MEXICO
8 7 1 0 2
505/766-6968
FAX/243-4508

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street, N.E.
Albuquerque, New Mexico
87102

C1