KEYED NOTES:

1. NEW ASPHALT PAVEMENT.
2. NEW 6" CONCRETE CURB.
3. 6' WIDE CONCRETE SIDEWALK.
4. ROOF SLOPE.
5. 4' x 4' CONCRETE STOOP.
6. OVERHEAD DOOR.
7. REFUSE ENCLOSURE.
8. EXIST. STD. CURB & GUTTER.
9. EDGE EXIST. ASPHALT PVM'NT.
10. DRAINAGE SWALE.
11. 2' - 0" SIDEWALK CULVERT PER C.O.A STD. DWG. 2236.
12. 1' - 0" CURB OPENING FOR DRAINAGE.
13. 1' - 6" DRAINAGE CHANNEL (SEE DETAIL).
14. 2' - 0" DRAINAGE CHANNEL (SEE DETAIL).
15. SEDIMENTATION BASIN AND POND OUTFALL STRUCTURE. (SEE DETAIL, SHEET 2).
16. 4" PIPE THROUGH CURB PER C.O.A. STD. DWG. 2235.
17. DOWNSPOUT (TYP. OF 4 EACH SIDE).
18. 2' x 6' CONCRETE SPLASH PAD.
19. CMU CUTOFF WALL. TOP WALL EL. = 52.50

GENERAL NOTES:

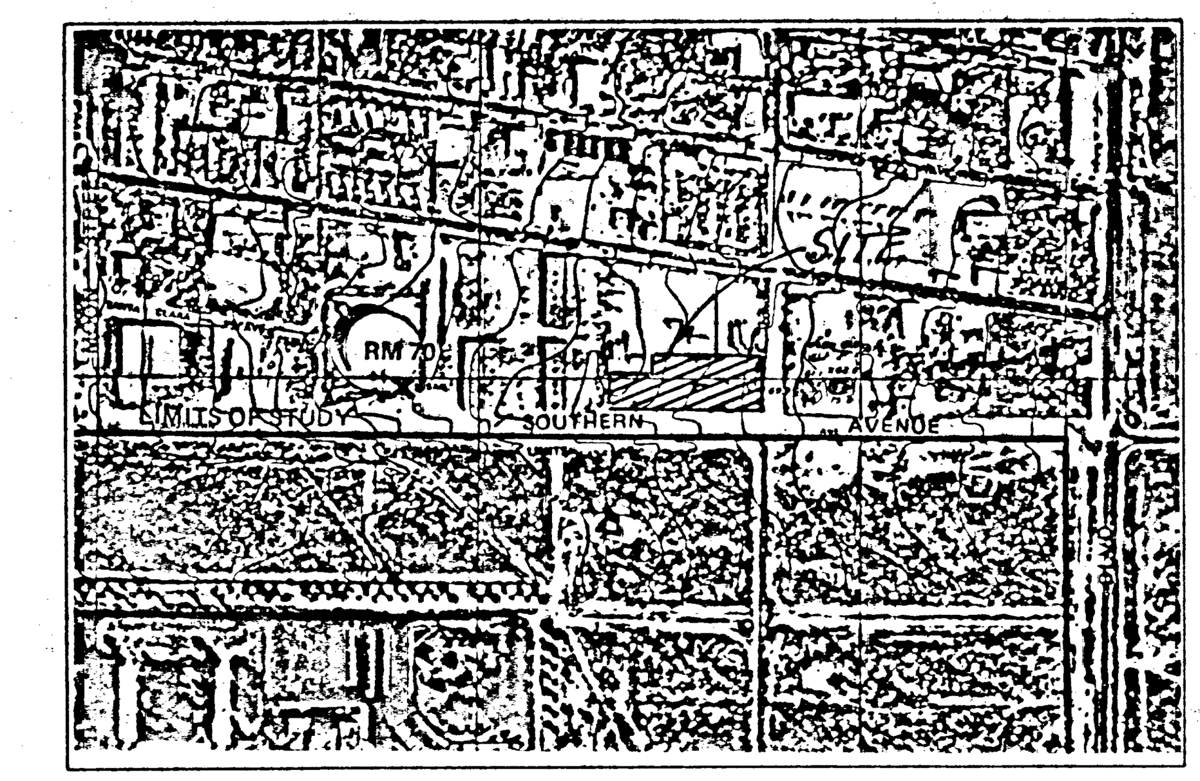
1: ADD 5400 TO SPOT ELEVATIONS TO SHOW TRUE ELEVATION.
2: CONTOUR INTERVAL IS ONE (1) FOOT.
3: ELEVATIONS SHOWN ARE BASED ON ACS STATION "SUSAN", WITH AN ELEVATION OF 5444.49 .

LEGAL DESCRIPTION:

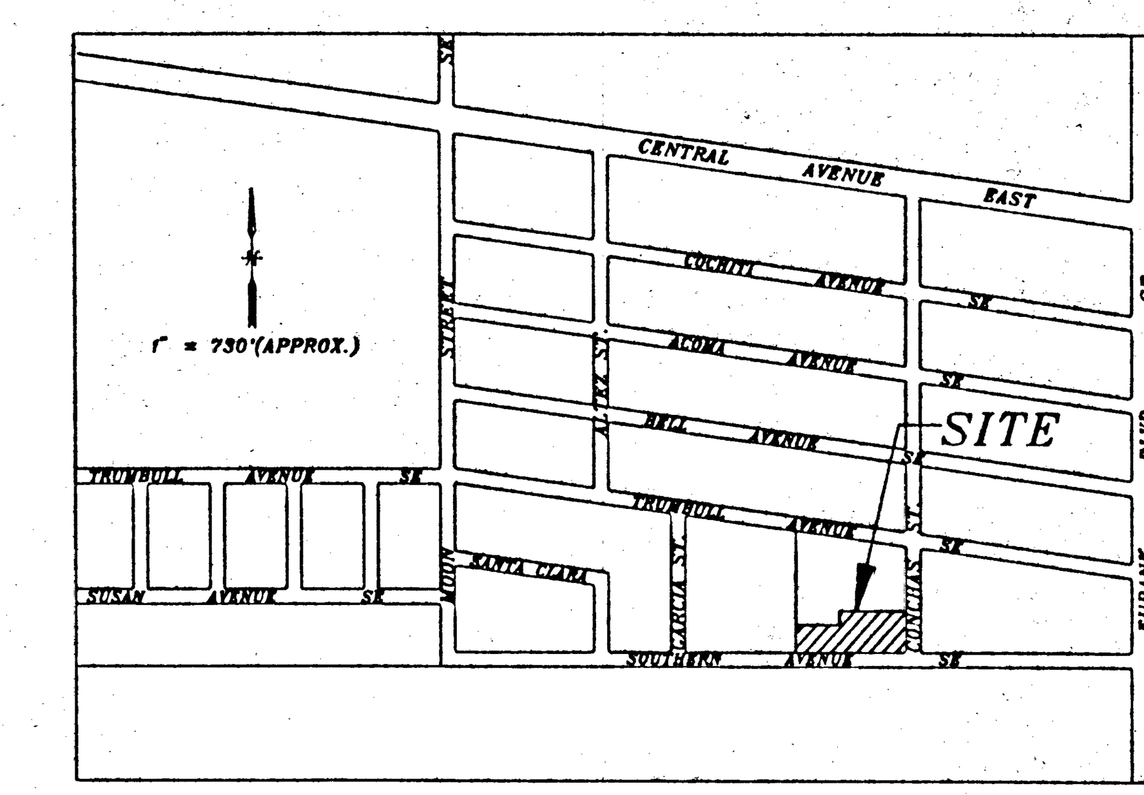
LOT NUMBERED TEN-A (10-A) IN BLOCK NUMBERED FIFTY-TWO AND FIFTY THREE (52 & 53) SKYLINE HEIGHTS SUBDIVISION, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO.

NOTE:

UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS-BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/ OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.



FLOODWAY MAP — PANEL 36 OF 50

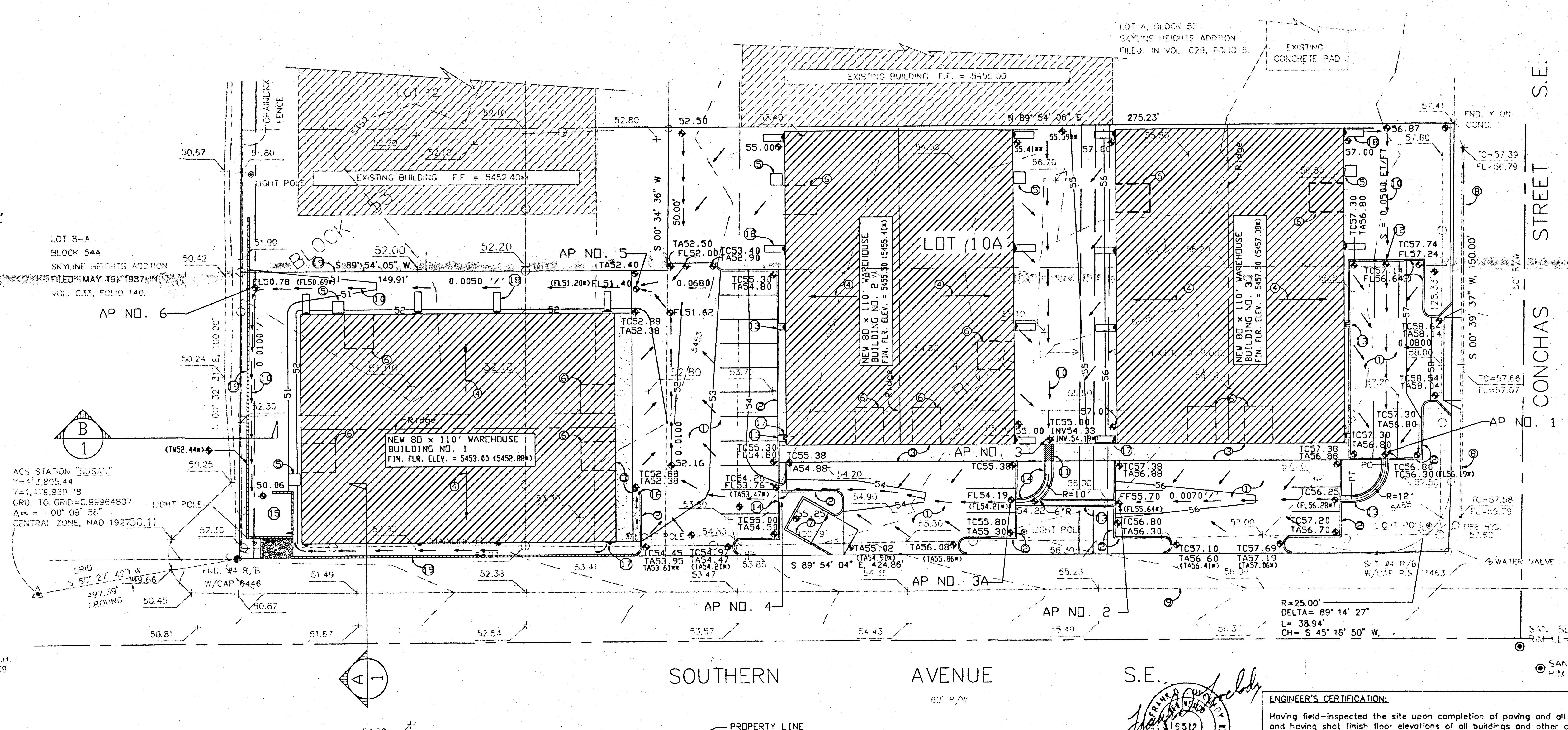


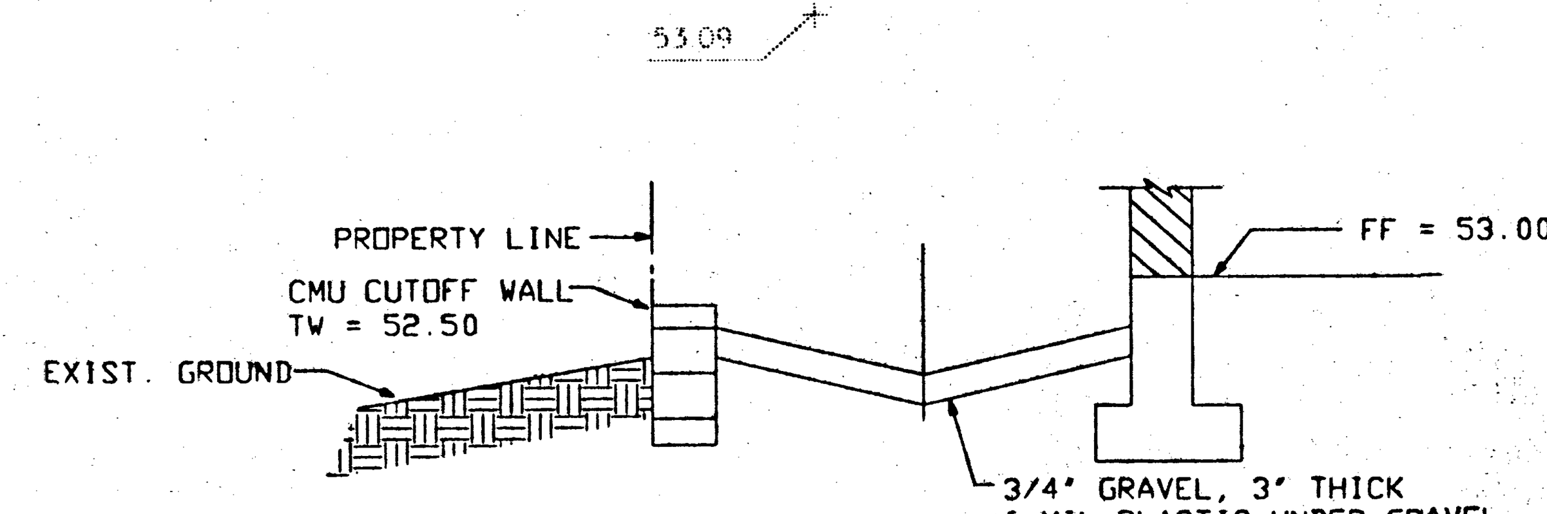
VICINITY MAP — ZONE ATLAS NO. L-20-Z

LEGEND:

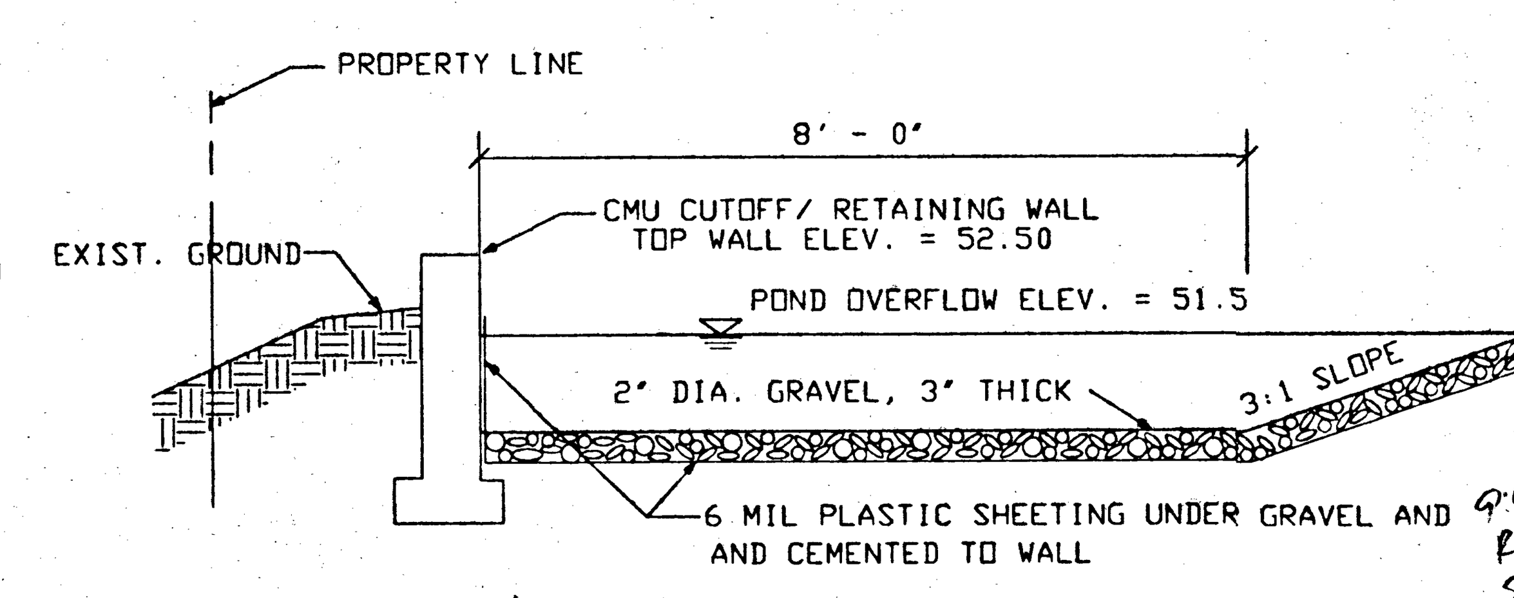
- 53.31 EXISTING SPOT ELEVATION
- 50.0 NEW SPOT ELEVATION
- 5452 EXISTING CONTOUR
- 51 NEW CONTOUR
- (FL56.28*) AS-CONSTRUCTED SPOT ELEV.

SCALE: 1" = 20'





SECTION A-A SWALE
1" = 2' - 0"



SECTION B-B DETENTION POND
1" = 2' - 0"

ENGINEER'S CERTIFICATION:

Having field-inspected the site upon completion of paving and all drainage facilities, and having shot finish floor elevations of all buildings and other critical spot elevations, I hereby certify that the as-constructed facility is in substantial conformance with the with the approved grading and drainage plan with Engineer's stamp dated 8/30/96.

Frank D. Lovelady, N.M.P.E. 6512 — 6/6/97 Date

RECEIVED JUN 06 1997 HYDROLOGY SECTION

TOPOGRAPHIC SURVEY PREPARED BY: HARRIS SURVEYING, INC. ALBUQUERQUE, NEW MEXICO

BUZCERT1.DWG(6/4/97)

FRANK D. LOVELADY, P.E.
300 ALAMOSA ROAD NW
ALBUQUERQUE, NEW MEXICO 87107
(505)345-2267

AS - CONSTRUCTED GRADING AND DRAINAGE PLAN
3 UNIT WAREHOUSING
LOT 10A, BLOCK 52 & 53
SKYLINE HEIGHTS SUBDIVISION
ALBUQUERQUE, NEW MEXICO

SHEET 1 OF 2

Designed	Drawn	Checked	Scale	Date	Job No.
FDL	FDL	FDL	1" = 20'	JUNE, 1997	529

DRAINAGE CALCULATIONS:

EXISTING CONDITIONS:

The site is located at the N.W. corner of the intersection of Southern Avenue and Conchas Street. Conchas Street is paved with standard curb and gutter. Southern Avenue is paved but without curb and gutter. Southern Avenue is in the corridor for Gibson Boulevard extension. Property north and west of the site is developed. The propterty to the north is developed as warehousing and property to the west is mini warehouse units with asphalt parking. The property slopes from east to west a an average slope of approximately 1.5 percent.

PROPOSED CONDITIONS:

It is proposed to construct warehouses and asphalt parking on the site as shown. Due to the future construction of Gibson Boulevard, construction of curb and gutter on Southern Boulevard is not recommended at this time by Traffic Engineering. Due to downstream storm drainage improvements, and due to the fact that the site is an infill site, unrestricted discharge would otherwise be acceptable except for Southern Avenue being without curb and gutter. A detention pond is proposed to reduce developed discharge to the existing rate.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque, in cooperation with Bernalillo County, New Mexico and the Albuquerque Metropolitan Arroyo Flood Control Authority, January, 1993.

PRECIPITATION ZONE:

The site is west of the Eubank Boulevard and is, therefore, in Precipitation Zone 3.

LAND TREATMENT	q(cfs/ac) 100-yr.	q(cfs/ac) 10-yr.	E (in) 100-yr.	E (in) 10-yr.	Existing Site Areas %	Existing Site Areas Sq.Ft.	Existing Site Areas Acres	Developed Site Areas %	Developed Site Areas Sq.Ft.	Developed Site Areas Acres
A	1.87	0.58	0.66	0.19	0.0	0	0.0	0.0	0	0.0000
B	2.60	1.19	0.92	0.36	00.0	0	0.0000	8.0	4,458	0.1023
C	3.45	2.00	1.29	0.62	100.0	56,123	1.2884	20.0	11,241	0.2581
D	5.02	3.39	2.36	1.50	00.0	0	0.0000	72.0	40,424	0.9280
Totals					100.0	58,123	1.2884	100.0	56,123	1.2884

PEAK DISCHARGE:

EXISTING CONDITIONS:
- Q100 = 1.2884 * 3.45 = 4.45 cfs
- Q10 = 1.2884 * 2.00 = 2.58 cfs

DEVELOPED CONDITIONS:
- Q100 = 0.1023 * 2.60 + 0.2581 * 3.45 + 0.9280 * 5.02 = 5.81 cfs
- Q10 = 0.1023 * 1.19 + 0.2581 * 2.00 + 0.9280 * 3.39 = 3.78 cfs

VOLUME 100-YEAR, 6-HOUR:

EXISTING CONDITIONS:
- V100 = (56,123 * 1.29)/12 = 6,033 CF
- V10 = (56,123 * 0.62)/12 = 2,900 CF

DEVELOPED CONDITIONS:
- V100 = (4,458 * 0.92 + 11,241 * 1.29 + 40,424 * 2.36)/12 = 9,500 CF
- V10 = (4,458 * 0.36 + 11,241 * 0.62 + 40,424 * 1.50)/12 = 5,768 CF

SUMMARY OF VOLUMES AND PEAK DISCHARGE RATES:

	V100	V10	Q100	Q10
EXISTING	6,033	2,900	4.45	2.58
DEVELOPED	9,500	5,768	5.81	3.78
INCREASE	3,467	2,868	1.36	1.20

OFF-SITE FLOW:

There is no off-site flow associated with this site. The property to the north is graded to drain to Trumbull Avenue, SE.

DOWNSTREAM CAPACITY:

THE SITE WILL DRAIN INTO SOUTHERN AVENUE WHICH IS PAVED BUT DOES NOT HAVE CURB AND GUTTER. THE SITE DISCHARGE WILL ENTER SOUTHERN AVENUE AND BE CONVEYED BY THE ROADSIDE DITCHES TO MOON AVENUE WHICH DOES HAVE CURB AND GUTTER AND A STORM DRAINAGE SYSTEM. THERE IS A FLOOD ZONE IN MOON STREET BEGINNING NORTH OF TRUMBULL AVENUE. A 54" RCP STORM DRAIN LINE HAS BEEN INSTALLED IN MOON STREET PARALLEL TO THE EXISTING 36" RCP STORM DRAIN LINE AND THE THE TWO LINES ARE INTERCONNECTED AT MANHOLES. THE NEW LINE IS A "WASH" LINE FOR THE CITY RESERVOIRS AT GARCIA AND TRUMBULL. IT IS IMPORTANT THAT THE DISCHARGE FROM THE DEVELOPED SITE NOT BE INCREASED SIGNIFICANTLY OVER THE EXISTING PEAK DISCHARGE. THE EXISTING PEAK DISCHARGE IS 4.45 CFS. DEVELOPED RUNOFF IS 5.81 CFS AND THE INCREASE IS 1.36 CFS. IN ORDER TO LIMIT SITE DISCHARGE TO THE EXISTING 4.45 CFS, IT IS PROPOSED TO HAVE A DETENTION POND WEST OF BUILDING NO. 1 WITH SPILLWAY AND POSITIVE DISCHARGE PIPES. THE AREA AVAILABLE IS LIMITED BUT IT WILL BE POSSIBLE TO LIMIT THE FLOW TO THE EXISTING 100-YEAR PEAK DISCHARGE. IT WILL ALSO BE NECESSARY TO LINE THE POND BOTTOM WITH AN IMPERVIOUS POND LINER SINCE THE POND WILL BE CLOSER THAN 15 FEET FROM THE BUILDING AND THE PROPERTY LINE.

POND CALCULATIONS

HYDROGRAPH FOR SMALL WATERSHEDS:

$t_B = (2.107 * E * A_T / Q_P) - (0.25 A_D / A_T)$

E = 0.08 * 0.92 + 0.20 * 1.29 + 0.72 * 2.36 = 2.03 in.

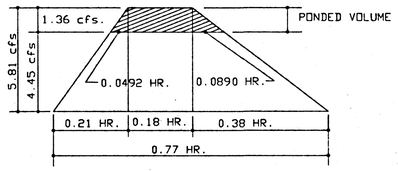
A_T = 1.2884 AC A_D = 0.9280 AC Q_P = 5.81 CFS

$t_B = (2.107 * 2.03 * 1.2884 / 5.81) - (0.25 * 0.9280 / 1.2884) = 0.77$ HR.

$t_P = (0.7 * t_C) + ((1/6 - (A_D / A_T))/12)$

$t_P = (0.7 * 0.2) + ((1.6 - (0.9280 / 1.2884)) / 12) = 0.21$ HR.

Continue the Peak 0.25 (A_D / A_T) = 0.25 (0.9280/1.2884) = 0.18 HR.



POND VOLUME: V = [(0.0492 * 1.36)1/2 + (0.18 * 1.36) + (0.0890 * 1.36)1/2]* 3600

V = 1,220 CF

ACTUAL POND VOLUME:

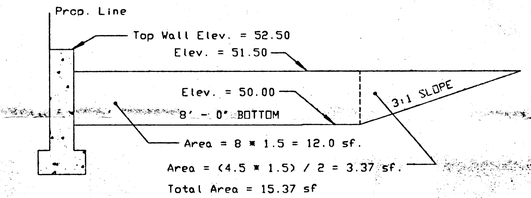
Ponding will take place along the west and north sides of Building No. 1 and in the silting basin.

North side of Building No. 1: Use Pyramid Equation, V = BH/3 B = Surface Area = 216 sf.

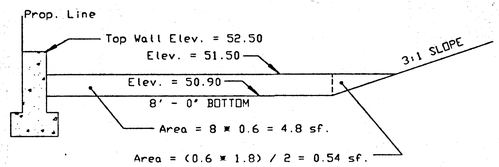
H = Depth at west end = 51.4 - 50.8 = 0.6 ft.

V = (216 * 0.6)/3 = 43 cf

West side of Building No. 1: Use Average End Area Method.



Average Area = 10.35 sf
Distance between sections = 85'
Volume = 10.35 X 85 = 880 cf



Sedimentation Basin.

Area = 15 * 15 * 1.5 = 337 cf.

TOTAL ACTUAL POND VOLUME: V = 43 + 880 + 337 = 1260 CF > 1220 CF.

POND POSITIVE DISCHARGE:

Design Q = 4.45 cfs. It is desireable to use a number of small diameter pipes rather than one large one. Use Orifice Equation, $Q = CA(2GH)^{1/2}$ C = 0.6 A = 0.0855 sf for 4" dia. PVC.

H = 1.17' (Vert. dist. between spillway and center of pipe).

$Q = 0.6 * 0.0855 (2 * 32.16 * 1.17)^{1/2} = 0.445$ cfs.

Use 10 each 4" PVC pipes through concrete cutoff wall.

POND OVERFLOW SPILLWAY:

Use Weir Equation, $Q = CLH^{3/2}$ C = 3.0 L = 10.0' H = 0.34' or approx. 4"

$Q = 3.0 * 10.0 * 0.34^{3/2} = 5.95$ cfs > 5.81 cfs.

FLOW AT ANALYSIS POINTS:

East side of Building No. 3 and East Parking Lot. (ANALYSIS POINT 1)

Treat. B = 0.0197 ac. Treat C = 0.0302 ac. Treat. D = 0.1469 ac.

Q = (0.0197 * 2.60 + 0.0302 * 3.45 + 0.1469 * 5.02) = 0.84 cfs

Area South of Building No 3: (ANALYSIS POINT 2)

Treat. B = 0.0241 ac. Treat D = 0.0478 ac.

Q = (0.0241 * 2.60 + 0.0478 * 5.02 = 0.30 cfs (Accum. Sum = 1.14 cfs.)

Area Between Ridges of Building No. 2 and Building No 3: (ANALYSIS POINT 3)

Treat C = 0.0909 ac. Treat. D = 0.2020 ac.

Q = (0.0909 * 3.45 + 0.2020 * 5.02 = 1.33 cfs If the landscaped area S. of the sidewalk is included, Q = 1.43 cfs. (ANALYSIS POINT 3A) (Accum. Sum = 2.57 cfs)

Area in front of Building No. 2: (ANALYSIS POINT 4)

Treat. B = 0.0069 ac. Treat D = 0.0647 ac.

Q = (0.0069 * 2.60 + 0.0647 * 5.02 = 0.34 cfs (Accum. Sum = 2.91 cfs)

Area between Buildings No 1 and No. 2 and W half of Building No. 2: (ANALYSIS POINT 5)

Treat C = 0.0559 ac. Treat. D = 0.2515 ac

Q = (0.0559 * 3.45 + 0.2515 * 5.02 = 1.46 cfs (Accum. Sum = 4 37 cfs)

Area north of Building No 1:(ANALYSIS POINT 6)

Treat C = 0.0379 ac. Treat. D = 0.1010 ac

Q = (0.0379 * 3.45 + 0.1010 * 5.02 = 0.64 cfs (Accum. Sum = 5.01 cfs)

Area west of Building No 1:(ANALYSIS POINT IS POND)

Treat C = 0.0725 ac. Q = 0.0725 X 3.45 = 0.25 cfs

Area South of Building No 1:(ANALYSIS POINT IS POND)

Treat. C = 0.0126 ac. Treat D = 0.1010 ac.

Q = (0.0126 * 3.45 + 0.1010 * 5.02 = 0.55 cfs (Accum. Sum = 5.81 cfs)

CHANNEL FLOW:

CHANNEL NO. 1 Channel at SE corner of Building No. 3

Q = 0.84 (Design Flow) $Q = CLH^{3/2}$ L = 2'/(CH$^{3/2}$) C = 3.0

H = 0.4' L = 0.84 / (3.0 * 0.4$^{3/2}$) = 1.10 Use 1.5'

Check Capacity by Manning's Equation. $Q = A(1.486/N)R^{2/3} S^{1/2}$

N = 0.013 S = 0.0020 ft/ft A = 0.4 * 1.5 = 0.6 sf. P = 2.3'

R = A/P = 0.26 Q = 0.6(1.486/0.013)(0.26)$^{2/3}$ (0.002)$^{1/2}$ = 1.25 cfs.

CHANNEL NO. 2:

Channel between Building No. 2 and Building No. 3, east end.
Q = 1.23 cfs Based on calcs for Channel No. 1, 1.5' is adequate.

CHANNEL NO. 3:

Channel between Building No. 2 and Building No. 3, w/ SW culvert.
Q = 1.33 cfs Based on calcs for Channel No. 1, 2.0' is adequate.

CHANNEL NO. 4:

Channel between Building No. 2 and Building No. 3, West of Junction.
Q = 2.57 cfs Use Manning's Equation. Try 2.0' Channel,
Flow Depth = 0.45 A = 0.9 sf P = 2.9' R = 0.31

Q = 0.9 (1.486 / 0.013)(0.31)$^{2/3}$ (0.005)$^{1/2}$ = 3.33 cfs (Adequate).

CHANNEL NO. 5:

Channel near SW corner of Building No. 2. Q = 2.91 cfs.
Based on Calcs. for Channel No. 4, 2.0' Channel is Adequate.

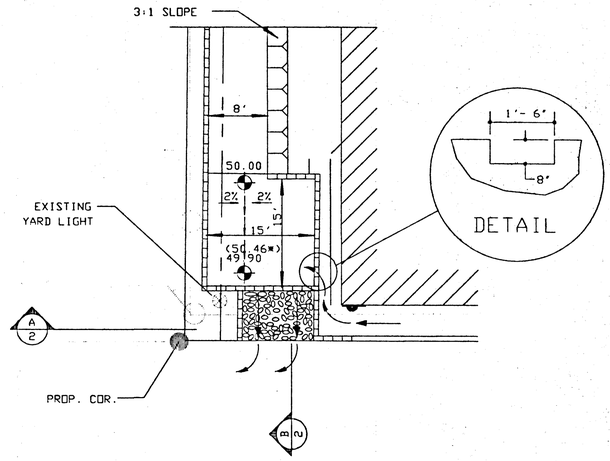
CHANNEL NO. 6:

North side of Building No. 1. Q = 5.01 cfs. D = 0.9'

Use Manning's Equation. V-shaped Channel with 3:1 side slopes.

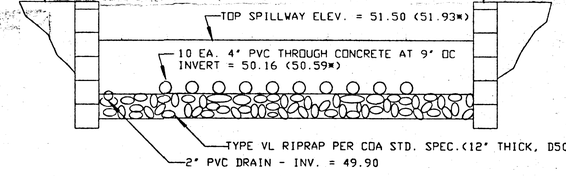
A = 2.43 P = 5.69' R = 0.43 N = 0.023 (Gravel).

Q = 2.43 (1.486 / 0.023) (0.43)$^{2/3}$ (0.0050)$^{1/2}$ = 6.32 cfs > 5.01 cfs.



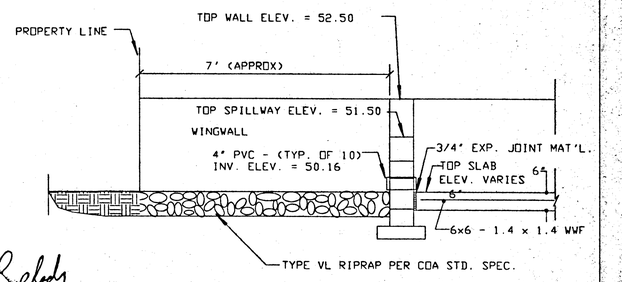
SEDIMENTATION BASIN AND POND DISCHARGE STRUCTURE DETAIL

1" = 10'



SECTION A - A SPILLWAY ELEVATION

1/2" = 1' - 0"



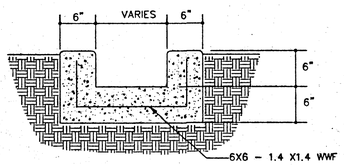
SECTION B - B SPILLWAY SECTION

1/2" = 1' - 0"

EROSION CONTROL REQUIREMENTS:

The Contractor shall be responsible for compliance with the following:

1. No sediment-bearing water shall be allowed to discharge from the site during construction.
2. During grading operations and until the project has been completed, all adjacent property rights-of-way, and easements shall be protected from flooding by runoff from the site.
3. Should the contractor fail to prevent sediment-bearing water from entering public right-of-way, he shall promptly renove from the public right-of-way any and all sedimentation originating from the site.
4. Control of sediment-bearing waters will be accomplished by use of a compacted earth berm of adequate height. The berm shall be located along the downstream perimeter of the property.



CONCRETE CHANNEL DETAIL

1" = 1'-0"

FRANK D. LOVELADY, P.E.
300 ALAMOSA ROAD NW
ALBUQUERQUE, NEW MEXICO 87107
(505)345-2267

DRAINAGE CALCULATIONS
3 UNIT WAREHOUSING
LOT 10A, BLOCK 52 & 53
SKYLINE HEIGHTS SUBDIVISION
ALBUQUERQUE, NEW MEXICO

SHEET 2 OF 2

Designed	Drawn	Checked	Scale	Date	Job No.
FDL	FDL	FDL	1" = 20'	JUNE, 1997	529

BUZCERT2.DWG(6/4/97)

KEYED NOTES:

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4. ROOF SLOPE.
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6. OVERHEAD DOOR.
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8. EXIST. STD. CURB & GUTTER.
9. EDGE EXIST. ASPHALT PVM'NT.
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12. 1' - 0" CURB OPENING FOR DRAINAGE.
13. 1' - 6" DRAINAGE CHANNEL (SEE DETAIL).
14. 2' - 0" DRAINAGE CHANNEL (SEE DETAIL).
15. SEDIMENTATION BASIN AND POND OUTFALL STRUCTURE. (SEE DETAIL, SHEET 2).
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17. DOWNSPOUT (TYP. OF 4 EACH SIDE).
18. 2' x 6' CONCRETE SPLASH PAD.
19. CMU CUTOFF WALL. TOP WALL EL. = 52.50

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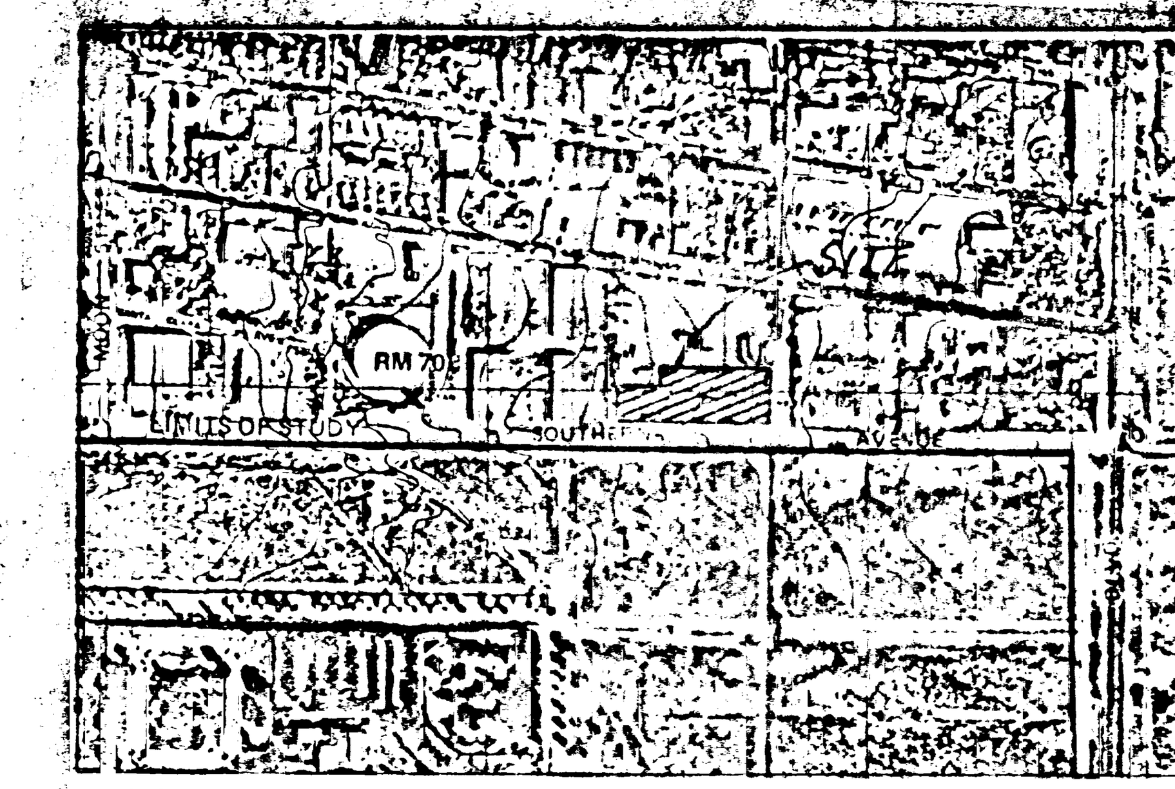
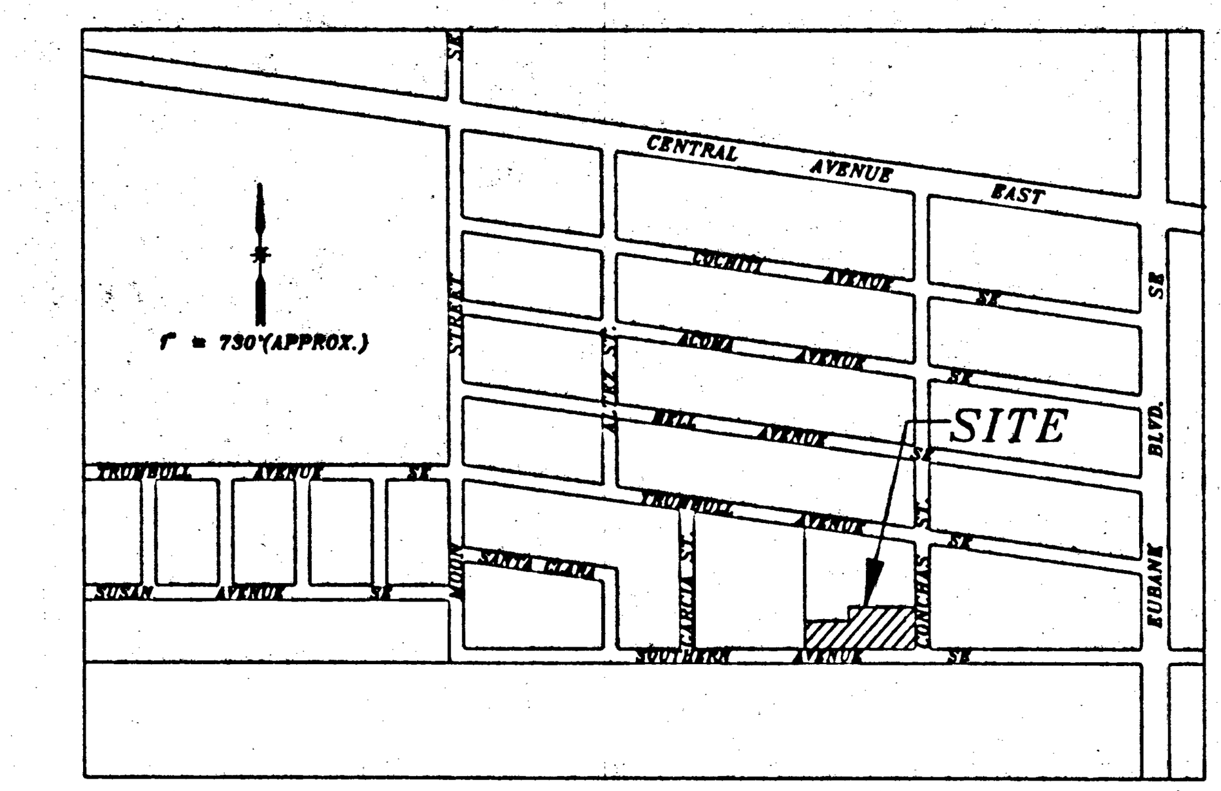


FLOODWAY MAP — PANEL 36 OF 50

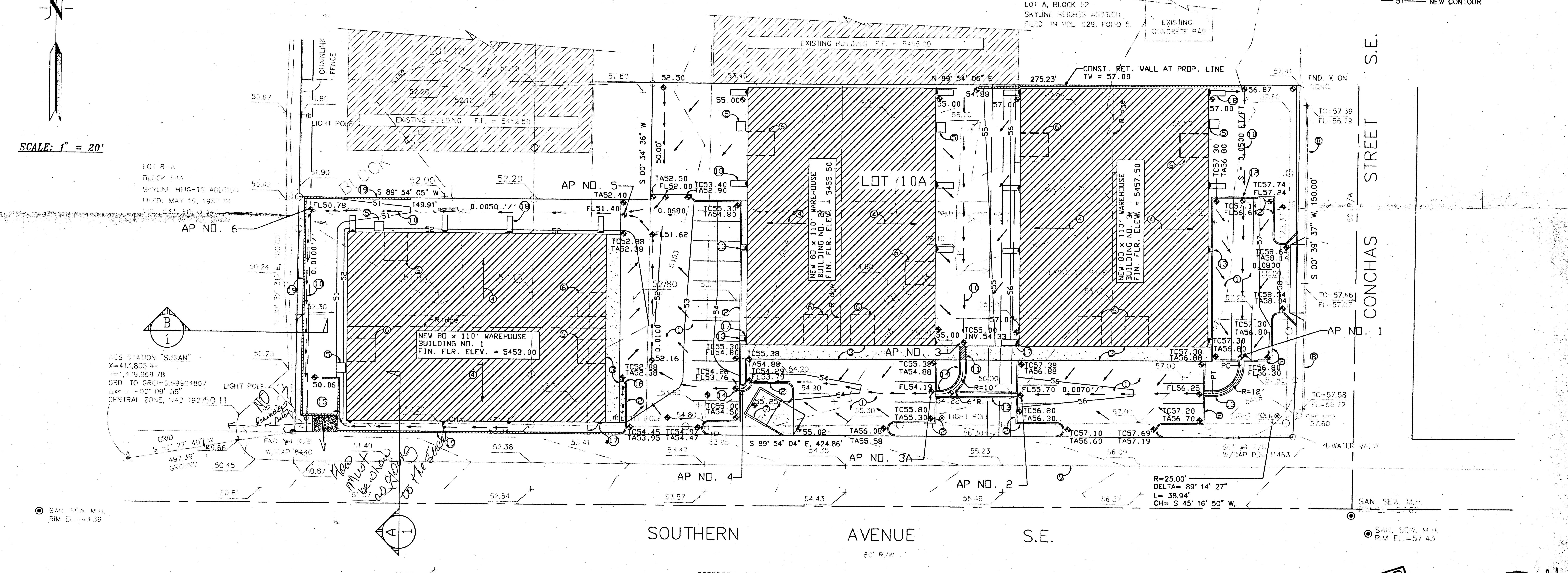


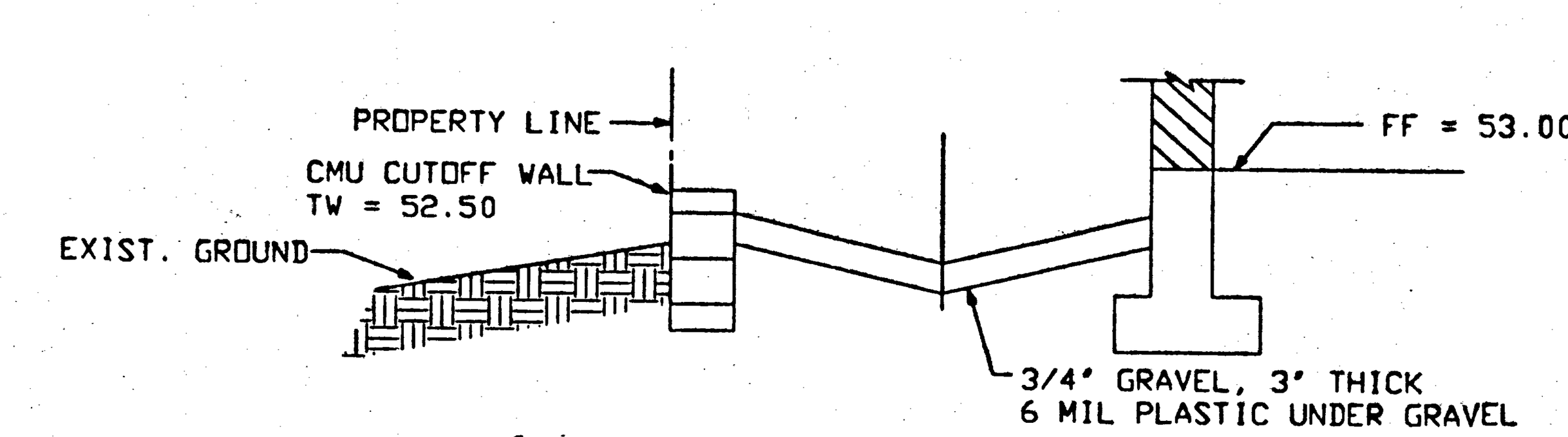
VICINITY MAP — ZONE ATLAS NO. L-20-Z

LEGEND:

- EXISTING SPOT ELEVATION
- ◆ 50.0 NEW SPOT ELEVATION
- 5452 EXISTING CONTOUR
- 51 NEW CONTOUR

SCALE: 1" = 20'





SECTION A-A SWALE
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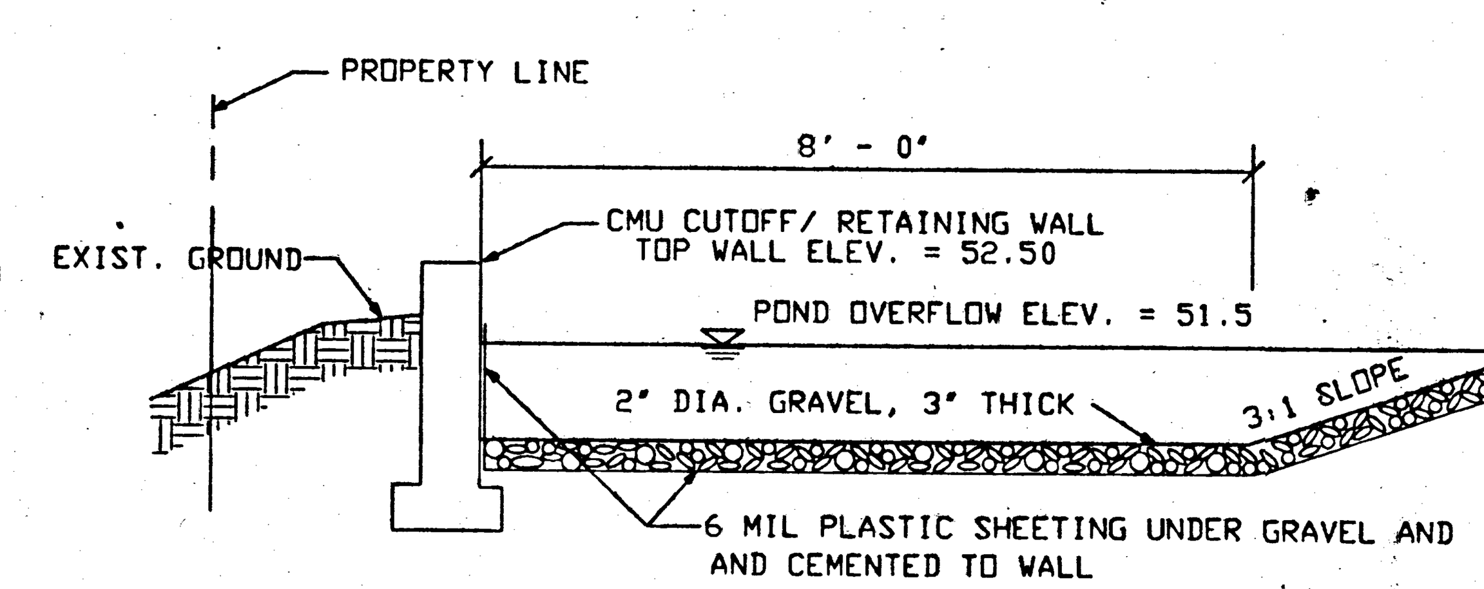


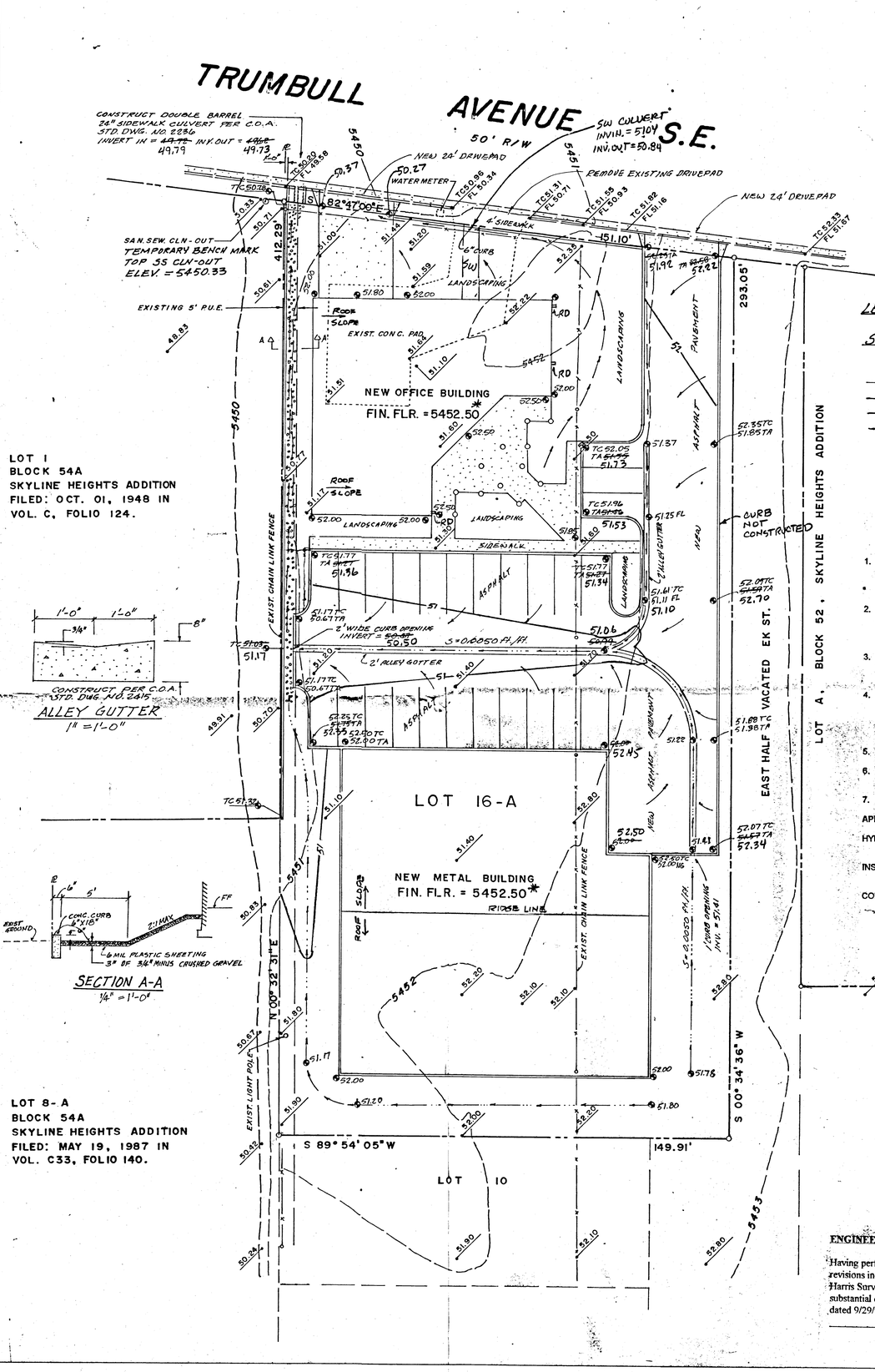
SECTION B-B DETENTION POND
1" = 2' - 0"

RECEIVED SEP 3 1996 HYDROLOGY DIVISION

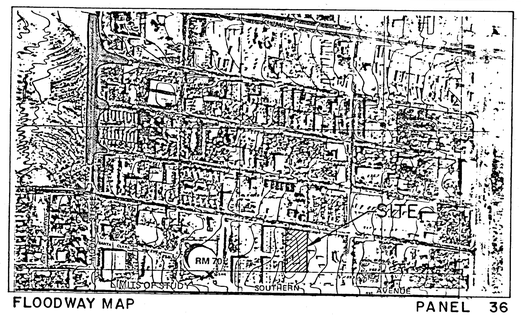
BUZZARD1.DWG(8/30/96)

TOPOGRAPHIC SURVEY PREPARED BY: HARRIS SURVEYING, INC. ALBUQUERQUE, NEW MEXICO

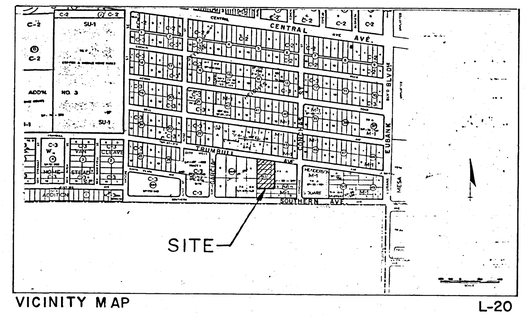
FRANK D. LOVELADY, P.E. 300 ALAMOSA ROAD NW ALBUQUERQUE, NEW MEXICO 87107 (505)345-2267	GRADING AND DRAINAGE PLAN 3 UNIT WAREHOUSING LOT 10A, BLOCK 52 & 53 SKYLINE HEIGHTS SUBDIVISION ALBUQUERQUE, NEW MEXICO	SHEET 1 OF 2
Designed FDL · Drawn FDL · Checked FDL	Scale 1" = 20' · Date AUGUST, 1996 · Job No. 529	



SCALE 1" = 20'



FLOODWAY MAP PANEL 36



VICINITY MAP L-20

LEGEND

SYMBOL	DESCRIPTION
52.23 / 5222	EXISTING SPOT ELEVATION AS CONSTRUCTED SPOT ELEV SHOWN THUS NEW SPOT ELEVATION
5452	EXISTING CONTOUR
52	NEW CONTOUR
	PROPERTY LINE
	SWALE
	SHEET FLOW
TC	TOP OF CURB
TA	TOP OF ASPHALT
*	FIN. FLR. GRADE VERIFIED

CITY OF ALBUQUERQUE
DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY (S.O. 19)
NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT, EXCEPT AS STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986, AS REVISED.
3. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, INC., 260-1990, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO RESIDENTIAL STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. THE ADDRESS OF THE PROPERTY SERVED IS TRUMBULL AVENUE, N.E.

APPROVALS:

HYDROLOGY _____ NAME _____ DATE

INSPECTOR _____ NAME _____ DATE

CONSTRUCTION _____ NAME _____ DATE

ENGINEER'S CERTIFICATION:

Having performed an on-site inspection of the as-constructed facilities, and having made revisions including as-constructed elevations based on actual survey data provided by Harris Surveying Company, Inc., I hereby certify that the as-constructed facilities are in substantial conformance with the approved grading and drainage plan, Engineer's stamp dated 9/29/95, and revised 10/18/95

Frank D. Lovelady — 3-11-97

Frank D. Lovelady, N.M.P.E. 6512 (Date)

EXISTING CONDITIONS:

The site is located on Trumbull Avenue 1,200 feet west of Eubank Boulevard, S.E. The area in which the site is located is presently developed as light industrial. The terrain slopes gently from east to west. Trumbull Avenue is paved with standard curb and gutter. The lot to the east, Lot A, Block 52, is developed with all runoff leaving the lot by a 4" PVC pipe through the curb into Trumbull Avenue, so there is no off-site flow from this lot. The site does not lie within a designated flood hazard zone. There is, however, a flood zone downstream from the site which is a result of an inadequately-sized storm drain line in Moon Street. A parallel 54" diameter wash line was constructed to drain the City of Albuquerque reservoir at Garcia and Southern. This line also has inlets in Moon Street which increases the capacity of the Moon Street storm drain. However, no map revision has been done so the flood hazard area in Moon Street is still considered to exist.

PROPOSED CONDITIONS:

It is proposed to develope the site as shown on the grading plan.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Albuquerque Metropolitan Arroyo Flood Control Authority, January 1993.

PRECIPITATION ZONE:

The site is east of San Mateo Boulevard but west of Eubank Boulevard and is, therefore, in Precipitation Zone 3.

PEAK DISCHARGE PER ACRE, EXCESS PRECIPITATION AND AREAS:

The existing site is in an industrial area and has been graded at one time. It is considered to be Land Treatment "C" The developed land treatment areas are shown in the following table:

Land Treatment	Q 100-yr.	Q 10-yr.	E 100-yr	E 10-year	Existing Site Areas %	Existing Site Areas Sq. Ft.	Existing Site Areas Acres	Developed Site Areas %	Developed Site Areas Sq Ft	Developed Site Areas Acres.
A	1.87	0.58	0.66	0.19	0.0	0,	0.0	0.0	0,	0.0
B	2.60	1.19	0.92	0.36	0.0	0,	0.0	12.9	5,813	0.133
C	3.45	2.00	1.29	0.62	95.4	43,007	0.987	18.5	8,344	0.192
D	5.02	3.39	2.36	1.50	4.6	2,075	0.048	68.6	30,925	0.710
Totals					100.0	45,082	1.035	100.0	45,082	1.035

WEIGHTED UNIT PEAK DISCHARGE VALUES:

Existing
q_{W100} = 0.954 X 3.45 + 0.046 X 5.02 = 3.52 cfs/acre
q_{W10} = 0.954 X 2.00 + 0.046 X 3.39 = 2.06 cfs/acre

Developed
q_{W100} = 0.129 X 2.60 + 0.185 X 3.45 + 0.686 X 5.02 = 4.42 cfs/acre
q_{W10} = 0.129 X 1.19 + 0.185 X 2.00 + 0.686 X 3.39 = 2.85cfs/acre

CONSTRUCTION NOTES:

1. THIS PLAN SHOWS ELEVATIONS AND DISPOSITION OF STORM WATER RUNOFF ONLY. NO DIMENSIONS ARE SHOWN ON THE PLAN. FOR DIMENSIONS OF BUILDING AND PARKING LAYOUT, SEE ARCHITECTURAL SITE PLAN.
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 SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
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.

LEGAL DESCRIPTION:

Present Legal Description:
All of Lots 11 through 16, Block 53 of Skyline Heights Addition together with the west half (W 1/2) of vacated EK Street per quit claim deed filed march 04, 1960 in book D530, Page 551

Legal Description Upon Completion of Replat:
Lot 16-A, Block 53 of Skyline Heights Addition

Revised 9/16/96 Revised 3/11/97

FRANK D. LOVELADY — NEW MEXICO — 6512 — REGISTERED PROFESSIONAL ENGINEER — 9/29/95

REVISED 10/18/95

WEIGHTED EXCESS PRECIPITATION:

Existing
E_{W100} = 0.959 X 1.29 + 0.046 X 2.36 = 1.34 in.
E_{W10} = 0.959 X 0.62 + 0.046 X 1.50 = 0.66 in.

Developed
E_{W100} = 0.129 X 0.92 + 0.185 X 1.29 + 0.686 X 2.36 = 1.98 in.
E_{W10} = 0.129 X 0.36 + 0.185 X 0.62 + 0.686 X 1.50 = 1.19 in.

SUMMARY OF VOLUMES AND PEAK DISCHARGE RATES

	V100	V10	Q100	Q10
EXISTING	5,034	2,480	3.84	2.13
DEVELOPED	7,439	4,471	4.57	2.95
INCREASE	2,405	1,991	0.93	0.82

DOWNSTREAM CAPACITY:

The site will drain into Trumbull Avenue. Approximately 750' west of that point, at Altez Street, there are inlets on both sides of Trumbull Avenue. The inlet on the south side of the street will intercept flow from the site. Any flow passing these inlets will continue down Trumbull Avenue to Moon Street where there are 6 inlets in the intersection. This intersection is not actually in the Moon Street flood zone which begins just south of Bell Street. A 54" RCP storm drain line has been installed in Moon Street parallel to the existing 36" RCP storm drain line and the two lines are interconnected at manholes. The new line is a "wash" line for the City Reservoirs at Garcia and Trumbull. The distance from Altez Street to Eubank Boulevard is roughly 2,100 feet. The site is, therefore, in the lower 1/3 of the watershed and runoff from the site will have entered the storm sewer and passed the flood zone before peak flows arrive. Any continuation of the watershed east of Eubank Boulevard that may have existed will now be eliminated by the storm drain under construction in Eubank Blvd. The site is an infill site. For these reasons, unrestricted discharge is warranted for this site.

OFF-SITE FLOW:

The property south of the site is almost flat but does have some slope in a northwesterly direction. However, it appears to pass south of the SW corner of the site. Lot A to the east drains to Trumbull Street. An area of approximately 45' X 180' = 8,100 sf, or 0.186 acre, may drain into the site just north of the SE corner. It is assumed that the peak discharge per acre is the same Q_W as was used for this site, or 4.42 cfs / acre. Q_{100} = 4.42 X 0.186 = 0.82 cfs.

DRAINAGE CHANNEL CAPACITY:

Design Q = 4.57 cfs + 0.82 cfs - 0.45 cfs = 4.94 cfs (0.45cfs drains directly to the street through the driveway. Use gravel-lined channel, 5.0' wide flat bottom with a concrete containment curb on the west side and a 2:1 gravel-lined side slope on the east side. Depth of flow = 5"
A = 5.0 X 0.41 + (0.41 X 0.82)1/2 = 2.22 sf
P = 0.41 + 5.0 + (0.41^2 + 0.82^2)$^{1/2}$ = 6.33 ft. R = A/P = 2.22 / 6.33 = 0.3507
N = 0.012 for concrete and 0.023 for gravel Nw = (0.41 X 0.013 + 5.92 X 0.023)/6.33 = 0.022
V = (1.486 / 0.022) (0.3507)$^{2/3}$ (0.0050)$^{1/2}$ = 2.37 fps Q = AV = 2.22 X 2.37 = 5.26 cfs
5.26 cfs > 4.94 cfs (Adequate)

SIDEWALK CULVERT CAPACITY:

Design Q = 4.94 cfs Use 2 ea 2'-0" sidewalk culverts. Use Weir Equation Q = CLH$^{3/2}$
C = 3.0 L = 4 H = 0.58' (7") Q = 3.0 x 4 X (0.58)3/2 = 5.30 cfs > 4.94 cfs (Adequate).

EROSION CONTROL REQUIREMENTS:

The contractor shall be responsible for compliance with the following:

1. No sediment-bearing water shall be allowed to discharge from the site during construction.
2. During grading operations and until the project has been completed, all adjacent property, rights-of-way, and easements shall be protected from flooding by runoff from the site.
3. Should the contractor fail to prevent sediment-bearing water from entering public right-of-way, he shall promptly remove from the public right-of-way any and all sedimentation originating from the site.
4. Control of sediment-bearing waters will be accomplished by use of a compacted earth berm of adequate height. The berm shall be located along the downstream perimeter of the property.

RECEIVED MAR 12 1997 HYDROLOGY SECTION

BENCH MARK:

Elevations shown are based on ACS Station "USAN", with and Elevation of 5444.49 Feet.

FRANK D. LOVELADY, P.E. 300 ALAMOSA ROAD N.W. ALBUQUERQUE, N.M. 87107 (505) 345-2267	GRADING AND DRAINAGE PLAN OFFICE/WAREHOUSE COMPLEX FOR ALL-AMERICAN FOAM		SHEET 1 OF 1
Designed: F.D.L. Drawn: STAFF Checked: F.D.L.	Scale: 1"=20'	Date: 9/95	Job No. 500

DRAINAGE CALCULATIONS:

EXISTING CONDITIONS:

The site is located at the N.W. corner of the intersection of Southern Avenue and Conchas Street. Conchas Street is paved with standard curb and gutter. Southern Avenue is paved but without curb and gutter. Southern Avenue is in the corridor for Gibson Boulevard extension. Property north and west of the site is developed. The propterty to the north is developed as warehousing and property to the west is mini warehouse units with asphalt parking. The property slopes from east to west a an average slope of approximately 1.5 percent.

PROPOSED CONDITIONS:

It is proposed to construct warehouses and asphalt parking on the site as shown. Due to the future construction of Gibson Boulevard, construction of curb and gutter on Southern Boulevard is not recommended at this time by Traffic Engineering. Due to downstream storm drainage improvements, and due to the fact that the site is an infill site, unrestricted discharge would otherwise be acceptable except for Southern Avenue being without curb and gutter. A detention pond is proposed to reduce developed discharge to the existing rate.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, For the City of Albuquerque, in cooperation with Bernalillo County, New Mexico and the Albuquerque Metropolitan Arroyo Flood Control Authority, January, 1993.

PRECIPITATION ZONE:

The site is west of the Eubank Boulevard and is, therefore, in Precipitation Zone 3.

LAND TREATMENT	q(cfs/ac) 100-yr.	q(cfs/ac) 10-yr.	E (in) 100-yr.	E (in) 10-yr.	Existing Site Areas %	Existing Site Areas Sq.Ft.	Existing Site Areas Acres	Developed Site Areas %	Developed Site Areas Sq.Ft.	Developed Site Areas Acres
A	1.87	0.58	0.66	0.19	0.0	0	0.0	0.0	0	0.0000
B	2.60	1.19	0.92	0.36	00.0	0	0.0000	8.0	4,458	0.1023
C	3.45	2.00	1.29	0.62	100.0	56,123	1.2884	20.0	11,241	0.2581
D	5.02	3.39	2.36	1.50	00.0	0	0.0000	72.0	40,424	0.9280
Totals					100.0	58,123	1.2884	100.0	56,123	1.2884

PEAK DISCHARGE:

EXISTING CONDITIONS:
Q100 = 1.2884 * 3.45 = 4.45 cfs
Q10 = 1.2884 * 2.00 = 2.58 cfs

DEVELOPED CONDITIONS:
Q100 = 0.1023 * 2.60 + 0.2581 * 3.45 + 0.9280 * 5.02 = 5.81 cfs
Q10 = 0.1023 * 1.19 + 0.2581 * 2.00 + 0.9280 *.3.39 = 3.78 cfs

VOLUME 100-YEAR, 6-HOUR:

EXISTING CONDITIONS:
V100 = (56,123 * 1.29)/12 = 6,033 CF
V10 = (56,123 * 0.62)/12 = 2,900 CF

DEVELOPED CONDITIONS:
V100 = (4,458 * 0.92 + 11,241 * 1.29 + 40,424 * 2.36)/12 = 9,500 CF
V10 = (4,458 * 0.36 + 11,241 * 0.62 + 40,424 * 1.50)/12 = 5,768 CF

SUMMARY OF VOLUMES AND PEAK DISCHARGE RATES:

	V100	V10	Q100	Q10
EXISTING	6,033	2,900	4.45	2.58
DEVELOPED	9,500	5,768	5.81	3.78
INCREASE	3,467	2,868	1.36	1.20

OFF-SITE FLOW:

There is no off-site flow associated with this site. The property to the north is graded to drain to Trumbull Avenue, SE.

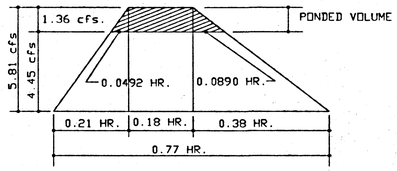
DOWNSTREAM CAPACITY:

THE SITE WILL DRAIN INTO SOUTHERN AVENUE WHICH IS PAVED BUT DOES NOT HAVE CURB AND GUTTER. THE SITE DISCHARGE WILL ENTER SOUTHERN AVENUE AND BE CONVEYED BY THE ROADSIDE DITCHES TO MOON AVENUE WHICH DOES HAVE CURB AND GUTTER AND A STORM DRAINAGE SYSTEM. THERE IS A FLOOD ZONE IN MOON STREET BEGINNING NORTH OF TRUMBULL AVENUE. A 54" RCP STORM DRAIN LINE HAS BEEN INSTALLED IN MOON STREET PARALLEL TO THE EXISTING 36" RCP STORM DRAIN LINE AND THE THE TWO LINES ARE INTERCONNECTED AT MANHOLES. THE NEW LINE IS A "WASH" LINE FOR THE CITY RESERVOIRS AT GARCIA AND TRUMBULL. IT IS IMPORTANT THAT THE DISCHARGE FROM THE DEVELOPED SITE NOT BE INCREASED SIGNIFICANTLY OVER THE EXISTING PEAK DISCHARGE. THE EXISTING PEAK DISCHARGE IS 4.45 CFS. DEVELOPED RUNOFF IS 5.81 CFS AND THE INCREASE IS 1.36 CFS. IN ORDER TO LIMIT SITE DISCHARGE TO THE EXISTING 4.45 CFS, IT IS PROPOSED TO HAVE A DETENTION POND WEST OF BUILDING NO. 1 WITH SPILLWAY AND POSITIVE DISCHARGE PIPES. THE AREA AVAILABLE IS LIMITED BUT IT WILL BE POSSIBLE TO LIMIT THE FLOW TO THE EXISTING 100-YEAR PEAK DISCHARGE. IT WILL ALSO BE NECESSARY TO LINE THE POND BOTTOM WITH AN IMPERVIOUS POND LINER SINCE THE POND WILL BE CLOSER THAN 15 FEET FROM THE BUILDING AND THE PROPERTY LINE.

POND CALCULATIONS

HYDROGRAPH FOR SMALL WATERSHEDS:

$t_B = (2.107 * E * A_T / Q_P) - (0.25 A_D / A_T)$
$E = 0.08 * 0.92 + 0.20 * 1.29 + 0.72 * 2.36 = 2.03$ in.
$A_T = 1.2884$ AC $A_D = 0.9280$ AC $Q_P = 5.81$ CFS
$t_B = (2.107 * 2.03 * 1.2884 / 5.81) - (0.25 * 0.9280 / 1.2884) = 0.77$ HR.
$t_P = (0.7 * t_C) + ((1/6 - (A_D / A_T))/12)$
$t_P = (0.7 * 0.2) + ((1.6 - (0.9280 / 1.2884)) / 12) = 0.21$ HR.
Continue the Peak $0.25 (A_D / A_T) = 0.25 (0.9280/1.2884) = 0.18$ HR.

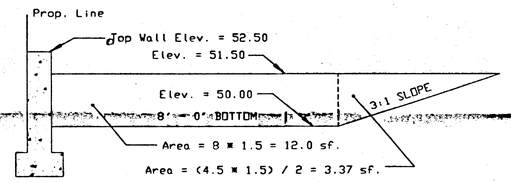


POND VOLUME: V = [(0.0492 * 1.36)1/2 + (0.18 * 1.36) + (0.0890 * 1.36)1/2]* 3600
V = 1,220 CF

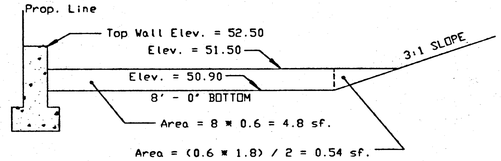
ACTUAL POND VOLUME:

Ponding will take place along the west and north sides of Building No. 1 and in the silting basin.

North side of Building No. 1: Use Pyramid Equation, V = BH/3 B = Surface Area = 216 sf.
H = Depth at west end = 51.4 - 50.8 = 0.6 ft.
V = (216 * 0.6)/3 = 43 cf
West side of Building No. 1: Use Average End Area Method.



Average Area = 10.35 sf
Distance between sections = 85'
Volume = 10.35 X 85 = 880 cf



Sedimentation Basin.
Area = 15 * 15 * 1.5 = 337 cf.

TOTAL ACTUAL POND VOLUME: V = 43 + 880 + 337 = 1260 CF > 1220 CF.

POND POSITIVE DISCHARGE:

Design Q = 4.45 cfs. It is desireable to use a number of small diameter pipes rather than one large one. Use Orifice Equation, $Q = CA(2GH)^{1/2}$ C = 0.6 A = 0.0855 sf for 4" dia. PVC.
H = 1.17' (Vert. dist. between spillway and center of pipe).
$Q = 0.6 * 0.0855 (2 * 32.16 * 1.17)^{1/2} = 0.445$ cfs.
Use 10 each 4" PVC pipes through concrete cutoff wall.

POND OVERFLOW SPILLWAY:

Use Weir Equation, $Q = CLH^{3/2}$ C = 3.0 L = 10.0' H = 0.34' or approx. 4"
$Q = 3.0 * 10.0 * 0.34^{3/2} = 5.95$ cfs > 5.81 cfs.

FLOW AT ANALYSIS POINTS:

East side of Building No. 3 and East Parking Lot. (ANALYSIS POINT 1)
Treat. B = 0.0197 ac. Treat C = 0.0302 ac. Treat. D = 0.1469 ac.
Q = (0.0197 * 2.60 + 0.0302 * 3.45 + 0.1469 * 5.02) = 0.84 cfs

Area South of Building No 3: (ANALYSIS POINT 2)
Treat. B = 0.0241 ac. Treat D = 0.0478 ac.
Q = (0.0241 * 2.60 + 0.0478 * 5.02 = 0.30 cfs (Accum. Sum = 1.14 cfs.)

Area Between Ridges of Building No. 2 and Building No 3: (ANALYSIS POINT 3)
Treat C = 0.0909 ac. Treat. D = 0.2020 ac.
Q = (0.0909 * 3.45 + 0.2020 * 5.02 = 1.33 cfs If the landscaped area S. of the sidewalk is included, Q = 1.43 cfs. (ANALYSIS POINT 3A) (Accum. Sum = 2.57 cfs)

Area in front of Building No. 2: (ANALYSIS POINT 4)
Treat. B = 0.0069 ac. Treat D = 0.0647 ac.
Q = (0.0069 * 2.60 + 0.0647 * 5.02 = 0.34 cfs (Accum. Sum = 2.91 cfs)

Area between Buildings No 1 and No. 2 and W. half of Building No. 2: (ANALYSIS POINT 5)
Treat C = 0.0559 ac. Treat. D = 0.2515 ac.
Q = (0.0559 * 3.45 + 0.2515 * 5.02 = 1.46 cfs (Accum. Sum = 4.37 cfs)

Area north of Building No 1:(ANALYSIS POINT 6)
Treat C = 0.0379 ac. Treat. D = 0.1010 ac.
Q = (0.0379 * 3.45 + 0.1010 * 5.02 = 0.64 cfs (Accum. Sum = 5.01 cfs)

Area west of Building No 1:(ANALYSIS POINT IS POND)
Treat C = 0.0725 ac. Q = 0.0725 X 3.45 = 0.25 cfs

Area South of Building No 1: (ANALYSIS POINT IS POND)
Treat. C = 0.0126 ac. Treat D = 0.1010 ac.
Q = (0.0126 * 3.45 + 0.1010 * 5.02 = 0.55 cfs (Accum. Sum = 5.81 cfs)

CHANNEL FLOW:

CHANNEL NO. 1 Channel at SE corner of Building No. 3.
Q = 0.84 (Design Flow) $Q = CLH^{3/2}$ $L = Q/(CH^{3/2})$ C = 3.0
H = 0.4' L = 0.84 / (3.0 * $0.4^{3/2}$) = 1.10' Use 1.5'
Check Capacity by Manning's Equation. $Q = A(1.486/N)R^{2/3} S^{1/2}$
N = 0.013 S = 0.0020 ft/ft A = 0.4 * 1.5 = 0.6 sf. P = 2.3'
R = A/P = 0.26 $Q = 0.6(1.486/0.013)(0.26)^{2/3} (0.002)^{1/2} = 1.25$ cfs.

CHANNEL NO. 2:
Channel between Building No. 2 and Building No. 3, east end.
Q = 1.23 cfs Based on calcs for Channel No. 1, 1.5' is adequate.

CHANNEL NO. 3:
Channel between Building No. 2 and Building No. 3, w/ SW culvert.
Q = 1.33 cfs Based on calcs for Channel No. 1, 2.0' is adequate.

CHANNEL NO. 4:
Channel between Building No. 2 and Building No. 3, West of Junction.
Q = 2.57 cfs Use Manning's Equation. Try 2.0' Channel,
Flow Depth = 0.45 A = 0.9 sf P = 2.9' R = 0.31
$Q = 0.9 (1.486 / 0.013)(0.31)^{2/3} (0.005)^{1/2} = 3.33$ cfs (Adequate).

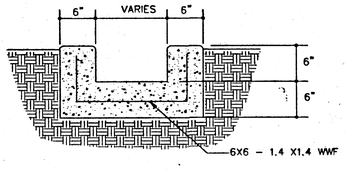
CHANNEL NO. 5:
Channel near SW corner of Building No. 2. Q = 2.91 cfs.
Based on Calcs. for Channel No. 4, 2.0' Channel is Adequate.

CHANNEL NO. 6:
North side of Building No. 1. Q = 5.01 cfs. D = 0.9'
Use Manning's Equation. V-shaped Channel with 3:1 side slopes.
A = 2.43 P = 5.69' R = 0.43 N = 0.023 (Gravel).
$Q = 2.43 (1.486 / 0.023) (0.43)^{2/3} (0.0050)^{1/2} = 6.32$ cfs > 5.01 cfs.

EROSION CONTROL REQUIREMENTS:

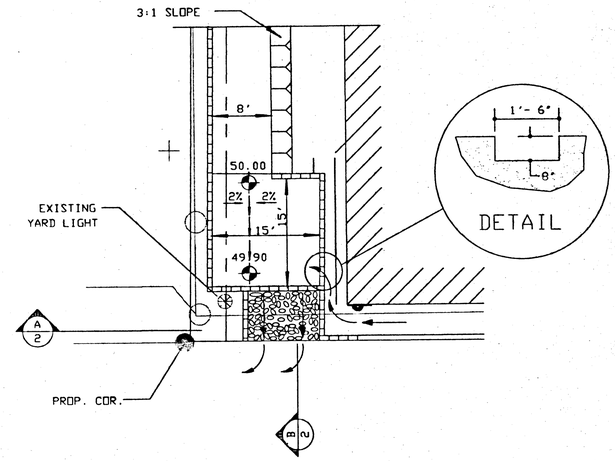
The Contractor shall be responsible for compliance with the following:

1. No sediment-bearing water shall be allowed to discharge from the site during construction.
2. During grading operations and until the project has been completed, all adjacent property rights-of-way, and easements shall be protected from flooding by runoff from the site.
3. Should the contractor fail to prevent sediment-bearing water from entering public right-of-way, he shall promptly remove from the public right-of-way any and all sedimentation originating from the site.
4. Control of sediment-bearing waters will be accomplished by use of a compacted earth berm of adequate height. The berm shall be located along the downstream perimeter of the property.



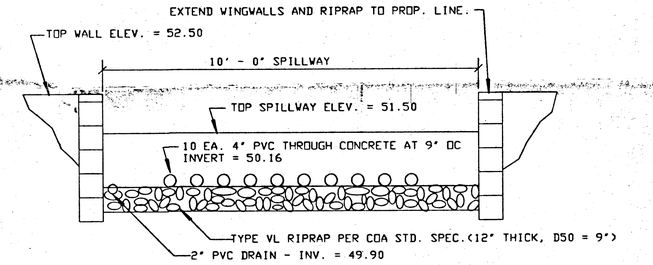
CONCRETE CHANNEL DETAIL

1" = 1'-0"



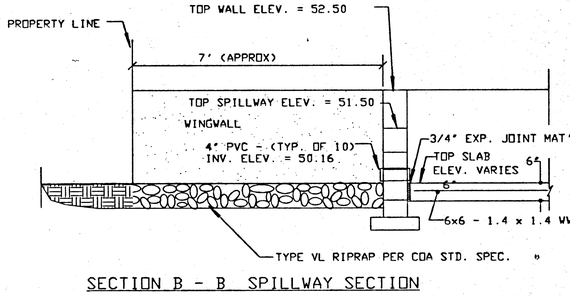
SEDIMENTATION BASIN AND POND DISCHARGE STRUCTURE DETAIL

1" = 10'



SECTION A - A SPILLWAY ELEVATION

1/2" = 1' - 0"



SECTION B - B SPILLWAY SECTION

1/2" = 1' - 0"

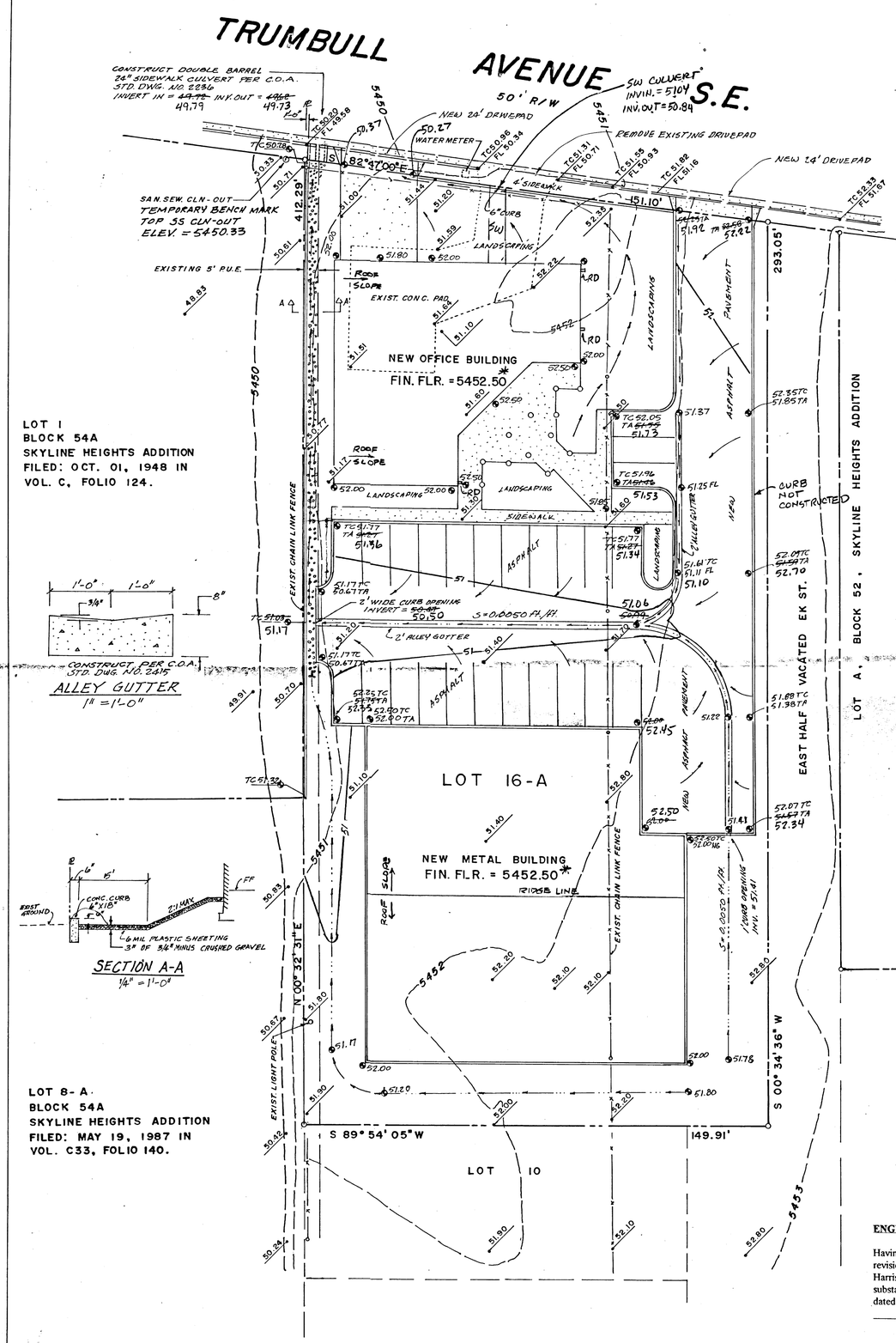
FRANK D. LOVELADY, P.E.
300 ALAMOSA ROAD NW
ALBUQUERQUE, NEW MEXICO 87107
(505)345-2267

DRAINAGE CALCULATIONS
3 UNIT WAREHOUSING
LOT 10A, BLOCK 52 & 53
SKYLINE HEIGHTS SUBDIVISION
ALBUQUERQUE, NEW MEXICO

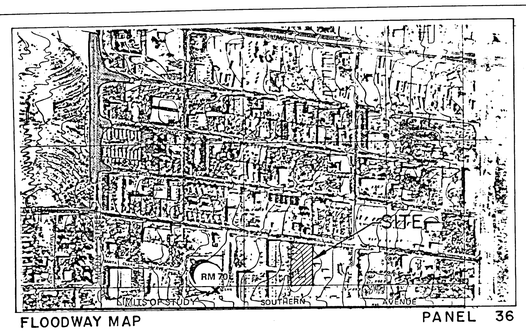
SHEET 2 OF 2

Designed FDL | Drawn FDL | Checked FDL | Scale 1" = 20' | Date AUGUST, 1996 | Job No. 529

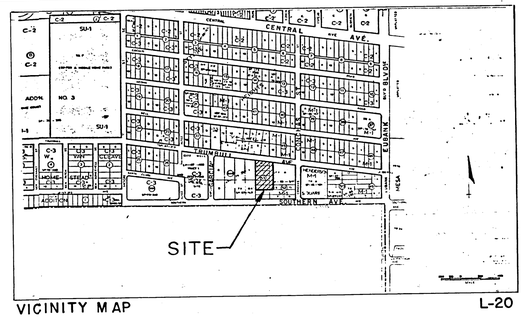
BUZZARD2.DWG(8/30/96)



SCALE 1" = 20'



FLOODWAY MAP PANEL 36



VICINITY MAP L-20

LEGEND

SYMBOL	DESCRIPTION
52.23 / ~~52.16~~	EXISTING SPOT ELEVATION / AS CONSTRUCTED SPOT ELEV SHOWN THUS / ~~NEW SPOT ELEVATION~~
5452	EXISTING CONTOUR
52	NEW CONTOUR
	PROPERTY LINE
	SWALE
	SHEET FLOW
TC	TOP OF CURB
TA	TOP OF ASPHALT
*	FIN. FLR. GRADE VERIFIED

CITY OF ALBUQUERQUE
DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY (S.O. 19)
NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT, EXCEPT AS STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986, AS REVISED.
3. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, INC., 260-1990, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO RESIDENTIAL STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. THE ADDRESS OF THE PROPERTY SERVED IS TRUMBULL AVENUE, N.E.

APPROVALS:

HYDROLOGY _____ NAME _____ DATE

INSPECTOR _____ NAME _____ DATE

CONSTRUCTION _____ NAME _____ DATE

ENGINEER'S CERTIFICATION:

Having performed an on-site inspection of the as-constructed facilities, and having made revisions including as-constructed elevations based on actual survey data provided by Harris Surveying Company, Inc., I hereby certify that the as-constructed facilities are in substantial conformance with the approved grading and drainage plan, Engineer's stamp dated 9/29/95 and revised 10/18/95

Frank D. Lovelady
Frank D. Lovelady, N.M.P.E. 6512 (Date) 3-11-97

Revised 9/14/96 Revised 3/11/97

REVISED 10/18/95

EXISTING CONDITIONS:

The site is located on Trumbull Avenue 1,200 feet west of Eubank Boulevard, S.E. The area in which the site is located is presently developed as light industrial. The terrain slopes gently from east to west. Trumbull Avenue is paved with standard curb and gutter. The lot to the east, Lot A, Block 52, is developed with all runoff leaving the lot by a 4" PVC pipe through the curb into Trumbull Avenue, so there is no off-site flow from this lot. The site does not lie within a designated flood hazard zone. There is, however, a flood zone downstream from the site which is a result of an inadequately-sized storm drain line in Moon Street. A parallel 54" diameter wash line was constructed to drain the City of Albuquerque reservoir at Garcia and Southern. This line also has inlets in Moon Street which increases the capacity of the Moon Street storm drain. However, no map revision has been done so the flood hazard area in Moon Street is still considered to exist.

PROPOSED CONDITIONS:

It is proposed to develope the site as shown on the grading plan.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Albuquerque Metropolitan Arroyo Flood Control Authority, January 1993.

PRECIPITATION ZONE:

The site is east of San Mateo Boulevard but west of Eubank Boulevard and is, therefore, in Precipitation Zone 3.

PEAK DISCHARGE PER ACRE, EXCESS PRECIPITATION AND AREAS:

The existing site is in an industrial area and has been graded at one time. It is considered to be Land Treatment "C" The developed land treatment areas are shown in the following table:

Land Treatment	q 100-yr.	q 10-yr.	E 100-yr	E 10-year	Existing Site Areas %	Existing Site Areas Sq. Ft	Existing Site Areas Acres	Developed Site Areas %	Developed Site Areas Sq Ft	Developed Site Areas Acres.
A	1.87	0.58	0.66	0.19	0.0	0,	0.0	0.0	0,	0.0
B	2.60	1.19	0.92	0.36	0.0	0,	0.0	12.9	5,813	0.133
C	3.45	2.00	1.29	0.62	95.4	43,007	0.987	18.5	8,344	0.192
D	5.02	3.39	2.36	1.50	4.6	2,075	0.048	68.6	30,925	0.710
Totals					100.0	45,082	1.035	100.0	45,082	1.035

WEIGHTED UNIT PEAK DISCHARGE VALUES:

Existing $q_{W100} = 0.954 \times 3.45 + 0.046 \times 5.02 = 3.52$ cfs/acre
$q_{W10} = 0.954 \times 2.00 + 0.046 \times 3.39 = 2.06$ cfs/acre

Developed $q_{W100} = 0.129 \times 2.60 + 0.185 \times 3.45 + 0.686 \times 5.02 = 4.42$ cfs/acre
$q_{W10} = 0.129 \times 1.19 + 0.185 \times 2.00 + 0.686 \times 3.39 = 2.85$cfs/acre

CONSTRUCTION NOTES:

1. THIS PLAN SHOWS ELEVATIONS AND DISPOSITION OF STORM WATER RUNOFF ONLY. NO DIMENSIONS ARE SHOWN ON THE PLAN. FOR DIMENSIONS OF BUILDING AND PARKING LAYOUT, SEE ARCHITECTURAL SITE PLAN.
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 SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
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.

LEGAL DESCRIPTION:

Present Legal Description:
All of Lots 11 through 16, Block 53 of Skyline Heights Addition together with the west half (W 1/2) of vacated EK Street per quit claim deed filed march 04, 1960 in book D530, Page 551

Legal Description Upon Completion of Replat:
Lot 16-A, Block 53 of Skyline Heights Addition

WEIGHTED EXCESS PRECIPITATION:

Existing $E_{W100} = 0.959 \times 1.29 + 0.046 \times 2.36 = 1.34$ in.
$E_{W10} = 0.959 \times 0.62 + 0.046 \times 1.50 = 0.66$ in.

Developed $E_{W100} = 0.129 \times 0.92 + 0.185 \times 1.29 + 0.686 \times 2.36 = 1.98$ in.
$E_{W10} = 0.129 \times 0.36 + 0.185 \times 0.62 + 0.686 \times 1.50 = 1.19$ in.

SUMMARY OF VOLUMES AND PEAK DISCHARGE RATES

	V100	V10	Q100	Q10
EXISTING	5,034	2,480	3.64	2.13
DEVELOPED	7,439	4,471	4.57	2.95
INCREASE	2,405	1,991	0.93	0.82

DOWNSTREAM CAPACITY:

The site will drain into Trumbull Avenue. Approximately 750' west of that point, at Altez Street, there are inlets on both sides of Trumbull Avenue. The inlet on the south side of the street will intercept flow from the site. Any flow passing these inlets will continue down Trumbull Avenue to Moon Street where there are 6 inlets in the intersection. This intersection is not actually in the Moon Street flood zone which begins just south of Bell Street. A 54" RCP storm drain line has been installed in Moon Street parallel to the existing 36" RCP storm drain line and the two lines are interconnected at manholes. The new line is a "wash" line for the City Reservoirs at Garcia and Trumbull. The distance from Altez Street to Eubank Boulevard is roughly 2,100 feet. The site is, therefore, in the lower 1/3 of the watershed and runoff from the site will have entered the storm sewer and passed the flood zone before peak flows arrive. Any continuation of the watershed east of Eubank Boulevard that may have existed will now be eliminated by the storm drain under construction in Eubank Blvd. The site is an infill site. For these reasons, unrestricted discharge is warranted for this site.

OFF-SITE FLOW:

The property south of the site is almost flat but does have some slope in a northwesterly direction. However, it appears to pass south of the SW corner of the site. Lot A to the east drains to Trumbull Street. An area of approximately 45' X 180' = 8,100 sf, or 0.186 acre, may drain into the site just north of the SE corner. It is assumed that the peak discharge per acre is the same q_W as was used for this site, or 4.42 cfs / acre. $Q_{100} = 4.42 \times 0.186 = 0.82$ cfs.

DRAINAGE CHANNEL CAPACITY:

Design Q = 4.57 cfs + 0.82 cfs - 0.45 cfs = 4.94 cfs (0.45cfs drains directly to the street through the driveway. Use gravel-lined channel, 5.0' wide flat bottom with a concrete containment curb on the west side and a 2:1 gravel-lined side slope on the east side. Depth of flow = 5"
A = 5.0 X 0.41 + (0.41 X 0.82)1/2 = 2.22 sf
P = 0.41 + 5.0 + (0.41² +0.82²)^1/2 = 6.33 ft. R = A/P = 2.22 / 6.33 = 0.3507
N = 0.012 for concrete and 0.023 for gravel Nw = (0.41 X 0.013 + 5.92 X 0.023)/6.33 = 0.022
V = (1.486 / 0.022) (0.3507)^2/3 (0.0050)^1/2 = 2.37 fps Q = AV = 2.22 X 2.37 = 5.26 cfs
5.26 cfs > 4.94 cfs (Adequate)

SIDEWALK CULVERT CAPACITY:

Design Q = 4.94 cfs Use 2 ea 2'-0" sidewalk culverts. Use Weir Equation $Q = CLH^{3/2}$
C = 3.0 L = 4 H = 0.58' (7") Q = 3.0 x 4 X (0.58)3/2 = 5.30 cfs > 4.94 cfs (Adequate).

EROSION CONTROL REQUIREMENTS:

The contractor shall be responsible for compliance with the following:

1. No sediment-bearing water shall be allowed to discharge from the site during construction.
2. During grading operations and until the project has been completed, all adjacent property, rights-of-way, and easements shall be protected from flooding by runoff from the site.
3. Should the contractor fail to prevent sediment-bearing water from entering public right-of-way, he shall promptly remove from the public right-of-way any and all sedimentation originating from the site.
4. Control of sediment-bearing waters will be accomplished by use of a compacted earth berm of adequate height. The berm shall be located along the downstream perimeter of the property.

BENCH MARK:

Elevations shown are based on ACS Station "SUSAN", with an elevation of 5439.99 Feet.

RECEIVED MAR 12 1997 HYDROLOGY SECTION

FRANK D. LOVELADY, P.E 300 ALAMOSA ROAD N.W. ALBUQUERQUE, N.M. 87107 (505) 345-2267	GRADING AND DRAINAGE PLAN OFFICE/WAREHOUSE COMPLEX FOR ALL-AMERICAN FOAM					SHEET 1 OF 1
Designed: F.D.L.	Drawn: STAFF	Checked: F.D.L.	Scale: 1"=20'	Date: 9/95	Job No. 500	