

CONCEPTUAL DRAINAGE REPORT FOR
SUNRISE TERRACE UNIT 7

INTRODUCTION AND PROJECT DESCRIPTION

This is a drainage report for Sunrise Terrace Unit 7. It consists of 19.3 acres in southwest Albuquerque to be developed as a residential area. The site planning and design are being done in conjunction with an adjacent property under the same ownership called Sunrise Terrace West, which is in Bernalillo County. Both sites make up 62.6 acres. This report addresses only the portion in the City, Unit 7, which will be developed first. However, Sunrise Terrace West is also analyzed for the fully developed condition due to shared drainage features. Figure 1 is a vicinity map.

The development will be phased such that the City portion will be built first along with erosion and drainage control features for the County portion of the land. This phase is referred to as "Interim." The interim phase also includes extending one half of Eucariz Avenue west to the City Limit. Drainage features to be installed now will be sized for ultimate build-out of the site, both City and County tracts.

The drainage analysis is based on the "Master Drainage Plan for Sunrise Terrace Units 1 and 6 (Master Drainage Plan)," dated March 1995 by Easterling and Associates, Inc. The analysis is also in compliance with "Master Drainage Plan, Sunrise Terrace Units III, IV & V," Revised June 1994, by Ryals Engineering & Construction Services. This report limited the total developed runoff to 1.29 cfs per acre. This number was computed as the "fair share" that all developing lots can release so the capacity of the downstream drainage structures is not exceeded.

Existing drainage on the property is generally from west to east at roughly a 4 percent slope. It is bounded on the north, west and south by undeveloped land. Residential developments or planned residential areas lie to the east. Runoff will flow through the residential area via streets or storm drains eventually draining to the Snow Vista Channel. Runoff on the site will be controlled by a "surge pond" within Unit 7. The flow will be drained through storm drains and bypass the pond. When the required HGL in the storm drain, exceeds the bottom of pond elevation, water will back up into the pond where it will be detained and released at the design rate. A more detailed description can be found in the On-Site Flow section of the report.

The site is not in a flood hazard zone. It is shown on FEMA Floodway Panel 33 which is shown on Figure 2.

METHODOLOGY

Hydrology was determined using the methods described in The City of Albuquerque Development Process Manual (DPM), Section 22.2, Hydrology. The AHYMO, January 1994 version, computer model was used to calculate the flows. The model created previously in the Master Drainage Plan was revised for this project.

Street and storm drain hydraulics are calculated as described in the DPM and meet the City's criteria.

OFF-SITE FLOWS

EXISTING CONDITIONS

Off-site flow drains to the project from the north and west overland or through small existing arroyos to two existing detention and sediment ponds on the project site. Runoff is directed to the ponds via an earthen channel which is also on the site and is directly west of an existing development, Sunrise Terrace Unit 6.

An exception is the City of Albuquerque Westside Satellite Center which now is bermed and has full retention of runoff.

Figure 3 shows the existing and interim condition off-site flow basins.

INTERIM

In this phase runoff from the north and west will drain the same as in the existing condition. However, the earthen channel will be relocated to the west of the project site and drain to the existing pond in the center of Sunrise Terrace Unit 7. The existing pond will require some reconfiguration to allow for lot placement. The other small sedimentation pond on the south side of the site will be eliminated and flows to this pond will be re-routed north to the remaining pond. The drainage features can extend west of the site into Sunrise Terrace West since the owner is the same. See Figure 3 for the contributing basins.

Also, during the interim phase, one half of Eucariz Avenue will be extended west to the City Limit from 106th Street. A 36-inch storm drain will be extended west under a portion of Eucariz Avenue as called for in the Master Drainage Plan. It will extend from the existing 60-inch storm drain at Eucariz Avenue and 106th Street approximately 100 feet. A temporary rundown inlet will be constructed at the upstream end of the storm drain to intercept flow from Basin 402. A ditch will be placed parallel to the new Eucariz Avenue to direct Basin 402 flow to the inlet. The ditch has adequate capacity for the interim flows as shown in Calculation D in the Appendix. The rundown inlet is designed to handle sediment along with the flow.

OUTFALL

Figure 4 shows on-site drainage basins in the fully developed condition. Flow from the City Westside Satellite Center will drain to a controlled discharge and drain a maximum of 1.29 cfs per acre to a proposed storm drain. As shown in Plate 1, the storm drain will intercept flow from the west (Basin 310). Again a controlled discharge of 1.29 cfs/acre will be collected and run through Basin 330 to the pond in Unit 7. Runoff in Basin 330 will also be directed into the storm drain free discharge. The controlled rate from this basin will be taken care of by the Unit 7 pond. See the On-Site Ultimate Section for a description of how the pond functions.

Flow from the north will empty to the storm drain in Eucariz Avenue, which, per the Master Drainage Plan, will be extended west up Eucariz Avenue. As required on all the sites draining ultimately to Snow Vista Channel, a controlled discharge of 1.29 cfs per acre will be necessary.

Table 1 shows flow rates at critical locations. Analysis points are shown on Plate 1

Table 1 OFF-SITE FLOW RATES						
Analysis Point	Existing Flow Rate (cfs)		Interim Flow Rate (cfs)		Fully Developed* Flow Rate (cfs)	
	100 year	10 year	100 year	10 year	100 year	10 year
1	124	24	135	26	281.4	218.8
2	62	12	62	12	129.9	129.9
3	0	0	0	0	58.6	58.6
4	N/A - included in AP 5		10	2	35.5**	35.5
5	31	6	22	4	55.9**	55.9

* Discharge limited to 1.29 cfs/acre in accordance with Master Drainage Plan for Sunrise Terrace Units 1 and 6.

** Runoff drains to Eucariz Avenue Storm Drain

ON-SITE FLOW

EXISTING

Drainage is generally from west to east to the on-site earth channel and detention ponds described above. Runoff ponded in the large pond in the center of the site has a standpipe

outlet to a 24-inch storm drain in Connemara Avenue. The storm drain runs east in Connemara to Tanager Drive where it turns to the south to the intersection of Tanager and Andalusian Avenue. At this point the 24-inch storm drain empties to a 48-inch storm drain in Andalusian Avenue.

Runoff ponded in the smaller pond to the south is collected and also drained by a standpipe to the 48-inch storm drain in Andalusian Avenue. The 48-inch pipe runs east along Andalusian Avenue to eventually tie to the Snow Vista Channel.

Figure 1, in the map pocket, shows the existing ponds and storm drain features.

INTERIM

This site will be developed to the City Limit as shown on Plate 1 in the map pocket. Runoff will be directed to the pond shown in the center of the site by way of street drainage and storm drains. The pond is in the same location as the existing, however, it will be reconfigured somewhat to allow for the placement of lots.

Flow from basins 401, 404 and 405 will drain to the pond from the west. A berm/ditch will be built on the west side of the City limit to collect this runoff and direct it to the pond. See Figure 3. The land to the west of the City limit is Sunrise Terrace West and is under the same ownership as Unit 7.

The existing standpipe in the central pond will remain. A new 36-inch storm drain will tie to it as shown in Plate 1, draining Basin 170. This will function as a surge system. Flow up to the capacity of the 24-inch will drain uncontrolled. When the system reaches the design level of 21 cfs, runoff will surcharge into the pond. Another structure will be required in conjunction with the 36-inch pipe to allow flow to surcharge into the pond because the existing standpipe does not have the capacity. The outflow will drain through the 24-inch pipe as described in the above section.

The 24-inch surge system will be supplemented by an outlet to a storm drain to the south along 110th Street. Under fully developed conditions, this outlet will also function as a surge system. In the interim it will function as a standard pipe outlet. Ultimately the pipe in 110th Street will drain 197.5 cfs and will be sized accordingly even though under interim conditions this will be oversized. The pipe will be either a 60-inch or a 54-inch pipe depending on the final grading of 110th Street. A calculation sheet in the appendix of the report shows a comparison of the two sizes and the requirements for each. This pipe will drain from north to south although 110th Street drains in the opposite direction.

The 110th Street storm drain will be extended west in the future to collect flow from the County portion of the project and off-site basins to the west and northwest. Only a stub out will be built as part of this project.

Flow from Basin 320 will free discharge into the 110th Street storm drain in the interim

condition. Basin 321 also drains uncontrolled into the 24-inch storm drain in Tanager Drive and into the Andalusian storm drain. While this basin is not strictly a part of this project, it is included in the Master Drainage Report as part of the area associated with the Unit 7 pond so it is considered in these calculations.

As shown in Table 2, at Analysis Point 10 the 100-year outflow is 85.2 cfs to the Andalusian storm drain. The Master Drainage Report shows an ultimate rate at this point of 191 cfs making the interim system well within the capacity of the drainage outfall system.

ULTIMATE

The entire (both City and County) site consists of 68.40 acres. See Plate 1 in the map pocket. Using the "fair share" flow release rate of 1.29 cfs/acre multiplied by 68.40 acres, under fully developed the site can release 88.24 cfs. This area includes the county portion which will drain to the Unit 7 pond and Basin 321 which has already been built with free discharge to the existing Tanager Road storm drain. Basin 321 was not accounted for in the previous AHYMO model so must be accounted for now.

A maximum outflow of 197.5 cfs was computed for the fully developed project site. Calculation sheet A in the appendix shows this calculation in detail.

Previously per the Master Drainage Plan, 23 cfs was to drain to the Eucartz storm drain. Under this plan very little flow will be discharged to the Eucartz Avenue storm drain. All on site flow will be directed to the pond or to the storm drains. Runoff will travel overland in the streets to storm drain systems discharging to the pond.

The Unit 7 pond is to act as a Surge Pond. Flow will empty to the two outflow storm drains up to the design rate. At this point flow will back up into the pond. When the peak flow drops the flow will then drain out of the pond. Benefits of the surge pond include:

- low flows will drain quickly through the storm drain
- the pond will only be wet during larger storm events
- the pond can be smaller since it does not store the entire storm volume - the volume of runoff up to the design outflow when water starts accumulating is drained in the storm drain - the pond only has to store the peak portion of the hydrograph

Basin 320 is downstream of the pond inflow and will drain freely out the 110th Street storm drain in smaller storm events. As noted earlier this storm drain will carry 197.5 cfs. When this flow is reached and flow is surcharging into the pond, the storm drain will be under pressure and runoff from Basin 320 will not be able to drain into the pipe. Since 110th

Street will be graded to drain north, runoff will drain overland in the street to the pond.

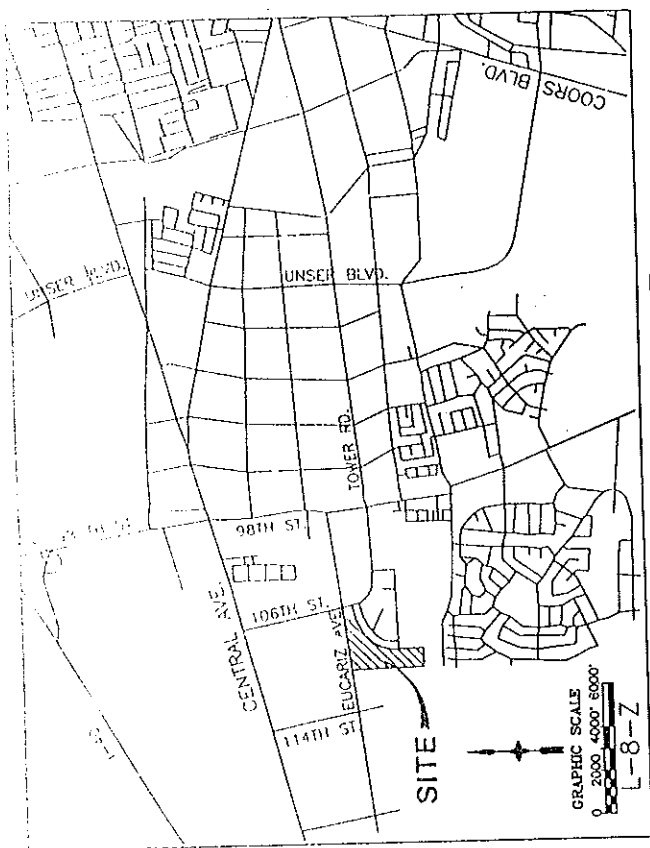
**Table 2
ON-SITE FLOW RATES**

Analysis Point	Interim Flow Rate (cfs)		Fully Developed * Flow Rate (cfs)	
	100 year	10 year	100 year	10 year
6	0	0	292.3	225.4
7	76.0	24.9	197.2	196.7
8	57.4	34.6	57.4	34.6
9	16.3	16.3	16.3	16.3
10	85.2	32.1	216.9	208.7

* Discharge limited to 1.29 cfs/acre in accordance with Master Drainage Plan for Sunrise Terrace Units 1 and 6.

CONCLUSION

Sunrise Terrace West will be developed with single family homes in a manner that complies with the Master Drainage Plan for the area as well as City criteria. Phased construction will also comply in a logical way that fits with the existing conditions.



VICINITY MAP

DRAINAGE REPORT
FOR SUNRISE TERRACE
UNIT 7

VICINITY MAP

FIGURE 1

Gardner

25 X

e

25 X

NOTE:

THE SPILLWAY IS 5258.00. THE MAXIMUM WATER SURFACE FOR A 100 YEAR STORM IS 5257.71. ATTACHED IS THE AHYMO INFLOW HYDROGRAPH (PER THE PREVIOUSLY APPROVED DRAINAGE REPORT) AND OUTFLOW HYDROGRAPH (FOR THE MODIFIED POND).

THE PREVIOUS MAXIMUM WATER SURFACE WAS 5257.29.

REVISED GRADING FOR ADDITION
OF LOT 15, BLOCK 2

SUNRISE TERRACE, UNIT 7

Greiner

2 OF 2

25 X 10

REVISION TO AHYMO - STD.DAT OUT

*ADD FLOW FROM 172 TO POND INFLOW HYDROGRAPH
ADD HYD 1D=12 HYD=172.1 ID=18 ID=12
PRINT #10 1D=12 CODE=1

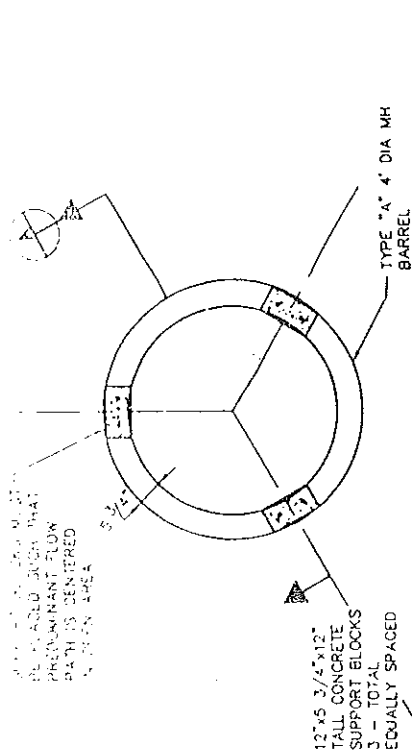
PARTIAL HYDROGRAPH 172.10

RUNOFF VOLUME = 1.88791 INCHES = 4.0875 ACRE-Feet
PEAK DISCHARGE RATE = 168.35 CFS AT 1.500 HOURS BASIN AREA = .0406 SQ. MI.

*REVISE POND TO ADD LOT 3JUN96 - 1FT COVER OVER SD PIPE/ LOWER TO 50
ROUTE RESERVOIR 1D=5 HYDROGRAPH HYD=520.1 INFLOW ID=12 CODE=10
POND

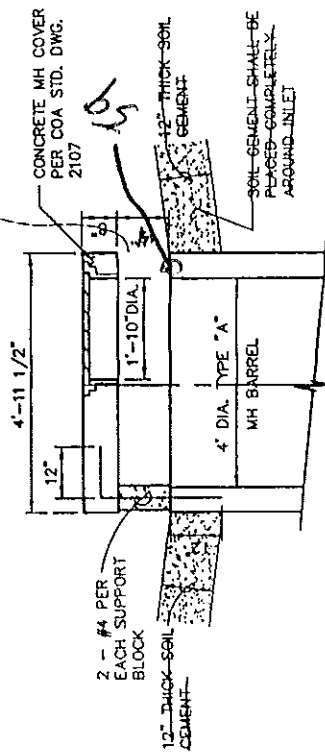
OUTFLOW(CFS)	STORAGE(AC FT)	ELEV(FT)
0	0	5250
3.3	0.2729	5251
10	2.2127	5256
10.1	2.3638	5256.3
10.2	4.6643	5260

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	C.FLOW (CFS)
.00	.00	5250.00	.000	.00
.32	.00	5250.00	.000	.00
.67	.00	5250.00	.000	.00
1.00	.00	5250.00	.000	.00
1.33	8.68	5250.15	.041	.49
1.67	67.08	5256.93	2.756	10.12
2.00	7.48	5257.69	3.229	10.14
2.33	1.69	5257.42	3.062	10.13
2.67	.71	5257.02	2.813	10.12
3.00	.57	5256.60	2.549	10.11
3.33	.24	5256.13	2.279	10.04
3.67	.19	5255.49	2.016	9.32
4.00	.16	5254.87	1.775	8.49
4.33	.16	5254.31	1.556	7.73
4.67	.16	5253.80	1.357	7.05
5.00	.16	5253.33	1.176	6.42
5.33	.17	5252.91	1.012	5.85
5.67	.18	5252.52	.863	5.34
6.00	.20	5252.17	.728	4.87
6.33	.24	5251.86	.606	4.45
6.67	.24	5251.57	.495	4.07
7.00	.24	5251.31	.395	3.72
7.33	.23	5251.08	.303	3.40
7.67	.23	5250.82	.223	2.70
8.00	.22	5250.61	.165	2.00
8.33	.22	5250.45	.124	1.50
8.67	.21	5250.34	.094	1.13
9.00	.21	5250.26	.072	.87
9.33	.20	5250.21	.056	.68
9.67	.20	5250.17	.045	.55
10.00	.20	5250.14	.037	.45



SURGE STRUCTURE DETAIL NTS

PLAN VIEW



SECTION NTS

A

DRAINAGE REPORT
FOR SUNRISE TERRACE
UNIT 7

SURGE STRUCTURE DETAIL

FIGURE 5

Gedner

25 X

DRAINAGE REPORT SUNRISE TERRACE

FC
JN/11
7
INTRODUCTION AND PROJECT DESCRIPTION

This is a drainage report for Sunrise Terrace Unit 7. Albuquerque to be developed as a residential area. are being done in conjunction with an adjacent project called Sunrise Terrace West, which is in Bernalillo County. he must be analyzed together due to shared drainage. The plan consists of 1.3 acres in southwest corner, will be built first. Under the 1994 Flood Insurance Rate Map (FIRM), the area is designated as a flood hazard zone. The project will be built in two phases. The first phase will be built first. The second phase will be built second. The project will be built in two phases. The first phase will be built first. The second phase will be built second.

The two developments will be phased such that Unit 7 will be built first. This phase is referred to as "Interim." Since the site will serve both developments, drainage features it 7. Ultimate build-out of both sites.

The drainage analysis is based on the "Master Drainage Plan" dated March 1995 and 6 (Master Drainage Plan), dated March 1995. The analysis is also in compliance with "Master Drainage Plan," Revised June 1994, by Ryals Engineering & Co. The total developed runoff to 1.29 cfs per acre. The project will be built in two phases. The first phase will be built first. The second phase will be built second.

Existing drainage on the property is generally from the north, west and south. It is bounded on the north, west and south by developed areas or planned residential areas. The project will be built in two phases. The first phase will be built first. The second phase will be built second.

The site is not in a flood hazard zone. It is shown on Figure 2.

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EMA File

HYDROLOGY

Runoff was determined using the methods described in the City of Albuquerque Development Process Manual (DPM), Section 22.2, Hydrology. The AHYMO, January 1994 version, computer model was used to calculate the flows. The model created previously in the Master Drainage Plan was revised for this project. The design storm is the 100 year, 24-hour storm. Ten year flows are also shown per DPM requirements.

Street and storm drain hydraulics are calculated as described in the DPM and meet the City's criteria.

DRAINAGE PLAN

EXISTING CONDITIONS

Off-site flow drains to the project from the north and west overland or through small existing arroyos to two existing detention and sediment ponds on the project site. Runoff is directed to the ponds by an earthen channel built in conjunction with Sunrise Terrace Unit 6.

The City of Albuquerque Westside Satellite Center is within the off-site basin boundary flowing to the site, however, it is currently bermed and has full retention of 100 year runoff.

Figure 3 shows the existing and interim condition off-site flow basins.

Runoff in the large pond in the center of the site has a standpipe outlet to a 24-inch storm drain in Connemara Avenue. The storm drain runs east in Connemara to Tanager Drive where it turns to the south to the intersection of Tanager and Andalusian Avenue and connects to the existing 48-inch storm drain in Andalusian Avenue.

Runoff in the smaller pond to the south is also drained by a standpipe to the 48-inch storm drain in Andalusian Avenue. The 48-inch pipe runs east along Andalusian Avenue to eventually tie to the Snow Vista Channel.

Plate 1, in the map pocket, shows the existing ponds and storm drain features.

INTERIM

This condition is defined as existing condition, with the exception of complete construction of Unit 7. In this phase off-site runoff from the north and west will drain the same as in the existing condition. However, an earthen ditch will be built west of Unit 7 to drain Basins 401, 404 and 405 to the existing pond remaining in the center of Unit 7. The existing pond will require some reconfiguration to allow for its placement. The other small sedimentation pond on the south side of the site will be eliminated and flows to this pond will be re-routed north to the central pond. See Figure 3 for the contributing basins.

1045

The surge capacity of the central pond will remain and function as the pond outlet as required above for existing conditions. The surge capacity of the central pond is 100 cfs as shown in the Master Drainage Report for Unit 5.

An emergency spillway will be constructed from the pond spilling to Connemara Avenue. The spillway is sized to carry the full 100 year flow generated by Sunrise Terrace Unit 7 plus Sunrise Terrace West. See Figure 7 for detail. Overflow will drain out of the pond and into Connemara Avenue and eastward on Connemara. The emergency spillway should only function in an extreme condition. The 100 year water surface during interim conditions is 5256.9 compared to a spillway elevation of 5258. Under ultimate conditions the 100 year water surface elevation is 5257.3. The spillway will be constructed of soil cement. A HEC 2 analysis was modeled and can be found in the appendix.

The Master Drainage Plan calls for a second pond to be built in Unit 7 on the northeast end of the site, approximately where lots 9, 10 and 11 - Block 5 are located. This report revises that plan and eliminates the second pond. Most of the flow will drain to the central pond by storm drains. A small amount of flow (Basin 173) still drains free discharge to Eucariz Avenue.

Unit 7 will be developed to the City Limit as shown on Plate 1 in the map pocket. On-site Basin 172 will drain to the central pond by way of street drainage and storm drains.

On-site basins 171 and 320 drain into a storm drain to be constructed in 110th Street and, during interim conditions, will free discharge into the 48-inch storm drain in Andalusian. The 110th Street storm drain begins as a 36-inch pipe, then is up sized to a 54-inch pipe south of Connemara Avenue. The line is quite oversized for the interim condition but must be built for ultimate development, which includes flow from Sunrise Terrace West.

Two surge structures will be constructed as part of the 110th Street storm drain. Figure 5 is a detail of the planned structures. The surge structures will be built over the 54-inch storm drain line and will allow the pond to function as a surge pond when ultimate development of the surrounding area is done. Under interim conditions they will not be needed.

Basin 321, within Unit 6, also drains uncontrolled into the 24-inch storm drain in Tanager Drive then into the 48-inch Andalusian storm drain. While this basin is not strictly a part of this project, it is included in the Master Drainage Report as part of the area associated with the Unit 7 pond so it is considered in these calculations.

As shown at Analysis Point 10 on Plate 1, the 100-year design flow during interim condition is well under the allowable flow of 191 cfs as called for in the Master Drainage Plan.

The 110th Street storm drain will be extended west in the future. Only stub outs will be built in Connemara Avenue and Andalusian Avenue as part of this project. Stub outs will

25x10

As called for in the Master Drainage Plan, the 110th Street storm drain will be constructed in 110th Street and, during interim conditions, will free discharge into the 48-inch storm drain in Andalusian. The 110th Street storm drain begins as a 36-inch pipe, then is up sized to a 54-inch pipe south of Connemara Avenue. The line is quite oversized for the interim condition but must be built for ultimate development, which includes flow from Sunrise Terrace West.

Two surge structures will be constructed as part of the 110th Street storm drain. Figure 5 is a detail of the planned structures. The surge structures will be built over the 54-inch storm drain line and will allow the pond to function as a surge pond when ultimate development of the surrounding area is done. Under interim conditions they will not be needed.

Basin 321, within Unit 6, also drains uncontrolled into the 24-inch storm drain in Tanager Drive then into the 48-inch Andalusian storm drain. While this basin is not strictly a part of this project, it is included in the Master Drainage Report as part of the area associated with the Unit 7 pond so it is considered in these calculations.

As shown at Analysis Point 10 on Plate 1, the 100-year design flow during interim condition is well under the allowable flow of 191 cfs as called for in the Master Drainage Plan.

The 110th Street storm drain will be extended west in the future. Only stub outs will be built in Connemara Avenue and Andalusian Avenue as part of this project. Stub outs will

... 100 year flow from Sunrise Terrace West ... the controlled discharge from Basins 331 and 332.

Also as part of this project, one half of Eucariz Avenue will be extended west to the City Limit from 106th Street. A 36-inch storm drain will be extended west under a portion of Eucariz Avenue as called for in the Master Drainage Plan. It will extend from the existing 60-inch storm drain at Eucariz Avenue and 106th Street approximately 100 feet. A temporary rundown inlet will be constructed at the upstream end of the storm drain to intercept flow from Basin 402 and street runoff from Eucariz. A ditch will be constructed parallel to Eucariz Avenue to direct flow into the inlet. The ditch has adequate capacity for the interim flows as shown in Calculation D in the Appendix. The rundown inlet is designed to carry sediment along with the flow.

ULTIMATE Off-site drainage basins in the fully developed condition can be seen in Figure 4.

As called for in the Master Drainage Plan, flow from the City Westside Satellite Center will drain at a maximum controlled discharge rate of 1.29 cfs per acre to a proposed storm drain. As shown in Figure 4 and Plate 1, the storm drain will run south along proposed 114th Street to intercept flow from Basin 310. Again a controlled discharge of 1.29 cfs/acre will limit the flow from Basin 310. The planned 42-inch storm drain then runs through Basin 331 in Connemara Avenue to the pond in Unit 7.

Runoff from Sunrise Terrace West (Basins 331 and 332) will drain to the storm drain free discharge. The controlled rate from these basins will be taken care of by the Unit 7 pond.

Sunrise Terrace West, Unit 7 and Basin 321 of Unit 6 consist of 68.40 acres. Using the "fair share" flow release rate of 1.29 cfs/acre multiplied by 68.40 acres, the fully developed site can release 88.24 cfs. Basin 321 was not accounted for in the previous AHYMO model so must be accounted for now.

After taking into account all flow that is free discharging to the downstream system and controlled discharge from off-site basins, a maximum outflow of 171 cfs is the maximum release from the pond. Calculation sheet A in the appendix shows this calculation in detail.

The Unit 7 pond is to act as a Surge Pond after ultimate development occurs in the area. Runoff will be collected in 110th Street and Connemara Avenue storm drains. During low flow conditions water will drain out of the 54-inch line in a normal manner. In larger storms the capacity of the 54-inch pipe will be reached and flow will surge out of the two surge structures into the pond. Hydraulic grade line calculations in the appendix show the actual flows and how this will work.

Benefits of the surge pond include:

- low flows will drain quickly through the storm drain
- the pond can be smaller since it does not store the entire storm volume - the pond only has to store the peak portion of the hydrograph

On-site Basin 320 is downstream of the pond inflow and will drain freely out the 110th Street storm drain in smaller storm events. In larger events, this flow will cause the 54-inch pipe to be flowing at capacity and cause surcharge into the pond. Grades on 110th Street will drain north to the pond so any runoff not collected in the storm drain will drain overland in the street to the pond.

On the north side of the site in the Eucariz Avenue Right of Way, the ditch and rundown will remain until off-site Basins 140 and 150 (Figure 4) are developed and the remaining half of Eucariz Avenue is built. The Master Drainage Plan calls for a 36-inch storm drain in Eucariz Avenue to drain developed basins 140 and 150 and a small amount of flow from Unit 7.

CONCLUSION

Sunrise Terrace West will be developed with single family homes in a manner that complies with the Master Drainage Plan for the area as well as City criteria. Phased construction will also comply in a logical way that fits with the existing conditions.

KEY ANALYSIS POINT DATA SUMMARY

ANALYSIS POINT/ HYDROGRAPH NUMBER	POINT DESCRIPTION	ASSUMED CONVEYANCE	100 YR. PEAK FLOW RATE (CFS) Δ
170.3	FLOW IN STORM DRAIN AT SOUTHWEST CORNER OF BASIN 180	60" DIA. STORM DRAIN	327.7
180.2	FLOW IN STORM DRAIN AT SOUTHWEST CORNER OF BASIN 200	60" DIA. STORM DRAIN	350.9
200.2	OUTFLOW FROM SNOW VISTA CHANNEL POND	10' B.W. TRAP CHANNEL	385.6
270.2	FLOW IN SANDPIPER DRIVE SOUTH OF TOWER ROAD	32' WIDE STREET	23.8 26.5
270.3	FLOW IN TOWER ROAD EAST OF SANDPIPER DRIVE	40' WIDE STREET	27.3
280.1	FLOW IN TOWER ROAD AT SNOW VISTA CHANNEL	40' WIDE STREET	29.1
280.2	FLOW IN SNOW VISTA CHANNEL SOUTH OF TOWER ROAD	10' B.W. TRAP CHANNEL	411.9
330.2	FLOW IN ANDALUSIAN AVENUE STORM DRAIN EAST OF TANAGER	48" DIA. STORM DRAIN	191.5
360.3	FLOW IN OUTFALL FROM SUNRISE TERRACE UNITS III, IV, AND V	72" DIA. STORM DRAIN	383.5 383.6
310.2	FLOW IN SNOW VISTA CHANNEL DOWNSTREAM OF SECTION LINE	10' B.W. TRAP CHANNEL	720.8

DESIGN ANALYSIS REPORT FOR
SUNRISE TERRACE UNIT 7
SUNRISE TERRACE UNIT 8
SUNRISE TERRACE UNIT 9
SUNRISE TERRACE UNIT 10
SUNRISE TERRACE UNIT 11
SUNRISE TERRACE UNIT 12
SUNRISE TERRACE UNIT 13
SUNRISE TERRACE UNIT 14
SUNRISE TERRACE UNIT 15
SUNRISE TERRACE UNIT 16
SUNRISE TERRACE UNIT 17
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SUNRISE TERRACE UNIT 96
SUNRISE TERRACE UNIT 97
SUNRISE TERRACE UNIT 98
SUNRISE TERRACE UNIT 99
SUNRISE TERRACE UNIT 100

SCALE 1" = 100'

CONCEPTUAL DRAINAGE REPORT
FOR SUNRISE TERRACE
UNIT 7

OFFSITE BASIN MAP ULTIMATE DEVELOPMENT

FIGURE 4

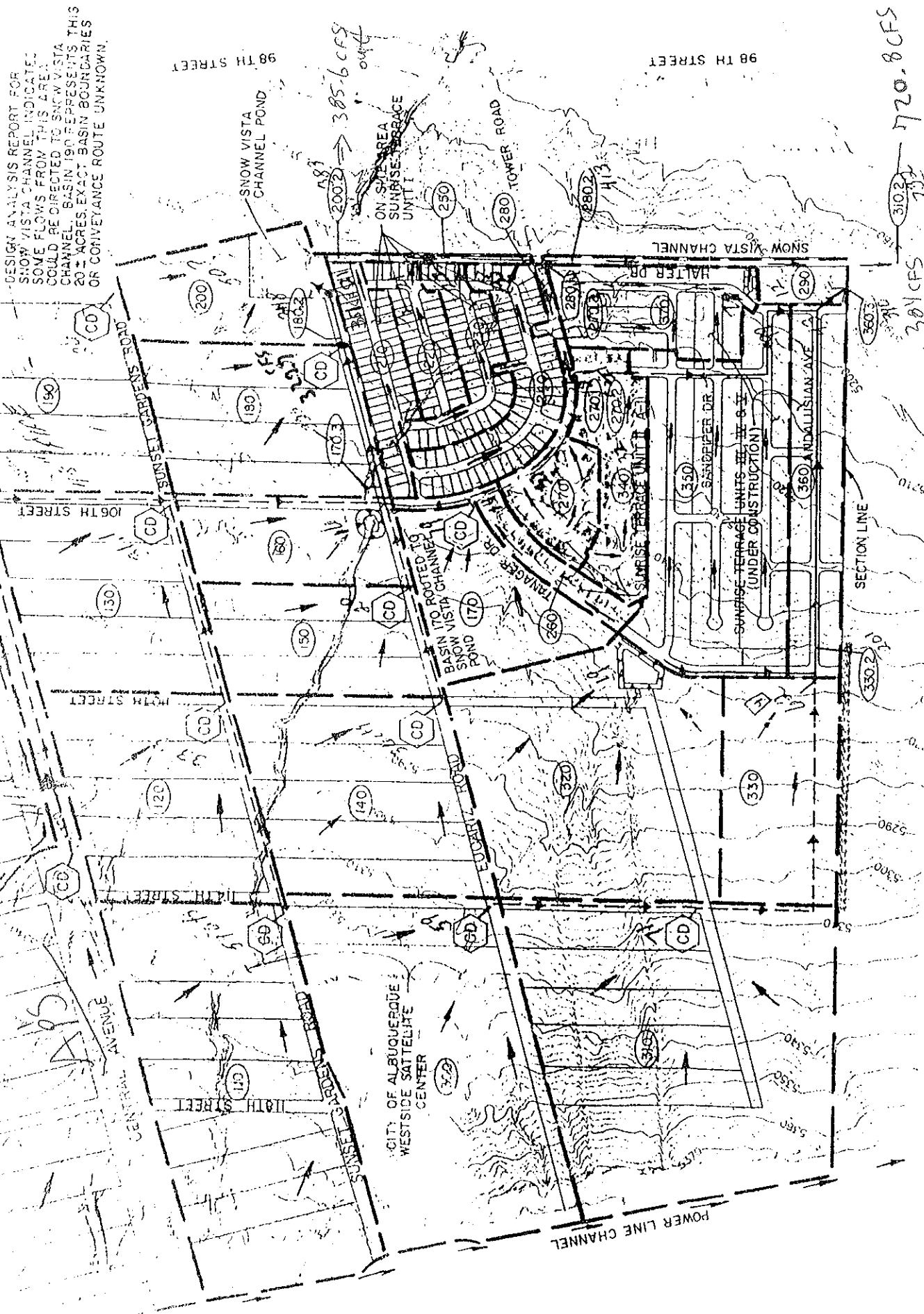
Greiner

OFFSITE BASIN MAP ULTIMATE DEVELOPMENT

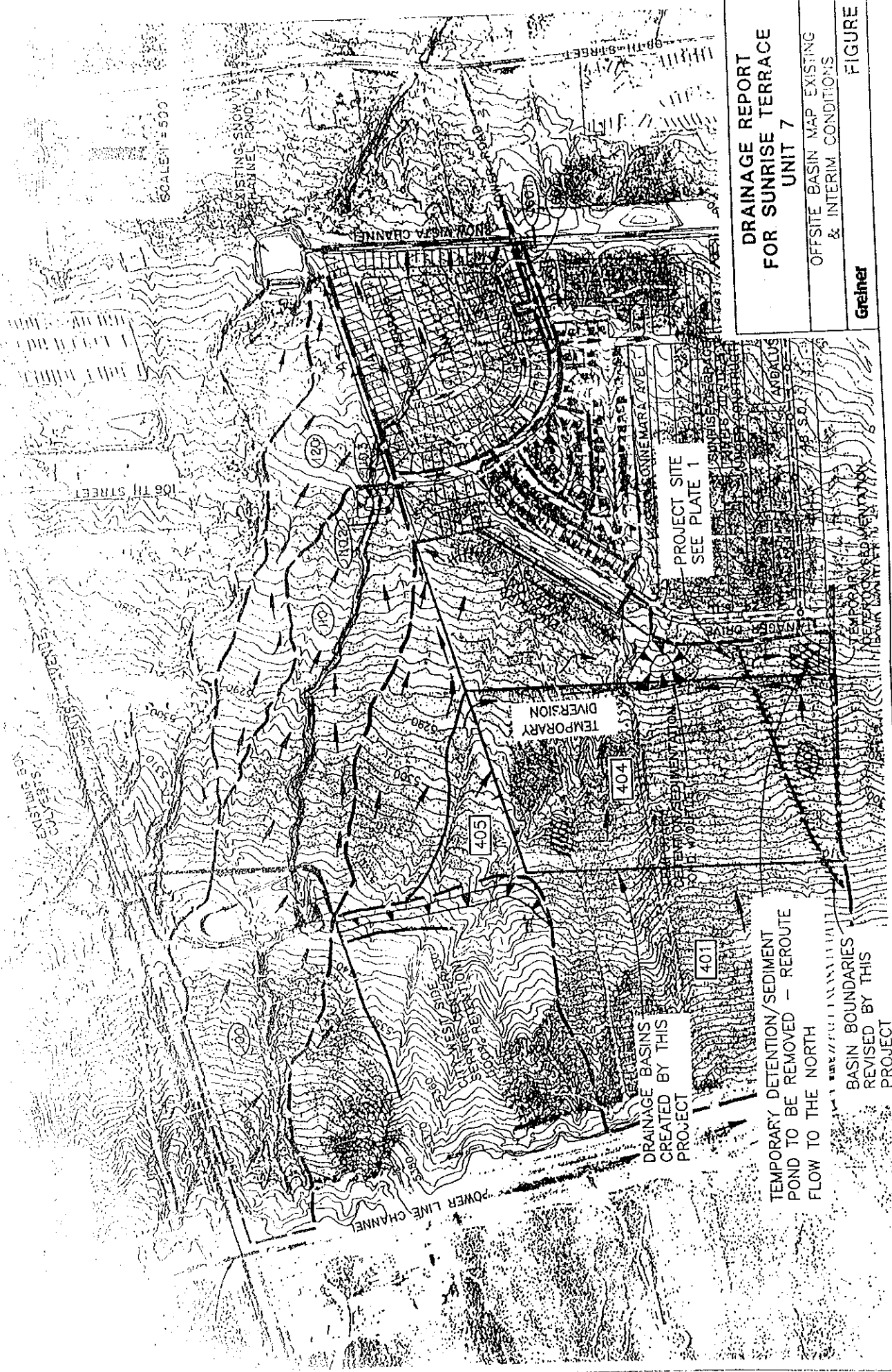
FIGURE 4

☐ DAY ONE
☒ DAY TWO
☐ DAY THREE
☐ DAY FOUR

DESIGN ANALYSIS REPORT FOR
SHOW VISTA CHANNEL INDICATES
SOME FLOWS FROM THIS AREA
COULD BE DIRECTED TO SHOW VISTA
CHANNEL. BASIN 190 REPRESENTS THIS
20+ ACRES EXACT BASIN BOUNDARIES
OR CONVEYANCE ROUTE UNKNOWN.



301 CFS
3102
720.8 CFS



**DRAINAGE REPORT
FOR SUNRISE TERRACE
UNIT 7**

OFFSITE BASIN MAP EXISTING
& INTERIM CONDITIONS

Greiner

FIGURE

PROJECT SITE
SEE PLATE 1

TEMPORARY
DIVERSION

TEMPORARY DETENTION / SEDIMENT
POND TO BE REMOVED - REROUTE
FLOW TO THE NORTH

BASIN BOUNDARIES
REVISED BY THIS
PROJECT

32 x 32

25 x 25

6

62

Con certual
G+D

TEMPORARY
DITCH

5411

110TH STREET

60 SD

5411

110TH STREET

60 SD

5411

110TH STREET

60 SD

5411

110TH STREET

60 SD

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110TH STREET

60 SD

5411



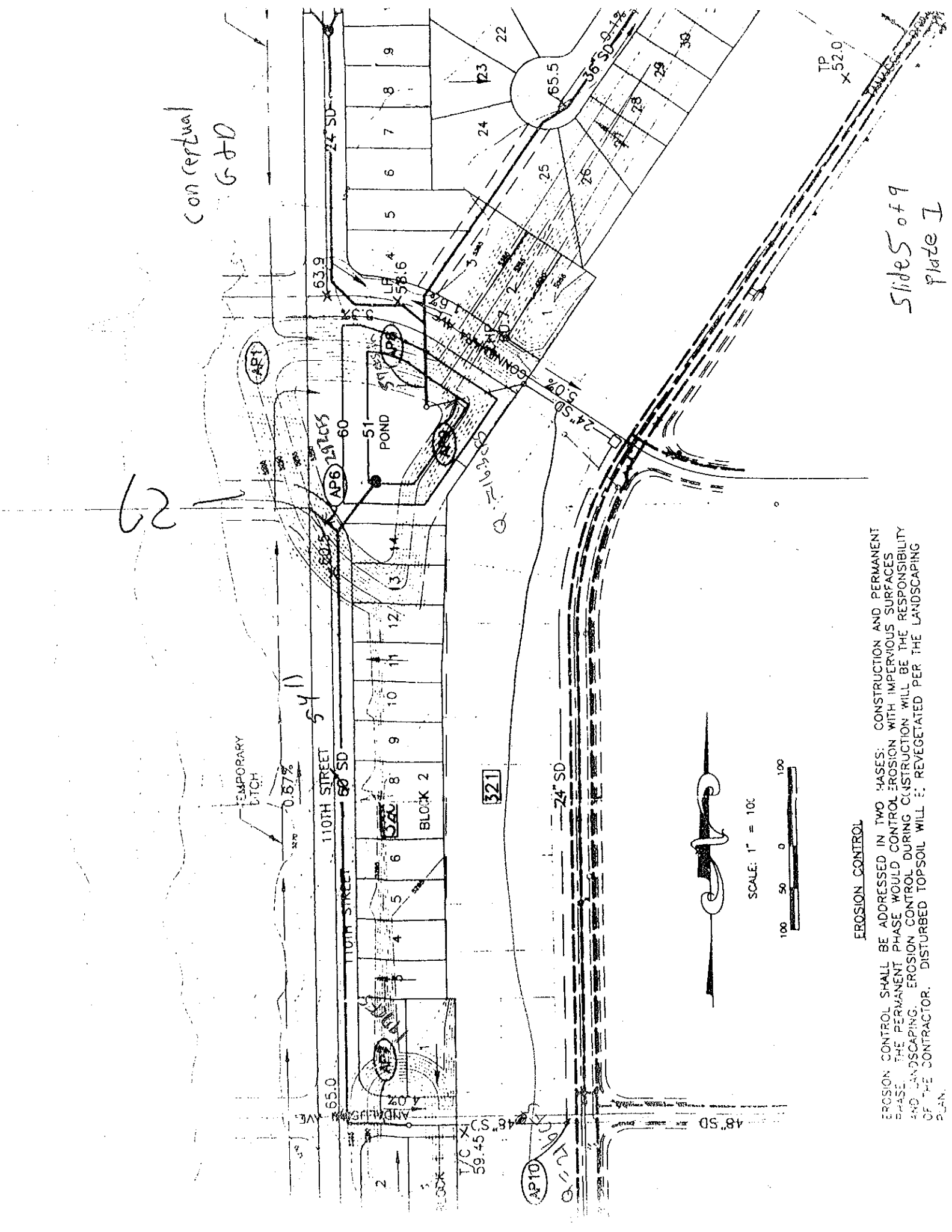
SCALE: 1" = 100'



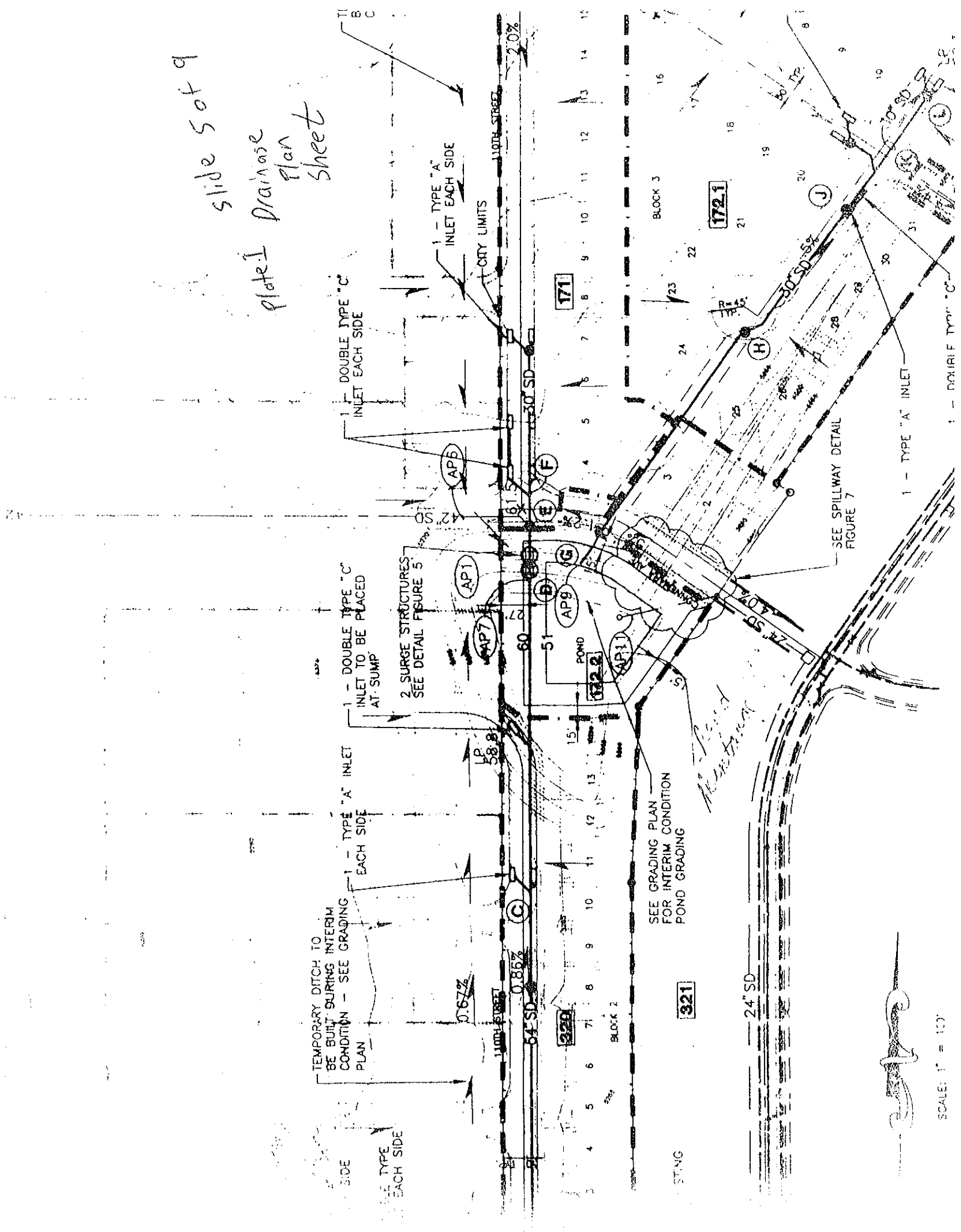
EROSION CONTROL

EROSION CONTROL SHALL BE ADDRESSED IN TWO PHASES: CONSTRUCTION AND PERMANENT PHASE. THE PERMANENT PHASE WOULD CONTROL EROSION WITH IMPERVIOUS SURFACES AND LANDSCAPING. EROSION CONTROL DURING CONSTRUCTION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. DISTURBED TOPSOIL WILL BE REVEGETATED PER THE LANDSCAPING PLAN.

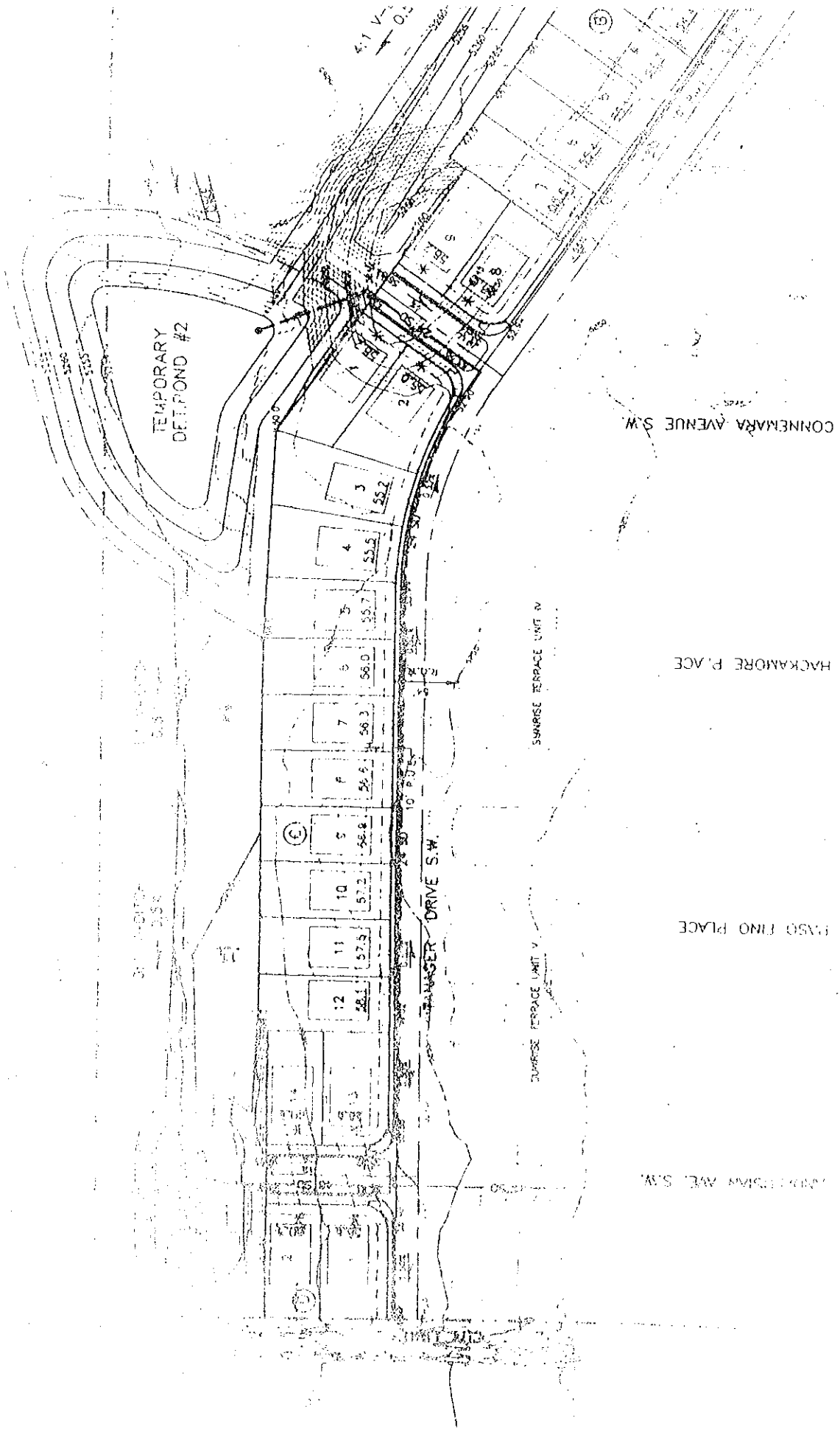
Slide 5 of 9
Plate I

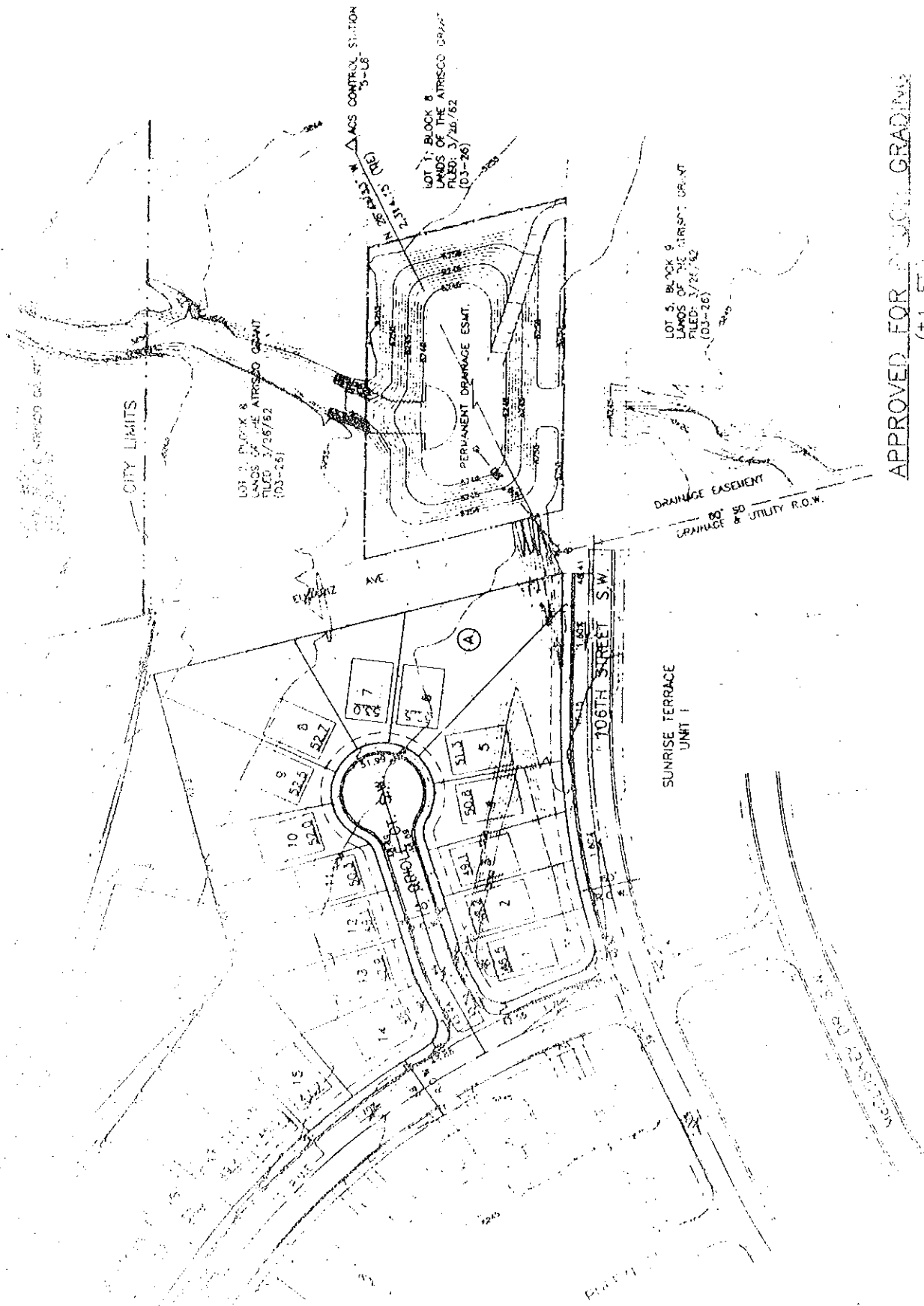


slide 5 of 9
 plate I Drainage
 plan sheet



SCALE: 1" = 10'





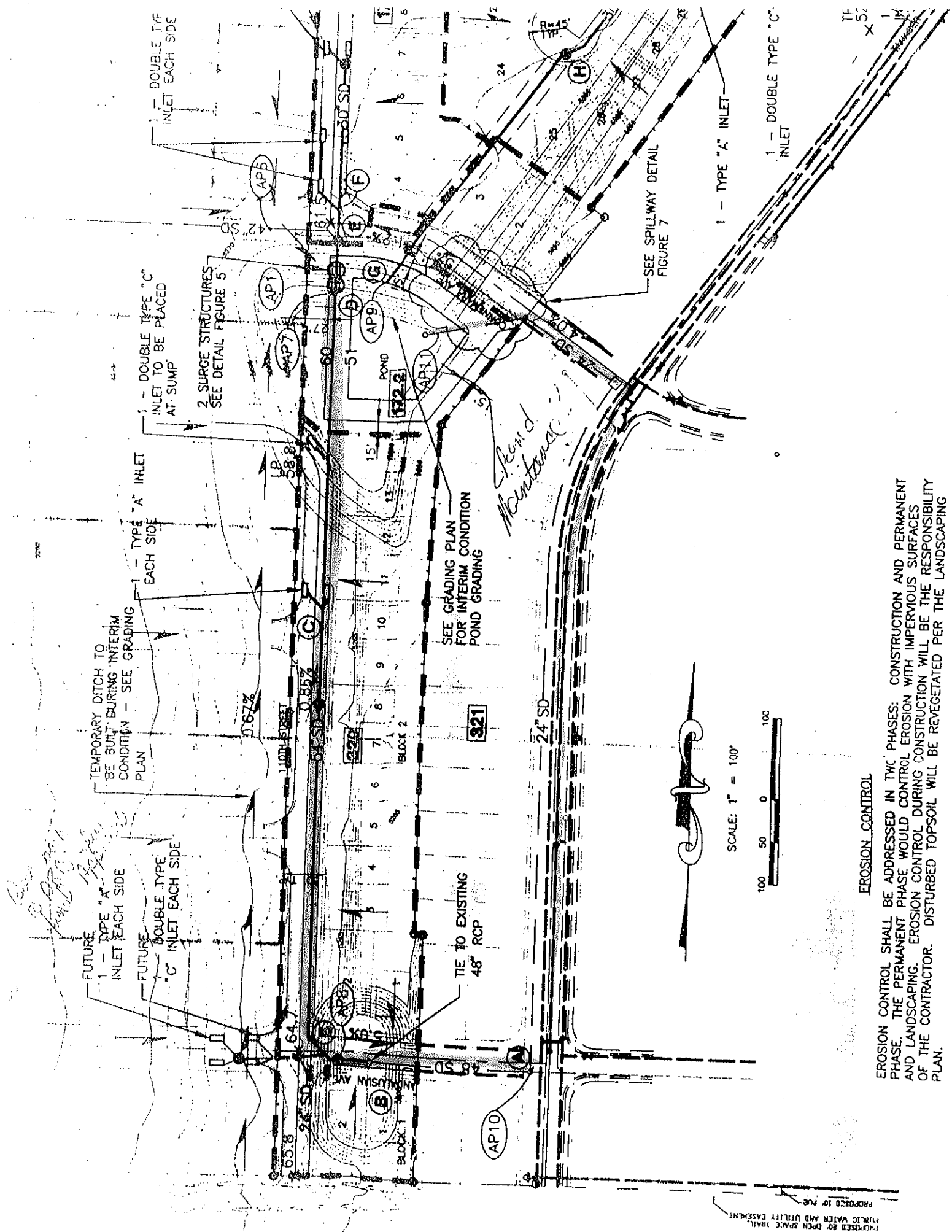
APPROVED FOR PLANNING GRADING
(±1 FT)

CITY OF ALBUQUERQUE, NEW MEXICO

STERLING & ASSOCIATES, INC.

CITY OF ALBUQUERQUE, NEW MEXICO

STERLING & ASSOCIATES, INC.

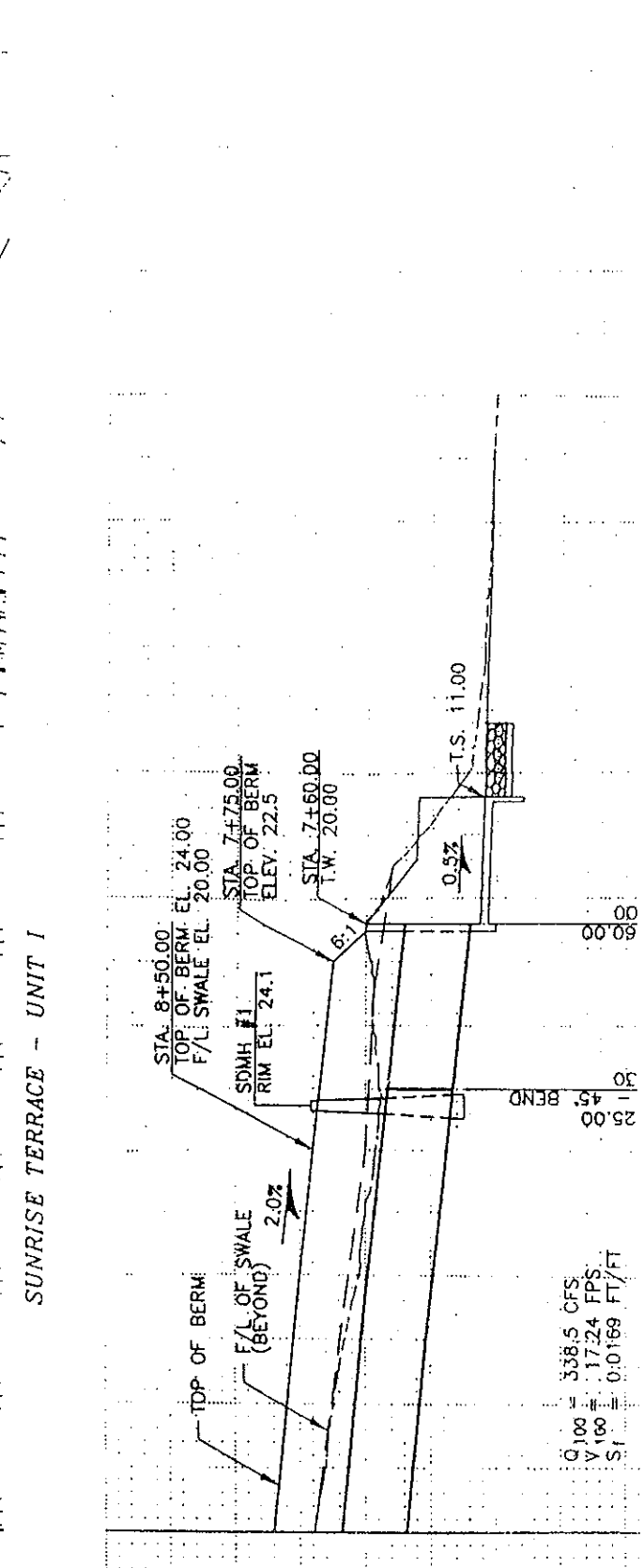
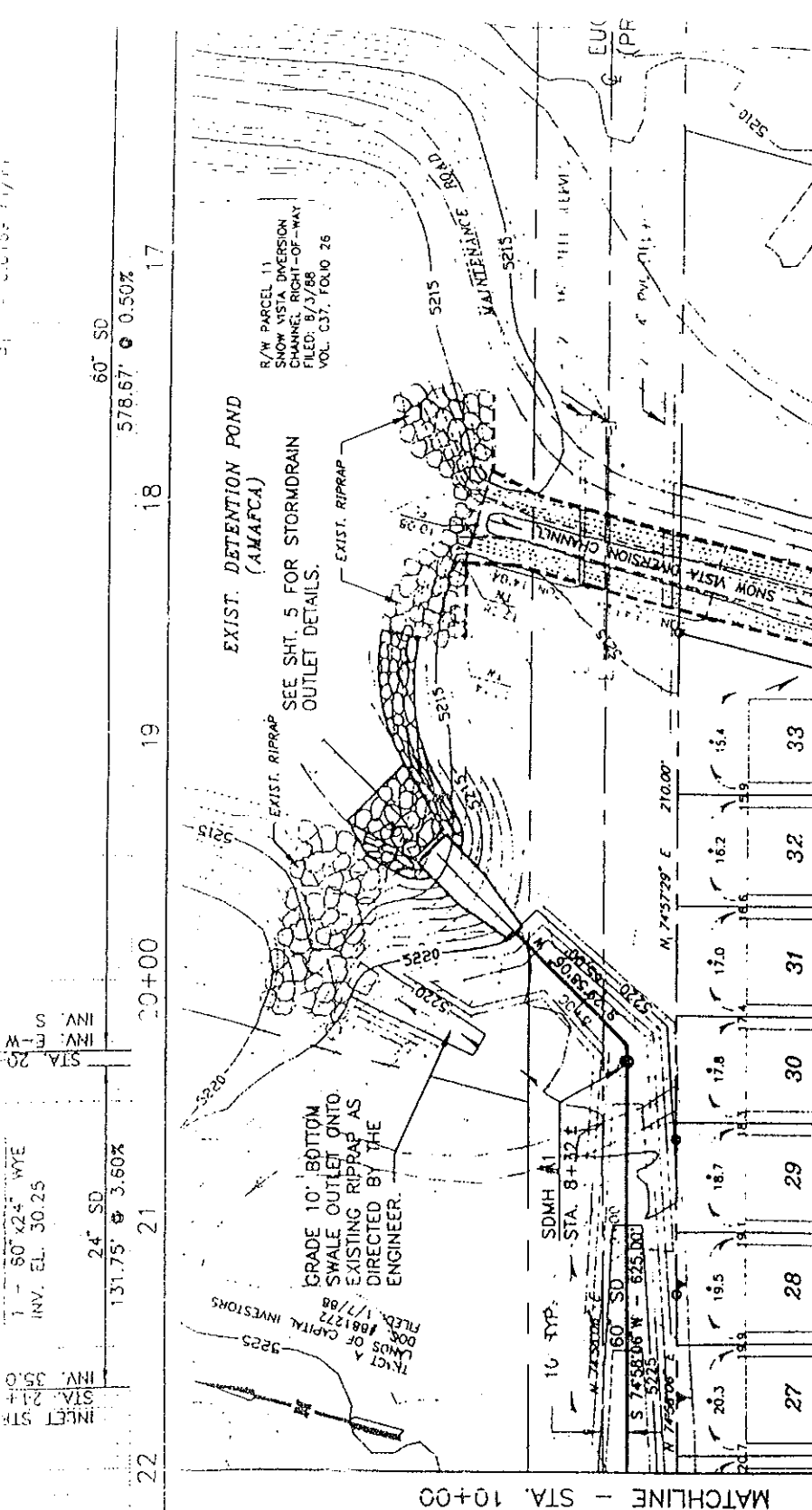


EROSION CONTROL

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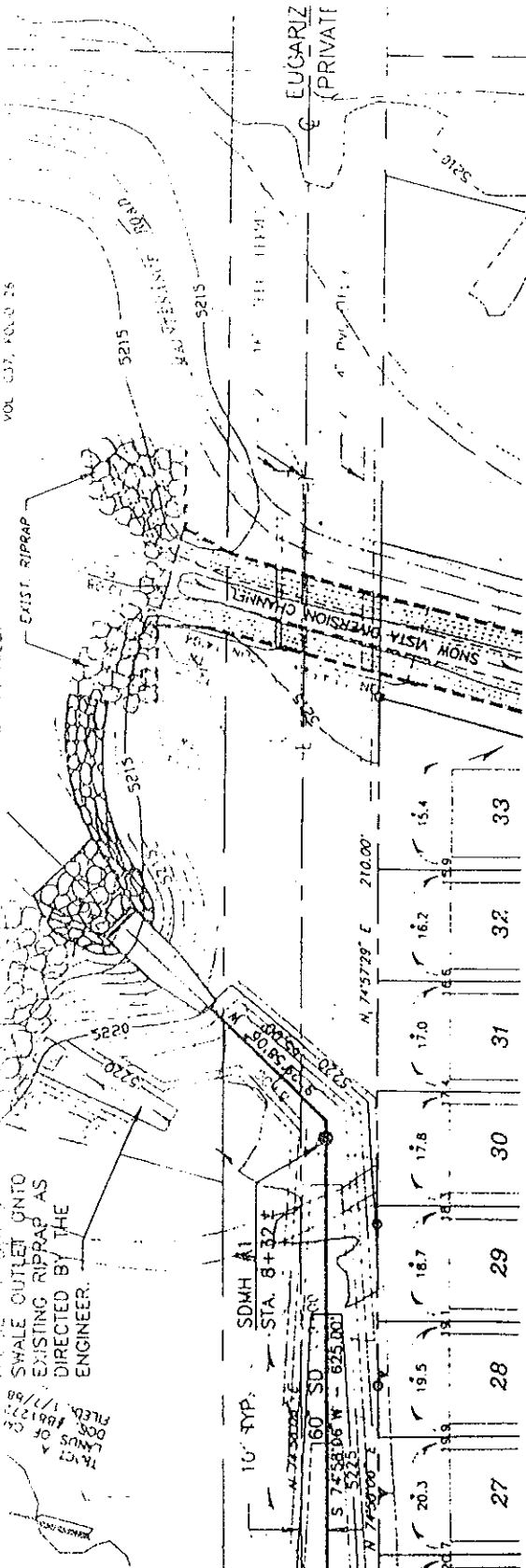
SCALE: 1" = 100'



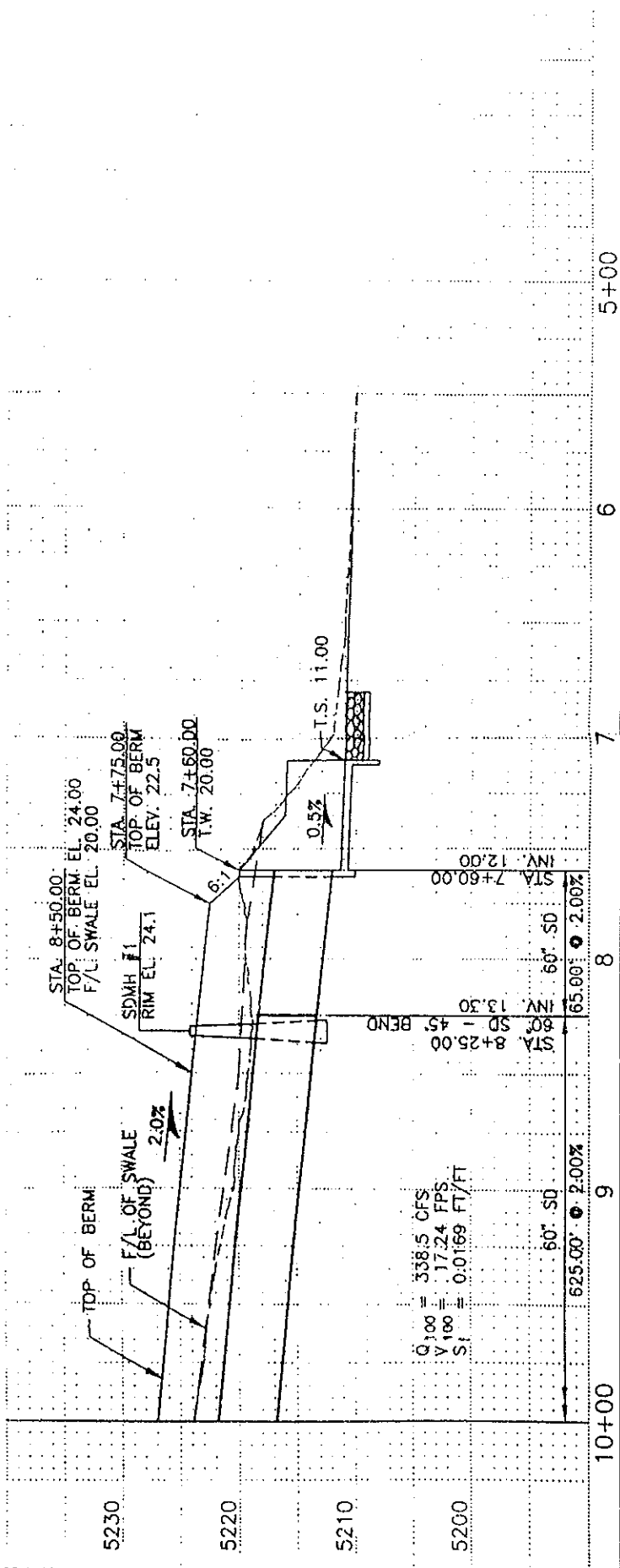


Q100 = 338.5 CFS
 V100 = 17.24 FPS
 S1 = 0.0169 FT/FT

SWALE OUTLET ONTO
EXISTING RIPRAP AS
DIRECTED BY THE
ENGINEER.



MATCHLINE - STA. 10+00



Q₁₀₀ = 338.5 CFS
V₁₀₀ = 17.24 FPS
S₁ = 0.0169 FT/FT

RYALS

engineering &
construction services

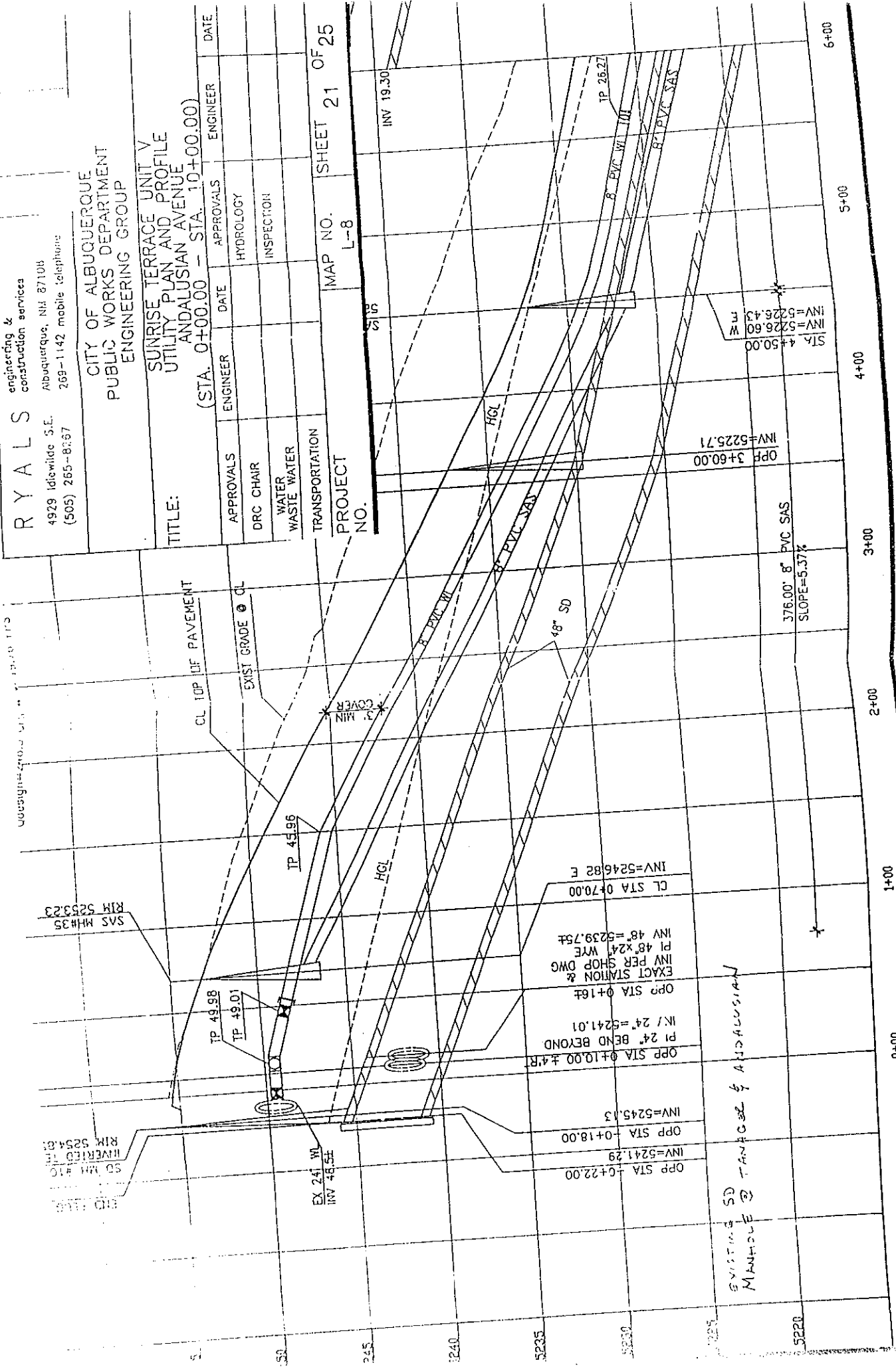
4929 Idelwildie S.E.
Albuquerque, NM 87108
(505) 265-8097 269-1142 mobile telephone

**CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP**

TITLE:
SUNRISE TERRACE UNIT V
UTILITY PLAN AND PROFILE
ANDALUSIAN AVENUE
(STA. 0+00.00 - STA. 10+00.00)

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
DRC CHAIR			HYDROLOGY		
WATER			INSPECTION		
WASTE WATER					
TRANSPORTATION					

PROJECT NO.
MAP NO. L-8
SHEET 21 OF 25



25x10 32x10

CURB DATA
 1 = 10' 0" 0.00'
 2 = 20' 0" 0.00'
 3 = 30' 0" 0.00'
 4 = 40' 0" 0.00'
 5 = 50' 0" 0.00'

CITY LIMIT

SCALE: 1" = 50'

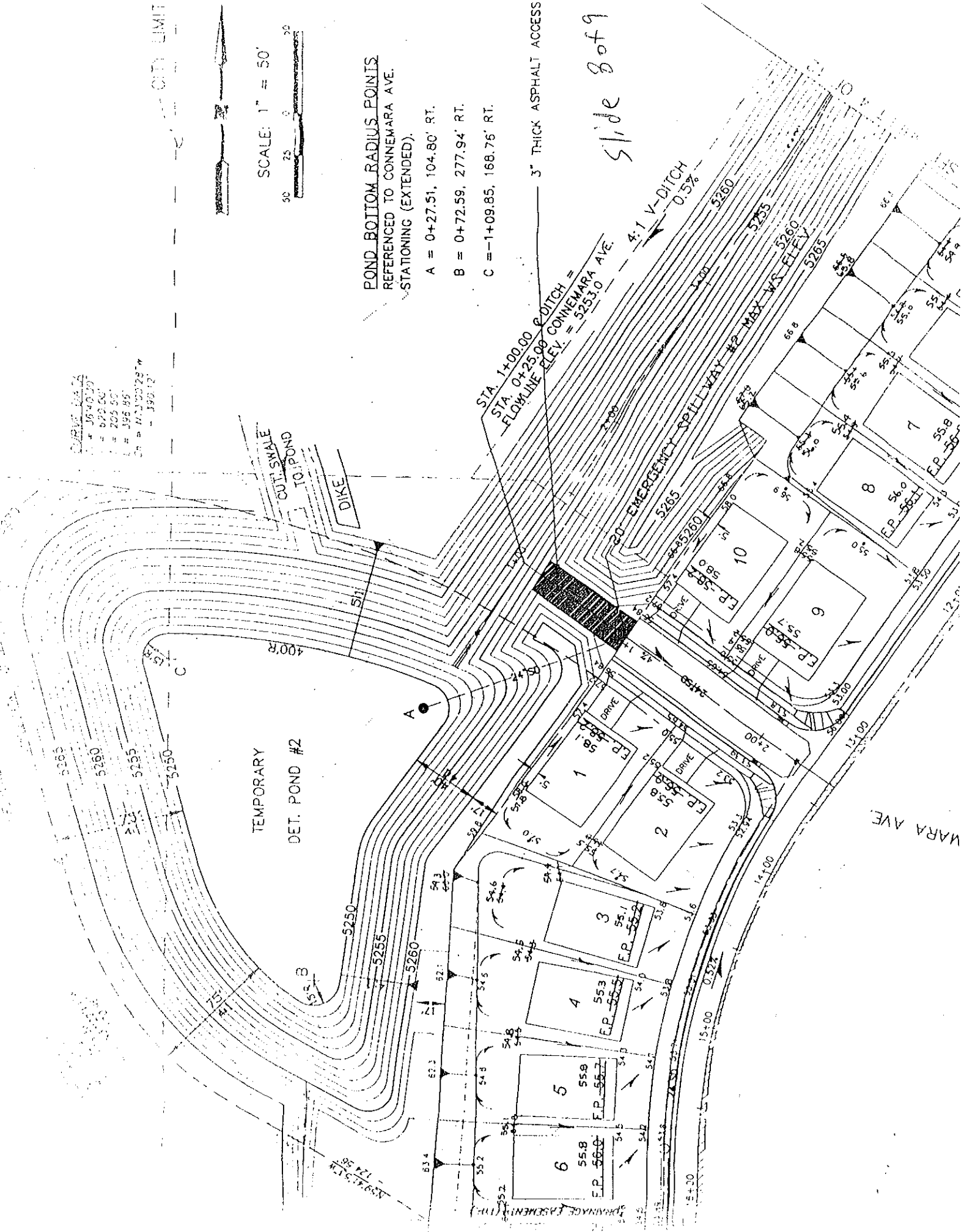


POND BOTTOM RADIUS POINTS
 REFERENCED TO CONNEMARA AVE.
 STATIONING (EXTENDED):

- A = 0+27.51, 104.80' RT.
- B = 0+72.59, 277.94' RT.
- C = 1+09.85, 168.76' RT.

3" THICK ASPHALT ACCESS

slide 8 of 9



60

10' 6" Channel
Type III Barricade
See Detail, this sheet.

Steel Casing Sleeve for
each way from Channel

Channel
10' 6" (5' 11")
Headwall
& Channel
4' 5"

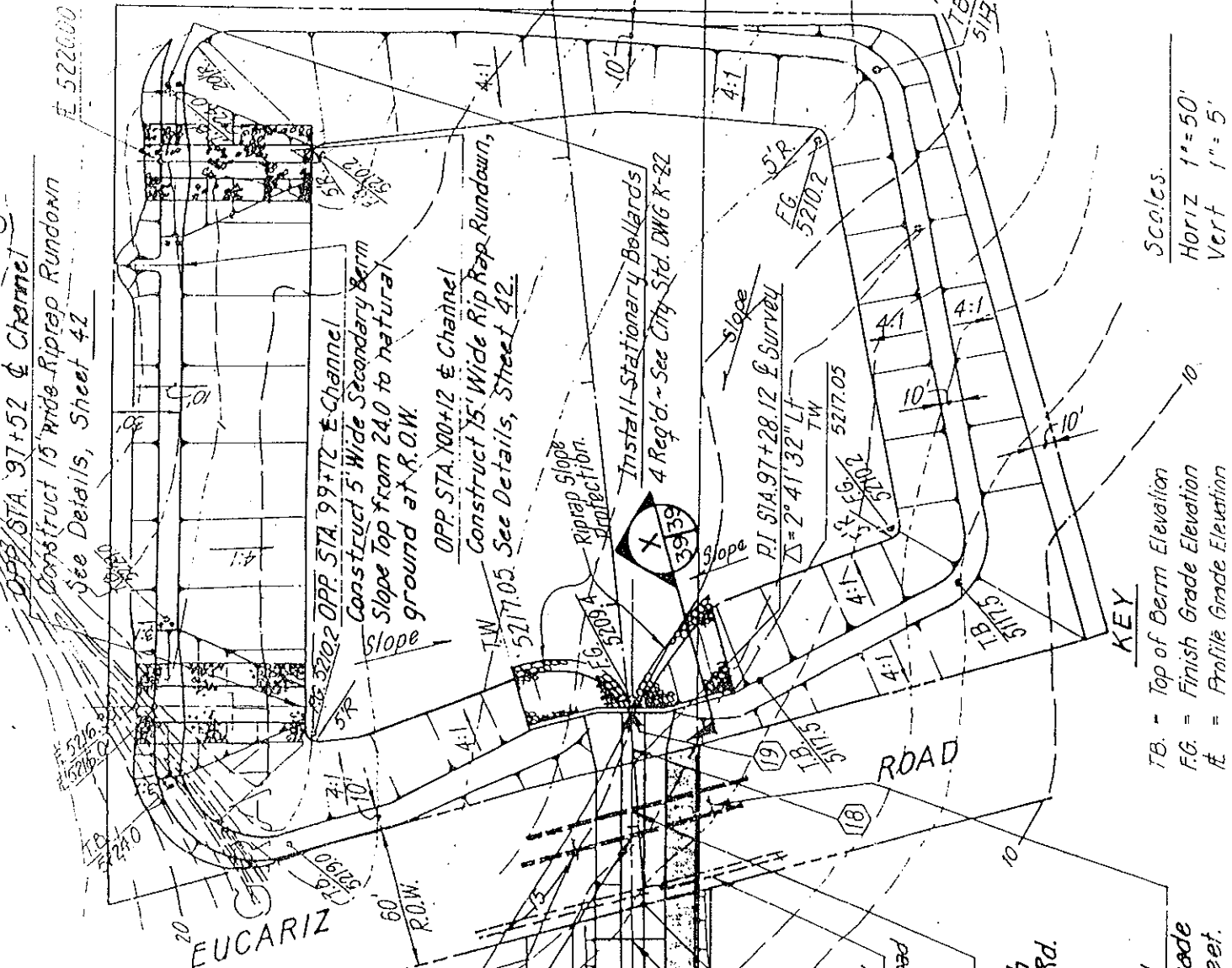
Expansion Joint - Construct
10' 6" Channel - Construct

Install 2-4" Conduits to be Supplied
by Mountain Bell 5' Inside Eucariz Road
South ROW 70' ± Rt. f Lt. & Channel.

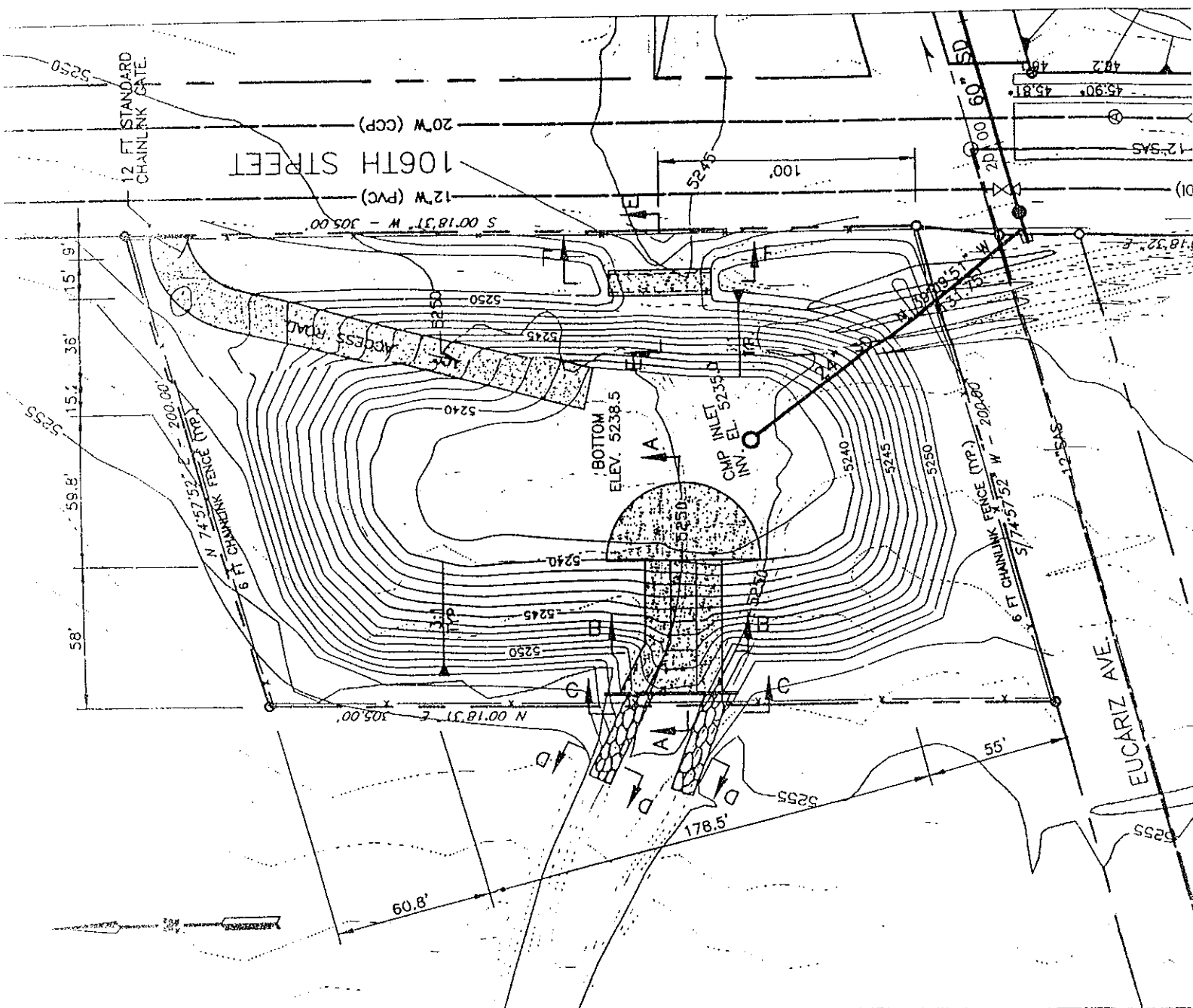
10' 6" Channel

100 L.F. 16" Schedule 30 Steel Casing
for Future utility line. Extend 50' each
from Channel, parallel to Eucariz Rd.
El. 50' Lt. = 03.30
El. 50' Rt. = 02.70

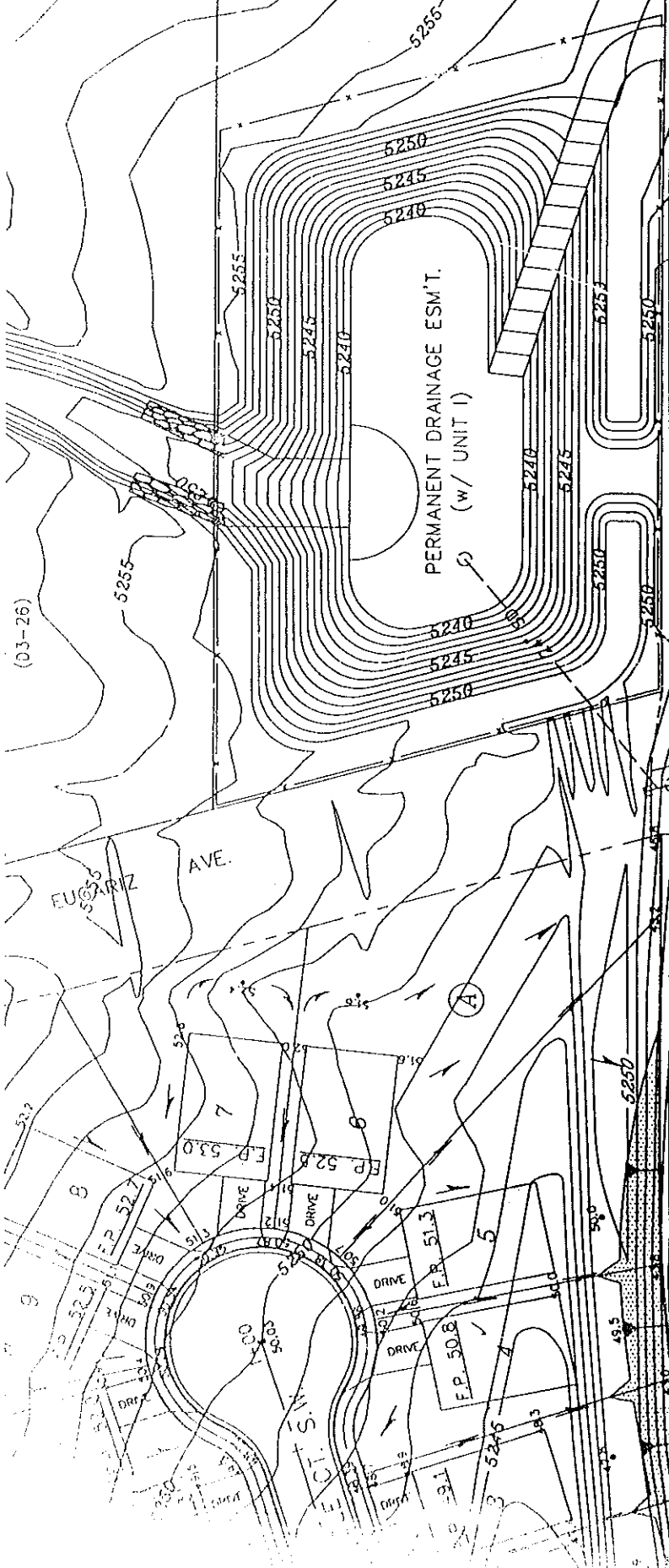
Opp. STA. 97+08 ~ 35' Rt. & Channel
Install permanent Type III Barricade
at R11-2 sign. See Detail, this sheet.



Scales
Horiz 1" = 50'
Vert 1" = 5'



ENGINEER



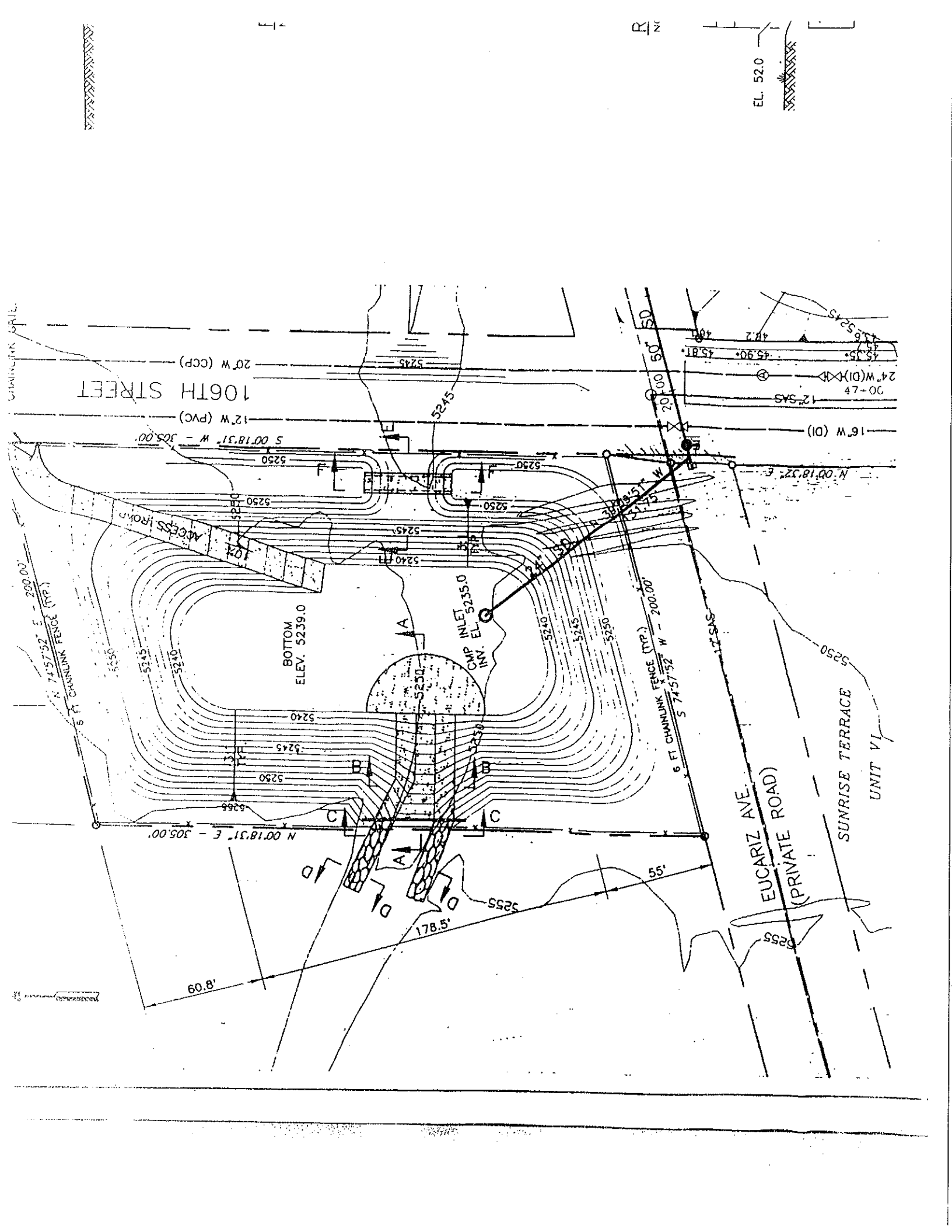
GORDAN AND ASSOCIATES
CONSULTING ENGINEERS
 1300 LUISA, SUITE 21
 SANTA FE, NEW MEXICO
 (505) 982-8687 FAX (505) 982-3506

CITY OF ALBUQUERQUE
 PUBLIC WORKS DEPARTMENT
 ENGINEERING GROUP

SUNRISE TERRACE, UNIT VI
AUG 22 1998 GRADING & DRAINAGE PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER
D.R.C. CHAIR			WATER	
TRANS. DEV.			WASTEWATER	
HYDROLOGY			CONST. COORD.	
DRAWING NO.	XXXX.XX	MAP NO. L-8	SHEET 4	

NO.	DATE	REMARKS	BY



EL. 52.0

24" W (DI) 45.81

16" W (DI) 45.81

12" SAS 45.81

12" SAS 45.81

12" SAS 45.81

12" SAS 45.81

12" SAS 45.81

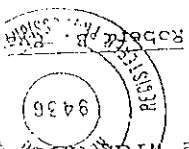
12" SAS 45.81

12" SAS 45.81

12" SAS 45.81

12" SAS 45.81

12" SAS 45.81



GRADING AND DRAINAGE CERTIFICATION

I, Robert B. Rials, a Registered Professional Engineer of New Mexico, hereby certify, based on as provided by Aldrich Land Surveying, that the improvements, including retaining walls, completed in substantial compliance with the Sunrize Terrace Unit III.

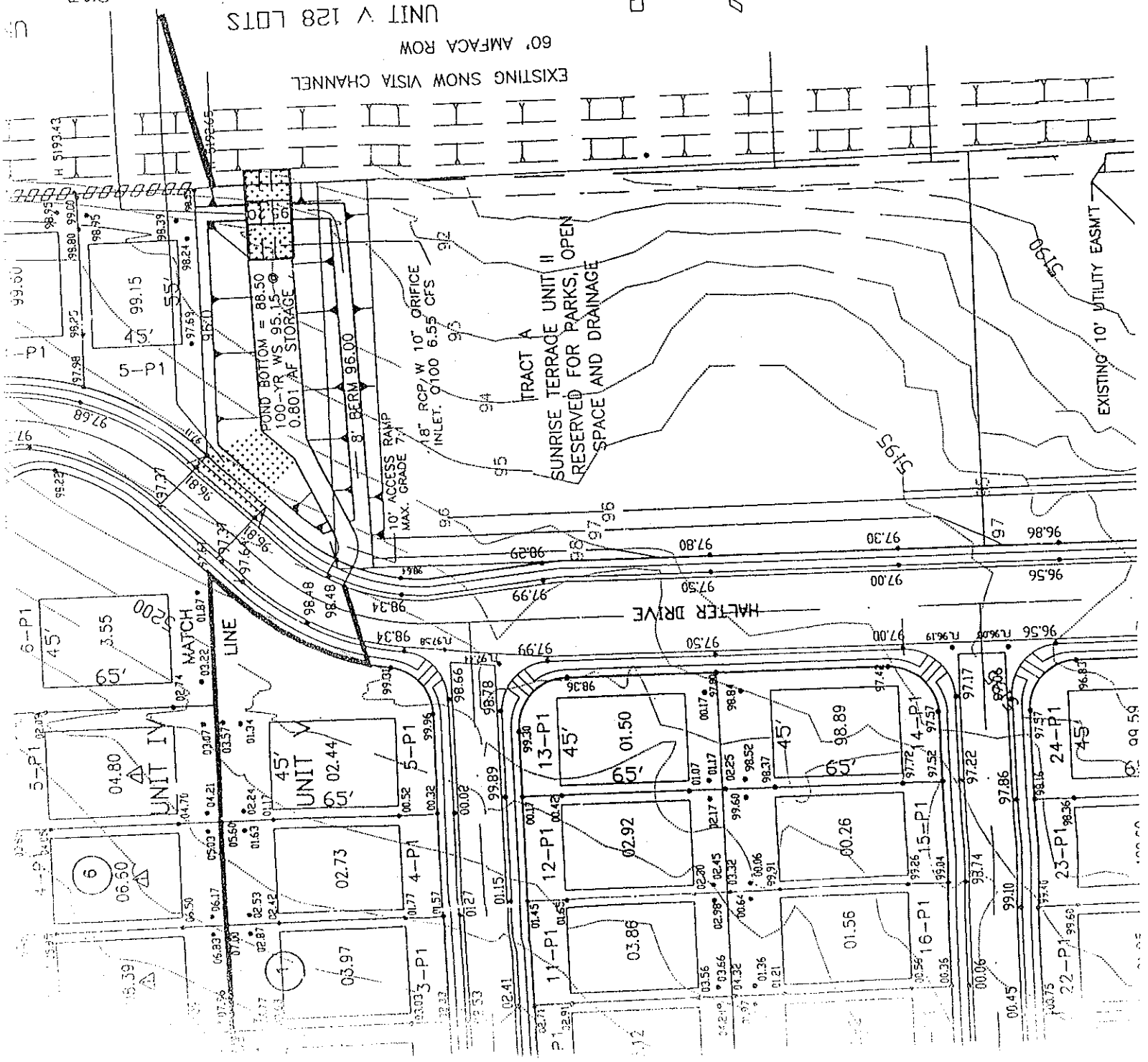
PROPOSED CONCRETE
SPILLWAY 22" WIDE
CAPACITY 47.2 CFS

PROPOSED CONCRETE
SURFACE RUNDOWN
0100 38.4 CFS

UNIT V 128 LOTS

60' AMFACA ROW

EXISTING SNOW VISTA CHANNEL



000000 = A RETAINING WALL RETAINING 18" OR LESS.

000000 = A RETAINING WALL RETAINING 18" OR MORE.

RYALS engineering & construction, s.c.

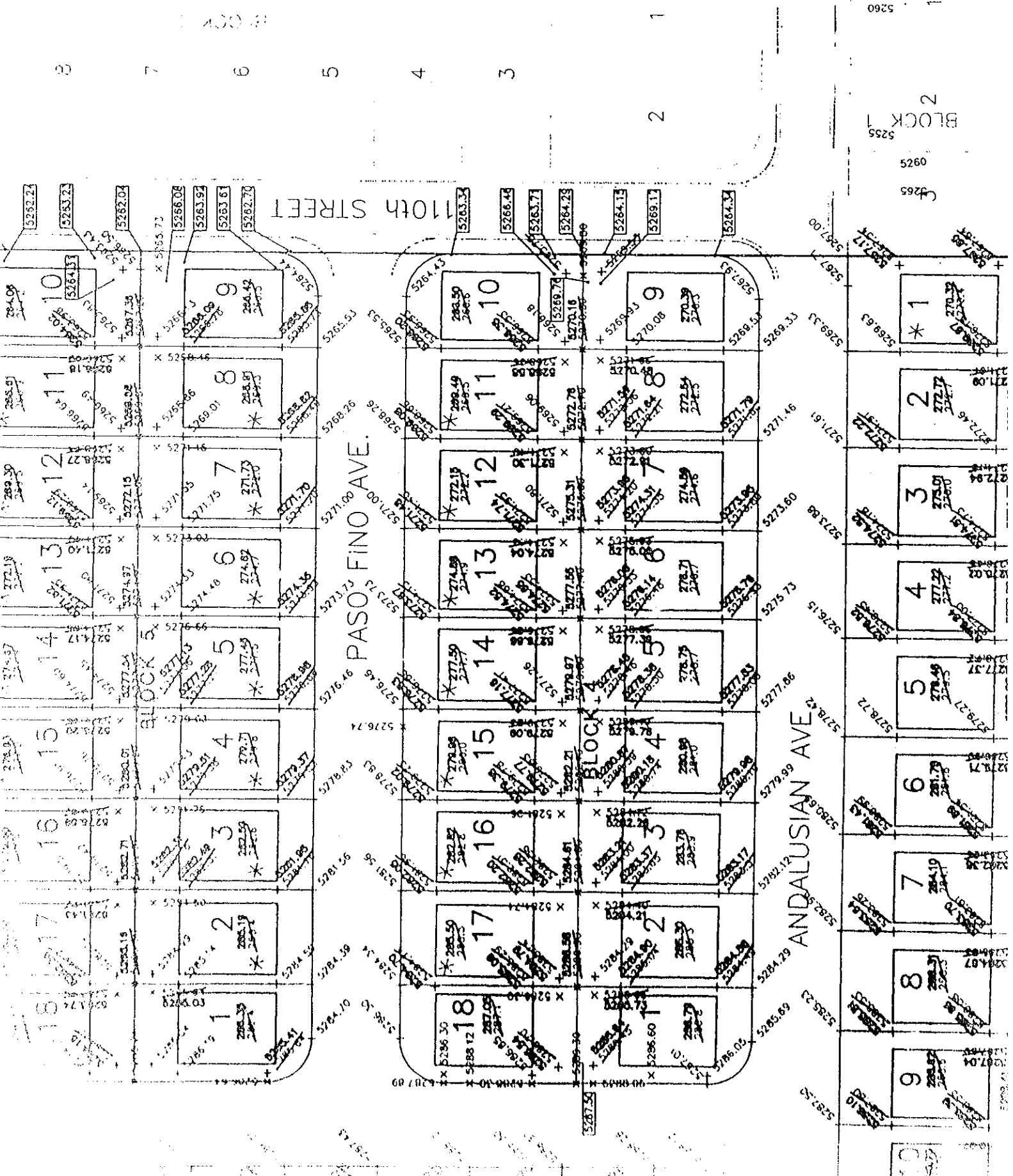
THE COM
FINA
WTH
SUB
SUN
HERI
I, M

BLOCK 1
5255
9255
4265

110th STREET

PASO FINO AVE.

ANDALUSIAN AVE



Slide 5 of 9
plate 1

GE PLAN

Drainage Plan



Scale
1" = 100'

Design SKU
Drawn JAK
Check MSH

DISCLAIMER

Greiner, Inc.
5971 JEFFERSON BLVD. NE ALBUQUERQUE, NEW MEXICO 87109
(505) 345-3995 FAX (505) 345-8393

TABLE 1
OFF-SITE FLOWRATES

ANALYSIS POINT	EXISTING FLOWRATE (cfs) 100YEAR	INTERIM FLOWRATE (cfs) 100YEAR	FULLY DEVELOPED FLOWRATE (cfs) 100YEAR
1	124	108.8	NA
2	61	61.8	129.9
3	0	0	58.6
4	N/A - INCLUDED IN AP5	9.6	35.5**
5	31	21.5**	55.9**

TABLE 2
ON-SITE FLOWRATES

ANALYSIS POINT	INTERIM FLOWRATE (cfs) 100YEAR	FULLY DEVELOPED FLOWRATE (cfs) 100YEAR
6	0	177.5
7	11.1	234.7
8	22.0	171.0
9	34.5	20.8
10	44.0	193.8
11	6.5	7.0
12**	34.3	67.3

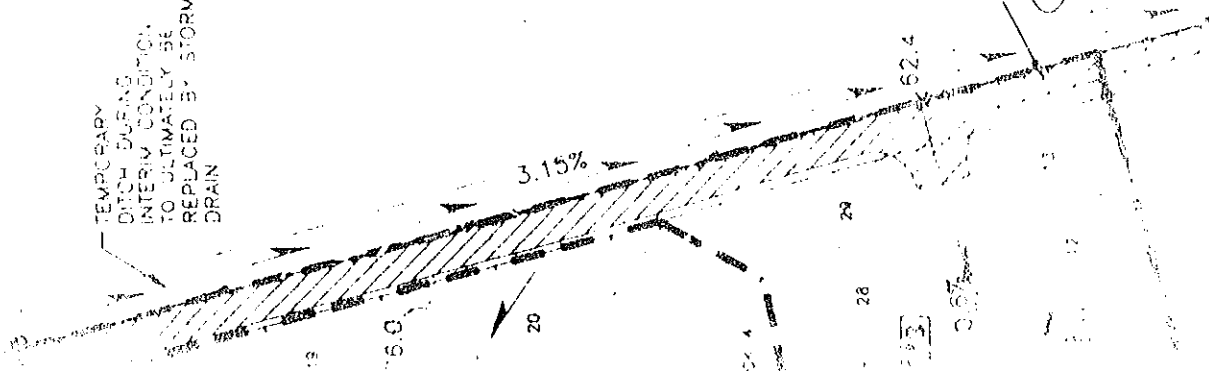
**DISCHARGE LIMITED TO 1.29 CFS/ACRE IN ACCORDANCE WITH MASTER DRAINAGE PLAN FOR SUNRISE TERRACE UNITS 1 AND 6

**RUNOFF DRAINS TO EUCARIZ AVENUE STORM DRAIN

TEMPORARY DITCH DURING INTERIM CONSTRUCTION TO ULTIMATELY BE REPLACED BY STORM DRAIN

EXTEND PAVEMENT IN EUCARIZ AVE.

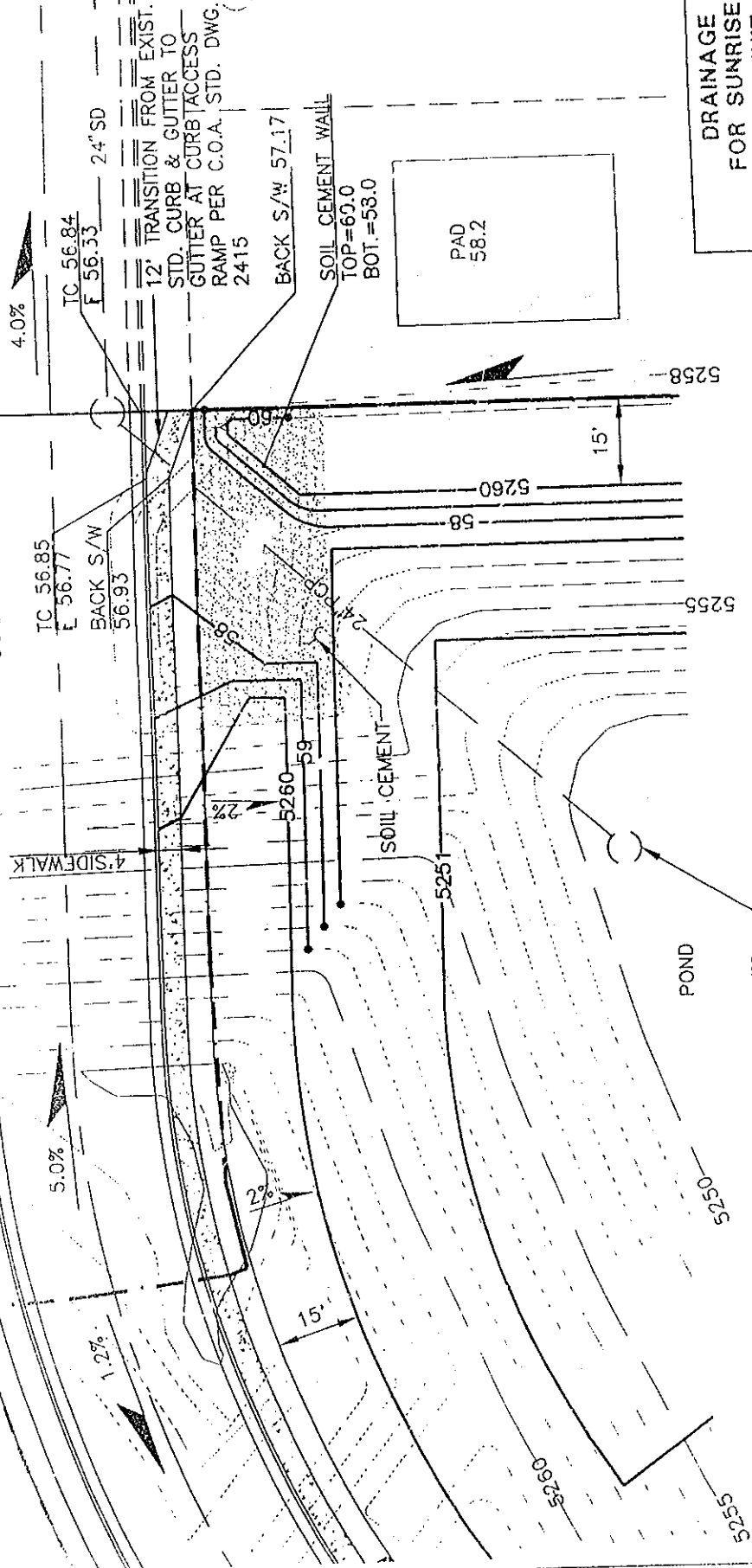
AP5



SUNRISE TERRACE
DNV

BOUNDARY

CONNEMARA AVE



SCALE: 1" =

DRAINAGE REPORT FOR SUNRISE TERRACE UNIT 7	
EMERGENCY SPILLWAY DETAIL	FIGURE
Greiner	

EXISTING OUTLET TO
REMAIN - SEE
DETAIL FIGURE 6

SPILLWAY DESIGN Q = 221.8 cfs

32x10

25x10

©

Concordia

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Greiner Inc

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DISCHARGE LIMITED TO 1.29 CFS/ACRE IN ACCORDANCE WITH MASTER
PLAN FOR SUNRISE TERRACE UNITS 1 AND 6

TABLE 2

TABLE 2

DISCHARGE LIMITED TO 1.29 CFS/ACRE IN ACCORDANCE WITH MASTER DRAINAGE PLAN FOR SUNRISE TERRACE UNITS 1 AND 6

AP5

2.85%