

Runoff Calculations:

The following calculations are based on Zone 2 from Table A-9 found in the Albuquerque Development Process Manual, Section 22.2 page 15.

100 YEAR PEAK DISCHARGE - TABLE A-9				
ZONE	A	B	C	D
1	1.290	2.030	2.870	4.370
2	1.560	2.280	3.140	4.700
3	1.870	2.600	3.450	5.020
4	2.200	2.920	3.730	5.250

Subbasin 1:

Treatment Type Areas for Subbasin 1:
 $Area_{A1} = 0$ $Area_{B1} = 0$ $Area_{C1} = 0.1714$ $Area_{D1} = 0.3282$ Ac
 $Q_{c1} = 1.560 \cdot Area_{A1} + 2.280 \cdot Area_{B1} + 3.140 \cdot Area_{C1} + 4.700 \cdot Area_{D1} = 2.081$

Subbasin 2:

Treatment Type Areas for Subbasin 2:
 $Area_{A2} = 0$ $Area_{B2} = 0$ $Area_{C2} = 0.1098$ $Area_{D2} = 1.0297$ Ac
 $Q_{c2} = 1.560 \cdot Area_{A2} + 2.280 \cdot Area_{B2} + 3.140 \cdot Area_{C2} + 4.700 \cdot Area_{D2} = 5.184$

Subbasin 3:

Treatment Type Areas for Subbasin 3:
 $Area_{A3} = 0$ $Area_{B3} = 0$ $Area_{C3} = 0.3508$ $Area_{D3} = 0.9815$ Ac
 $Q_{c3} = 1.560 \cdot Area_{A3} + 2.280 \cdot Area_{B3} + 3.140 \cdot Area_{C3} + 4.700 \cdot Area_{D3} = 5.715$ cfs

Total:

$Q_c = Q_{c1} + Q_{c2} + Q_{c3} = 12.98$ cfs

Water Quality First Flush Volumes Required

Pond 1:

$PFVol_1 = Area_{D1} \cdot 43560 \cdot \frac{0.34}{12} = 405.064$ cu. ft.

Pond 2:

$PFVol_2 = Area_{D2} \cdot 43560 \cdot \frac{0.34}{12} = 1270.856$ cu. ft.

Pond 3:

$PFVol_3 = Area_{D3} \cdot 43560 \cdot \frac{0.34}{12} = 1211.367$ cu. ft.

Total Pond Volume:

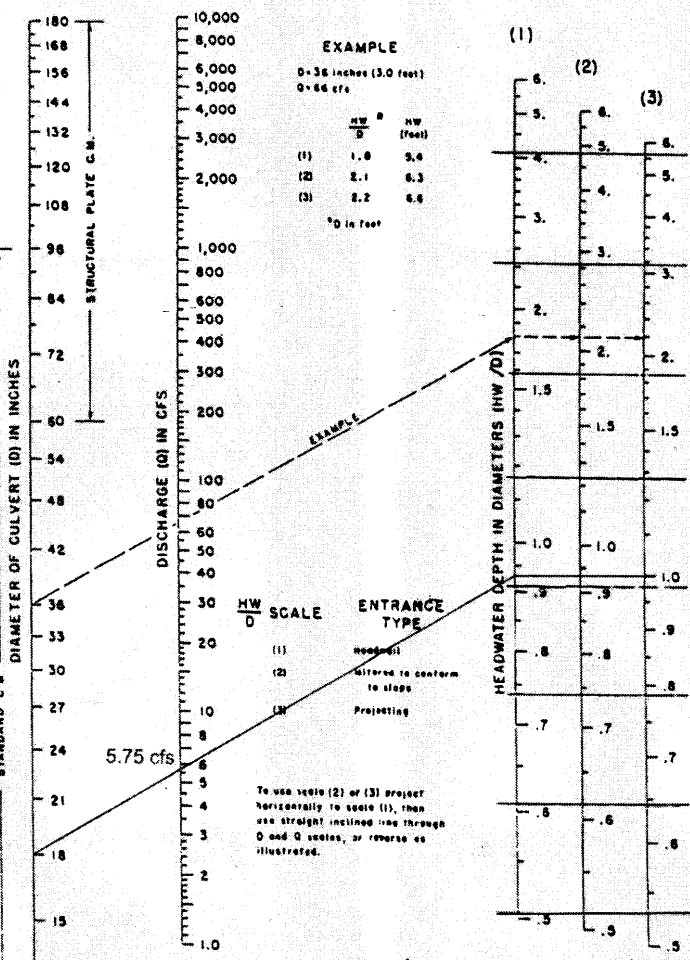
$PFVol = PFVol_1 + PFVol_2 + PFVol_3 = 2887.287$ cu. ft.

Pond 1	Elev.	Area (Cu. Ft.)	Vol (Cu. Ft.)	Cum. (Cu. Ft.)	Cum. (Ac-ft)
	5117.75	214.2098	0	0	0
	5118.25	499.3876	178.39935	178.39935	0.004
	5118.75	802.1949	325.395625	503.794975	0.012

Pond 2	Elev.	Area (Cu. Ft.)	Vol (Cu. Ft.)	Cum. (Cu. Ft.)	Cum. (Ac-ft)
	5110.75	3.7036	0	0	0.000
	5111.25	53.4338	14.28435	14.28435	0.002
	5111.75	159.4263	53.215025	67.499375	0.004
	5112.25	318.6876	119.528475	187.02785	0.009
	5112.75	499.8758	204.64085	391.6687	0.016
	5113.25	697.9785	299.463575	691.132275	0.025
	5113.75	912.7591	402.6844	1093.816675	0.037
	5114.25	1144.2227	514.24545	1608.062125	0.057

Pond 3	Elev.	Area (Cu. Ft.)	Vol (Cu. Ft.)	Cum. (Cu. Ft.)	Cum. (Ac-ft)
	5116.75	80.9655	0	0	0
	5117.25	236.9095	79.46875	79.46875	0.002
	5117.75	410.4333	161.8357	241.30445	0.006
	5118.25	601.541	252.993575	494.298025	0.011
	5118.75	810.2327	352.943425	847.24145	0.019

CHART 2



Manning Formula:

Triangular Channel
Input
 Flow: 0.3 cfs
 Slope: 0.0085 ft/ft
 Manning's n: 0.025
 Base Width: 0 ft
 Right Side Slope: 3:1
 Left Side Slope: 3:1
Output
 Depth: 0.320 ft
 Flow Area: 0.308 sq ft
 Velocity: 0.975 fps
 Velocity Head: 0.0148 ft
 Top Width: 1.92 ft
 Froude Number: 0.429
 Critical Depth: 0.228 ft
 Critical Slope: 0.0395 ft/ft

Manning Formula:

Circular Channel
Input
 Flow: 5.75 cfs
 Slope: 0.075 ft/ft
 Manning's n: 0.024
 Diameter: 18 in
Output
 Depth: 0.631 ft
 Flow Area: 0.705 sq ft
 Velocity: 8.15 fps
 Velocity Head: 1.03 ft
 Top Width: 1.48 ft
 Froude Number: 2.08
 Critical Depth: 0.925 ft
 Critical Slope: 0.0208 ft/ft

Tract 8-B-1

AREA=1.7502 ACRES ±
 76,237 SQ. FT. ±

Tract 6-B-1-A-1

AREA=1.0648 ACRES ±
 46,381 SQ. FT. ±

Tract 7-B-1-A

AREA=3.1640 ACRES ±
 137,825 SQ. FT. ±

Purvis Industries Warehouse Drainage

Background

Tract 7-B-1-A is allowed free discharge per the Drainage report for Montessori School Drainage Grading Plan (1989). This site has already been developed in accordance with these conditions. Currently, the site plan does not include any water quality features. As a part of this project, water quality ponding will be provided for Tract 7-B-1-A. Tract 7-B-1-A is created from Tract 7-B-1, which is the current playground for the existing Montessori School and a small portion of Tract 8-B, which is the existing property to the North.

Existing Conditions

The site is approximately 3 acres and slopes primarily from east to west at 3% and slightly from south to north. Currently, this site receives additional water from the site to the East. However, the original Drainage and Grading Plan for that site, mentioned above, shows a swale to divert all flow from the eastern site to Singer Boulevard. For Tract 7-B-1, all runoff currently flows to the West until reaching that portion of the site adjacent Midway Park Blvd NE, with flows discharging to Midway through the existing drive opening at the northwest corner of the site.

Methodology

Hydrology calculations for the site are performed in accordance with the Albuquerque DFM Section 22.2 using the Rational Method to calculate the peak flow rates to insure that flow paths, such as swales and gutters, are sufficient to carry flows to the water quality ponds located on-site.

The Water Quality ponding volume required was calculated by multiplying the impervious area of each individual subbasin by the first flush runoff value of 0.34". The water quality calculations as well as the pond rating curves can be found on the left side of this sheet.

Proposed Conditions

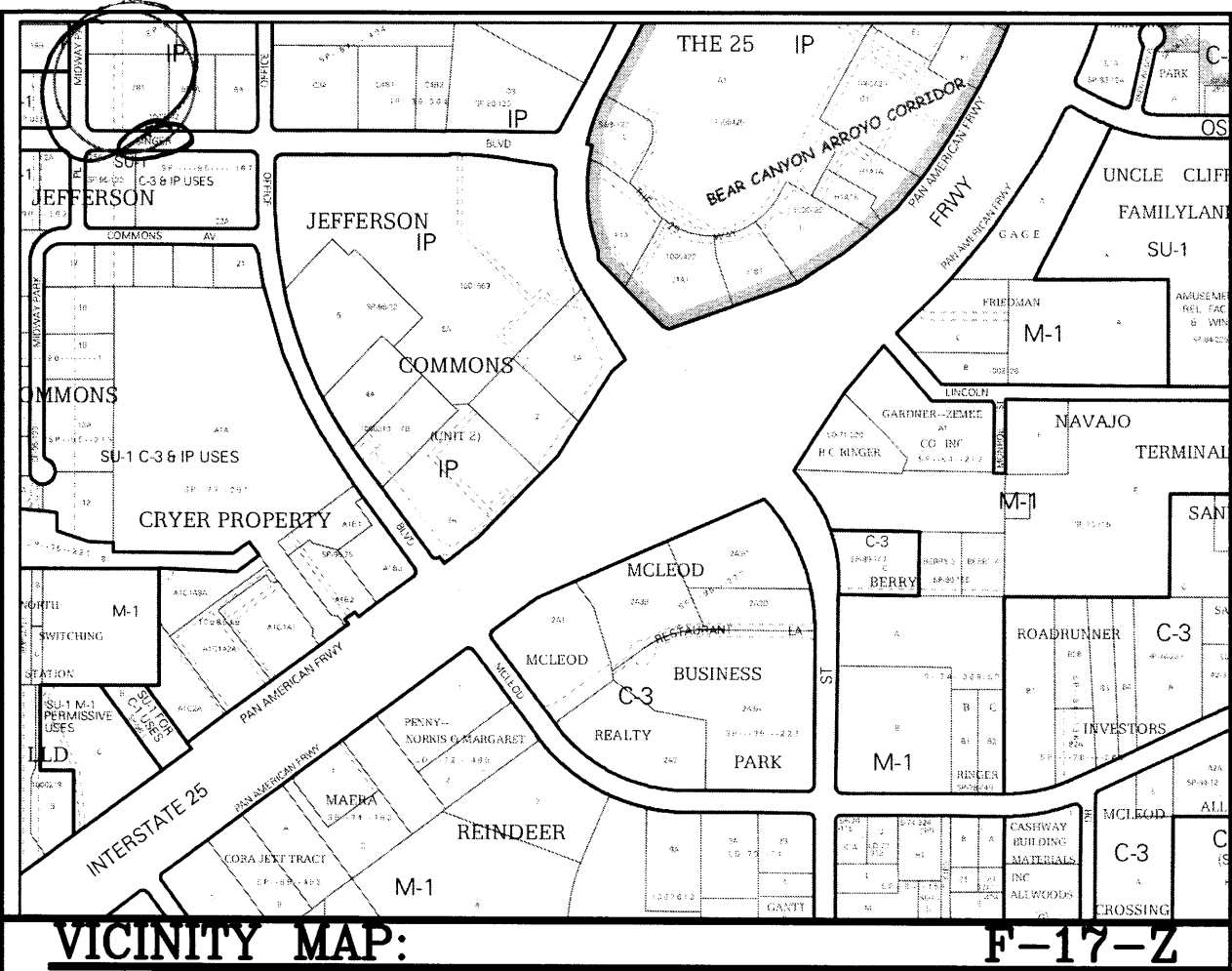
The site is analyzed as three separate subbasins. Subbasin 1 consists of the Southeastern portion of the site including most of the parking area. Subbasin 2 consists of the Western portion of the property including part of the parking lot as well as the truck yard. Subbasin 3 consists of the Northeastern portion of the site including the building. The measured areas of Treatment Types are shown at the left side of this sheet along with the calculations to determine flow rates for each of the subbasins.

The grading on the south side of the building is designed to form a swale within the parking lot in order to convey this runoff to the curb and gutter on the Southern side of the site until it reaches Pond 1. Once Pond 1 has filled, water will bypass the entrance of the pond and continue to flow along the curb and gutter. The water then drains to the curb with gutter along the West side of the property and then along this curb from South to North, with Subbasin 2 flowing to this curbline as well. The runoff water flows across a concrete swale on the Northwest portion of the subbasin and into Pond 2. The swale has a consistent depth of 0.3' (see Cross Section C-C of Sheet C-2). The combined flow rate for both Subbasins 1 and 2 is 12.27 cfs. As can be seen in the Manning's analysis for the swale found on this page, the swale has capacity for the water flowing into the water quality pond.

A swale wraps around the East and North side of the building and drains runoff into Pond 3. The swale on the east side of the building (See Cross-section A-A, Sheet C-2), is a relatively small swale. Based on the Runoff Calculations, the flow for the portion of Subbasin 3 coming to this point is 0.2 cfs. In the graph "Triangular Channel," it can be seen that the swale is sufficient to handle this flow rate.

Once Pond 3 has reached capacity, runoff water overflows into a swale leading to Pond 2. The overflow from Pond 2 discharges to Midway Park Boulevard through a 3' x 0.5' concrete weir in smaller storms and also through the proposed driveway in larger storms. The total discharge rate to Midway Park Boulevard in a 100 year storm is 13 cfs.

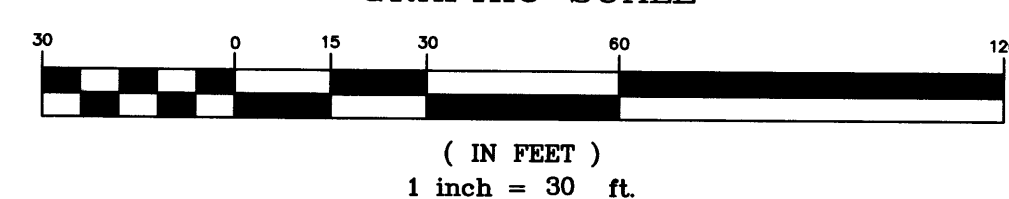
This plan includes berm along the eastern property boundary that will allow Tract 6-B-1-A-1 to drain as it was originally designed and stop water from flowing onto Tract 7-B-1-A. Both tracts are owned by the same party. To avoid water flowing onto Tract 7-B-1-A from Tract 8-B-1 due to the property line adjustment, a proposed curb and gutter is proposed to be installed along the Southern side of Tract 8-B-1, with a sidewalk culvert allowing collected runoff to discharge to Midway Park Boulevard. Both of these tracts are owned by the same party.



Legend

- UTILITY POLE
- GUY WIRE
- TRANSFORMER
- ELECTRIC BOX
- WATER METER
- ROOF DRAIN
- WATER VALVE
- FIRE HYDRANT
- IRRIGATION CONTROL VALVE
- SIDEWALK CULVERT
- EDGE OF ASPHALT
- BLUESTAKE ELECTRIC LINE
- BLUESTAKE GAS LINE
- OVERHEAD UTILITY LINE
- BLUESTAKE WATER LINE
- SUBBASIN BOUNDARY
- PROPERTY LINE
- PROPOSED POND ELEVATIONS
- EXISTING CONTOURS
- PROPOSED CONTOURS
- LANDSCAPING HATCH

GRAPHIC SCALE



ENGINEER'S SEAL



HUGH W. FLOYD
 P.E. 16633

3801 Singer Blvd. NE
 Albuquerque, N.M. 87109

CONCEPTUAL DRAINAGE PLAN

FLOYD DEVELOPMENT SERVICES, LLC
 DEVELOPMENT, ENGINEERING, & WATERSHED
 CONSULTING
 918 PINEHURST RD SE, SUITE 102
 RIO RANCHO, NM 87124
 HUGH@DEVELOPNM.COM
 505-366-4187

DRAWN
 BY JWS

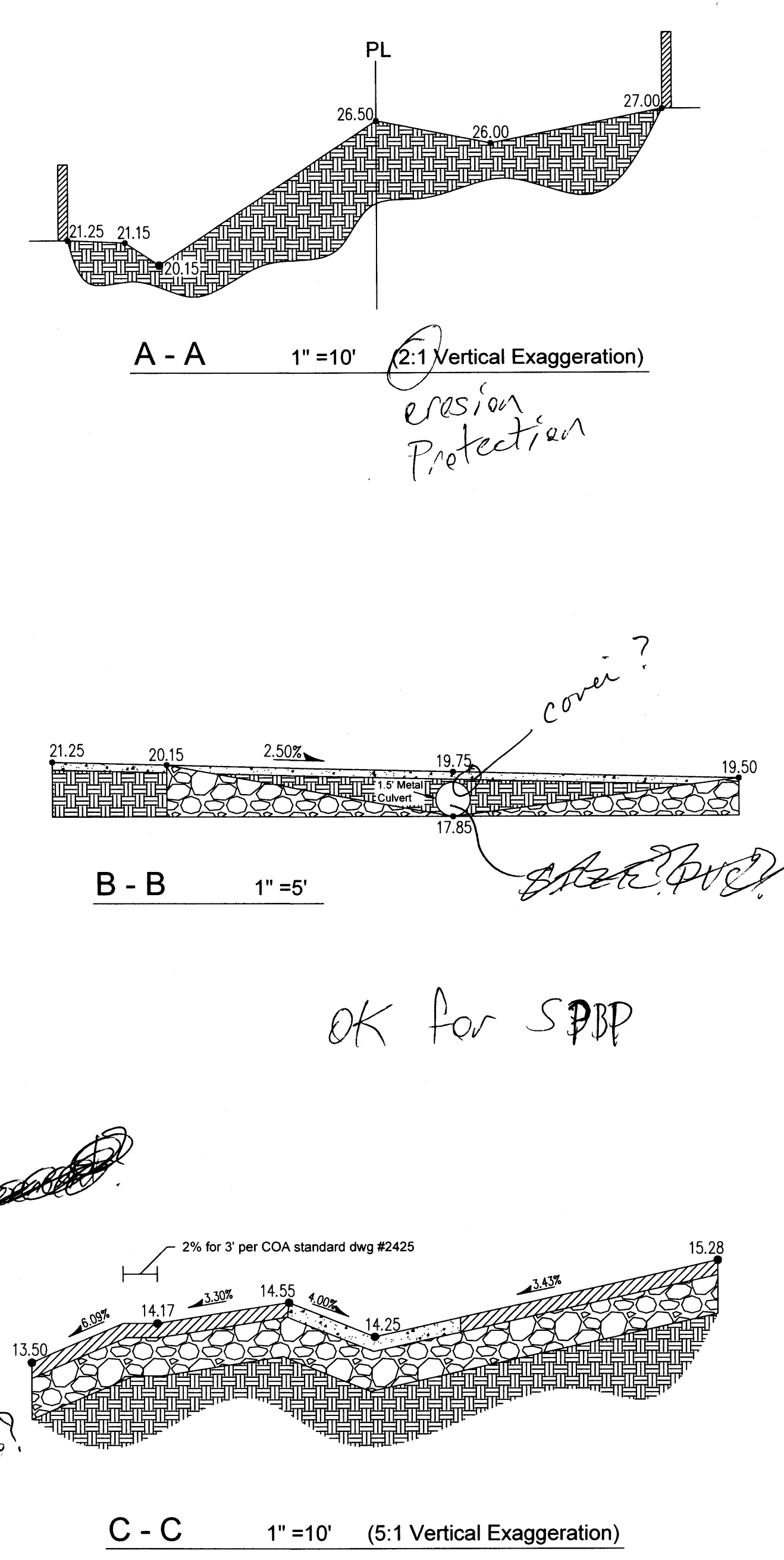
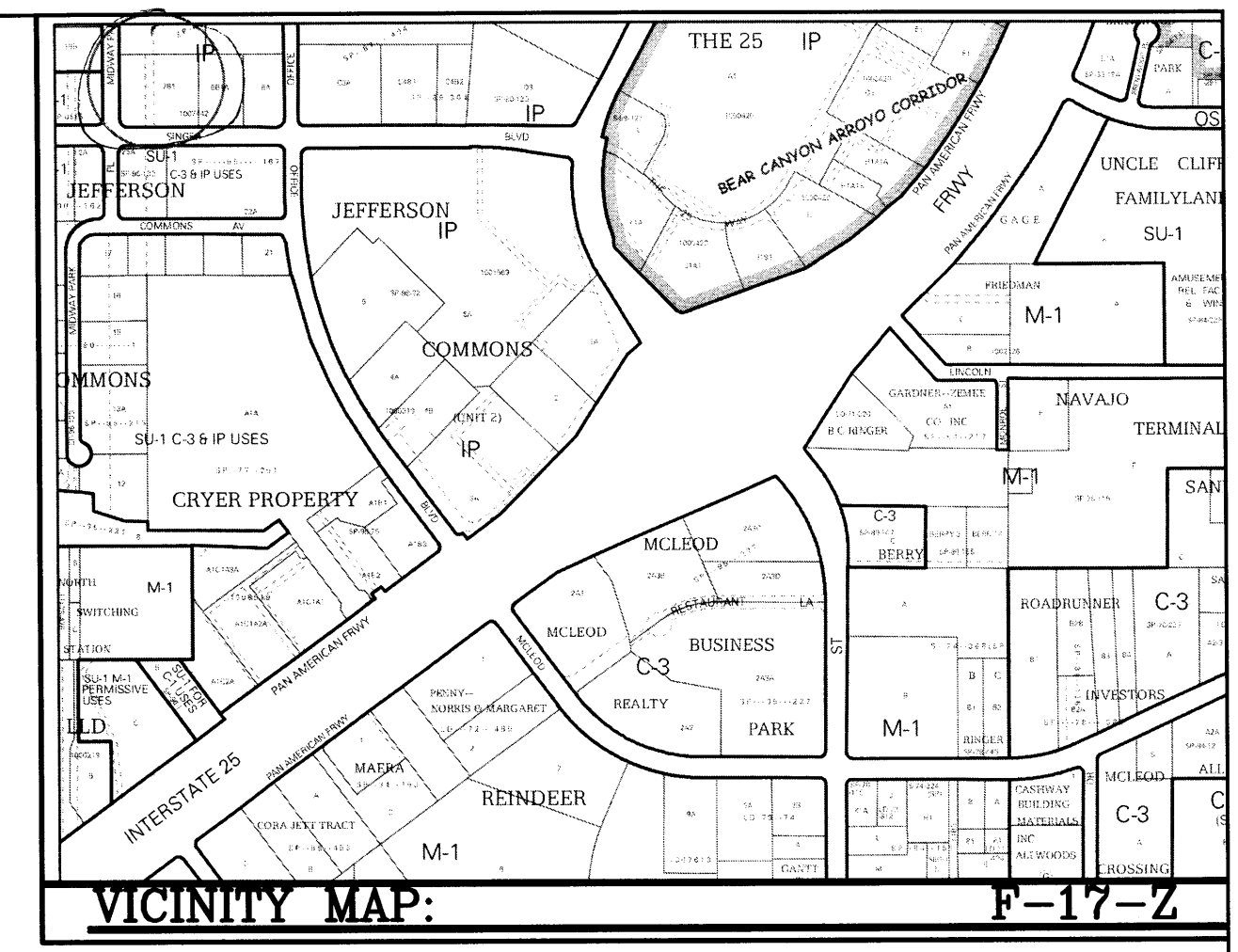
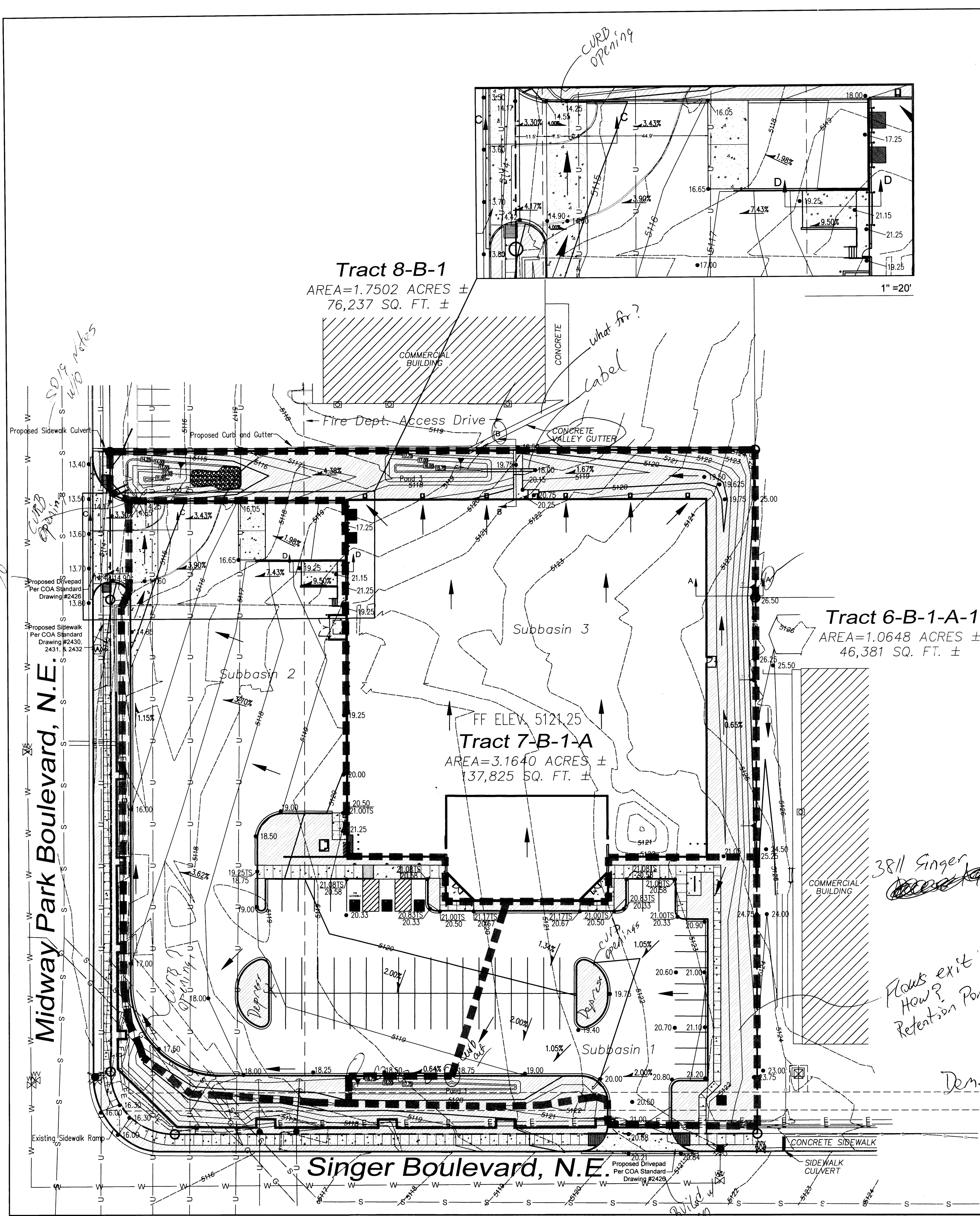
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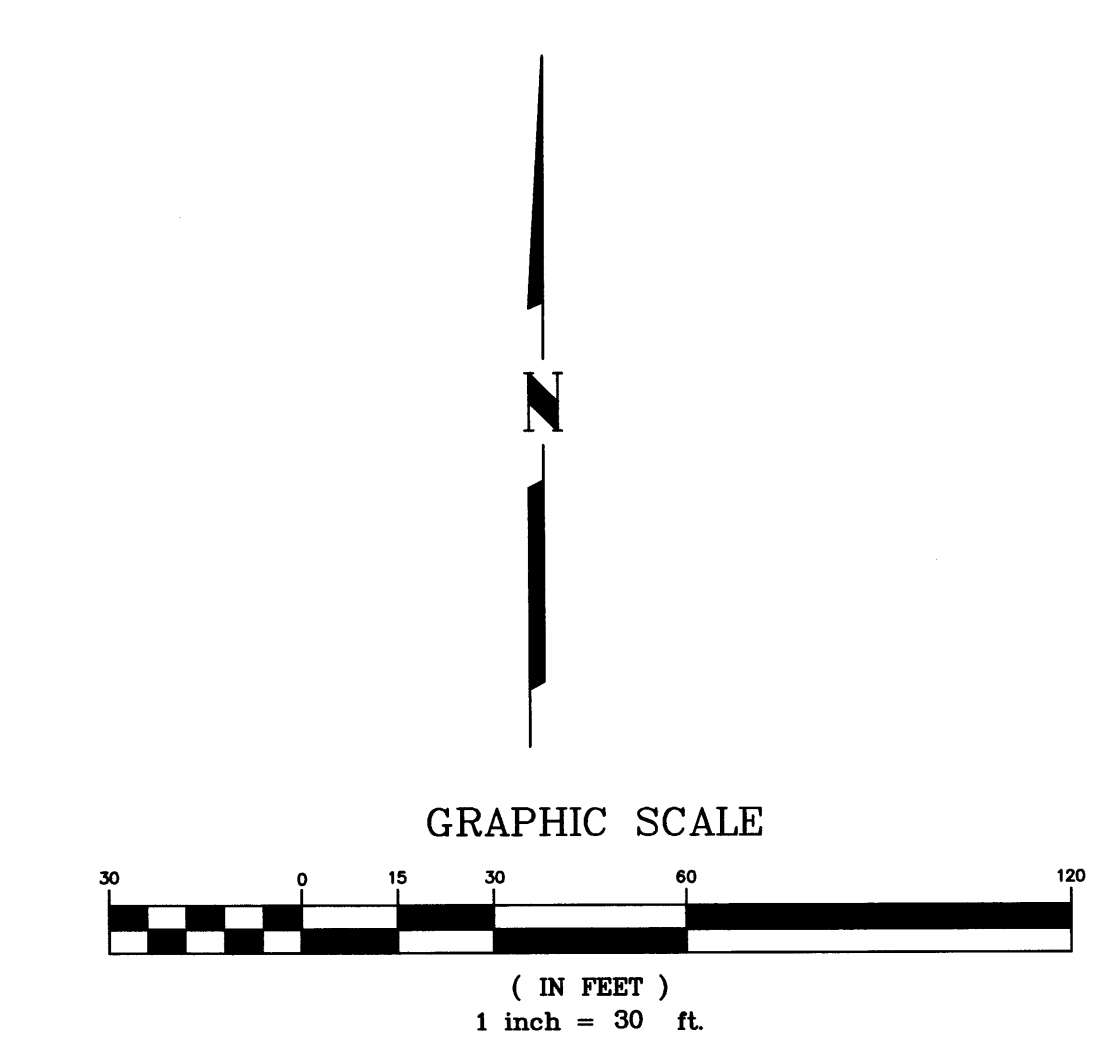
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C1

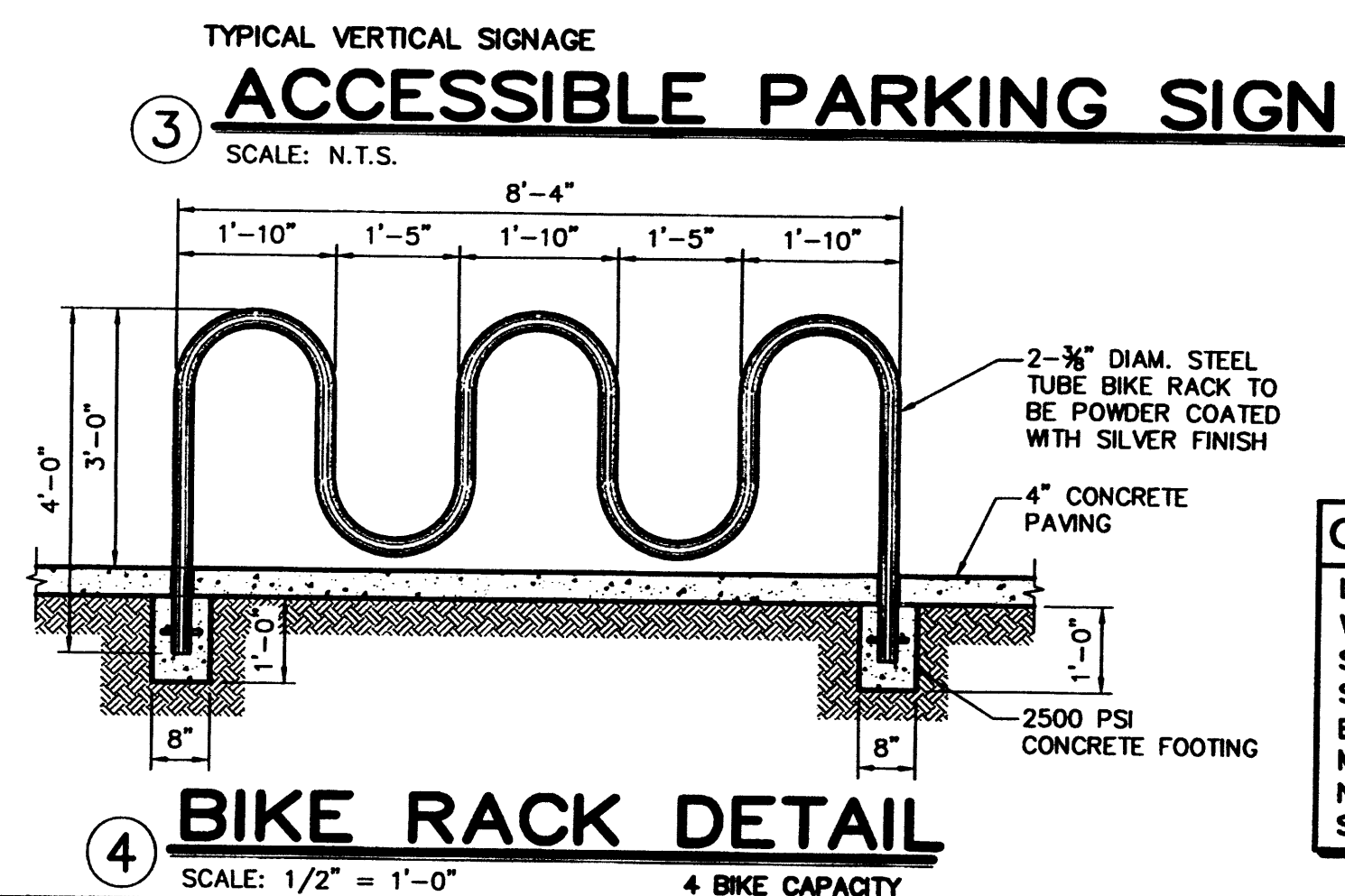
JOB #
 019-15-200



- Legend**
- UTILITY POLE
 - GUY WIRE
 - TRANSFORMER
 - ELECTRIC BOX
 - WATER METER
 - ROOF DRAIN
 - WATER VALVE
 - FIRE HYDRANT
 - IRRIGATION CONTROL VALVE
 - SIDEWALK CULVERT
 - EDGE OF ASPHALT
 - BLUESTAKE ELECTRIC LINE
 - BLUESTAKE GAS LINE
 - OVERHEAD UTILITY LINE
 - BLUESTAKE WATER LINE
 - SUBBASIN BOUNDARY
 - PROPERTY LINE
 - PROPOSED POND ELEVATIONS
 - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - LANDSCAPING HATCH



ENGINEER'S SEAL	3801 Singer Blvd. NE Albuquerque, N.M. 87109	DRAWN BY JWS
	CONCEPTUAL GRADING PLAN	DATE 9-2-2015
	FLOYD DEVELOPMENT SERVICES, LLC DEVELOPMENT, ENGINEERING, & WATERSHED CONSULTING 918 PINEHURST RD SE, SUITE 102 RIO RANCHO, NM 87124 HUGH@DEVELOPNM.COM 505-366-4187	019-15-200_base.dwg
HUGH W. FLOYD P.E. 16633		SHEET C2
		JOB # 019-15-200



Curve Table

CURVE	RADIUS	ARC LENGTH	TANGENT	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	35.00'	55.88'	35.92'	91°28'47"	N 45°18'46" W	50.13'
	(35.00')	(55.08')	(35.08')	(90°08'05")		

PROVIDED 4 BIKE RACK

* Environmental Health, if necessary

CONSTRUCTION TYPE: II-E
BUILDING HEIGHT 34'-0" TALL

—0" WIDE
CONCRETE WALK
OR ACCESSIBLE ROUTE
(SEE CIVIL SHEET 4
OR WALK DETAILS)

1

[illegible]

0" WIDE
CONCRETE WALK

FOR ACCESSIBLE ROUTE
SEE CIVIL SHEET 4)
-0" WIDE

CONCRETE WALK
SEE DETAIL 2/AC-3)

[illegible][illegible]

WIDE X 15' P.N.M.
EMENT GRANTED
BY THIS PLAT

CLEAR SIGHT TRIANGLE

	MUNICIPAL TRAFFIC E TABLE 2
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154.52'

NOTE

CONSTR
APRON I

**SINGER I
WITH TH
PROJECT**

TABLE 1

3815 SINGER BLVD. N.E.

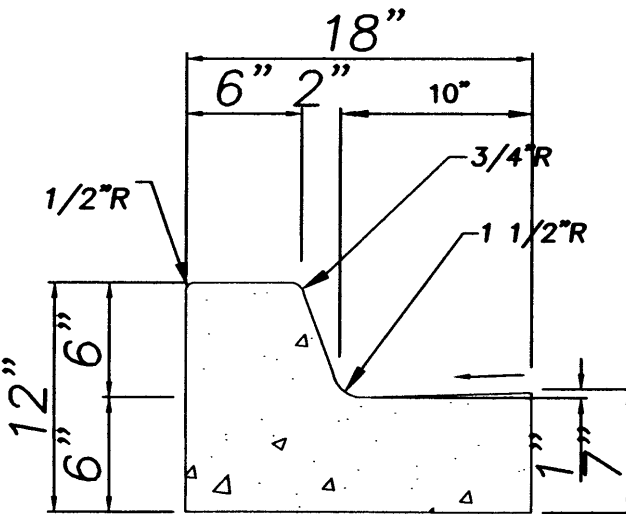
PSRBB
Industrial Group, Inc.
1845 NORTHWESTERN DRIVE, SUITE A
915 877-2020

SHEET: AC-1

1 OF 2

GENERAL NOTES:

- CURBS & GUTTERS TO BE CONSTRUCTED TO P.C.C.
- FOR STANDARD C & G, PROVIDE CONTRACTION JTS. 6" O.C. MAX. ALSO PROVIDE 1/2" EXP. JTS. 48" O.C. MAX. AT CURB RETURNS & AT EACH SIDE OF DRIVEWAY & ADJACENT TO WALLS & BUILDINGS
- EDGES NOT SPEC. DIMENSIONED SHALL BE EDGED WITH A 3/8" EDGING TOOL.
- STD. C & G SHALL BE USED FOR NEW CONSTR. UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- REMOVE & REPLACE 12" WIDE STRIP OF PAVEMENT BEYOND LIP OF GUTTER WHEN CONSTRUCTING C & G. ADJACENT TO EXIST. A.C. PAVEMENT.
- STD. C & G REQUIRE FULL FORM ON ALL FACES EXCEPT WITH PRIOR APPROVAL OF ENGINEER.



ON-SITE STD. CURB AND GUTTER
NTS

RIPRAP NOTES:

ALL RIP-RAP SHALL CONSIST OF 9" OF RIP-RAP OVER 8" OF FILTER MATERIAL.

RIP-RAP

RIP-RAP SHALL CONSIST OF CRUSHED ROCK MEETING THE FOLLOWING GRADATION, OR ENGINEER APPROVED EQUIVALENT.

MAX. DIMENSION	% SMALLER
1/2"	50-60
3/4"	35-45
1"	10

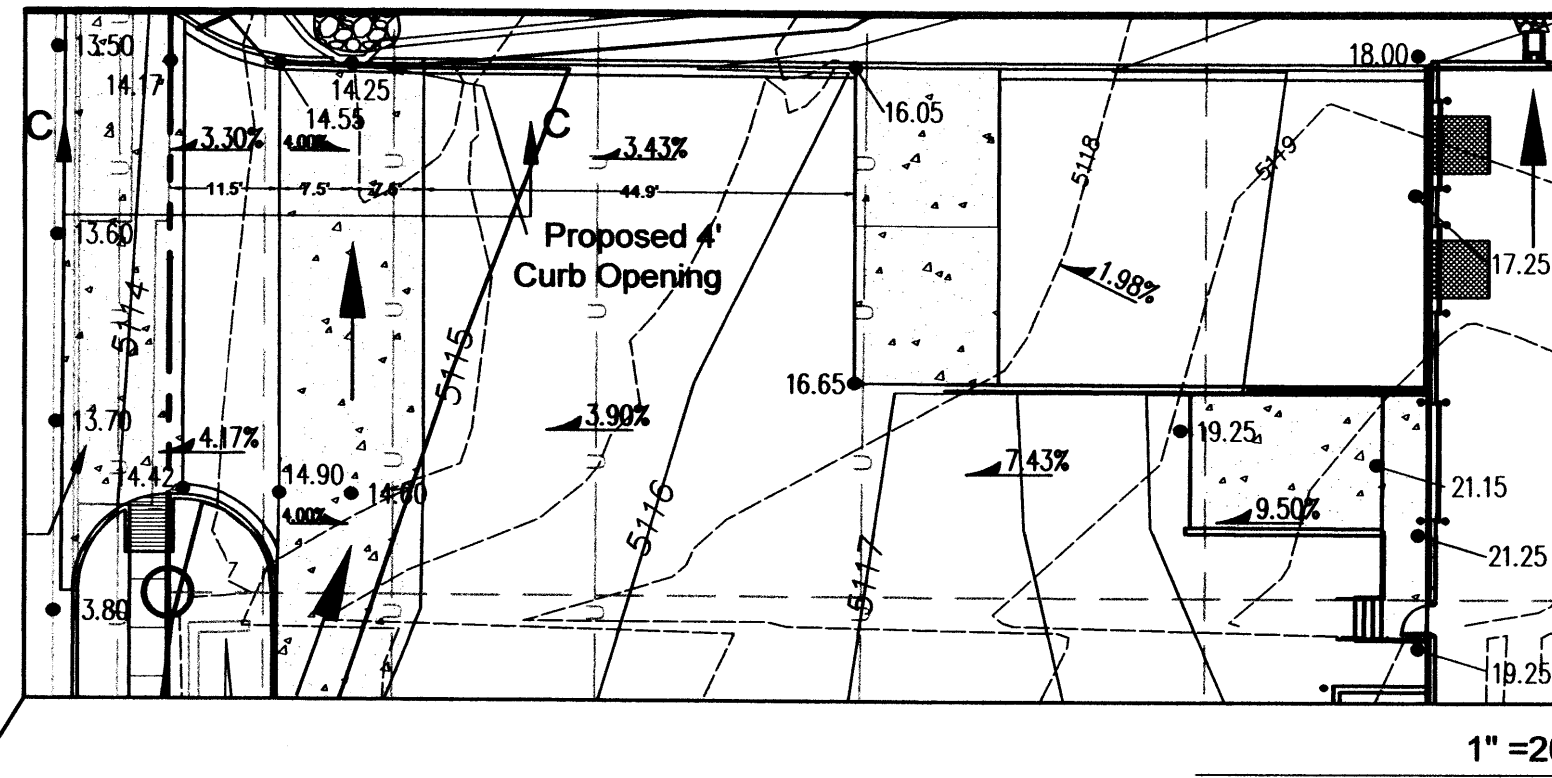
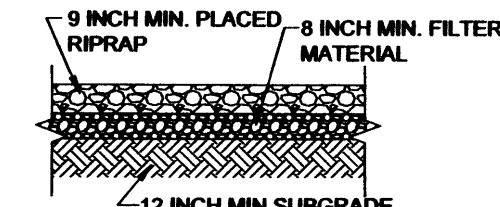
FILTER MATERIAL

FILTER MATERIAL SHALL CONSIST OF CRUSHED BASALT ROCK MEETING THE FOLLOWING GRADATION, OR ENGINEER APPROVED EQUIVALENT.

U.S. STANDARD SIZE	PASSING NO. 100
1/2"	45-65
3/4"	25-45
1"	10-20
1 1/2"	0-5

FILTER MATERIAL SHALL BE PLACED UNDER THE RIP-RAP CHANNEL PAVEMENT AS SHOWN HEREON. THE SUBGRADE SHALL BE PROCESSED TO A 1 1/2" MIN. DEPTH AND COMPACTED TO 95% MIN. RELATIVE DENSITY PER ASTM D 1557. THE FILTER MATERIAL SHALL BE TAMPED AND SHADED TO FORM A SMOOTH, EVEN, AND FIRM FOUNDATION FOR THE OVERLYING RIP-RAP. THE CONTRACTOR'S OPERATIONS AND METHODS OF PLACING SHALL PREVENT SEGREGATION OF THE MATERIALS. THE FILTER MATERIAL SHALL BE PLACED AND TAMPED IN THE VIEWS OF THE RIP-RAP.

RIPRAP CROSS SECTION
NTS



Runoff Calculations:

The following calculations are based on Zone 2 from Table A-9 found in the Albuquerque Development Process Manual, Section 22.2, page 15.

100 YEAR PEAK DISCHARGE - TABLE A-9				
ZONE	A	B	C	D
1	1.290	2.030	2.870	4.370
2	1.560	2.280	3.140	4.700
3	1.870	2.600	3.450	5.020
4	2.200	2.920	3.730	5.250

Subbasin 1:
Treatment Type Areas for Subbasin 1:
 $Area_{A1}=0$ $Area_{B1}=0$ $Area_{C1}=0.1714$ $Area_{D1}=0.3283$ Ac
 $Q_{s1}=1.560 \cdot Area_{A1} + 2.280 \cdot Area_{B1} + 3.140 \cdot Area_{C1} + 4.700 \cdot Area_{D1}=2.081$ cfs

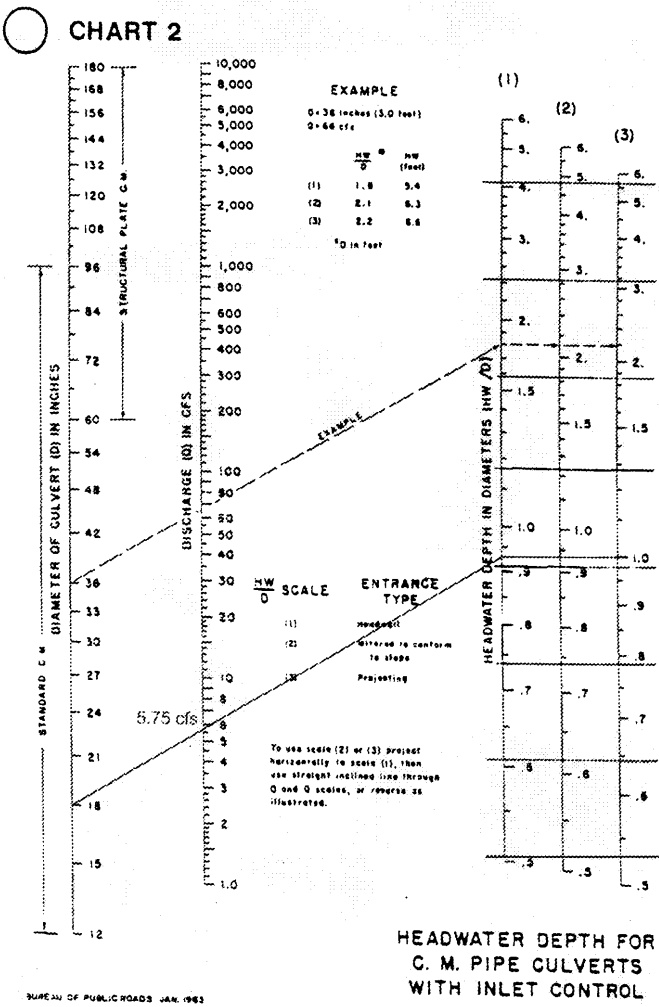
Subbasin 2:
Treatment Type Areas for Subbasin 2:
 $Area_{A2}=0$ $Area_{B2}=0$ $Area_{C2}=0.1098$ $Area_{D2}=1.0297$ Ac
 $Q_{s2}=1.560 \cdot Area_{A2} + 2.280 \cdot Area_{B2} + 3.140 \cdot Area_{C2} + 4.700 \cdot Area_{D2}=5.184$ cfs

Subbasin 3:
Treatment Type Areas for Subbasin 3:
 $Area_{A3}=0$ $Area_{B3}=0$ $Area_{C3}=0.3508$ $Area_{D3}=0.9815$ Ac
 $Q_{s3}=1.560 \cdot Area_{A3} + 2.280 \cdot Area_{B3} + 3.140 \cdot Area_{C3} + 4.700 \cdot Area_{D3}=5.715$ cfs

Total:
 $Q_s=Q_{s1}+Q_{s2}+Q_{s3}=12.98$ cfs

Water Quality Calculations:

Subbasin 1:
 $PWQ_{s1}=Area_{D1} \cdot 43560 \cdot \frac{0.34}{12}=405.064$ cu. ft.
Subbasin 2:
 $PWQ_{s2}=Area_{D2} \cdot 43560 \cdot \frac{0.34}{12}=1270.856$ cu. ft.
Subbasin 3:
 $PWQ_{s3}=Area_{D3} \cdot 43560 \cdot \frac{0.34}{12}=1211.367$ cu. ft.
Total Required Subbasin Volume:
 $PWQ_s=PWQ_{s1}+PWQ_{s2}+PWQ_{s3}=2887.287$ cu. ft.



SO-19

NOTICE TO CONTRACTORS

- AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
- ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
- TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
- BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
- MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
- WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR		

Truck Yard Swale

Triangular Channel Input	
Flow	7.265 cfs
Slope	0.00778 ft/ft
Manning's n	0.015
Base Width	28.15 ft
Right Side Slope	3:1
Left Side Slope	25:1
Output	
Depth	0.305 ft
Flow Area	2.32 sf
Velocity	2.88 fps
Velocity Head	0.129 ft
Top Width	16.5 ft
Froude Number	1.30
Critical Depth	0.339 ft
Critical Slope	0.00445 ft/ft

Landscaping Swale

Triangular Channel Input	
Flow	0.3 cfs
Slope	0.0065 ft/ft
Manning's n	0.015
Base Width	0 ft
Right Side Slope	3:1
Left Side Slope	3:1
Output	
Depth	0.320 ft
Flow Area	0.308 sf
Velocity	0.975 fps
Velocity Head	0.0148 ft
Top Width	1.92 ft
Froude Number	0.429
Critical Depth	0.228 ft
Critical Slope	0.0395 ft/ft

Culvert Capacity

Circular Channel Input	
Flow	5.75 cfs
Slope	0.075 ft/ft
Manning's n	0.024
Diameter	18 in
Output	
Depth	0.631 ft
Flow Area	0.703 sf
Velocity	8.15 fps
Velocity Head	1.03 ft
Top Width	1.48 ft
Froude Number	2.06
Critical Depth	0.925 ft
Critical Slope	0.0208 ft/ft

Tract 8-B-1 Sidewalk Culvert

Rectangular Channel Input	
Flow	3 cfs
Slope	0.04 ft/ft
Manning's n	0.015
Base Width	1.5 ft
Right Side Slope	0:1
Left Side Slope	0:1
Output	
Depth	0.261 ft
Flow Area	0.392 sf
Velocity	7.65 fps
Velocity Head	0.911 ft
Top Width	1.50 ft
Froude Number	2.64
Critical Depth	0.488 ft
Critical Slope	0.00613 ft/ft

Purvis Industries Warehouse Drainage

Background

Tract 7-B-1-A is allowed free discharge per the Drainage report for Singer Business Park (1985; E17D041F). This site has already been developed in accordance with these conditions. According to this report, basin 1-B includes 6-B-1-A and 6-A and basin 2-B includes Tracts 7-B-1 and a portion of 8-B. Basin B-1 was intended to drain onto Singer Blvd and around the corner onto Midway Park Blvd, while basin B-2 was intended to drain onto Midway Park. Both basins drain to the North Diversion Channel located to the West. Basin B-2 has a peak runoff rate of 18.71 cfs and the downstream channel has been sized based on this amount. Currently, the site plan does not include any water quality features. As a part of this project, water quality ponding will be provided for Tract 7-B-1-A. Tract 7-B-1-A is created from Tract 7-B-1, which is the existing property to the North.

Existing Conditions

The site is approximately 3 acres and slopes primarily from east to west at 3% and slightly from south to north. Currently, this site receives additional water from the site to the East. However, the Montessori School Drainage and Grading Plan (1988, F17D054) shows a swale to divert all flow from the Eastern site to Singer Boulevard. There is also another plan for a Montessori School expansion (1989), which was not constructed. For Tract 7-B-1, all runoff currently flows to the West until reaching that portion of the site adjacent Midway Park Blvd NE, with flows discharging to Midway through the existing drive opening at the northwest corner of the site.

Methodology

Hydrology calculations for the site are performed in accordance with the Albuquerque DPM Section 22.2 using the Rational Method to calculate the peak flow rates to insure that flow paths, such as swales and gutters, are sufficient to carry flows to the water quality ponds located on-site.

The Water Quality ponding volume required was calculated by multiplying the impervious area of each individual subbasin by the first flush runoff value of 0.34". The water quality calculations as well as the pond rating curves can be found on the left side of this sheet.

Offsite Flows

To avoid water flowing onto Tract 7-B-1-A from Tract 8-B-1 due to the property line adjustment, a proposed curb and gutter is proposed to be installed along the Southern side of Tract 8-B-1, with a sidewalk culvert allowing collected runoff to discharge to Midway Park Boulevard. As can be seen in the Manning's calculations under "Tract 8-B-1 Sidewalk Culvert," the culvert has sufficient capacity for a peak flow rate of 3 cfs. Both of these tracts are owned by the same party.

This plan includes a berm along the eastern property boundary that will allow Tract 6-B-1-A-1 to drain property and stop water from flowing onto Tract 7-B-1-A. This berm is to be reconstructed per the original 1988 Montessori School plan (referenced above), which showed a manning's capacity analysis for the 1.5 cfs that flows in this swale. The proposed property boundary moves the property line to the same location as shown in the 1988 plan. Both tracts are owned by the same party.

Proposed Conditions

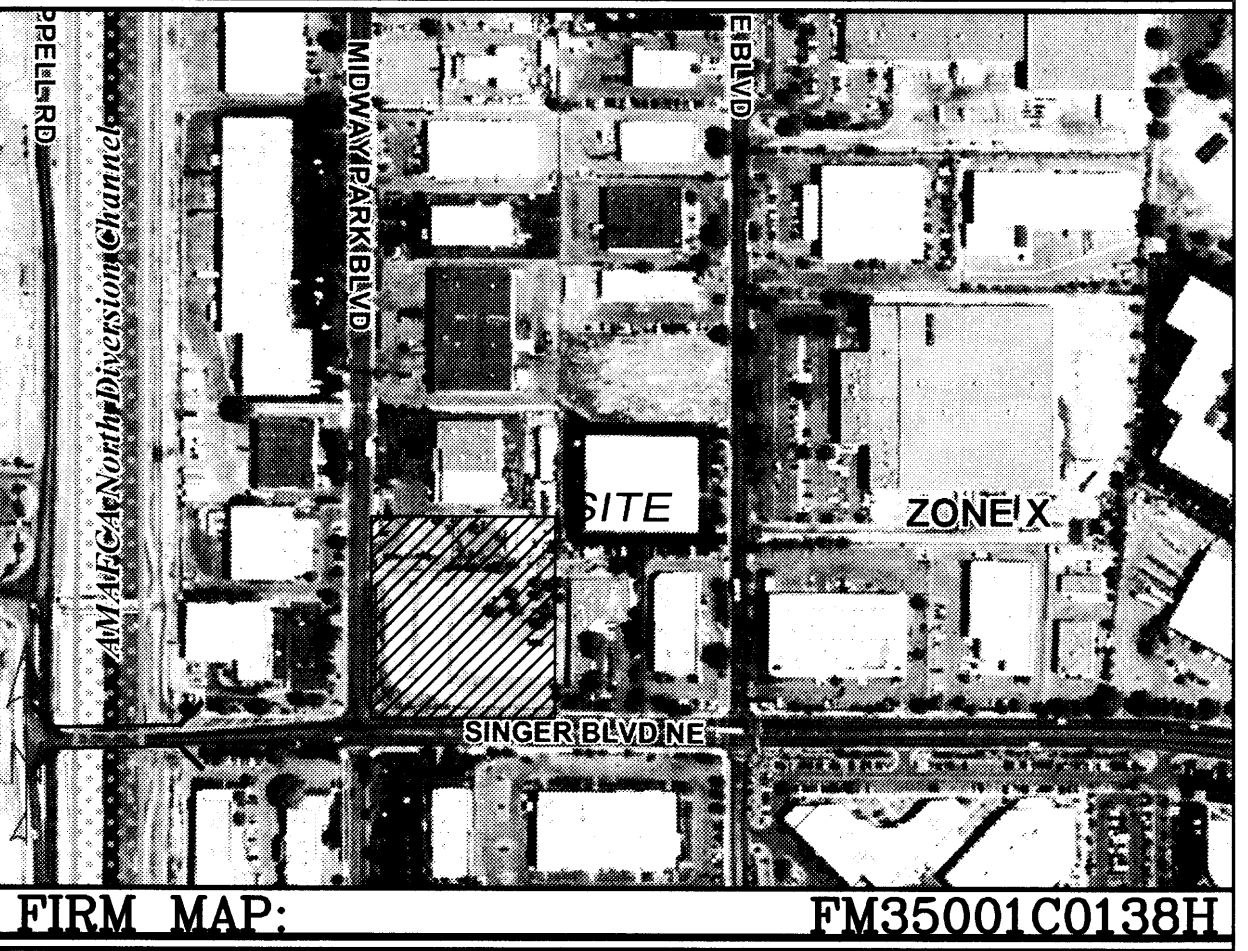
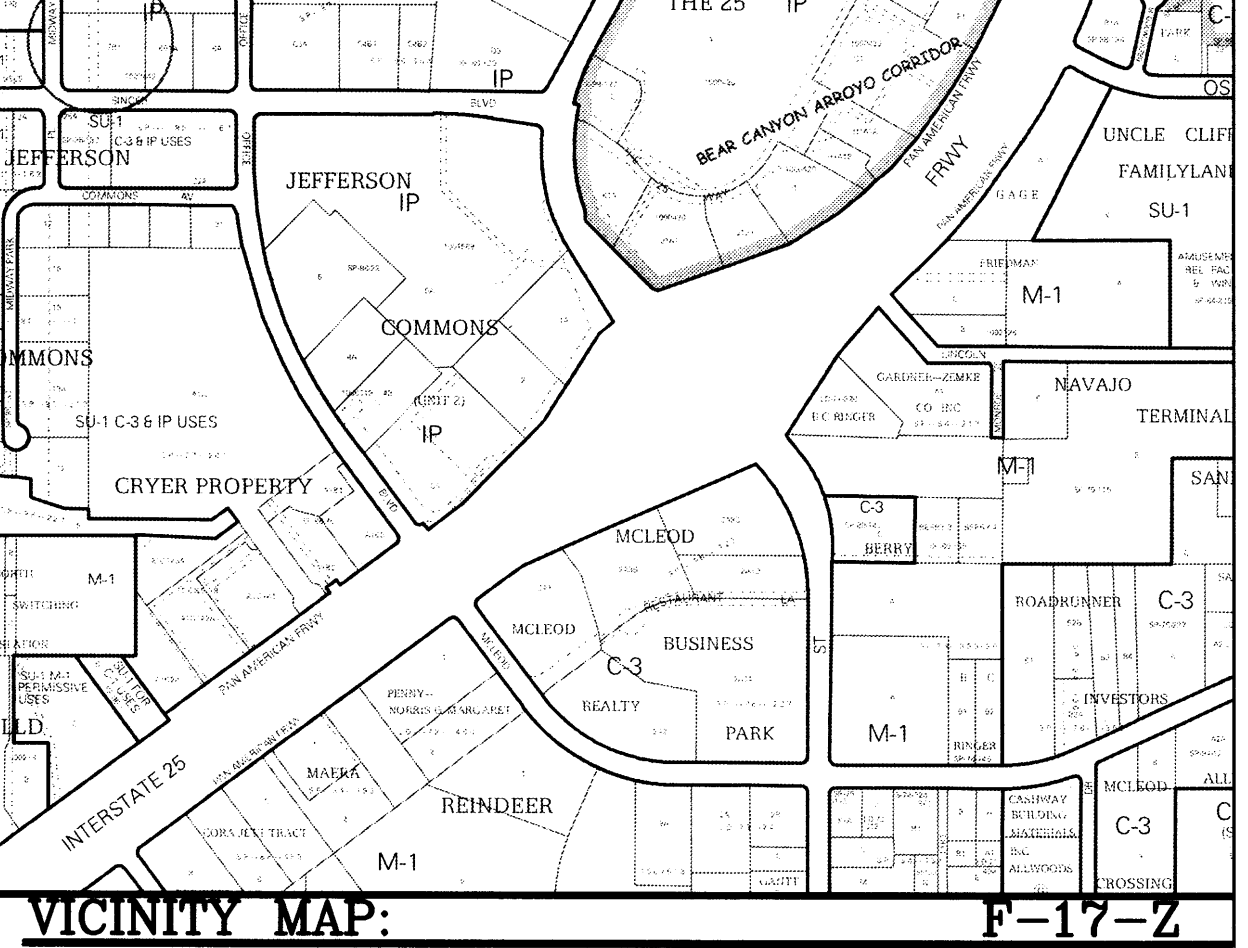
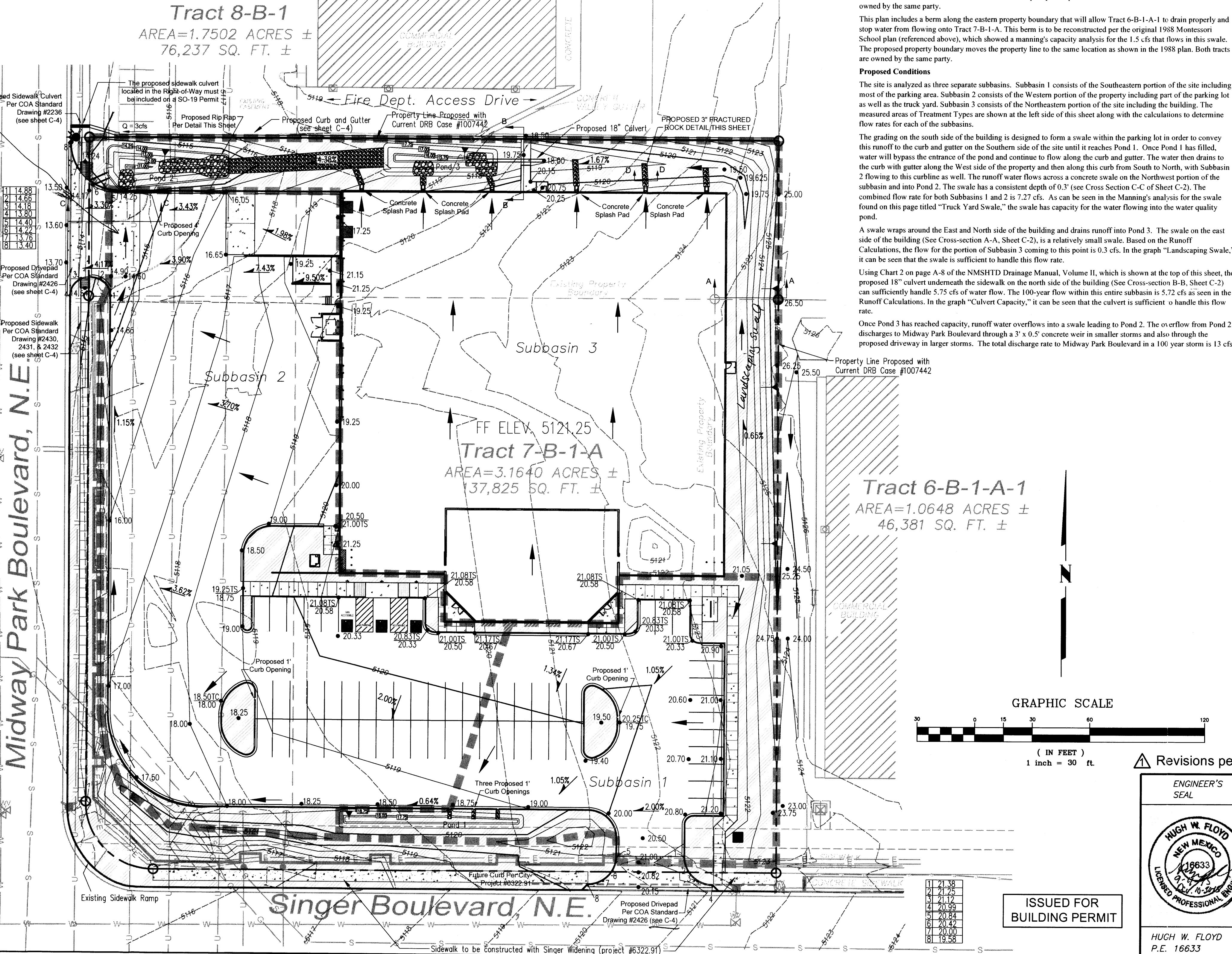
The site is analyzed as three separate subbasins. Subbasin 1 consists of the Southeastern portion of the site including most of the parking area. Subbasin 2 consists of the Western portion of the property including part of the parking lot as well as the truck yard. Subbasin 3 consists of the Northeastern portion of the site including the building. The measured areas of Treatment Types are shown at the left side of this sheet along with the calculations to determine flow rates for each of the subbasins.

The grading on the south side of the building is designed to form a swale within the parking lot in order to convey this runoff to the curb and gutter on the Southern side of the site until it reaches Pond 1. Once Pond 1 has filled, water will bypass the entrance of the pond and continue to flow along the curb and gutter. The water then drains to the curb with gutter along the West side of the property and then along this curb from South to North, with Subbasin 2 flowing to this curbline as well. The runoff water flows across a concrete swale on the Northwest portion of the subbasin and into Pond 2. The swale has a consistent depth of 0.3" (see Cross Section C-C of Sheet C-2). The combined flow rate for both Subbasins 1 and 2 is 7.27 cfs. As can be seen in the Manning's analysis for the swale found on this page titled "Truck Yard Swale," the swale has capacity for the water flowing into the water quality pond.

A swale wraps around the East and North side of the building and drains runoff into Pond 3. The swale on the east side of the building (See Cross-section A-A, Sheet C-2), is a relatively small swale. Based on the Runoff Calculations, the flow for the portion of Subbasin 3 coming to this point is 0.3 cfs. In the graph "Landscaping Swale," it can be seen that the swale is sufficient to handle this flow rate.

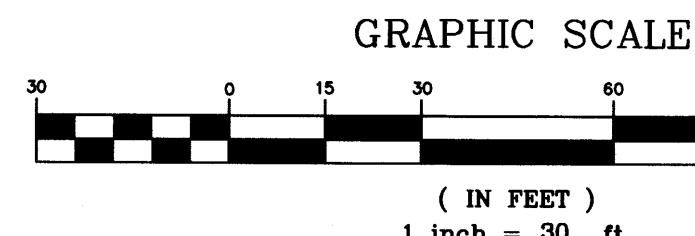
Using Chart 2 on page A-8 of the NMSHTD Drainage Manual, Volume II, which is shown at the top of this sheet, the proposed 18" culvert underneath the sidewalk on the north side of the building (See Cross-section B-B, Sheet C-2) can sufficiently handle 5.75 cfs of water flow. The 100-year flow within this entire subbasin is 5.72 cfs as seen in the Runoff Calculations. In the graph "Culvert Capacity," it can be seen that the culvert is sufficient to handle this flow rate.

Once Pond 3 has reached capacity, runoff water overflows into a swale leading to Pond 2. The overflow from Pond 2 discharges to Midway Park Boulevard through a 3' x 0.5' concrete weir in smaller storms and also through the proposed driveway in larger storms. The total discharge rate to Midway Park Boulevard in a 100 year storm is 13 cfs.



Legend

- UTILITY POLE
- GUY WIRE
- TRANSFORMER
- ELECTRIC BOX
- WATER METER
- ROOF DRAIN
- WATER VALVE
- FIRE HYDRANT
- IRRIGATION CONTROL VALVE
- SIDEWALK CULVERT
- EDGE OF ASPHALT
- BLUESTAKE ELECTRIC LINE
- BLUESTAKE GAS LINE
- OVERHEAD UTILITY LINE
- BLUESTAKE WATER LINE
- SUBBASIN BOUNDARY
- PROPERTY LINE
- PROPOSED POND ELEVATIONS
- EXISTING CONTOURS
- PROPOSED CONTOURS
- LANDSCAPING HATCH
- EXISTING PROPERTY LINE



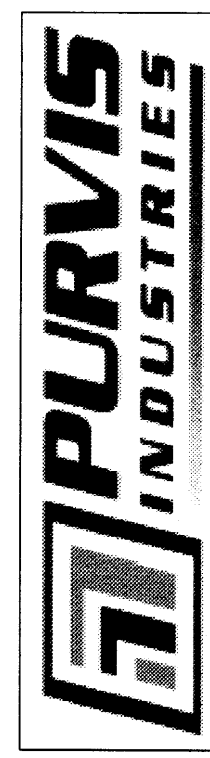
Revisions per city hydrologist comments dated 10/5/2015

ENGINEER'S SEAL
HUGH W. FLOYD
NEW MEXICO
196633
REGISTERED PROFESSIONAL ENGINEER
P.E. 16633

DRAINAGE
JOB # 019-15-200
FLOYD DEVELOPMENT SERVICES, LLC
DEVELOPMENT, ENGINEERING, & WATERSHED CONSULTING
918 PINEHURST RD SE, SUITE 101
RIO RANCHO, NM 87124
HUGH@DEVELOPNM.COM
505-366-4187

COMMISSION No. 15-121
DATE 10-2015
REV 10-2015
SHEET: C-1
1 OF 4

A NEW OFFICE / WAREHOUSE for



3815 SINGER BLVD. N.E. ALBUQUERQUE, NEW MEXICO 87109

RIPRAP NOTES:

ALL RIPRAP SHALL CONSIST OF 3" OF RIPRAP OVER 2" OF FILTER MATERIAL.

RIPRAP SHALL CONSIST OF CRUSHED ROCK MEETING THE FOLLOWING GRADATION, OR ENGINEER APPROVED EQUIVALENT.

MAX. DIMENSION	SMALLER
1/2"	100
3/4"	20-25
1"	10

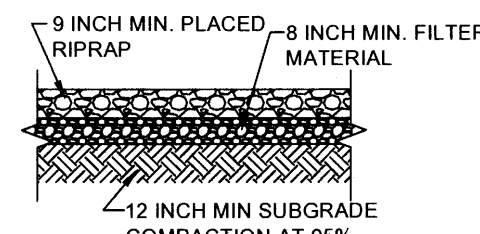
FILTER MATERIAL SHALL CONSIST OF CRUSHED BASALT ROCK MEETING THE FOLLOWING GRADATION, OR ENGINEER APPROVED EQUIVALENT.

U.S. STANDARD SIEVE SIZE	PASSING BY WEIGHT
2"	45-65
4"	25-45
8"	0-20
16"	0-5

FILTER MATERIAL SHALL BE PLACED UNDER THE RIPRAP CHANNEL. PAVEMENT AS SHOWN HEREON, THE SUBGRADE SHALL BE PROCESSED TO A 12" MIN. DEPTH AND COMPACTED TO 95% MIN. RELATIVE DENSITY PER ASTM D 1557. THE FILTER MATERIAL SHALL BE TAMPED AND SHARED TO FORM A SMOOTH, EVEN AND FIRM FOUNDATION FOR THE OVERLYING RIPRAP. THE CONSTRUCTION OPERATIONS AND METHODS OF PLACING SHALL PREVENT SEGREGATION OF THE MATERIALS. THE FILTER MATERIAL SHALL BE PLACED AND TAMPED IN THE VOIDS OF THE RIPRAP.

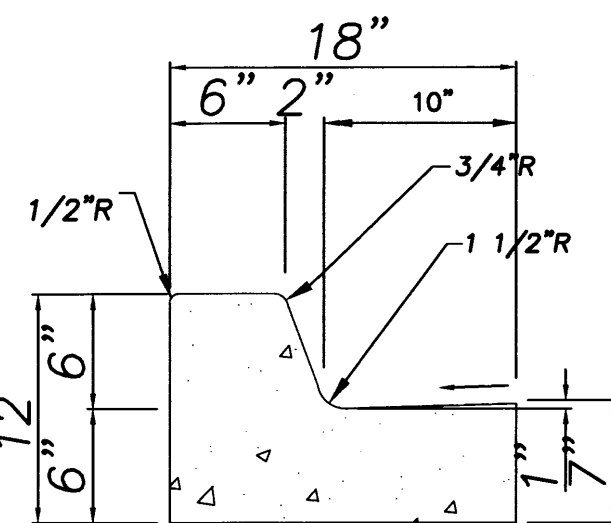
RIPRAP CROSS SECTION

NTS



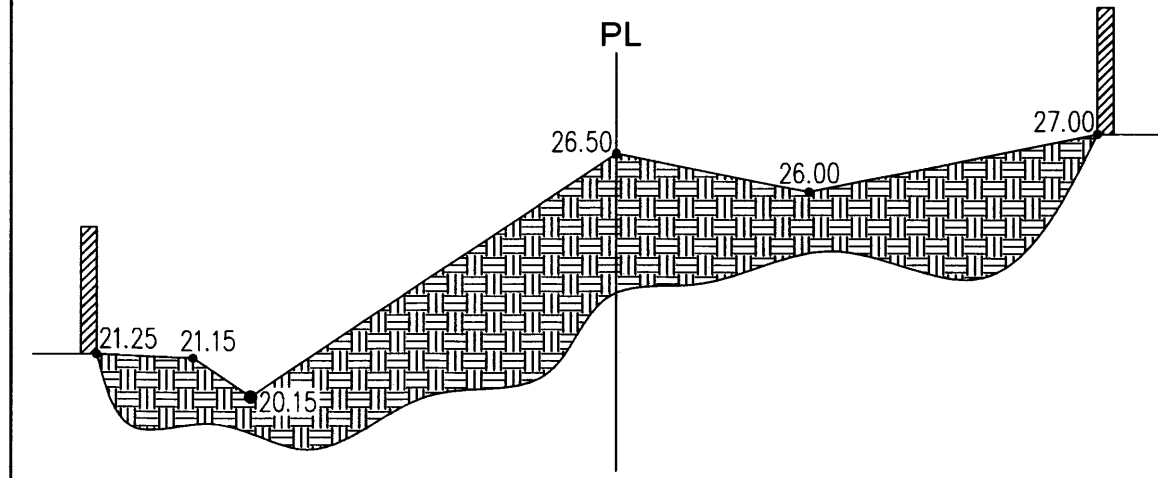
GENERAL NOTES:

- CURBS & GUTTERS TO BE CONSTRUCTED OF P.C.C.
- FOR STANDARD C. & G. PROVIDE CONTRACTION JTS. 6" O.C. MAX., ALSO PROVIDE 1/2" EXP. JTS. 48" O.C. MAX. AT CURB RETURNS & AT EACH SIDE OF DRIVEWAY & ADJACENT TO WALLS & BUILDINGS.
- EDGES NOT SPEC. DIMENSIONED SHALL BE EDGED WITH A 3/8" EDGING TOOL.
- STD. C. & G. SHALL BE USED FOR NEW CONSTR. UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- REMOVE & REPLACE 12" WIDE STRIP OF PAVEMENT BEYOND LIP OF GUTTER WHEN CONSTRUCTING C. & G. ADJACENT TO EXIST. A.C. PAVEMENT.
- STD. C. & G. REQUIRE FULL FORM ON ALL FACES EXCEPT WITH PRIOR APPROVAL OF ENGINEER.

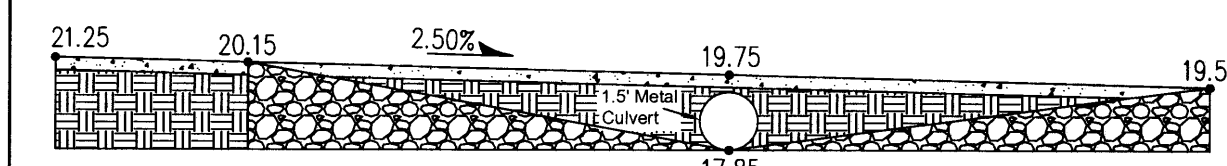


ON-SITE STD. CURB AND GUTTER

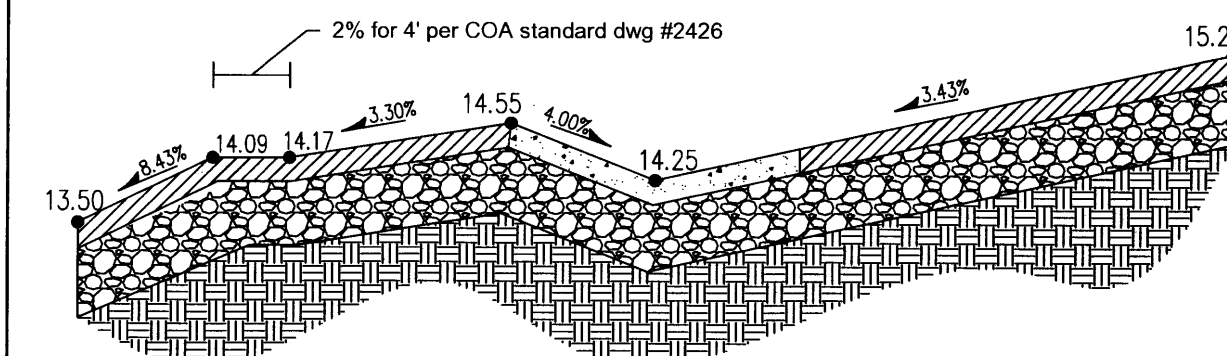
NTS



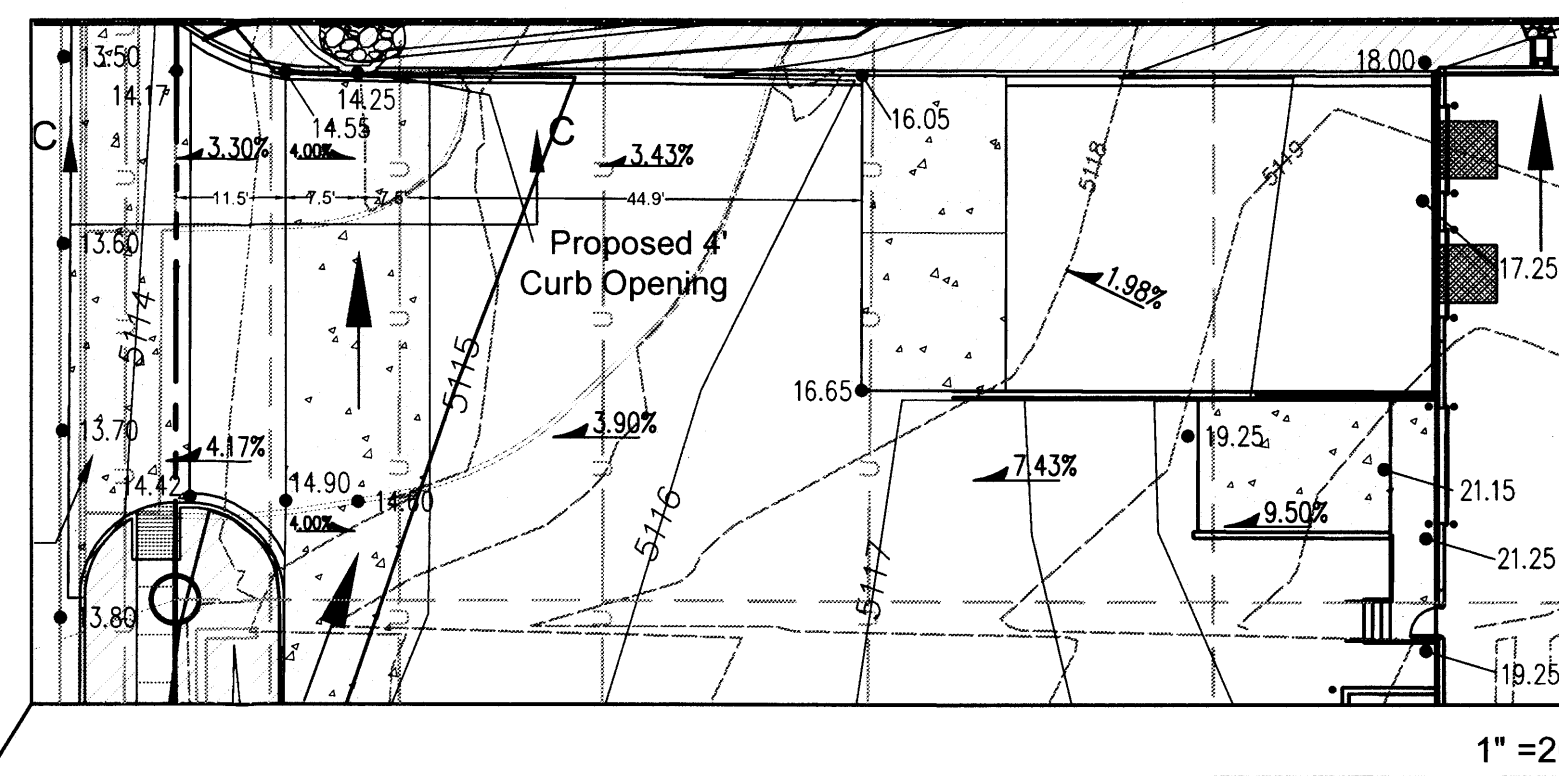
A - A 1" = 10' (2:1 Vertical Exaggeration)



B - B 1" = 5'



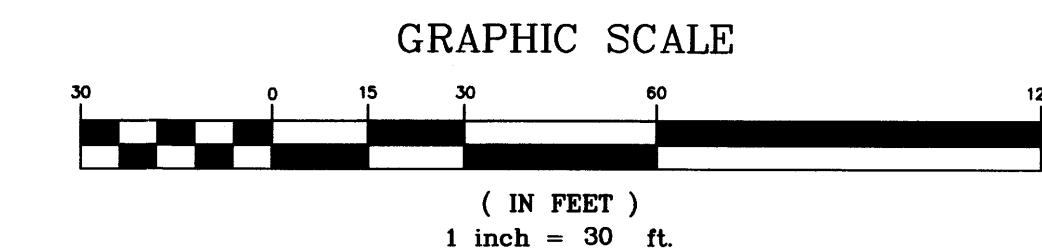
C - C 1" = 10' (5:1 Vertical Exaggeration)



1" = 20'

Legend

- UTILITY POLE
- GUY WIRE
- TRANSFORMER
- ELECTRIC BOX
- WATER METER
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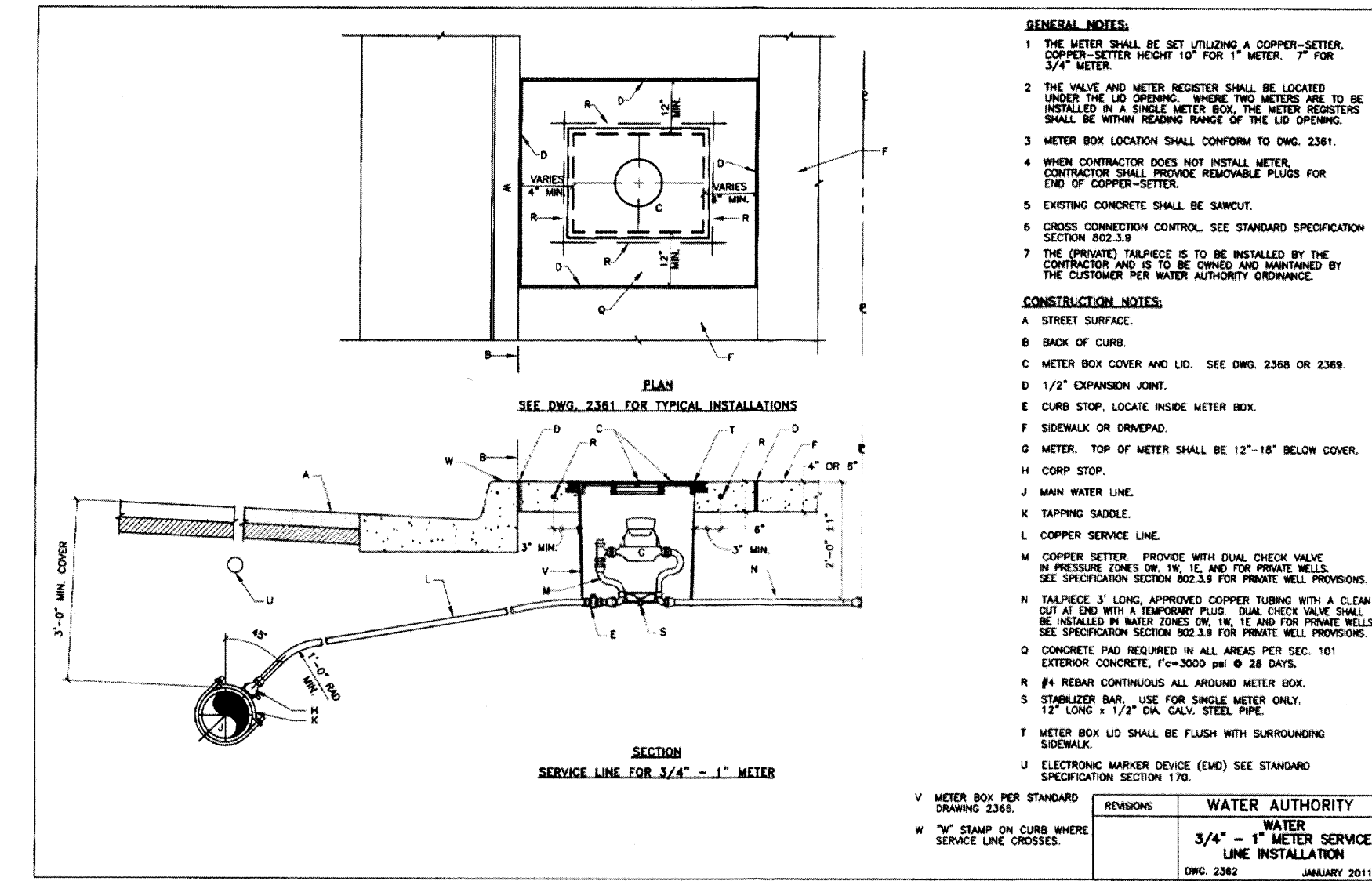
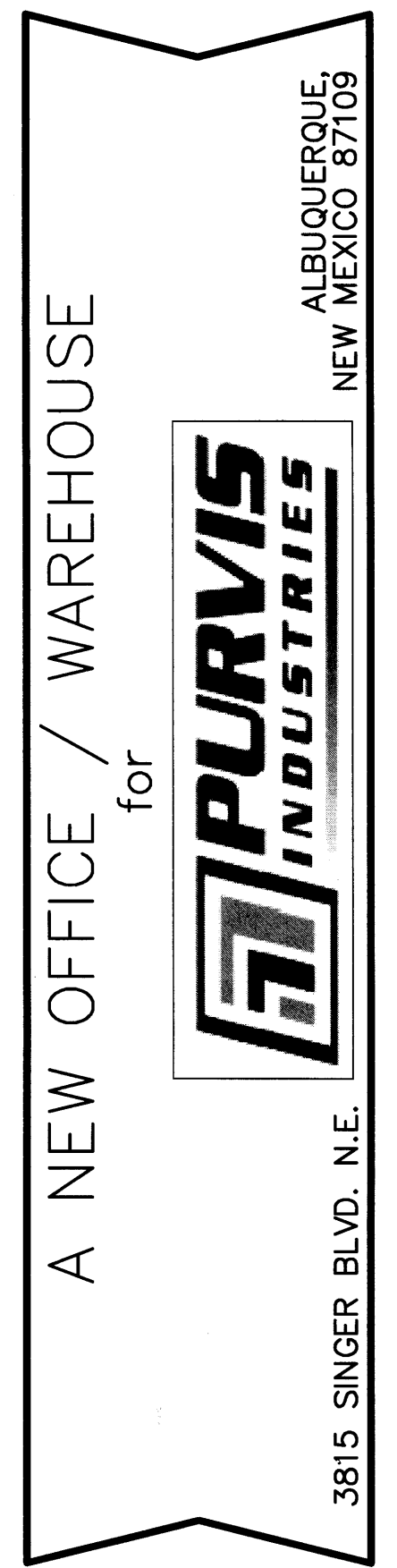
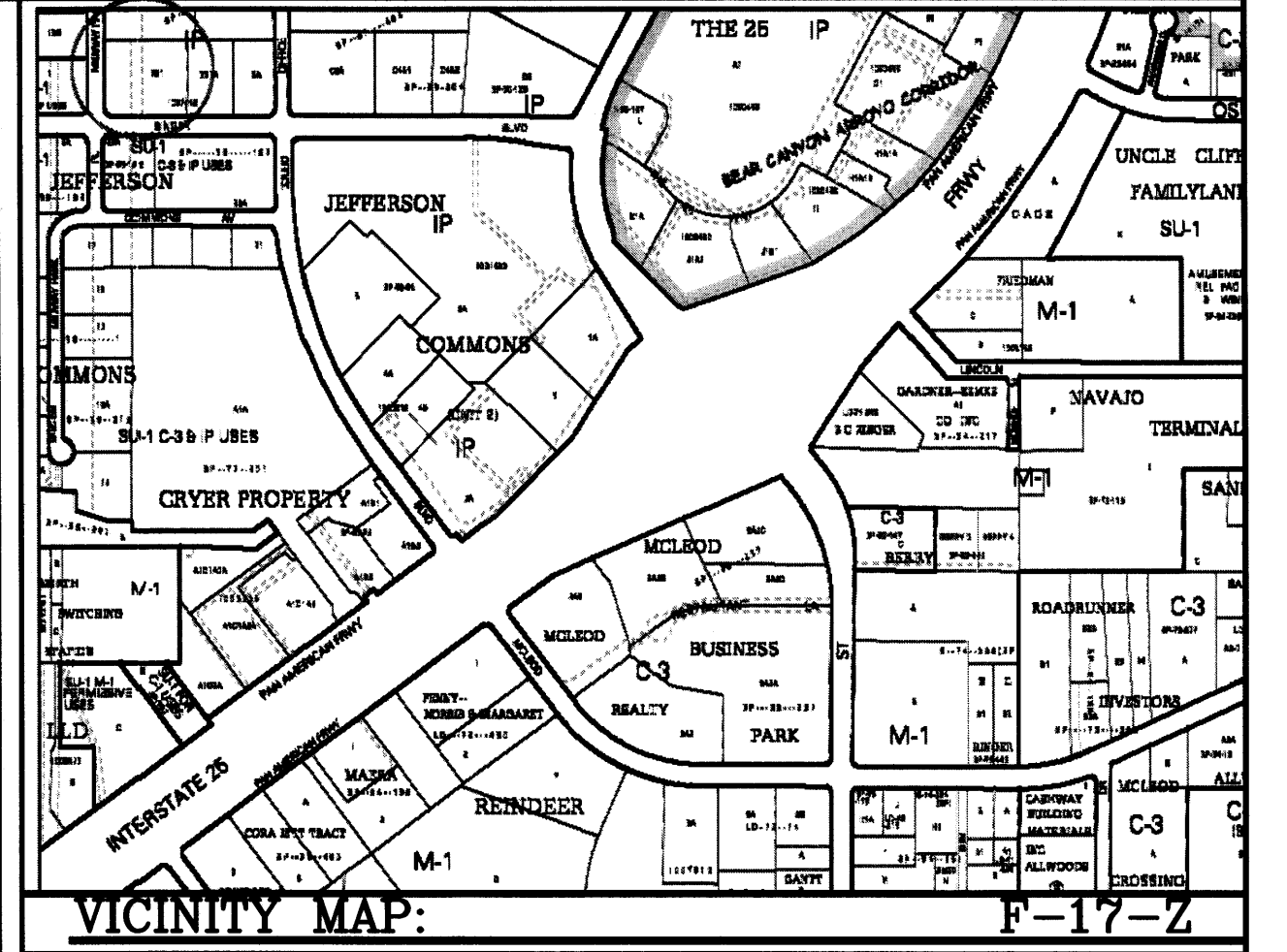
Revisions per city hydrologist comments dated 10/5/2015

ENGINEER'S SEAL	GRADING		OMMISSION No. 15-121
	JOB # 019-15-200		DATE 10-2015 REV 10-2015
	FLOYD DEVELOPMENT SERVICES, LLC DEVELOPMENT, ENGINEERING, & WATERSHED CONSULTING 918 PINEHURST RD SE, SUITE 101 RIO RANCHO, NM 87124 HUGH@DEVELOPNM.COM 505-366-4187		SHEET: C-2 2 OF 4
	ISSUED FOR BUILDING PERMIT		

A NEW OFFICE / WAREHOUSE for

PURVIS INDUSTRIES

3815 SINGER BLVD. N.E. ALBUQUERQUE, NEW MEXICO 87109



OMMISSION No.
15-121

DATE 09-2015

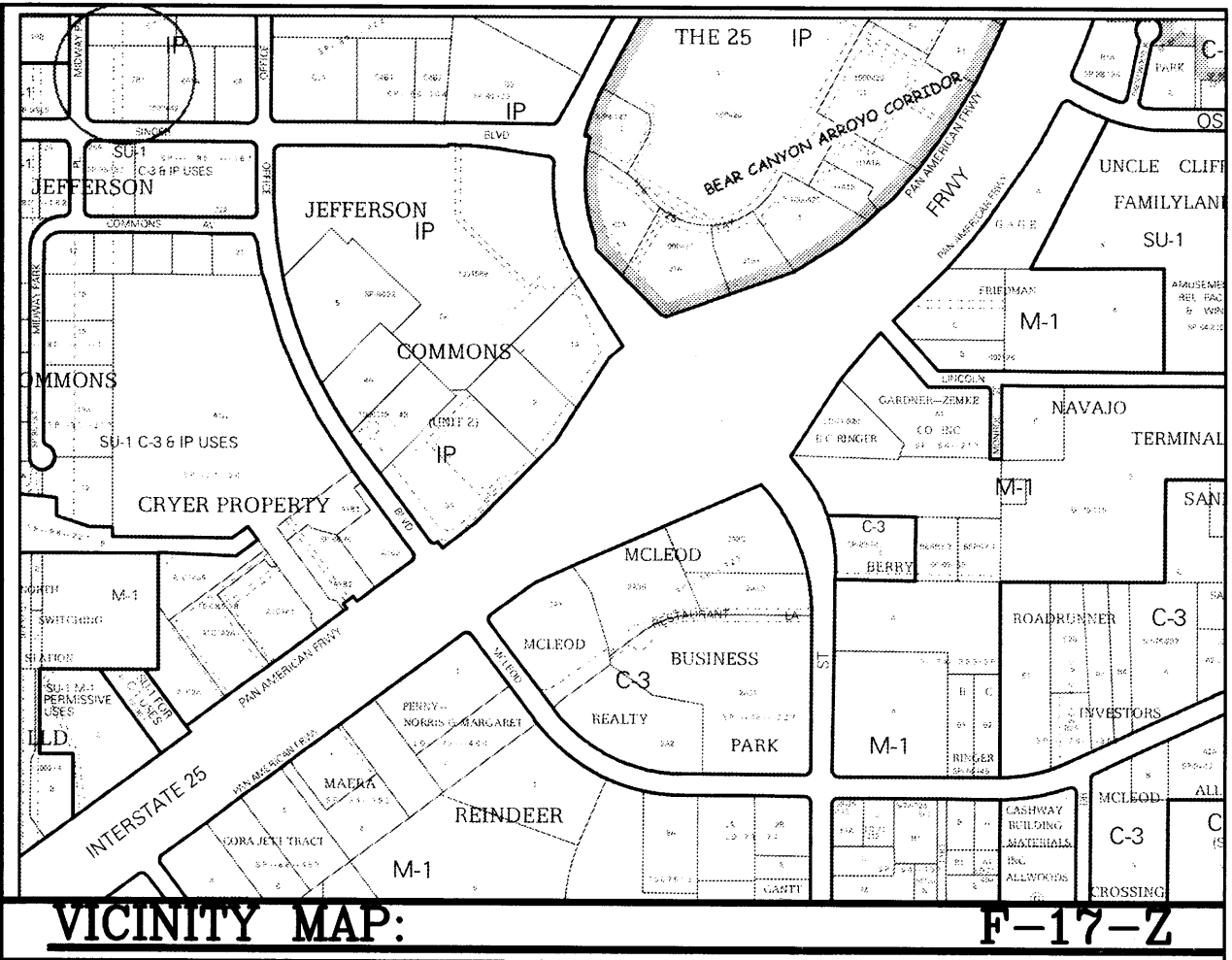
REV Δ -

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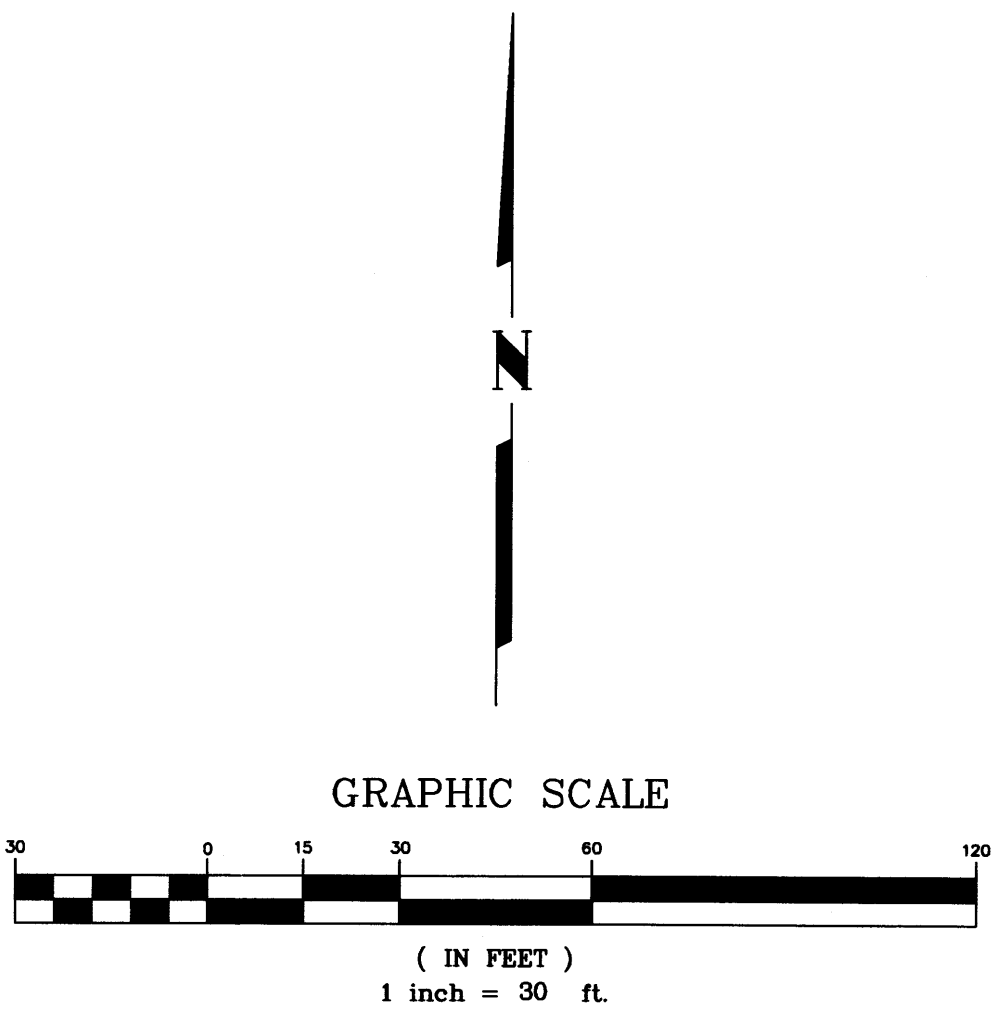
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SHEET: C-4

4 OF 4

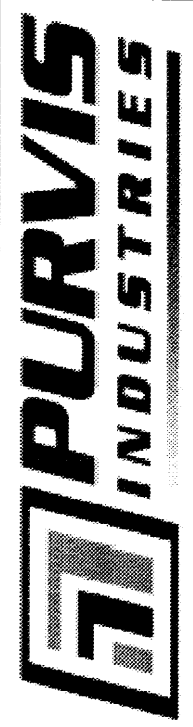


	UTILITY POLE
	GUY WIRE
	TRANSFORMER
	ELECTRIC BOX
	WATER METER
	ROOF DRAIN
	WATER VALVE
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	PROPOSED POND ELEVATIONS
	EXISTING CONTOURS
	PROPOSED CONTOURS
	LANDSCAPING HATCH
	EXISTING PROPERTY LINE



A NEW OFFICE / WAREHOUSE

for



3815 SINGER BLVD. N.E.

ALBUQUERQUE,
NEW MEXICO 87109

ISSUED FOR
GRADING PERMIT



HUGH W. FLOYD
P.E. 16633

Rough Grading

JOB # 019-15-200

FLOYD DEVELOPMENT SERVICES, LLC
DEVELOPMENT, ENGINEERING, & WATERSHED
CONSULTING
918 PINEHURST RD SE, SUITE 101
RIO RANCHO, NM 87124
HUGH@DEVELOPNM.COM
505-366-4187

OMMISSION No.
15-121

DATE 10-2015

REV Δ -
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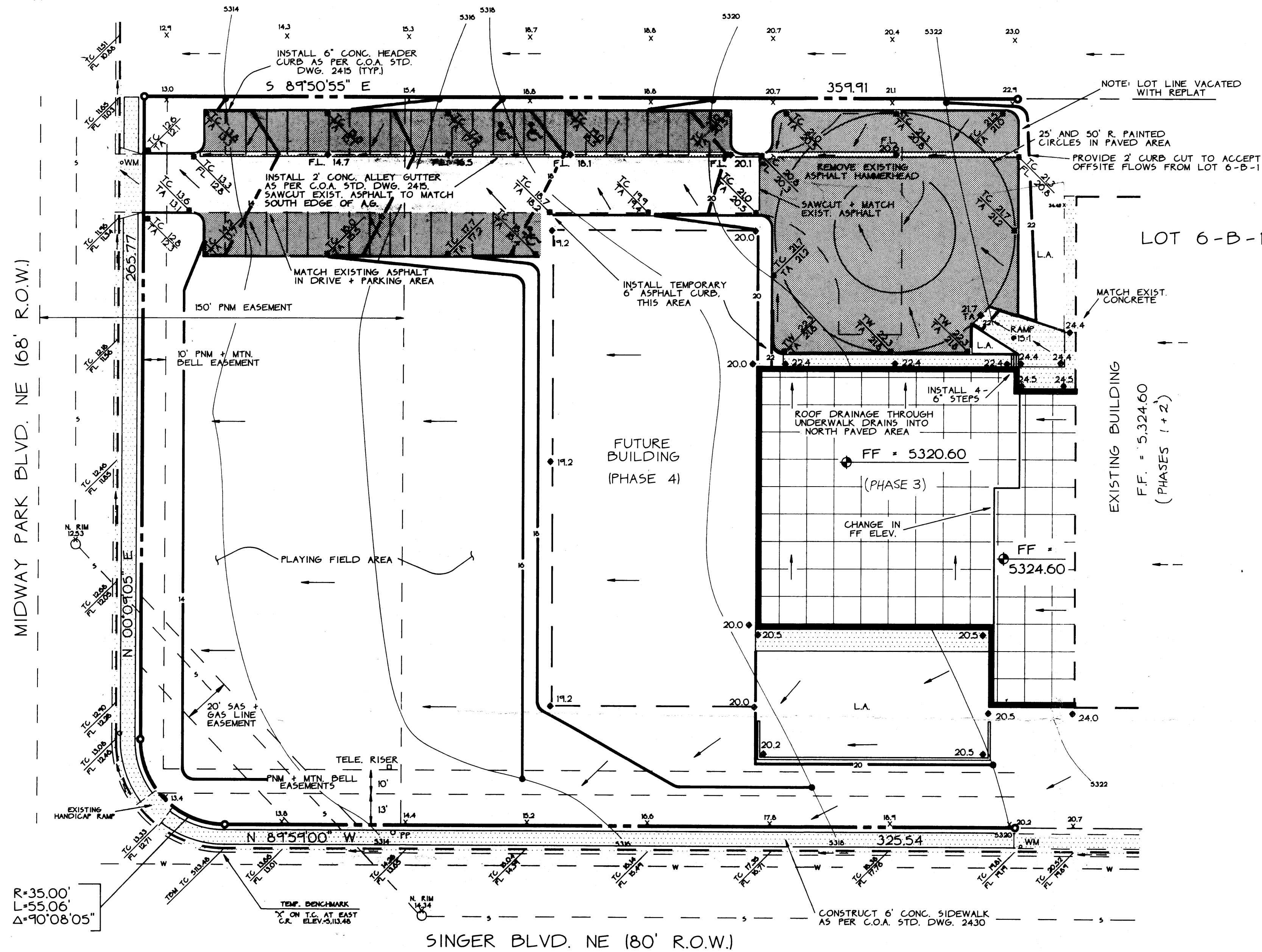
SHEET: C-1.0

1 OF -1



1" = 30'

TRACT 8-B



SCOPE:

The proposed improvements are comprised of a 14,830 SF block building (Phase 3 of a 4-Phase Montessori School building project), an asphalt parking/playground area, a graded building pad for a future Phase 4 building, a grassed playing field and associated walks and landscape areas.

The present site is undeveloped land sloping at approximately 2.5% from east to west and is covered with sparse native grasses. A 24' wide asphalt drive crosses the north side of the lot from Midway Park Blvd. to a paved hammerhead turnaround near the site's northeast corner--this serves as a fire lane for Phases 1 & 2 Buildings on Lot 6-B-1 east of the site.

The intent of this plan is to show:

- Grading relationships between the existing ground elevations and proposed finished elevations in order to facilitate positive drainage to designated discharge points.
- The extent of proposed site improvements, including buildings, walks and pavement.
- The flow rate/volume of rainfall runoff across or around these improvements and methods of handling these flows to meet City requirements for drainage management.
- The relationship of onsite improvements with existing neighboring property to insure an orderly transition between proposed and surrounding grades.

DRAINAGE PLAN CONCEPT:

This plan is in compliance with Midway Business Park Master Drainage Plan (approved 8/10/84). Concentrated flows from Phase 1 and Phase 4 (future) roof runoffs and paved parking/playground area north of the building will be collected in the parking area and discharges through the existing drive entrance into Midway Park Blvd. These flows travel north 300 feet in Midway Park Blvd. to a concrete drainage channel which discharges directly into the North Diversion Channel. The unconcentrated flows from the site (the playing field area) will sheet-flow into the streets as they currently do and follow the above mentioned drainage into the North Diversion Channel.

GENERAL NOTES:

LEGAL: Lot 7-B, Midway Business Park, Albuquerque, NM.

SURVEYOR: Southwest Surveying Co., Inc., 333 Lomas N.E., Albuquerque, NM.

B.M.: ANAFCA brass tablet stamped "MDC 13-102", set in a concrete post 0.4 above the ground located 0.4 miles south of the Osuna Bridge over the ANAFCA North Diversion Channel. Elevation = 5,097.3'.

T.B.M.: "X" on top of curb at east curb return at northeast corner of Singer Boulevard and Midway Park Boulevard intersection. Elevation = 5,113.48'.

SOILS: From SCS Bernalillo County, NM soils map, soil type "Emb", Group "B".

FLOOD HAZARD: Site is not located within a flood hazard zone as shown on FEMA Map No.16.

OFF-SITE DRAINAGE: No offsite flows reach the site from the north, west or south. Limited surface flows (0.2 cfs) reach the site from the east (Phases 1 & 2) and are directed to the paved area north of the Phase 3 building. In addition 0.4 cfs of roof drainage from Phases 1 & 2 will be combined with the Phase 3 roof drainage and discharged into the north paved area.

EROSION CONTROL: Contractor shall contain any sediment generated during construction by constructing 1'-high earth berms across low points of discharge from the site.

CALCULATIONS: Calculations are based on the City of Albuquerque D.F.M. Manual, Vol. II for the 100-year, 6-hour storm, using the Rational Formula to compare the existing and proposed runoff rates, and the SCS Method to compare the existing and proposed runoff volumes.

RATIONAL METHOD - Q = CIA

RUN-OFF COEFFICIENT:

Area of site: 107,966 SF = 2.48 AC

Existing site:

Undeveloped Area = 97,968 SF

Paved Area = 10,000 SF

$C_u = \frac{107,968(0.40)}{107,968} = 0.36$

$C_p = \frac{10,000(0.95)}{107,968} = 0.09$

Composite C = 0.45

Developed Site:

Roof Area = 31,258 SF

Landscaped Area = 51,710 SF

Paved Area = 25,000 SF

$C_u = \frac{31,258(0.90)}{107,968} = 0.26$

$C_l = \frac{51,710(0.25)}{107,968} = 0.12$

$C_p = \frac{25,000(0.95)}{107,968} = 0.22$

Composite C = 0.60

* NOTE: All calculations based on Phase 3 (current) and Phase 4 (future) roof areas combined at this time.

Rainfall Intensity:

$I = P_s(6.84)T_s^{0.31} = 4.65"$ per hour

where $P_s = 2.2"$ (DPM 22.2 D-1)

$T_s = 10$ minutes

Direct Runoff (Undeveloped):

$R = 0.4"$

where $P = 2.2"$

$CN = 70$

Existing Condition:

$Q_{100} = (0.45)(4.65)(2.48)$

= 5.2 cfs

$V_{100} = (0.4)(107,968)/12$

= 3,600 CF

SUMMARY:

$Q_{100} = (7.5)-(5.2) = 2.3$ cfs (increase)

$V_{100} = (4500)-(3600) = 900$ CF (increase)

OTHER CALCULATIONS:

Offsite Surface Runoff from Phase 1 & 2:

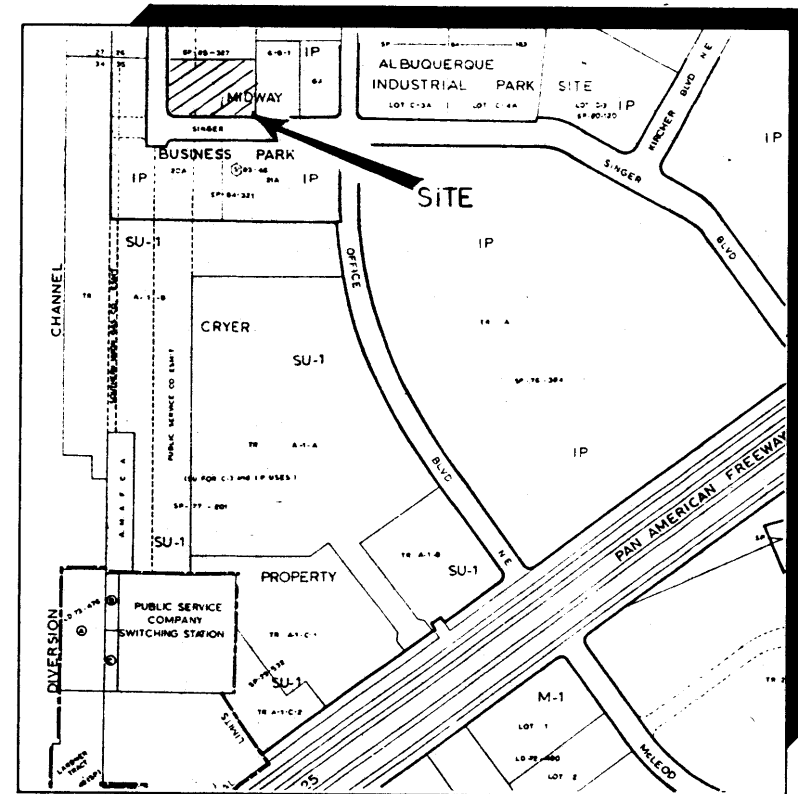
$Q = CIA = (0.25)(4.65)(0.15) = 0.2$ cfs

Offsite Roof Runoff from Phase 1 & 2:

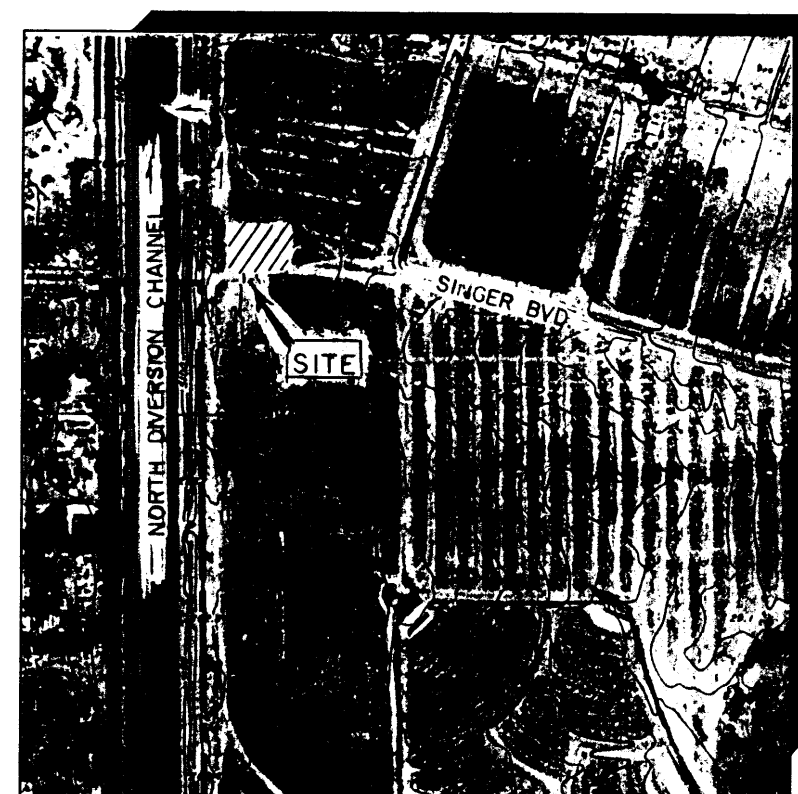
$Q = CIA = (0.90)(4.65)(0.1) = 0.4$ cfs

LEGEND

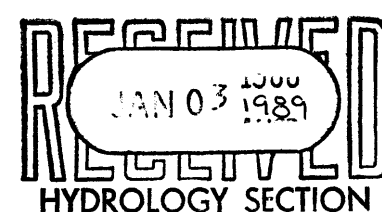
	Street, curb & gutter (Existing, Proposed)
	Proposed Asphalt, Existing to Remain
	Building (Existing, Proposed)
	Property Line
	Existing Spot Elevation
	Existing Contour
	Proposed Spot Elevation
	Proposed Contour
	Surface Flow Direction (Existing, Proposed)
	Landscaped Area
	Top of Grade Wall (< 18" High)
	Top of Retaining Wall (> 18" High)
	Top of Asphalt
	Top of Curb
	Flow Line
	Finished Floor



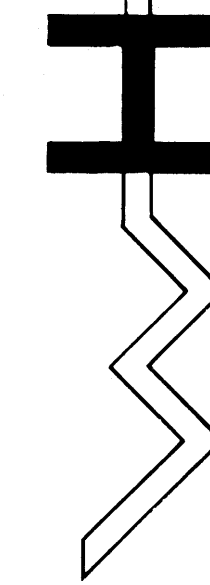
VICINITY MAP F-17



FLOOD HAZARD MAP



MONTESSORI SCHOOL DRAINAGE/GRADING PLAN



SHEET 1 OF 1

WEISS-HINES ENGINEERING, INC.
1100 ALVARADO N.E. SUITE B
ALBUQUERQUE, NEW MEXICO 87110
(505) 266-3444

REVISIONS	DATE
DESIGNED SC	1-27
DRAWN SC	1-27
CHECKED CW	1-27