

CITY OF ALBUQUERQUE



File

August 11, 2006

Kevin Patton, PE
Bohannon Huston, Inc
7500 Jefferson NE
Albuquerque, NM 87109

Re: Coors Blvd Improvements at Andalucia Drainage Plan
Engineer Stamp dated 8-6-06 (F11/D15)

Dear Mr. Patton,

P.O. Box 1293

Based upon the information provided in your submittal dated 8-11-06, the above referenced plan is acceptable to the City for issuance of the construction permit from the NMDOT.

Albuquerque

If you have any other questions, you can contact me at 924-3986.

New Mexico 87103

www.cabq.gov

Sincerely,

Bradley L. Bingham
Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: file

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96-17

ZA Fil, F12

9-11-96

**AGREEMENT FOR CHANNEL IMPROVEMENTS
SAN ANTONIO ARROYO, COORS BOULEVARD TO RIO GRANDE**

THIS AGREEMENT is made and entered into this 25th day of April, 1996 by and between Albuquerque Metropolitan Arroyo Flood Control Authority, a political subdivision of the State of New Mexico (hereinafter referred to as AMAFCA), and Ray Graham III, a private citizen (hereinafter referred to as GRAHAM).

RECITALS

1. WHEREAS, AMAFCA's 1975 Drainage Management Plan of the Western Albuquerque Metropolitan Area (DMP), as modified, called for maximum utilization of the San Antonio Arroyo (as one of only two natural stormwater outfalls to the Rio Grande), to include diversions from other drainage basins; and
2. WHEREAS, the San Antonio Arroyo is used to convey stormwater via diversions from the Boca Negra/Mariposa and Ladera basins; and
3. WHEREAS, the DMP also called for channel improvements to the San Antonio Arroyo; and
4. WHEREAS, in 1982 AMAFCA constructed major improvements in the San Antonio Arroyo west of Coors Boulevard at a cost of \$2,700,000, and in 1983 constructed a temporary bank protection project along the La Luz development, at a cost of \$51,000; and
5. WHEREAS, as a consequence, the San Antonio Arroyo east of Coors Boulevard is undergoing vertical and lateral migration and significant sediment transport, and
6. WHEREAS, sanitary sewer lines have been installed across the Arroyo which are in need of permanent protection; and

9108

**AGREEMENT FOR CHANNEL IMPROVEMENTS
SAN ANTONIO ARROYO, COORS BOULEVARD TO RIO GRANDE**

- E. Provide, for review by GRAHAM, metes and bounds descriptions of all permanent easements and graphical descriptions of all temporary easements.
- F. Obtain an appraisal, at no cost to GRAHAM, of the value of said permanent and temporary easements to be granted to AMAFCA. Said appraisal shall be in accordance with standard appraisal practice. Estimated cost of said appraisal, to be borne by AMAFCA, is \$20,000.
- G. Install two 16" steel sleeves and four 4" PVC sleeves in a common location upstream of the lift station crossing, as shown on the PLANS, to serve future utilities, and allow GRAHAM to install utility lines in such sleeves in the future, and grant a license to GRAHAM to maintain and repair such utility lines.
- H. Allow GRAHAM to cross the arroyo with constructed improvements, if any, as he might require in the future for the benefit of the land, so long as the improvements will not impair the flood carrying capacity of the channel, nor impair the integrity of AMAFCA's improvements or AMAFCA's maintenance thereof. All structures crossing the arroyo shall have a minimum of twelve (12) feet vertical clearance from the bottom of the arroyo, or provisions shall be made for maintenance equipment to go around such structure. All such constructed improvements, and the maintenance of such improvements, will be subject to AMAFCA's prior written approval, not to be unreasonably withheld.
- I. Inspect, operate, and maintain the constructed improvements from Coors eastward to and including the concrete stormwater chute over the Lower Corrales Riverside Drain,
- J. Inspect, operate, and maintain facilities in the Bosque in accordance with the Maintenance and Inspection Agreement at Exhibit "B".

DG Type "A" Sump

ANALYSIS OF AN INLET IN A SUMP CONDITION - Coors Blvd.

INLET TYPE: Double Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q = C * L * H^{1.5}$

Wing opening

C= 3.0

L= 4.0 ft

$Q = 3.0(4.0')H^{1.5} = 12.0H^{1.5}$

Grate opening

C=3.0

L(double grate)=[2(2.67')+2(1.8')]=8.94 ft

$Q = 3.0(8.94)H^{1.5} = 26.82 * H^{1.5}$

ORIFICE: $Q = C * A * (2 * G * H)^{0.5}$

Grate opening

C=0.6

A(double grate)=8.19 sf

$Q = 4.194 * (64.4 * H)^{0.5}$

Wing opening

C=0.6

A=2.0 sf

$Q = 1.2 * (64.4 * H)^{0.5}$

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR "A" OPENING	Q (CFS) WEIR DOUBLE GRATE	Q (CFS) ORIFICE DOUBLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at double "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.85	12.47	1.61	Weir controls on grate analysis
	0.20	0.20	1.07	2.40	17.64	4.55	
	0.30	0.30	1.97	4.41	21.60	8.35	
	0.40	0.40	3.04	6.78	24.94	12.86	
	0.50	0.50	4.24	9.48	27.88	17.97	
	0.60	0.60	5.58	12.46	30.55	23.62	
TOP OF CURB	0.70	0.70	7.03	15.71	32.99	29.76	
	0.80	0.80	8.59	19.19	35.27	36.36	
	0.90	0.90	10.25	22.90	37.41	43.39	
	1.00	1.00	12.00	26.82	39.43	50.82	Q(100 yr) =48.1 cfs is provided at this depth

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

$Q_r(100) = 2 * [(\text{runoff of the wing opening}) + (\text{the lesser of the weir or orifice amount taken by the double grate})]$.

THE 100 YR STORM EVENT =48.1 cfs at the sump condition

New Mexico Department of Transportation

**Preliminary Design Bureau
Drainage Section**

INTRA-DEPARTMENTAL CORRESPONDENCE

DATE: June 29, 2006

FILE REF: DIST. 3

TO: Tony Abbo
District 3, Traffic Engineer

FROM: James S. Lowe 
Drainage Development Engineer

SUBJECT: Coors Blvd Improvements @ San Antonio Arroyo

At your request, the Drainage Section has reviewed the Drainage Management Plan and calculations for Coors Boulevard at San Antonio Arroyo dated September 2005 and June 28, 2006 by BHI Inc. and it appears the drop inlet (2- double wing, double grate type A inlets) are now sized correctly for City Criteria and it is understood that this size will be used in the proposed design. This inlet meets City criteria as it produces a water depth of less than 0.5 ' Concurrence should be obtained from the City.

It is understood that a SWPPP will be implemented for the project site if it is greater than 1 acre.

If you have any questions, please call 827-5334

XC: Max Valerio
Ray Van Hoven
Jared Lee, BHI

DG Type "A" Sump

ANALYSIS OF AN INLET IN A SUMP CONDITION - Coors Blvd.

INLET TYPE: Double Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q = C * L * H^{1.5}$

Wing opening

C= 3.0

L= 4.0 ft

$Q = 3.0(4.0')H^{1.5} = 12.0H^{1.5}$

Grate opening

C=3.0

L(double grate)=[2(2.67')+2(1.8')]=8.94 ft

$Q = 3.0(8.94)H^{1.5} = 26.82 * H^{1.5}$

ORIFICE: $Q = C * A * (2 * G * H)^{0.5}$

Grate opening

C=0.6

A(double grate)=8.19 sf

$Q = 4.194 * (64.4 * H)^{0.5}$

Wing opening

C=0.6

A=2.0 sf

$Q = 1.2 * (64.4 * H)^{0.5}$

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR "A" OPENING	Q (CFS) WEIR DOUBLE GRATE	Q (CFS) ORIFICE DOUBLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at double "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.85	12.47	1.61	Weir controls on grate analysis
	0.20	0.20	1.07	2.40	17.64	4.55	
	0.30	0.30	1.97	4.41	21.60	8.35	
	0.40	0.40	3.04	6.78	24.94	12.86	
	0.50	0.50	4.24	9.48	27.88	17.97	Q(10 yr) =15.5 cfs is provided at this depth
	0.60	0.60	5.58	12.46	30.55	23.62	Q(100 yr) =24.1 cfs is provided at this depth
TOP OF CURB	0.70	0.70	7.03	15.71	32.99	29.76	
	0.80	0.80	8.59	19.19	35.27	36.36	
	0.90	0.90	10.25	22.90	37.41	43.39	
	1.00	1.00	12.00	26.82	39.43	50.82	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

$Q_r(100) = 2 * [(\text{runoff of the wing opening}) + (\text{the lesser of the weir or orifice amount taken by the double grate})]$.

THE 10 YR STORM EVENT =15.5 cfs/inlet at the sump condition

THE 100 YR STORM EVENT =24.1 cfs/inlet at the sump condition

Analyzer Report

ALMANZORA SD

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Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Monday, October 27, 2003 5:35:12 PM

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Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	19.0 cfs
Slope	0.600%
Size (W x T):	30.00 x 2.7500

Output Results

Flow Rate	19.0 cfs
Slope	0.600%
d/D	0.56
Capacity	31.8 cfs
Velocity	6.76 ft/s
Depth	1.39 ft
Critical Depth	1.47 ft
Size (W x T):	30.00 x 2.7500

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Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Monday, October 27, 2003 3:47:51 PM

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Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	19.8 cfs
Slope	1.000%
Size (W x T):	24.00 x 2.5000

Output Results

Flow Rate	19.8 cfs
Slope	1.000%
d/D	0.72
Capacity	22.6 cfs
Velocity	8.12 ft/s
Depth	1.45 ft
Critical Depth	1.59 ft
Size (W x T):	24.00 x 2.5000

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Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Monday, October 27, 2003 3:24:09 PM

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Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	48.9 cfs
Slope	0.600%
Size (W x T):	36.00 x 3.0000

Output Results

Flow Rate	48.9 cfs
Slope	0.600%
d/D	0.78
Capacity	51.7 cfs
Velocity	8.32 ft/s
Depth	2.33 ft
Critical Depth	2.27 ft
Size (W x T):	36.00 x 3.0000

Analyzer Report

SEVILLA AVE SD

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Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Monday, October 27, 2003 5:33:22 PM

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Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	36.0 cfs
Slope	0.600%
Size (W x T):	36.00 x 3.0000

Output Results

Flow Rate	36.0 cfs
Slope	0.600%
d/D	0.61
Capacity	51.7 cfs
Velocity	7.90 ft/s
Depth	1.84 ft
Critical Depth	1.95 ft
Size (W x T):	36.00 x 3.0000

ANDALUCIA								
BASIN	AREA	UNITS	% LAND TREATMENT				DISCHARGE (CFS)	
I.D.	(AC)	#	A	B	C	D ¹	10 YR	100YR
HYDROLOGICAL VOLUMETRIC & DISCHARGE DATA (EXISTING)								
EX1	44.12	0	60.00%	40.00%	0.00%	0.00%	19.95	69.26
EX2	22.58	0	60.00%	40.00%	0.00%	0.00%	10.21	35.45
EX3	5.46	0	50.00%	50.00%	0.00%	0.00%	2.74	8.98
EX4	2.75	0	50.00%	50.00%	0.00%	0.00%	1.38	4.52
EX5	5.05	0	50.00%	50.00%	0.00%	0.00%	2.54	8.31
SUBTOTAL	79.96	0					36.82	126.52
HYDROLOGICAL VOLUMETRIC & DISCHARGE DATA (DEVELOPED)								
A-1	1.89	10	0.00%	28.27%	28.27%	43.47%	3.56	6.20
A-2	0.85	4	0.00%	28.27%	28.27%	43.47%	1.60	2.78
A-3	0.55	0	0.00%	5.00%	5.00%	90.00%	1.50	2.31
B-1	2.02	9	0.00%	28.27%	28.27%	43.47%	3.81	6.63
B-2	2.57	14	0.00%	28.27%	28.27%	43.47%	4.85	8.43
B-3	1.59	6	0.00%	28.27%	28.27%	43.47%	2.99	5.21
B-4	0.17	0	0.00%	5.00%	5.00%	90.00%	0.47	0.72
C-1	0.91	4	0.00%	28.27%	28.27%	43.47%	1.72	3.00
C-2	0.23	1	0.00%	28.27%	28.27%	43.47%	0.43	0.74
C-3	0.21	1	0.00%	28.27%	28.27%	43.47%	0.40	0.69
C-4	0.27	1	0.00%	28.27%	28.27%	43.47%	0.51	0.89
D-1	0.63	2	0.00%	28.27%	28.27%	43.47%	1.18	2.05
D-2	0.18	1	0.00%	28.27%	28.27%	43.47%	0.34	0.59
D-3	0.14	0	0.00%	5.00%	5.00%	90.00%	0.37	0.58
E-1	0.43	2	0.00%	28.27%	28.27%	43.47%	0.81	1.41
E-2	0.46	2	0.00%	28.27%	28.27%	43.47%	0.88	1.52
E-3	0.43	2	0.00%	28.27%	28.27%	43.47%	0.82	1.42
E-4	0.46	2	0.00%	28.27%	28.27%	43.47%	0.88	1.52
E-5	0.51	2	0.00%	28.27%	28.27%	43.47%	0.96	1.67
E-6	2.10	10	0.00%	28.27%	28.27%	43.47%	3.97	6.90
E-7	2.28	11	0.00%	28.27%	28.27%	43.47%	4.31	7.49
F-1	2.85	12	0.00%	28.27%	28.27%	43.47%	5.38	9.36
F-2	0.41	0	0.00%	5.00%	5.00%	90.00%	1.11	1.71
G-1	1.19	10	0.00%	28.27%	28.27%	43.47%	2.24	3.91
G-2	0.98	9	0.00%	28.27%	28.27%	43.47%	1.85	3.22
G-3	0.86	0	0.00%	5.00%	5.00%	90.00%	2.33	3.59
G-4	0.26	0	0.00%	5.00%	5.00%	90.00%	0.69	1.07
H-1	0.81	8	0.00%	28.27%	28.27%	43.47%	1.53	2.67
H-2	1.12	9	0.00%	28.27%	28.27%	43.47%	2.12	3.68
H-3	0.41	0	0.00%	5.00%	5.00%	90.00%	1.12	1.73
I-1	1.18	6	0.00%	28.27%	28.27%	43.47%	2.23	3.87
I-2	0.20	0	0.00%	5.00%	5.00%	90.00%	0.54	0.84
J-1	0.46	2	0.00%	28.27%	28.27%	43.47%	0.86	1.50
J-2	0.85	0	0.00%	5.00%	5.00%	90.00%	2.30	3.55
K-1	0.76	2	0.00%	28.27%	28.27%	43.47%	1.43	2.49
K-2	2.24	8	0.00%	28.27%	28.27%	43.47%	4.22	7.35
K-3	1.19	5	0.00%	28.27%	28.27%	43.47%	2.24	3.89
K-4	1.75	6	0.00%	28.27%	28.27%	43.47%	3.30	5.74
L-1	0.41	0	0.00%	5.00%	5.00%	90.00%	1.11	1.72
L-2	0.40	0	0.00%	5.00%	5.00%	90.00%	1.08	1.66
L-3	0.35	0	0.00%	5.00%	5.00%	90.00%	0.95	1.46
L-4	0.37	0	0.00%	5.00%	5.00%	90.00%	1.00	1.55
M-1	0.45	0	0.00%	5.00%	5.00%	90.00%	1.22	1.88
SUBTOTAL	38.39	161					77.21	131.21

BASIN I.D.	AREA (AC)	UNITS #	% LAND TREATMENT				DISCHARGE (CFS)	
			A	B	C	D	10 YR	100YR
OPEN 1	0.50	0	0.00%	80.00%	0.00%	20.00%	0.59	1.24
OPEN 2	0.12	0	0.00%	80.00%	0.00%	20.00%	0.14	0.29
OPEN 3	1.10	0	0.00%	80.00%	0.00%	20.00%	1.29	2.73
OPEN 4	0.32	0	0.00%	95.00%	0.00%	5.00%	0.28	0.68
OPEN 5	2.25	0	0.00%	100.00%	0.00%	0.00%	1.70	4.55
OPEN 6	0.91	0	0.00%	80.00%	0.00%	20.00%	1.07	2.27
OPEN 7	0.52	0	0.00%	100.00%	0.00%	0.00%	0.39	1.05
OPEN 8	0.55	0	0.00%	100.00%	0.00%	0.00%	0.41	1.11
OPEN 9	0.47	0	0.00%	95.00%	0.00%	5.00%	0.40	1.00
OFF1	8.66	0	60.00%	40.00%	0.00%	0.00%	3.92	13.59
OFF2	4.20	0	80.00%	20.00%	0.00%	0.00%	1.48	5.96
OFF3	1.86	0	10.00%	90.00%	0.00%	0.00%	1.31	3.62
OFF4	4.73	0	90.00%	10.00%	0.00%	0.00%	1.43	6.36
OFF5	3.86	0	50.00%	50.00%	0.00%	0.00%	1.94	6.35
NAMASTE	0.72	0	0.00%	5.00%	5.00%	90.00%	1.96	3.02
SUBTOTAL	30.76						18.30	53.83
TOTAL	69.15						95.51	185.03

NOTES: 1) Impervious percentages were calculated from the DPM equation A-4, with the remaining percentages distributed to land treatment type B, due to the relatively flat terrain

$$N = \text{UNITS/ACRES} = 4.2$$

$$\%D = 7 * \text{SQRT}((N * N) + (5 * N)) = 43.5 \%$$

*Table A-4
**Table A-11

FUTURE 1-A	1.95	0	0.00%	28.27%	28.27%	43.47%	3.68	6.40
FUTURE 1-B	6.03	0	0.00%	28.27%	28.27%	43.47%	11.37	19.79
FUTURE 1-C	0.78	0	0.00%	28.27%	28.27%	43.47%	1.47	2.56
FUTURE 2	3.22	0	0.00%	28.27%	28.27%	43.47%	6.07	10.57
FUTURE 3	5.23	0	0.00%	28.27%	28.27%	43.47%	9.86	17.16
FUTURE 4	2.34	0	0.00%	28.27%	28.27%	43.47%	4.41	7.67
SUBTOTAL	19.55						36.86	64.15

Type "A" Sump - MONTE FRIO

ANALYSIS OF AN INLET IN A SUMP CONDITION - MONTE FRIO - NORTH END

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q=C*L*H^{1.5}$

Wing opening

C= 3.0

L= 4.0 ft

$Q=3.0(4.0)H^{1.5}=12.0H^{1.5}$

Grate opening

C=3.0

L(single grate)=[(2.67')+2(1.8')]=6.2' A(single grate)=4.09 sf

$Q=3.0(6.27)H^{1.5}=18.81H^{1.5}$

ORIFICE: $Q=C*A*(2*G*H)^{0.5}$

Grate opening

C=0.6

A=2.0 sf

$Q=2.46*(64.4*H)^{0.5}$

Wing opening

C=0.6

A=2.0 sf

$Q=1.2*(64.4*H)^{0.5}$

	WS	HEIGHT	Q (CFS) WEIR WING	Q (CFS) WEIR SINGLE	Q (CFS) ORIFICE SINGLE	TOTAL Q (CFS)	COMMENTS:
	ELEVATION	ABOVE INLET	OPENING	GRATE	GRATE		
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	6.24	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.82	3.83	
	0.30	0.30	1.97	3.09	10.80	7.03	
	0.40	0.40	3.04	4.76	12.47	10.83	
	0.50	0.50	4.24	6.65	13.94	15.14	
	0.60	0.60	5.58	8.74	15.27	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	16.50	25.07	
	0.80	0.80	8.59	13.46	17.64	30.63	Q(100 yr) =29.2 cfs is provided at this depth
	0.90	0.90	10.25	16.06	18.71	36.55	
ROW LIMIT	1.00	1.00	12.00	18.81	19.72	42.81	

NOTE:

The total runoff intercepted by the inlet at the low point in the road is:

$Q(100) = 2*[(\text{runoff of the wing opening}) + (\text{the lesser of the weir or orifice amount taken by the double grate})]$.

THE 100 YR STORM EVENT =40.25 CFS at the sump condition

THE 2 x 100 YR STORM EVENT = 80.5 CFS at the sump condition

MONTE PRIO

PC PROGRAM STREAM

SEPTEMBER 1994

26ff/44rw std full 0.60%

MANNING'S N= .017 SLOPE= .006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	35.17	0.67
2	8.37	0.67	6	22.00	0.34	10	35.63	0.67
3	8.83	0.67	7	33.00	0.13	11	44.00	0.85
4	9.00	0.00	8	35.00	0.00	12	0.00	0.00
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
	INC	AREA	RATE	PER	VEL		HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.05	0.05	0.04	0.0	1.71	0.56	1.63	0.00	0.05
0.10	0.10	0.16	0.1	3.41	0.89	3.25	0.01	0.11
0.15	0.15	0.39	0.4	6.82	1.00	6.58	0.02	0.17
0.20	0.20	0.84	1.0	11.92	1.16	11.60	0.02	0.22
0.25	0.25	1.55	2.1	17.03	1.37	16.63	0.03	0.28
0.30	0.30	2.50	4.0	22.13	1.58	21.65	0.04	0.34
0.35	0.35	3.71	6.7	26.73	1.82	26.18	0.05	0.40
0.40	0.40	5.02	11.1	26.84	2.21	26.20	0.08	0.48
0.45	0.45	6.33	16.3	26.94	2.58	26.23	0.10	0.55
0.50	0.50	7.64	22.3	27.04	2.92	26.25	0.13	0.63
0.55	0.55	8.96	29.0	27.15	3.23	26.28	0.16	0.71
0.60	0.60	10.27	36.3	27.25	3.53	26.30	0.19	0.79
0.65	0.65	11.59	44.3	27.35	3.82	26.33	0.23	0.88
0.70	0.70	12.97	49.0	31.11	3.78	30.05	0.22	0.92
0.75	0.75	14.59	54.4	35.76	3.73	34.70	0.22	0.97
0.80	0.80	16.44	61.1	40.41	3.72	39.35	0.21	1.01
0.85	0.85	18.53	69.4	45.06	3.74	44.00	0.22	1.07

$$Q = \text{Future 1-A} + \text{Future 4} + \text{A-1} + \text{Future 1-C} + \text{A-2} + \text{A-3} = 29.17 \text{ cfs}$$

$$d = 0.55 > 0.34$$

$$V = 3.23$$

$$E = 0.71 < 0.85 \quad \text{OK}$$

MONTE FRIO

PC PROGRAM STREAM

SEPTEMBER 1994

26ff/44rw std full 6.00%

MANNING'S N= .017 SLOPE= .06

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	35.17	0.67
2	8.37	0.67	6	22.00	0.34	10	35.63	0.67
3	8.83	0.67	7	33.00	0.13	11	44.00	0.85
4	9.00	0.00	8	35.00	0.00	12	0.00	0.00
□ WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
	INC	AREA	RATE	PER	VEL		HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.05	0.05	0.04	0.1	1.71	1.77	1.63	0.05	0.10
0.10	0.10	0.16	0.5	3.41	2.81	3.25	0.12	0.22
0.15	0.15	0.39	1.2	6.82	3.16	6.58	0.16	0.31
0.20	0.20	0.84	3.1	11.92	3.66	11.60	0.21	0.41
0.25	0.25	1.55	6.7	17.03	4.33	16.63	0.29	0.54
0.30	0.30	2.50	12.5	22.13	5.01	21.65	0.39	0.69
0.35	0.35	3.71	21.3	26.73	5.74	26.18	0.51	0.86
0.40	0.40	5.02	35.2	26.84	7.00	26.20	0.76	1.16
0.45	0.45	6.33	51.6	26.94	8.15	26.23	1.03	1.48
0.50	0.50	7.64	70.5	27.04	9.22	26.25	1.32	1.82
0.55	0.55	8.96	91.6	27.15	10.22	26.28	1.62	2.17
0.60	0.60	10.27	114.8	27.25	11.17	26.30	1.94	2.54
0.65	0.65	11.59	139.9	27.35	12.08	26.33	2.26	2.91
0.70	0.70	12.97	155.1	31.11	11.95	30.05	2.22	2.92
0.75	0.75	14.59	171.9	35.76	11.78	34.70	2.15	2.90
0.80	0.80	16.44	193.3	40.41	11.76	39.35	2.15	2.95
0.85	0.85	18.53	219.4	45.06	11.84	44.00	2.18	3.03

$$Q_{100} = \text{Future I-A} + \text{Future 4} + E-1 + A-1 + \text{Future I-C} \\ + A-2 + A-3 = 29.17 \text{ cfs}$$

$$A = 0.378 > 0.37$$

$$V = 6.45$$

$$E = 1.03$$

CITY OF ALBUQUERQUE



November 9, 2007

Chris Sholtis, P.E.
Bohannon Huston, Inc.
7500 Jefferson NE-Courtyard 1
Albuquerque, NM 87109

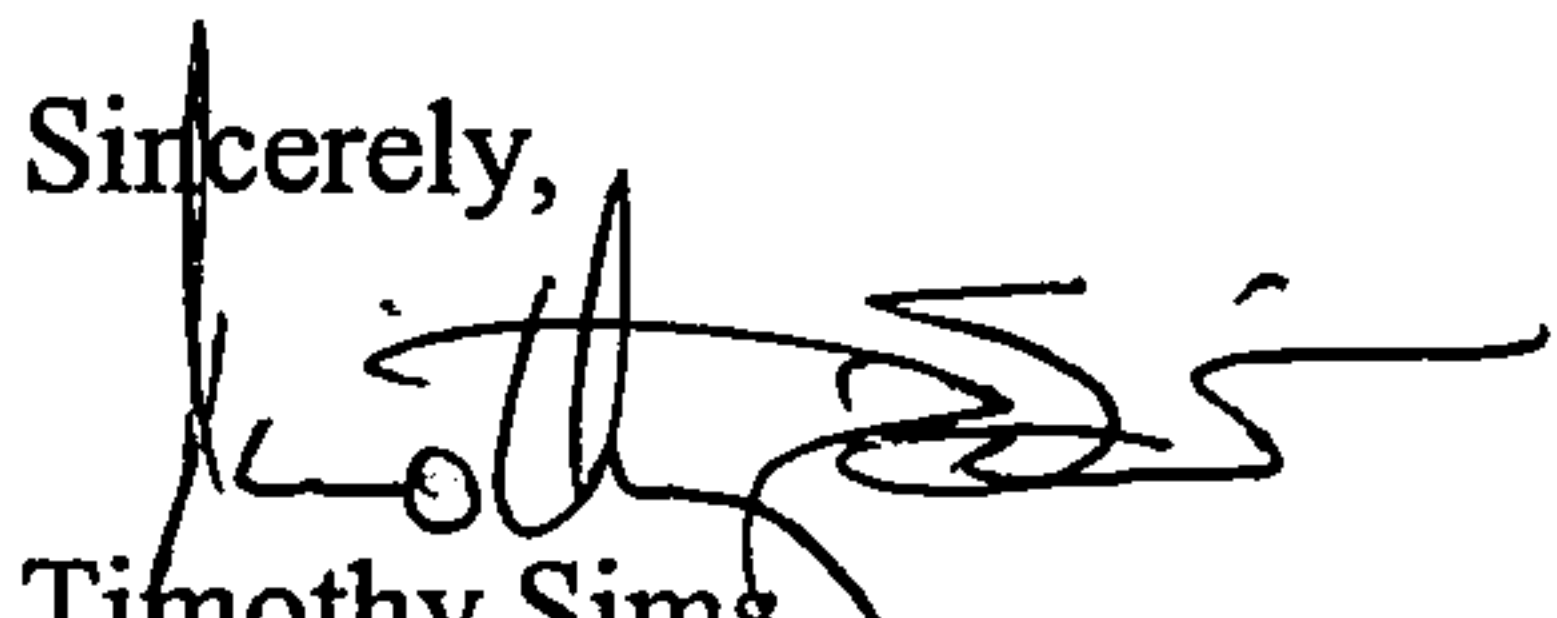
RE: Analucia @ La Luz Unit 1 (F-11/D015), WO #: 730881
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 11/28/03
Engineers Certification dated 11/06/07

Mr. Sholtis:

Based upon the information provided in your Engineer's Certification Submittal dated 11/08/07, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If you have any questions, you can contact me at 924-3982.

Sincerely,


Timothy Sims
Plan Checker-Hydrology
Development and Building Services

C: Marilyn Maldonado-W.O. #: 730881
File

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DRAINAGE REPORT
FOR
ANDALUCIA AT LA LUZ – PHASE 1

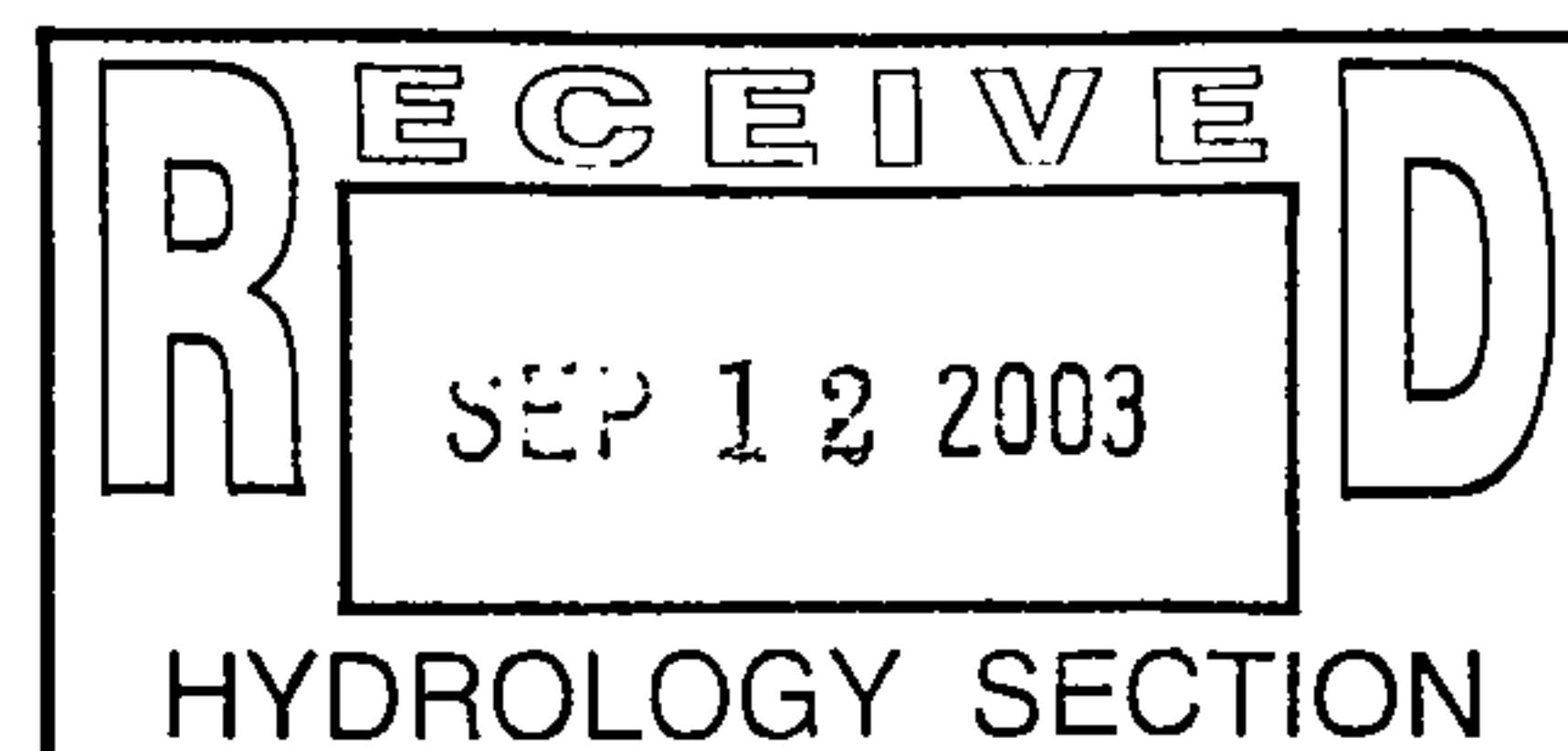
SEPTEMBER 11, 2003

Prepared for:

ANDALUCIA DEVELOPMENT CO., INC.
401 PASEO DE PERALTA
SANTA FE, NM 87501

Prepared by:

BOHANNAN HUSTON, INC.
COURTYARD I
7500 JEFFERSON STREET NE
ALBUQUERQUE, NM 87109



PREPARED BY:

Jared M. Lee, E.I.

Date

UNDER THE SUPERVISION OF:

 9-11-03
Chris Sholtis, P.E. Date

I. PURPOSE

The purpose of this report is to present the drainage management plans for Andalucia at La Luz – Phase 1 and to obtain approval of the preliminary/final plat and grading plan by the City of Albuquerque. The proposed development of Andalucia at La Luz – Phase 1 consists of 161 single family detached residential lots on approximately 44.5 acres.

II. METHODOLOGIES

Site conditions will be analyzed for a 10-year and 100-year, 6-hour storm event in accordance with the City of Albuquerque Drainage Ordinance and the Development Process Manual (DPM) Volume 2, Design Criteria, Section 22.2, Hydrology, for the City of Albuquerque, January 1993.

The site, as described in the 'Site Location and Characteristics' section below, is approximately 44.5 acres, divided into sub-basins for analysis purposes. Therefore, Part A of the DPM, Section 22.2, which provides a simplified procedure for projects with sub-basins smaller than 40 acres, was used. Free discharge from the site into the fully improved San Antonio Arroyo located north of the site will be utilized as per discussions with AMAFCA and as stated by the San Antonio Arroyo LOMR prepared by this office dated September 8, 1997 which delineates developed basins which discharge into the arroyo.

III. SITE LOCATION AND CHARACTERISTICS

Andalucia is a development located east of Coors Boulevard. The project is located near the San Antonio Arroyo. More specifically, Phase 1 is bordered by Namaste Road to the south, Coors Boulevard to the west, by the San Antonio Arroyo to the north and by the Rio Grande to the east. The site will be accessible from Coors Boulevard and Namaste Road.

IV. EXISTING HYDRAULIC AND HYDROLOGIC CONDITIONS

In its existing condition, the site consists of mainly undeveloped land. The site was divided into five (5) basins, Existing Basin 1, 2, 3, 4, and 5; see Existing Drainage Basin Map in the Exhibit section at the back of this report. The natural soils consist of loose to dense, clean to silty sand. Vegetation on the site consists of weeds, grass and some cacti. The San Antonio Arroyo flows through the site. Existing Basin 1 (44.12 ac $Q_{100}=69.26\text{cfs}$) and Existing Basin 2 (22.58 ac $Q_{100}=35.45\text{cfs}$) encompass the land south of the San Antonio Arroyo. These basins naturally flow northeast into the arroyo. Existing Basin 3 (5.46ac $Q_{100}=8.98\text{cfs}$), Existing Basin 4 (2.75 ac $Q_{100}=4.52\text{cfs}$) and Existing Basin 5 (5.05ac $Q_{100}=8.31\text{cfs}$) consist of the land north of the San Antonio Arroyo near the proposed entrance road. These basins naturally flow south east by swales to the arroyo. The arroyo then carries all of the discharge to the Rio Grande. There are no recognized FEMA Floodplains within the proposed development.

V. PROPOSED HYDRAULIC AND HYDROLOGIC CONDITIONS

The site will discharge runoff into the San Antonio Arroyo which is located north of the site. This will be accomplished through a proposed onsite public storm drain system. This system will convey the 100-year storm event into the fully improved San Antonio Arroyo, but will direct the 2-year or smaller storm event into proposed private ponding areas for the purpose of water harvesting. These ponding areas will be located along the north portion of the site, adjacent to the San Antonio Arroyo. Excess storm water will overflow from the proposed ponds directly into the San Antonio Arroyo.

For additional assistance throughout this portion of the report, please refer to the Existing Drainage Basin Map, Proposed Drainage Basin Map and the Grading and Drainage Plan enclosed in the Exhibit section of this report.

Discharge generated by Andalucia at La Luz – Phase 1 will flow north on Monte Frio Dr., Mi Cordelia Dr. and Tres Gracias Dr. and east on Sevilla Ave. and into the stub street off of Sevilla

Ave. when fully developed. There are six sump conditions; one at the north end of Monte Frio Dr., one at the northern end of Mi Cordelia Dr. and one located north of Sevilla Ave. on Mi Cordelia Dr., one just south of Almanzora Ave. on Sevilla Ave., one on Almanzora Ave. and one located at the park on the stub street off of Sevilla Ave. Discharge will also be collected by inlets located along Mi Cordelia Dr. and Tres Gracias Dr. All of the flow generated by the site will eventually discharge into the proposed onsite storm drain systems, and then be released into the San Antonio Arroyo, which is an improved soil cement channel. As per the San Antonio Arroyo Letter of Map Revision (LOMR) prepared by Bohannon Huston, September 1997, the San Antonio Arroyo is designed to accept 100% of the fully developed runoff generated by this project.

The runoff generated within conceptual future phases of Andalucia at La Luz will flow to the proposed streets when developed. The street capacities and inlet analysis for this report were based on the assumption that the runoff from future phases would be developed flow, which generate higher flows than actually exist. In the interim, offsite basins will remain ungraded and the actual runoff generated within them will be less than that of the assumed future conditions.

A. On-Site Basins

The proposed site is broken into thirteen (13) major basins. The thirteen basins have been divided into sub-basins for analysis reasons. Major basins are described below. For sub-basin data, see Appendix A at the back of this report.

Basin A (3.34ac, $Q_{100}=11.51\text{cfs}$) consists of Monte Frio Dr. and the lots on the east half of street. It consists of Sub-basins A-1, A-2 and A-3; see Appendix A for more information. Basin A contains fourteen (14) lots, #20-33. The runoff from Basin A will flow north on Monte Frio Dr. and be collected by a Type "A" inlet, along with Future 1 basin (28.74 cfs), in a sump condition located at the end of the street. The inlets will drain to the San Antonio Arroyo through a 36" storm drain. Since the runoff can spill over into the offsite and flow to the arroyo, the inlet will be designed for the 100 year storm event (40.25cfs).

Basin B (6.35 ac, $Q_{100}=21.05\text{cfs}$) encompasses the southern portion of Mi Cordelia Dr., up to the intersection of San Jorge Ave., a portion of San Jorge Ave., up to a high point between lots #93 and 94, and Rafael Cruz Ave. It contains Sub-basins B-1, B-2, B-3, and B-4; see Appendix A for more information. Basin B consists of twenty-nine (29) lots, #5-19 and #77-90. Basin B will flow north on Mi Cordelia Dr. to be collected by two Type "A" inlets at the intersection of San Jorge Ave., leaving a residual (10.65cfs) to flow northeast on Mi Cordelia Dr..

Basin C (2.73ac, $Q_{100}=6.88\text{cfs}$) includes Mi Cordelia Dr., from the intersection of San Jorge Ave. to a high point northeast of Sevilla Ave., and a portion of Sevilla Ave. and its median. It contains Sub-basins C-1, C-2, C-3, C-4, OPEN 1, and OPEN 2; see Appendix A for more information. Basin C consists of seven (7) lots, #1-4, 91, 111, and 130. All of the runoff generated by Basin C and the residual from Basin B (10.65cfs) will flow to a low point, just northeast of Sevilla Ave., and be collected by two Type "A" inlets in a sump condition. The inlets will drain to a storm system and then into the San Antonio Arroyo through a 24" storm drain. Run-off generated in excess of the 100-year storm event will overflow toward the north within Mi Cordelia Dr. and be collected by inlets at the end of the street. Therefore, the inlets will be designed for the 100-year storm event (8.75cfs each).

Basin D (0.95 ac, $Q_{100}=3.24\text{cfs}$) encompasses the remaining portion of Mi Cordelia Dr., from the high point northeast of Sevilla Ave. and contains Sub-basins D-1, D-2, and D-3; see Appendix A for more information. Basin D consists of three (3) lots, #112 and 131-132. Runoff generated by Basin D will flow northeast on Mi Cordelia Dr. and be collected by a Type "A" inlet in sump condition. The inlets will drain to the San Antonio Arroyo through a 24" storm drain. Since there will be no emergency spillway, the inlet will be designed for the two times the 100-year storm event (6.48cfs).

Basin E (6.67ac, $Q_{100}=22.09\text{cfs}$) consists of the southern half of Sacate Ave. and Almeria Dr. and the lots fronting them. It consists of Sub-basins E-1, E-2, E-3, E-4, E-5,

E-6, and E-7; see Appendix A for more information. Basin E contains thirty-one (31) lots, #34-64. The runoff from Basin E, along with Future 4 (7.67cfs) and the residual from Namaste (0.19cfs) will flow east to Almeria Dr. and then north to be collected by two Type "A" inlets, leaving a residual (16.93cfs) to flow to San Jorge Ave.

Basin F (4.17ac, $Q_{100}=13.40\text{cfs}$) encompasses Mijas Dr. and a portion of San Jorge Ave., from a high point west of Mijas Dr. to the intersection of Tres Gracias Dr. It consists of Sub-basins F-1, F-2, and OPEN 6; see Appendix A for more information. Basin F contains twelve (12) lots, #65-76. The runoff from Basin F will flow north to San Jorge Ave. and then southeast to be collected by two Type "A" inlets, along with the residual from Basin E (16.93cfs), at the intersection of San Jorge Ave. and Tres Gracias Dr., leaving a residual (17.0cfs) to flow north on Tres Gracias Dr.

Basin G (3.29ac, $Q_{100}=11.82\text{cfs}$) encompasses the alley south of Sevilla Ave. and Tres Gracias Dr., from Namaste Rd. to the intersection of Sevilla Ave. It consists of Sub-basins G-1, G-2, G-3, and G-4; see Appendix A for more information. Basin G contains nineteen (19) lots, #92-110. The runoff from Basin G will flow southeast on the southern alley to Tres Gracias Dr. and then northeast to be collected by two Type "A" inlets, along with the residual from Basin F (17.0cfs), at the intersection of Sevilla Ave. and Tres Gracias Dr., leaving a residual (16.94cfs) to flow north on Tres Gracias Dr.

Basin H (3.91ac, $Q_{100}=11.84\text{cfs}$) consists of Sevilla Ave. and its median, the alley north of Sevilla Ave. and a portion of Tres Gracias Dr., from Sevilla Ave. to the intersection of San Adan Ave. It consists of Sub-basins H-1, H-2, H-3, OPEN 3 and OPEN 9; see Appendix A for more information. Basin H contains seventeen (17) lots, #113-129. The runoff from Basin H will flow southeast down the northern alley and Sevilla Ave. to Tres Gracias Dr. and then northeast to be collected by two Type "A" inlets, along with the residual from Basin G (16.94cfs), at the intersection of San Adan Ave., leaving a residual (17.64cfs) to flow north on Tres Gracias Dr..

Basin I (1.38ac, $Q_{100}=4.74\text{cfs}$) contains San Adan Ave. and a portion of Tres Gracias Dr., from the intersection of San Adan Ave. to the boundary. It consists of Sub-basins I-1 and I-2; see Appendix A for more information. Basin I contains six (6) lots, #133-138. The runoff from Basin I will flow southeast down San Adan Ave. to Tres Gracias Dr. and then northeast to be collected by two Type "A" inlets, along with the residual from Basin H (17.64cfs), at the boundary, leaving a residual (12.69cfs) to flow north on Tres Gracias Dr. to the San Antonio Arroyo. The inlets will drain to the arroyo through a 42" storm drain system.

Basin J (1.31ac, $Q_{100}=5.07\text{cfs}$) encompasses La Bienvenida Place, east of the intersection of Tres Gracias Dr. It consists of Sub-basins J-1 and J-2; see Appendix A for more information. Basin J contains two (2) lots, #152 and 153. The runoff from Basin J will flow east on La Bienvenida Place to the boundary will be collected by a Type "A" inlet, leaving a residual (1.4cfs) to continue to flow La Bienvenida Place.

Basin K (6.27ac, $Q_{100}=20.25\text{cfs}$) consists of Sevilla Ave. and San Adan Ave. south of Tres Gracias Dr. and Las Granada Ave. It consists of Sub-basins K-1, K-2, K-3, K-4, and OPEN 4; see Appendix A for more information. Basin K contains twenty-one (21) lots, #139-151 and #154-161. The runoff from Basin K will flow east to the stub street off of Sevilla Ave. and be collected by a Type "A" inlet in a sump condition. The inlets will drain to the San Antonio Arroyo through a 24" storm drain. Since the runoff can spill over into the park and flow to the arroyo, the inlet will be designed for the 100 year storm event (20.25cfs).

Basin L (1.53ac, $Q_{100}=6.39\text{cfs}$) encompasses the far north portion of Sevilla Ave. It consists of Sub-basins L-1, L-2, L-3, and L-4; see Appendix A for more information. The runoff from Basin L, along with the Future 2 basin (10.57cfs) will flow to a low point near the intersection of Almanzora Ave. and be collected by two Type "A" inlets in a sump condition. The inlets will drain to the San Antonio Arroyo through a 36" storm drain. The

inlets will be designed for two times the 100 year storm event (16.96cfs each), since there is no planned emergency spillway.

Basin M (0.45ac, $Q_{100}=1.88\text{cfs}$) encompasses the portion of Almanzora Ave. to be built with this project, northeast from the Sevilla Ave. intersection. The runoff from Basin M will flow to a low point past the lots on the south side and be collected by two Type "A" inlets, along with Future 3 basin (17.15 cfs) in a sump condition. The inlets will drain to a storm system and then to the San Antonio Arroyo through a 30" storm drain. Since there will be no planned emergency spillway, the inlets will be designed for two times the 100 year storm event (19.03cfs each).

Three other basins, Open 5 (2.25ac, $Q_{100}=4.55\text{cfs}$), which will be made into a park, Open 7 (0.52ac, $Q_{100}=1.04\text{cfs}$) and Open 8 (0.55ac, $Q_{100}=1.11\text{cfs}$), will contain on-site ponds sized for a minimum 2-year 6-hour storm event which will retain the onsite runoff generated. The Open 5 and Open 8 ponds will also be used as a water harvesting system to collect the 2 year or smaller storm event from the Basin J and K storm system ($Q_2=12.07\text{cfs}$) and the Tres Gracias Dr. storm system ($Q_2=32.8\text{cfs}$), respectively. The ponds will need to be sized to hold a minimum of the 2-year 6-hour storm.

Basin Namaste (0.72ac, $Q_{100}=3.02\text{cfs}$) borders the southern portion of the subdivision and contains the north half of Namaste, to be built with this project. The runoff from Namaste will flow east on the street and be collected by a single Type "A" inlet just west of the Almeria Dr. entrance, leaving a residual of (0.19cfs) to flow down Almeria Dr. and be collected by inlets with Basin E.

In summary, the proposed onsite inlets and storm drains within Basins A through M will collect all of the runoff generated by Andalucia at La Luz – Phase 1 and convey it to the San Antonio Arroyo which will carry it to the Rio Grande. See Appendix C, Inlet Analysis, for flow distributions.

B. Off-Site Basin

There will be five (5) proposed offsite basins, Offsite 1, 2, 3, 4 and 5; see Proposed Drainage Basin Map in the Exhibit section at the back of this report. These basins will exist in the interim conditions; however the Future Basins will be used for analysis.

Basins Offsite 1 (8.66ac, $Q_{100}= 13.59\text{cfs}$), Offsite 2 (4.20ac, $Q_{100}= 5.96\text{cfs}$) and Offsite 3 (1.86 ac, $Q_{100}= 3.62\text{cfs}$) are located in the offsite areas west of Phase 1. The discharge generated within these basins will flow northeast into the San Antonio Arroyo.

Basin Offsite 4 (4.73 ac, $Q_{100}= 6.36\text{cfs}$) and Offsite 5 (3.86ac, $Q_{100}= 6.35\text{cfs}$) is located in the offsite area bordering the right and left side of the entrance road, respectively. The discharge from these basins will flow south east into the San Antonio Arroyo.

In summary, all of the flow generated by the basins mentioned above would eventually discharge into the San Antonio Arroyo, which will then be conveyed to the Rio Grande.

C. Future Basins

There will be four (4) conceptual future basins, Future 1, 2, 3, and 4; see Proposed Drainage Basin Map in the Exhibit section at the back of this report. These basins were based on conceptual layouts of phases to be built in the future and will be used for analysis purposes, given that they will have greater impact than the undeveloped interim conditions.

Basin Future 1 (8.76ac, $Q_{100}=28.74\text{cfs}$) is located in the offsite area west of Phase 1. The discharge generated within this basin will flow northeast and be collected by the inlet on Monte Frio Dr. along with Basin A and flow into the San Antonio Arroyo.

Basin Future 2 (3.22 ac, $Q_{100}= 10.57\text{cfs}$) is located in the offsite area bordering the right side of the entrance road. The discharge from this basin will flow northeast into Sevilla Ave. and be collected by inlets in sump condition along with Basin L and flow into the San Antonio Arroyo.

Basin Future 3 (5.23 ac, $Q_{100}= 17.15\text{cfs}$) is located in the offsite area bordering the left side of the entrance road. The discharge from this basin will flow southeast into Almanzora Ave. and be collected by inlets in sump condition along with Basin M and flow into the San Antonio Arroyo.

Basin Future 4 (2.34ac, $Q_{100}=7.67\text{cfs}$) is located along Sacate Ave. in the offsite area west of Phase 1. The discharge generated within this basin will flow east to Almeria Dr. and be collected by the inlets on Monte Frio Dr. along with Basin A and flow into the San Antonio Arroyo.

In summary, all of the flow generated by the basins mentioned above would discharge into one of the proposed basins and eventually discharge into the San Antonio Arroyo, which will then be conveyed to the Rio Grande.

VI. CONCLUSION

This report has provided hydrologic and hydraulic considerations of the proposed development of Andalucia at La Luz – Phase 1. This information provides adequate supporting documentation and guidance for approval of this report and to guide future development and phasing of the properties previously mentioned. These flows can be safely conveyed by the improvements proposed in this drainage plan to the existing San Antonio Arroyo, which has adequate capacity to accept such runoff. Erosion and dust control, consisting of erosion control berms, silt fencing and sedimentation basins, are proposed to prevent soil washing or blowing into paved streets, storm drains, and existing development areas. Therefore, we believe this report supports the preliminary/final plat and grading plan submittals and should be approved as requested.

ANDALUCIA

	BASIN	AREA	UNITS	% LAND TREATMENT				DISCHARGE (CFS)	
	I.D.	(AC)	#	A	B	C	D ¹	10 YR	100YR
HYDROLOGICAL VOLUMETRIC & DISCHARGE DATA (EXISTING)									
	EX1	44.12	0	60.00%	40.00%	0.00%	0.00%	19.95	69.26
	EX2	22.58	0	60.00%	40.00%	0.00%	0.00%	10.21	35.45
	EX3	5.46	0	50.00%	50.00%	0.00%	0.00%	2.74	8.98
	EX4	2.75	0	50.00%	50.00%	0.00%	0.00%	1.38	4.52
	EX5	5.05	0	50.00%	50.00%	0.00%	0.00%	2.54	8.31
SUBTOTAL		79.96	0					36.82	126.52
HYDROLOGICAL VOLUMETRIC & DISCHARGE DATA (DEVELOPED)									
	A-1	1.89	10	0.00%	28.27%	28.27%	43.47%	3.56	6.20
	A-2	0.85	4	0.00%	28.27%	28.27%	43.47%	1.60	2.78
	A-3	0.55	0	0.00%	5.00%	5.00%	90.00%	1.50	2.31
	B-1	2.02	9	0.00%	28.27%	28.27%	43.47%	3.81	6.63
	B-2	2.57	14	0.00%	28.27%	28.27%	43.47%	4.85	8.43
	B-3	1.59	6	0.00%	28.27%	28.27%	43.47%	2.99	5.21
	B-4	0.17	0	0.00%	5.00%	5.00%	90.00%	0.47	0.72
	C-1	0.91	4	0.00%	28.27%	28.27%	43.47%	1.72	3.00
	C-2	0.23	1	0.00%	28.27%	28.27%	43.47%	0.43	0.74
	C-3	0.21	1	0.00%	28.27%	28.27%	43.47%	0.40	0.69
	C-4	0.27	1	0.00%	28.27%	28.27%	43.47%	0.51	0.89
	D-1	0.63	2	0.00%	28.27%	28.27%	43.47%	1.18	2.05
	D-2	0.18	1	0.00%	28.27%	28.27%	43.47%	0.34	0.59
	D-3	0.14	0	0.00%	5.00%	5.00%	90.00%	0.37	0.58
	E-1	0.43	2	0.00%	28.27%	28.27%	43.47%	0.81	1.41
	E-2	0.46	2	0.00%	28.27%	28.27%	43.47%	0.88	1.52
	E-3	0.43	2	0.00%	28.27%	28.27%	43.47%	0.82	1.42
	E-4	0.46	2	0.00%	28.27%	28.27%	43.47%	0.88	1.52
	E-5	0.51	2	0.00%	28.27%	28.27%	43.47%	0.96	1.67
	E-6	2.10	10	0.00%	28.27%	28.27%	43.47%	3.97	6.90
	E-7	2.28	11	0.00%	28.27%	28.27%	43.47%	4.31	7.49
	F-1	2.85	12	0.00%	28.27%	28.27%	43.47%	5.38	9.36
	F-2	0.41	0	0.00%	5.00%	5.00%	90.00%	1.11	1.71
	G-1	1.19	10	0.00%	28.27%	28.27%	43.47%	2.24	3.91
	G-2	0.98	9	0.00%	28.27%	28.27%	43.47%	1.85	3.22
	G-3	0.86	0	0.00%	5.00%	5.00%	90.00%	2.33	3.59
	G-4	0.26	0	0.00%	5.00%	5.00%	90.00%	0.69	1.07
	H-1	0.81	8	0.00%	28.27%	28.27%	43.47%	1.53	2.67
	H-2	1.12	9	0.00%	28.27%	28.27%	43.47%	2.12	3.68
	H-3	0.41	0	0.00%	5.00%	5.00%	90.00%	1.12	1.73
	I-1	1.18	6	0.00%	28.27%	28.27%	43.47%	2.23	3.87
	I-2	0.20	0	0.00%	5.00%	5.00%	90.00%	0.54	0.84
	J-1	0.46	2	0.00%	28.27%	28.27%	43.47%	0.86	1.50
	J-2	0.85	0	0.00%	5.00%	5.00%	90.00%	2.30	3.55
	K-1	0.76	2	0.00%	28.27%	28.27%	43.47%	1.43	2.49
	K-2	2.24	8	0.00%	28.27%	28.27%	43.47%	4.22	7.35
	K-3	1.19	5	0.00%	28.27%	28.27%	43.47%	2.24	3.89
	K-4	1.75	6	0.00%	28.27%	28.27%	43.47%	3.30	5.74
	L-1	0.41	0	0.00%	5.00%	5.00%	90.00%	1.11	1.72
	L-2	0.40	0	0.00%	5.00%	5.00%	90.00%	1.08	1.66
	L-3	0.35	0	0.00%	5.00%	5.00%	90.00%	0.95	1.46
	L-4	0.37	0	0.00%	5.00%	5.00%	90.00%	1.00	1.55
	M-1	0.45	0	0.00%	5.00%	5.00%	90.00%	1.22	1.88
SUBTOTAL		38.39	161					77.21	131.21

BASIN I.D.	AREA (AC)	UNITS #	% LAND TREATMENT				DISCHARGE (CFS)	
			A	B	C	D	10 YR	100YR
OPEN 1	0.50	0	0.00%	80.00%	0.00%	20.00%	0.59	1.24
OPEN 2	0.12	0	0.00%	80.00%	0.00%	20.00%	0.14	0.29
OPEN 3	1.10	0	0.00%	80.00%	0.00%	20.00%	1.29	2.73
OPEN 4	0.32	0	0.00%	95.00%	0.00%	5.00%	0.28	0.68
OPEN 5	2.25	0	0.00%	100.00%	0.00%	0.00%	1.70	4.55
OPEN 6	0.91	0	0.00%	80.00%	0.00%	20.00%	1.07	2.27
OPEN 7	0.52	0	0.00%	100.00%	0.00%	0.00%	0.39	1.05
OPEN 8	0.55	0	0.00%	100.00%	0.00%	0.00%	0.41	1.11
OPEN 9	0.47	0	0.00%	95.00%	0.00%	5.00%	0.40	1.00
OFF1	8.66	0	60.00%	40.00%	0.00%	0.00%	3.92	13.59
OFF2	4.20	0	80.00%	20.00%	0.00%	0.00%	1.48	5.96
OFF3	1.86	0	10.00%	90.00%	0.00%	0.00%	1.31	3.62
OFF4	4.73	0	90.00%	10.00%	0.00%	0.00%	1.43	6.36
OFF5	3.86	0	50.00%	50.00%	0.00%	0.00%	1.94	6.35
NAMASTE	0.72	0	0.00%	5.00%	5.00%	90.00%	1.96	3.02
SUBTOTAL	30.76						18.30	53.83

TOTAL	69.15						95.51	185.03
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NOTES: 1) Impervious percentages were calculated from the DPM equation A-4, with the remaining percentages distributed to land treatment type B, due to the relatively flat terrain

$$N = \text{UNITS/ACRES} = 4.2$$

$$\%D = 7 * \text{SQRT}((N * N) + (5 * N)) = 43.5 \%$$

*Table A-4
**Table A-11

FUTURE 1	8.76	0	0.00%	28.27%	28.27%	43.47%	16.52	28.74
FUTURE 2	3.22	0	0.00%	28.27%	28.27%	43.47%	6.07	10.57
FUTURE 3	5.23	0	0.00%	28.27%	28.27%	43.47%	9.86	17.16
FUTURE 4	2.34	0	0.00%	28.27%	28.27%	43.47%	4.41	7.67
SUBTOTAL	19.55						36.86	64.14

PC PROGRAM STREAM

SEPTEMBER 1994

24ff/42rw std half 6.00%

where is it 6%

Monte Frio

MANNING'S N= .017 SLOPE= .06

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	4	9.00	0.00	7	0.00	0.00
2	8.37	0.67	5	11.00	0.13	8	0.00	0.00
3	8.83	0.67	6	21.00	0.32	9	0.00	0.00
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)		(FT)	(FT)
0.05	0.05	0.02	0.0	0.85	1.77	0.81	0.05	0.10
0.10	0.10	0.08	0.2	1.71	2.81	1.63	0.12	0.22
0.15	0.15	0.19	0.6	3.41	3.16	3.29	0.16	0.31
0.20	0.20	0.42	1.5	5.96	3.66	5.80	0.21	0.41
0.25	0.25	0.77	3.3	8.51	4.33	8.31	0.29	0.54
0.30	0.30	1.25	6.3	11.07	5.01	10.83	0.39	0.69
0.35	0.35	1.84	11.1	12.37	6.01	12.09	0.56	0.91
0.40	0.40	2.45	17.7	12.42	7.25	12.10	0.82	1.22
0.45	0.45	3.05	25.6	12.47	8.38	12.11	1.09	1.54
0.50	0.50	3.66	34.5	12.52	9.42	12.13	1.38	1.88
0.55	0.55	4.26	44.4	12.57	10.41	12.14	1.68	2.23
0.60	0.60	4.87	55.3	12.62	11.35	12.15	2.00	2.60
0.65	0.65	5.48	67.1	12.68	12.24	12.16	2.33	2.98
0.70	0.70	6.12	73.6	14.55	12.02	14.03	2.24	2.94
0.75	0.75	6.88	81.0	16.88	11.77	16.35	2.15	2.90
0.80	0.80	7.76	90.8	19.20	11.70	18.68	2.13	2.93
0.85	0.85	8.75	102.8	21.53	11.75	21.00	2.14	2.99

$$Q_{100} = A-1 + A-2 = 6.21 + 2.78$$

$$Q_T = 8.99 \text{ cfs}$$

$$d = 0.328 > 0.32$$

over-centerline

Needs to add
Future

PC PROGRAM STREAM

SEPTEMBER 1994

24ff/42rw std full 6.00%

MANNING'S N= .017 SLOPE= .06

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	33.17	0.67
2	8.37	0.67	6	21.00	0.32	10	33.63	0.67
3	8.83	0.67	7	31.00	0.13	11	42.00	0.85
4	9.00	0.00	8	33.00	0.00	12	0.00	0.00
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.05	0.05	0.04	0.1	1.71	1.77	1.63	0.05	0.10
0.10	0.10	0.16	0.5	3.41	2.81	3.25	0.12	0.22
0.15	0.15	0.39	1.2	6.82	3.16	6.58	0.16	0.31
0.20	0.20	0.84	3.1	11.92	3.66	11.60	0.21	0.41
< 0.25	0.25	1.55	6.7	17.03	4.33	16.63	0.29	0.54
0.30	0.30	2.50	12.5	22.13	5.01	21.65	0.39	0.69
0.35	0.35	3.68	22.1	24.73	6.01	24.18	0.56	0.91
0.40	0.40	4.89	35.4	24.84	7.25	24.20	0.82	1.22
0.45	0.45	6.10	51.1	24.94	8.38	24.23	1.09	1.54
0.50	0.50	7.31	68.9	25.04	9.42	24.25	1.38	1.88
0.55	0.55	8.53	88.8	25.15	10.41	24.28	1.68	2.23
0.60	0.60	9.74	110.5	25.25	11.35	24.30	2.00	2.60
0.65	0.65	10.96	134.1	25.35	12.24	24.33	2.33	2.98
0.70	0.70	12.24	147.2	29.10	12.02	28.05	2.24	2.94
0.75	0.75	13.76	162.0	33.76	11.77	32.70	2.15	2.90
0.80	0.80	15.51	181.5	38.41	11.70	37.35	2.13	2.93
0.85	0.85	17.50	205.5	43.06	11.75	42.00	2.14	2.99

$$Q_{100} = A-1 + A-2 + A-3 = 11.3 \text{ cfs}$$

$$d = 0.289 < 0.32 \quad \checkmark$$

$$V = 4.87$$

$$E = 0.66 < 0.85 \quad \text{OK}$$

Need to add

further

sump does
not work
this way

PC PROGRAM STREAM

SEPTEMBER 1994

24ff/42rw std full 2.72%

MANNING'S N= .017 SLOPE= .0272

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	33.17	0.67
2	8.37	0.67	6	21.00	0.32	10	33.63	0.67
3	8.83	0.67	7	31.00	0.13	11	42.00	0.85
4	9.00	0.00	8	33.00	0.00	12	0.00	0.00
□ WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
	(FT)	SQ. FT.	(CFS)	(FT)	(FPS)		(FT)	(FT)
0.05	0.05	0.04	0.0	1.71	1.19	1.63	0.02	0.07
0.10	0.10	0.16	0.3	3.41	1.89	3.25	0.06	0.16
0.15	0.15	0.39	0.8	6.82	2.13	6.58	0.07	0.22
0.20	0.20	0.84	2.1	11.92	2.46	11.60	0.09	0.29
0.25	0.25	1.55	4.5	17.03	2.91	16.63	0.13	0.38
0.30	0.30	2.50	8.4	22.13	3.37	21.65	0.18	0.48
< 0.35	0.35	3.68	14.9	24.73	4.05	24.18	0.25	0.60
0.40	0.40	4.89	23.9	24.84	4.88	24.20	0.37	0.77
0.45	0.45	6.10	34.4	24.94	5.64	24.23	0.49	0.94
0.50	0.50	7.31	46.4	25.04	6.35	24.25	0.63	1.13
0.55	0.55	8.53	59.8	25.15	7.01	24.28	0.76	1.31
0.60	0.60	9.74	74.4	25.25	7.64	24.30	0.91	1.51
0.65	0.65	10.96	90.3	25.35	8.24	24.33	1.05	1.70
0.70	0.70	12.24	99.1	29.10	8.09	28.05	1.02	1.72
0.75	0.75	13.76	109.1	33.76	7.93	32.70	0.98	1.73
0.80	0.80	15.51	122.2	38.41	7.88	37.35	0.96	1.76
0.85	0.85	17.50	138.4	43.06	7.91	42.00	0.97	1.82

$$Q_T = B-1 + B-2 + B-3 + B-4 = \underline{21.05} \text{ cfs}$$

$$\lambda = 0.38 > 0.32 \text{ over-center}$$

$$V = 4.56$$

$$E = 0.705 < 0.85 \quad \underline{\underline{OK}}$$

PC PROGRAM STREAM

SEPTEMBER 1994

24ff/42rw std full 5.22%

MANNING'S N= .017 SLOPE= .0522

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	33.17	0.67
2	8.37	0.67	6	21.00	0.32	10	33.63	0.67
3	8.83	0.67	7	31.00	0.13	11	42.00	0.85
4	9.00	0.00	8	33.00	0.00	12	0.00	0.00
□ WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
	INC	AREA	RATE	PER	VEL		HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.05	0.05	0.04	0.1	1.71	1.65	1.63	0.04	0.09
0.10	0.10	0.16	0.4	3.41	2.62	3.25	0.11	0.21
0.15	0.15	0.39	1.1	6.82	2.95	6.58	0.14	0.29
0.20	0.20	0.84	2.9	11.92	3.41	11.60	0.18	0.38
0.25	0.25	1.55	6.2	17.03	4.04	16.63	0.25	0.50
0.30	0.30	2.50	11.7	22.13	4.67	21.65	0.34	0.64
0.35	0.35	3.68	20.6	24.73	5.61	24.18	0.49	0.84
0.40	0.40	4.89	33.1	24.84	6.76	24.20	0.71	1.11
0.45	0.45	6.10	47.7	24.94	7.81	24.23	0.95	1.40
0.50	0.50	7.31	64.3	25.04	8.79	24.25	1.20	1.70
0.55	0.55	8.53	82.8	25.15	9.71	24.28	1.46	2.01
0.60	0.60	9.74	103.1	25.25	10.58	24.30	1.74	2.34
0.65	0.65	10.96	125.1	25.35	11.42	24.33	2.02	2.67
0.70	0.70	12.24	137.3	29.10	11.21	28.05	1.95	2.65
0.75	0.75	13.76	151.1	33.76	10.98	32.70	1.87	2.62
0.80	0.80	15.51	169.3	38.41	10.91	37.35	1.85	2.65
0.85	0.85	17.50	191.7	43.06	10.96	42.00	1.86	2.71

$$Q_{100} = C-1 + C-2 + C-3 + \text{Open 1} + \text{Open 2} + 13 \text{ residual}$$

$$= 3.01 + 0.75 + 0.70 + 1.24 + 0.29 + 10.65$$

$$Q_r = 16.64 \text{ cfs}$$

$$d = 0.33 > 0.32$$

$$V = 5.19$$

$$E = 0.75 < 0.85 \quad \underline{\underline{\text{OK}}}$$

what

PC PROGRAM STREAM

SEPTEMBER 1994

22ff/40rw std half 7.31%

MANNING'S N= .017 SLOPE= .0731

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	4	9.00	0.00	7	0.00	0.00
2	8.37	0.67	5	11.00	0.13	8	0.00	0.00
3	8.83	0.67	6	22.00	0.34	9	0.00	0.00
☐ WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
	INC	AREA	RATE	PER	VEL		HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.05	0.05	0.02	0.0	0.85	1.96	0.81	0.06	0.11
0.10	0.10	0.08	0.3	1.71	3.11	1.63	0.15	0.25
0.15	0.15	0.19	0.7	3.41	3.49	3.29	0.19	0.34
0.20	0.20	0.42	1.7	5.96	4.04	5.80	0.25	0.45
0.25	0.25	0.77	3.7	8.51	4.78	8.31	0.35	0.60
0.30	0.30	1.25	6.9	11.07	5.53	10.83	0.47	0.77
0.35	0.35	1.86	11.8	13.37	6.34	13.09	0.62	0.97
0.40	0.40	2.51	19.4	13.42	7.73	13.10	0.93	1.33
0.45	0.45	3.17	28.5	13.47	9.00	13.11	1.26	1.71
0.50	0.50	3.82	38.9	13.52	10.18	13.13	1.61	2.11
0.55	0.55	4.48	50.5	13.57	11.28	13.14	1.98	2.53
0.60	0.60	5.14	63.3	13.63	12.33	13.15	2.36	2.96
0.65	0.65	5.79	77.2	13.68	13.33	13.16	2.76	3.41
0.70	0.70	6.49	85.6	15.55	13.19	15.03	2.70	3.40
0.75	0.75	7.30	94.9	17.88	13.00	17.35	2.63	3.38
0.80	0.80	8.22	106.7	20.20	12.98	19.68	2.62	3.42
0.85	0.85	9.26	121.1	22.53	13.07	22.00	2.65	3.50

Mmaste

$$Q_T = 3.02 \text{ cfs}$$

$$d = 0.233$$

$$V = 4.53$$

$$E = 0.549 < 0.85 \text{ OK}$$

PC PROGRAM STREAM

SEPTEMBER 1994

24ff/42rw std full 1.59%

MANNING'S N= .017 SLOPE= .0159

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	33.17	0.67
2	8.37	0.67	6	21.00	0.32	10	33.63	0.67
3	8.83	0.67	7	31.00	0.13	11	42.00	0.85
4	9.00	0.00	8	33.00	0.00	12	0.00	0.00
□ WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
(FT)	(FT)	SQ. FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.05	0.05	0.04	0.0	1.71	0.91	1.63	0.01	0.06
0.10	0.10	0.16	0.2	3.41	1.45	3.25	0.03	0.13
0.15	0.15	0.39	0.6	6.82	1.63	6.58	0.04	0.19
0.20	0.20	0.84	1.6	11.92	1.88	11.60	0.06	0.26
0.25	0.25	1.55	3.4	17.03	2.23	16.63	0.08	0.33
0.30	0.30	2.50	6.5	22.13	2.58	21.65	0.10	0.40
0.35	0.35	3.68	11.4	24.73	3.10	24.18	0.15	0.50
0.40	0.40	4.89	18.2	24.84	3.73	24.20	0.22	0.62
Σ 0.45	0.45	6.10	26.3	24.94	4.31	24.23	0.29	0.74
0.50	0.50	7.31	35.5	25.04	4.85	24.25	0.37	0.87
0.55	0.55	8.53	45.7	25.15	5.36	24.28	0.45	1.00
0.60	0.60	9.74	56.9	25.25	5.84	24.30	0.53	1.13
0.65	0.65	10.96	69.0	25.35	6.30	24.33	0.62	1.27
0.70	0.70	12.24	75.8	29.10	6.19	28.05	0.59	1.29
0.75	0.75	13.76	83.4	33.76	6.06	32.70	0.57	1.32
0.80	0.80	15.51	93.4	38.41	6.02	37.35	0.56	1.36
0.85	0.85	17.50	105.8	43.06	6.05	42.00	0.57	1.42

$$Q_T = E-1 + E-2 + E-3 + E-4 + E-5 + E-6 + E-7 + F_{int} = 29.95$$

$$d = 0.47 > 0.32 \text{ over-center line}$$

$$V = 4.52$$

$$E = 0.79 < 0.85 \quad \underline{\underline{OK}}$$

PC PROGRAM STREAM

SEPTEMBER 1994

24ff/42rw std full 2.10%

MANNING'S N= .017 SLOPE= .021

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	33.17	0.67
2	8.37	0.67	6	21.00	0.32	10	33.63	0.67
3	8.83	0.67	7	31.00	0.13	11	42.00	0.85
4	9.00	0.00	8	33.00	0.00	12	0.00	0.00
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.05	0.05	0.04	0.0	1.71	1.05	1.63	0.02	0.07
0.10	0.10	0.16	0.3	3.41	1.66	3.25	0.04	0.14
0.15	0.15	0.39	0.7	6.82	1.87	6.58	0.05	0.20
0.20	0.20	0.84	1.8	11.92	2.16	11.60	0.07	0.27
0.25	0.25	1.55	4.0	17.03	2.56	16.63	0.10	0.35
0.30	0.30	2.50	7.4	22.13	2.96	21.65	0.14	0.44
0.35	0.35	3.68	13.1	24.73	3.56	24.18	0.20	0.55
0.40	0.40	4.89	21.0	24.84	4.29	24.20	0.29	0.69
0.45	0.45	6.10	30.2	24.94	4.95	24.23	0.38	0.83
0.50	0.50	7.31	40.8	25.04	5.58	24.25	0.48	0.98
0.55	0.55	8.53	52.5	25.15	6.16	24.28	0.59	1.14
0.60	0.60	9.74	65.4	25.25	6.71	24.30	0.70	1.30
0.65	0.65	10.96	79.3	25.35	7.24	24.33	0.81	1.46
0.70	0.70	12.24	87.1	29.10	7.11	28.05	0.79	1.49
0.75	0.75	13.76	95.9	33.76	6.96	32.70	0.75	1.50
0.80	0.80	15.51	107.4	38.41	6.92	37.35	0.74	1.54
0.85	0.85	17.50	121.6	43.06	6.95	42.00	0.75	1.60

$$Q_{100} = F-1 + F-2 + Open 6 + E_{residual}$$

$$= 9.43 + 1.70 + 2.27 + 16.94$$

$$= 30.34 \text{ cfs}$$

$$d = 0.45 > 0.32$$

$$V = 4.95$$

$$E = 0.83 < 0.85 \quad \underline{OK}$$

PC PROGRAM STREAM

SEPTEMBER 1994

32ff/50rw std full 1.31%

MANNING'S N= .017 SLOPE= .0131

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	41.17	0.67
2	8.37	0.67	6	25.00	0.41	10	41.63	0.67
3	8.83	0.67	7	39.00	0.13	11	50.00	0.85
4	9.00	0.00	8	41.00	0.00	12	0.00	0.00
☐ WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
	INC	AREA	RATE	PER	VEL		HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.05	0.05	0.04	0.0	1.71	0.83	1.63	0.01	0.06
0.10	0.10	0.16	0.2	3.41	1.31	3.25	0.03	0.13
0.15	0.15	0.39	0.6	6.82	1.48	6.58	0.03	0.18
0.20	0.20	0.84	1.4	11.92	1.71	11.60	0.05	0.25
0.25	0.25	1.55	3.1	17.03	2.02	16.63	0.06	0.31
0.30	0.30	2.50	5.9	22.13	2.34	21.65	0.09	0.39
0.35	0.35	3.71	9.8	27.23	2.65	26.68	0.11	0.46
0.40	0.40	5.17	15.2	32.34	2.95	31.70	0.13	0.53
0.45	0.45	6.78	23.7	32.94	3.49	32.23	0.19	0.64
0.50	0.50	8.39	33.7	33.05	4.01	32.25	0.25	0.75
0.55	0.55	10.01	45.1	33.15	4.50	32.28	0.31	0.86
0.60	0.60	11.62	57.7	33.25	4.96	32.30	0.38	0.98
0.65	0.65	13.24	71.5	33.35	5.40	32.33	0.45	1.10
0.70	0.70	14.92	81.4	37.11	5.45	36.05	0.46	1.16
0.75	0.75	16.84	92.0	41.76	5.46	40.70	0.46	1.21
0.80	0.80	18.99	104.7	46.41	5.51	45.35	0.47	1.27
0.85	0.85	21.38	119.7	51.06	5.60	50.00	0.49	1.34

$$Q_{100} = G-1 + G-2 + G-3 + G-4 + F_{residual}$$

$$= 3.93 + 3.24 + 3.58 + 1.07 + 17.0$$

$$Q_T = 28.82 \text{ cfs}$$

$$d = 0.476 > 0.41$$

$$V = 3.76$$

$$E = 0.696 < 0.85 \quad \underline{\text{OK}}$$

PC PROGRAM STREAM

SEPTEMBER 1994

32ff/50rw std full 0.60%

MANNING'S N= .017 SLOPE= .006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	41.17	0.67
2	8.37	0.67	6	25.00	0.41	10	41.63	0.67
3	8.83	0.67	7	39.00	0.13	11	50.00	0.85
4	9.00	0.00	8	41.00	0.00	12	0.00	0.00
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
	(FT)	SQ. FT.	(CFS)	(FT)	(FPS)		(FT)	(FT)
0.05	0.05	0.04	0.0	1.71	0.56	1.63	0.00	0.05
0.10	0.10	0.16	0.1	3.41	0.89	3.25	0.01	0.11
0.15	0.15	0.39	0.4	6.82	1.00	6.58	0.02	0.17
0.20	0.20	0.84	1.0	11.92	1.16	11.60	0.02	0.22
0.25	0.25	1.55	2.1	17.03	1.37	16.63	0.03	0.28
0.30	0.30	2.50	4.0	22.13	1.58	21.65	0.04	0.34
0.35	0.35	3.71	6.7	27.23	1.79	26.68	0.05	0.40
0.40	0.40	5.17	10.3	32.34	1.99	31.70	0.06	0.46
0.45	0.45	6.78	16.0	32.94	2.36	32.23	0.09	0.54
0.50	0.50	8.39	22.8	33.05	2.72	32.25	0.11	0.61
0.55	0.55	10.01	30.5	33.15	3.05	32.28	0.14	0.69
0.60	0.60	11.62	39.0	33.25	3.36	32.30	0.18	0.78
0.65	0.65	13.24	48.4	33.35	3.66	32.33	0.21	0.86
0.70	0.70	14.92	55.1	37.11	3.69	36.05	0.21	0.91
0.75	0.75	16.84	62.3	41.76	3.70	40.70	0.21	0.96
0.80	0.80	18.99	70.9	46.41	3.73	45.35	0.22	1.02
0.85	0.85	21.38	81.0	51.06	3.79	50.00	0.22	1.07

$$Q_{100} = H-1 + H-2 + H-3 + \text{Open 3} + E_{\text{residual}}$$

$$= 2.68 + 3.70 + 1.73 + 2.73 + 16.94$$

$$Q_T = 27.78 \text{ cfs}$$

$$d = 0.532 > 0.41$$

$$V = 2.93$$

$$E = 0.66 < 0.85 \quad \underline{\underline{OK}}$$

$$Q_{100} = I-1 + I-2 + H_{\text{residual}}$$

$$= 3.89 + 0.84 + 16.64 = 21.37 \text{ cfs}$$

$$d = 0.489 > 0.41$$

$$V = 2.64$$

$$E = 0.595 < 0.85 \quad \underline{\underline{OK}}$$

PC PROGRAM STREAM

SEPTEMBER 1994

24ff/42rw std half 3.49%

MANNING'S N= .017 SLOPE= .0349

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	4	9.00	0.00	7	0.00	0.00
2	8.37	0.67	5	11.00	0.13	8	0.00	0.00
3	8.83	0.67	6	21.00	0.32	9	0.00	0.00
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)		(FT)	(FT)
0.05	0.05	0.02	0.0	0.85	1.35	0.81	0.03	0.08
0.10	0.10	0.08	0.2	1.71	2.15	1.63	0.07	0.17
0.15	0.15	0.19	0.5	3.41	2.41	3.29	0.09	0.24
0.20	0.20	0.42	1.2	5.96	2.79	5.80	0.12	0.32
0.25	0.25	0.77	2.6	8.51	3.30	8.31	0.17	0.42
0.30	0.30	1.25	4.8	11.07	3.82	10.83	0.23	0.53
0.35	0.35	1.84	8.4	12.37	4.59	12.09	0.33	0.68
0.40	0.40	2.45	13.5	12.42	5.53	12.10	0.47	0.87
0.45	0.45	3.05	19.5	12.47	6.39	12.11	0.63	1.08
0.50	0.50	3.66	26.3	12.52	7.19	12.13	0.80	1.30
0.55	0.55	4.26	33.9	12.57	7.94	12.14	0.98	1.53
0.60	0.60	4.87	42.2	12.62	8.65	12.15	1.16	1.76
0.65	0.65	5.48	51.1	12.68	9.33	12.16	1.35	2.00
0.70	0.70	6.12	56.1	14.55	9.17	14.03	1.31	2.01
0.75	0.75	6.88	61.8	16.88	8.98	16.35	1.25	2.00
0.80	0.80	7.76	69.2	19.20	8.92	18.68	1.24	2.04
0.85	0.85	8.75	78.4	21.53	8.96	21.00	1.25	2.10

$$Q_{100} = J-1 + J-2 = 1.50 + 3.57$$

$$Q_T = 5.07 \text{ cfs}$$

$$d = 0.30 < 0.32$$

$$V = 3.98$$

$$E = 0.54 < 0.85 \quad \underline{\underline{OK}}$$

PC PROGRAM STREAM

SEPTEMBER 1994

22ff/40rw std full 3.58%

MANNING'S N= .017 SLOPE= .0358

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	31.17	0.67
2	8.37	0.67	6	20.00	0.31	10	31.63	0.67
3	8.83	0.67	7	29.00	0.13	11	40.00	0.85
4	9.00	0.00	8	31.00	0.00	12	0.00	0.00
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)		(FT)	(FT)
0.05	0.05	0.04	0.1	1.71	1.37	1.63	0.03	0.08
0.10	0.10	0.16	0.4	3.41	2.17	3.25	0.07	0.17
0.15	0.15	0.39	0.9	6.82	2.44	6.58	0.09	0.24
0.20	0.20	0.84	2.4	11.92	2.82	11.60	0.12	0.32
0.25	0.25	1.55	5.2	17.03	3.34	16.63	0.17	0.42
0.30	0.30	2.50	9.7	22.13	3.87	21.65	0.23	0.53
0.35	0.35	3.61	17.5	22.73	4.85	22.18	0.37	0.72
0.40	0.40	4.72	27.3	22.84	5.78	22.20	0.52	0.92
0.45	0.45	5.83	38.7	22.94	6.64	22.23	0.68	1.13
0.50	0.50	6.94	51.6	23.04	7.43	22.25	0.86	1.36
0.55	0.55	8.06	65.9	23.15	8.18	22.28	1.04	1.59
0.60	0.60	9.17	81.6	23.25	8.90	22.30	1.23	1.83
0.65	0.65	10.29	98.5	23.35	9.58	22.33	1.42	2.07
0.70	0.70	11.47	107.0	27.10	9.32	26.05	1.35	2.05
0.75	0.75	12.89	116.9	31.76	9.07	30.70	1.28	2.03
0.80	0.80	14.54	130.5	36.41	8.97	35.35	1.25	2.05
0.85	0.85	16.43	147.5	41.06	8.98	40.00	1.25	2.10

$$Q_T = K-1 + K-2 + K-3 + K-4 + \text{Open } 4 = 21.25 \text{ cfs}$$

$$\lambda = 0.369 > 0.31 \quad \text{over-center}$$

$$V = 5.205$$

$$E = 0.79 < 0.95 \quad \underline{\text{OK}}$$

PC PROGRAM STREAM

SEPTEMBER 1994

24ff/42rw std full 2.00%

MANNING'S N= .017 SLOPE= .02

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	11.00	0.13	9	33.17	0.67
2	8.37	0.67	6	21.00	0.32	10	33.63	0.67
3	8.83	0.67	7	31.00	0.13	11	42.00	0.85
4	9.00	0.00	8	33.00	0.00	12	0.00	0.00
□ WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
	(FT)	SQ. FT.	(CFS)	(FT)	(FPS)		(FT)	(FT)
	0.05	0.04	0.0	1.71	1.02	1.63	0.02	0.07
	0.10	0.16	0.3	3.41	1.62	3.25	0.04	0.14
	0.15	0.39	0.7	6.82	1.83	6.58	0.05	0.20
	0.20	0.84	1.8	11.92	2.11	11.60	0.07	0.27
	0.25	1.55	3.9	17.03	2.50	16.63	0.10	0.35
	0.30	2.50	7.2	22.13	2.89	21.65	0.13	0.43
	0.35	3.68	12.8	24.73	3.47	24.18	0.19	0.54
	0.40	4.89	20.5	24.84	4.18	24.20	0.27	0.67
	0.45	6.10	29.5	24.94	4.84	24.23	0.36	0.81
	0.50	7.31	39.8	25.04	5.44	24.25	0.46	0.96
	0.55	8.53	51.3	25.15	6.01	24.28	0.56	1.11
	0.60	9.74	63.8	25.25	6.55	24.30	0.67	1.27
	0.65	10.96	77.4	25.35	7.07	24.33	0.78	1.43
	0.70	12.24	85.0	29.10	6.94	28.05	0.75	1.45
	0.75	13.76	93.5	33.76	6.80	32.70	0.72	1.47
	0.80	15.51	104.8	38.41	6.75	37.35	0.71	1.51
	0.85	17.50	118.7	43.06	6.78	42.00	0.71	1.56

-nture

$$1: Q_T = 23.66$$

$$d = 0.417 > 0.32 \text{ over-center}$$

$$V = 4.411$$

$$E = 0.719 < 0.85 \quad \underline{\underline{OK}}$$

$$2: Q_T = 10.57$$

$$d = 0.33 > 0.32$$

$$V = 3.234$$

$$E = 0.496 < 0.85 \quad \underline{\underline{OK}}$$

3:

Type "A" Sump - MONTE FRIO

ANALYSIS OF AN INLET IN A SUMP CONDITION - MONTE FRIO - NORTH END

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q = C * L * H^{1.5}$

ORIFICE: $Q = C * A * (2 * G * H)^{0.5}$

Wing opening

Grate opening

Grate opening

Wing opening

C= 3.0

C=3.0

C=0.6

C=0.6

L= 4.0 ft

L(single grate)=[(2.67')+2(1.8')]=6.2' A(single grate)=4.09 sf A=2.0 sf

$Q = 3.0(4.0')H^{1.5} = 12.0H^{1.5}$ $Q = 3.0(6.27)H^{1.5} = 18.81H^{1.5}$ $Q = 2.46*(64.4H)^{0.5}$ $Q = 1.2*(64.4H)^{0.5}$

	WS	HEIGHT	Q (CFS) WEIR WING	Q (CFS) WEIR SINGLE	Q (CFS) ORIFICE SINGLE	TOTAL Q (CFS)	COMMENTS:
	ELEVATION	ABOVE INLET	OPENING	GRATE	GRATE		
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	6.24	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.82	3.83	
	0.30	0.30	1.97	3.09	10.80	7.03	
	0.40	0.40	3.04	4.76	12.47	10.83	
	0.50	0.50	4.24	6.65	13.94	15.14	
	0.60	0.60	5.58	8.74	15.27	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	16.50	25.07	
	0.80	0.80	8.59	13.46	17.64	30.63	
	0.90	0.90	10.25	16.06	18.71	36.55	
ROW LIMIT	1.00	1.00	12.00	18.81	19.72	42.81	Q(100 yr) = 40.25 cfs is provided at this depth

NOTE:

The total runoff intercepted by the inlet at the low point in the road is:

$Q(100) = 2 * [(\text{runoff of the wing opening}) + (\text{the lesser of the weir or orifice amount taken by the double grate})]$.

THE 100 YR STORM EVENT = 40.25 CFS at the sump condition

THE 2 x 100 YR STORM EVENT = 80.5 CFS at the sump condition

Type "A" Sump - MI CORDELIA

ANALYSIS OF AN INLET IN A SUMP CONDITION - MI CORDELIA DR - SEVILLA AVE.

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q = C * L * H^{1.5}$

ORIFICE: $Q = C * A * (2 * G * H)^{0.5}$

Wing opening

Grate opening

Grate opening

Wing opening

C=3.0

C=3.0

C=0.6

C=0.6

L=4.0 ft

L(single grate)=[(2.67')+2(1.8')]=6.2' A(single grate)=4.09 sf A=2.0 sf

$Q = 3.0(4.0')H^{1.5} = 12.0H^{1.5}$ $Q = 3.0(6.27)H^{1.5} = 18.81H^{1.5}$ $Q = 2.46*(64.4'H)^{0.5}$ $Q = 1.2*(64.4'H)^{0.5}$

	WS	HEIGHT	Q (CFS) WEIR WING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	6.24	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.82	3.83	
	0.30	0.30	1.97	3.09	10.80	7.03	
	0.40	0.40	3.04	4.76	12.47	10.83	Q(100 yr)=8.77 cfs is provided at this depth
	0.50	0.50	4.24	6.65	13.94	15.14	
	0.60	0.60	5.58	8.74	15.27	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	16.50	25.07	
	0.80	0.80	8.59	13.46	17.64	30.63	
	0.90	0.90	10.25	16.06	18.71	36.55	
ROW LIMIT	1.00	1.00	12.00	18.81	19.72	42.81	

NOTE:

The total runoff intercepted by the inlet at the low point in the road is:

$Q(100) = 2 * [(runoff of the wing opening) + (the lesser of the weir or orifice amount taken by the double grate)]$.

THE 100 YR STORM EVENT = 8.77 CFS at the sump condition

THE 2 x 100 YR STORM EVENT = 17.53 CFS at the sump condition

Type "A" Sump - MI CORDELIA(2)

ANALYSIS OF AN INLET IN A SUMP CONDITION - MI CORDELIA DR - Turnaround

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q=C*L*H^{1.5}$

ORIFICE: $Q=C*A*(2*G*H)^{0.5}$

Wing opening

Grate opening

Grate opening

Wing opening

C= 3.0

C=3.0

C=0.6

C=0.6

L= 4.0 ft

L(single grate)=[(2.67')+2(1.8')]=6.27' A(single grate)=4.09 sf A=2.0 sf

$Q=3.0(4.0')H^{1.5}=12.0H^{1.5}$ $Q=3.0(6.27')H^{1.5}=18.81H^{1.5}$ $Q=2.46*(64.4'H)^{0.5}$ $Q=1.2*(64.4'H)^{0.5}$

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR WING OPENING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	6.24	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.82	3.83	Q(100 yr) =3.24. cfs is provided at this depth
	0.30	0.30	1.97	3.09	10.80	7.03	Q(2x100 yr) =6.48 cfs is provided at this depth
	0.40	0.40	3.04	4.76	12.47	10.83	
	0.50	0.50	4.24	6.65	13.94	15.14	
	0.60	0.60	5.58	8.74	15.27	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	16.50	25.07	
	0.80	0.80	8.59	13.46	17.64	30.63	
	0.90	0.90	10.25	16.06	18.71	36.55	
ROW LIMIT	1.00	1.00	12.00	18.81	19.72	42.81	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

$Q(100) = 2*[(\text{runoff of the wing opening}) + (\text{the lesser of the weir or orifice amount taken by the double grate})]$.

THE 100 YR STORM EVENT =3.24 CFS at the sump condition

THE 2 x 100 YR STORM EVENT = 6.48 CFS at the sump condition

Type "A" Sump - LAS GRANADAS

ANALYSIS OF AN INLET IN A SUMP CONDITION - LAS GRANADAS - Park

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q=C*L*H^{1.5}$

ORIFICE: $Q=C*A*(2*G*H)^{0.5}$

Wing opening

Grate opening

Grate opening

Wing opening

C= 3.0

C=3.0

C=0.6

C=0.6

L= 4.0 ft

L(single grate)=[(2.67')+2(1.8')]=6.27' A(single grate)=4.09 sf A=2.0 sf

$Q=3.0(4.0')H^{1.5}=12.0H^{1.5}$ $Q=3.0(6.27')H^{1.5}=18.81H^{1.5}$ $Q=2.46*(64.4'H)^{0.5}$ $Q=1.2*(64.4'H)^{0.5}$

	WS	HEIGHT	Q (CFS) WEIR WING	Q (CFS) WEIR SINGLE	Q (CFS) ORIFICE SINGLE	TOTAL Q (CFS)	COMMENTS:
	ELEVATION	ABOVE INLET	OPENING	GRATE	GRATE		
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	6.24	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.82	3.83	
	0.30	0.30	1.97	3.09	10.80	7.03	
	0.40	0.40	3.04	4.76	12.47	10.83	
	0.50	0.50	4.24	6.65	13.94	15.14	
	0.60	0.60	5.58	8.74	15.27	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	16.50	25.07	Q(100 yr) =20.25 cfs is provided at this depth
	0.80	0.80	8.59	13.46	17.64	30.63	
	0.90	0.90	10.25	16.06	18.71	36.55	
ROW LIMIT	1.00	1.00	12.00	18.81	19.72	42.81	

NOTE:

The total runoff intercepted by the inlet at the low point in the road is:

$Q(100) = 2*[(\text{runoff of the wing opening}) + (\text{the lesser of the weir or orifice amount taken by the double grate})]$.

THE 100 YR STORM EVENT =20.25 CFS at the sump condition

THE 2 x 100 YR STORM EVENT = 40.50 CFS at the sump condition

Type "A" Sump - SEVILLA

ANALYSIS OF AN INLET IN A SUMP CONDITION - SEVILLA AVE. - ALMANZORA AVE.

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q = C * L * H^{1.5}$

ORIFICE: $Q = C * A * (2 * G * H)^{0.5}$

Wing opening

Grate opening

Grate opening

Wing opening

C= 3.0

C=3.0

C=0.6

C=0.6

L= 4.0 ft

L(single grate)=[(2.67')+2(1.8')]=6.27' A(single grate)=4.09 sf A=2.0 sf

$Q = 3.0(4.0')H^{1.5} = 12.0H^{1.5}$ $Q = 3.0(6.27')H^{1.5} = 18.81H^{1.5}$ $Q = 2.46(64.4'H)^{0.5}$ $Q = 1.2(64.4'H)^{0.5}$

	WS	HEIGHT	Q (CFS) WEIR WING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	COMMENTS:
	ELEVATION	ABOVE INLET	OPENING	GRATE	GRATE		
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	6.24	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.82	3.83	
	0.30	0.30	1.97	3.09	10.80	7.03	
	0.40	0.40	3.04	4.76	12.47	10.83	Q(100 yr) =8.48 cfs is provided at this depth
	0.50	0.50	4.24	6.65	13.94	15.14	
	0.60	0.60	5.58	8.74	15.27	19.90	Q(2x100 yr) =16.96 cfs is provided at this depth
TOP OF CURB	0.70	0.70	7.03	11.02	16.50	25.07	
	0.80	0.80	8.59	13.46	17.64	30.63	
	0.90	0.90	10.25	16.06	18.71	36.55	
ROW LIMIT	1.00	1.00	12.00	18.81	19.72	42.81	

NOTE:

The total runoff intercepted by the inlet at the low point in the road is:

$Q(100) = 2 * [(\text{runoff of the wing opening}) + (\text{the lesser of the weir or orifice amount taken by the double grate})]$.

THE 100 YR STORM EVENT =8.48 CFS at the sump condition

THE 2 x 100 YR STORM EVENT = 16.96 CFS at the sump condition

Type "A" Sump - ALMANZORA

ANALYSIS OF AN INLET IN A SUMP CONDITION - ALMANZORA AVE. - SEVILLA AVE

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: $Q = C * L * H^{1.5}$

Wing opening

C= 3.0

L= 4.0 ft

$Q = 3.0(4.0')H^{1.5} = 12.0H^{1.5}$

Grate opening

C=3.0

$L(\text{single grate}) = [(2.67') + 2(1.8')] = 6.27'$ $A(\text{single grate}) = 4.09 \text{ sf}$ $A = 2.0 \text{ sf}$

$Q = 3.0(6.27)H^{1.5} = 18.81 * H^{1.5}$

ORIFICE: $Q = C * A * (2 * G * H)^{0.5}$

Grate opening

C=0.6

$Q = 2.46 * (64.4 * H)^{0.5}$

Wing opening

C=0.6

$Q = 1.2 * (64.4 * H)^{0.5}$

	WS	HEIGHT	Q (CFS) WEIR WING	Q (CFS) WEIR SINGLE	Q (CFS) ORIFICE SINGLE	TOTAL Q (CFS)	COMMENTS:
	ELEVATION	ABOVE INLET	OPENING	GRATE	GRATE		
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	6.24	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.82	3.83	
	0.30	0.30	1.97	3.09	10.80	7.03	
	0.40	0.40	3.04	4.76	12.47	10.83	Q(100 yr) = 9.52 cfs is provided at this depth
	0.50	0.50	4.24	6.65	13.94	15.14	
	0.60	0.60	5.58	8.74	15.27	19.90	Q(2x100 yr) = 19.03 cfs is provided at this depth
TOP OF CURB	0.70	0.70	7.03	11.02	16.50	25.07	
	0.80	0.80	8.59	13.46	17.64	30.63	
	0.90	0.90	10.25	16.06	18.71	36.55	
ROW LIMIT	1.00	1.00	12.00	18.81	19.72	42.81	

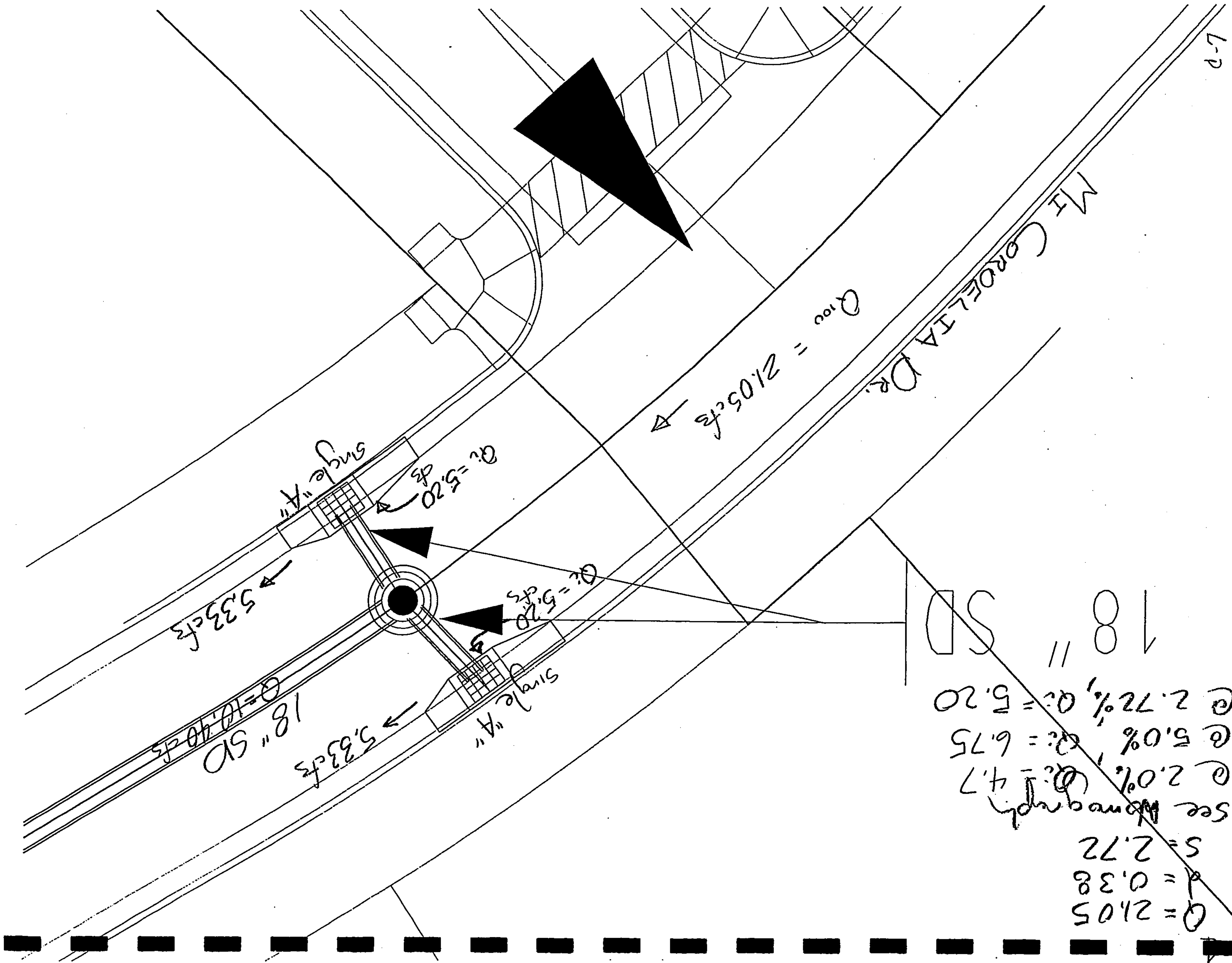
NOTE:

The total runoff intercepted by the inlet at the low point in the road is:

$Q(100) = 2 * [(\text{runoff of the wing opening}) + (\text{the lesser of the weir or orifice amount taken by the double grate})]$.

THE 100 YR STORM EVENT = 9.52 CFS at the sump condition

THE 2 x 100 YR STORM EVENT = 19.03 CFS at the sump condition



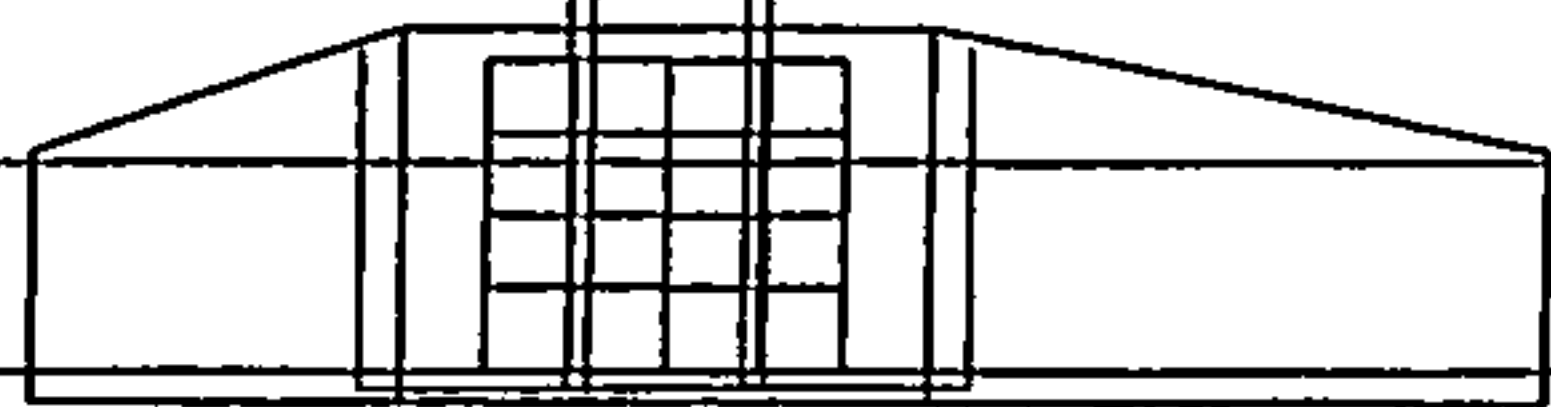
$Q = 21.05$
 $d = 0.38$
 $S = 2.72$
 See Monograph
 $Q = 4.7$
 $@ 2.0\%$
 $Q = 6.75$
 $@ 5.0\%$
 $Q = 5.20$
 $@ 2.72\%$

L-2

$$Q_{100} = 3.02 \text{ cfs} \quad \leftarrow$$

$$Q_i = 2.83 \text{ cfs} \quad \nwarrow$$

$$Q_{res} = 0.19 \text{ cfs} \quad \leftarrow$$



single "A"

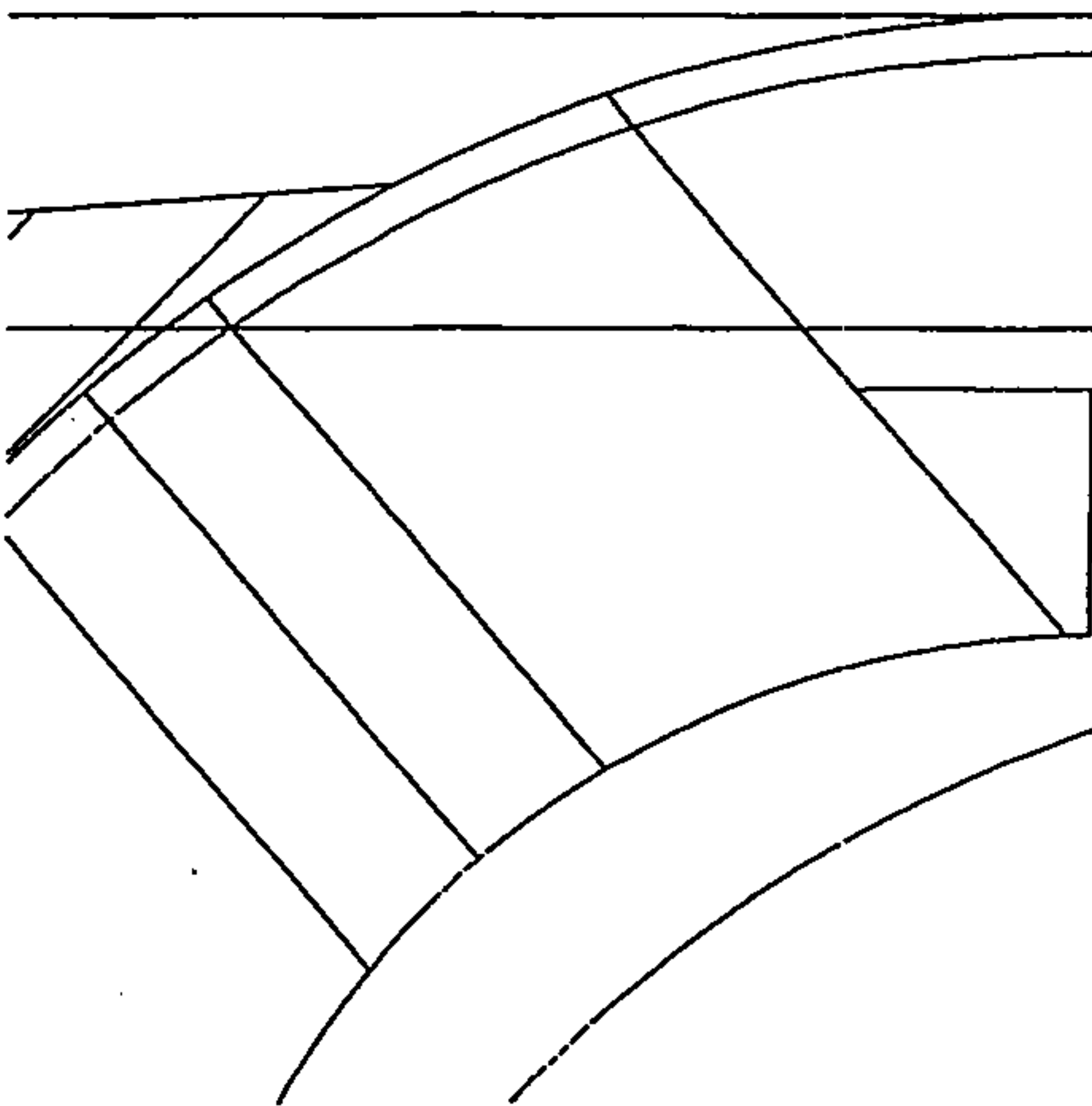
NAMASTE Rd.

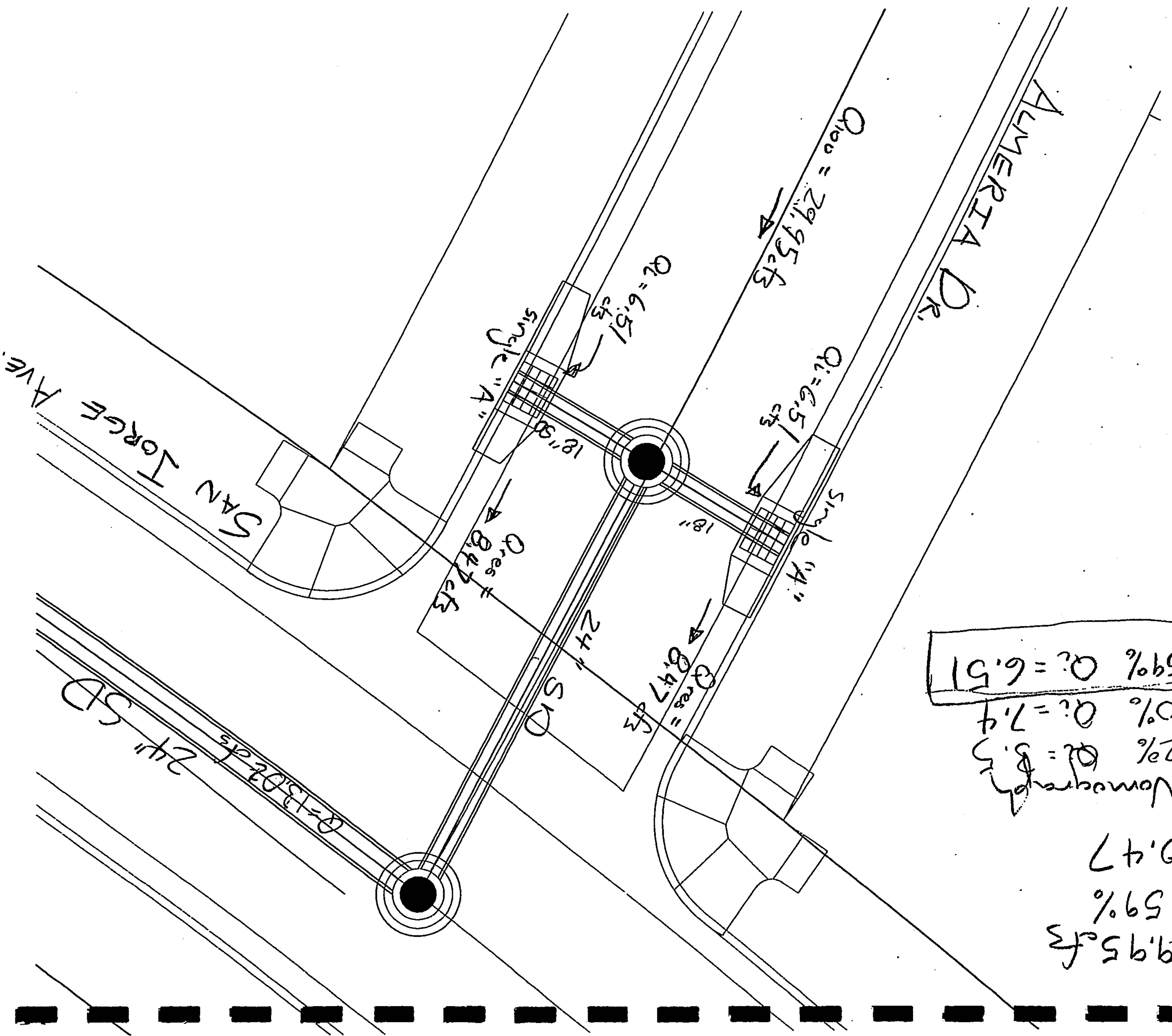
$$Q = 3.02 \text{ cfs}$$

$$d = 0.233$$

$$S = 7.31\%$$

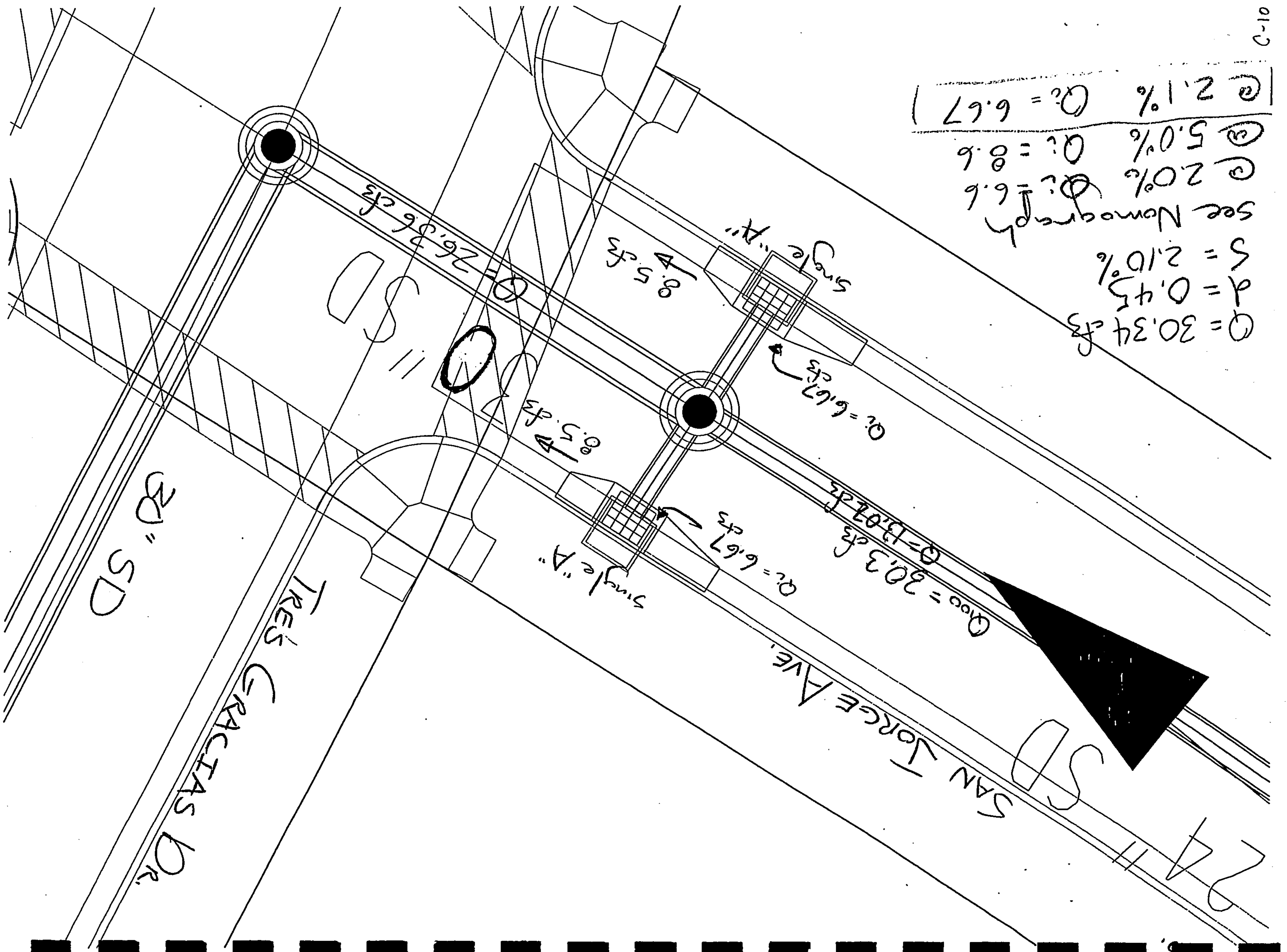
$$\begin{aligned} @ 5.0\% \quad Q_i &= 2.45 \\ @ 9.0\% \quad Q_i &= 3.1 \\ @ 7.31\% \quad Q_i &= 2.83 \end{aligned}$$



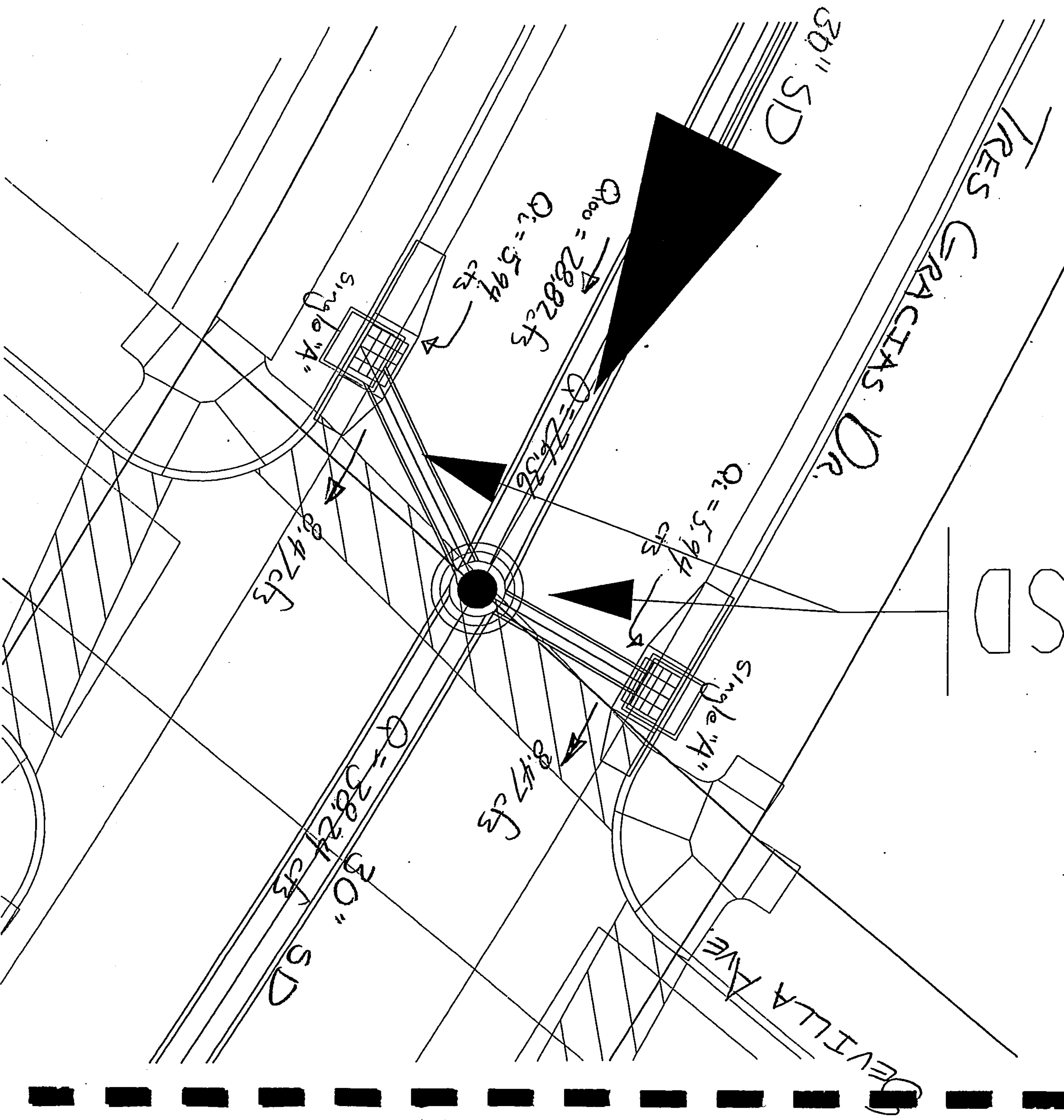


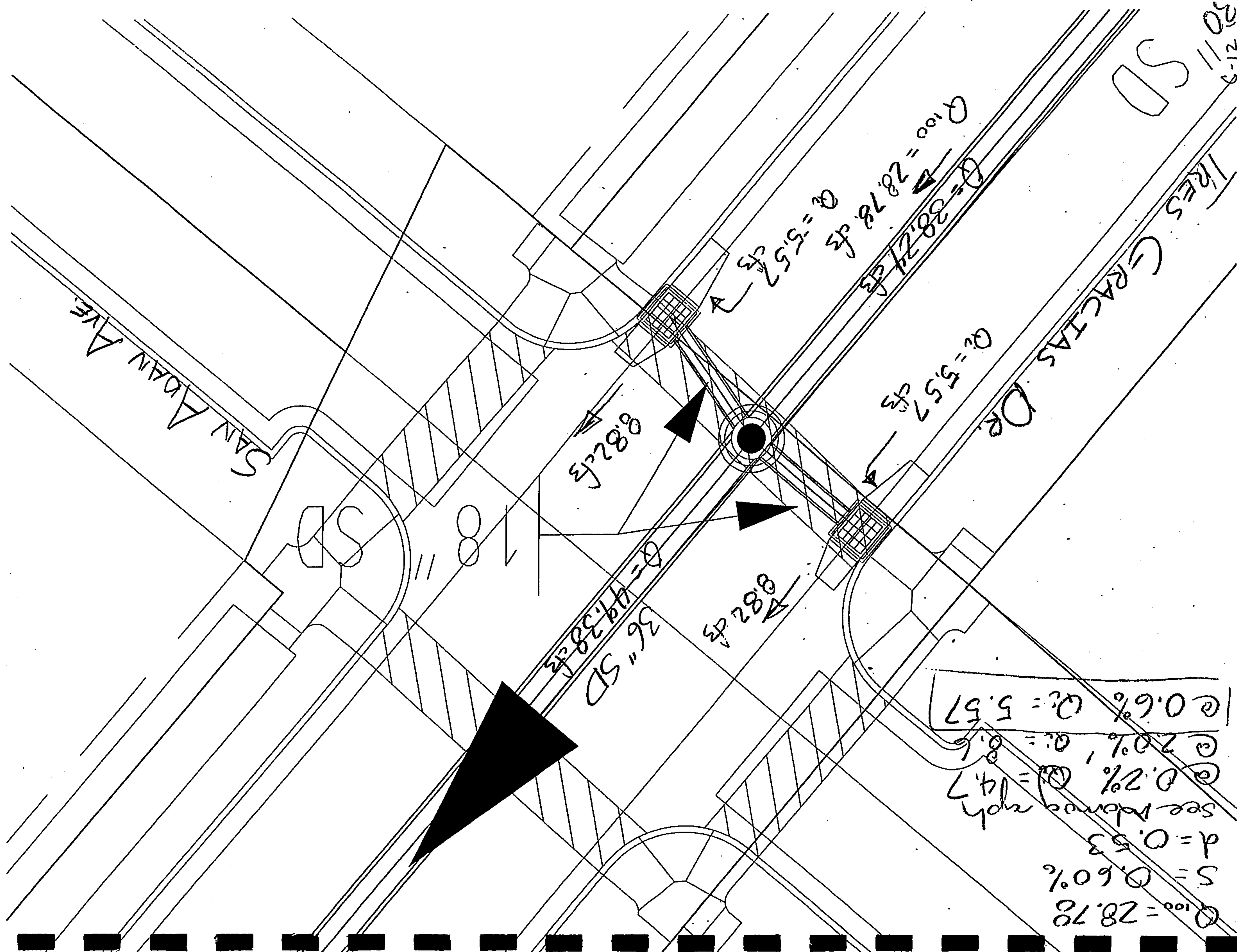
Q = 29.95 cfs
S = 1.59%
d = 0.47
See Nomograph
@ 0.2% Q1 = 8.5
@ 2.0% Q1 = 7.4
@ 1.59% Q1 = 6.51

$Q = 30.34 \text{ cfs}$
 $d = 0.45$
 $S = 2.10\%$
see Monograph
 $Q = 2.0\% \quad Q_c = 6.6$
 $Q = 5.0\% \quad Q_c = 8.6$
 $Q = 2.1\% \quad Q_c = 6.67$



102
18"
SD
102
see Monograph
@ 0.2% $Q_c = 13.6$
@ 2.0% $Q_c = 7.4$
@ 1.31% $Q_c = 5.94$





$Q_{100} = 28.78$
 $S = 0.60\%$
 $d = 0.53$
see reference graph
 $@ 0.2\% \quad Q = 14.7$
 $@ 2.0\% \quad Q = 8.6$
 $@ 0.6\% \quad Q = 5.57$

36" SD
 $Q = 49.38$

0.82%

0.82%

$Q = 5.57$

$Q = 28.24$
 $Q = 5.57$
 $Q_{100} = 28.78$

SAN JUAN AVE

RES GRACIAS DR

SD
8-12-05

$$Q = 22.37$$

$$d = 0.49$$

$$S = 0.6\%$$

See Nomograph

$$@ 0.2\%, Q_i = 14$$

$$@ 2.0\%, Q_i = 7.8$$

$$@ 0.6\%, Q_i = 4.94$$

18" SD

TRES GRACIAS DR.

36" SD

$$Q = 49.38 \text{ cfs}$$

$$Q_{100} = 22.37 \text{ cfs}$$

$$Q_i = 4.94 \text{ cfs}$$

$$Q_i = 4.94 \text{ cfs}$$

$$6.33 \text{ cfs}$$

42" SD

$$Q = 59.06 \text{ cfs}$$

$$6.33 \text{ cfs}$$

139

LA BIENVENIDA PL.

$\rightarrow Q_{100} = 5.07 \text{ cfs}$

2.00%



$Q_i = 3.67 \text{ cfs}$

$Q = 3.67$

$\rightarrow Q_{res} = 1.4$

$Q_{100} = 5.07 \text{ cfs}$

$d = 0.30$

$S = 3.49\%$

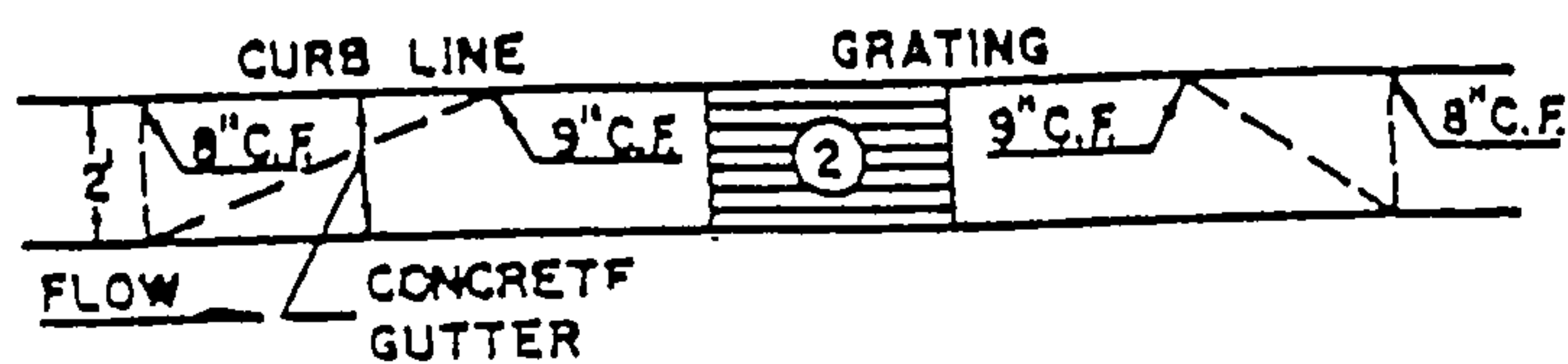
see nomograph

@ 2.0% $Q_i = 2.95$

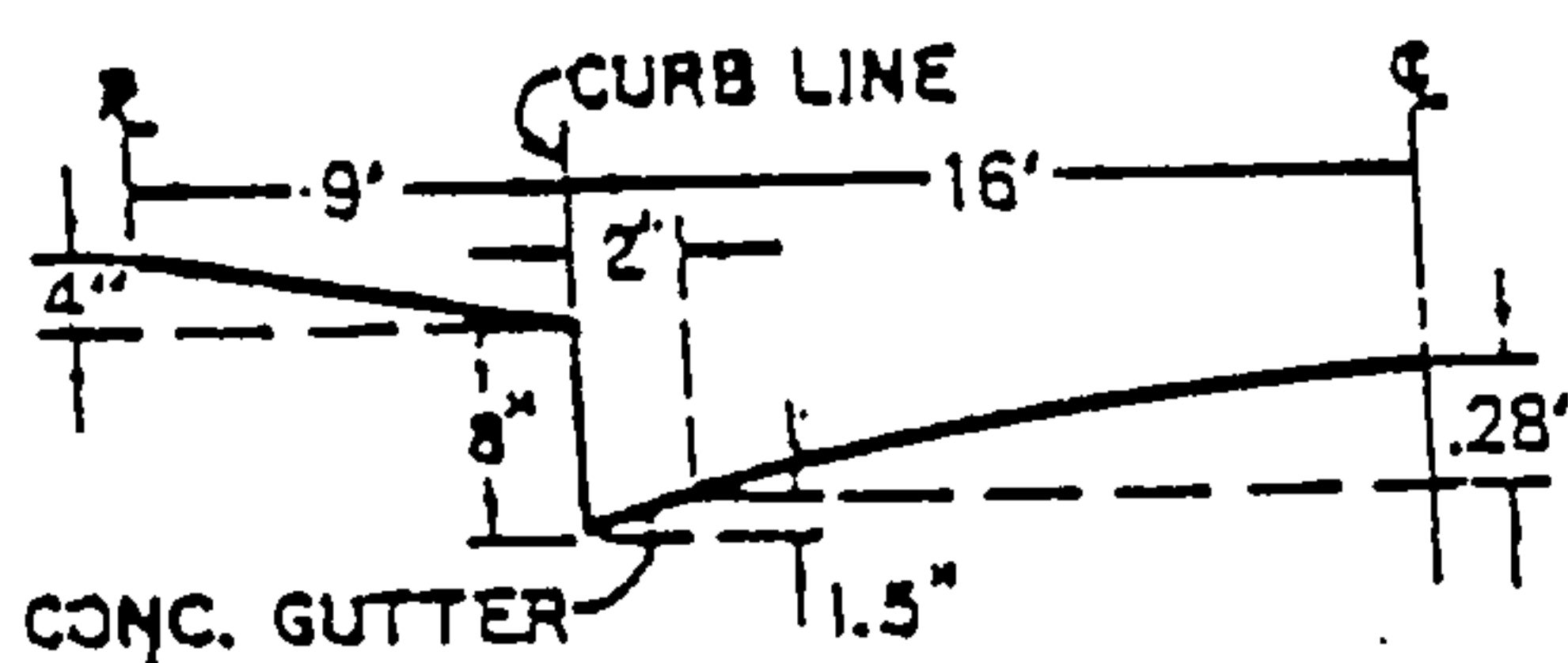
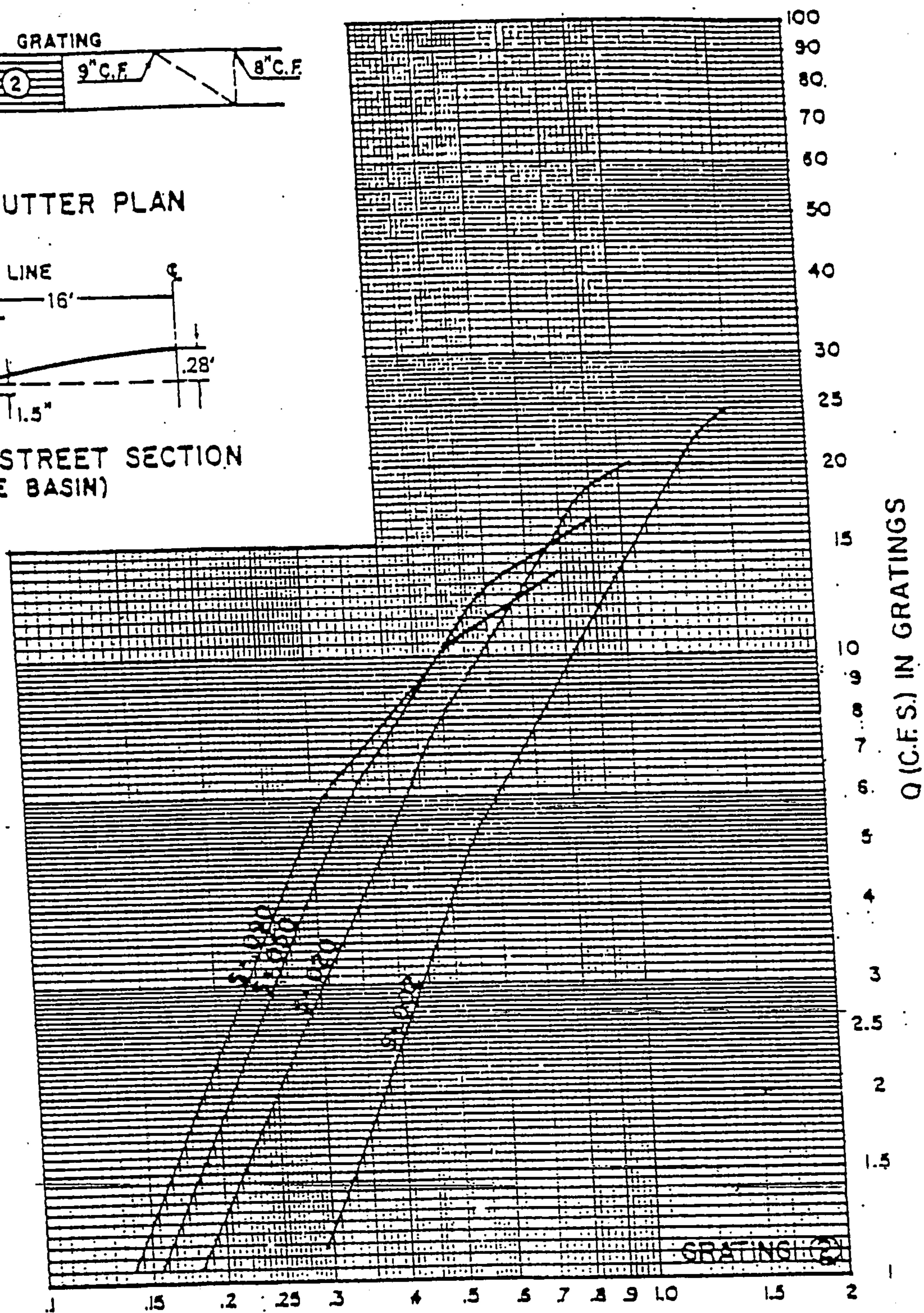
@ 5.0% $Q_i = 4.4$

@ 3.49% $Q_i = 3.67$

GRATING CAPACITIES FOR TYPE "A", "C" and "D"

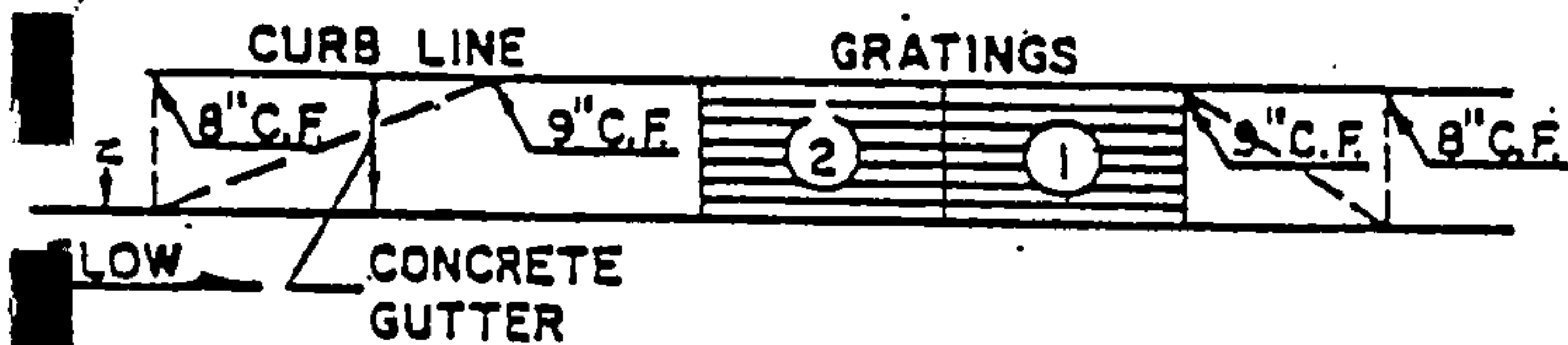


GRATING & GUTTER PLAN

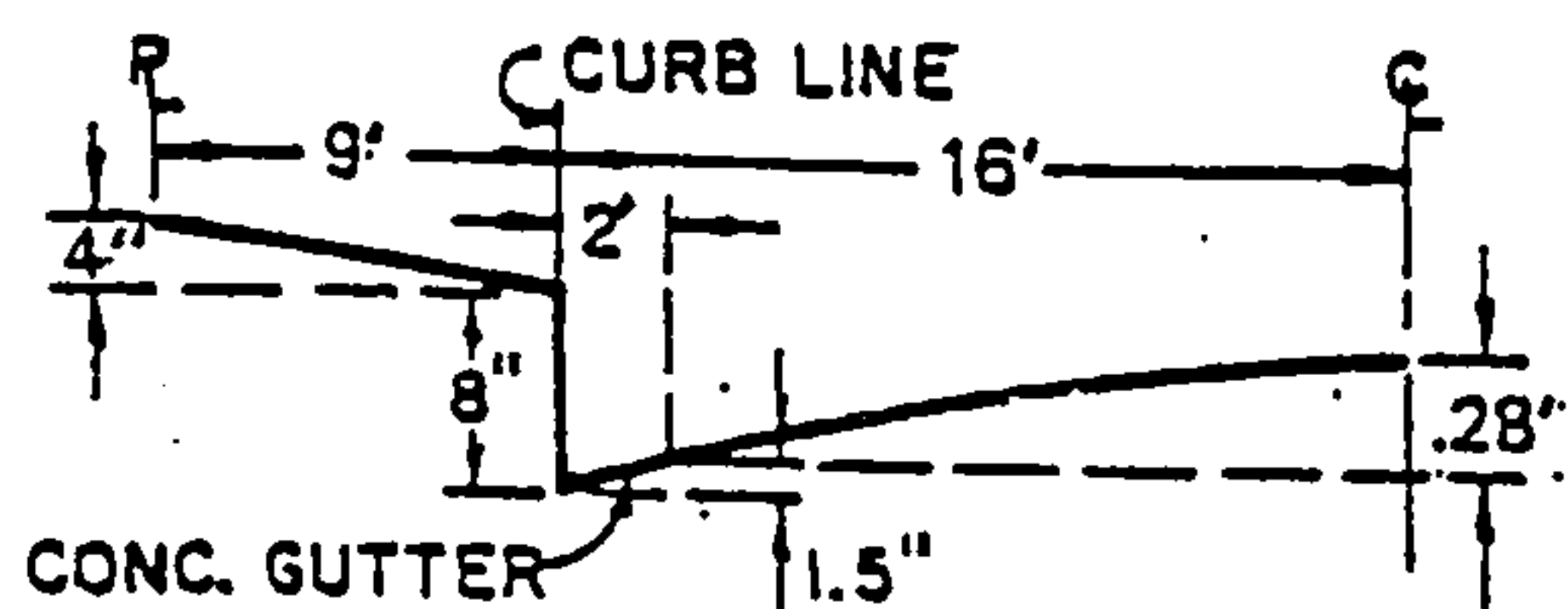
TYPICAL HALF STREET SECTION
(ABOVE BASIN)

D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

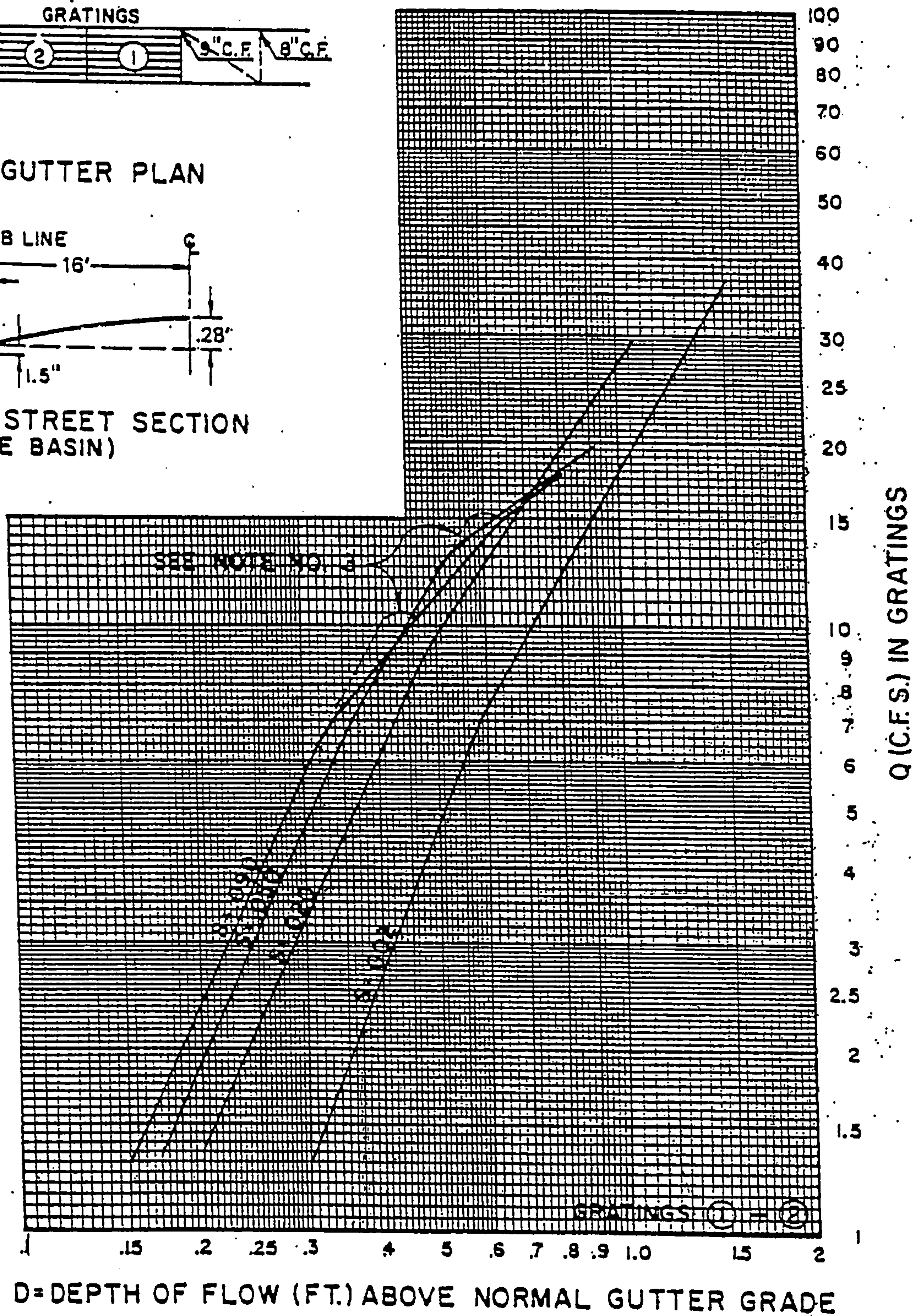
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION (ABOVE BASIN)



Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:25:11 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	10.4000 cfs
Slope	2.7200%
Size (W x T):	18.00 x 2.0000

Output Results

Flow Rate	10.4000 cfs
Slope	2.7200%
d/D	0.5580
Capacity	17.3242 cfs
Velocity	10.2586 ft/s
Depth	0.8370 ft
Critical Depth	1.2400 ft
Size (W x T):	18.00 x 2.0000

Basin 13

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:28:39 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	17.5300 cfs
Slope	1.5200%
Size (W x T):	24.00 x 2.5000

Output Results

Flow Rate	17.5300 cfs
Slope	1.5200%
d/D	0.5745
Capacity	27.8908 cfs
Velocity	9.3859 ft/s
Depth	1.1490 ft
Critical Depth	1.5000 ft
Size (W x T):	24.00 x 2.5000

Basin C

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:29:10 AM

=====

Input Data

Shape Circular
Material RC C76-A
Roughness 0.013000
Method Manning
Flow Rate 20.7700 cfs
Slope 1.5200%
Size (W x T): 24.00 x 2.5000

Output Results

Flow Rate 20.7700 cfs
Slope 1.5200%
d/D 0.6425
Capacity 27.8908 cfs
Velocity 9.7375 ft/s
Depth 1.2850 ft
Critical Depth 1.6300 ft
Size (W x T): 24.00 x 2.5000

Basin D

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:30:23 AM

=====

Input Data

Shape Circular
Material RC C76-A
Roughness 0.013000
Method Manning
Flow Rate 13.0200 cfs
Slope 1.5900%
Size (W x T): 24.00 x 2.5000

Output Results

Flow Rate 13.0200 cfs
Slope 1.5900%
d/D 0.4740
Capacity 28.5258 cfs
Velocity 8.8762 ft/s
Depth 0.9480 ft
Critical Depth 1.2900 ft
Size (W x T): 24.00 x 2.5000

Basin E

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:31:32 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	26.3600 cfs
Slope	1.3100%
Size (W x T):	30.00 x 2.7500

Output Results

Flow Rate	26.3600 cfs
Slope	1.3100%
d/D	0.5356
Capacity	46.9463 cfs
Velocity	9.8480 ft/s
Depth	1.3390 ft
Critical Depth	1.7500 ft
Size (W x T):	30.00 x 2.7500

Basin F

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:32:19 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	38.2400 cfs
Slope	4.0000%
Size (W x T):	30.00 x 2.7500

Output Results

Flow Rate	38.2400 cfs
Slope	4.0000%
d/D	0.4796
Capacity	82.0343 cfs
Velocity	16.4338 ft/s
Depth	1.1990 ft
Critical Depth	2.0800 ft
Size (W x T):	30.00 x 2.7500

Basin G

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:33:16 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	49.3800 cfs
Slope	0.6000%
Size (W x T):	36.00 x 3.0000

Output Results

Flow Rate	49.3800 cfs
Slope	0.6000%
d/D	0.7823
Capacity	51.6644 cfs
Velocity	8.3230 ft/s
Depth	2.3470 ft
Critical Depth	2.2800 ft
Size (W x T):	36.00 x 3.0000

Basin H

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:33:54 AM

=====

Input Data

Shape Circular
Material RC C76-A
Roughness 0.013000
Method Manning
Flow Rate 59.0600 cfs
Slope 0.6000%
Size (W x T): 42.00 x 3.5000

Output Results

Flow Rate 59.0600 cfs
Slope 0.6000%
d/D 0.6509
Capacity 77.9320 cfs
Velocity 8.9078 ft/s
Depth 2.2780 ft
Critical Depth 2.4000 ft
Size (W x T): 42.00 x 3.5000

Basin I

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:38:14 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	19.0300 cfs
Slope	0.6000%
Size (W x T):	30.00 x 2.7500

Output Results

Flow Rate	19.0300 cfs
Slope	0.6000%
d/D	0.5576
Capacity	31.7717 cfs
Velocity	6.7636 ft/s
Depth	1.3940 ft
Critical Depth	1.4700 ft
Size (W x T):	30.00 x 2.7500

Basin M "Sump"

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:39:07 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	35.9900 cfs
Slope	0.6000%
Size (W x T):	36.00 x 3.0000

Output Results

Flow Rate	35.9900 cfs
Slope	0.6000%
d/D	0.6143
Capacity	51.6644 cfs
Velocity	7.9025 ft/s
Depth	1.8430 ft
Critical Depth	1.9500 ft
Size (W x T):	36.00 x 3.0000

Basin L "Sump"

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:40:40 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	40.2500 cfs
Slope	0.6000%
Size (W x T):	36.00 x 3.0000

Output Results

Flow Rate	40.2500 cfs
Slope	0.6000%
d/D	0.6637
Capacity	51.6644 cfs
Velocity	8.0814 ft/s
Depth	1.9910 ft
Critical Depth	2.0600 ft
Size (W x T):	36.00 x 3.0000

Basin A

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:41:40 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	21.2500 cfs
Slope	1.0000%
Size (W x T):	24.00 x 2.5000

Output Results

Flow Rate	20.2500 cfs
Slope	1.0000%
d/D	0.7695
Capacity	22.6224 cfs
Velocity	8.1918 ft/s
Depth	1.5390 ft
Critical Depth	1.6500 ft
Size (W x T):	24.00 x 2.5000

Basin K

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:42:27 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	3.6700 cfs
Slope	0.6000%
Size (W x T):	18.00 x 2.0000

Output Results

Flow Rate	3.6700 cfs
Slope	0.6000%
d/D	0.4707
Capacity	8.1366 cfs
Velocity	4.4887 ft/s
Depth	0.7060 ft
Critical Depth	0.7300 ft
Size (W x T):	18.00 x 2.0000

Basin J

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 9:42:52 AM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	24.9200 cfs
Slope	1.5000%
Size (W x T):	24.00 x 2.5000

Output Results

Flow Rate	24.9200 cfs
Slope	1.5000%
d/D	0.7410
Capacity	27.7067 cfs
Velocity	9.9838 ft/s
Depth	1.4820 ft
Critical Depth	1.7500 ft
Size (W x T):	24.00 x 2.5000

Basin J + K

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 5:25:55 PM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	19.5000 cfs
Slope	1.0000%
Size (W x T):	24.00 x 2.5000

Output Results

Flow Rate	19.5000 cfs
Slope	1.0000%
d/D	0.7160
Capacity	22.6224 cfs
Velocity	8.1010 ft/s
Depth	1.4320 ft
Critical Depth	1.5800 ft
Size (W x T):	24.00 x 2.5000

Open 8 Pond

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Tuesday, July 29, 2003 5:26:21 PM

=====

Input Data

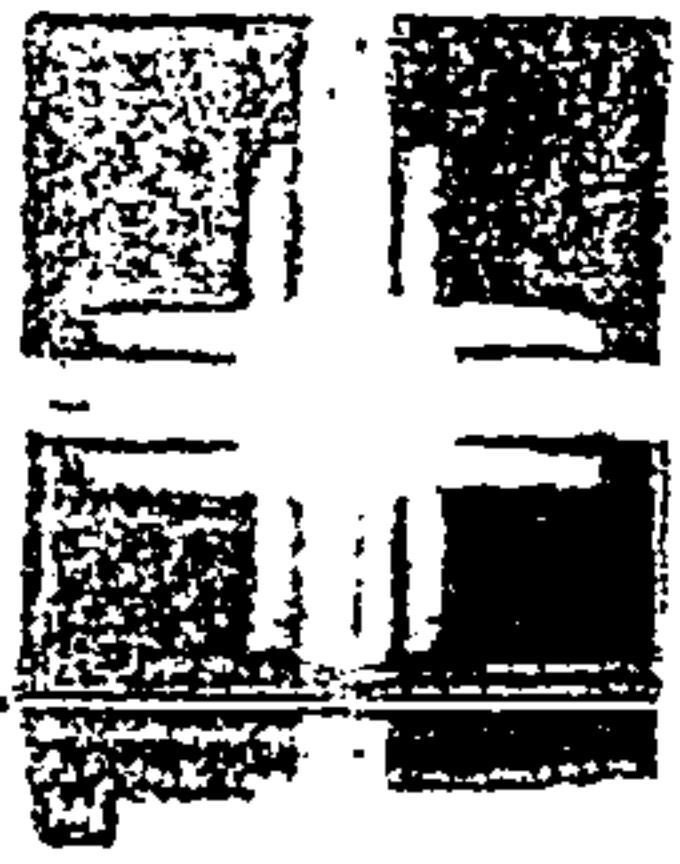
Shape Circular
Material RC C76-A
Roughness 0.013000
Method Manning
Flow Rate 15.0400 cfs
Slope 0.6000%
Size (W x T): 24.00 x 2.5000

Output Results

Flow Rate 15.0400 cfs
Slope 0.6000%
d/D 0.7135
Capacity 17.5232 cfs
Velocity 6.2717 ft/s
Depth 1.4270 ft
Critical Depth 1.3900 ft
Size (W x T): 24.00 x 2.5000

Open 5 Pond

F11/D015



NEW MEXICO DEPARTMENT OF
TRANSPORTATION
MOBILITY FOR EVERYONE

District Three Office - Albuquerque

July 18, 2006

Mr. Jared M. Lee
Bohannon Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109-4335

Subject: **Authorization to Construct: Driveway Permit #3-2868**

Dear Mr. Lee,

We have reviewed the documentation and plans you submitted for access to our State Highway System and have determined that your proposed driveway will meet the requirements of the State Access Management Manual. Therefore, we issue this correspondence as your **Authority to Proceed** with your construction.

The fully executed driveway permit will be returned to you upon our Final acceptance of your Driveway construction to include but not limited to; approved roadway features (auxiliary lanes, curb & gutter, sidewalks etc.), drainage, signing & stripping requirements as outlined on the approved TIA and approved design plans.

♦♦ The Owner is authorized to construct one right-in/right-out driveway with a deceleration lane as per the approved plans.

You are required to notify us of your start date & completion date so we can schedule a field review of your project during & after construction. You shall use the attached Traffic Control / Work Permit Form to notify us of your schedule.

By granting a driveway permit, the NMDOT does not relieve the property owner from insuring that historical flows along the roadway are maintained. Should construction of the driveway impact historical flows along the roadway, it is the responsibility of the property owner to take corrective action to resolve any drainage issues that results from the construction of the driveway.

All work performed within State rights-of-way must meet or exceed NMDOT Standard Specifications for Road & Bridge Construction, 2000 Edition.

Sincerely,


Tony Abbo, P.E., PTOE
District Three Traffic Engineer

cc: Julian Vigil AMS/Patrol Records

Bill Richardson
Governor

Rhonda G. Faught P.E.
Cabinet Secretary

Commission

Johnny Cope
Chairman
District 2

David Schutz
Vice Chairman
District 5

Gregory T. Ortiz
Secretary
District 6

Norman Assed
Commissioner
District 3

Jim Franken
Commissioner
District 4

John L. Hummer
Commissioner
District 1

New Mexico Department of Transportation

Preliminary Design Bureau
Drainage Section

INTRA-DEPARTMENTAL CORRESPONDENCE

DATE: June 29, 2006

FILE REF: DIST. 3

TO: Tony Abbo
District 3, Traffic Engineer

FROM: James S. Lowe *JSL*
Drainage Development Engineer

SUBJECT: Coors Blvd Improvements @ San Antonio Arroyo

At your request, the Drainage Section has reviewed the Drainage Management Plan and calculations for Coors Boulevard at San Antonio Arroyo dated September 2005 and June 28, 2006 by BHI Inc. and it appears the drop inlet (2- double wing, double grate type A inlets) are now sized correctly for City Criteria and it is understood that this size will be used in the proposed design. This inlet meets City criteria as it produces a water depth of less than 0.5 '.

Concurrence should be obtained from the City.

It is understood that a SWPPP will be implemented for the project site if it is greater than 1 acre.

If you have any questions, please call 827-5334

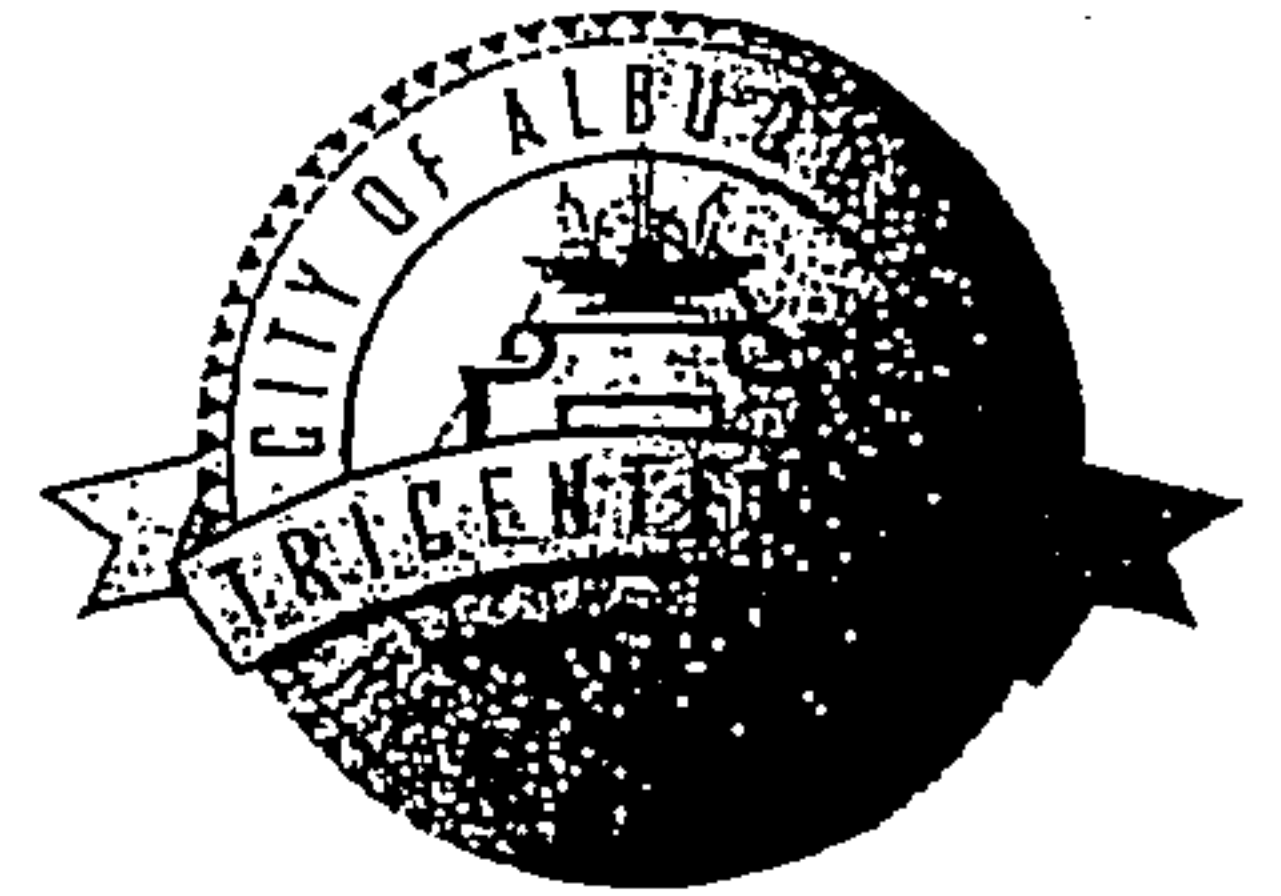
XC: Max Valerio
Ray Van Hoven
Jared Lee, BHI

Julian

This is for

Andalucia project

CITY OF ALBUQUERQUE



August 11, 2006

Kevin Patton, PE
Bohannon Huston, Inc
7500 Jefferson NE
Albuquerque, NM 87109

Re: Coors Blvd Improvements at Andalucia Drainage Plan
Engineer Stamp dated 8-6-06 (F11/D15)

Dear Mr. Patton,

P.O. Box 1293

Based upon the information provided in your submittal dated 8-11-06, the above referenced plan is acceptable to the City for issuance of the construction permit from the NMDOT.

Albuquerque

If you have any other questions, you can contact me at 924-3986.

New Mexico 87103

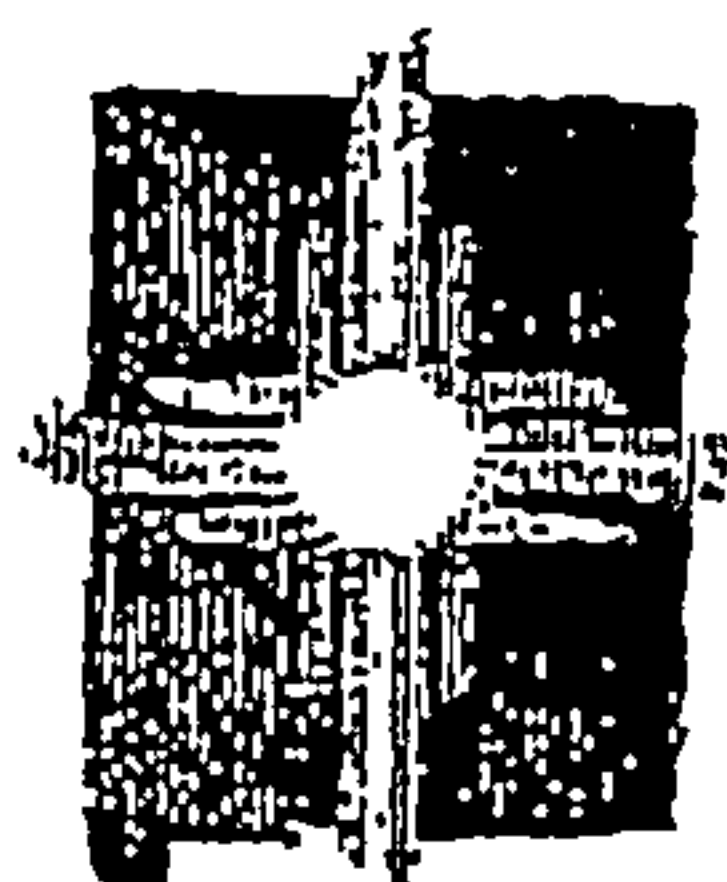
www.cabq.gov

Sincerely,

Bradley L. Bingham
Bradley L. Bingham, PE

Principal Engineer, Planning Dept.
Development and Building Services

C: file



New Mexico DEPARTMENT OF
TRANSPORTATION
MOBILITY FOR EVERYONE

Environmental Clearance for Undertakings within NMDOT Rights-of-way

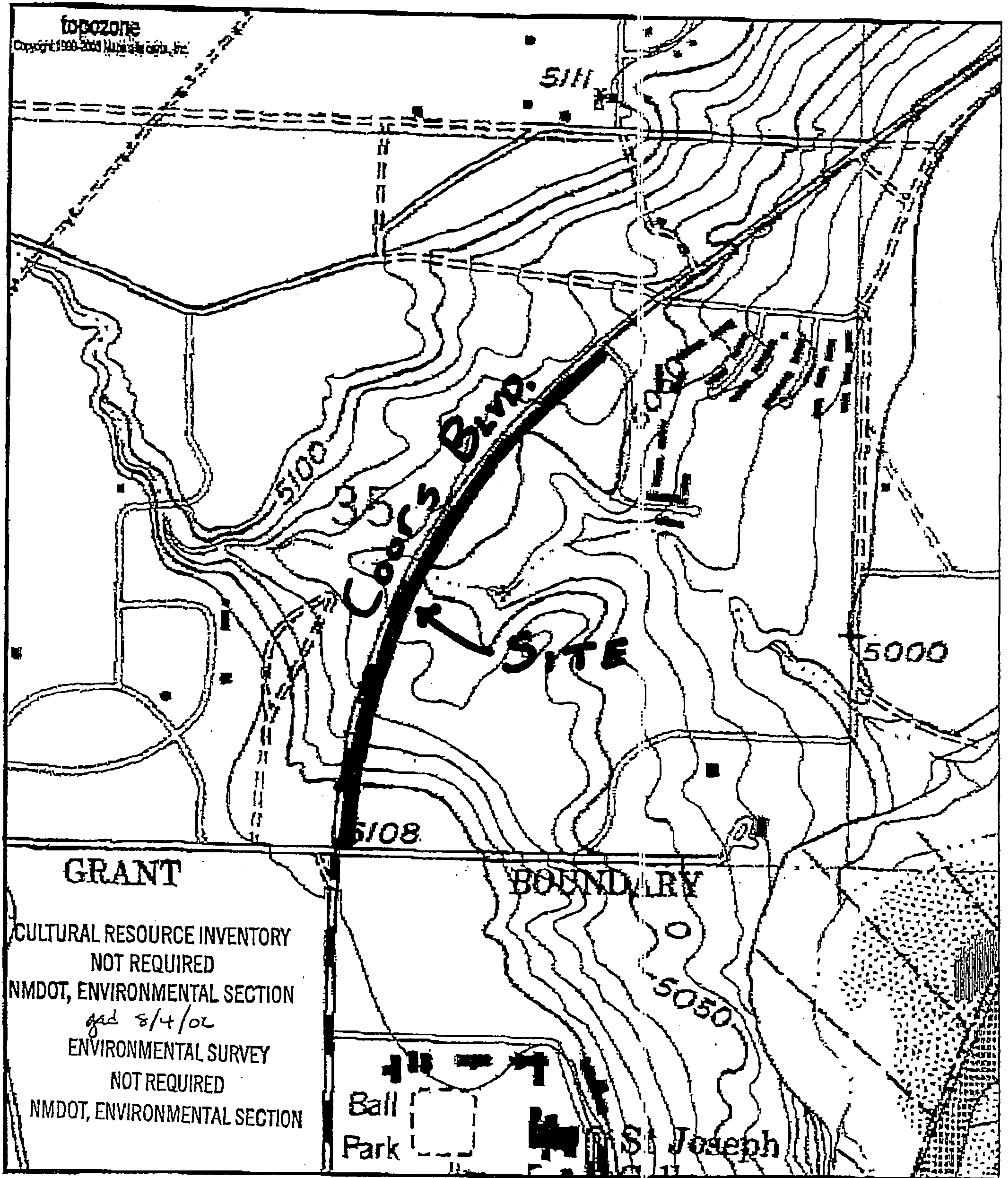
The following information will need to be submitted to the New Mexico Department of Transportation (NMDOT) Environmental Section prior to any decision being made regarding the need for environmental surveys (cultural and/or natural resource surveys) for all proposed projects. Submittals are reviewed on Tuesday of each week so please plan accordingly. Emergency requests are handled on a case-by-case basis.

1. **Purpose and Nature of project.** Offsite Improvements on NM 448 (Coors Boulevard) for Andalucia at La Luz Subdivision, which is north of Namaste Road and south of La Luz.
2. **Is your project resulting from a NMDOT project?** No
3. **Funding source.** Private
4. **Land status.** NMSHTD - Does the project cross BLM, Forest Service, or tribal land? NO State Trust land? NO
5. **Permitting agencies.** NMDOT
6. **County.** Bernalillo County
7. **Highway number.** NM 448
8. **BOP and EOP.** Milepost 3.90 to Milepost 4.45
9. **Side(s) of the road.** East
10. **Length of the project.** Approx. 3080 ft
11. **Provide the legal description of the project area:** Township: T. 11 N., Range: R. 2 E., Section(s): 32
12. **USGS 1:24,000 (7.5') Quadrangle map.** Los Griegos, New Mexico
13. **Include the appropriate portion of the USGS 1:24,000 (7.5') Quadrangle map(s) with the project area indicated by an X if a crossing, or BOP and EOP if linear. Do not reduce or enlarge. Quad map images can be printed at no charge from websites Topozone.com or Terraserver-usa.com.**
14. **Photos do not reproduce when faxed. Do not send photos unless they are scanned or via US Mail.**
15. **Fax or mail your information to Gwyneth Duncan, NMDOT - Environmental Design. Fax number 505-827-6862. Mailing address: P.O. Box 1149, Room 213, Santa Fe, NM 87504-1149. Please submit your request either by fax or by mail. Do not send the same request in multiple formats.**

CULTURAL RESOURCE INVENTORY
NOT REQUIRED
NMDOT, ENVIRONMENTAL SECTION

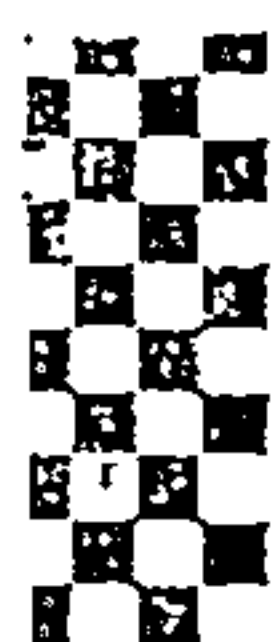
gwd 8/4/06
ENVIRONMENTAL SURVEY
NOT REQUIRED
NMDOT, ENVIRONMENTAL SECTION

If you have any questions please call Gwyneth Duncan at 505-827-5235, or email at: gwyneth.duncan@state.nm.us



0 0.1 0.2 0.3 0.4 0.5 km
0 0.09 0.18 0.27 0.36 0.45 mi
Map center is UTM 13 345247E 3889736N (WGS84/NAD83)
Los Griegos quadrangle
Projection is UTM Zone 13 NAD83 Datum

*M
G
M=10.269
G=-0.978



Bohannon & Huston

FACSIMILE TRANSMITTAL COVER SHEET

Courtyard I
7500 Jefferson St. NE
Albuquerque, NM
87109-4335

www.bhinc.com

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

Date: ~~July 28, 2006~~ 8/4/06

~~From:~~ ~~To:~~ Gwyneth Duncan

Company: NMDOT Environmental Dept.

Fax No.: 505-827-6862

~~To:~~ ~~From:~~ Jared Lee

Project No: 060136

Project Name: Coors Blvd.

Number of Pages (including Cover): 3 ✓

Re: Environmental Clearance for Undertakings within NMDOT Rights-of-way

Comments:

Enclosed for your review and approval is the Environmental Clearance Request for Andalucia at La Luz Offsite Construction, which include improvements to Coors Boulevard. Improvements consist of widening the existing eastern half of Coors Boulevard along Andalucia at La Luz to 50' face-to-face and adding a right turn lane to access Andalucia at La Luz. It would be appreciated if you could review these as soon as possible.

18' WIDE to 50' CURBS & GUTTER. FRONTING A SUBDIVISION
NOT CONTACTED YET. KEVIN PATTON - BH. (LION) HAS WORKED SOMETHING
OUT WITH CITY - FUTURE SIGNAL - CITY WOULD TAKE CARE OF, IF
PRIVATE DEVELOPER DID ROAD. IF SOMETHING IS WORKED OUT WITH CITY,
WE NEED TO KNOW WHAT THAT IS - IN LIGHTING, ROAD INFRASTRUCTURE LIST.

Original to Follow: ☒ Yes

If you do not receive all pages, please contact _____ at 823-1000.

ENGINEERING

SPATIAL DATA

CLIENT/COURIER TRANSMITTAL

To: Julian Vigil

New Mexico Department of
Transportation Dist 3
PO Box 91750
Albuquerque, NM 87199-1750

Requested by: Kevin Patton

Date: 8/14/06

Time Due: ☐ This A.M.
☒ This P.M.
☐ Rush _____
☐ By Tomorrow

Phone: (505) 841-2772

DELIVERY VIA

☒ Courier ☐ Federal Express
☐ Mail ☐ UPS
☐ Other

PICK UP

Item: _____

Job No.: 060136

Job Name: Coors Blvd Improvements at
Andalucia at La Luz

<u>ITEM NO.</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	4	Half size Construction plan set
2	1	City of Albuquerque Construction permit approval
3	3	Environmental / Cultural clearance

COMMENTS / INSTRUCTIONS

ACCESS INFORMATION		
NAME: Jared Lee/Kevin Patton (7) <u>Owner:</u>		
ADDRESS: 7500 Jefferson St NE		
CITY: Albuquerque	STATE: NM	ZIP: 87109
COUNTY: Bernalillo	PHONE: (505) 823-1000	

1. ROUTE NO. (S.R./US):	State Road NM 448
2. LOCATION (NEAREST MILE POST):	Coors Boulevard, north of Namaste Road and south of La Luz Mile Post 4
3. ACCESS WIDTH:	66 feet
4. LENGTH OF PROPERTY FRONTAGE:	3080 feet
5. ACCESS TYPE (commercial/residential/other):	Residential Subdivision
6. ACCESS RADIUS:	30 feet
7. GATE/CATTLE GUARD/OTHER:	
8. TYPE OF SURFACE MATERIAL:	Asphalt Pavement

*****FOR OFFICIAL USE ONLY*****	
1. POSTED SPEED:	45
2. SIGHT DISTANCE:	500'
3. DRAINAGE:	See Letter from Drainage Eng.
4. CULVERT SIZE:	
5. CONC. END BLANKETS:	
6. R.O.W TO R.O.W. WIDTH:	200'
7. DRIVING LANE WIDTH:	12'
	SHOULDER WIDTH: 5'
8. HIGHWAY A.D.T.:	See TIA
	ESTIMATED ACCESS A.D.T.: See TIA

Courtyard
7500 Jefferson St. NE
Albuquerque, NM
87109-4331

www.bhinc.com

voice: 505.823.1000
facsimile: 505.798.7981
toll free: 800.877.5331

July 12, 2006

Tony Abbo, P.E.
New Mexico State Highway &
Transportation Department
District 3
P.O. Box 91750
Albuquerque, NM 87199-1750

Re: Andalucia at La Luz Offsite Construction Plans

Dear Tony:

Enclosed for your review and approval are the corrected construction plans for Andalucia at La Luz Offsite Construction Plans, which include improvements to Coors Boulevard, and your original mark-ups. Improvements consist of widening the existing eastern half of Coors Boulevard along Andalucia at La Luz to 50' face-to-face and adding a right turn lane to access Andalucia at La Luz. Also included in this submittal is the Driveway Permit application for Sevilla Ave. It would be appreciated if you could review these as soon as possible.

Please do not hesitate to call if you need additional information or if you have any questions.

Sincerely,



Jared M. Lee
Design Engineer
Community Development and Planning

Enclosures

cc: John Clark, Scott Patrick Homes
Kevin Patton, BHI

Courtyard I
7500 Jefferson St. NE
Albuquerque, NM
87109-4335

www.bhinc.com

voice: 505.823.1000

facsimile: 505.798.7988

toll free: 800.877.5332

CLIENT/COURIER TRANSMITTAL

Julian
please process

To: Tony Abbo
NMDOT
7500 Pan American Freeway NE
Albuquerque, NM 87109

Requested by: Jared M. Lee

Date: 7-12-06

Time Due: ☒ This A.M.
☐ This P.M.
☐ Rush _____
☐ By Tomorrow

Phone: (505) 848-1517

Job No.: 060136

Job Name: Coors Blvd

DELIVERY VIA

- ☒ Courier ☐ Federal Express
☐ Mail ☐ UPS
☐ Other

PICK UP

Item: _____

<u>ITEM NO.</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	1	Submittal Letter
2	1	Construction Plans (11x17)
3	1	Driveway Permit
4	1	Original Mark-ups

COMMENTS / INSTRUCTIONS

For Review

① COA CONCURRENCE for Drainage
② Arch/Envir. Clearance Letter
③ 4 sets (Reduced copies)
T/C w/ MR. LEE
ON 7-18-06
ANDALUCIA PROJECT

REC'D BY:

Eva Tronolone

DATE:

7/12

TIME:

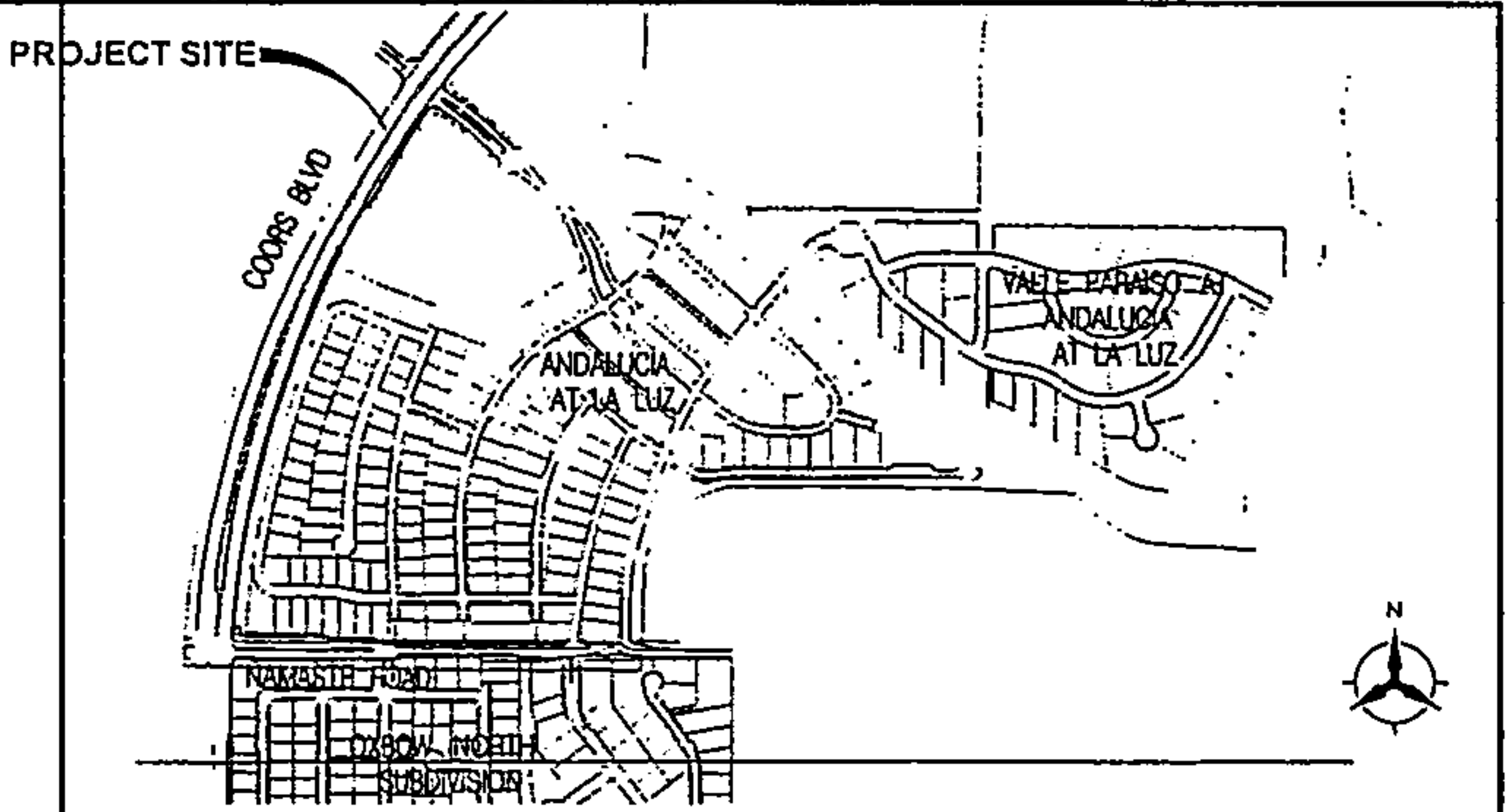
8:50A

ENGINEERING 
SPATIAL DATA 

CONSTRUCTION PLANS
FOR
ANDALUCIA AT LA LUZ OFFSITE
COORS BOULEVARD IMPROVEMENTS
ALBUQUERQUE, NEW MEXICO

INDEX

SHEET NUMBER	DESCRIPTION
1	TITLE SHEET
2	OVERALL PAVING PLAN
	PAVING PLAN AND PROFILE SHEETS
3	COORS BOULEVARD 0+00 - 7+50
4	COORS BOULEVARD 7+50 - 16+00
5	COORS BOULEVARD 16+00 - 24+50
6	COORS BOULEVARD 24+50 - 33+00
	STRIPING PLAN
7	COORS BOULEVARD



VICINITY MAP:NOT TO SCALE

ZONE MAP NO. F-11

NOTICE TO CONTRACTORS

A TRAFFIC CONTROL PLAN WILL BE SUBMITTED BY THE CONTRACTOR AND APPROVED BEFORE ANY WORK BEGINS

2.

ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED UNDER CONTRACT SHALL, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH NMDOT STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, 2005 EDITION. 2005 INTRIM SPECS.

3.

TWO WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM (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 OR SURVEYOR IMMEDIATELY SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

5.

FIVE (5) WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT, TO THE CONSTRUCTION COORDINATION DIVISION, A DETAILED CONSTRUCTION SCHEDULE. TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A BARRICADING PERMIT FROM THE CONST. COORDINATION DIVISION. CONTRACTOR SHALL NOTIFY CONSTRUCTION COORDINATION ENGINEER (924-3400) PRIOR TO OCCUPYING AN INTERSECTION. REFER TO SECTION 19 OF THE GENERAL CONDITIONS OF THE STANDARD SPECIFICATIONS. CONTRACTOR SHALL SUBMIT AND GET APPROVAL FOR A NMDOT TRAFFIC CONTROL PERMIT PRIOR TO ANY CONSTRUCTION BEGINS.

6.

ALL WORK EFFECTING ARTERIAL ROADWAYS REQUIRES TWENTY-FOUR HOUR CONSTRUCTION.

7.

ALL STREET STRIPING ALTERED OR DESTROYED SHALL BE REPLACED W/ THERMOPLASTIC REFLECTORIZED PAVEMENT MARKING BY CONTRACTOR TO THE SAME LOCATION AS EXISTING, OR AS INDICATED BY THIS PLAN SET.

8.

CONTRACTOR SHALL NOTIFY THE ENGINEER NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK IN ORDER THAT THE CITY SURVEYOR MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. CONTRACTOR SHALL NOT DISTURB PERMANENT SURVEY MONUMENTS WITHOUT THE CONSENT OF THE CITY SURVEYOR AND SHALL NOTIFY THE CITY SURVEYOR AND BEAR THE EXPENSE OF REPLACING ANY THAT MAY BE DISTURBED WITHOUT PERMISSION. REPLACEMENT SHALL BE DONE ONLY BY THE CITY SURVEYOR. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATIONS OF THE PAVEMENT OF ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED. REFER TO SECTION 4.4 OF THE GENERAL CONDITIONS OF THE STANDARD SPECIFICATIONS.

9.

CONTRACTOR SHALL RECORD DATA ON ALL UTILITY LINES AND ACCESSORIES AS REQUIRED BY THE CITY OF ALBUQUERQUE FOR THE PREPARATION OF "AS CONSTRUCTED" DRAWINGS. CONTRACTOR SHALL NOT COVER UTILITY LINES AND ACCESSORIES UNTIL ALL DATA HAS BEEN RECORDED.

10.

CONTRACTOR SHALL MAINTAIN A GRAFFITI-FREE WORK SITE. CONTRACTOR SHALL PROMPTLY REMOVE ANY GRAFFITI FROM ALL EQUIPMENT, WHETHER PERMANENT OR TEMPORARY.

11.

CONTRACTOR SHALL COORDINATE WITH THE CITY OF ALBUQUERQUE WATER SYSTEMS DIVISION (857-8200) SEVEN WORKING DAYS IN ADVANCE OF ANY WORK THAT MAY AFFECT EXISTING PUBLIC WATER OR SEWER UTILITIES. EXISTING VALVES TO BE OPERATED BY CITY PERSONNEL ONLY. CONTRACTOR SHALL CONTACT THE WATER SYSTEMS DIVISION SEVEN(7) DAYS PRIOR TO NEEDING VALVES TURNED ON OR OFF.

THE FOLLOWING NOTES ALSO APPLY WHEN CHECKED

☒

ALL UTILITIES AND UTILITY SERVICE LINES SHALL BE INSTALLED PRIOR TO PAVING.

☒

BACKFILL COMPACTION SHALL BE ACCORDING TO SPECIFIED STREET USE.

☒

TACK COAT REQUIREMENTS SHALL BE DETERMINED BY THE ENGINEER.

☒

SIDEWALKS AND WHEELCHAIR RAMPS WITHIN THE CURB RETURNS SHALL BE CONSTRUCTED WHEREVER A NEW CURB RETURN IS CONSTRUCTED.

☒

IF CURB IS DEPRESSED FOR A DRIVEPAD, THE DRIVEPAD SHALL BE CONSTRUCTED PRIOR TO ACCEPTANCE OF CURB AND GUTTER.

☒

ALL STORM DRAINAGE FACILITIES SHALL BE COMPLETED PRIOR TO FINAL ACCEPTANCE.

☒

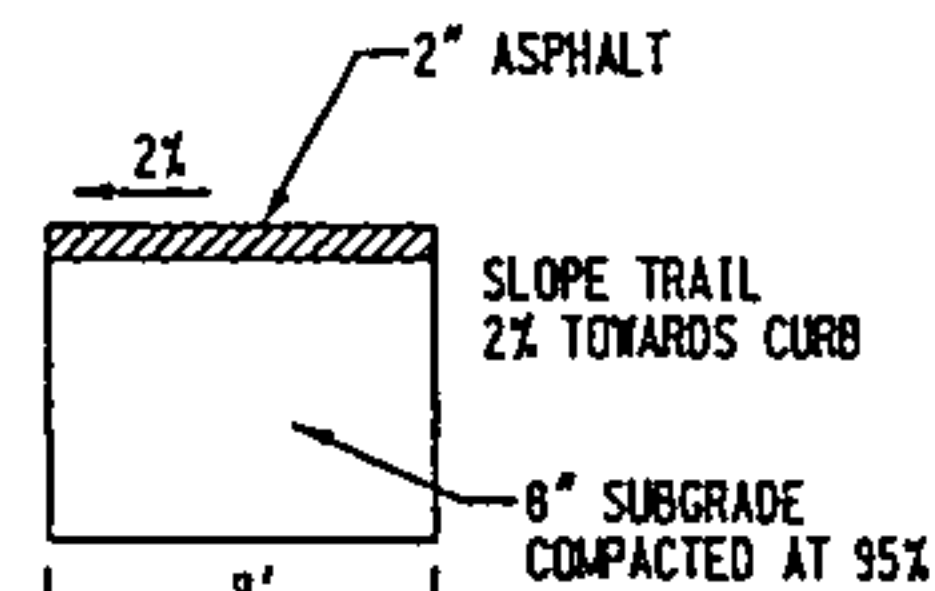
THE REQUESTOR OR DEVELOPER SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ALL CURB AND GUTTER OR SIDEWALK DAMAGED AFTER APPROVAL BY THE CITY ENGINEER OF WORK COMPLETED BY THE CONTRACTOR.

REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE
ENGINEERS STAMP & SIGNATURE		APPROVALS		ENGINEER	DATE	*****	
KEVIN G. PATTON NEW MEXICO 13415 REGISTERED PROFESSIONAL ENGINEER		DRC Chairman				APPROVED FOR CONSTRUCTION	
		Transportation					
		Water/Wastewater					
		Hydrology					
		CIP					
		Const. Mngmt.				City EngineerDate	
		Const. Coord.					

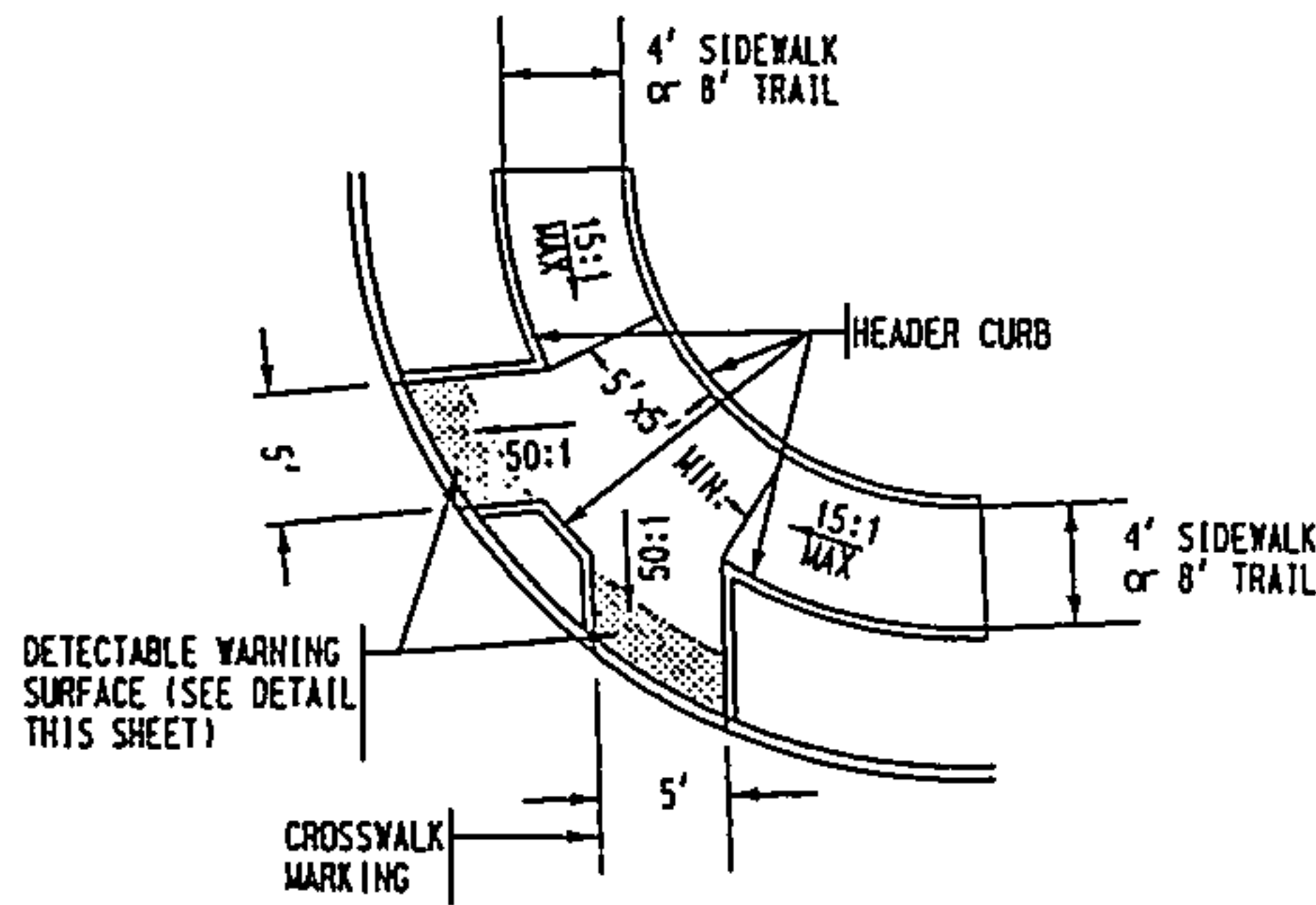
NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. ALL CURB RETURN RADIUS SHALL BE 25' UNLESS OTHERWISE SPECIFIED.
3. ALL CURVE DATA AND DIMENSIONS REFER TO FACE OF CURB UNLESS OTHERWISE SPECIFIED.
4. GRADE ELEVATIONS, WHERE NOTED, ARE ALONG FLOWLINE OF CURB UNLESS OTHERWISE SPECIFIED.
5. CONTRACTOR IS TO INSTALL A 4" X 4" X 5' POST AND END AT THE END OF EACH SANITARY SEWER SERVICE.
6. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL UTILITY CONDUITS AND EXISTING LINES.
7. ANY ADDITIONAL GRADING REQUIRED TO MATCH PROPOSED STREET GRADES SHALL BE INCIDENTAL TO PAVING ITEMS.
8. CONTRACTOR SHALL PROVIDE THE INSPECTORS, (CITY AND PRIVATE) WITH THE PROPOSED HYDROSTATIC TESTING PLAN. THE PLAN MUST BE APPROVED BEFORE TESTING OPERATIONS BEGIN.
9. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
10. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER), PAVEMENT, CONDUITS, LANDSCAPING, UTILITY LINES, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
11. REMOVAL OF THE EXISTING CURB AND GUTTER SHALL BE AS PER COA STD. DWG. 2415 (SAWCUT ONLY).
12. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED PRIOR TO ACCEPTANCE OF CURB & GUTTER.

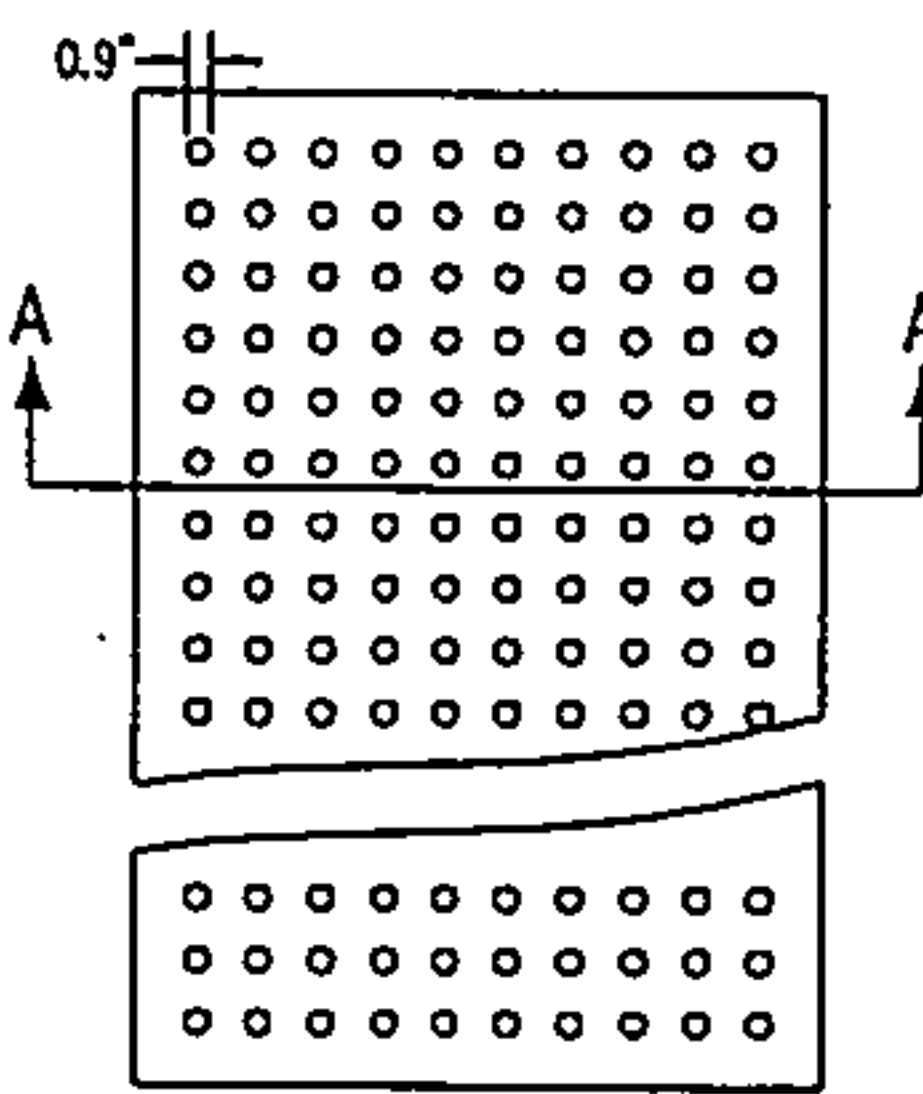
CONTRACTOR SHALL COORDINATE WITH ALL WET AND DRY UTILITY COMPANIES FOR EXACT LOCATIONS OF UTILITIES PRIOR TO ANY WORK WITHIN COORS BLVD. CONTRACTOR SHALL CONTACT ENGINEER IMMEDIATELY UPON THE DISCOVERY OF ANY DISCREPANCIES.



ASPHALT TRAIL
NOT TO SCALE

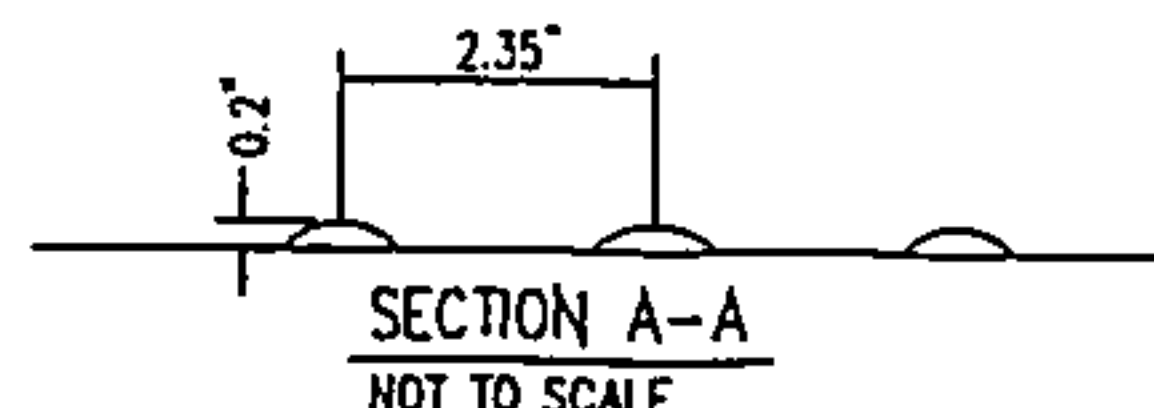


WHEEL CHAIR RAMP DETAIL
NMDOT TYPE D - MODIFIED
NOT TO SCALE

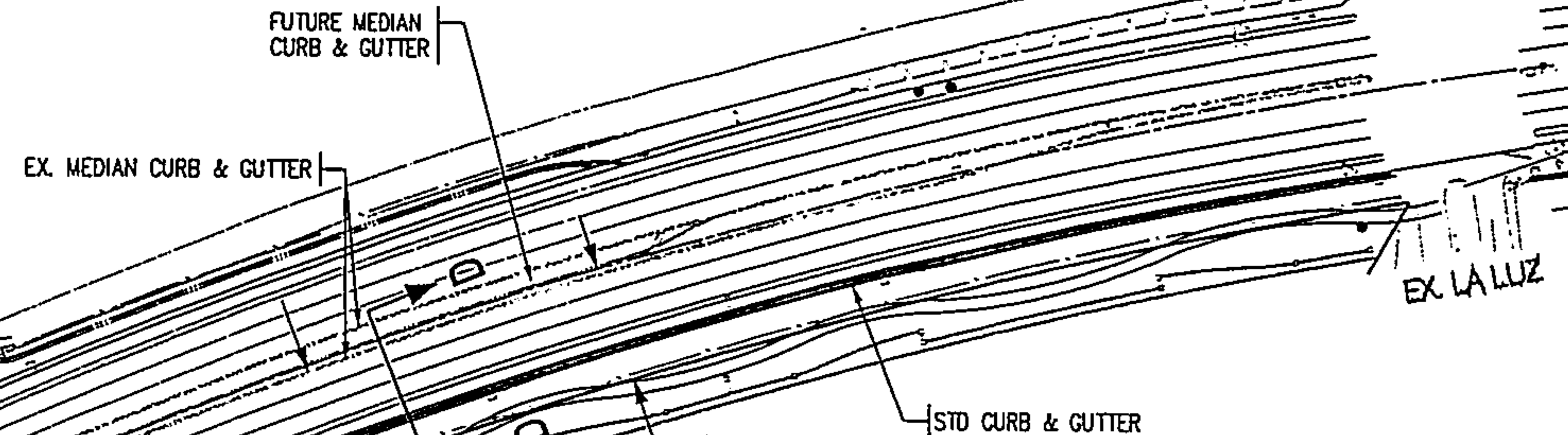


DETECTABLE WARNING SURFACE NOTES:

1. THE DETECTABLE WARNING SURFACE SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A NOMINAL DIAMETER OF 23mm, (0.9"), A NOMINAL HEIGHT OF 5mm, (0.2") AND A NOMINAL CENTER TO CENTER SPACING OF 60mm, (2.35"). THE SURFACE SHALL BE FIBERGLASS PANELS (PROCESS TO BE COORDINATED WITH AND FIELD APPROVED WITH CITY PRIOR TO INSTALLATION).
2. THE DETECTABLE WARNING SURFACE SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE INTEGRAL PART OF THE WALKING SURFACE. PROVIDE 70/30 CONTRAST PER ADA.
3. CONTRACTOR SHALL COORDINATE THE EXACT CONTRAST OF DETECTABLE WARNING SURFACE W/ OWNER.



DETECTABLE WARNING SURFACE
NOT TO SCALE

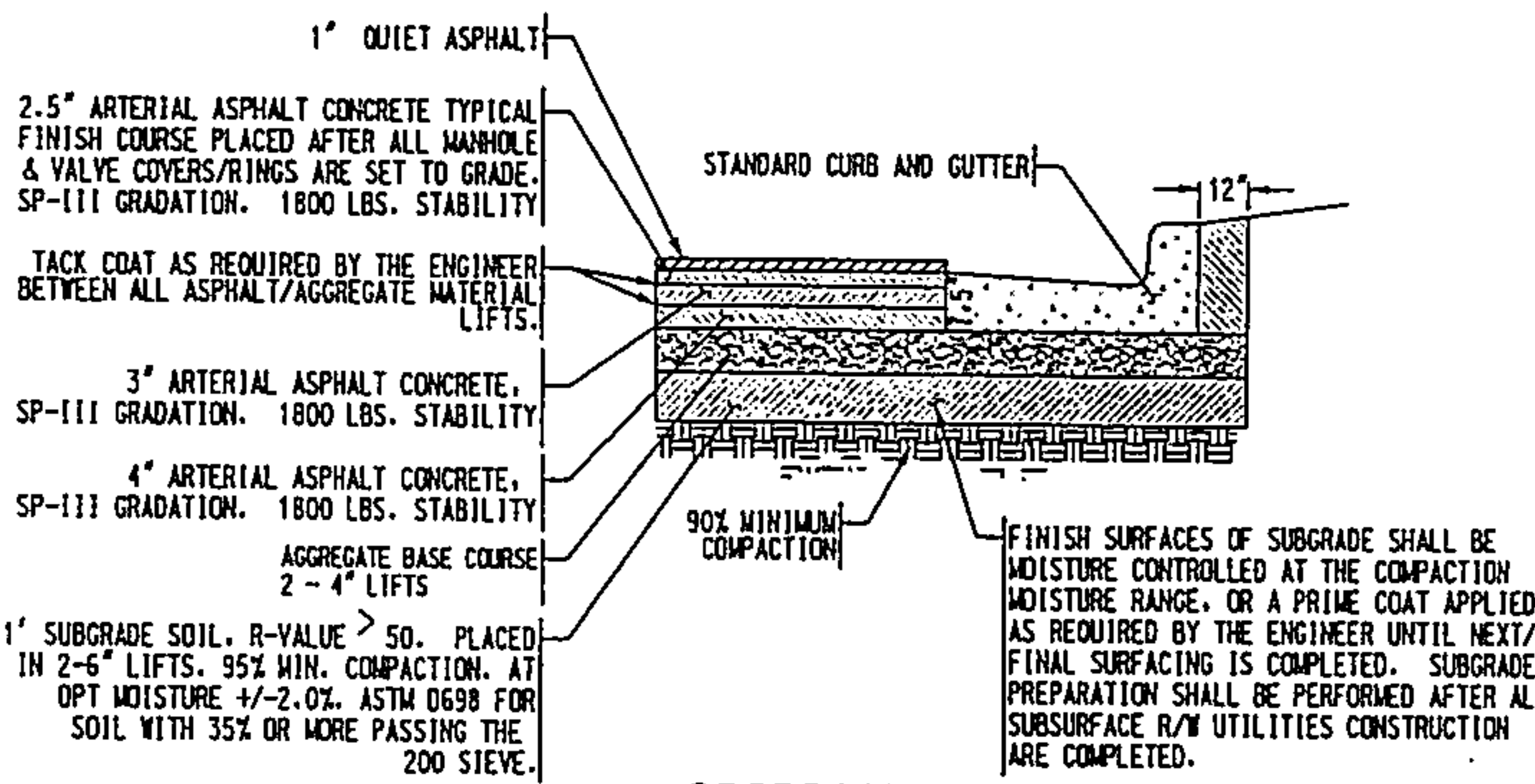


LEGEND

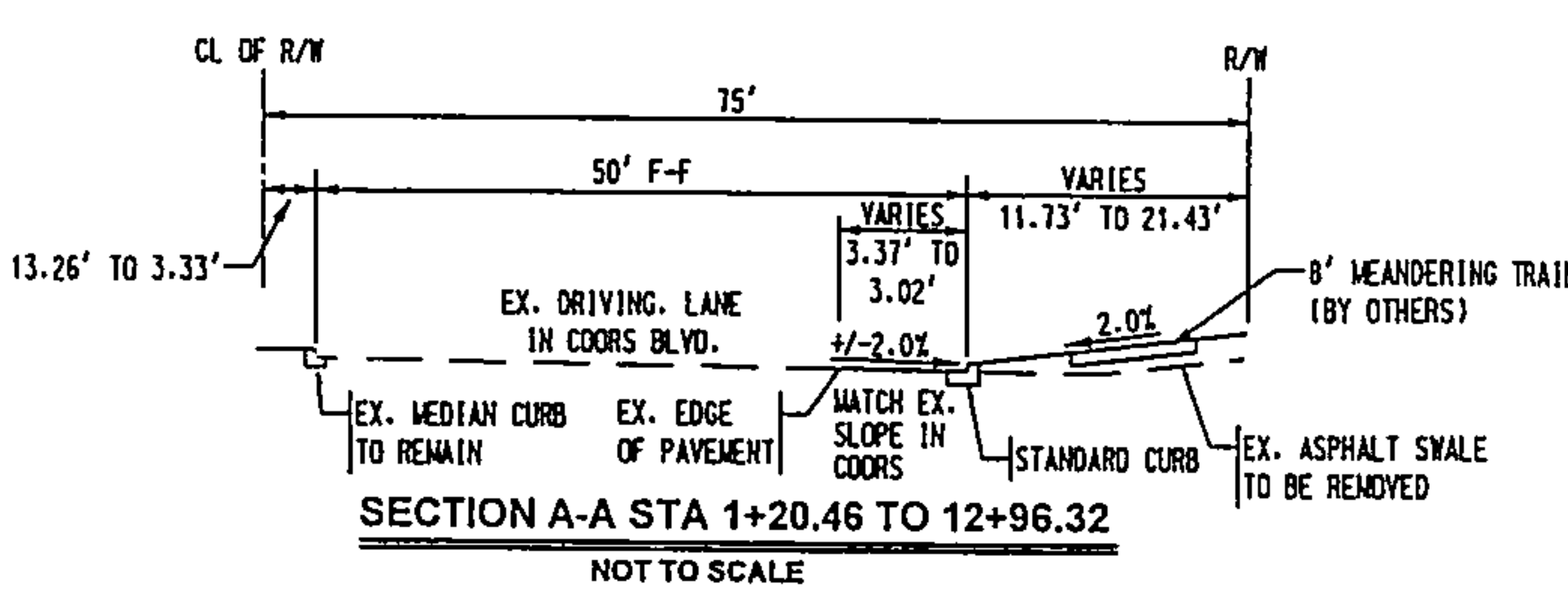
PROPOSED CURB AND GUTTER	---
EXISTING CURB AND GUTTER	---
FUTURE CURB AND GUTTER	---
PROPOSED STORM DRAIN MANHOLE	⊙
EXISTING STORM DRAIN MANHOLE	⊙
PROPOSED SANITARY SEWER MANHOLE	⊙
EXISTING SANITARY SEWER MANHOLE	⊙
PROPOSED FIRE HYDRANT	⊙
PROPOSED GATE VALVE	⊙
EXISTING GATE VALVE	⊙
PROPOSED STREET LIGHT	⊙
10' ASPHALT TRAIL	---
CROWN FLATTENING	---

PAVEMENT LEGEND

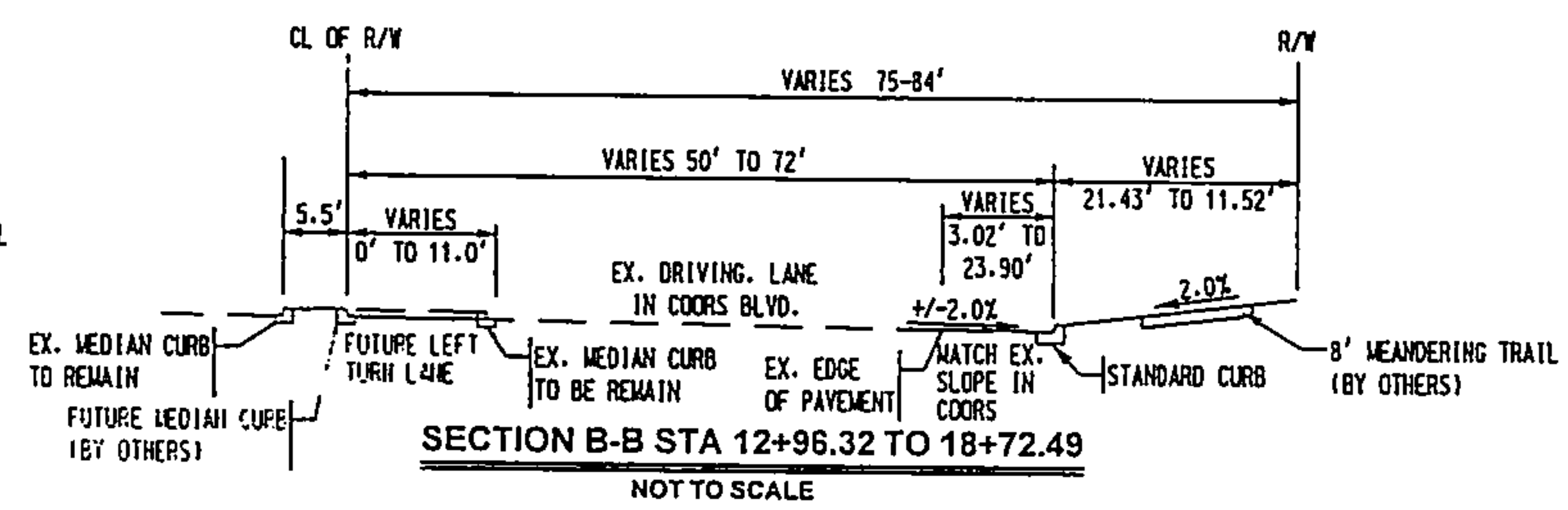
PAVEMENT REMOVAL	---
NEW PAVEMENT	---



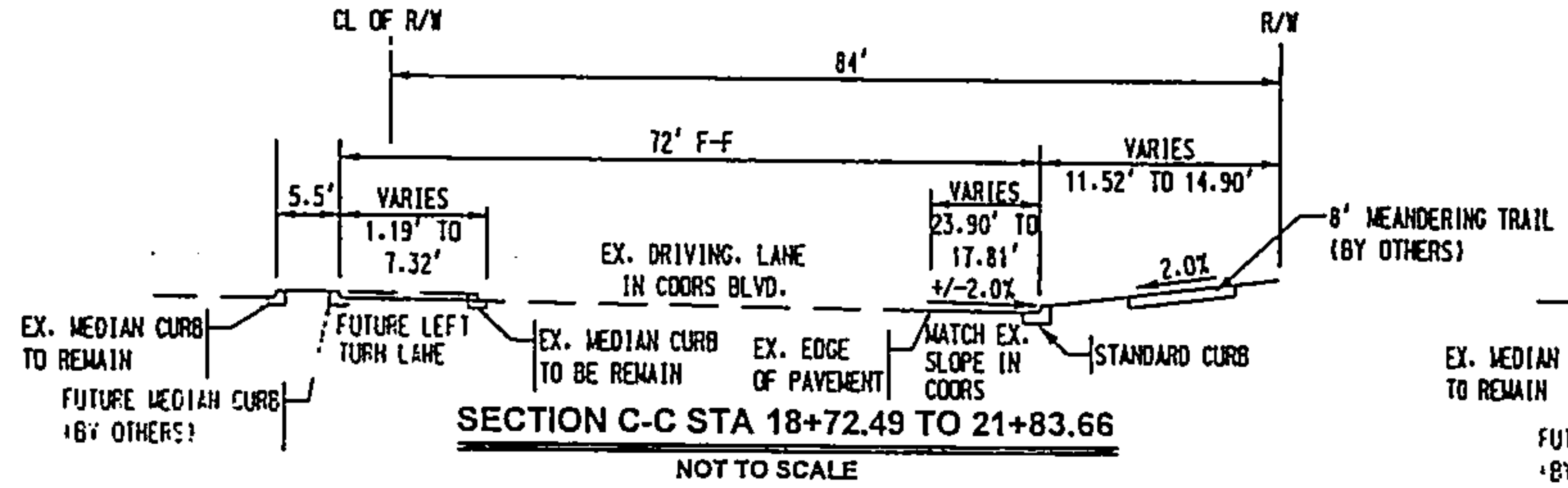
COORS BLVD.
ARTERIAL PAVEMENT SECTION
MINOR ARTERIAL/PRINCIPAL ARTERIAL
DESIGN WITH COA PROJECT #626881
NOT TO SCALE



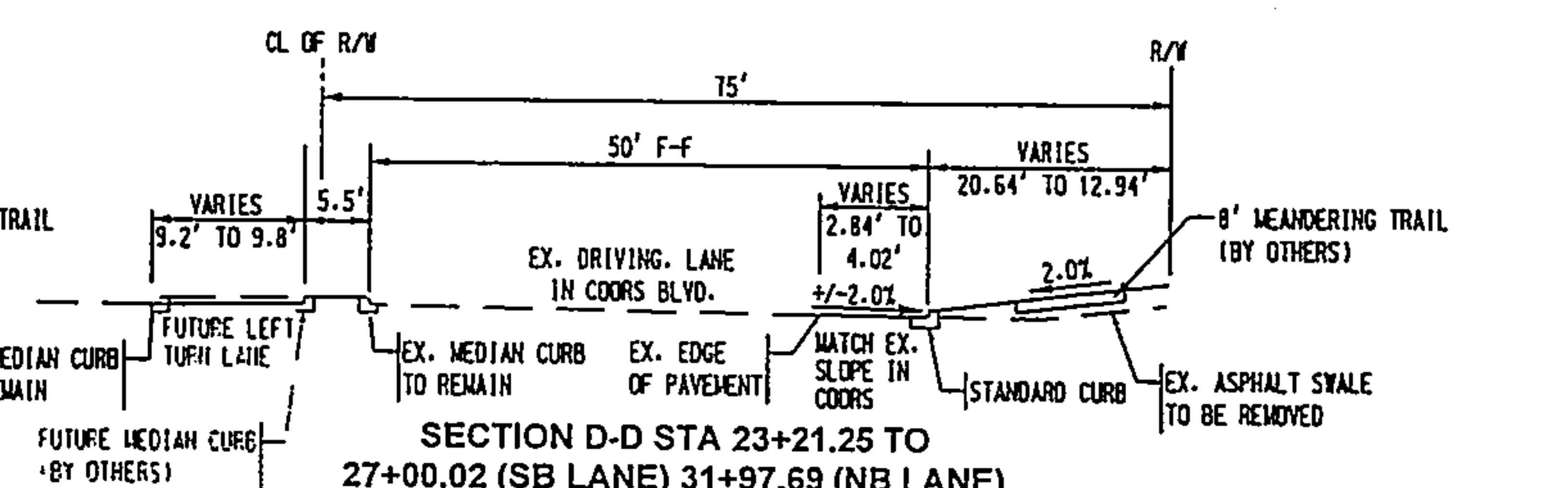
SECTION A-A STA 1+20.46 TO 12+96.32
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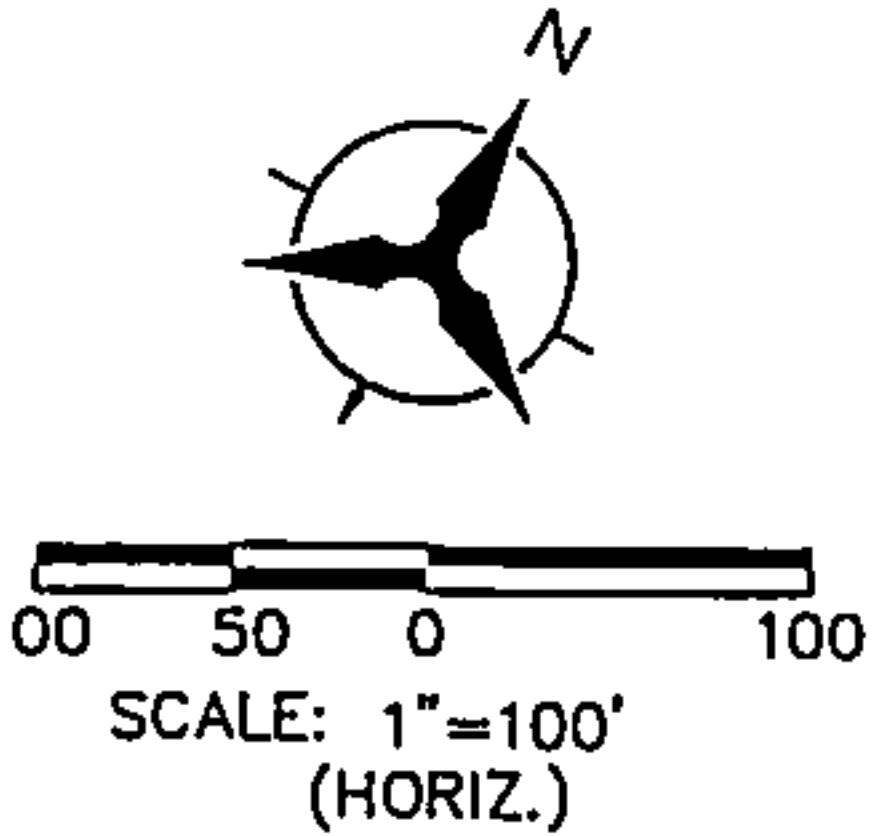
SECTION B-B STA 12+96.32 TO 18+72.49
NOT TO SCALE



SECTION C-C STA 18+72.49 TO 21+83.66
NOT TO SCALE



SECTION D-D STA 23+21.25 TO 27+00.02 (SB LANE) 31+97.69 (NB LANE)
NOT TO SCALE



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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

COORS BOULEVARD IMPROVEMENTS
OVERALL PAVING PLAN

DESIGN REVIEW COMMITTEE

CITY ENGINEER APPROVAL

MO./DAY/YR. MO./DAY/YR.

LAST DESIGN UPDATE

REVISIONS

NO. DATE

DESIGNED BY

DRAWN BY

CHECKED BY

DATE



REMARKS
REVISIONS
DESIGN

DATE 08/05
DATE 08/05
DATE 08/05

BY
KMP

DATE 08/05
DATE 08/05
DATE 08/05

BY
KMP

DATE 08/05
DATE 08/05
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BY
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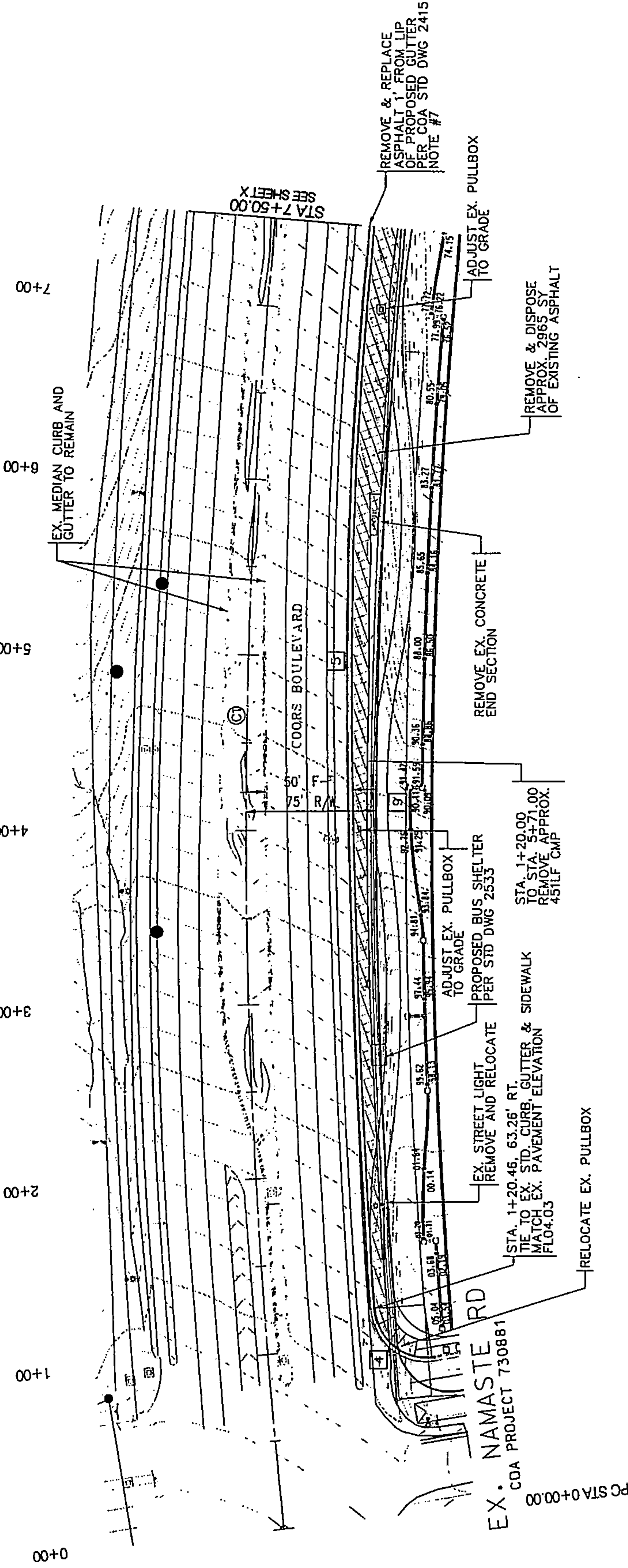
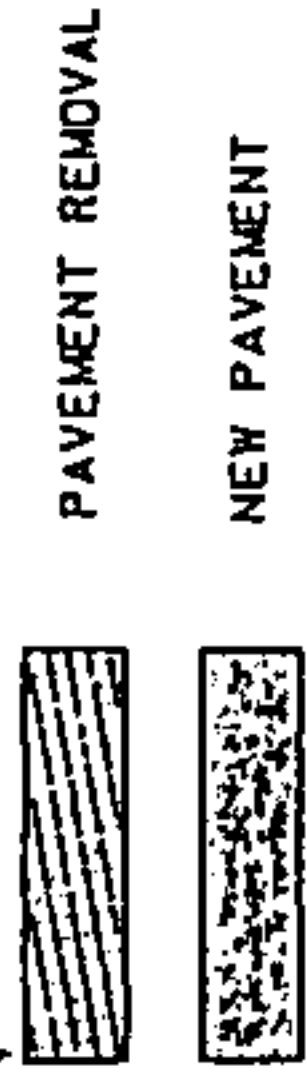
DATE 08/05
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BY
KMP

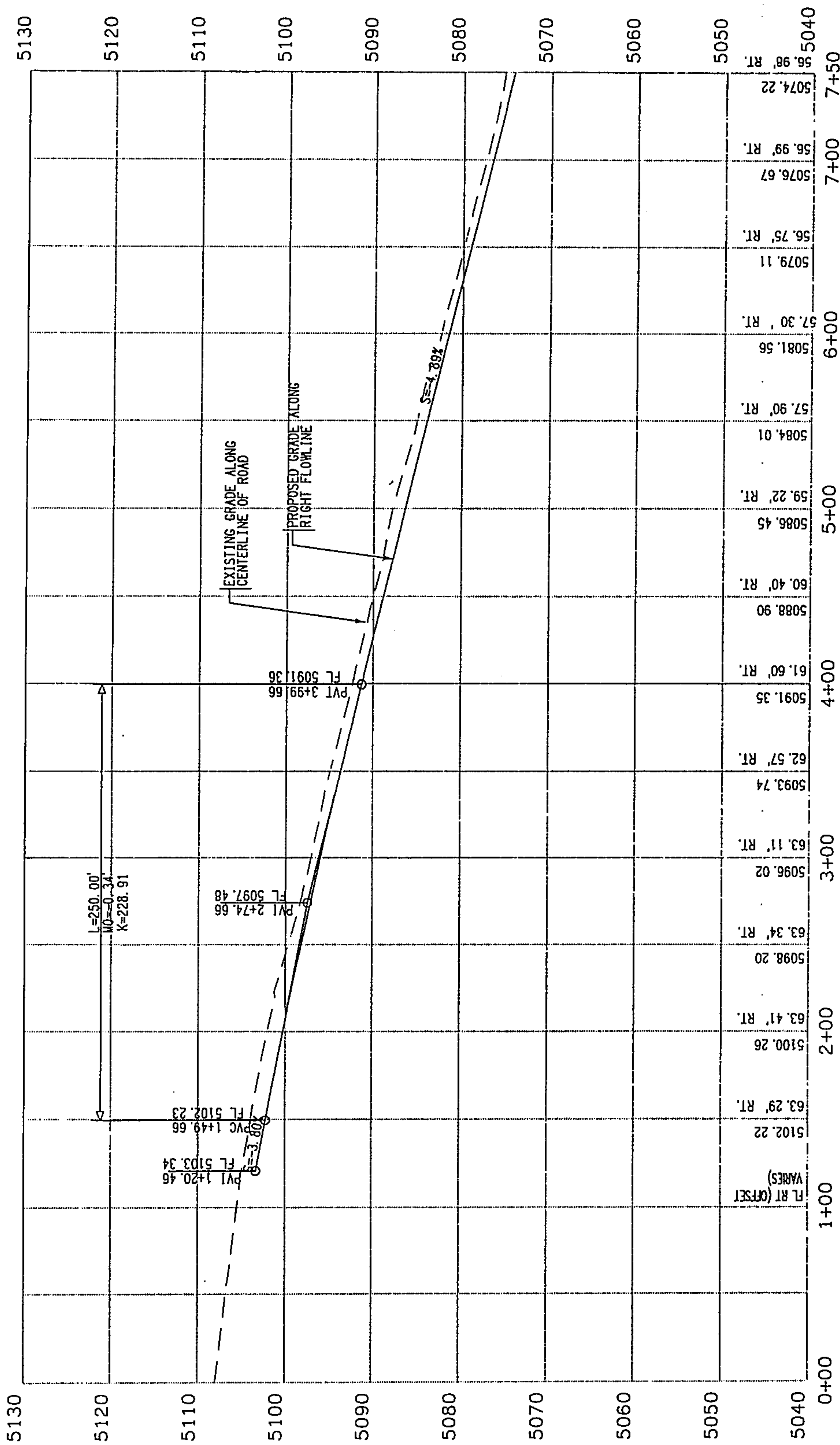
DATE 08/05
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DATE 08/05

BY
KMP

PAVEMENT LEGEND



COORS BLVD STA 0+00 - 7+50



CL Curve Table			
ID	ARC	RADIUS	DELTA
CT	3206.78'	3816.72'	48°08'22"
			1704.88'

NOTES

- THE CONTRACTOR SHALL FIELD VERIFY EXISTING UTILITY LOCATIONS AND NOTIFY THE OWNER IMMEDIATELY OF ANY DISCREPANCIES.
- ALL CURB RETURN RADII SHALL BE 25' UNLESS OTHERWISE SPECIFIED.
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- FOR STORM DRAIN CONSTRUCTION, RCP PIPE JOINTS SHALL NOT BE GROUTED PRIOR TO FINAL INSPECTION. FINAL INSPECTION WILL DETERMINE JOINTS TO BE GROUTED FOR FINAL ACCEPTANCE OF THE CONSTRUCTION.

KEYED GENERAL NOTES

1. INSTALL 6" CONCRETE VALLEY GUTTER AS PER STD. DWG. 2420
2. INSTALL 4" CONCRETE VALLEY GUTTER AS PER STD. DWG. 2421
3. INSTALL 12" CONCRETE VALLEY GUTTER AS PER STD. DWG. 2422
4. INSTALL WHEELCHAIR RAMP AS PER DETAIL SHEET 5
5. STD. CURB & GUTTER AS PER STD. DWG. 2415A
6. MEDIAN CURB & GUTTER AS PER STD. DWG. 2415B
7. ROLL CURB & GUTTER AS PER STD. DWG. 2415A
8. BUILD 4" SIDEWALK PER STD. DWG. 2430
9. 8' ASPHALT TRAIL BUILD W/ LANDSCAPE PLANS AS PER STD. DWG. 2415B
10. ASPHALT CURB AS PER STD. DWG. 2415B
11. CONCRETE MEDIAN PAVING SECTION AS PER STD. DWG. 2408
12. DEFERRED 4" SIDEWALK
13. BUILD 4" TEXTURED MEDIAN PAVEMENT FROM MEDIAN NOSE TO 10' FROM NOSE (BANK RED) MEDIAN NOSES SHALL BE PAINTED YELLOW TO APPROX. 6' BEHIND PC/PT. PER COA STD DWG 2408

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PAVING PLAN & PROFILE
COORS BLVD STA 0+00 - 7+50

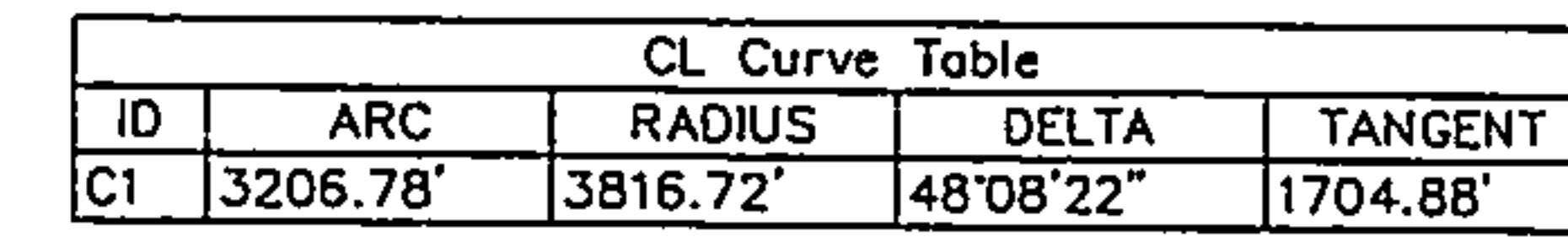
DESIGN REVIEW COMMITTEE

CITY ENGINEER APPROVAL

LAST DESIGN UPDATE

 PAVEMENT REMOVAL

 NEW PAVEMENT



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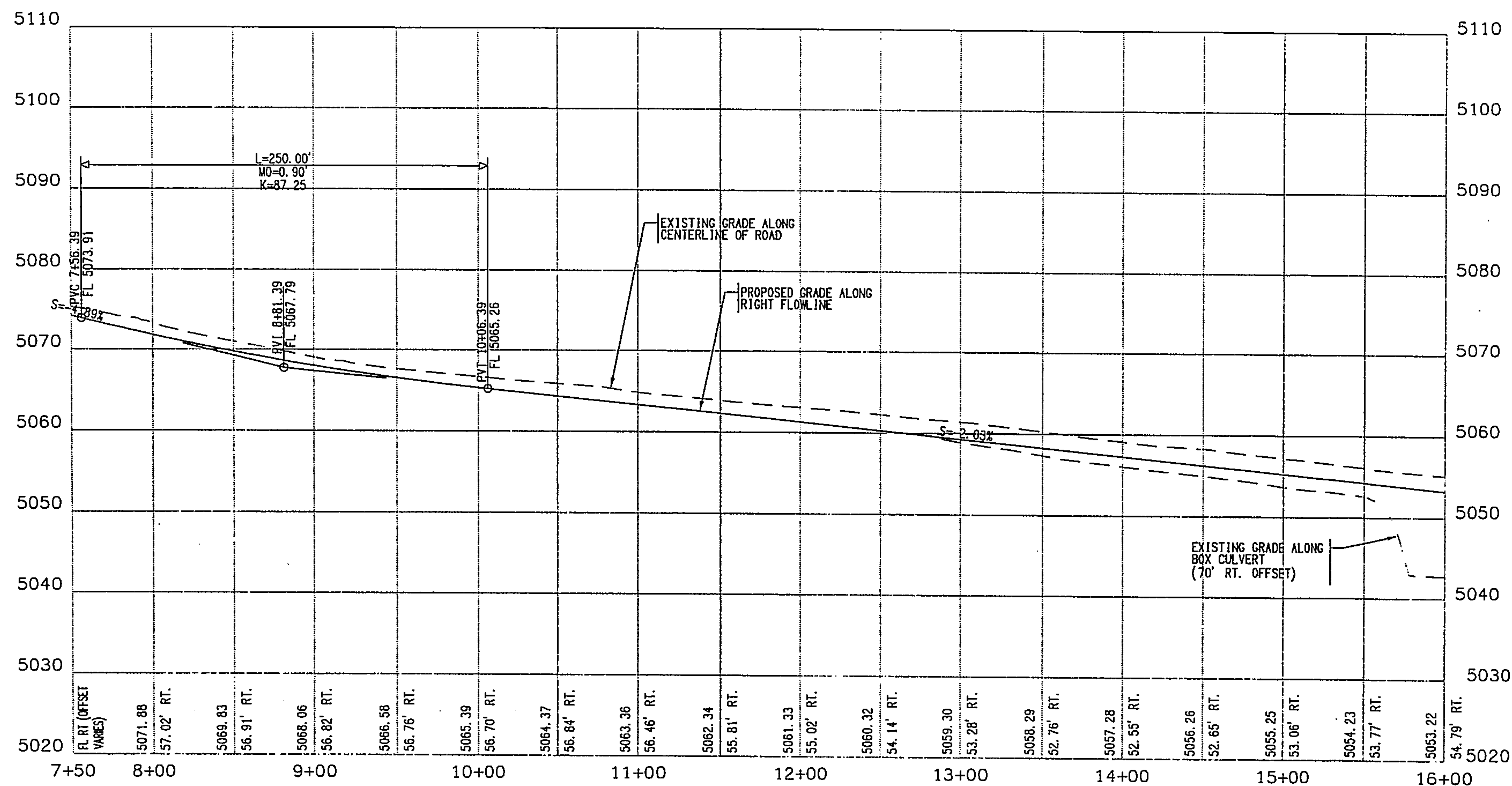
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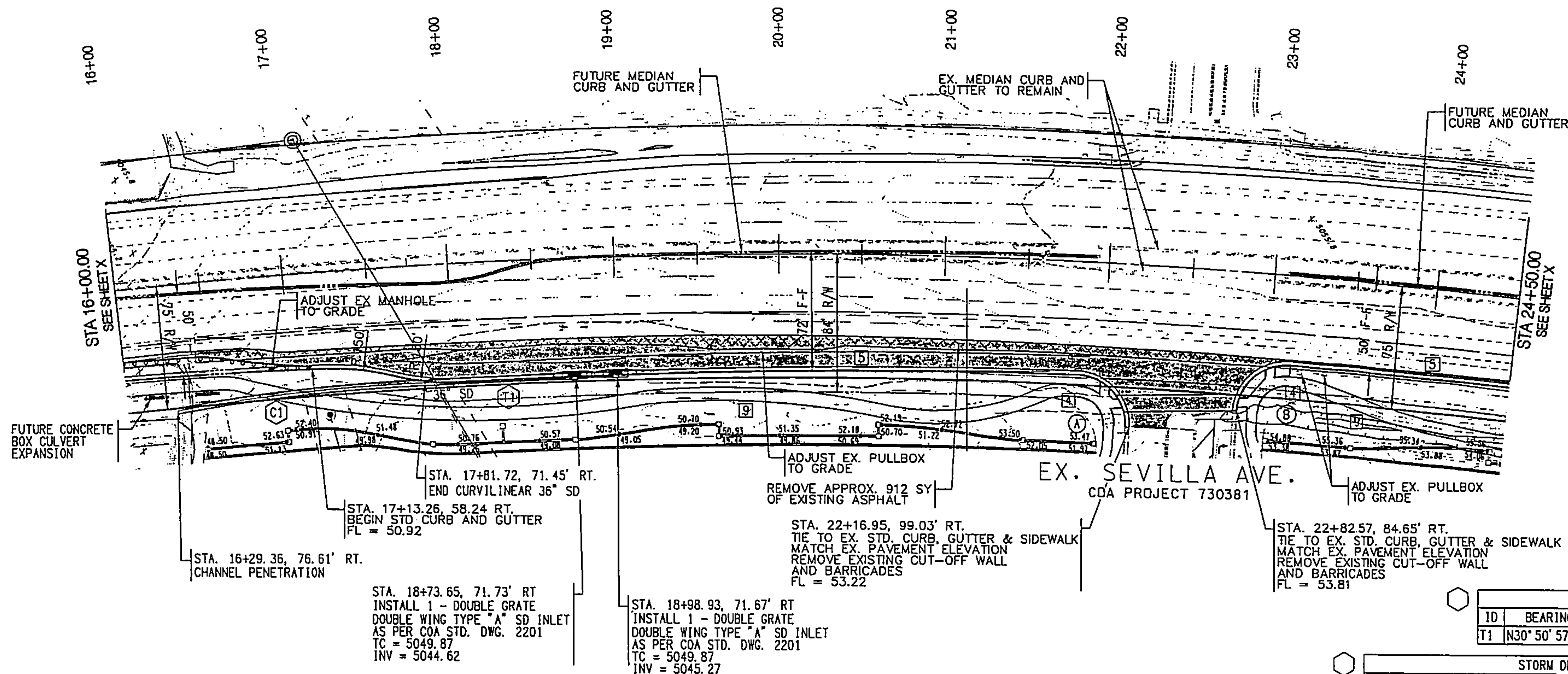
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PAVING PLAN & PROFILE
COORS BLVD STA 7+50 - 16+00

DESIGN REVIEW COMMITTEE		CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.



D. \n ENI 36\ ada\ nnn\ ENI 360000? dan

ID	ARC	RADIUS	DELTA	TANGENT
C1	3206.78'	3816.72'	48°08'22"	1704.88'



COORS BLVD STA 16+00 - 24+50

A FLOWLINE DATA FOR CURB RETURN

PC	52.56	D = 91°58'40"
1	52.72	R = 30.00'
2	52.88	T = 31.05'
3	53.04	L = 48.16'
PT	53.20	C = 43.15'
PI	52.99	

PC	STA.	21+83.66,	68.53'	RT.
PT	STA.	22+14.90,	99.01'	RT.
PI	STA.	22+15.28,	67.96'	RT.
RAD	STA.	21+84.11,	98.53'	RT.

(B) FLOWLINE DATA FOR CURB RETURN

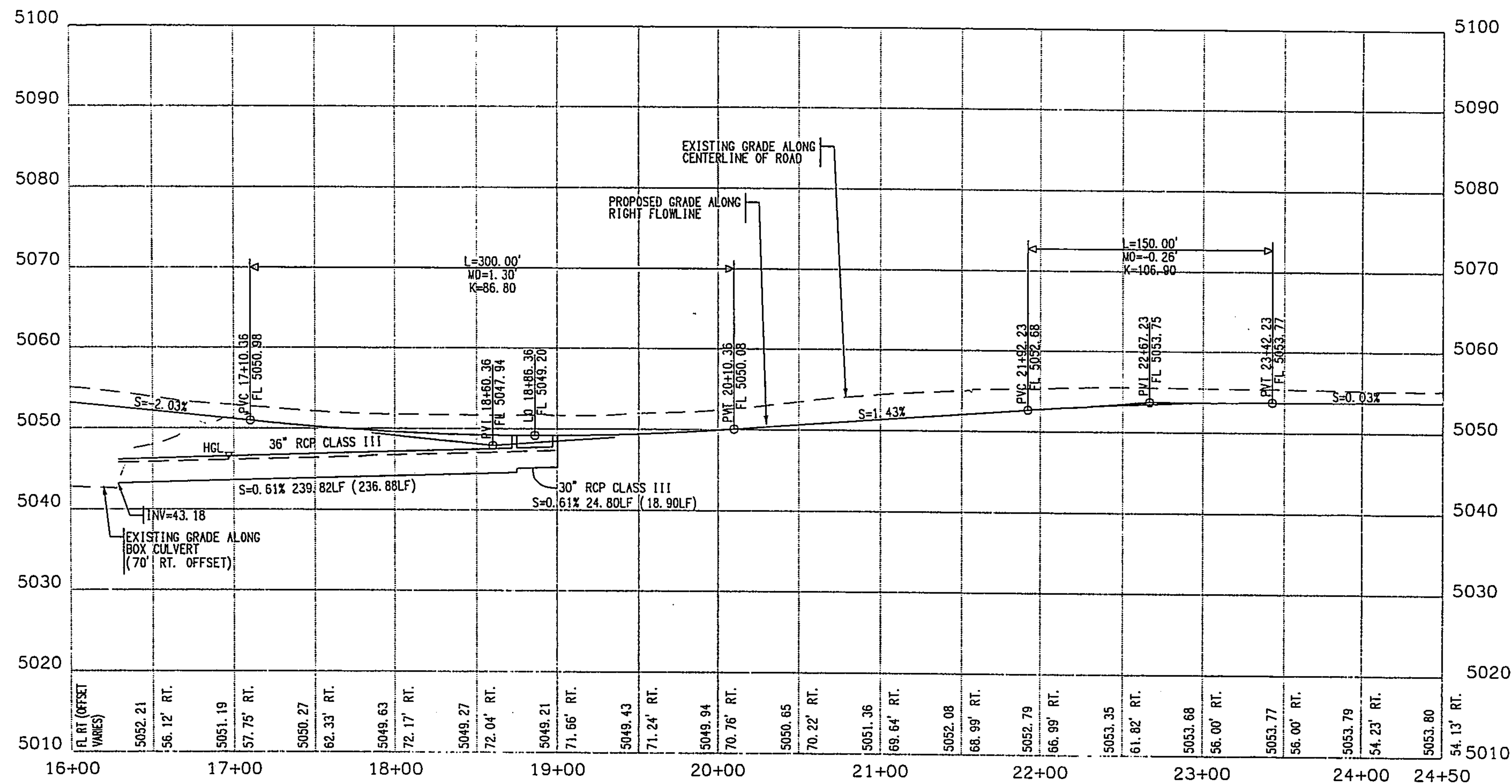
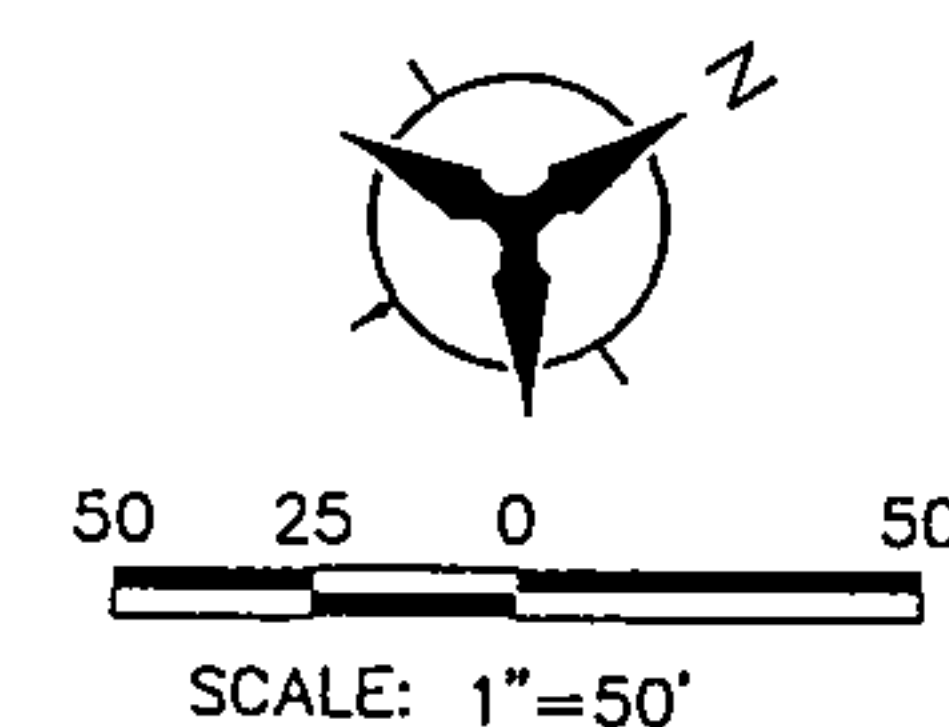
PC	53.81
1	53.79
2	53.77
3	53.75
PT	53.73
PI	53.59

D = 90° 33' 40"
R = 30.00'
T = 30.30'
L = 47.42'
C = 42.63'

PC	STA.	22+82.57,	84.65' RT.
PT	STA.	23+13.13,	54.36' RT.
PI	STA.	22+82.40,	54.36' RT.
RAD	STA.	23+13.25,	84.36' RT.

STORM DRAIN TANGENT & FLOW TABLE							
ID	BEARING	LENGTH	Q(CFS)	V(F/S)	DEPTH	SIZE	SLOPE
T1	N30° 50' 57" E	102.67'	47.50	6.72	3.00	36"	0.61%

STORM DRAIN Curve & Flow Table									
ID	ARC	RADIUS	DELTA	TANGENT	Q(cfs)	V(f/s)	DEPTH	SIZE	SLOPE
C1	149.62'	1050.00'	08° 09' 51"	74.94'	47.50	6.72	3.00	36"	0.61%



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**CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
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COORS BOULEVARD IMPROVEMENTS
PAVING PLAN & PROFILE
COORS BLVD STA 16+00 - 24+50

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.

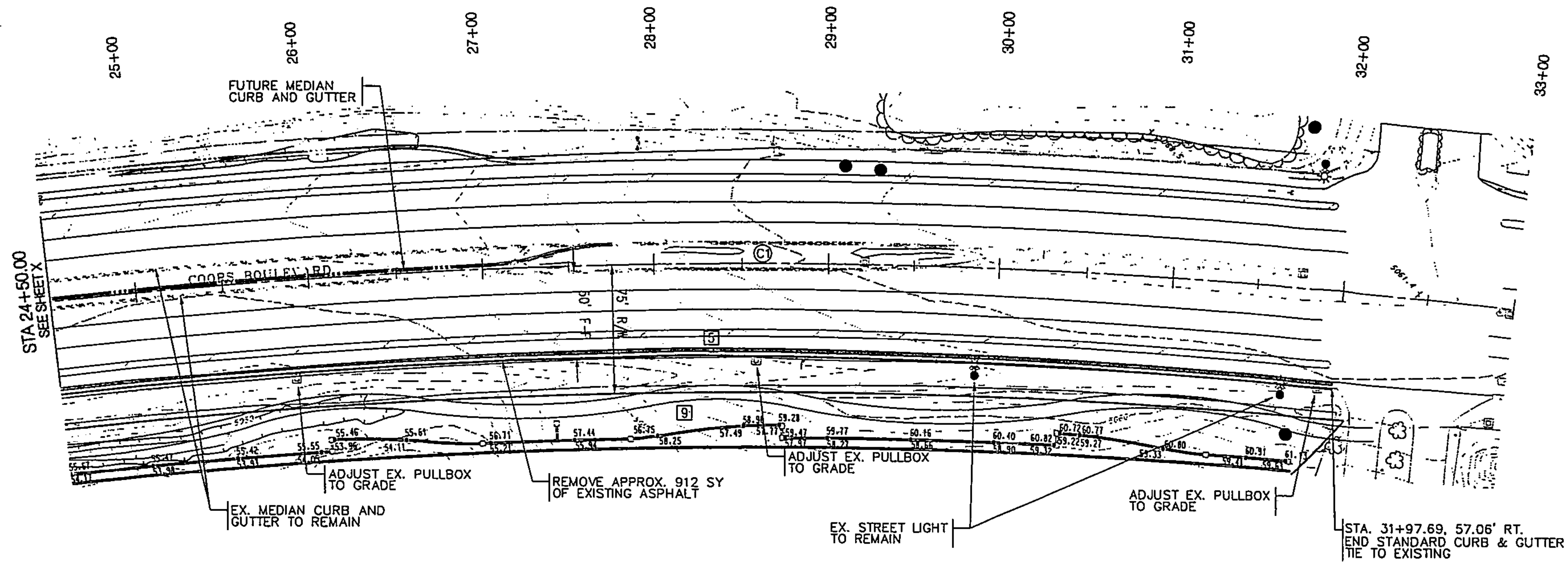
SURVEY INFORMATION			BENCH MARKS		AS-BUILT INFORMATION	
FIELD NOTES						
NO.	BY	DATE			CONTRACTOR	
			ACS STATION NAMED 4 - K6, 3 - 1/4" ALUM. CAP		STANDARD BY	
			HW18 = 4 - K6 GEOGRAPHIC POSITION (1927)		INSPECTOR'S ACCEPTANCE BY	
			N.M. STATE PLANE COORDINATES (CENTRAL ZONE)		DATE	
			X=336,918.47, Y=1,483,515.05		VERIFICATION BY	
			GROUND-TO-GRID FACTOR .0095656356		DATE	
			NOVD 1929 ELEVATION = 5732.892		DRAWINGS	
			ON PASEO DEL VULCAN, 0.91 MI NORTH		CONTRACTED BY	
			OFF 1-40, 0.74 MI SOUTH OF POWER LINES, 39.6'		DATE	
			NOVD 29, 1929 ELEVATION = 5732.892		RECORDED BY	
			NOVD 29, 1929 ELEVATION = 5732.892		NO.	

[illegible]

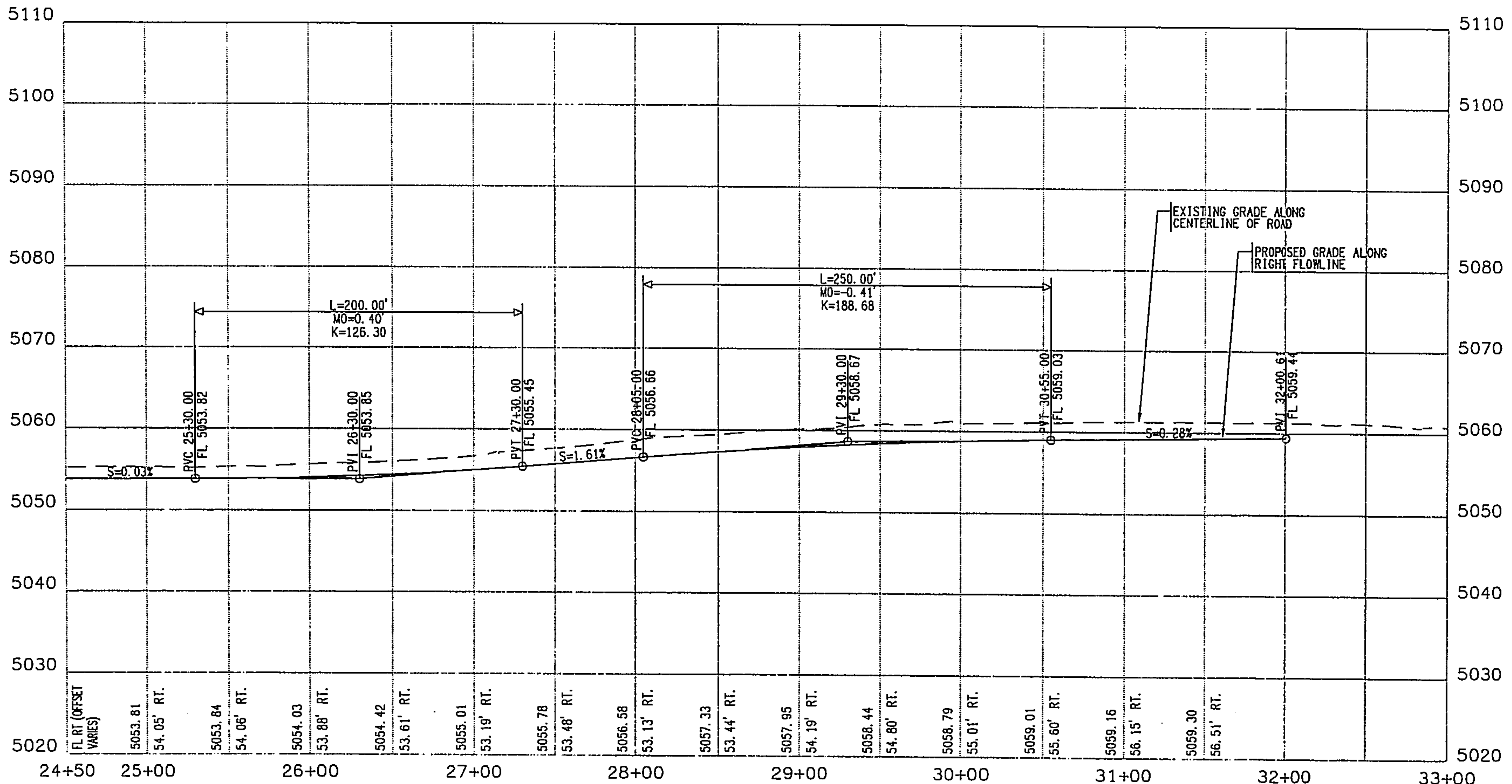
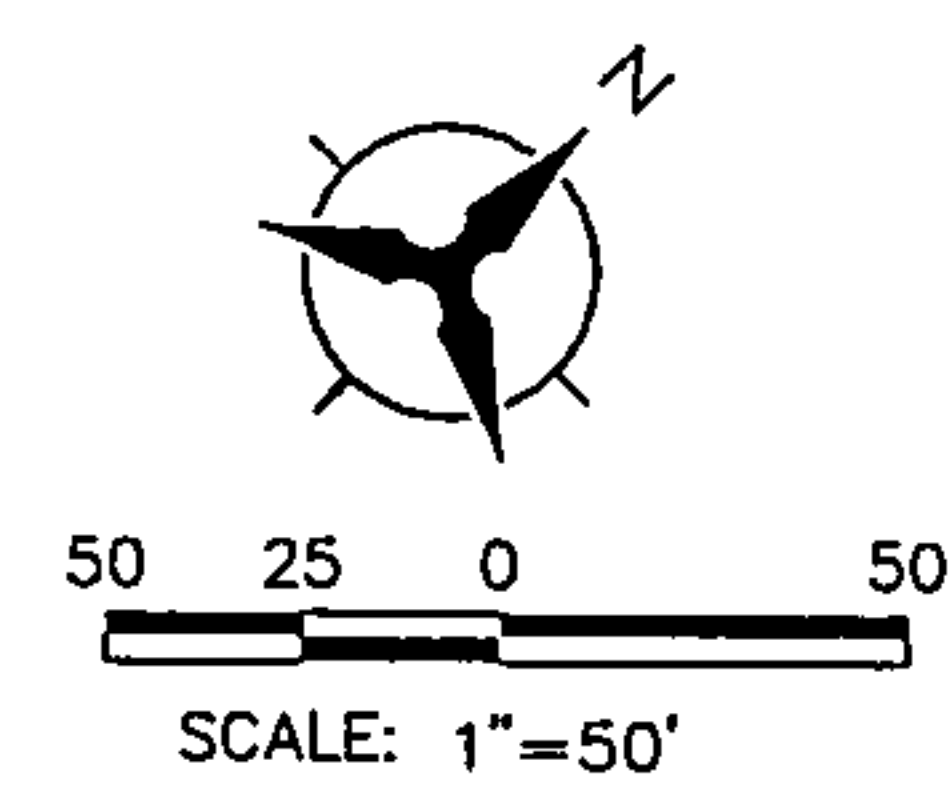
PAVEMENT LEGEND



CL Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C1	3206.78'	3816.72'	48°08'22"	1704.88'



COORS BLVD STA 24+50 - 33+00



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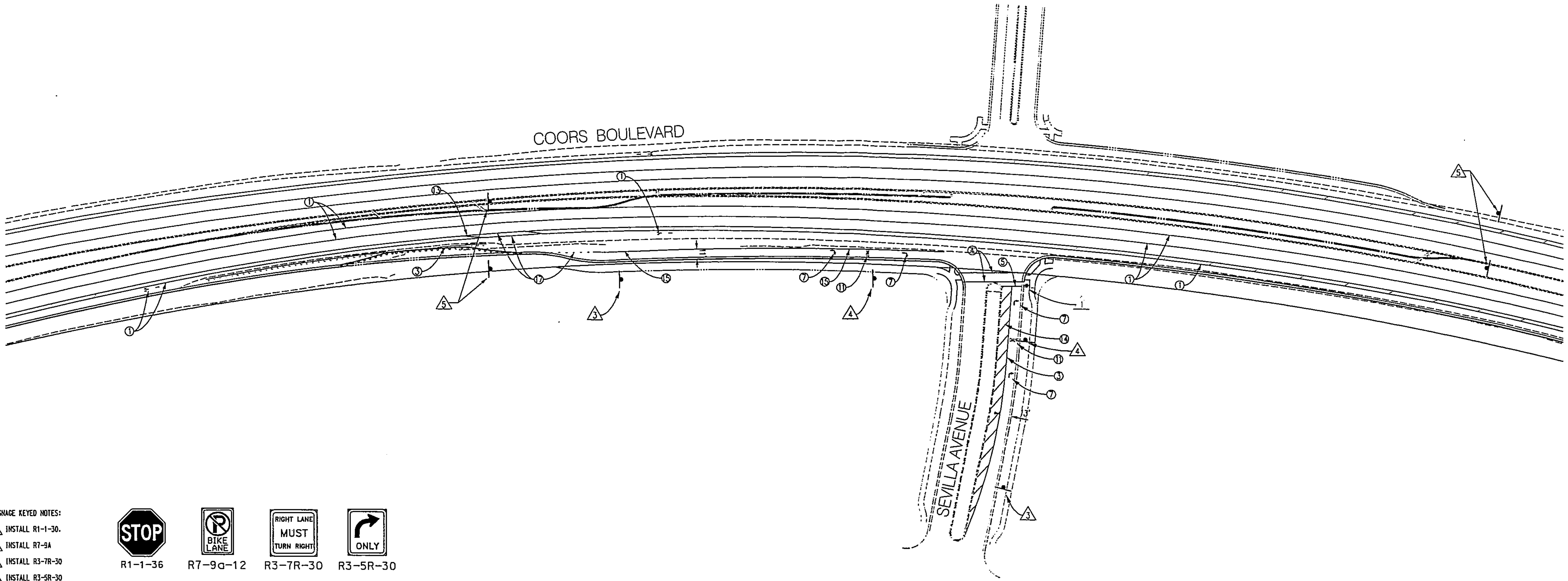
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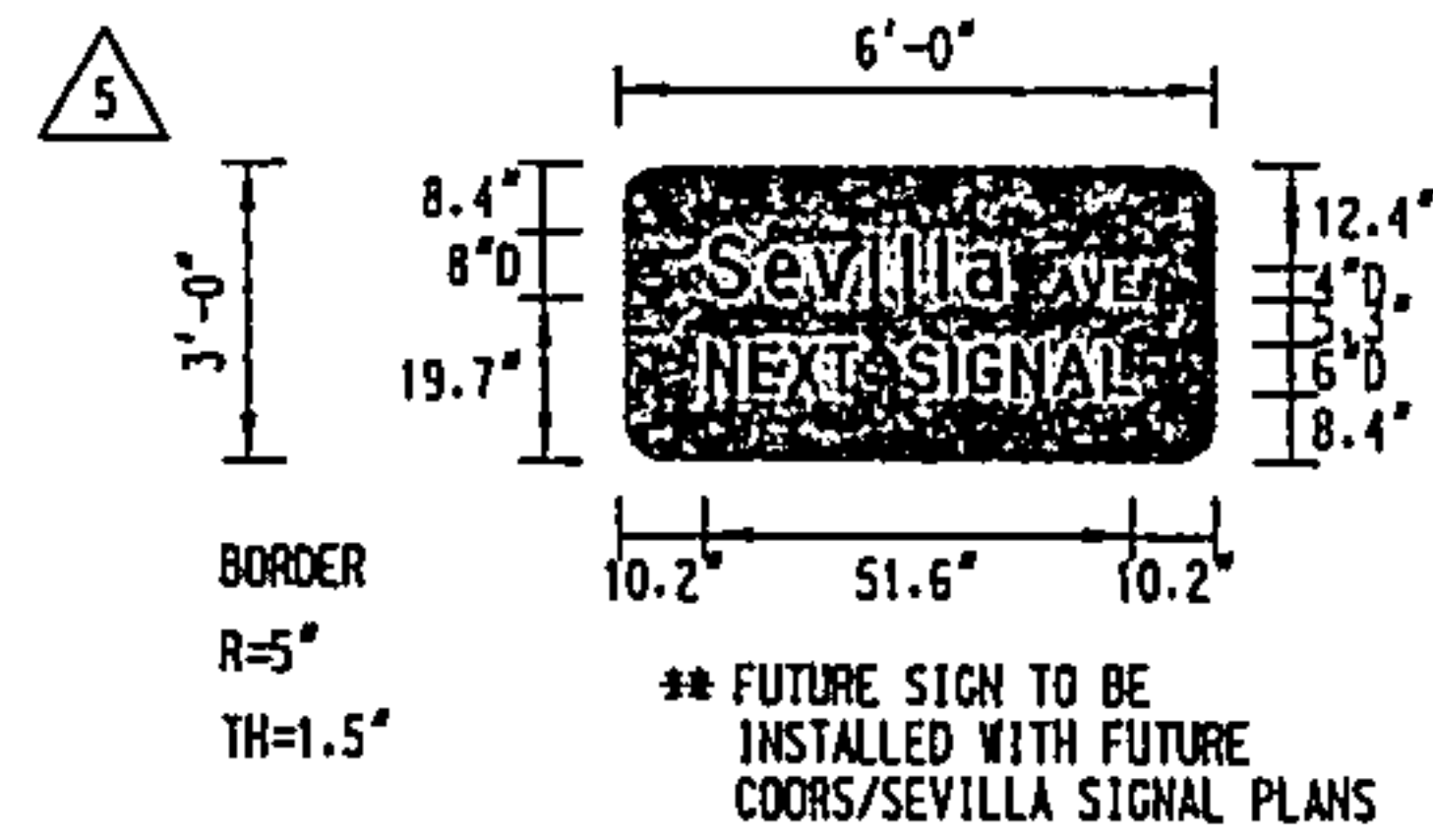
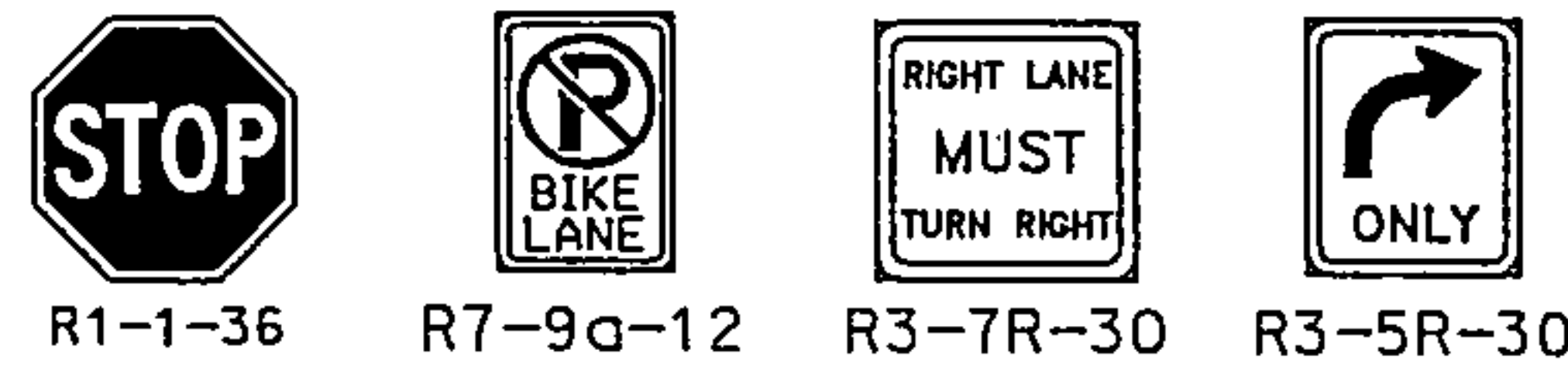
DESIGN REVIEW COMMITTEE		CITY ENGINEER APPROVAL		MO./DAY/YR.		MO./DAY/YR.	
LAST DESIGN UPDATE							

AS-BUILT INFORMATION				BENCH MARKS				SURVEY INFORMATION				ENGINEER'S SEAL			
CONTRACTOR				CONTRACTOR				NO.				NO.			
WORKED BY				HW18 = 4 - K6, 3 - 1/4" ALUM. CAP				BY				DATE			
INSPECTOR'S				N.M. STATE PLANE COORDINATES (CENTRAL ZONE)				DATE				REMARKS			
DATE				X=336,918.47, Y=1,483,515.05				BY				REVISIONS			
DATE				GROUND-TO-GRID FACTOR = .09966556				DATE				DESIGN			
DATE				NVD 1928 ELEVATION = 5732.892				DATE				KJM/JML			
DATE				ON PASO DEL VULCAN, 0.91 MI. NORTH				DATE				AR/BS			
DATE				OF 1-40, 0.74 MI. SOUTH OF POWER LINES, 39.6'				DATE				KJM			
DATE				NW OF CENTERLINE OF PASO DEL VULCAN				DATE				KJM			



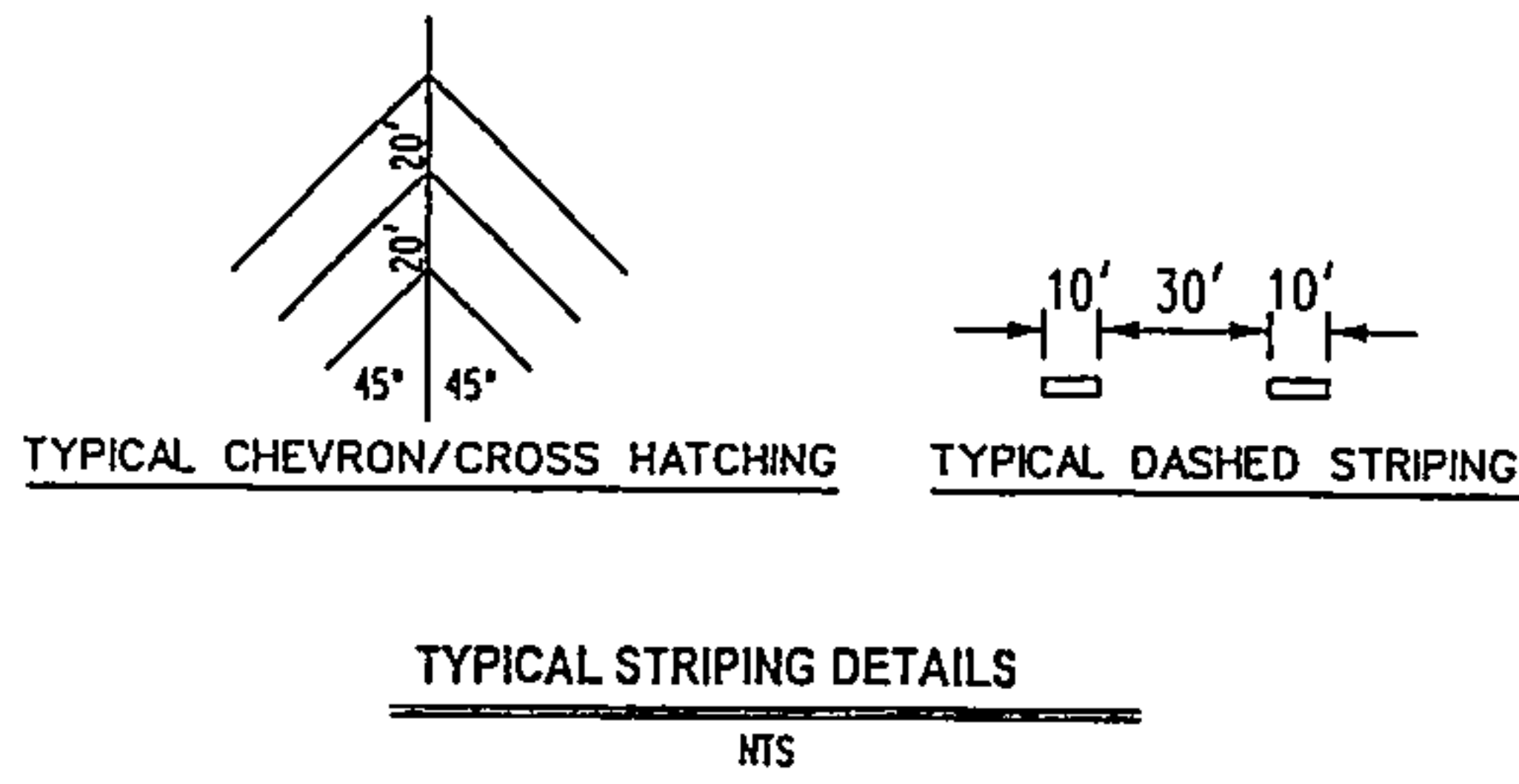
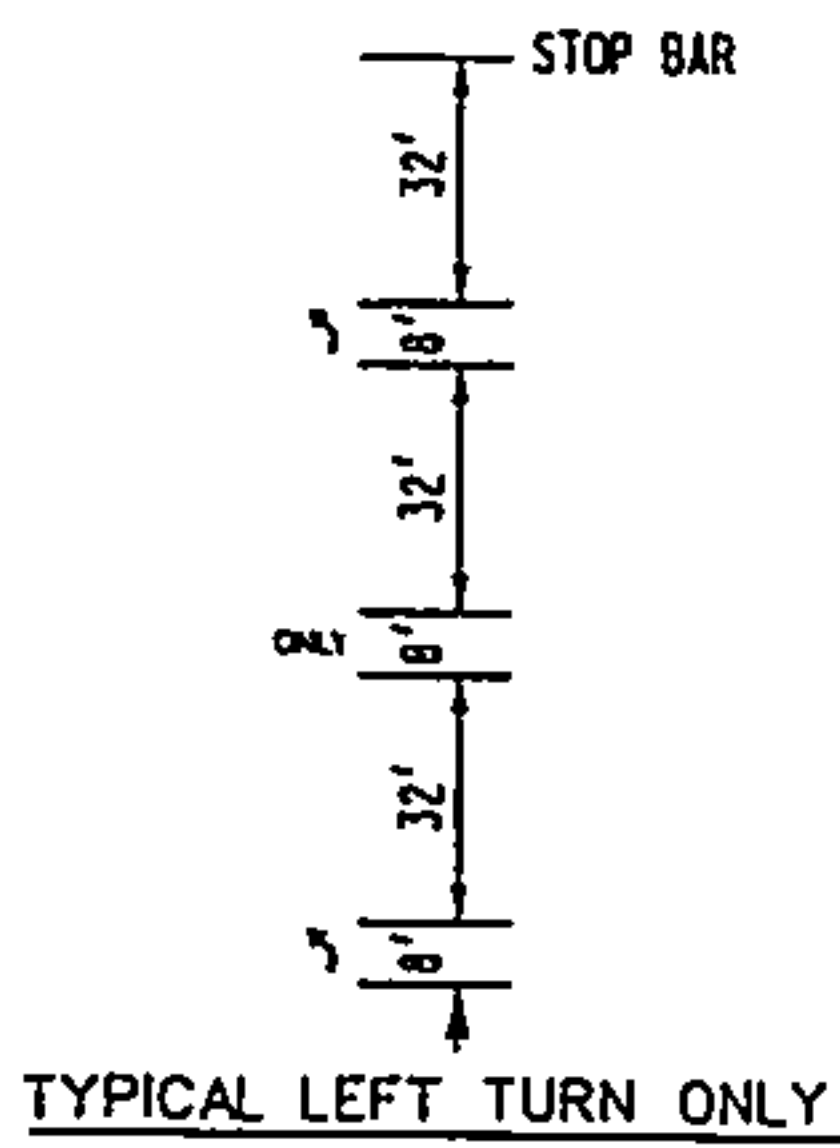


- SIGNAGE KEYED NOTES:
- 1. INSTALL R1-1-30.
 - 2. INSTALL R7-9A.
 - 3. INSTALL R3-7R-30.
 - 4. INSTALL R3-5R-30.
 - 5. FUTURE SIGN (SEE DETAIL BELOW)**



KEYED NOTES ①

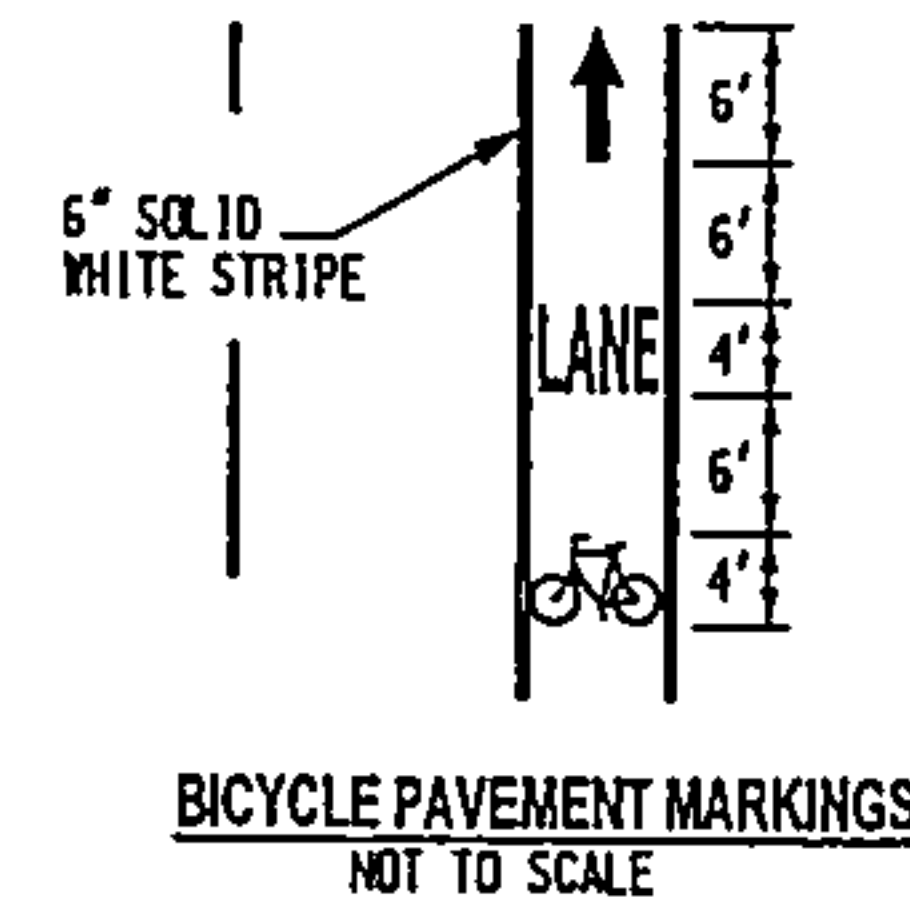
- EXISTING PAVEMENT MARKINGS TO REMAIN.
- NEW 4" BROKEN WHITE REFLECTIVE PLASTIC STRIPE (10' STRIPE, 30' GAP).
- NEW 4" SOLID WHITE REFLECTIVE PLASTIC STRIPE.
- NEW 12" SOLID WHITE THERMOPLASTIC STRIPE CROSSWALK 10' (INSIDE) WIDE (TYP.).
- NEW 12" OR 24" SOLID WHITE THERMOPLASTIC STRIPE STOP BAR, 4" (MIN.) BEHIND CROSSWALK OR PC OF MEDIAN WHICHEVER IS LESS.
- NEW PREFORMED THERMOPLASTIC LEFT ARROW.
- NEW PREFORMED THERMOPLASTIC RIGHT ARROW.
- NEW PREFORMED THERMOPLASTIC THRU OR CHANNELIZATION ARROW.
- NEW PREFORMED THERMOPLASTIC THRU AND RIGHT ARROW.
- NEW PREFORMED THERMOPLASTIC THRU AND LEFT ARROW.
- NEW PREFORMED THERMOPLASTIC PAVEMENT MARKING "ONLY".
- REMOVE EXISTING STRIPING OR PAVING MARKINGS. SEE STRIPING ERADICATION NOTE THIS SHEET.
- INSTALL CHEVRON WHITE REFLECTIVE PLASTIC AT 20' SPACING AND 45° ANGLE (SEE DETAIL THIS SHEET).
- 6" WHITE THERMOPLASTIC BIKE LANE STRIPING.
- SOLID DOUBLE 4" YELLOW REFLECTIVE PLASTIC.
- NEW 8" BROKEN WHITE THERMOPLASTIC STRIPE (3' STRIPE, 7' GAP).
- PAINT MEDIAN NOSE YELLOW.



TYPICAL STRIPING DETAILS
NTS

GENERAL STRIPING & SIGNING LEGEND

- REFLECTORIZED LEFT TURN ARROW (THERMOPLASTIC)
- REFLECTORIZED RIGHT TURN ARROW (THERMOPLASTIC)
- REFLECTORIZED STRAIGHT ARROW (THERMOPLASTIC)
- REFLECTORIZED "ONLY" (THERMOPLASTIC)
- EXISTING SIGN
- PROPOSED SIGN
- PROPOSED TYPE III BARRICADE
- PROPOSED STREET LIGHT *
- EXISTING STREET LIGHT



BICYCLE PAVEMENT MARKINGS
NOT TO SCALE

STRIPING ERADICATION NOTE:

STRIPING ERADICATION SHALL BE ACCOMPLISHED BY WATER BLASTING OR SURFACE PLANING OF THE ROADWAY, TO A MAX. DEPTH OF 1/2" AND A WIDTH EQUAL TO TWICE THE WIDTH OF THE STRIPE OR MARKING TO BE REMOVED.

CONTRACTOR SHALL COORDINATE WITH ANDREW GALLEGOS AT THE CITY OF ALBUQUERQUE PRIOR TO STRIPING AND SIGNING.

Bohannon & Huston
Court yard | 7500 Jefferson St NE Albuquerque, NM 87109-4335
ENGINEERING • SPATIAL DATA • ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

COORS BOULEVARD IMPROVEMENTS
SIGNING & STRIPING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.

REVISIONS
DESIGN

NO.	DATE	BY

DESIGNED BY: KM/JML
DRAWN BY: AR/BS
CHECKED BY: KGP

DATE: 08/05
DATE: 08/05
DATE: 08/05

ENGINEER'S SEAL

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

AS-BUILT INFORMATION
CONTRACTOR: ACS STATION WARD 4 - KG, 3 - 174" ALUM. CAP
STAMPED BY: HYIB # 4 - KG GEOGRAPHIC POSITION (1927)
INSPECTOR'S: N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
ACCEPTANCE BY: X-336, 918.47, 741, 483, 515.05
VERIFICATION BY: GROUND-TO-GRID FACTOR: .099565656
DRAWINGS CORRECTED BY: NEWO 1929 ELEVATION = 5132.882
MICRO-FILM INFORMATION: ON PASEO DEL VULCAN, 0.91 MI NORTH
RECORDED BY: OF 1-40, 0.74 MI SOUTH OF POWER LINES, 39.6'
NO. NW OF CENTERLINE OF PASEO DEL VULCAN