Design Analysis Report

for the

Airport Drive Storm Drain Outfall

(The Coors Upgrade)

October 1992

Purpose

To demonstrate the adequacy of the proposed storm drain improvements.

Project Description

The project consists of approximately 780 LF of 48″ diameter reinforced concrete pipe storm drain. The proposed storm drain will connect the future Airport Drive Storm Drain (C.O.A. Project 4383.90) in Airport Drive to an existing 54″ diameter storm drain in Coors Boulevard as proposed in the Master Drainage Plan for Atrisco Business Park, September 1992. At the point of connection to the existing Coors Boulevard Storm Drain, an existing junction manhole will be removed and replaced with a series of bends and wyes to increase the hydraulic efficiency of the junctions located there. The proposed 48″ diameter storm drain will parallel an existing 24″ to 30″ diameter storm drain located in the median of Coors Boulevard. The parallel configuration was chosen over removal and replacement of the existing storm drain line in anticipation of the need for additional capacity to provide an outfall from property located north and west of the proposed storm drain.

Hydrology

The peak flow rates for the proposed storm drain were determined in the Master Drainage Plan for the Atrisco Business Park dated September 1992. The assumption made in modeling the storm drain for the Master Drainage Plan was that the 48″ storm drain would replace the existing 24″ to 30″ storm drain in Coors rather than parallel it. The model also assumed that some of the water from Coors Boulevard would not be accepted into the storm drain at the inlets adjacent to the junction with the new 48″ storm drain because of a high H.G.L. in the storm drain during peak flows. Due to physical improvements which will be made to the junction in the proposed project and refinements made to the hydraulic analysis of the downstream storm drain, the current analysis indicates the storm drain will have capacity to accept all of the flows from Coors Boulevard. The peak flow rates in the storm drain were manually adjusted to reflect these changes.

Hydraulics

Hydraulic grade line calculations were performed for the proposed storm drain, as well as for the downstream segment of the existing Coors Boulevard Storm Drain. Calculations were made in a spreadsheet utilizing equations proposed by the C.O.A. D.P.M. Chapter 22.3. A summary of these calculations is included in Appendix "A." Profiles of the storm drains included in the analysis are also located in Appendix "A."

The starting water surface elevation, at the point of discharge to the AMOLE system, for the existing Coors Boulevard Storm Drain was assumed to be 5029.00 as was used in the H.G.L. calculations for the storm drain performed by D.T.M and Associates, the designers of the Coors Boulevard Storm Drain, in 1986. No analysis was made of existing inlet capacity but rather all flows from upstream street segments were assumed to be taken into the storm drain at all inlet locations. At junction points, the flow contributed by the lateral at the time of peak flow in the trunk line was determined by subtracting the immediate upstream peak rate from the immediate downstream peak rate. Where the H.G.L. was calculated to be lower than the soffit elevation of the pipe, the H.G.L. was assumed to be at the soffit elevation.

Pipe Class and Bedding Class

An analysis was performed to demonstrate the adequacy of the pipe and bedding classes specified for the project. A copy of this analysis is included in Appendix "B." The analysis was performed per the method presented in the "Concrete Pipe Design Manual" published by the American concrete Pipe Association, June 1980 edition.

The analysis indicated Class III R.C.P. pipe bedded in Class "C" bedding is adequate for trench depths less than 14′. Class III R.C.P. should be bedded with Class "B" bedding for trench depths in the 14′ to 15′ range.

Conclusions

The calculations performed for this analysis demonstrate that the proposed storm drain will have adequate capacity to convey the peak 100 year flow rates established in the Master Drainage Plan for the Atrisco Business Park.

PROJECT: COORS CONNECTION STORM DRAIN (OUTLET TO 54" INLET)

JOB#: **SUNWEST 3322**

DATE: 10/19/1992

TIME: 9:17 am

ANALYSIS BY: VANCEL FOSSINGER, *EASTERLING & ASSOCIATES*

STARTING CONDITIONS:

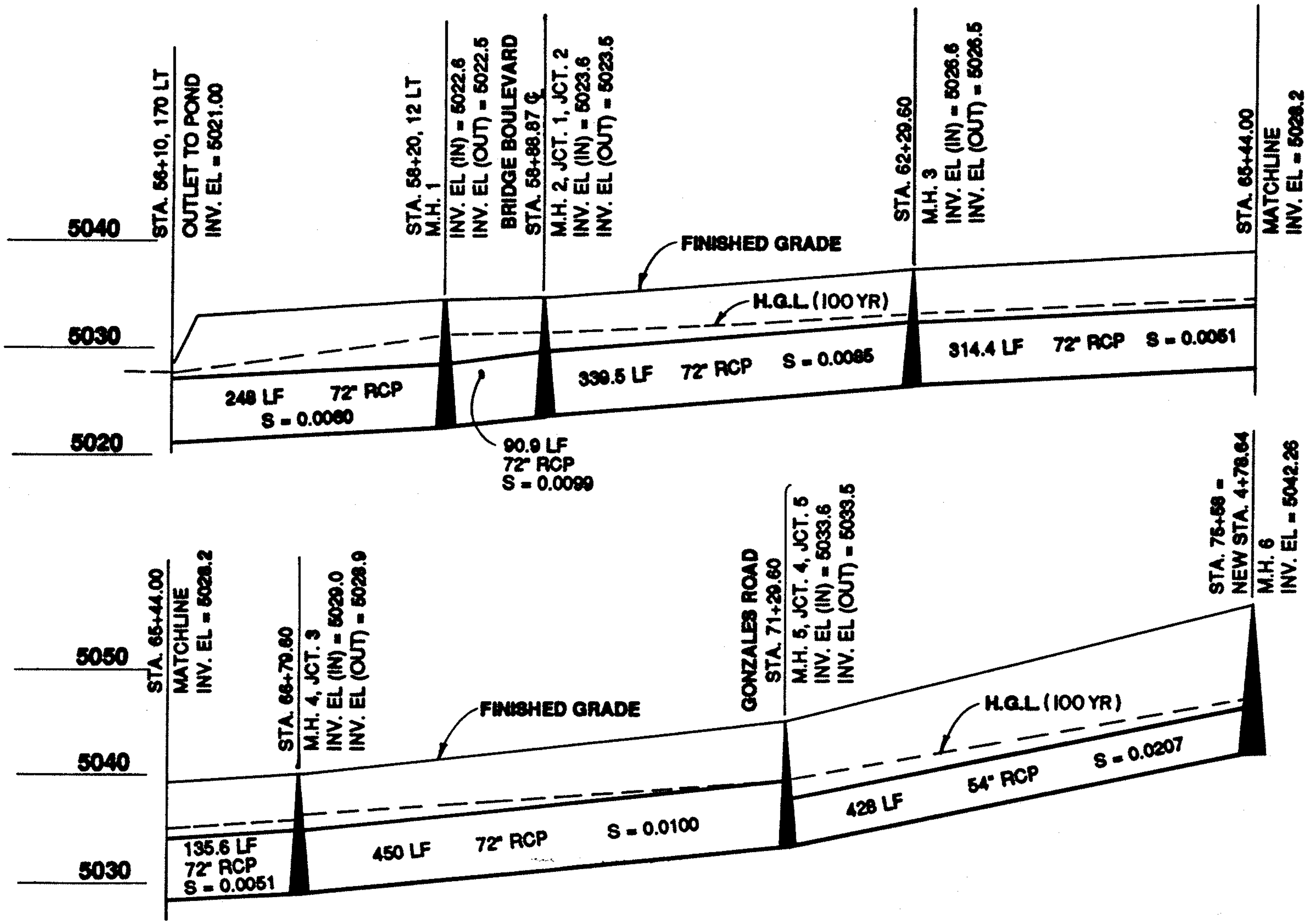
TAILWATER ELEVATION = 5029.00

MANNING'S ROUGHNESS = 0.013

ASSUMED STARTING HGL ELEV.= 5029.00

PIPE LINK DESCRIPTION FROM	TO	MAINLINE FLOW RATE (cfs)	PIPE DIA. (inches)	MANNING'S ROUGHNESS ("n")	LAY LENGTH (feet)	PIPE SLOPE (fpf)	INVERT: DOWN STREAM (elev.)	INVERT: UP STREAM (elev.)	HYDRAULIC GRADE LINE COMPUTATIONS: FRICTION LOSS Hf	MANHOLE LOSS Hm	ANGLE PT. LOSS Hb	JUNCTION LOSS Hj	EXPANSION LOSS Hx	SUM OF LOSSES	ENERGY GRADE LINE ELEVATION	HYDRAULIC GRADE LINE ELEVATION	FINISHED GRADE ELEVATION
STORM DRAIN OUTFALL INITIAL CONDITIONS-----------------------------> @ OUTLET = 5021.00															5029.00	5029.00	
OUTLET	M.H. 1	324.0	72	0.013	248.00	0.0060	5021.00	5022.49	1.452	0.102	0.235	0.000	2.039	3.828	5032.83	5030.79	5034.61
M.H. 1	M.H. 2	324.0	72	0.013	90.87	0.0099	5022.60	5023.50	0.532	0.102	0.136	0.000	0.000	0.770	5033.60	5031.56	5034.61
M.H. 2	JCT. 1 RT	324.0	72	0.013	0.00	0.0099	5023.60	5023.60	0.000	0.000	0.000	0.044	0.000	0.044	5033.64	5031.65	5034.61
JCT. 1 RT	JCT. 2 LT	320.0	72	0.013	0.00	0.0099	5023.60	5023.60	0.000	0.000	0.000	0.048	0.000	0.048	5033.69	5031.75	5034.61
JCT. 2 LT	M.H. 3	316.0	72	0.013	339.53	0.0085	5023.60	5026.49	1.891	0.097	0.000	0.000	0.000	1.987	5035.68	5033.74	5037.72
M.H. 3	M.H. 4	316.0	72	0.013	450.00	0.0051	5026.60	5028.90	2.506	0.097	0.000	0.000	0.000	2.603	5038.28	5036.34	5040.10
M.H. 4	JCT. 3 LT	316.0	72	0.013	0.00	0.0051	5029.00	5029.00	0.000	0.000	0.000	0.204	0.000	0.204	5038.48	5036.87	5040.10
JCT. 3 LT	M.H. 5	288.0	72	0.013	450.00	0.0100	5029.00	5033.50	2.081	0.081	0.000	0.000	0.000	2.162	5041.11	5039.50	5045.58
M.H. 5	JCT. 4 RT	288.0	54	0.013	0.00	0.0100	5033.60	5033.60	0.000	0.000	0.000	0.161	0.905	1.066	5043.19	5038.28	5045.58
JCT. 4 RT	JCT. 5 LT	283.0	54	0.013	0.00	0.0100	5033.60	5033.60	0.000	0.000	0.000	0.219	0.000	0.219	5043.41	5038.73	5045.58
JCT. 5 LT	M.H. 6	276.0	54	0.013	424.00	0.0204	5033.60	5042.25	8.353	0.234	0.000	0.000	0.000	8.587	5052.00	5047.32	5056.50
M.H. 6	BEND 1	276.0	54	0.013	6.42	0.0450	5042.26	5042.55	0.126	0.000	0.473	0.000	0.000	0.599	5052.60	5047.92	5056.60
BEND 1	WYE 1 RT	276.0	54	0.013	6.88	0.0450	5042.55	5042.86	0.136	0.000	0.000	0.738	0.000	0.873	5053.47	5049.90	5056.70
WYE 1 RT	BEND 2	241.0	54	0.013	9.43	0.0450	5042.86	5043.28	0.142	0.000	0.291	0.000	0.000	0.433	5053.90	5050.34	5056.80
BEND 2	WYE 2 RT	241.0	54	0.013	3.74	0.0450	5043.29	5043.46	0.056	0.000	0.000	1.265	0.000	1.321	5055.22	5053.92	5056.90
WYE 2 RT	BEND 3	146.0	54	0.013	10.96	0.0450	5043.46	5043.95	0.060	0.000	0.107	0.000	0.000	0.167	5055.39	5054.08	5057.00
BEND 3	INLET	146.0	54	0.013	85.40	0.0720	5043.95	5050.10	0.471	0.000	0.000	0.000	0.000	0.471	5055.91	5054.60	5062.00
INLET	DUMMY	146.0	54	0.013	1.00	0.0720	5050.10	5050.17	0.006	0.000	0.000	0.000	0.000	0.006	5055.98	5054.67	5062.00

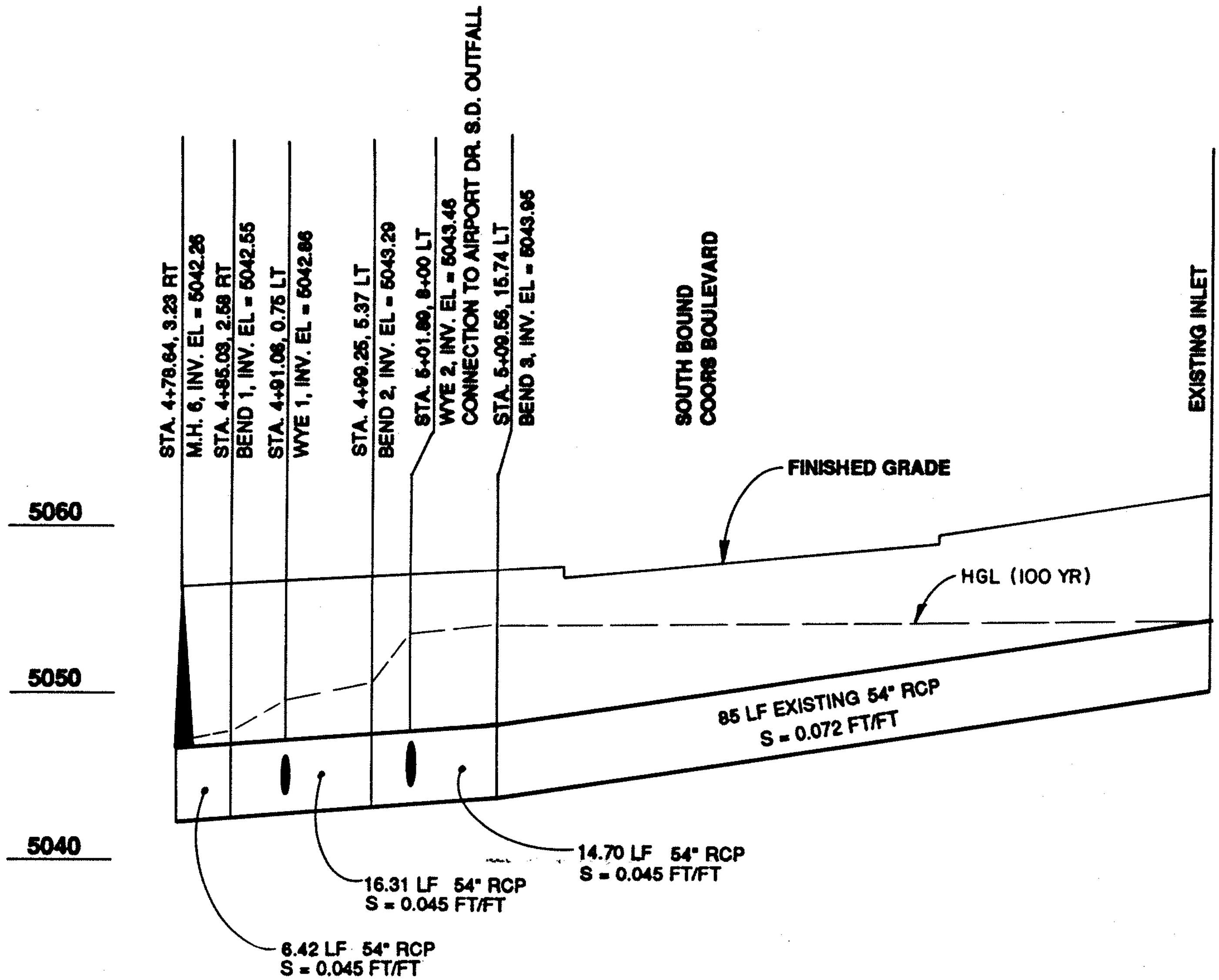
NOTE: Where less than full pipe flow is calculated, the H.G.L. is assumed to be equal to the soffit elevation.



EXISTING COORS BOULEVARD STORM DRAIN
DOWNSTREAM OF AIRPORT DRIVE STORM DRAIN OUTFALL

PROFILE N.T.S.

NOTE: STORM DRAIN DATA TAKEN FROM AS-BUILT DRAWINGS FOR THE NORTH/SOUTH COORS CONNECTION. STATIONING IS PER THE COORS CONNECTION DRAWINGS.



RECONSTRUCTED PORTION OF COORS BOULEVARD
STORM DRAIN DOWNSTREAM OF AIRPORT DR. STORM DRAIN OUTFALL

PROFILE NTS

PROJECT: AIRPORT DRIVE STORM DRAIN OUTFALL

JOB#: SUNWEST 3322

DATE: 10/16/1992

TIME: 9:25 am

ANALYSIS BY: VANCEL FOSSINGER, *EASTERLING & ASSOCIATES*

STARTING CONDITIONS:

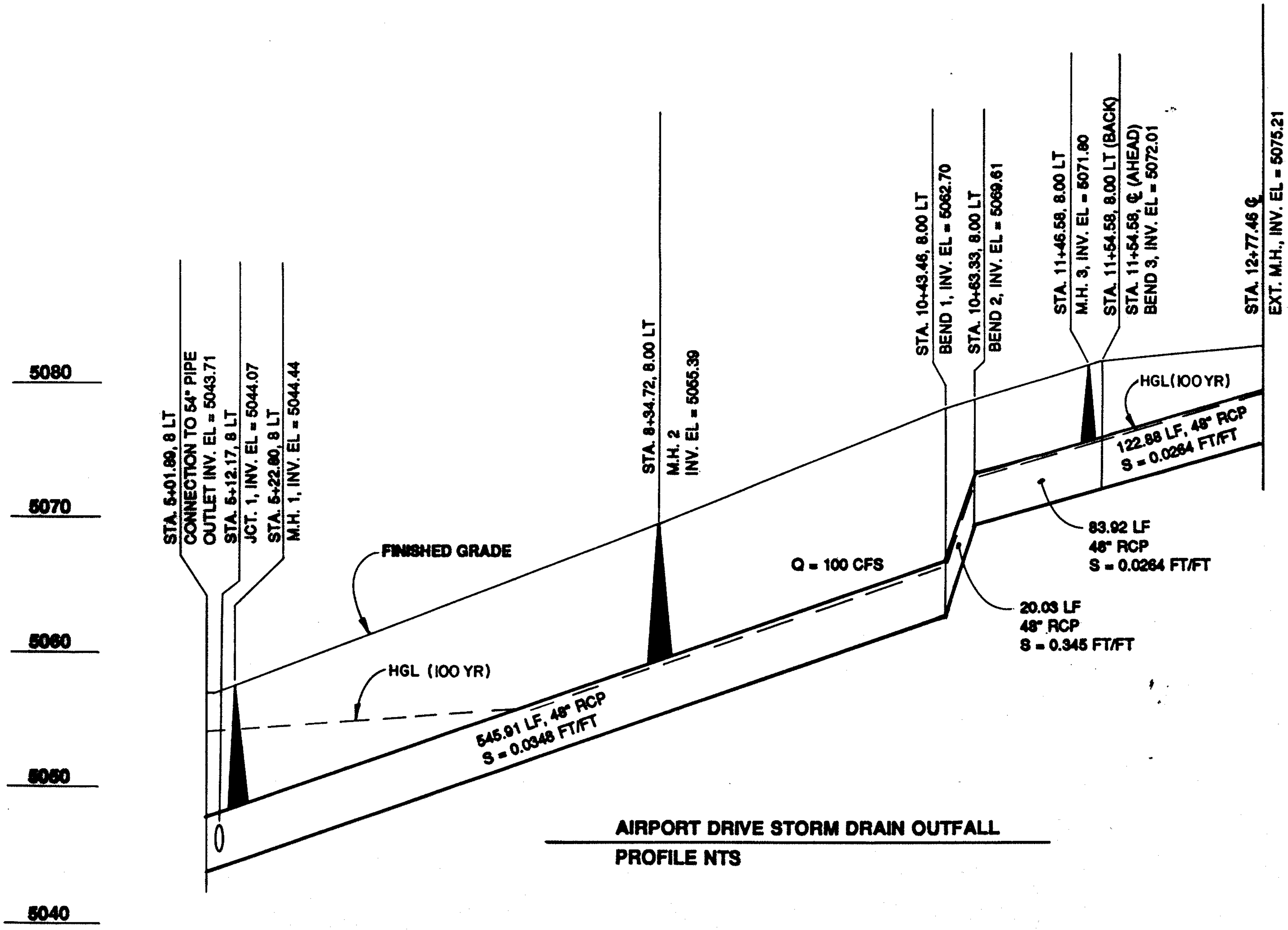
TAILWATER ELEVATION = 5053.92

MANNING'S ROUGHNESS = 0.013

ASSUMED STARTING HGL ELEV.= 5053.92

PIPE LINK DESCRIPTION FROM	TO	MAINLINE FLOW RATE (cfs)	PIPE DIA. (inches)	MANNING'S ROUGHNESS ("n")	LAY LENGTH (feet)	PIPE SLOPE (fpf)	INVERT: DOWN STREAM (elev.)	INVERT: UP STREAM (elev.)	HYDRAULIC GRADE LINE COMPUTATIONS: FRICTION LOSS Hf	MANHOLE LOSS Hm	ANGLE PT. LOSS Hb	JUNCTION LOSS Hj	EXPANSION LOSS Hx	SUM OF LOSSES	ENERGY GRADE LINE ELEVATION	HYDRAULIC GRADE LINE ELEVATION	FINISHED GRADE ELEVATION
STORM DRAIN OUTFALL INITIAL CONDITIONS------------> @ OUTLET = 5043.71															5053.92	5053.92	
OUTLET	WYE 1	103.0	48	0.013	10.36	0.0346	5043.71	5044.07	0.053	0.000	0.000	0.054	1.043	1.151	5055.07	5054.09	5057.20
WYE 1	M.H. 1	100.0	48	0.013	10.71	0.0348	5044.07	5044.44	0.052	0.049	0.000	0.000	0.000	0.101	5055.17	5054.19	5057.50
M.H. 1	M.H. 2	100.0	48	0.013	314.43	0.0348	5044.44	5055.38	1.524	0.049	0.000	0.000	0.000	1.573	5060.37	5059.38	5069.60
M.H. 2	V.BEND 1	100.0	48	0.013	210.42	0.0348	5055.38	5062.70	1.020	0.000	0.085	0.000	0.000	1.105	5067.69	5066.70	5078.00
V.BEND 1	V.BEND 2	100.0	48	0.013	20.03	0.3450	5062.70	5069.61	0.097	0.000	0.085	0.000	0.000	0.183	5074.60	5073.61	5078.70
V.BEND 2	M.H. 3	100.0	48	0.013	83.92	0.0261	5069.61	5071.80	0.407	0.049	0.000	0.000	0.000	0.456	5076.79	5075.80	5081.50
M.H. 3	BEND 3	100.0	48	0.013	8.06	0.0261	5071.80	5072.01	0.039	0.000	0.163	0.000	0.000	0.202	5077.00	5076.01	5081.80
BEND 3	EXIST. M.H.	100.0	48	0.013	122.88	0.0261	5072.01	5075.22	0.596	0.049	0.000	0.000	0.000	0.645	5080.20	5079.22	5082.83
EXIST. M.H.	DUMMY	100.0	48	0.013	1.00	0.0261	5075.22	5075.25	0.005	0.000	0.000	0.000	0.000	0.005	5080.23	5079.25	5082.83

NOTE: Where less than full pipe flow is calculated, the H.G.L. is assumed to be equal to the soffit elevation.



AIRPORT DRIVE STORM DRAIN OUTFALL

PROFILE NTS

Easterling & Associates, Inc.
10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021
FAX (505) 898-8501

Project Name Airport Drive storm Drain Outfall
Project No. 3322 Date 10-19-92
Subject Pipe Class + Bedding
By VSF Sheet 1 of 3

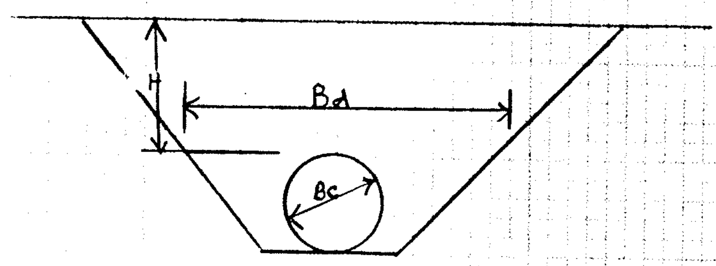
Use method presented in "Concrete Pipe Design Manual", by the American Concrete Pipe Assoc., to check pipe and bedding class.

Pipe I.D. = 48" Pipe O.D. ≈ 58"

Trench Depth Range - 9' to 15' Assume a soil weight of 120 lb/cf

Assume an OSHA Soil Classification of Type "B" (1/1 side slopes)

To be conservative assume trench side slopes may be sloped from the bottom.



Check Pipe and bedding for 3 trench depths: 9', 12', and 15'

1. Trench depth = 9' $H = 9 - 58/12 = 4.16'$ $Bd = 15.8'$ $Bc \approx 4.83'$

- From table 26-A the transition width for H = 5' = 6'6"
  Use Backfill Load = 2950 lb/LF at 100 lb/Cf material
- Backfill load with 120 lb/cf Material = 2950 X 1.20 = 3,540 lb/LF
- Live load from table = 1,120 lb/LF
- Try Class C bedding $Bf = 1.5$

$$D\text{-load} = D_{0.01} = \frac{W_L + W_E}{Bf \times D} \times F.S. \quad \text{For RCP Us } F.S. = 1$$

$$D_{0.01} = \frac{1{,}120 + 3{,}540}{1.5 \times 4} \times 1 = 777 \text{ lb/LF/ft I.D.}$$

From ASTM C-76 for Class III RCP $D_{0.01}$ = 1,350 lb/LF/I.D

777 < 1350 OK

Class III Pipe and Class C bedding OK at depth = 9'

2. Trench depth = 12' $H = 12 - 58/12 = 7.16'$ $Bd = 15.8'$ $Bc = 4.83'$

- From table 26-A Transition Width = 7'6"
  Interpolate between H = 7' WE = 4,490 and H = 8' WE = 5,354

W_{E100} = (5,354 - 4,490) 0.16 + 4,490 = 4,628 lb/LF
WE = 4,628 X 1.20 = 5,554 lb/LF

- Interpolated from Table 45 W_L = 560 - ((560 - 470).16) = 546 lb/LF
- Try Class C bedding $Bf = 1.5$

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Depth = 12' 48" Dia RCP Cont.

$$D_{0.01} = \frac{5,554 + 546}{1.5 \times 4} \times 1 = \underline{1,017 \text{ lb/LF/ I.D.}}$$

Do.01 for Class III RCP = 1,350 > 1,017 OK

Class III RCP and Class "C" bedding OK for 12' depth

3. Trench depth = 15' H = 15-4.83 = 10.37 Bd = 15.8' Bc = 4.83'
- From Table 26-A Transition Width = 8'-8"
- Interpolate between H = 10' W_{E100} = 7,041 + H = 11 W_{E100} = 7,776

$$W_{E100} = (7,776 - 7,041)(0.37) + 7,041 = 7,313 \text{ lb/LF}$$

$$W_E = 7,313 \times 1.20 = \underline{8,776 \text{ lb/LF}}$$

Truck Live Loads are insignificant at H > 10'

$$D_{0.01} = \frac{8,776}{1.5 \times 4} \times 1 = \underline{1,463 \text{ lb/LF/ID}}$$

Do.01 for Class III RCP = 1,350 < 1,463 No Good

CLASS III RCP AND CLASS "C" BEDDING IS NOT ADEQUATE AT 15' DEPTH

TRY Trench Depth = 14' H = 14 - 4.83 = 9.17' Bd = 15.8 Bc = 4.83'
From Table 26-A Transition Width = 8'-6"
Interpolate between H = 9' W_{E100} = 6,287 and H = 10' W_{E100} = 7,041

$$W_{E100} = (7,041 - 6,287)(.17) + 6,287 = 6,415 \text{ lb/LF}$$

$$W_E = 6,415 \times 1.20 = \underline{7,698 \text{ lb/LF}}$$

Use W_L for 9' depth for W_L $\underline{W_L = 410 \text{ lb/LF}}$

$$D_{0.01} = \frac{7,698 + 410}{1.5 \times 4} \times 1 = 1,351$$

Do.01 for Class III RCP = 1350 ≈ 1,351 O.K.

Class III RCP and Class "C" bedding OK. to 14' depth

Try Class "B" Bedding for 15' depth B_f = 1.9
From above W_E = 8,776 lb/LF W_L ≈ 0

$$D_{0.01} = \frac{8,776}{1.9 \times 4} = \underline{1,155 \text{ lb/LF} < 1350 \text{ lb/LF} \quad \text{O.K.}}$$

CLASS III RCP and Class "B" bedding O.K. for 14' > depth < 15'

Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021
FAX (505) 898-8501

Project Name Airport Drive Storm Drain Outfall
Project No. 3322 Date 10-19-92
Subject Pipe Class + Bedding
By DSF Sheet 3 of 3

Pipe ID = 54" Pipe O.D. = 5.42'

Trench depth = 14'

Assume soil wt and OSHA soil type as per 48" Dia Calcs

$H = 14 - 5.42 = 8.58'$ $Bd = 17.59'$ $Bc = 5.42'$

- From Table 27-A the transition width = 8'-10"
- Interpolate between $H = 8'$ $W_{E100} = 5,790$ + $H = 9'$ $W_{E100} = 6,765$

$W_{E100} = (6,765 - 5,790)0.58 + 5,790 = 6,356$ lb/LF

$W_E = 6,356 \times 1.20 = \underline{7,627 \text{ lb/LF}}$

- Interpolate W_L from Table 45 $520 - ((520 - 440)(0.58)) = \underline{474 \text{ lb/LF}}$

$D_{0.01} = \dfrac{7,627 + 474}{1.5 \times 4.5} \times 1 = \underline{\underline{1,200 \text{ lb/LF/I.D.}}}$

$D_{0.01}$ for Class III RCP $= \underline{1,350 \text{ lb/LF/ID} > 1,200 \text{ lb/LF/I.D. OK}}$

Class III RCP and Class "C" bedding OK for 14' depth

NOTICE OF TERMINATION AND
CANCELLATION OF
DRAINAGE AGREEMENT AND OF DRAINAGE COVENANT

This Notice of Termination and Cancellation of Drainage Agreement and of Drainage Covenant ("Notice") is made, executed and delivered by the CITY OF ALBUQUERQUE, NEW MEXICO, a New Mexico municipal corporation (hereinafter "CITY"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103.

1. City is a party to that certain Drainage Agreement dated November 26, 1991, recorded February 26, 1992 as Document No. 92-16956, Records of Bernalillo County, New Mexico, as amended by that certain Amendment to Drainage Agreement dated September 9, 1992, recorded September 15, 1992 as Document No. 92-92202, Records of Bernalillo County, New Mexico, and that certain Drainage Covenant dated November 26, 1991, recorded February 26, 1992 as Document No. 92-16957, Records of Bernalillo County, New Mexico, as amended by that certain Amendment to Drainage Covenant dated as of July 7, 1992, recorded September 15, 1992 as Document No. 92-92203.

2. Pursuant to paragraph 9 of the said Drainage Agreement and paragraph 9 of the said Drainage Covenant, City hereby certifies and gives notice that the Owner has satisfactorily completed and fully performed all requirements of the said Drainage Agreement, as amended, and the said Drainage Covenant, as amended, and any drainage easement or license therein

granted in favor of City is hereby vacated and the said Drainage Agreement, as amended, and the said Drainage Covenant, as amended, are each hereby terminated and cancelled and declared to be of no further force and effect.

In witness whereof, this Notice is executed and delivered this ____ day of ________________, 1993.

APPROVED:

By:________________________
City Engineer

CITY OF ALBUQUERQUE, a New Mexico Municipal Corporation

By:________________________________
Arthur A. Blumenfeld, Chief Administrative Officer

ACKNOWLEDGMENT

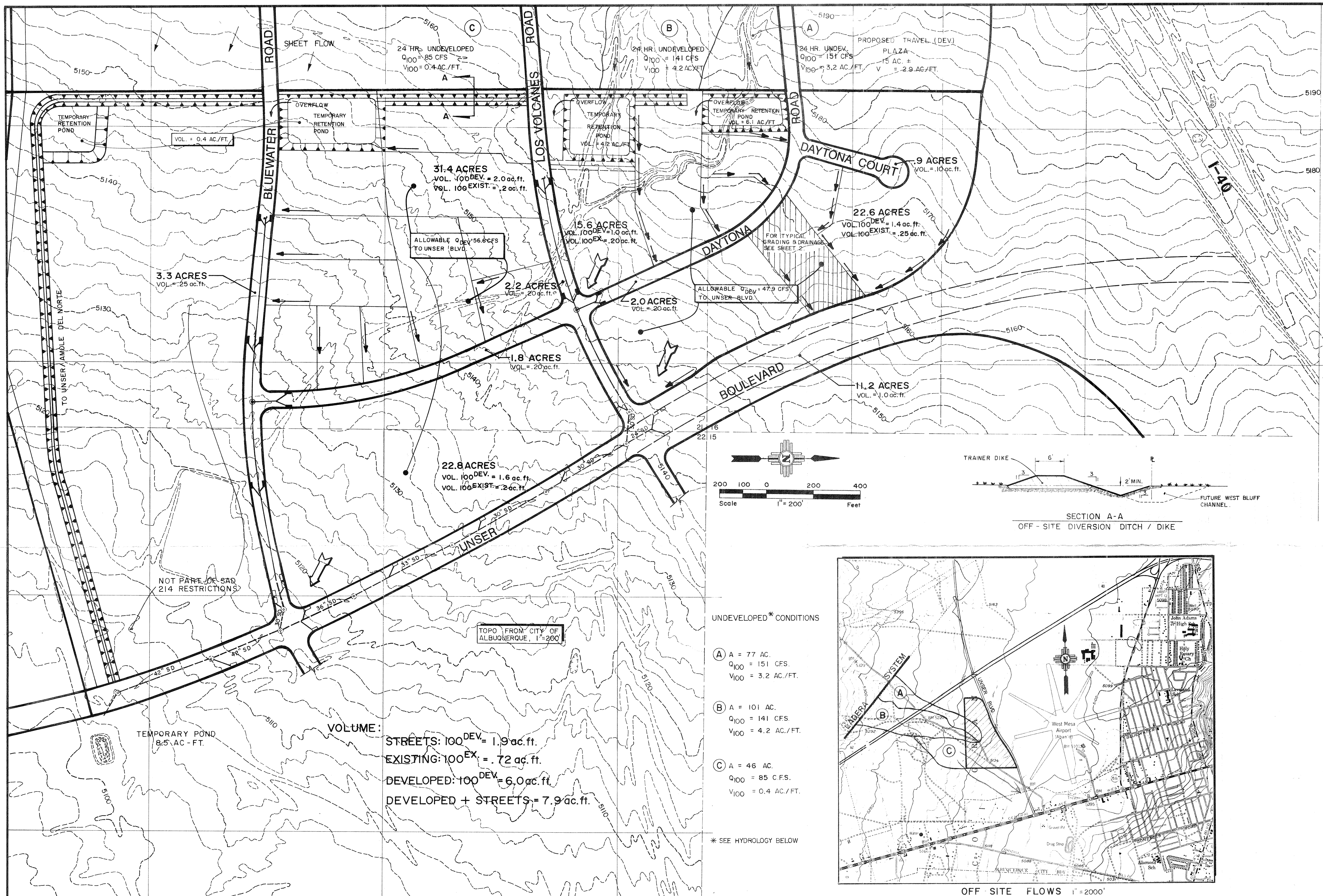
STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on ______________ ___________________________, 19_____, by Arthur A. Blumenfeld, Chief Administrative Officer of City of Albuquerque, a New Mexico municipal corporation, on behalf of said corporation.

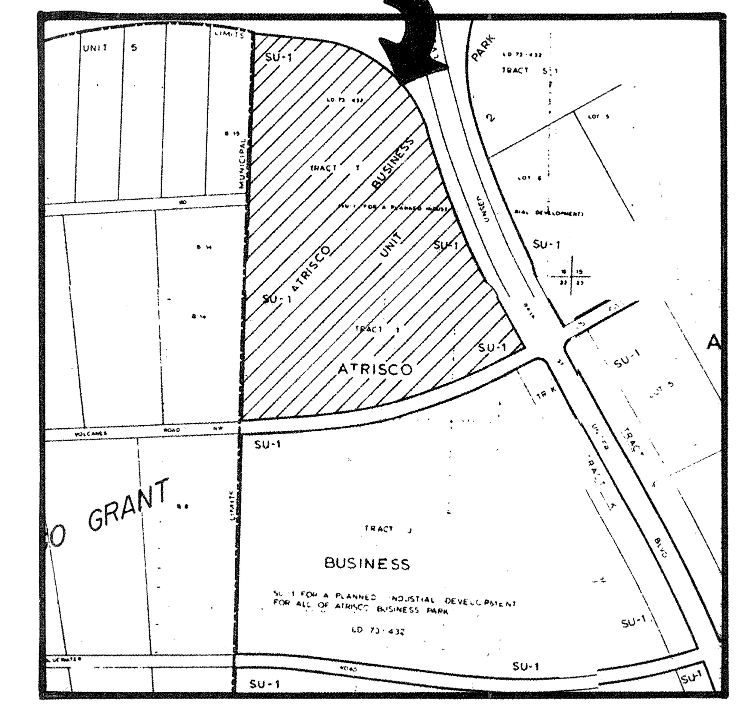
____
Notary Public

My Commission Expires:

____

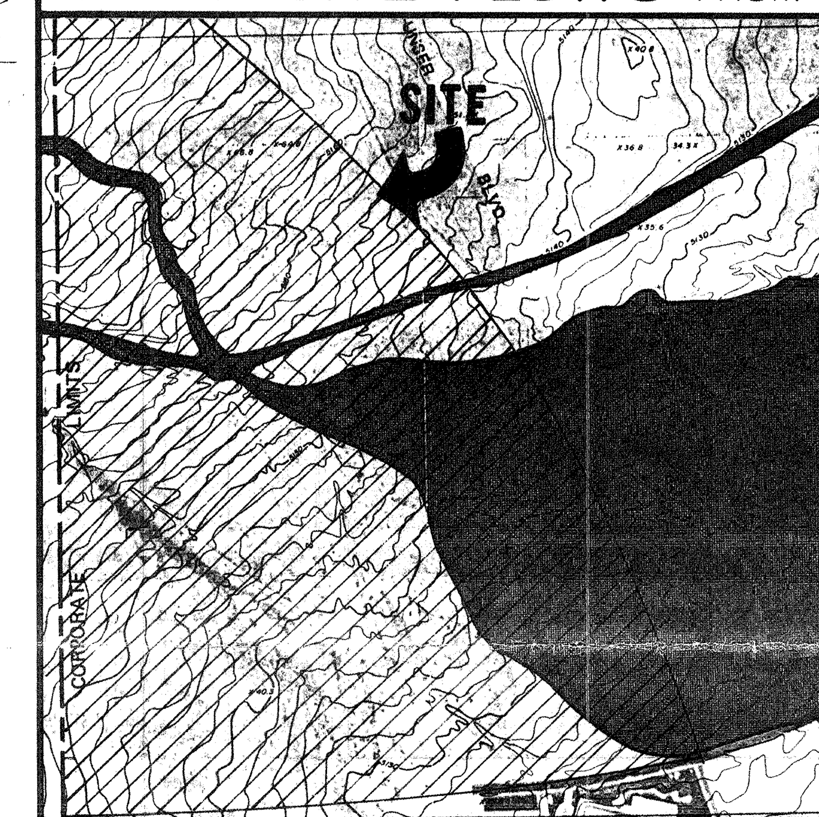


VICINITY MAP ZONE ATLAS MAP NO. J-9 K-9



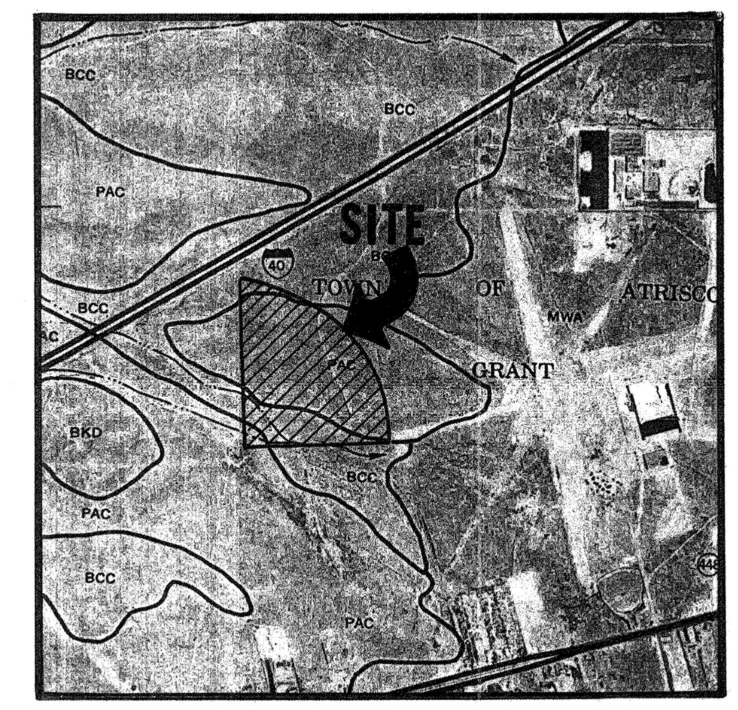
NO. 27

FLOOD HAZARD MAP & OFF-SITE FLOWS FROM F.E.M.A.



NO. 30

SOILS MAP SOIL SURVEY U.S.D.A., S.C.S.



HYDROLOGY

INDIVIDUAL LOT PONDING WILL BE REQUIRED TO COMPLY WITH THE UNSER BLVD/SAD 214 DRAINAGE PLAN. CONTROL RELEASE TO STREETS FROM INDIVIDUAL PARCELS IS RECOMMENDED.

OFF-SITE FLOWS WILL BE INTERCEPTED BY THE WEST BLUFF/AMOLE CHANNEL.

TEMPORARY RETENTION PONDS ARE SIZED TO RETAIN THE 100 YEAR - 24 HR. UNDEVELOPED RUNOFF FLOWING TO THE WEST BLUFF ALIGNMENT PLUS THE 100 YEAR 24 HR. DEVELOPED RUNOFF FROM THE PROPOSED TRAVEL PLAZA AND THAT PORTION OF DAYTONA RD. WHICH FRONTS IT.

REF. 1. WEST BLUFF DRAINAGE PLAN
ANDREWS ASBURY & ROBERT

2. DRAINAGE PLAN FOR THE DESIGN OF SAD-214 UNSER BLVD.
SCANLON & ASSOCIATES

SOILS INFORMATION FROM SOIL SURVEY U.S.D.A., S.C.S.

SOIL SERIES AND MAP SYMBOLS	DEGREE AND KIND OF LIMITATIONS FOR						SUITABILITY AS SOURCE OF —				SOIL FEATURES AFFECTING —		HYDROLOGIC SOIL GROUP
	SEPTIC TANK ABSORPTION FIELDS	SEWAGE LAGOONS	SHALLOW EXCAVATIONS	DWELLINGS WITHOUT BASEMENTS	SANITARY LANDFILL (TRENCH TYPE)	LOCAL ROAD AND STREETS	ROAD FILL	SAND	GRAVEL	TOPSOIL	POND RESERVOIR AREAS	DIKES, LEVEES, AND OTHER EMBANKMENTS	
Pajarito: PAC, PbB	Slight	Severe: seepage.	Slight	Slight	Severe: seepage.	Slight	Good	Poor: excess fines.	Unsuited	Good	Seepage	Piping	B
*Bluepoint: Bb, BcA, BCC, Bd3, BKD. For Wink part of Bd3, see Wink series; for Kokan part of BKD, see Kokan series.	Slight if slope is 1 to 8 percent, moderate if 8 to 15.	Severe: seepage.	Severe: cut-banks cave.	Slight if slope is 1 to 8 percent, moderate if 8 to 15.	Moderate: too sandy.	Slight if slope is 1 to 8 percent, moderate if 8 to 15.	Good	Fair: excess fines.	Unsuited	Poor: too sandy.	Seepage	Piping; seepage	A

BCC—Bluepoint loamy fine sand, 1 to 9 percent slopes. This soil is nearly level to moderately sloping. It has the profile described as representative of the series, but on about 10 percent of the acreage the surface layer is sand. Included in mapping are areas of Madurez, Pajarito, and Wink soils, which make up about 15 percent of the unit.

Runoff is slow, and the hazard of soil blowing is severe. This soil is used for range, watershed, wildlife habitat, recreation, and community development. Dryland capability subclass VIIe; native plant community 2.

PAC—Pajarito loamy fine sand, 1 to 9 percent slopes. This nearly level to moderately sloping soil is on the East and West Mesas. It has the profile described as representative of the series.

Included with this soil in mapping are areas of Bluepoint, Madurez, and Wink soils. On about 30 percent of the acreage are areas where the surface layer is fine sandy loam.

Runoff is slow, and the hazard of soil blowing is severe. This soil is used for range, watershed, wildlife habitat, and community development. Dryland capability subclass VIIe; native plant community 6.

NO.	REVISIONS	BY	DATE

RECEIVED DEC 06 1988 HYDROLOGY SECTION

ATRISCO BUSINESS PARK
WEST OF UNSER ROAD
CONCEPTUAL GRADING & DRAINAGE PLAN

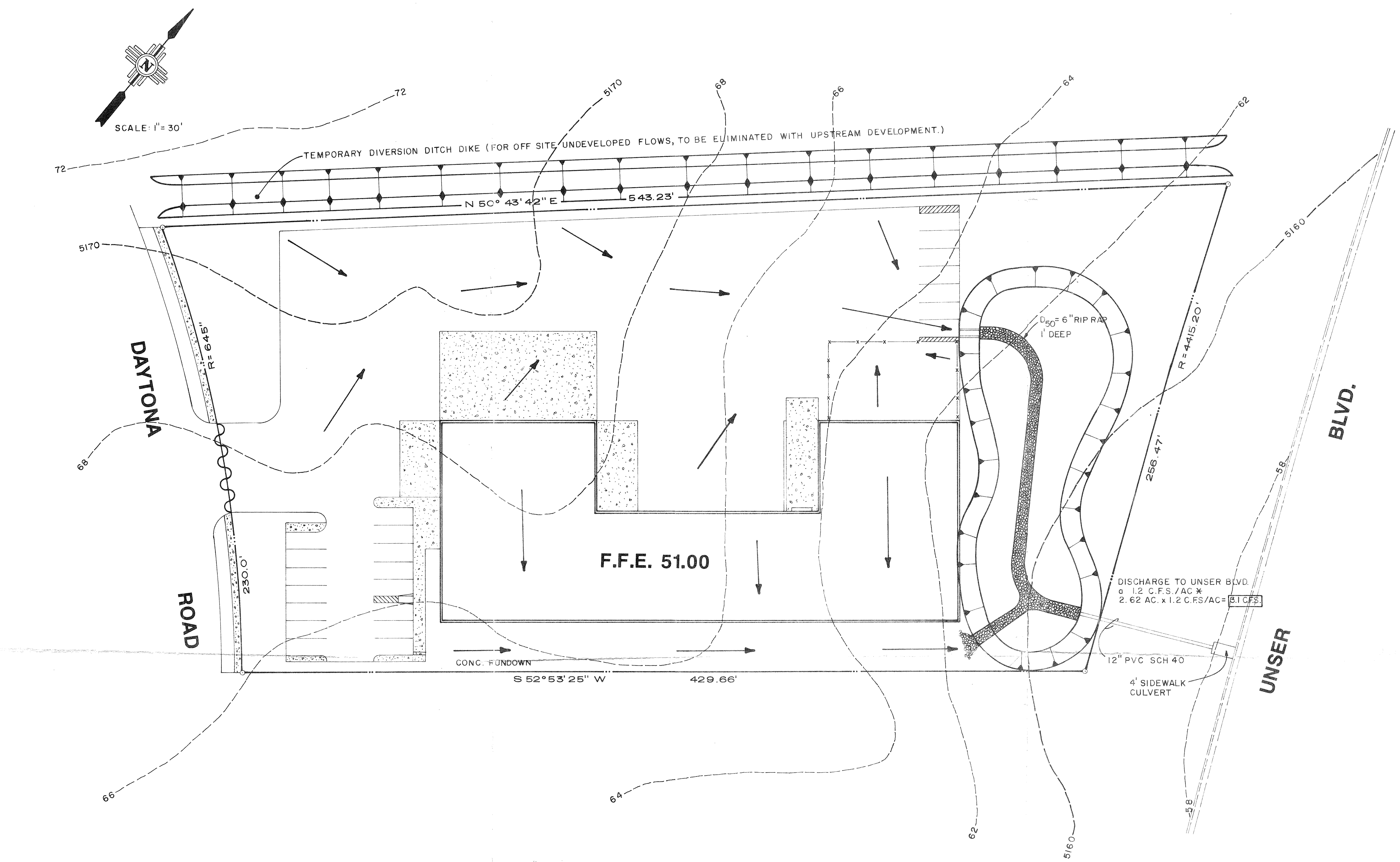
Rev 11-1-88
Rev 12-5-88

CHARLES M. EASTERLING NEW MEXICO 6411 REGISTERED PROFESSIONAL ENGINEER

8-25-88

EASTERLING & ASSOCIATES, INC.
CONSULTING ENGINEERS
5643 Paradise Blvd. N.W.
Albuquerque, New Mexico 87114

Designed:	Drawn:	Checked:	Sheet 1 of 2
Job No: 2401	Date: 10-88		



LEGEND

DESCRIPTION	NEW	EXISTING
CONTOURS	88	88
SPOT ELEVATION	88.2	88.2
DRAINAGE AREA BOUNDARY		
DRAINAGE DIVIDE		
WATER BLOCK		
DIRECTION OF FLOW		
ASPHALT PAVING	ASPHALT	ASPHALT
LANDSCAPING	L.S.	L.S.
RETAINING WALL		
GARDEN WALL		
SWALE		
PROPERTY LINE		
FENCE		
CATCH BASIN		
STORM DRAIN MANHOLE AND LINE	SD	SD
SANITARY SEWER MANHOLE AND LINE	SAS	SAS
FIRE HYDRANT AND WATER LINE	W	W
REDUCERS		
WATER VALVES	GATE BUTTERFLY	GATE BUTTERFLY
WATER CONNECTIONS		
WATER JOINTS	TEE CROSS BEND CAP	TEE CROSS BEND CAP
CONCRETE		EXISTING
GAS LINE	G	G
UNDERGROUND TELEPHONE	UT	UT
CABLE TELEVISION	CT	CT
POWER/TELEPHONE POLE	PP.	PP.
UNDERGROUND ELECTRICAL	UE	UE
CURB ELEVATION	TC 5088.28 FL 5087.78	TC 5088.28 FL 5087.78
HYDROLOGICAL ANALYSIS POINT	AP	
DETAIL REFERENCE		
KEYED NOTES	1	
CITY ABQ DETAIL REFERENCE	1	

HYDROLOGY

	A.P. #	D.A. AC.	H. FT.	S. FT/FT	L. FT.	Tc MIN.	SOIL TYPE	% IMP.	C.N.	C.	P_2 IN.	P_{10} IN.	P_{100} IN.	i_2 IN./HR.	i_{10} IN./HR.	i_{100} IN./HR.	$VOL._2$ C.F.	$VOL._{10}$ C.F.	$VOL._{100}$ C.F.	Q_2 C.F.S.	Q_{10} C.F.S.	Q_{100} C.F.S.
EXISTING	—	2.6	—	—	—	10	B	Ø	70	.40	.98	1.45	2.20	2.07	3.06	4.64	Ø	666	3,043	2.2	3.2	4.9
DEVELOPED	—	2.6	—	—	—	10	B	71	92	.74	.98	1.45	2.20	2.07	3.06	4.64	3,804	7,228	13,505	4.0	5.9	9.0

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REVISIONS | BY | DATE

ATRISCO BUSINESS PARK

INDIVIDUAL LOT GRADING & DRAINAGE PLAN (TYPICAL)

CHARLES M. EASTERLING
NEW MEXICO
6411
REGISTERED PROFESSIONAL ENGINEER

Revised 11-1-88

EASTERLING & ASSOCIATES, INC.
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Designed | Drawn | Checked | Sheet 2 of 2
Job No. | Date