CITY OF ALBUQUERQUE

September 29, 2016

Richard J. Berry, Mayor

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM 87199

RE: Legacy NAA Apartments
Grading and Drainage Plan & Report
Engineer's Stamp Date 9-15-2016 (File: C18D064B)

Dear Mr. Soule:

Based upon the information provided in your submittal received 9-19-2016, the above-referenced plan is approved for Preliminary Plat Approval (#1009881). It is approved for ESC Building Permit (and ESC Grading Permit) with the following conditions:

1. Ensure that the Contractor receives the modified grate detail (Std Drawing #2220) to use on this project.
2. Ensure that the Contractor receives a legible version of the detail sheet.
3. The placement of the inline drains which was referenced in our previous review letter will be reviewed at CO.

Please attach a copy of this approved plan in the construction sets when submitting for a building permit. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

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

Sincerely,

Abiel Carrillo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

Orig: Drainage file

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: LEGACY NAA APARTMENT Building Permit #: _____ City Drainage #: C18-d064B

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES

City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____

Address: 6501 EAGLE ROCK

Phone#: _____ Fax#: _____ E-mail: _____

Architect: Rich Barber Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES *Contact:* JOHN GALLEGOS

Address: _____

Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

x DRAINAGE REPORT
x DRAINAGE PLAN 1st SUBMITTAL
___ DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
x GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
X PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL/TEMP)
___ FOUNDATION PERMIT APPROVAL
x BUILDING PERMIT APPROVAL
x GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION
___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED SEP 19 2016 AND DEVELOPMENT SECTION

Paid $100.00

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided

DATE SUBMITTED: 9/16/16 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

UPDATED
DRAINAGE REPORT

For

LEGACY NAA APARTMENTS

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

SEPTEMBER 2016

RECEIVED
SEP 19 2016
LAND DEVELOPMENT SECTION

DAVID SOULE
NEW MEXICO
14522
REGISTERED PROFESSIONAL ENGINEER

9/15/16

David Soule P.E. No. 14522

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NAAMDP, San Pedro Storm drain and Eagle rock Diversion map ..... A
Site Hydrology ..... B
Hydraulic calculations C
Hydraulic Modeling ..... D

Map

Site Grading and Drainage Plan

PURPOSE

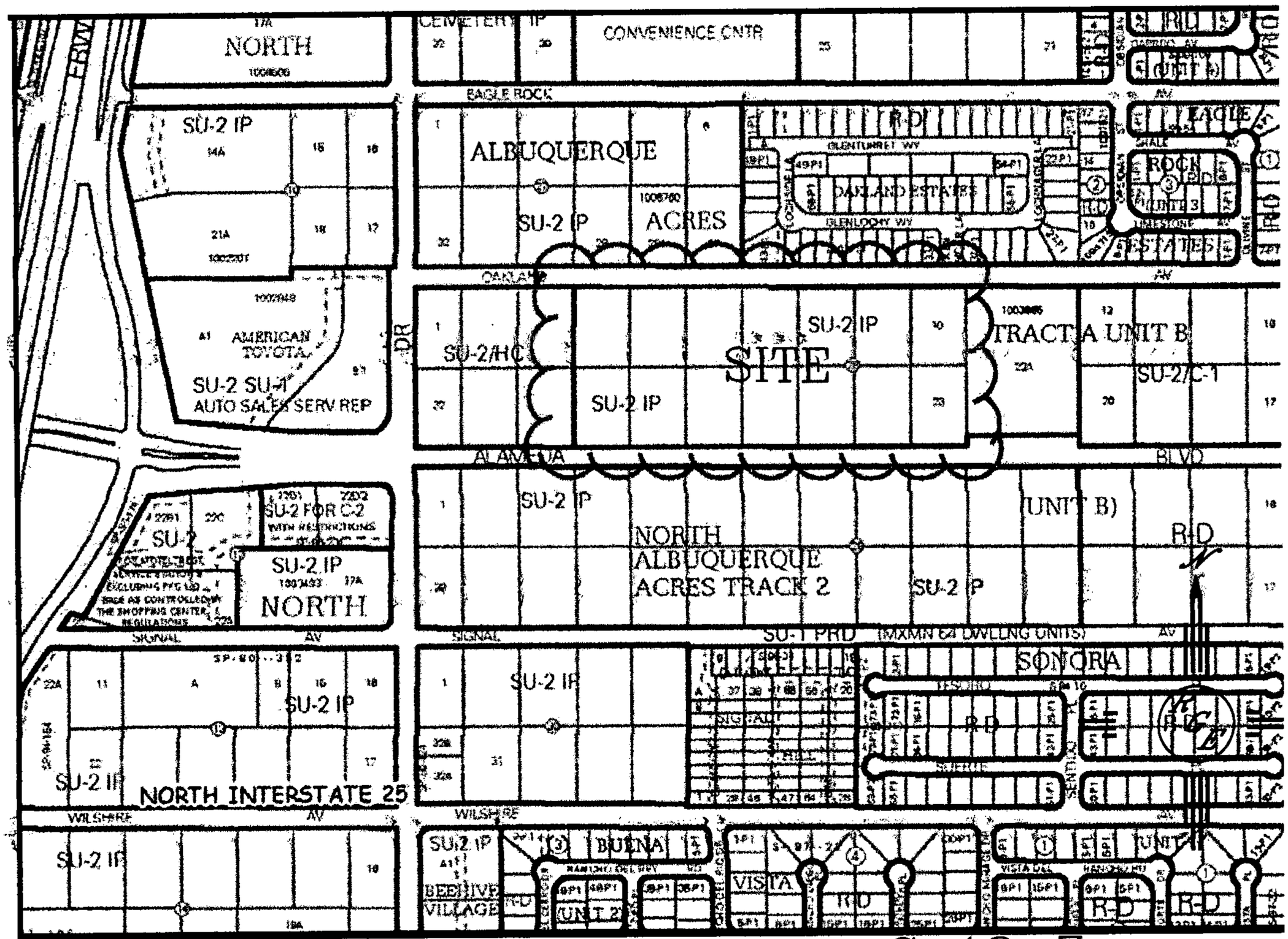
The purpose of this report is to provide the Drainage Management Plan for the development of a 12.41 acre multi family project located on Alameda Boulevard between San Pedro and Louisiana NE. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines, and HYDROCAD. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

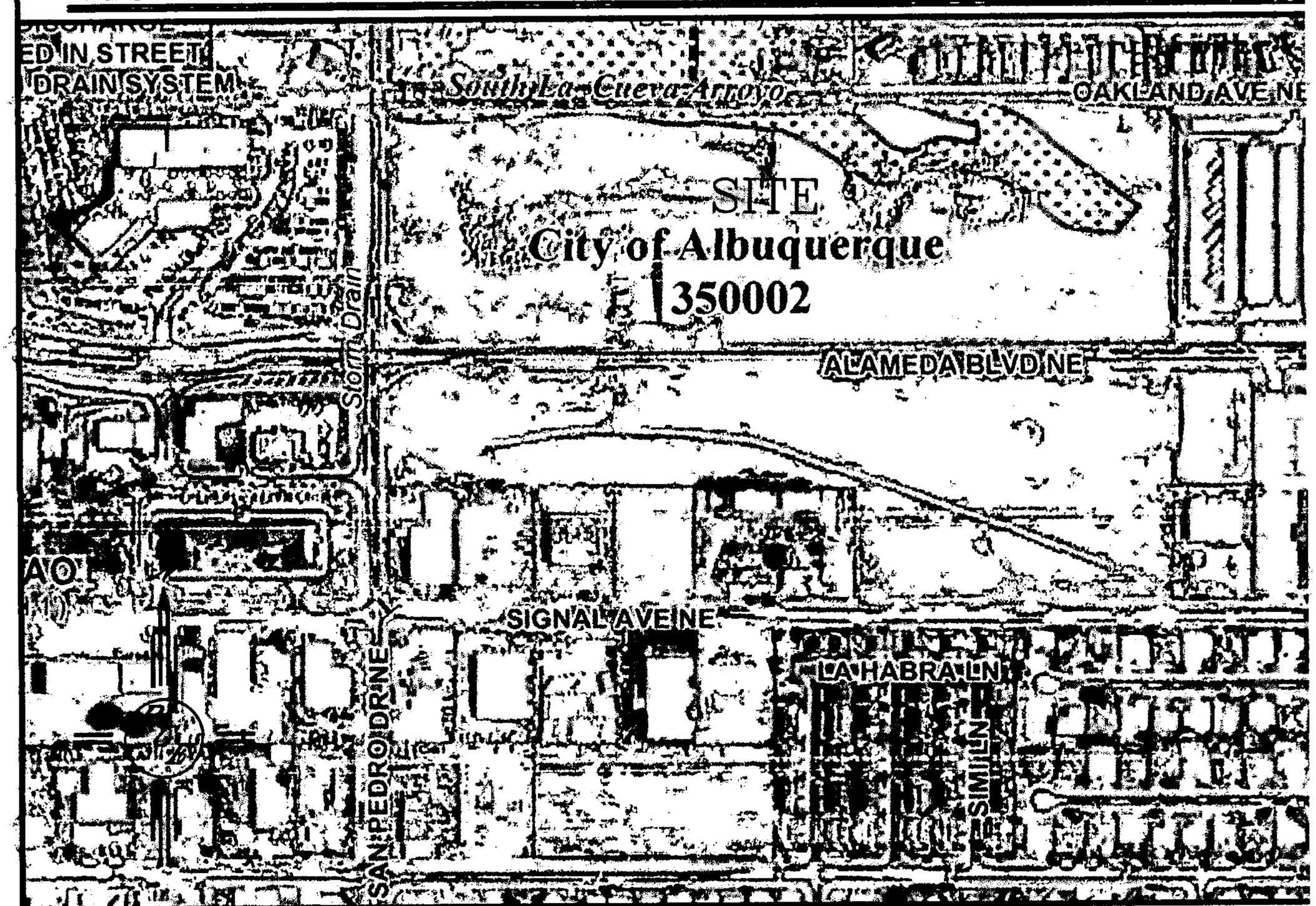
The subject of this report, as shown on the Exhibit A, is a 12.41-acre parcel of land located on the south side of Oakland Avenue and the north side of Alameda Boulevard between San Pedro and Louisiana. The legal description of this site is Lots 4-10 and 23-29, block 28, tract A, unit B, North Albuquerque Acres. As shown on FIRM map35013C0137H, the majority of the entire site is located within Flood Zone X, a recent LOMR was approved removing a previous flood zone AE-1 foot. The site has had significant grading activities upon it over the past 10 years. The site is not in native condition. Due to the upstream construction, the site is not affected by any upland flow. The site free discharges to the west. The development of the site will require the site to discharge at a rate equal to or less than the fully developed conditions assumed for this site in the governing North Albuquerque Acres Master Drainage Plan (NAAMDP), which relevant excerpts can be found in appendix A.

EXISTING CONDITIONS

The site currently does have structures on it and has been impacted by human development over the years. The site was most recently an auto salvage and parts yard. The site is not impacted by any upland flows. The site currently discharges all of its flow to the North West



VICINITY MAP: C-18-Z



FIRM MAP: 35001C0137H

LEGAL DESCRIPTION:

Corner of the site. The site is located within basins 117.2 and 117.3 of the NAAMDP. The NAAMDP design analysis has been modified by the Eagle Rock drainage plan. The diversion of the upper 57% of basin 117.2 was designed with the construction of Oakland estates Subdivision. The upland properties have been designed to drain to the storm drain provided within Oakland and Alameda. The recently constructed San Pedro and Alameda storm drain were designed to convey the developed flow from this site. Excerpts of these plan are located in appendix A

PROPOSED CONDITIONS

The proposed improvements consist of a new multi family apartment complex with associated open space and paved parking areas. The drainage is conveyed to three separate discharge point. The site grading was designed utilizing a several onsite water quality ponds that fill and then 'spill' into either the onsite storm drain or into the parking lot. An onsite drainage basin map is located in appendix B. The basins have been color coded to better differentiate them. A spreadsheet calculating the hydrology is located in appendix B. An onsite storm drain map with drainage labels is also located within appendix B. The slopes for each reach have been labeled and the capacities for the pipes are confirmed in appendix C. The site generates flow that exceeds the allowable discharge rates specified within the NAA master drainage plan. To reduce the peak flow to less than allowable several of the ponds have been sized to retain the entire 100-year, 10-day volume generated, therefore removing that basin from contributing flow. The remaining peak exceedence is reduced by the introduction of orifice plates in the two western most inlets. The parking lots have been designed to act as detention basins. The stage storage calculation is located within appendix D. The detention basin was modeled utilizing AHYMO. As shown from the model in appendix D the detention basins reduce the developed site discharge to less than allowed.

As shown on the storm drain map, and site hydrology calculations, the allowable discharge to Oakland upstream of the diversion to eagle rock is 12.23 cfs. We propose to discharge 9.83 cfs. The allowable discharge to Oakland below the diversion, which drains to the san Pedro storm drain, is allowed to be 12.23 cfs. Out site will discharge 13.44 cfs, while this is 1.11 cfs higher than allowed, it enters into the san Pedro storm drain at lower down stream point that anticipated. The allowable discharge to Alameda is 24.46. This site will discharge 23.27 cfs, which is less than allowed. The discharge rates include the roadway frontage captured by the new inlets. The combined discharge to alameda and Oakland that contribute to the san Pedro storm drain is less than allowed. The existing double D inlets on Alameda are removed and replaced with double A inlets. .

The site is required to retain on site 9,413 cubic feet of water for the first flush. This site will retain onsite 15,562 cubic feet of water, which is 6149 cubic feet greater.

SUMMARY AND RECOMMENDATIONS

This project is a development of a multi family complex with the North Albuquerque Acres Master Drainage plan. The development is consistent with the land use assumptions of the plan. The surrounding development altered the upland and onsite basin by the creation of a diversion from Oakland to Eagle rock. Our plan conforms to this diversion. Our discharge will enter the downstream storm drain where it was generally anticipated. The inlets, pipes and roadways have been shown to provide the required capacity. The onsite flows are reduced to allowable by ponding certain areas and throttling the flow by creating a parking lot detention pond utilizing orifice plate to govern the discharge. The site has been designed in accordance with City of Albuquerque Drainage ordinance. This drainage plan and report conforms to the governing drainage regulations of the City. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity.

APPENDIX A

North Albuquerque Acres Master Drainage Plan

And

Excerpts of Oakland diversion map

And

San Pedro Storm drain design excerpts

FINAL
NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN

Prepared For:

City of Albuquerque

Prepared By:

Resource Technology, Inc.
ENGINEERS AND ENVIRONMENTAL SCIENTISTS
1720-B Randolph Road SE, Albuquerque, NM 87106
Telephone (505) 243-7300
Fax (505) 243-7400
[illegible]@rtia.com

DONALD S. WON
NEW MEXICO

- Commercial/Industrial (C/I): The area west of Louisiana Boulevard, north of Modesto Avenue and east of I-25 would develop as high density commercial and industrial. Also used for Paseo del Norte Corridor.
- Medium Density Industrial (MI): Campus type commercial/office facilities and APS schools sites.
- Sandia Tribal Lands (ST): Sandia tribal lands south of Tramway Road and north of the Sandia Pueblo Grant Boundary were allocated land treatments consistent with moderate levels of development even though there are no current plans to develop this area.

The relative weight of each type of Land Treatment is shown in Table 2.

TABLE 2

FUTURE FULL DEVELOPMENT HYDROLOGIC CONDITION ASSUMPTIONS

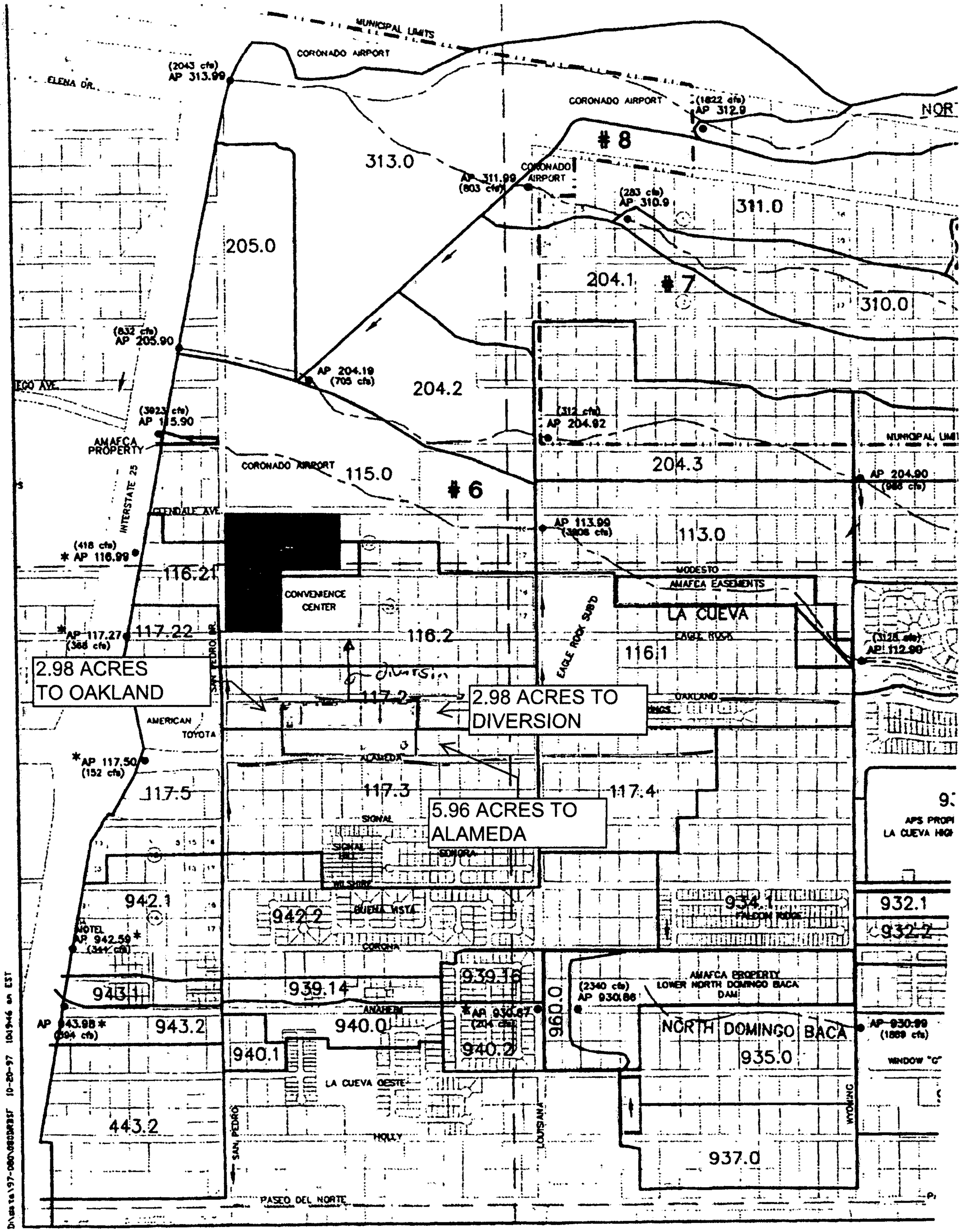
	Land Treatments (%)			
	A	B	C	D
Sandia Heights/Tramway (SH/TB)	20	40	5	35
North Albuquerque Acres (NAA)	22	23	38	17
Low Density Residential (LR)	20	20	34	26
Residential (R)	0	34	16	50
High Density Residential (HR)	0	25	15	60
Commercial/Industrial (C/I)	0	20	10	70
Medium Density Industrial (MI)	0	20	30	50
Sandia Tribal Lands (ST)	20	20	40	20
Primrose Pointe (PP)	0	40	20	40

TABLE A-2 (cont.)

LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
113*	Existing	.1136	80	0	15	5	.133
	Future	.1000	0	25	15	60	.133
115*	Existing	.1337	80	0	15	5	.133
	Future	.1202	0	26	12	62	.133
116*	Existing	.1309	80	0	5	15	.133
116.1	Future	.1000	0	25	15	50	.133
116.2	Future	.0719	0	25	15	60 ~~50~~	.133
116.21	Future	.0344	0	40	20	40	.133
~~117.2*~~	Existing	.1391	73	0	7	20	.22
	~~Future~~	~~.0500~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.21*	Existing	.0234	0	34	16	50	.133
117.22*	Future	.0156	0	20	10	70	.133
~~117.3*~~	Existing	.0863	65	5	15	15	.133
	~~Future~~	~~.1172~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.31*	Existing	.0250	0	34	16	50	.133
117.32*	Existing	.0090	0	34	16	50	.133
117.4*	Existing	.0750	85	0	5	10	.133
	Future	.0512	0	25	15	60	.133
117.5*	Existing	.0550	0	10	20	70	.133
	Future	.0550	0	10	20	70	.133
118	Existing	.0649	0	20	10	70	.133
	Future	.0649	0	20	10	70	.133
118.1	Existing	.0306	75	5	10	10	.133
	Future	.0306	0	20	30	50	.133
119	Existing	.0549	0	20	10	70	.133
	Future	.0549	0	20	10	70	.133
120	Existing	.0268	50	0	0	50	.133
	Future	.0268	0	20	10	70	.133
121	Existing	.0489	80	0	15	5	.133
	Future	.0489	0	20	10	70	.133

*Modified for COA NAA MDP 9/97


MUNICIPAL LIMITS
CORONADO AIRPORT
ELENA DR.
(2043 cfs)
AP 313.99
313.0
205.0
(832 cfs)
AP 205.90
AP 204.19
(705 cfs)
204.2
(3923 cfs)
AP 115.90
AMAFCA PROPERTY
INTERSTATE 25
115.0
6
(418 cfs)
* AP 116.99
116.21
AP 117.27
(388 cfs)
117.22
2.98 ACRES TO OAKLAND
AMERICAN TOYOTA
* AP 117.50
(152 cfs)
117.5
CONVENIENCE CENTER
116.2
117.2
2.98 ACRES TO DIVERSION
117.3
5.96 ACRES TO ALAMEDA
117.4
SIGNAL
SONORA
WILSHIRE
942.1
942.2
BUENA VISTA
CORONA
MOTEL
AP 942.59 *
(344 cfs)
943.1
939.14
939.16
ANAHEIM
AP 943.88 *
(394 cfs)
943.2
940.0
940.1
940.2
960.0
LA CUEVA OESTE
443.2
HOLLY
SAN PEDRO
LOUISIANA
PASEO DEL NORTE
(2340 cfs)
AP 930.86
AMAFCA PROPERTY
LOWER NORTH DOMINGO BACA DAM
NORTH DOMINGO BACA
935.0
937.0
WYOMING
WINDOW "C"
932.1
932.2
934.1
FALCON RIDGE
(1822 cfs)
AP 312.9
NOR
8
CORONADO AIRPORT
AP 311.99
(803 cfs)
(283 cfs)
AP 310.9
311.0
204.1
7
310.0
(312 cfs)
AP 204.92
204.3
AP 204.90
(988 cfs)
MUNICIPAL LIMI
AP 113.99
(3808 cfs)
113.0
MODESTO
AMAFCA EASEMENTS
LA CUEVA
EAGLE ROCK
EAGLE ROCK SUB'D
116.1
(3126 cfs)
AP 112.90
OAKLAND
ALAMEDA
APS PROPI
LA CUEVA HIGH

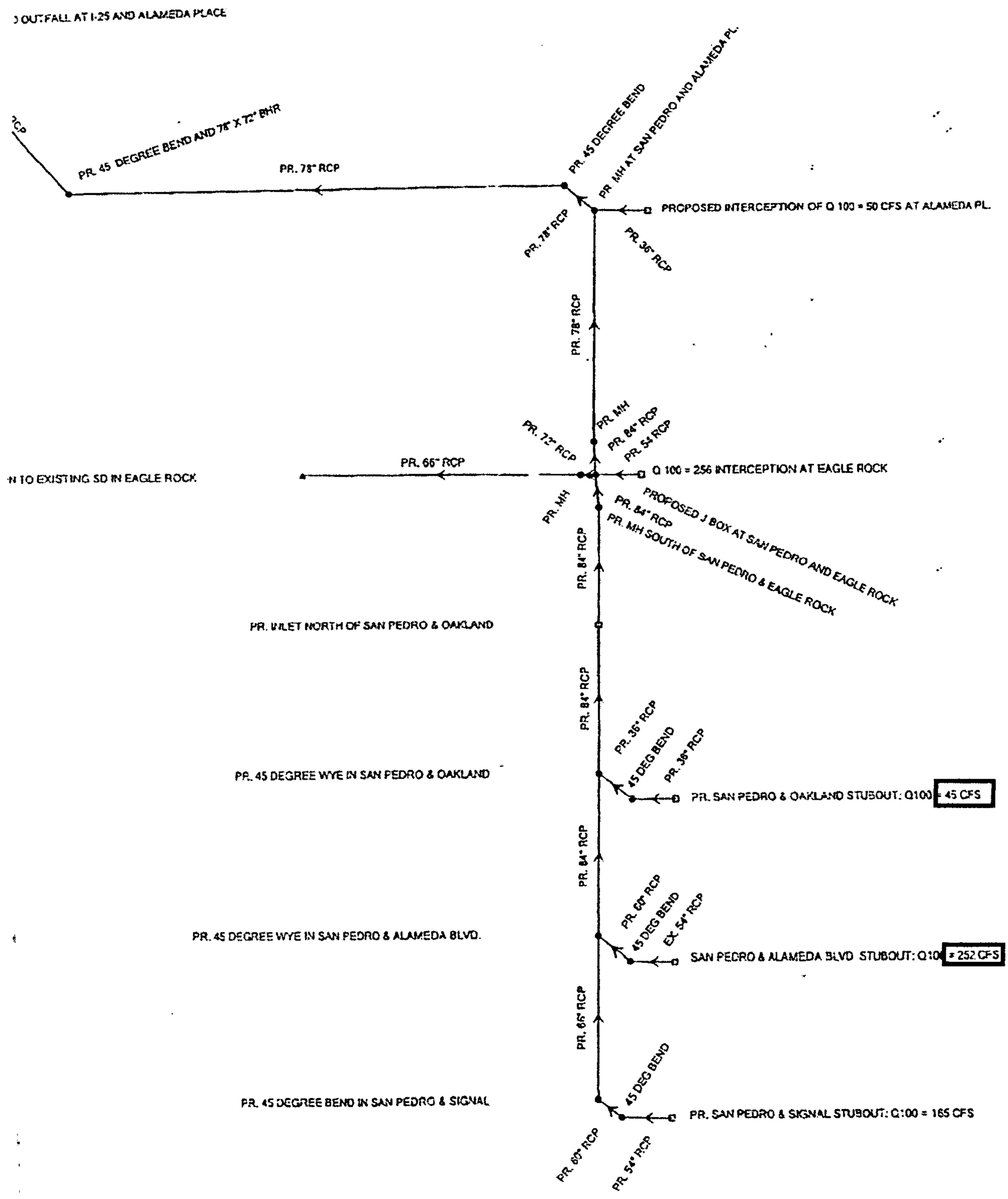
DESIGN ANALYSIS REPORT
FOR
SAN PEDRO STORM DRAIN PROJECT
CITY PROJECT NO. 5304.91

Prepared by:
Thompson Engineering Consultants, Inc.
P.O. Box 65760
Albuquerque, NM 87193

January 2010

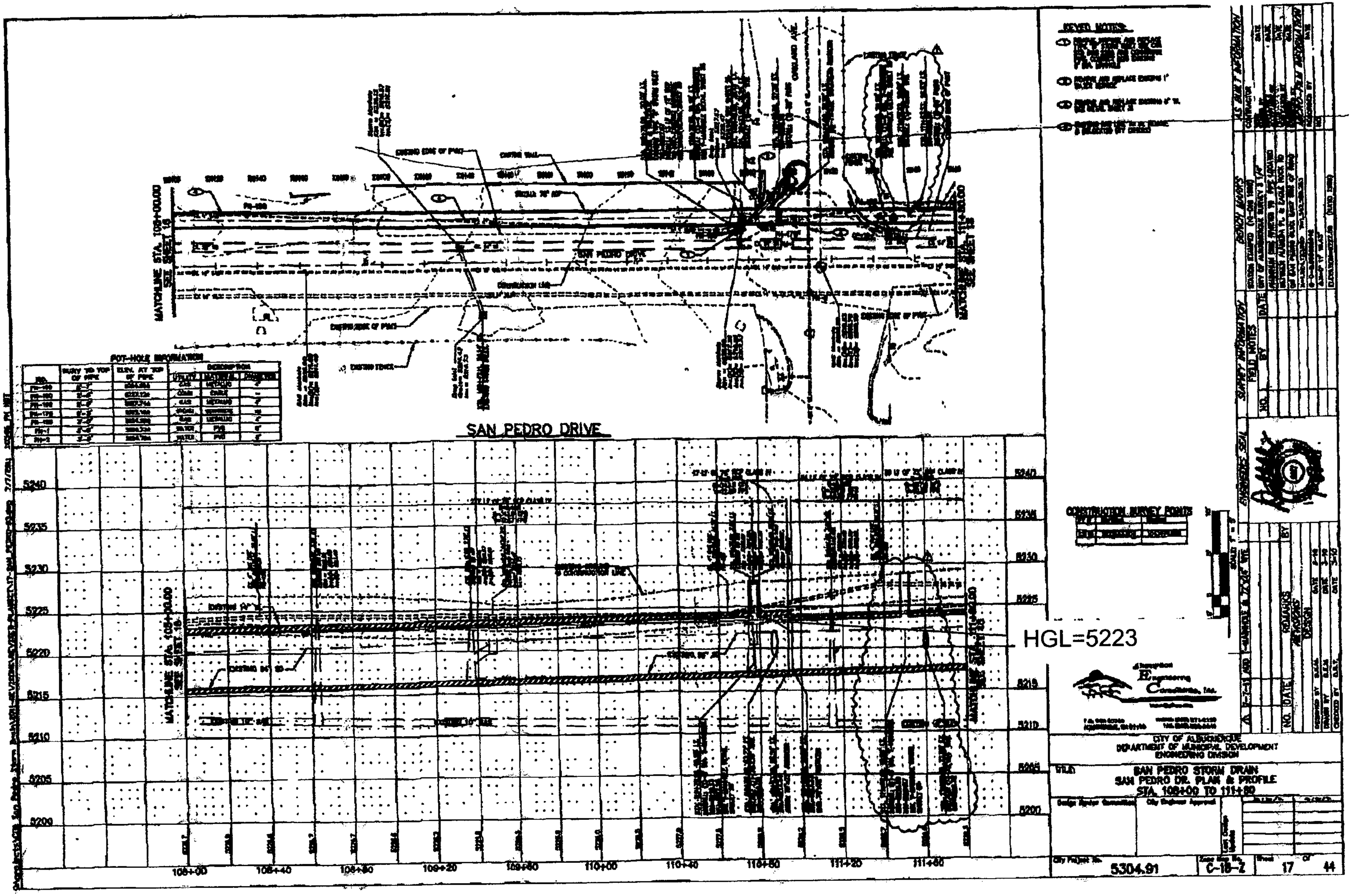
San Pedro Storm Drain

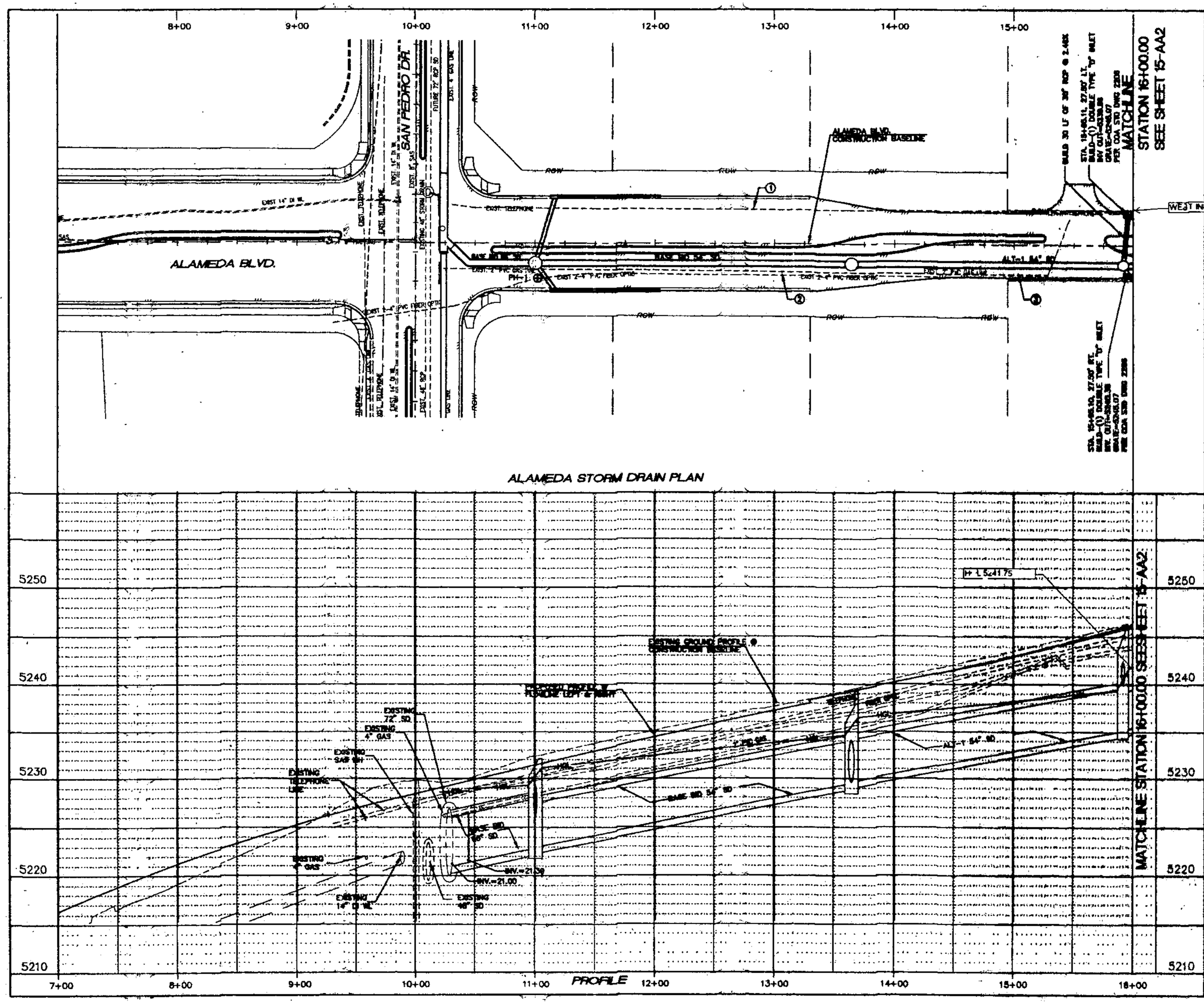
Proposed Single Pipe System



DOT Report (San Pedro SD - Final Single Pipe System with changes from coa.stc)

Label	Node Upstream Downstream	Conduit Description	Slope (Calculated) (ft/ft)	Length (ft)	Manning's n	Flow (ft³/s)	Velocity (Average) (ft/s)	Ground Upstream Downstream (ft)	Invert Upstream Downstream (ft)	HGL Upstream Downstream (ft)
PR. 66" RCP	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL	Circular Pipe - 66.0 in	0.006	532	0.013	165	6.94	5230.42	5222.97	5229.42
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.	Circular Pipe - 84.0 in	0.005	525	0.013	417	12.96	5229.65	5219.8	5225.46
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	139	0.013	462	13.62	5228	5217.29	5223.55
	PR. INLET NORTH OF SAN PEDRO & OAKLAND							5226.12	5216.57	5223.01
PR. 84" RCP	PR. INLET NORTH OF SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	335	0.013	462	13.38	5226.12	5216.57	5222.46
	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK							5224.23	5214.89	5220.83
PR. 84" RCP	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK	Circular Pipe - 84.0 in	0.006	31	0.013	462	15.09	5224.23	5214.89	5220.53
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5220.1
PR. 84" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 84.0 in	0.009	32	0.013	393	16.57	5224.03	5210.5	5215.72
	PR. MH							5223.95	5210.22	5215.94
PR. 78" RCP	PR. MH	Circular Pipe - 78.0 in	0.01	505	0.013	393	17.57	5223.95	5210.22	5215.52
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.69
PR.72" RCP	PR. 45 DEGREE BEND AND 78" X 72" BHR	Circular Pipe - 72.0 in	0.012	257	0.013	443	15.67	5208.9	5199.5	5205.55
	SAN PEDRO SD OUTFALL AT I-25 AND ALAMEDA PLACE							5203.5	5196.43	5202.74
PR. 54" RCP	PR. SAN PEDRO & SIGNAL STUBOUT: Q100 = 165 CFS	Circular Pipe - 54.0 in	0.026	50	0.013	165	10.37	5233.2	5225.75	5230.6
	45 DEG BEND							5231.8	5224.36	5230.25
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.026	50	0.013	165	8.4	5231.8	5224.36	5229.89
	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL							5230.42	5222.97	5229.67
EX. 54" RCP	SAN PEDRO & ALAMEDA BLVD. STUBOUT: Q100 = 252 CFS	Circular Pipe - 54.0 in	0.034	50	0.013	252	15.84	5232.3	5223.36	5230.29
	45 DEG BEND							5230.1	5221.58	5229.47
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.034	50	0.013	252	12.83	5230.1	5221.58	5228.6
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 36" RCP	PR. SAN PEDRO & OAKLAND STUBOUT: Q100 = 45 CFS	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5230.6	5220.05	5224.6
	45 DEG BEND							5229.3	5218.67	5224.37
PR. 36" RCP	45 DEG BEND	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5229.3	5218.67	5224.15
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 72" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 72.0 in	0.02	5	0.013	325	(N/A)	5224.03	5210.5	(N/A)
	PR. MH							5224	5210.4	(N/A)
PR. 66" RCP	PR. MH	Circular Pipe - 66.0 in	0.019	334	0.013	325	20.9	5224	5210.4	5215.31
	CONNECTION TO EXISTING SD IN EAGLE ROCK							5212.65	5204.2	5207.75
PR. 78" RCP	PR. MH AT SAN PEDRO AND ALAMEDA PL.	Circular Pipe - 78.0 in	0.017	30	0.013	443	13.35	5221.4	5205	5211.75
	PR. 45 DEGREE BEND							5220	5204.5	5211.54
PR. 78" RCP	PR. 45 DEGREE BEND	Circular Pipe - 78.0 in	0.01	496.7	0.013	443	17.77	5220	5204.5	5210.07
	PR. 45 DEGREE BEND AND 78" X 72" BHR							5208.9	5199.5	5206.85
PR. 36" RCP	PROPOSED INTERCEPTION OF Q 100 = 50 CFS AT ALAMEDA	Circular Pipe - 42.0 in	0.01	50	0.013	50	10.44	5222	5211.5	5213.71
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.85
PR. 54 RCP	Q 100 = 256 INTERCEPTION AT EAGLE ROCK	Circular Pipe - 54.0 in	0.02	50	0.013	256	16.1	5226	5216	5220.62
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5219.77


SAN PEDRO DRIVE
MATCHLINE STA. 109+00.00 SEE SHEET 16
MATCHLINE STA. 111+00.00 SEE SHEET 18
POT-HOLE INFORMATION
CONSTRUCTION SURVEY POINTS
HGL=5223
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION
SAN PEDRO STORM DRAIN
SAN PEDRO DR. PLAN & PROFILE
STA. 109+00 TO 111+80
5304.91
C-18-Z
17
44



KEYED NOTES:

1. EXISTING DIRECT BURY TELEPHONE LINE TO BE REMOVED AND DISPOSED BY CENTURYLINK.
2. EXISTING 2-4" PVC FIBER OPTIC LINES TO BE RELOCATED BY CENTURYLINK.
3. EXISTING 2" PVC GAS LINE TO BE RELOCATED BY GAS CO. OF N.M.

POT-HOLE INFORMATION

NO.	ELEV. AT TOP OF PIPE	DESCRIPTION		
		UTILITY	MATERIAL	DIAMETER
PH-1	5230.33	FIBER OPT.	PVC	2-4"

NOTE:
HGL BASED ON DEVELOPED CONDITIONS WITH FUTURE STORM DRAIN SYSTEM CONSTRUCTED.

SCALE: 1" = 40'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc.

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY
INSPECTOR
NOTES/CHANGES BY
DATE
REVIEWED BY
DATE
ACCEPTANCE BY
DATE
CERTIFICATION BY
DATE
SIGNATURE BY
DATE
MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

BENCH MARKS
Coordinates shown hereon are modified (surface).
N.M. State Plane Coordinates - Central Zone.
NAD 83 and were derived by existing State Plane grid coordinates by the project average combined factor of CF = 1.0.....
an origin of 0,0. Elevations are NAVD 88, and are adjusted to the WCS Control Section "10-C18, 1985" (published elevation = 5222.090').
The coordinates and elevations are US Survey Feet.

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE
11599	SURVEYING CONTROL INC.	11-2010

ENGINEERS SEAL
DALTON G. THOMPSON NEW MEXICO 9677 LICENSED PROFESSIONAL ENGINEER
1-4-13

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY DBT DATE 12-2012
DRAWN BY DCM DATE 12-2012
CHECKED BY DBT DATE 12-2012

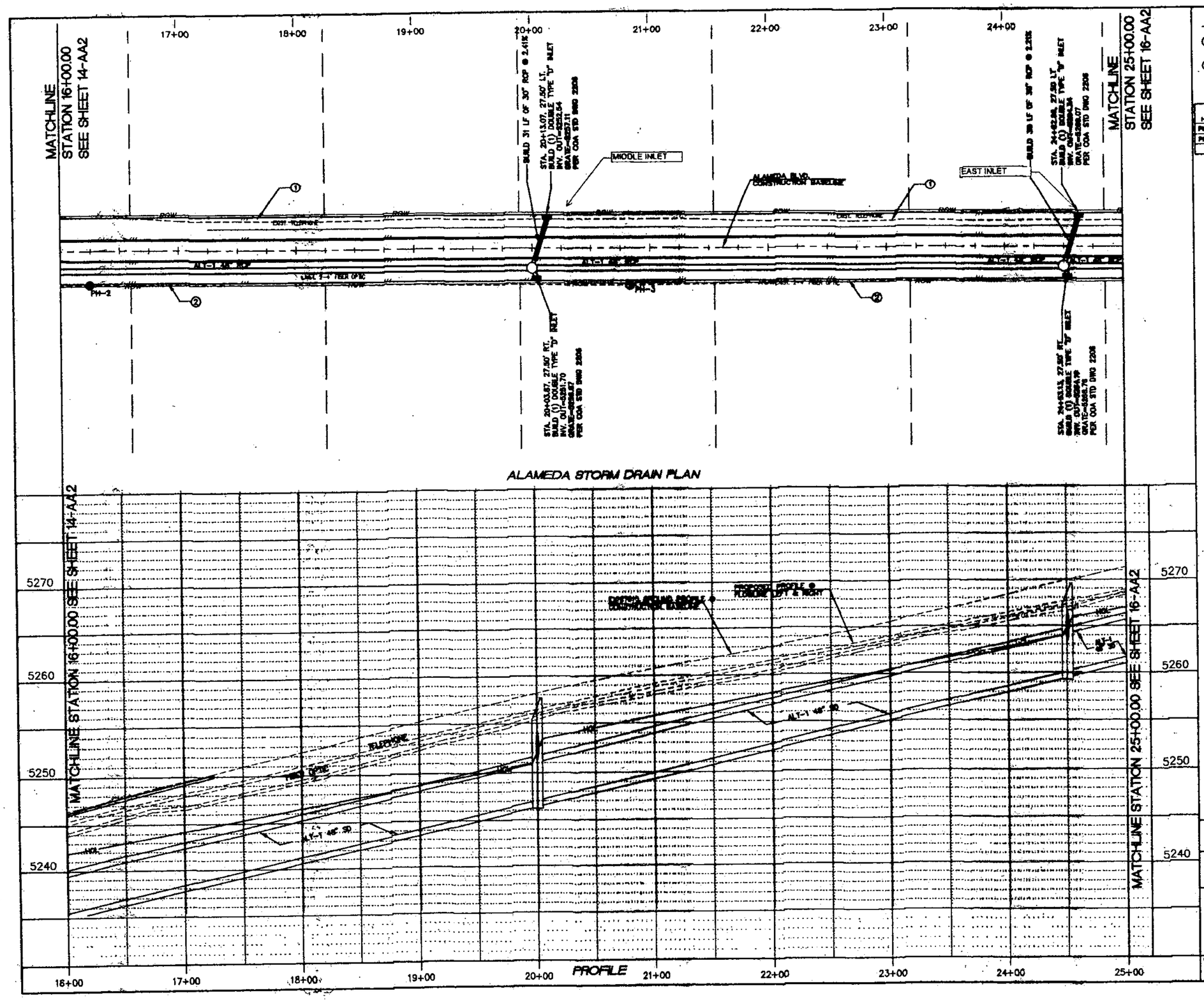
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TITLE: ALAMEDA BLVD. WIDENING

ALAMEDA STORM DRAIN PLAN AND PROFILE STA. 7+00.00 TO STA. 16+00

Design Review Committee: APPROVED JAN 23 2013 DESIGN REVIEW COMMITTEE
City Engineer Approval: APPROVED JAN 1 1 2013 CITY ENGINEER
Last Design Update

City Project No.	Zone Map No.	Sequence No.	Sheet	Of
768391	C-18/C-19	4-2	14-AA2	25



KEYED NOTES:

① EXISTING DIRECT BURY TELEPHONE LINE TO BE REMOVED AND DISPOSED BY CENTURYLINK.

② EXISTING 2-4" PVC FIBER OPTIC LINES TO BE RELOCATED BY CENTURYLINK.

POT-HOLE INFORMATION

NO.	ELEV. AT TOP OF PIPE	DESCRIPTION		
		UTILITY	MATERIAL	DIAMETER
PH-2	5248.79	FIBER OPT	PVC	2-4"
PH-3	5255.38	FIBER OPT	PVC	2-4"

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY DATE
FIELD VERIFIED BY DATE
DRAWINGS MARKED FOR REVISION BY DATE
FIELD TOPO CHK BY DATE
DWG'S CORRECTED BY DATE
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS
Coordinates shown hereon are modified (surface) Coordinates are NAD 83 and are adjusted to the NGS Control Station "16-C18, 1983" (published elevation = 5222.090'). The coordinates and elevations are US Survey Feet.

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE
11599	SURVEYING CONTROL INC.	11-2010

ENGINEERS SEAL
DUANE BRETT THOMPSON NEW MEXICO 9677 LICENSED PROFESSIONAL ENGINEER
14-13

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY DBT DATE 12-2012
DRAWN BY DEM DATE 12-2012
CHECKED BY DBT DATE 12-2012

SCALE: 1" = 40'
SCALE: 1" = 5'

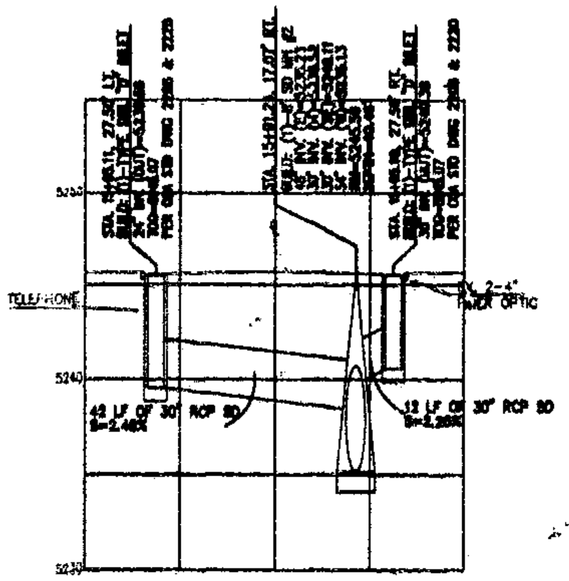
Thompson Engineering Consultants, Inc.
tecnm@yahoo.com

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

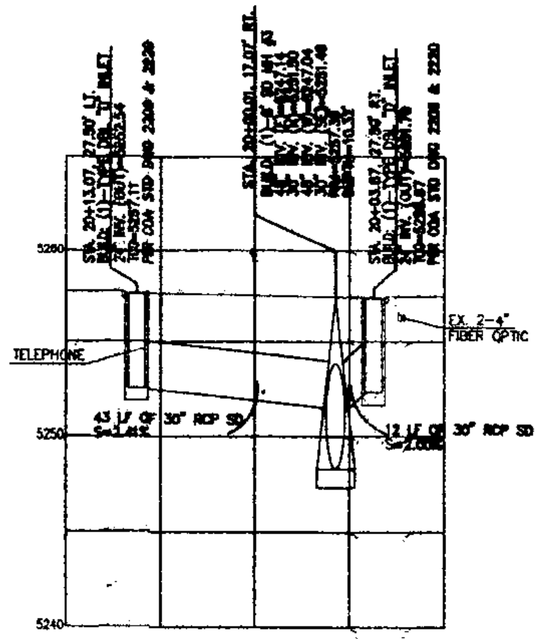
TITLE: ALAMEDA BLVD. WIDENING
ALAMEDA STORM DRAIN PLAN AND PROFILE STA. 16+00 TO STA. 25+00

Design Review Committee: APPROVED JAN 11 2013 DESIGN REVIEW COMMITTEE
City Engineer Approval: APPROVED JAN 11 2013 CITY ENGINEER
Last Design Update

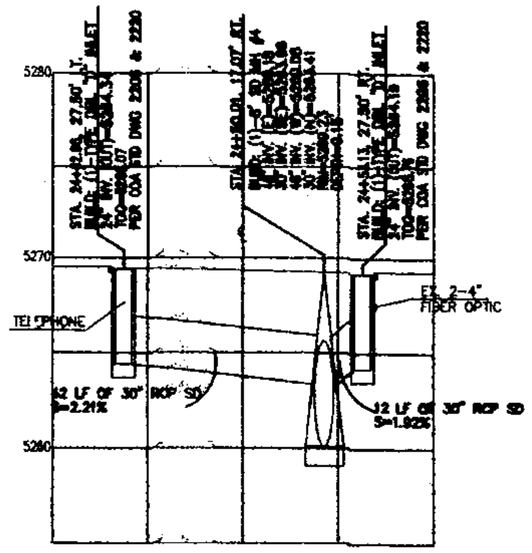
City Project No.	Zone Map No.	Sequence No.	Sheet	Of
766391	C-18/C-19	4-3	15-AA2	25



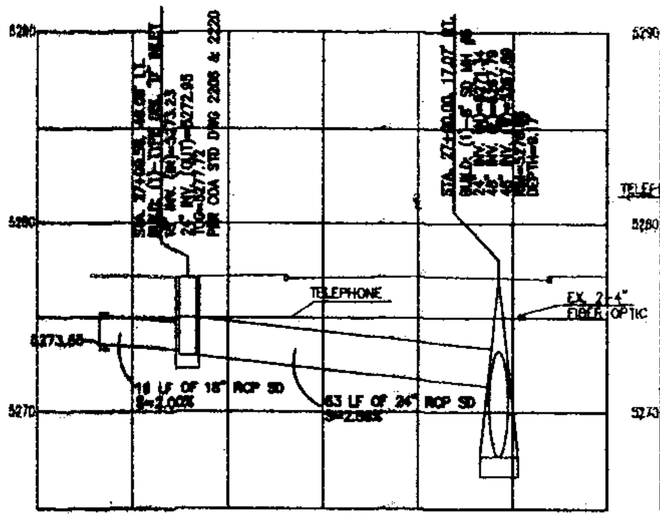
ALAMEDA STORM DRAIN LATERAL
STA. 15+91.24, 17.07' RT.



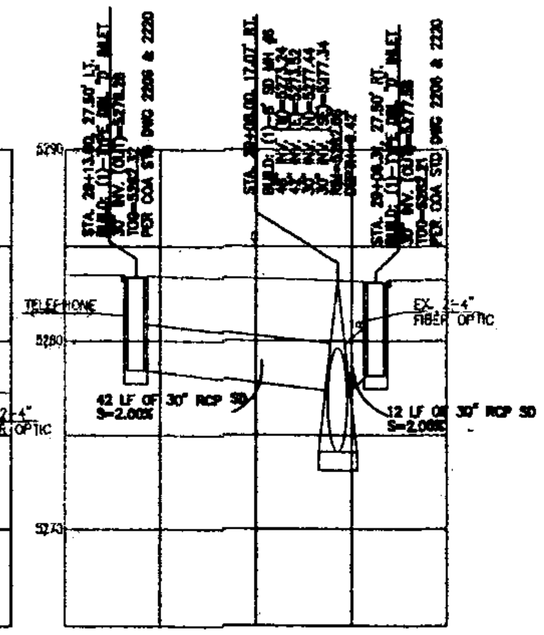
ALAMEDA STORM DRAIN LATERAL
STA. 20+00.01, 17.07' RT.



ALAMEDA STORM DRAIN LATERAL
STA. 24+50.01, 17.07' RT.



ALAMEDA STORM DRAIN LATERAL
STA. 27+00.00, 17.07' RT.



ALAMEDA STORM DRAIN LATERAL
STA. 29+08.00, 17.07' RT.

NOTE:
ALL LATERAL STORM DRAINS ARE CLASS IV.

SCALE: 1" = 20'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc

AS BUILT INFORMATION
CONTRACTOR
STAKED BY
INSPECTOR'S
PLANS REVIEWED BY
CHECKED BY
DATE
MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

BENCH MARKS
Coordinates shown hereon are modified (surface)
N.M. State Plane Coordinates – Central Zone, NAD 83 and were derived by scaling State Plane grid coordinates by the project average combined factor of GF = 1.0003546451 around an origin of 0,0. Elevations are NAVD 88, and are adjusted to the NGS Control Station "10-C18, 1985" (published elevation = 5222.090').
The coordinates and elevations are US Survey Feet.

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE
11599	SURVEYING CONTROL INC.	11-2010

ENGINEERS SEAL
DAVID BRYAN THOMPSON
NEW MEXICO
9677
LICENSED PROFESSIONAL ENGINEER
1-8-13

NO.	DATE	REMARKS	BY
		PREVISIONS	

DESIGN

DESIGNED BY	DBT	DATE 12-2012
DRAWN BY	DEM	DATE 12-2012
CHECKED BY	DBT	DATE 12-2012

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TITLE: ALAMEDA BLVD. WIDENING
LATERALS

Design Review Committee: APPROVED JAN 11 2013 DESIGN REVIEW COMMITTEE
City Engineer Approval: APPROVED JAN 11 2013 CITY ENGINEER
Last Design Update

City Project No.	Zone Map No.	Sequence No.	Sheet	Of
7663.91	C-18/C-19	4-5	17-AA2	25

APPENDIX B

SITE HYDROLOGY

Weighted E Method

EAGLE CREST

Existing Developed Basins

	Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	100-Year, 6-hr. Weighted E (ac-ft)	100-Year, 6-hr. Volume (ac-ft)	100-Year, 6-hr. Flow cfs	10-day Volume (ac-ft)	provided	total	
drains to oakland div	B1	61044	1.401	0%	0	10.0%	0.140	22.0%	0.3083	68%	0.953	1.981	0.231	6.21	0.358	0.000	15609.968	0.0%
	B2	4230	0.097	0%	0	10.0%	0.010	40.0%	0.03884	50%	0.049	1.788	0.014	0.40	0.021	0.000	912.27	0.0%
	B3	13645	0.313	0%	0	20.0%	0.063	24.0%	0.07518	56%	0.175	1.815	0.047	1.30	0.071	1565.000	3082.8603	50.8%
drains to oakland	G1	38271	0.879	0%	0	10.0%	0.088	22.0%	0.19329	68%	0.597	1.981	0.145	3.89	0.225	302.000	9786.5326	3.1%
	G2	3581	0.082	0%	0	30.0%	0.025	24.0%	0.01973	46%	0.038	1.671	0.011	0.32	0.016	252.000	718.3486	35.1%
	G3	3122	0.072	0%	0	40.0%	0.029	25.0%	0.01792	34%	0.024	1.493	0.009	0.26	0.012	530.000	529.93348	100.0%
	G4	5992	0.138	0%	0	15.0%	0.021	36.0%	0.04952	49%	0.067	1.759	0.020	0.56	0.029	0.000	1269.7048	0.0%
	G4A	3244	0.074	0%	0	25.0%	0.019	28.0%	0.02085	36%	0.027	1.441	0.009	0.25	0.013	252.000	545.20827	46.2%
	G5	2258	0.052	0%	0	48.0%	0.025	30.0%	0.01555	22%	0.011	1.348	0.006	0.18	0.007	537.000	319.8457	167.9%
	G6	18458	0.424	0%	0	26.0%	0.110	26.0%	0.11017	48%	0.203	1.707	0.060	1.69	0.087	2098.000	3807.5778	55.1%
	G7	8236	0.189	0%	0	10.0%	0.019	21.0%	0.03971	69%	0.130	1.991	0.031	0.84	0.049	0.000	2124.4076	0.0%
	G8	14425	0.331	0%	0	21.0%	0.070	25.0%	0.08279	54%	0.179	1.790	0.049	1.36	0.073	678.000	3190.4494	21.3%
	G8E	26480	0.608	0%	0	21.0%	0.128	25.0%	0.15197	54%	0.328	1.790	0.091	2.50	0.134	221.000	5856.714	3.8%
	O1W	5843	0.134	0%	0	18.0%	0.024	44.0%	0.05902	38%	0.051	1.630	0.018	0.52	0.025	100.000	1089.7195	9.2%
	O1E	9652	0.222	0%	0	14.0%	0.031	32.0%	0.07091	54%	0.120	1.816	0.034	0.93	0.049	100.000	2155.6133	4.6%
drains to alameda	R1	5710	0.131	0%	0	23.0%	0.030	24.0%	0.03146	53%	0.069	1.772	0.019	0.54	0.029	459.000	1246.6833	36.8%
	R2	12780	0.293	0%	0	23.0%	0.067	26.0%	0.07628	51%	0.150	1.751	0.043	1.19	0.063	641.000	2733.429	23.5%
	R3	4983	0.114	0%	0	10.0%	0.011	16.0%	0.0183	74%	0.085	2.045	0.019	0.52	0.031	0.000	1340.7592	0.0%
	R4	6059	0.139	0%	0	30.0%	0.042	22.0%	0.0306	48%	0.067	1.693	0.020	0.55	0.029	1250.000	1242.398	100.6%
	M1	767	0.018	0%	0	60.0%	0.011	40.0%	0.00704	0%	0.000	1.068	0.002	0.05	0.002	196.000	68.263	287.1%
	M2	1503	0.035	0%	0	40.0%	0.014	40.0%	0.0138	20%	0.007	1.356	0.004	0.12	0.005	210.000	209.919	100.0%
	M3E	58541	1.344	0%	0	13.0%	0.175	23.0%	0.3091	64%	0.860	1.927	0.216	5.84	0.330	543.000	14394.744	3.8%
	M3W	116701	2.679	0%	0	19.0%	0.509	16.0%	0.42865	65%	1.741	1.915	0.428	11.54	0.660	2501.000	28739.566	8.7%
	M4	5047	0.116	0%	0	58.0%	0.067	30.0%	0.03476	28%	0.032	1.581	0.015	0.46	0.020	1636.000	853.53182	191.6%
	M5	30725	0.705	0%	0	20.0%	0.141	24.0%	0.16928	56%	0.395	1.815	0.107	2.93	0.159	1492.000	6941.8017	21.5%
	DRAIN TO OAKLAND DIV	78919	1.812	0%	0	11.7%	0.2124977	23.3%	0.42233	65%	1.1769082	1.942	0.293	7.92	0.450	1565	19605.099	8.0%
	DRAIN TO OAKLAND	139562	3.204	0%	0	18.3%	0.5867674	26.0%	0.83142	55%	1.7768021	1.812	0.484	13.31	0.721	5070	31394.055	16.1%
	DRAIN TO ALAMEDA	242816	5.574	0%	0	19.1%	1.087169	20.1%	1.11929	61%	3.4063703	1.877	0.872	23.74	1.326	8927	57771.095	15.5%
	FLOW IN DEDICATED ALAMEDA	39422	0.905	0%	0	10.0%	0.091	20.0%	0.181	70%	0.634	2.002	0.151	4.04	0.235	0.000	0	0.0%
	FLOW IN DEDICATED OAKLAND	39422	0.905	0%	0	10.0%	0.091	20.0%	0.181	70%	0.634	2.002	0.151	4.04	0.235	0.000	0	
	TOTAL FLOW	540141	12.400		0	16.5%	2.047	22.1%	2.735	62%	7.627	1.888	1.951	53.05				
	ALLOWED PER NAADMP	540141	12.400		0	34.0%	4.2159766	16.0%	1.98399	50%	6.1999656	1.699	1.756	48.93				

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66	Qa= 1.87
Eb= 0.92	Qb= 2.6
Ec= 1.29	Qc= 3.45
Ed= 2.36	Qd= 5.02

PONDING PROVIDED	15562.000	11.87
FIRST FLUSH REQUIREMENT	9413.34285 CF	
FLOW RATE EXCEEDANCE	4.12 CFS	
REDUCTION FOR ROUTING AND PONDS	6.52 CFS	

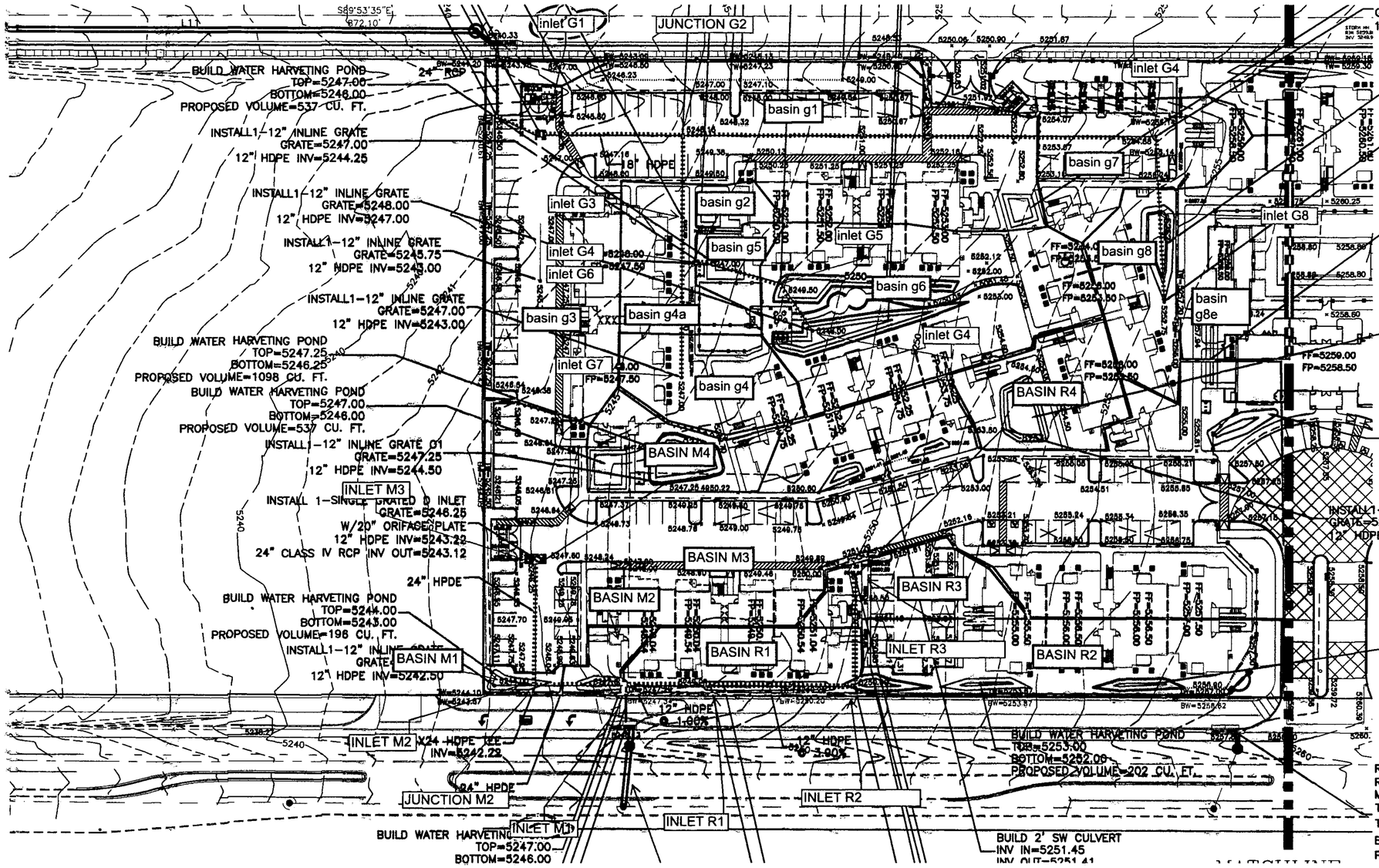
BASINS THAT RETAIN ALL FLOWS

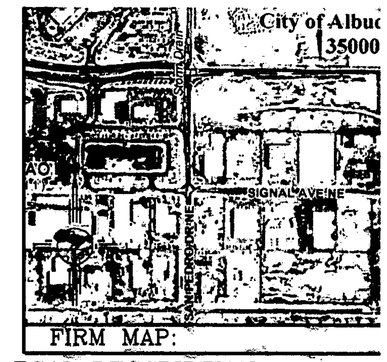
G3	0.26 CFS
G5	0.18 CFS
R4	0.55 CFS
M1	0.05 CFS
M2	0.12
M4	0.46 CFS
TOTAL	1.62 CFS

FLOW SUMMARY	PROPOSED FROM SITE	FROM ROADWAY	TOTAL	ALLOWED PER NAADMP
FLOW TO OAKLAND DIRVERSION	7.81	2.02	9.83	12.23
FLOW TO OAKLAND	11.42	2.02	13.44	12.23
FLOW TO ALAMEDA	19.23	4.04	23.27	24.46

ROAD FLOWS AT INLET	
EAST ALAMEDA*	3.40 CFS
MIDDLE ALAMEDA	3.4 CFS
WEST ALAMEDA	3.4 CFS
EAST OAKLAND	2.02 CFS
WEST OAKLAND	2.02 CFS

* STREET FLOWS IN ALAMEDA ARE BASED UPON FLOWS GENERATED BY OUR 10' LANE AND ASPHALT MULTIPLIED BY 2.5 TO ACCOUNT FOR 20' OF EX ASPHALT





FIRM MAP:

LEGAL DESCRIPTION:

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE EL NOTED.

2. ALL RETAINING WALL DESIGN SHALL BE BY OTH

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A PERMIT PRIOR TO BEGINNING WORK.

2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING CONSTRUCTION.

3. CONTRACTOR IS RESPONSIBLE FOR CLEANING AI INTO EXISTING RIGHT-OF-WAY.

4. REPAIR OF DAMAGED FACILITIES AND CLEANUP ACCUMULATIONS ON ADJACENT PROPERTIES AND IN RESPONSIBILITY OF THE CONTRACTOR.

5. ALL EXPOSED EARTH SURFACES MUST BE PROT WATER EROSION PRIOR TO FINAL ACCEPTANCE OF

LEGEND

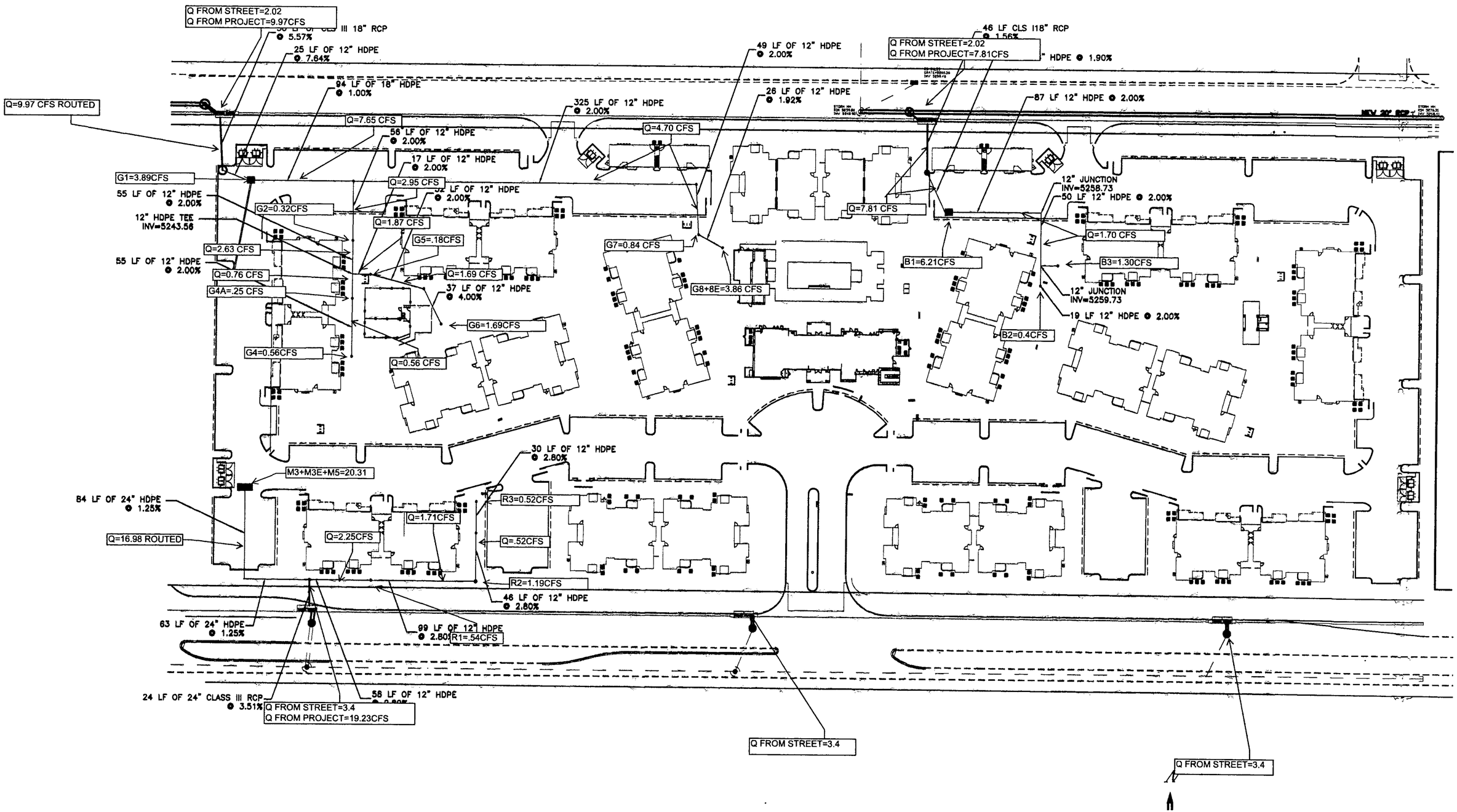
5414

5415

5414

5415

1
× 4048.25
1
× 4048.25



ONSITE STORM DRAIN MAP.

INSTALL 1-12" INLINE GRATE
GRATE=5263.24
12" HDPE INV=5257.94

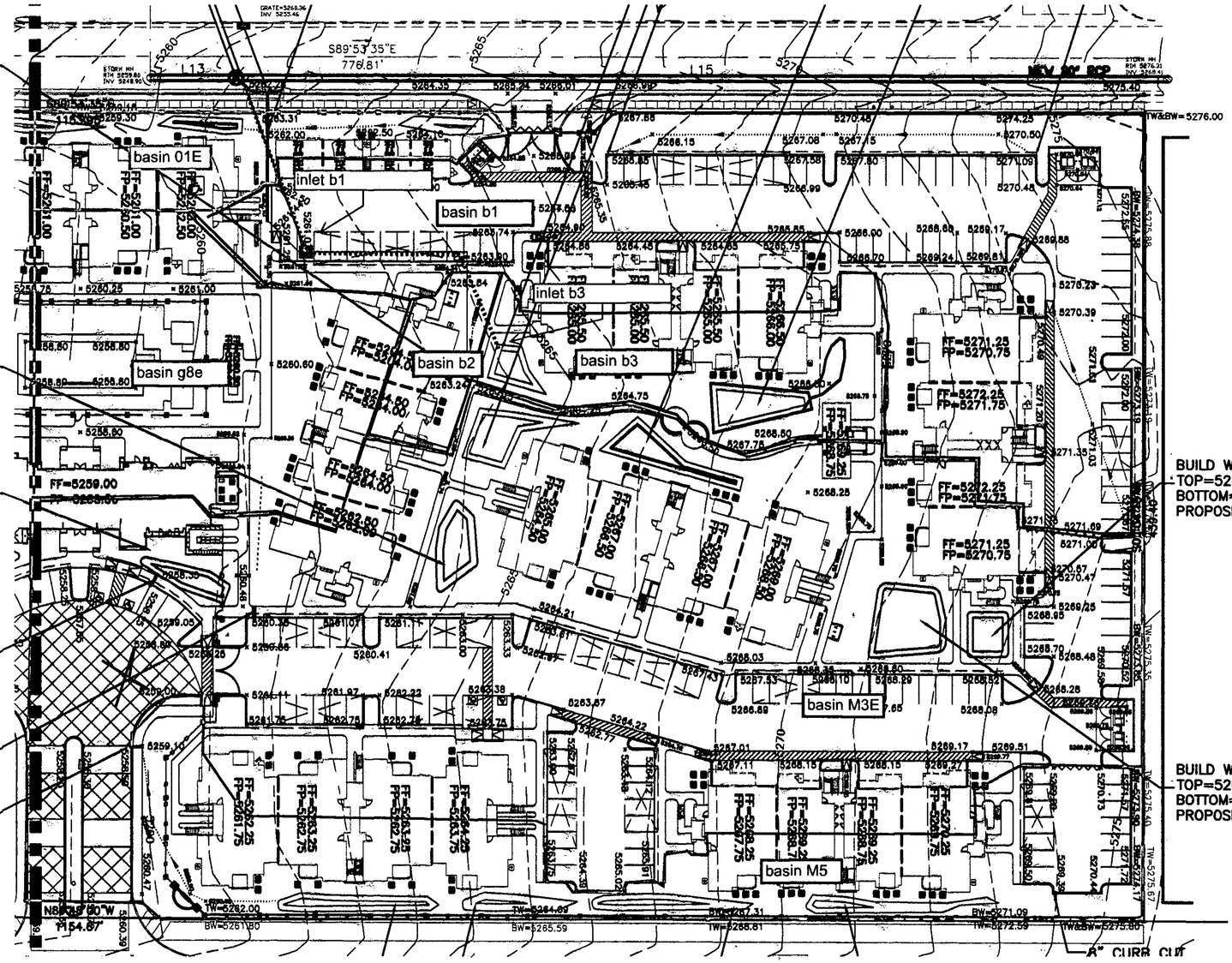
BUILD WATER HARVETING POND
TOP=5262.00
BOTTOM=5261.00
PROPOSED VOLUME=590 CU. FT.

BUILD WATER HARVETING POND
TOP=5258.35
BOTTOM=5257.35
PROPOSED VOLUME=343 CU. FT.

BUILD 2' SW CULVERT
INV IN=5258.35
INV OUT=5258.25
TSW=5258.75

BUILD 2' SW CULVERT
INV IN=5259.98
INV OUT=5259.88
TSW=5260.38

BUILD 2' SW CULVERT
INV IN=5259.98
INV OUT=5259.88
TSW=5260.38



BUILD WATER HARVETING POND
TOP=5269.00
BOTTOM=5268.00
PROPOSED VOLUME=418 CU. FT.

BUILD WATER HARVETING POND
TOP=5268.50
BOTTOM=5267.50
PROPOSED VOLUME=1231 CU. FT.

APPENDIX C

HYDRAULIC CALCULATIONS

DROP INLET CALCULATIONS

INLET	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
north	SINGLE	3.84	7.78	0.1771	1.75
south	DOUBLE	7.68	40.62	1.2066	1.75
east	SINGLE	3.84	12.42	0.4512	0.67

ORIFICE EQUATION

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

FLOW RATES ARE DOUBLED

Pipe Capacity

for all onsite pipes

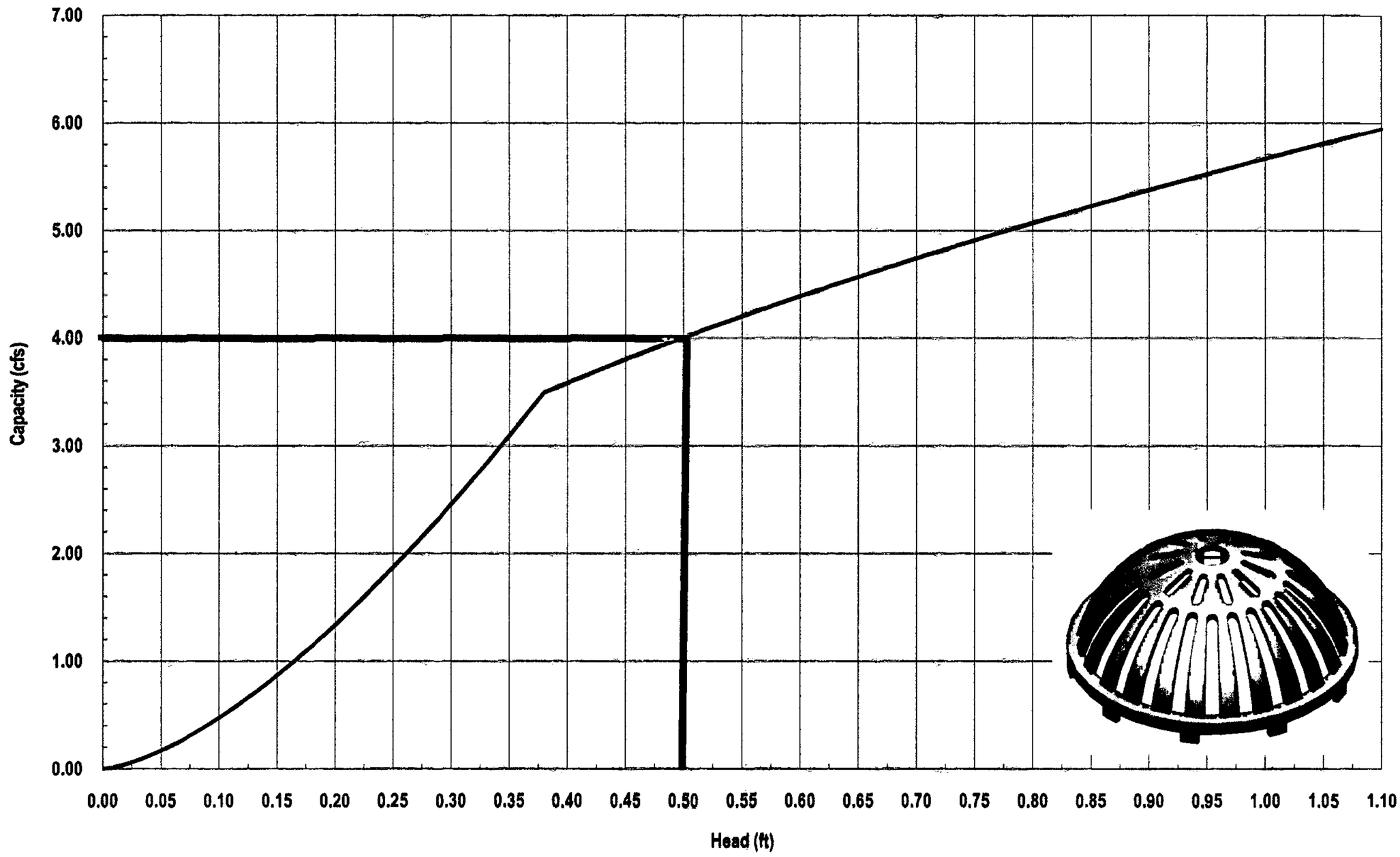
D	Slope	Area	R	Q Provided	Q Required	Velocity
(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
18	5.57	1.77	0.375	24.86	9.97	5.64
12	7.66	0.79	0.25	9.89	9.97	12.69
18	1	1.77	0.375	10.53	7.65	4.33
12	2	0.79	0.25	5.05	4.70	5.98
24	1.25	3.14	0.5	25.36	16.98	5.40
12	2.8	0.79	0.25	5.98	0.54	0.69
18	1.56	1.77	0.375	13.16	7.81	4.42
30	1	4.91	0.625	41.13	19.23	3.92

<u>Manning's Equation:</u>

Q = 1.49/n * A * R^(2/3) * S^(1/2)

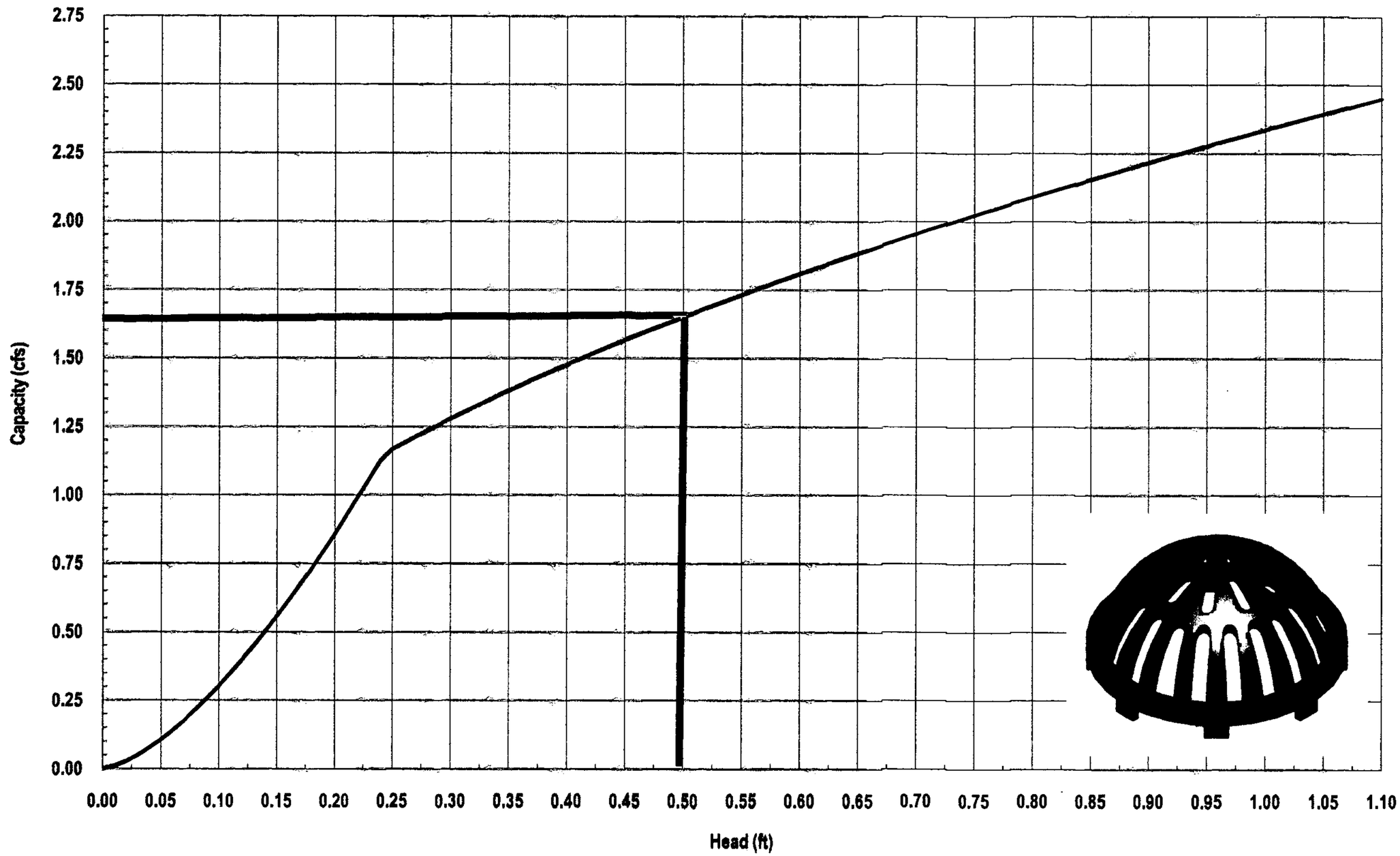
A = Area
R = D/4
S = Slope
n = 0.013

Nyloplast 18" Dome Grate Inlet Capacity Chart



Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490
© Nyloplast Inlet Capacity Charts June 2012

Nyloplast 12" Dome Grate Inlet Capacity Chart



Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490
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APPENDIX D

HYDRAULIC MODEL

```
*S      AHYMO - NORTH INLET
*S              POND ROUTING

START                 TIME=0.0  PUNCH CODE=0


RAINFALL              TYPE=2
                      QUARTER=0.0    ONE= 2.14 IN
                      SIX= 2.60 IN   DAY= 3.10 IN   DT = 0.05 HR



COMPUTE NM HYD        ID=1  HYD NO=101  DA= .004297 SQ MI
                      PER A=0  PER B=17.50  PER C=24.5  PER D=58

                      TP=-.145  MASSRAIN=-1


PRINT HYD             ID=1  CODE=3


* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR
ROUTE RESERVOIR       ID=2  HYD NO=102  INFLOW=1   CODE=3
                      OUTFLOW(CFS)    STORAGE(AC-FT)    ELEV(FT)
                         5.24             0.000        42.00
                         7.63             0.001        44.00
                         8.83             0.001        45.00

                         9.88             0.016        46.00
                         10.83            0.072        47.00



FINISH
```

NORTH POND OUTLET AHYMO.OUT

```
AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
     RUN DATE (MON/DAY/YR) = 09/11/2016
     START TIME (HR:MIN:SEC) = 19:45:15     USER NO.=
RioGrandeSingleA41963517
     INPUT FILE = \Owner\Desktop\2015 JOBS\15120-alameda
appartments\DRAINAGE\Npondrout0909 16.txt


*S      AHYMO - NORTH INLET
*S              POND ROUTING

START                TIME=0.0  PUNCH CODE=0


RAINFALL             TYPE=2
                     QUARTER=0.0    ONE= 2.14 IN
                     SIX= 2.60 IN   DAY= 3.10 IN   DT = 0.05 HR
```

24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1

DT = 0.050000 HOURS END TIME = 24.000002 HOURS

0.0000	0.0031	0.0062	0.0096	0.0133	0.0171	0.0214
0.0274	0.0368	0.0470	0.0575	0.0690	0.0807	0.0927
0.1052	0.1178	0.1320	0.1467	0.1627	0.1887	0.2196
0.2611	0.3081	0.3661	0.4435	0.5307	0.6811	0.9149
1.3155	1.5971	1.8192	1.9308	2.0287	2.0989	2.1549
2.2036	2.2393	2.2720	2.2991	2.3181	2.3331	2.3464
2.3590	2.3700	2.3804	2.3905	2.4002	2.4083	2.4129
2.4175	2.4219	2.4261	2.4303	2.4343	2.4383	2.4422
2.4459	2.4495	2.4531	2.4566	2.4601	2.4634	2.4667
2.4699	2.4731	2.4762	2.4792	2.4822	2.4851	2.4880
2.4909	2.4937	2.4965	2.4992	2.5019	2.5046	2.5072
2.5098	2.5124	2.5149	2.5175	2.5200	2.5224	2.5249
2.5273	2.5296	2.5320	2.5343	2.5366	2.5389	2.5412
2.5434	2.5456	2.5478	2.5500	2.5521	2.5542	2.5564
2.5584	2.5605	2.5626	2.5646	2.5666	2.5686	2.5706
2.5725	2.5745	2.5764	2.5783	2.5802	2.5821	2.5839
2.5858	2.5876	2.5894	2.5912	2.5930	2.5948	2.5965
2.5983	2.6000	2.6017	2.6035	2.6052	2.6069	2.6086
2.6104	2.6121	2.6138	2.6155	2.6172	2.6190	2.6207
2.6224	2.6241	2.6258	2.6275	2.6292	2.6309	2.6326
2.6343	2.6360	2.6377	2.6394	2.6411	2.6428	2.6445
2.6461	2.6478	2.6495	2.6512	2.6529	2.6545	2.6562
2.6579	2.6595	2.6612	2.6629	2.6645	2.6662	2.6679
2.6695	2.6712	2.6728	2.6745	2.6761	2.6778	2.6794
2.6811	2.6827	2.6844	2.6860	2.6876	2.6893	2.6909
2.6925	2.6942	2.6958	2.6974	2.6990	2.7007	2.7023
2.7039	2.7055	2.7071	2.7087	2.7104	2.7120	2.7136
2.7152	2.7168	2.7184	2.7200	2.7216	2.7232	2.7248
2.7264	2.7279	2.7295	2.7311	2.7327	2.7343	2.7359
2.7374	2.7390	2.7406	2.7422	2.7437	2.7453	2.7469
2.7484	2.7500	2.7516	2.7531	2.7547	2.7562	2.7578
2.7593	2.7609	2.7624	2.7640	2.7655	2.7671	2.7686
2.7701	2.7717	2.7732	2.7747	2.7763	2.7778	2.7793
2.7808	2.7824	2.7839	2.7854	2.7869	2.7884	2.7899
2.7915	2.7930	2.7945	2.7960	2.7975	2.7990	2.8005
2.8020	2.8035	2.8050	2.8065	2.8079	2.8094	2.8109
2.8124	2.8139	2.8154	2.8168	2.8183	2.8198	2.8213

2.8227	2.8242	2.8257	2.8271	2.8286	2.8301	2.8315
2.8330	2.8344	2.8359	2.8373	2.8388	2.8402	2.8417
2.8431	2.8446	2.8460	2.8474	2.8489	2.8503	2.8517
2.8532	2.8546	2.8560	2.8574	2.8589	2.8603	2.8617
2.8631	2.8645	2.8659	2.8674	2.8688	2.8702	2.8716
2.8730	2.8744	2.8758	2.8772	2.8786	2.8800	2.8813
2.8827	2.8841	2.8855	2.8869	2.8883	2.8897	2.8910
2.8924	2.8938	2.8952	2.8965	2.8979	2.8993	2.9006
2.9020	2.9033	2.9047	2.9061	2.9074	2.9088	2.9101
2.9115	2.9128	2.9141	2.9155	2.9168	2.9182	2.9195
2.9208	2.9222	2.9235	2.9248	2.9262	2.9275	2.9288
2.9301	2.9314	2.9328	2.9341	2.9354	2.9367	2.9380
2.9393	2.9406	2.9419	2.9432	2.9445	2.9458	2.9471
2.9484	2.9497	2.9510	2.9523	2.9536	2.9549	2.9561
2.9574	2.9587	2.9600	2.9612	2.9625	2.9638	2.9651
2.9663	2.9676	2.9689	2.9701	2.9714	2.9726	2.9739
2.9751	2.9764	2.9776	2.9789	2.9801	2.9814	2.9826
2.9839	2.9851	2.9863	2.9876	2.9888	2.9900	2.9912
2.9925	2.9937	2.9949	2.9961	2.9974	2.9986	2.9998
3.0010	3.0022	3.0034	3.0046	3.0058	3.0070	3.0082
3.0094	3.0106	3.0118	3.0130	3.0142	3.0154	3.0166
3.0178	3.0189	3.0201	3.0213	3.0225	3.0237	3.0248
3.0260	3.0272	3.0283	3.0295	3.0307	3.0318	3.0330
3.0341	3.0353	3.0364	3.0376	3.0387	3.0399	3.0410
3.0422	3.0433	3.0445	3.0456	3.0467	3.0479	3.0490
3.0501	3.0513	3.0524	3.0535	3.0546	3.0558	3.0569
3.0580	3.0591	3.0602	3.0613	3.0624	3.0635	3.0646
3.0658	3.0669	3.0680	3.0690	3.0701	3.0712	3.0723
3.0734	3.0745	3.0756	3.0767	3.0777	3.0788	3.0799
3.0810	3.0821	3.0831	3.0842	3.0853	3.0863	3.0874
3.0885	3.0895	3.0906	3.0916	3.0927	3.0937	3.0948
3.0958	3.0969	3.0979	3.0990	3.1000		

COMPUTE NM HYD ID=1 HYD NO=101 DA= .004297 SQ MI
PER A=0 PER B=17.50 PER C=24.5 PER D=58
TP=-.145 MASSRAIN=-1

K = 0.079025HR TP = 0.145000HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 9.0456 CFS UNIT VOLUME = 0.9989 B = 526.28 P60 = 2.1400
AREA = 0.002492 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.129687HR TP = 0.145000HR K/TP RATIO = 0.894390 SHAPE CONSTANT, N = 3.964006
UNIT PEAK = 4.3907 CFS UNIT VOLUME = 0.9979 B = 352.77 P60 = 2.1400
AREA = 0.001805 SQ MI IA = 0.41250 INCHES INF = 1.00500 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=1 CODE=3

PARTIAL HYDROGRAPH 101.00

TIME	FLOW	TIME	FLOW	TIME	FLOW

TIME HRS	FLOW HRS CFS	CFS	TIME HRS	FLOW HRS CFS	CFS	HRS	CFS
	0.000	0.0		4.950	0.0	9.900	0.1
14.850	0.0		19.800	0.0			
	0.150	0.0		5.100	0.0	10.050	0.1
15.000	0.0		19.950	0.0			
	0.300	0.0		5.250	0.0	10.200	0.1
15.150	0.0		20.100	0.0			
	0.450	0.0		5.400	0.0	10.350	0.1
15.300	0.0		20.250	0.0			
	0.600	0.0		5.550	0.0	10.500	0.1
15.450	0.0		20.400	0.0			
	0.750	0.0		5.700	0.1	10.650	0.1
15.600	0.0		20.550	0.0			
	0.900	0.3		5.850	0.1	10.800	0.1
15.750	0.0		20.700	0.0			
	1.050	0.6		6.000	0.1	10.950	0.0
15.900	0.0		20.850	0.0			
	1.200	1.3		6.150	0.1	11.100	0.0
16.050	0.0		21.000	0.0			
	1.350	3.5		6.300	0.1	11.250	0.0
16.200	0.0		21.150	0.0			
	1.500	11.4		6.450	0.1	11.400	0.0
16.350	0.0		21.300	0.0			
	1.650	7.8		6.600	0.1	11.550	0.0
16.500	0.0		21.450	0.0			
	1.800	3.7		6.750	0.1	11.700	0.0
16.650	0.0		21.600	0.0			
	1.950	2.0		6.900	0.1	11.850	0.0
16.800	0.0		21.750	0.0			
	2.100	1.2		7.050	0.1	12.000	0.0
16.950	0.0		21.900	0.0			
	2.250	0.7		7.200	0.1	12.150	0.0
17.100	0.0		22.050	0.0			
	2.400	0.5		7.350	0.1	12.300	0.0
17.250	0.0		22.200	0.0			
	2.550	0.3		7.500	0.1	12.450	0.0
17.400	0.0		22.350	0.0			
	2.700	0.2		7.650	0.1	12.600	0.0
17.550	0.0		22.500	0.0			
	2.850	0.1		7.800	0.1	12.750	0.0
17.700	0.0		22.650	0.0			
	3.000	0.1		7.950	0.1	12.900	0.0
17.850	0.0		22.800	0.0			
	3.150	0.1		8.100	0.1	13.050	0.0
18.000	0.0		22.950	0.0			
	3.300	0.1		8.250	0.1	13.200	0.0
18.150	0.0		23.100	0.0			
	3.450	0.0		8.400	0.1	13.350	0.0
18.300	0.0		23.250	0.0			
	3.600	0.0		8.550	0.1	13.500	0.0
18.450	0.0		23.400	0.0			
	3.750	0.0		8.700	0.1	13.650	0.0
18.600	0.0		23.550	0.0			
	3.900	0.0		8.850	0.1	13.800	0.0
18.750	0.0		23.700	0.0			
	4.050	0.0		9.000	0.1	13.950	0.0
18.900	0.0		23.850	0.0			
	4.200	0.0		9.150	0.1	14.100	0.0
19.050	0.0		24.000	0.0			
	4.350	0.0		9.300	0.1	14.250	0.0
19.200	0.0		24.150	0.0			

```
        4.500        0.0          9.450        0.1          14.400        0.0
19.350      0.0          24.300       0.0
        4.650        0.0          9.600        0.1          14.550        0.0
19.500      0.0          24.450       0.0
        4.800        0.0          9.750        0.1          14.700        0.0
19.650      0.0          24.600       0.0

      RUNOFF VOLUME =      2.16519 INCHES      =       0.4962 ACRE-FEET
      PEAK DISCHARGE RATE =      11.53 CFS  AT   1.550 HOURS   BASIN AREA =
0.0043 SQ. MI.


    * ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR
    ROUTE RESERVOIR      ID=2   HYD NO=102   INFLOW=1   CODE=3
                         OUTFLOW(CFS)    STORAGE(AC-FT)    ELEV(FT)
                         5.24            0.000             42.00
                         7.63            0.001             44.00
                         8.83            0.001             45.00
                         9.88            0.016             46.00
                         10.83           0.072             47.00


* * * * * * * * * * * * * * * * *

  TIME       INFLOW     ELEV       VOLUME     OUTFLOW
  (HRS)      (CFS)      (FEET)     (AC-FT)    (CFS)

   0.00       0.00      37.62      -0.002       0.00
   0.15       0.00      42.00       0.000       5.24
   0.30       0.00      42.00       0.000       5.24
   0.45       0.00      42.00       0.000       5.24
   0.60       0.00      42.00       0.000       5.24
   0.75       0.04      42.00       0.000       5.24
   0.90       0.28      42.00       0.000       5.24
   1.05       0.59      42.00       0.000       5.24
   1.20       1.25      42.00       0.000       5.24
   1.35       3.52      42.00       0.000       5.24
   1.50      11.45      45.64       0.011       9.51
   1.65       7.83      46.01       0.017       9.89
   1.80       3.68      42.00       0.000       5.24
   1.95       2.01      42.00       0.000       5.24
   2.10       1.16      42.00       0.000       5.24
   2.25       0.74      42.00       0.000       5.24
   2.40       0.51      42.00       0.000       5.24
   2.55       0.29      42.00       0.000       5.24
   2.70       0.19      42.00       0.000       5.24
   2.85       0.13      42.00       0.000       5.24
   3.00       0.09      42.00       0.000       5.24
   3.15       0.07      42.00       0.000       5.24
   3.30       0.06      42.00       0.000       5.24
   3.45       0.04      42.00       0.000       5.24
   3.60       0.04      42.00       0.000       5.24
   3.75       0.04      42.00       0.000       5.24
```

NORTH POND OUTLET AHYMO.OUT

3.90	0.04	42.00	0.000	5.24
4.05	0.04	42.00	0.000	5.24
4.20	0.04	42.00	0.000	5.24
4.35	0.04	42.00	0.000	5.24
4.50	0.04	42.00	0.000	5.24
4.65	0.04	42.00	0.000	5.24
4.80	0.04	42.00	0.000	5.24
4.95	0.04	42.00	0.000	5.24
5.10	0.05	42.00	0.000	5.24
5.25	0.05	42.00	0.000	5.24
5.40	0.05	42.00	0.000	5.24
5.55	0.05	42.00	0.000	5.24
5.70	0.05	42.00	0.000	5.24
5.85	0.05	42.00	0.000	5.24
6.00	0.05	42.00	0.000	5.24
6.15	0.06	42.00	0.000	5.24
6.30	0.05	42.00	0.000	5.24
6.45	0.06	42.00	0.000	5.24
6.60	0.06	42.00	0.000	5.24
6.75	0.06	42.00	0.000	5.24
6.90	0.05	42.00	0.000	5.24
7.05	0.05	42.00	0.000	5.24
7.20	0.05	42.00	0.000	5.24
7.35	0.05	42.00	0.000	5.24
7.50	0.05	42.00	0.000	5.24
7.65	0.05	42.00	0.000	5.24
7.80	0.05	42.00	0.000	5.24
7.95	0.05	42.00	0.000	5.24
8.10	0.05	42.00	0.000	5.24
8.25	0.05	42.00	0.000	5.24

```
PEAK DISCHARGE =          9.968 CFS - PEAK OCCURS AT HOUR    1.60
MAXIMUM WATER SURFACE ELEVATION =        46.093
MAXIMUM STORAGE =          0.0212 AC-FT       INCREMENTAL TIME=    0.050000HRS

FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 19:45:15
```

```
*S      AHYMO - SOUTH INLET
*S              POND ROUTING

START                 TIME=0.0  PUNCH CODE=0


RAINFALL              TYPE=2
                      QUARTER=0.0    ONE= 2.14 IN
                      SIX= 2.60 IN   DAY= 3.10 IN   DT = 0.05 HR



COMPUTE NM HYD        ID=1  HYD NO=101  DA= .0073875 SQ MI
                      PER A=0  PER B=17.4 PER C=19.2  PER D=63.4

                      TP=-.142  MASSRAIN=-1


PRINT HYD             ID=1  CODE=3


* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR
ROUTE RESERVOIR       ID=2  HYD NO=102  INFLOW=1   CODE=3
                      OUTFLOW(CFS)    STORAGE(AC-FT)    ELEV(FT)
                          7.37            0.000         44.00
                         11.26            0.001         45.00
                         14.11            0.001         46.25

                         16.48            0.014         46.50
                         17.54            0.062         47.00



FINISH
```

```
        AHYMO PROGRAM (AHYMO-S4)                        - Version: S4.01a - Rel: 01a
             RUN DATE (MON/DAY/YR) = 09/11/2016
             START TIME (HR:MIN:SEC) = 20:09:09         USER NO.=
RioGrandeSingleA41963517
             INPUT FILE = \Owner\Desktop\2015 JOBS\15120-alameda
appartments\DRAINAGE\Spondrout0909 16.txt


    *S      AHYMO - SOUTH INLET
    *S              POND ROUTING

    START                   TIME=0.0  PUNCH CODE=0


    RAINFALL                TYPE=2
                            QUARTER=0.0    ONE= 2.14 IN
                            SIX= 2.60 IN   DAY= 3.10 IN   DT = 0.05 HR
                     24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
                     DT =   0.050000 HOURS       END TIME =    24.000002 HOURS
                       0.0000  0.0031  0.0062  0.0096  0.0133  0.0171  0.0214
                       0.0274  0.0368  0.0470  0.0575  0.0690  0.0807  0.0927
                       0.1052  0.1178  0.1320  0.1467  0.1627  0.1887  0.2196
                       0.2611  0.3081  0.3661  0.4435  0.5307  0.6811  0.9149
                       1.3155  1.5971  1.8192  1.9308  2.0287  2.0989  2.1549
                       2.2036  2.2393  2.2720  2.2991  2.3181  2.3331  2.3464
                       2.3590  2.3700  2.3804  2.3905  2.4002  2.4083  2.4129
                       2.4175  2.4219  2.4261  2.4303  2.4343  2.4383  2.4422
                       2.4459  2.4495  2.4531  2.4566  2.4601  2.4634  2.4667
                       2.4699  2.4731  2.4762  2.4792  2.4822  2.4851  2.4880
                       2.4909  2.4937  2.4965  2.4992  2.5019  2.5046  2.5072
                       2.5098  2.5124  2.5149  2.5175  2.5200  2.5224  2.5249
                       2.5273  2.5296  2.5320  2.5343  2.5366  2.5389  2.5412
                       2.5434  2.5456  2.5478  2.5500  2.5521  2.5542  2.5564
                       2.5584  2.5605  2.5626  2.5646  2.5666  2.5686  2.5706
                       2.5725  2.5745  2.5764  2.5783  2.5802  2.5821  2.5839
                       2.5858  2.5876  2.5894  2.5912  2.5930  2.5948  2.5965
                       2.5983  2.6000  2.6017  2.6035  2.6052  2.6069  2.6086
                       2.6104  2.6121  2.6138  2.6155  2.6172  2.6190  2.6207
                       2.6224  2.6241  2.6258  2.6275  2.6292  2.6309  2.6326
                       2.6343  2.6360  2.6377  2.6394  2.6411  2.6428  2.6445
                       2.6461  2.6478  2.6495  2.6512  2.6529  2.6545  2.6562
                       2.6579  2.6595  2.6612  2.6629  2.6645  2.6662  2.6679
                       2.6695  2.6712  2.6728  2.6745  2.6761  2.6778  2.6794
                       2.6811  2.6827  2.6844  2.6860  2.6876  2.6893  2.6909
                       2.6925  2.6942  2.6958  2.6974  2.6990  2.7007  2.7023
                       2.7039  2.7055  2.7071  2.7087  2.7104  2.7120  2.7136
                       2.7152  2.7168  2.7184  2.7200  2.7216  2.7232  2.7248
                       2.7264  2.7279  2.7295  2.7311  2.7327  2.7343  2.7359
                       2.7374  2.7390  2.7406  2.7422  2.7437  2.7453  2.7469
                       2.7484  2.7500  2.7516  2.7531  2.7547  2.7562  2.7578
                       2.7593  2.7609  2.7624  2.7640  2.7655  2.7671  2.7686
                       2.7701  2.7717  2.7732  2.7747  2.7763  2.7778  2.7793
                       2.7808  2.7824  2.7839  2.7854  2.7869  2.7884  2.7899
                       2.7915  2.7930  2.7945  2.7960  2.7975  2.7990  2.8005
                       2.8020  2.8035  2.8050  2.8065  2.8079  2.8094  2.8109
                       2.8124  2.8139  2.8154  2.8168  2.8183  2.8198  2.8213
```

2.8227	2.8242	2.8257	2.8271	2.8286	2.8301	2.8315
2.8330	2.8344	2.8359	2.8373	2.8388	2.8402	2.8417
2.8431	2.8446	2.8460	2.8474	2.8489	2.8503	2.8517
2.8532	2.8546	2.8560	2.8574	2.8589	2.8603	2.8617
2.8631	2.8645	2.8659	2.8674	2.8688	2.8702	2.8716
2.8730	2.8744	2.8758	2.8772	2.8786	2.8800	2.8813
2.8827	2.8841	2.8855	2.8869	2.8883	2.8897	2.8910
2.8924	2.8938	2.8952	2.8965	2.8979	2.8993	2.9006
2.9020	2.9033	2.9047	2.9061	2.9074	2.9088	2.9101
2.9115	2.9128	2.9141	2.9155	2.9168	2.9182	2.9195
2.9208	2.9222	2.9235	2.9248	2.9262	2.9275	2.9288
2.9301	2.9314	2.9328	2.9341	2.9354	2.9367	2.9380
2.9393	2.9406	2.9419	2.9432	2.9445	2.9458	2.9471
2.9484	2.9497	2.9510	2.9523	2.9536	2.9549	2.9561
2.9574	2.9587	2.9600	2.9612	2.9625	2.9638	2.9651
2.9663	2.9676	2.9689	2.9701	2.9714	2.9726	2.9739
2.9751	2.9764	2.9776	2.9789	2.9801	2.9814	2.9826
2.9839	2.9851	2.9863	2.9876	2.9888	2.9900	2.9912
2.9925	2.9937	2.9949	2.9961	2.9974	2.9986	2.9998
3.0010	3.0022	3.0034	3.0046	3.0058	3.0070	3.0082
3.0094	3.0106	3.0118	3.0130	3.0142	3.0154	3.0166
3.0178	3.0189	3.0201	3.0213	3.0225	3.0237	3.0248
3.0260	3.0272	3.0283	3.0295	3.0307	3.0318	3.0330
3.0341	3.0353	3.0364	3.0376	3.0387	3.0399	3.0410
3.0422	3.0433	3.0445	3.0456	3.0467	3.0479	3.0490
3.0501	3.0513	3.0524	3.0535	3.0546	3.0558	3.0569
3.0580	3.0591	3.0602	3.0613	3.0624	3.0635	3.0646
3.0658	3.0669	3.0680	3.0690	3.0701	3.0712	3.0723
3.0734	3.0745	3.0756	3.0767	3.0777	3.0788	3.0799
3.0810	3.0821	3.0831	3.0842	3.0853	3.0863	3.0874
3.0885	3.0895	3.0906	3.0916	3.0927	3.0937	3.0948
3.0958	3.0969	3.0979	3.0990	3.1000		

COMPUTE NM HYD ID=1 HYD NO=101 DA= .0073875 SQ MI
PER A=0 PER B=17.4 PER C=19.2 PER D=63.4
TP=-.142 MASSRAIN=-1

K = 0.077390HR TP = 0.142000HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 17.358 CFS UNIT VOLUME = 0.9985 B = 526.28 P60 = 2.1400
AREA = 0.004684 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.128552HR TP = 0.142000HR K/TP RATIO = 0.905294 SHAPE CONSTANT, N = 3.913266
UNIT PEAK = 6.6520 CFS UNIT VOLUME = 0.9992 B = 349.35 P60 = 2.1400
AREA = 0.002704 SQ MI IA = 0.42131 INCHES INF = 1.02967 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=1 CODE=3

PARTIAL HYDROGRAPH 101.00

TIME	FLOW	TIME	FLOW	TIME	FLOW

TIME HRS	FLOW HRS CFS	CFS	TIME HRS	FLOW HRS CFS	CFS	HRS	CFS
	0.000	0.0		5.100	0.1	10.200	0.1
15.300	0.1		20.400	0.1			
	0.150	0.0		5.250	0.1	10.350	0.1
15.450	0.1		20.550	0.1			
	0.300	0.0		5.400	0.1	10.500	0.1
15.600	0.1		20.700	0.1			
	0.450	0.0		5.550	0.1	10.650	0.1
15.750	0.1		20.850	0.1			
	0.600	0.0		5.700	0.1	10.800	0.1
15.900	0.1		21.000	0.1			
	0.750	0.1		5.850	0.1	10.950	0.1
16.050	0.1		21.150	0.1			
	0.900	0.5		6.000	0.1	11.100	0.1
16.200	0.1		21.300	0.1			
	1.050	1.1		6.150	0.1	11.250	0.1
16.350	0.1		21.450	0.1			
	1.200	2.4		6.300	0.1	11.400	0.1
16.500	0.1		21.600	0.1			
	1.350	6.4		6.450	0.1	11.550	0.1
16.650	0.1		21.750	0.1			
	1.500	20.3		6.600	0.1	11.700	0.1
16.800	0.1		21.900	0.1			
	1.650	13.4		6.750	0.1	11.850	0.1
16.950	0.1		22.050	0.1			
	1.800	6.4		6.900	0.1	12.000	0.1
17.100	0.1		22.200	0.1			
	1.950	3.5		7.050	0.1	12.150	0.1
17.250	0.1		22.350	0.1			
	2.100	2.0		7.200	0.1	12.300	0.1
17.400	0.1		22.500	0.1			
	2.250	1.3		7.350	0.1	12.450	0.1
17.550	0.1		22.650	0.1			
	2.400	0.9		7.500	0.1	12.600	0.1
17.700	0.1		22.800	0.1			
	2.550	0.5		7.650	0.1	12.750	0.1
17.850	0.1		22.950	0.1			
	2.700	0.3		7.800	0.1	12.900	0.1
18.000	0.1		23.100	0.1			
	2.850	0.2		7.950	0.1	13.050	0.1
18.150	0.1		23.250	0.1			
	3.000	0.2		8.100	0.1	13.200	0.1
18.300	0.1		23.400	0.1			
	3.150	0.1		8.250	0.1	13.350	0.1
18.450	0.1		23.550	0.1			
	3.300	0.1		8.400	0.1	13.500	0.1
18.600	0.1		23.700	0.1			
	3.450	0.1		8.550	0.1	13.650	0.1
18.750	0.1		23.850	0.1			
	3.600	0.1		8.700	0.1	13.800	0.1
18.900	0.1		24.000	0.1			
	3.750	0.1		8.850	0.1	13.950	0.1
19.050	0.1		24.150	0.0			
	3.900	0.1		9.000	0.1	14.100	0.1
19.200	0.1		24.300	0.0			
	4.050	0.1		9.150	0.1	14.250	0.1
19.350	0.1		24.450	0.0			
	4.200	0.1		9.300	0.1	14.400	0.1
19.500	0.1		24.600	0.0			
	4.350	0.1		9.450	0.1	14.550	0.1
19.650	0.1		24.750	0.0			

4.500	0.1	9.600	0.1	14.700	0.1
19.800	0.1				
4.650	0.1	9.750	0.1	14.850	0.1
19.950	0.1				
4.800	0.1	9.900	0.1	15.000	0.1
20.100	0.1				
4.950	0.1	10.050	0.1	15.150	0.1
20.250	0.1				

RUNOFF VOLUME = 2.24744 INCHES = 0.8855 ACRE-FEET
PEAK DISCHARGE RATE = 20.34 CFS AT 1.500 HOURS BASIN AREA = 0.0074 SQ. MI.

* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR

ROUTE RESERVOIR ID=2 HYD NO=102 INFLOW=1 CODE=3

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)
7.37	0.000	44.00
11.26	0.001	45.00
14.11	0.001	46.25
16.48	0.014	46.50
17.54	0.062	47.00

* * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	42.11	-0.002	0.00
0.15	0.00	44.00	0.000	7.37
0.30	0.00	44.00	0.000	7.37
0.45	0.00	44.00	0.000	7.37
0.60	0.00	44.00	0.000	7.37
0.75	0.07	44.00	0.000	7.37
0.90	0.54	44.00	0.000	7.37
1.05	1.14	44.00	0.000	7.37
1.20	2.38	44.00	0.000	7.37
1.35	6.42	44.00	0.000	7.37
1.50	20.34	46.50	0.014	16.48
1.65	13.45	46.66	0.030	16.83
1.80	6.37	44.00	0.000	7.37
1.95	3.55	44.00	0.000	7.37
2.10	2.03	44.00	0.000	7.37
2.25	1.29	44.00	0.000	7.37
2.40	0.88	44.00	0.000	7.37
2.55	0.49	44.00	0.000	7.37
2.70	0.32	44.00	0.000	7.37
2.85	0.23	44.00	0.000	7.37
3.00	0.16	44.00	0.000	7.37
3.15	0.13	44.00	0.000	7.37
3.30	0.11	44.00	0.000	7.37
3.45	0.09	44.00	0.000	7.37

3.60	0.08	44.00	0.000	7.37
3.75	0.07	44.00	0.000	7.37
3.90	0.07	44.00	0.000	7.37
4.05	0.07	44.00	0.000	7.37
4.20	0.07	44.00	0.000	7.37
4.35	0.07	44.00	0.000	7.37
4.50	0.08	44.00	0.000	7.37
4.65	0.08	44.00	0.000	7.37
4.80	0.08	44.00	0.000	7.37
4.95	0.08	44.00	0.000	7.37
5.10	0.09	44.00	0.000	7.37
5.25	0.09	44.00	0.000	7.37
5.40	0.09	44.00	0.000	7.37
5.55	0.09	44.00	0.000	7.37
5.70	0.10	44.00	0.000	7.37
5.85	0.10	44.00	0.000	7.37
6.00	0.10	44.00	0.000	7.37
6.15	0.10	44.00	0.000	7.37
6.30	0.10	44.00	0.000	7.37
6.45	0.10	44.00	0.000	7.37
6.60	0.10	44.00	0.000	7.37
6.75	0.10	44.00	0.000	7.37
6.90	0.10	44.00	0.000	7.37
7.05	0.10	44.00	0.000	7.37
7.20	0.10	44.00	0.000	7.37
7.35	0.10	44.00	0.000	7.37
7.50	0.10	44.00	0.000	7.37
7.65	0.10	44.00	0.000	7.37
7.80	0.10	44.00	0.000	7.37
7.95	0.10	44.00	0.000	7.37
8.10	0.10	44.00	0.000	7.37
8.25	0.10	44.00	0.000	7.37

```
PEAK DISCHARGE =        16.976 CFS - PEAK OCCURS AT HOUR    1.60
MAXIMUM WATER SURFACE ELEVATION =       46.734
MAXIMUM STORAGE =         0.0364 AC-FT      INCREMENTAL TIME=    0.050000HRS

FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 20:09:09
```

VOLUME CALCULATIONS

SOUTH INLET

		ACTUAL ELEV.	DEPTH (FT)	AREA SF	VOLUME PER UNIT	VOLUME CUMULATIVE	VOLUME AC-FT	Q (CFS)
	inlet bottom	43.33	0.00	12.00	0	1	0.000	
OUTLET	POND OUTLET	43.50	0.00	12.0000	2.04	3.04	0.000	
		44.00	0.50	12.0000	6.0000	9.04	0.000	5.07
		45.00	1.50	12.0000	12.0000	21.04	0.000	7.37
		46.00	2.50	12.0000	12.0000	33.04	0.001	11.26
		46.25	3.50	12.0000	12.0000	45.04	0.001	14.11
		46.50	4.50	2275.0000	571.7500	616.79	0.014	16.48
		47.00	5.00	6054.0000	2082.2500	2699.04	0.062	17.54

<u>Orifice Equation</u>

Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	18
Area (ft^2)=	1.767145868
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

VOLUME CALCULATIONS

NORTH INLET

		ACTUAL ELEV.	DEPTH (FT)	AREA SF	VOLUME PER UNIT	VOLUME CUMULATIVI	VOLUME AC-FT	Q (CFS)
	inlet bottom	40.20	0.00	12.00	0	1	0.000	
OUTLET	POND OUTLET	40.50	0.00	12.0000	2.04	3.04	0.000	
		42.00	1.50	12.0000	6.0000	9.04	0.000	5.24
		43.00	2.50	12.0000	12.0000	21.04	0.000	6.21
		44.00	3.50	12.0000	12.0000	33.04	0.001	7.63
		45.00	4.50	12.0000	12.0000	45.04	0.001	8.83
		46.00	5.50	2565.0000	644.2500	689.29	0.016	9.88
		47.00	6.50	7285.0000	2462.5000	3151.79	0.072	10.83

<u>Orifice Equation</u>

Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	13
Area (ft^2)=	0.921752011

Abiel X. Carrillo

From: Abiel X. Carrillo
Sent: Tuesday, May 10, 2016 11:13 AM
To: 'David Soule'
Subject: RE: C18D064B - Legacy NAA Apartments - Stamp Date 3/25/2016

Sounds good, then the information provided in the Revised Version of the plan dated 4/8/2016, received by email 5/9/2016 is approved for Site Plan for Building Permit, with the understanding that the Building Permit approval will require a future re-submittal to address comments provided for that approval request.

Thanks,

Abiel Carrillo, PE, CFM

Principal Engineer - Hydrology
Planning Department
Development Review Services Division
City of Albuquerque
505-924-3986
acarrillo@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

From: David Soule [mailto:david@riograndeengineering.com]
Sent: Tuesday, May 10, 2016 11:09 AM
To: Abiel X. Carrillo
Subject: RE: C18D064B - Legacy NAA Apartments - Stamp Date 3/25/2016

yes please and thank you.
David

From: Abiel X. Carrillo [mailto:acarrillo@cabq.gov]
Sent: Tuesday, May 10, 2016 11:04 AM
To: David Soule
Subject: RE: C18D064B - Legacy NAA Apartments - Stamp Date 3/25/2016

Thanks, I know we are trying to get this one through, can I get your concurrence that the next iteration of the report will show how those inlets comply with the Alameda/Oakland masterplans, and that if in reviewing the report we need to change them again that your owner/architect is ok with coming back and amending the infrastructure list?

Abiel Carrillo, PE, CFM

Principal Engineer - Hydrology
Planning Department
Development Review Services Division
City of Albuquerque
505-924-3986
acarrillo@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

From: David Soule [mailto:david@riograndeengineering.com]
Sent: Monday, May 09, 2016 4:06 PM
To: Abiel X. Carrillo
Subject: RE: C18D064B - Legacy NAA Apartments - Stamp Date 3/25/2016

Abiel, please find the attached revised infrastructure list and site plan package, We have added additional inlets to the existing stubs and provided RCP to all the inlets in the right of way. We are having weekly design meeting with the architect so some of the grading will be slightly adjusted and we will submit the report in accordance with your additional comments below. Thank you very much
David Soule
Rio Grande Engineering
321.9099

From: Abiel X. Carrillo [mailto:acarrillo@cabq.gov]
Sent: Wednesday, May 04, 2016 2:56 PM
To: David Soule
Subject: RE: C18D064B - Legacy NAA Apartments - Stamp Date 3/25/2016

David,

So, per this morning, out of the list below (for Prelim Plat/SPBP) I struck the comments that have been addressed

Abiel Carrillo, PE, CFM

Principal Engineer - Hydrology
Planning Department
Development Review Services Division
City of Albuquerque
505-924-3986
acarrillo@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

From: Abiel X. Carrillo
Sent: Thursday, April 07, 2016 12:00 PM
To: David Soule
Cc: Cherne, Curtis
Subject: C18D064B - Legacy NAA Apartments - Stamp Date 3/25/2016

Mr. Soule,

This email is being sent in lieu of an attached comment letter in order to expedite the response for initial reviews. Responses to comments should continue to be included in the re-submittal. A reply to this email with responses to comments will not be considered a re-submittal.

Based on the information provided in your submittal received 3-24-2016, the above-referenced Grading and Drainage Report and Grading Plan cannot be approved for Preliminary Plat, Site Development for Building Permit, or Grading Permit. The plan can be approved for Site Plan for Subdivision, however, since it only involves the consolidation of the lots. The following sets of comments would need to be addressed prior to the applicable approval:

Preliminary Plat and Site Plan for Building Permit (DRB #1009881):

1. The Report (or a supplement) needs to show how the inlet types and sizes were selected along Alameda and Oakland. The Infrastructure List (which is tied to the SPBP) needs to reflect the sizes and types as well, since the work order involves removing and replacing inlets, and only installing a portion of the trunk along the frontage. Please find revised Infrastructure list showing the double C and single A inlet at each existing stub. ok

2. ~~The Drainage Plan should not rely on the proposed restriction of discharge to the adjacent property, even if it is currently owned by the same entity, and even though the overage is small. This is possible, but it appears to be much more feasible to reduce the peak discharge of this project below the allowable rate per the latest NAA Drainage Master Plan.~~

3. All pipes in the City Right of Way need to be either RCP or HPPP, the connection into the Oakland Ave Right of Way shows a 12" HDPE extension into the inlet. The attached plan has the corrected rcp within the right of way ok

4. ~~Show the diameter of all new and existing manholes (that are to be tied to) on Oakland and Alameda on the Plan.~~

PROVIDE IN A FUTURE SUBMITTAL :

Grading (ESC) Permit:

1. An Erosion and Sediment Control Plan needs to be approved by the City's Stormwater Quality Engineer.

2. Provide a Benchmark for the project.

3. There appears to be a disconnect between the information in the Grading Plan and the analysis completed in the Report.

4. Describe the check dams that are called out (dimensions, etc), or show a detail on the plan.

5. Show the modified grate detail (DWG #2220) on the plan since it is not published yet.

6. In general, the pipe layout consists of 12" diameter pipes; it is not clear that the interior inlets need to be 30" and/or Double D grated. up to them.

7. Provide a cross-section for the typical installation of the inline drains near the top of the first flush ponding areas. The typical detail provided is a general layout from the product catalog.

8. Clarify the distribution of discharge to the three outlet points by labeling the discharges on the Basin Map to facilitate future research of this project. Provide a full size Basin Map as a part of the Grading Plan. Provided

9. Consider using drop manholes just before the outlets instead of laying the entire interior pipe network so deep (8'+). It may be difficult for the Owner to maintain deep, 12" lines that have Tee connections. recommendation

10. If the project will be phased, provide a phasing plan. Not phased

11. Minor comments: address typos on the plan labels, label the street names on the exhibits; improve the quality of Sheet C3, the HGL exhibits in the report, and provide the full page of the city projects included. Most of these are not legible or difficult to relate to the Report/Plan.

Any question just let me know.

Will check the rest of the comments for CO..

Abiel Carrillo, P.E.

Principal Engineer - Hydrology
Planning Department
Development Review Services Division
City of Albuquerque
505-924-3986
acarrillo@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

LIGHTING LEGEND

- TYPE 'SA'. 18' TALL POLE LIGHT.
- TYPE 'SB'. 12' TALL POLE LIGHT.
- TYPE 'SC'. 7' TALL POLE LIGHT.
- TYPE 'SD'. LED UPLIGHT.
- TYPE 'SE'. CARPORT LIGHT.
- TYPE 'SF'. WALL SCONCE AT 6'-6" B.O.F. ADA COMPLIANT.
- TYPE 'SG'. 18' TALL POLE LIGHT.

B.O.F. – HEIGHT IS MEASURED FROM BOTTOM OF FIXTURE OR FIXTURE LENS TO ABOVE FINISHED FLOOR.

T.O.F. – HEIGHT MEASURED FROM TOP OF FIXTURE TO ABOVE FINISHED FLOOR.

DEVELOPMENT DATA

NET SITE AREA :

11.6221 ACRES (506,259 S.F.)

ZONING :

CURRENT: SU-2

BUILDING HEIGHT :

PROVIDED: 38 FEET

DENSITY :

PROPOSED: 19.96 DU/ACRE

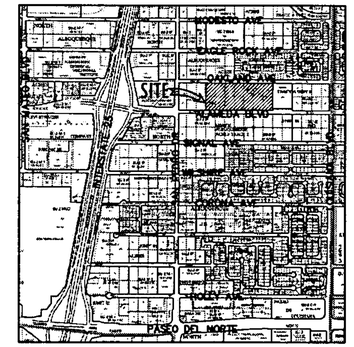
SETBACKS PROVIDED :

	REAR (N)	SIDE (W)	FRONT (S)	SIDE (E)
BUILDINGS	15'	50'	15'	50'
PARKING	22'	5'	15'	5'

UNIT MIX							
	UNIT TYPE						
	A1	A2	B1	C1	UNITS/ BLDG	NO. BLDGS	TOTAL UNITS
LIVABLE	719	874	1,033	1,220			
STORAGE	28		19	24			
PAT/BAL	65	35	67	57			
BLDG TYPE 1	12		8		20	2	40
BLDG TYPE 2	10		6		16	6	96
BLDG TYPE 3			12	8	20	3	60
BLDG TYPE 4			8	8	18	2	32
BLDG TYPE 5		2			2	2	4
TOTAL	84	4	104	40		15	232

MINIMUM ON-LOT USABLE OPEN SPACE REQUIRED AND PROVIDED				
	SF REQ. PER DU	# OF DU's	TOTAL SF REQUIRED	TOTAL SF PROVIDED
1 BEDROOM	400	88	35,200	
2 BEDROOM	500	104	52,000	
3 BEDROOM	600	40	24,000	
PROVIDED SITE OPEN SPACE				224,907
PROVIDED BALCONY PRIVATE OPEN SPACE				14,848
TOTAL (excess of 128,555 SF)		232	111,200	239,755

PARKING SPACE REQUIREMENTS		
	PARKING RATIO REQUIRED	PARKING SPACES
UNIT A1, A2 < 1,000 SF 84 – 1 BR / 1 BATH	1.5 / 1	132
UNIT B1 > 1,000 SF 104 – 2 BR / 2 BATH	2 / 2	208
UNIT C1 > 1,000 SF 40 – 3 BR / 2 BATH	2 / 2	80
Total Parking Spaces Required		420
OPEN PARKING PROVIDED		189
CARPORT PARKING PROVIDED		157
GARAGE PARKING PROVIDED		75
Total Parking Provided		421
Accessible Parking Required		12
OPEN ACCESSIBLE PARKING PROVIDED		7
CARPORT ACCESSIBLE PARKING PROVIDED		3
GARAGE ACCESSIBLE PARKING PROVIDED		2
Total Accessible Parking Provided		12
Bicycle Parking Required (1 SPACE FOR EVERY 2 DWELLING UNITS)		116
GARAGE		75
BICYCLE RACK		42
Total Bicycle Parking Provided		117



VICINITY MAP
NOT TO SCALE

PROJECT NUMBER:
Application Number:

This Plan is consistent with the specific Site Development Plan approved by the Environmental Planning Commission (EPC), dated _____ and the Findings and Conditions in the Official Notification of Decision are satisfied.

Is an Infrastructure List required? ( ) Yes ( ) No If yes, then a set of approved DRC plans with a work order is required for any construction within Public Right-of-Way or for construction of public improvements.

DRB SITE DEVELOPMENT PLAN SIGNOFF APPROVAL:

Traffic Engineering, Transportation Division	Date
ABCWUA	Date
Parks and Recreation Department	Date
City Engineer	Date
Solid Waste Management	Date
DRB Chairperson, Planning Department	Date

LEGACY NAA APARTMENTS

SAN PEDRO AND ALAMEDA
Albuquerque, New Mexico

Office of Rich Barber Architecture, LLC
ORB
WorldHQ@ORBArch.com

STATE OF NEW MEXICO
RICH BARBER
NO. 2295
REGISTERED ARCHITECT

PRELIMINARY
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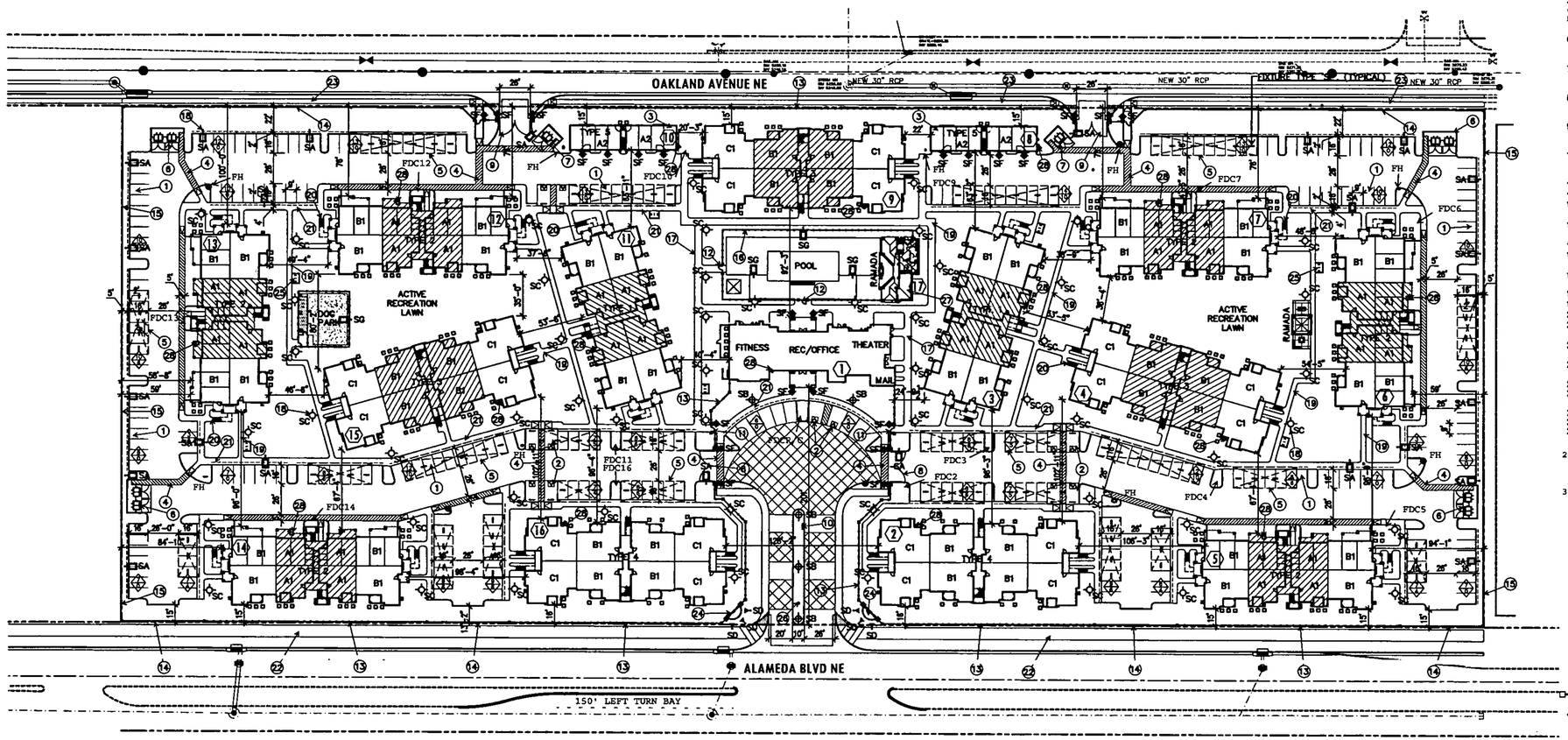
CONSTRUCTION

LHI
LEGACY HOSPITALITY



KEYNOTES ①

1. 9'x18' PARKING SPACE WITH 2' OVERHANG, TYPICAL, SEE DETAIL 01/A1.20.
2. 11'x18' ACCESSIBLE PARKING SPACE WITH 2' OVERHANG, SEE DETAIL 05/A1.20.
3. ACCESSIBLE GARAGE SPACE.
4. ACCESSIBLE DRIVEWAY CROSSING MARKING.
5. INDICATES LOCATION OF CARPORT PARKING STRUCTURE, SEE DET 08/A1.20.
6. DOUBLE TRASH ENCLOSURE SURROUNDED BY 6' CMU WALL PAINTED TO MATCH BUILDINGS, SEE DETAIL 13/A1.20.
7. SINGLE TRASH ENCLOSURE SURROUNDED BY 6' CMU WALL PAINTED TO MATCH BUILDINGS, SEE DETAIL 07/A1.20.
8. ELECTRONIC ENTRY GATE TO BE EQUIPPED FOR FIRE DEPARTMENT ACCESS, SEE DETAIL 28/A1.21.
9. RESIDENT ONLY REMOTE CONTROL ENTRY GATE TO BE EQUIPPED FOR FIRE DEPARTMENT ACCESS, SEE DETAIL 28/A1.21.
10. GATE CONTROL BOX AND SITE DIRECTORY MAP, SEE DETAIL 17/A1.21. PROVIDE KNOX BOX FOR FIRE DEPARTMENT ACCESS.
11. PEDESTRIAN ENTRY GATE, SEE DETAIL 23/A1.21.
12. POOL GATE, SEE DETAIL 24/A1.21.
13. WROUGHT IRON PERIMETER VIEW FENCE , SEE DETAIL 18 & 19/A1.21.
14. CMU/WROUGHT IRON COMBO PERIMETER FENCE, SEE DETAIL 27/A1.21.
15. CMU PERIMETER WALL, SEE DETAIL 16/A1.21.
16. WROUGHT IRON POOL FENCE, SEE DETAIL 19/A1.21.
17. 6' SIDEWALK CONNECTING TO EACH BUILDING AND TO PUBLIC WAYS.
18. SITE LIGHTING – SEE LIGHTING LEGEND.
19. 4' SIDEWALK, TYPICAL ON SITE.
20. 3'-6" SIDEWALK AT STAIR APPROACH, TYPICAL.
21. 6' SIDEWALK, TYPICAL AT PARKING, SEE DETAIL 09/A1.20.
22. 10' MULTI-USE ASPHALT TRAIL
23. 6' SIDEWALK DETACH 6' FROM STREET CURB AT OAKLAND AVE.
24. MONUMENT SIGN, SEE DETAIL 29/A1.21.
25. BICYCLE PARKING RACK FOR 6 BICYCLES, SEE DETAIL 30/A1.21.
26. FLAG POLE.
27. POOL EQUIPMENT AT POOL RAMADA.
28. FIRE RISER LOCATION, SEE BUILDING PLANS (ALL BUILDINGS SHALL HAVE PIV)
29. ALL IMPROVEMENTS LOCATED WITHIN PUBLIC RIGHT OF WAY MUST BE INCLUDED ON A WORK ORDER
30. LANDSCAPING, FENCING AND SIGNAGE WILL NOT INTERFERE WITH CLEAR SIGHT REQUIREMENTS, THEREFORE SIGNS, WALLS,TREES AND SHRUBBERY BETWEEN 3 AND 8 FEET AS MEASURED FROM GUTTER PAN WILL NOT BE ALLOWED WITHIN THE CLEAR SITE TRIANGLES

INDEX OF SHEETS
A110-SITE PLAN FOR BUILDING PERMIT
A120-SITE PLAN DETAILS
A121-SITE PLAN DETAILS
A314-BUILDING 1 ELEVATIONS
A324-BUILDING 2 ELEVATIONS
A334-BUILDING 3 ELEVATIONS
A343-BUILDING 4 ELEVATIONS
A352-BUILDING 5 ELEVATIONS
A512-REC BUILDING ELEVATIONS
LS101-LANDSCAPE PLAN
C1-GRADING SHEET 1
C2-GRADING SHEET 2
C3- GRADING DETAILS
C4-MASTER UTILITY SHEET 1
C5-MASTER UTILITY SHEET 2

LEGEND

- DENOTES PROPERTY LINE
- ① BUILDING NUMBER
- TYPE 2 BUILDING TYPE
- 10/6 NO. OF PARKING SPACES / NO. OF COVERED SPACES
- DENOTES ACCESSIBLE PARKING AND ANSI TYPE 'A' DWELLING UNIT
- FIRE HYDRANT

PRELIMINARY SITE PLAN

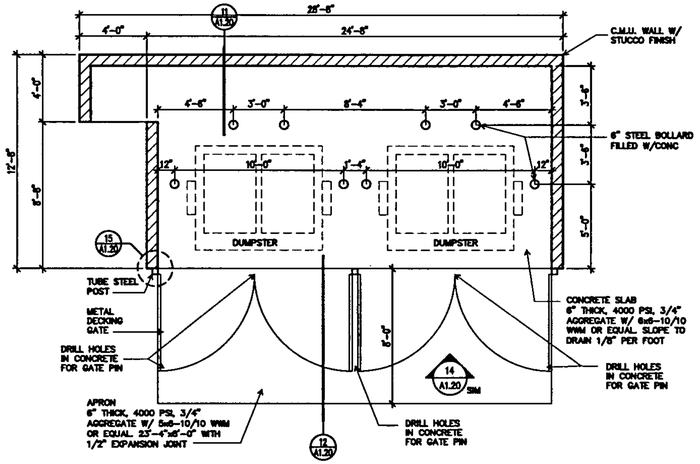
0 | 1 | 25' | 50' | 100'
SCALE: 1" = 50'-0"

DATE: APRIL 7, 2016 ORB # 15-218

A1.10

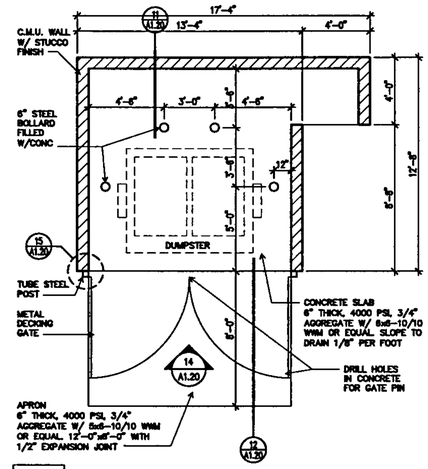
SITE PLAN
PRELIMINARY

FILE:T:\Orb\ORB Job Files\15-218 -LH_Legacy NAA\CAD Files\Preliminary\16xxx DRB 3rd Submittal\15218 A110 Site Plan.dwg USER:jca DATE:Apr. 07 2016 TIME: 11:09 am



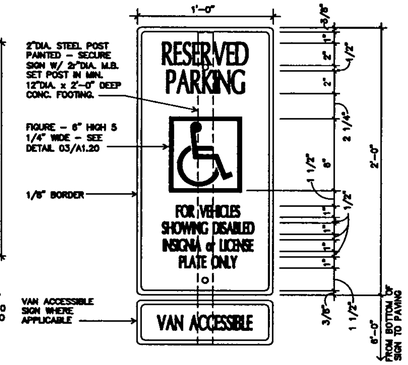
13 DOUBLE TRASH ENCLOSURE PLAN

SCALE: 1/4" = 1'-0"



07 SINGLE TRASH ENCLOSURE PLAN

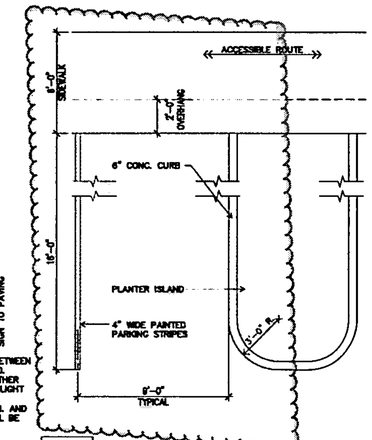
SCALE: 1/4" = 1'-0"



1. LETTERS AND NUMBERS ON SIGNS SHALL HAVE A WIDTH-TO-HEIGHT RATIO BETWEEN 3:5 AND 1:1 AND A STROKE WIDTH-TO-HEIGHT RATIO BETWEEN 1:5 AND 1:10.
2. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND – EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.
3. LETTERS AND NUMBERS ON SIGNS SHALL BE RAISED OR INCISED 1/32 IN. MIN. AND SHALL BE SANS SERIF CHARACTERS. RAISED CHARACTERS OR SYMBOLS SHALL BE AT LEAST 5/8 IN. HIGH, BUT NO HIGHER THAN 2 IN.

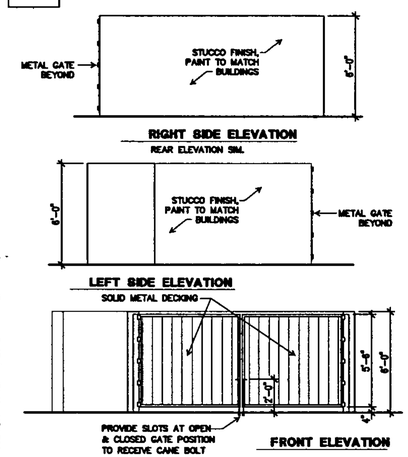
04 ACCESSIBLE PARKING SIGN

NOT TO SCALE



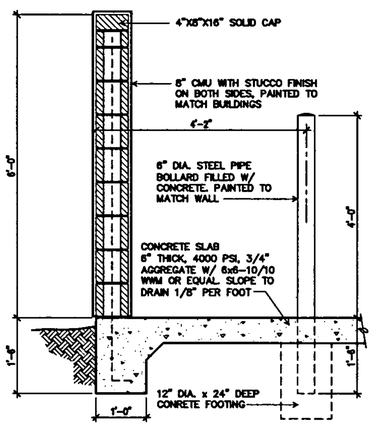
01 TYPICAL PARKING STALL WITH ISLAND

SCALE: 1/4" = 1'-0"



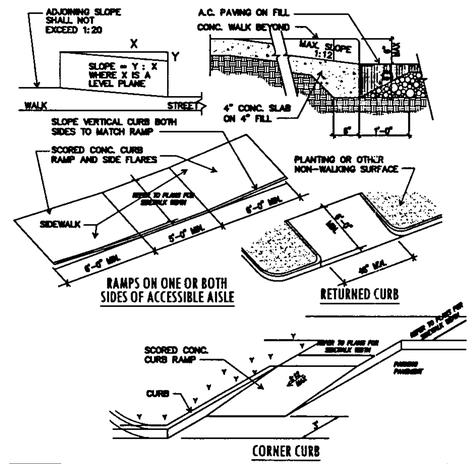
14 REFUSE ENCLOSURE ELEVATIONS

SCALE: 1/4" = 1'-0"



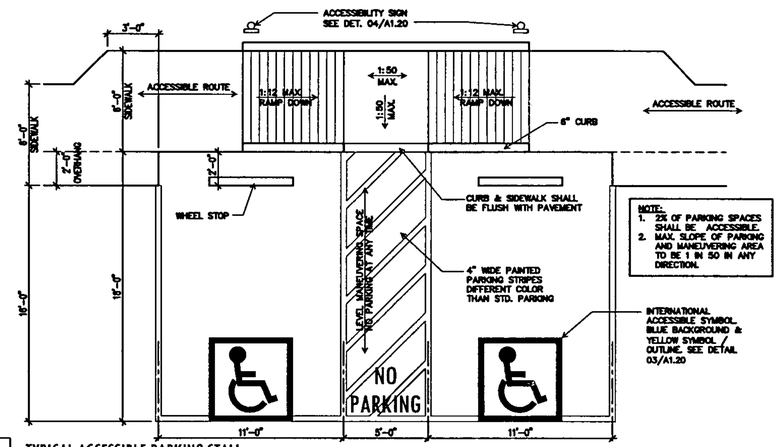
11 TRASH ENCLOSURE WALL

SCALE: 3/4" = 1'-0"



08 TYPICAL ACCESSIBLE RAMP

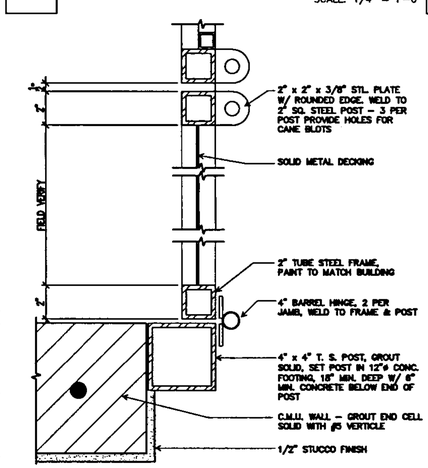
NOT TO SCALE



NOTE:
1. 2% OF PARKING SPACES SHALL BE ACCESSIBLE.
2. MAX. SLOPE OF PARKING AND MANEUVERING AREA TO BE 1 IN 50 IN ANY DIRECTION.

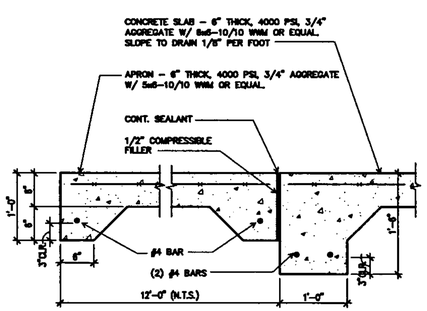
05 TYPICAL ACCESSIBLE PARKING STALL

SCALE: 1/4" = 1'-0"



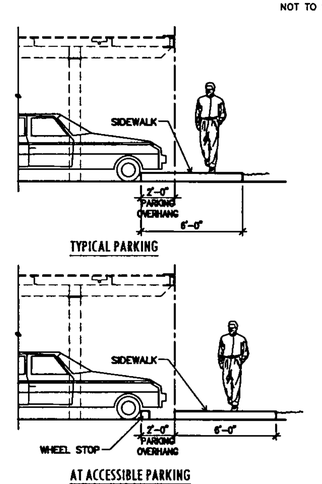
15 TRASH ENCLOSURE GATE

SCALE: 3" = 1'-0"



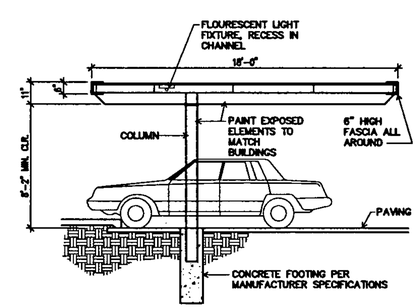
12 REFUSE ENCLOSURE SLAB JOINT

SCALE: 1" = 1'-0"



09 SIDEWALK AT PARKING

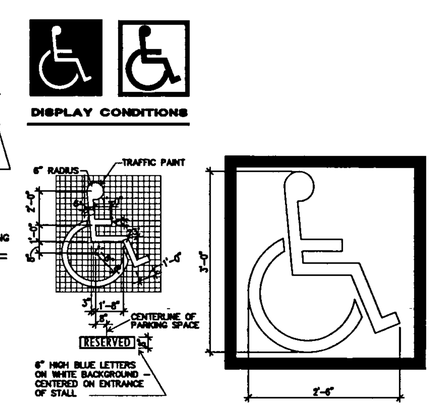
SCALE: 1/4" = 1'-0"



NOTES:
1. DESIGN TO BE COMPATIBLE WITH BUILDING IN COLOR AND DETAILING.
2. SHOP DRAWINGS AND CALCULATIONS REQUIRED TO BE DRAWN AND SEALED BY A REGISTERED STRUCTURAL ENGINEER.
3. CARPORT UNDER SEPARATE PERMIT AND REVIEW. – DETAIL FOR REFERENCE ONLY.

06 CARPORT DETAIL

SCALE: 1/4" = 1'-0"



03 INTERNATIONAL SYMBOL OF ACCESSIBILITY

NOT TO SCALE

LEGACY NAA APARTMENTS

SAN PEDRO AND ALAMEDA
Albuquerque, New Mexico

Office of Rich Barber Architecture, LLC
ORB
WorldHQ@ORBArch.com

STATE OF NEW MEXICO
RICH BARBER
NO. 2295
REGISTERED ARCHITECT

LHI
LEGACY HOSPITALITY

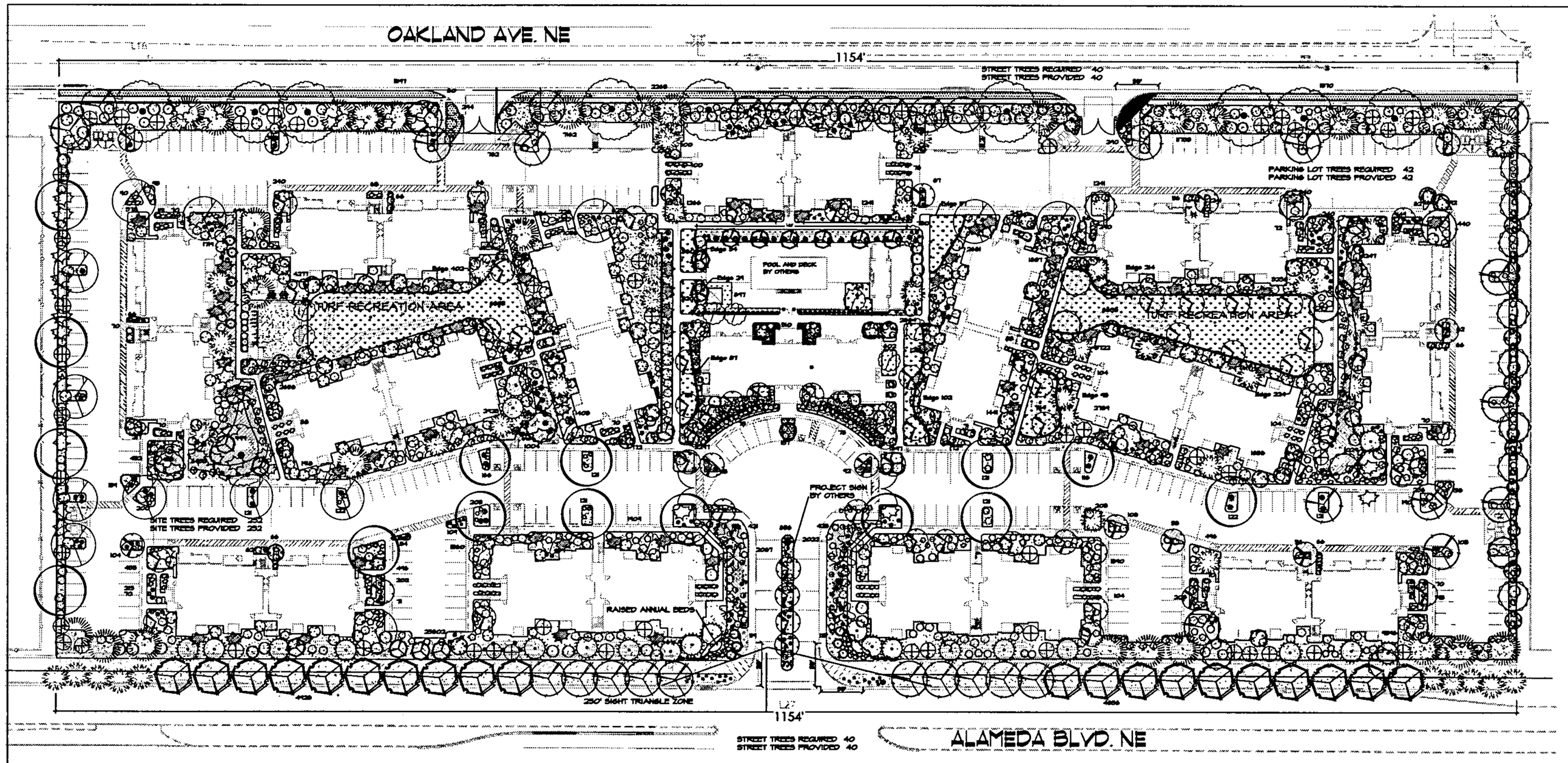
NOTES:
1. REFER TO STRUCTURAL DETAILS AND PLANS FOR STRUCTURAL RELATED INFORMATION. TYPICAL. THESE DRAWINGS ARE ARCHITECTURAL ONLY.
2. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION ON SPEDIFIC MATERIALS AND MANUFACTURERS.

DATE: MARCH 25, 2016 ORB # 15-218

A1.20

SITE DETAILS
01 - 15

FILE:T:\Orb\ORB Job Files\15-218 -LH_Legacy NAA\CAD Files\Preliminary\15xxxx DRB 2nd Submittal\15218 A120 Site Details.dwg USER:jse DATE:Mar, 23 2016 TIME: 01:45 pm



LANDSCAPE NOTES:
Landscape maintenance shall be the responsibility of the Property Owner. The Property Owner shall maintain street trees and shrubs in a living, healthy, and attractive condition.

Water management is the sole responsibility of the Property Owner. All landscaping will be in conformance with the City of Albuquerque Zoning Code. In general, water conservative, environmentally sound landscape principles will be followed in design and installation.

Gravel over Filter Fabric to a minimum depth of 3" shall be placed in all landscape areas.

IRRIGATION NOTES:
Irrigation system maintenance and operation shall be the sole responsibility of the owner. It shall be the owners responsibility to ensure that fugitive water does not leave the site due to overwatering.

Irrigation shall be a complete underground system with Trees to receive 1 Netafim spiral (50' length) with 3 loops at a final radius of 4.5' from tree trunk, pinned in place. Netafim shall have emitters 12" o.c. with a flow of .6 gph. Shrubs to receive (2) 1.0 GPH Drip Emitters. Drip and Bubbler systems to be tied to 1/2" polypipe with flush caps at each end.

Run time per each shrub drip valve will be approximately 15 minutes per day. Tree drip valve shall run 1.5 hours, 3 times per week. Run time will be adjusted according to the season.

Point of connection for irrigation system is unknown at current time and will be coordinated in the field. Irrigation will be operated by automatic controller.

Location of controller to be field determined and power source for controller to be provided by others.
Irrigation maintenance shall be the responsibility of the Property Owner.
Water and Power source shall be the responsibility of the Developer/Builder.

LANDSCAPE CALCULATIONS

TOTAL LOT AREA (sf)	11.6221 AC (506,254)
TOTAL BUILDING AREA (sf)	131,470
NET LOT AREA (sf)	374784
LANDSCAPE REQUIREMENT	X .15
TOTAL LANDSCAPE REQUIRED (15%)	56218
TOTAL LANDSCAPE PROVIDED	141242
TOTAL XERISCAPE AREA	110738
TOTAL TURF	20504
TOTAL GROUNDCOVER REQ'D 75%	143431
TOTAL GROUND COVER PROVIDED	150280

LANDSCAPE LEGEND

QTY	SIZE	COMMON/BOTANICAL	Height/spread	H20 USE	
Trees					
15	2" cal	Honey Locust *Gleditsia triacanthos*	50x45	2025	30375 M
22	2" cal	Urbanite Ash *Fraxinus 'Urbanite'*	55x25	625	13750 M+
13	2" cal	Chinese Pistache *Pistacia chinensis*	40x35	2327.5	11025 M+
10	2" cal	Bur Oak *Quercus macrocarpa*	50x45	2025	20250 M
73	15 gal	Prairifire Crabapple *Malus 'Prairifire'*	20x20	400	29200 M
64	2" cal	Chanticleer Pear *Pyrus 'Chanticleer'*	20x15	400	21600 M
54	2" cal	Purple Leaf Plum *Prunus cerastifera*	20x20	400	13600 M
40	4 - 6'	Pinon *Pinus edulis*	30x20	400	16000 M
29	8-10'	Austrian Pine *Pinus nigra*	50x30	900	26100 M
22	8-10'	Wichita Blue Juniper *Juniperous virginiana*	55x25	625	13750 M
23	15 Gal.	Oklahoma Redbud *Cercis reniformis*	15x12	144	3312 M
4	4 - 6'	Palm Yucca *Yucca faxoniana*	15x6	90	180 M
350	Total Trees				205142

Shrubs & Groundcovers

84	15 Gal	Flameleaf Sumac *Rhus copallina var. latifolia*	10x15	225	20025	L
24	15 Gal	Desert Willow *Multi-Trunk Chilopsis linearis*	20x25	625	15000	M
6	15 Gal	Vitex *Multi-Trunk Vitex agnus-castus*	20x20	625	3750	M
123	1 Gal	Spanish Broom *Genista hispanica*	6x6	64	7872	L
64	1 Gal	Apache Plume *Fallugia paradoxa*	6x7	49	3136	L
36	1 Gal	Winter Jasmine *Jasminum nudiflorum*	4x12	144	5352	M
82	5 Gal	Buffalo Juniper *Juniperus sabina 'Buffalo'*	1x12	144	11808	M
64	1 Gal	Fern Bush *Chamaebatiaria millefolium*	5x6	36	2484	L
57	5 Gal	Nanking Cherry *Prunus tomentosa*	12x12	144	8208	M
84	5 Gal	Red Cloistberry *Cotoneaster parneyii*	6x10	100	8400	M
28	1 Gal	Mugo Pine *Pinus mugo mugo*	6x6	36	1008	M
41	5 Gal	India Hawthorne *Raphiolepis indica*	5x5	25	1025	M
275	1 Gal	Purple Leaf Sandcherry *Prunus cistena*	6x6	36	9900	M
167	1 Gal	Lion Gren Sumac *Rhus aromatica*	6x6	36	6084	L
240	1 Gal	Rock Cotoneaster *Cotoneaster dammeri*	2x7	14	1760	M
16	1 Gal	Banana Yucca *Yucca baccata*	2x4	16	256	M
36	1 Gal	Wintergreen Boxwood *Buxus microphyllia 'Winter Gem'*	6x6	36	1368	M
18	1 Gal	Blue Rug Juniper *Juniper orientalis*	6'x2'	64	1152	L
61	1 Gal	Brakelights Red Yucca *Hesperaloe parviflora*	5x3	6	256	L
54	5 Gal	Barberry Sedona Red *Berberis thunbergii atropurpurea'*	2x2	4	216	L
248	5 Gal	Carpet Rose 'Amber' *Rosa*	1x3	6	1788	M
81	1 Gal	Blue Mist *Caryopteris x clandonensis*	3x3	9	729	M
42	1 Gal	Desert Sage *Salvia darri 'darri'*	2x2	4	168	M
18	1 Gal	Day Lilly *Hemerocallis 'Stella d'Oro'*	1.5x1.5	9	54	L
35	1 Gal	Cherry Sage *Salvia greggii*	2x3	9	315	M
54	1 Gal	Maiden Hair Grass *Miscanthus sinensus 'gracillimus'*	3x2	4	216	L
66	1 Gal	Shenandoah Switch Grass *Panicum virgatum 'Shenandoah'*	3x3	9	594	L
40	1 Gal	Blue Grama Grass *Bouteloua gracilis Blonde Ambition*	2x1	1	40	L
80	1 Gal	Karl Foerster Grass *Calamogrostis arudinacea*	2.5x3	9	720	M
14	1 Gal	Halls Honeysuckle vine *Lonicera japonice 'Halliana'*	17' o.c.	144	2016	L
526 SF	24" OC	Yellow Iceplant *Delosperma*	6"x24"	4	526	M
	53					
total plants	2429					

Live Veg. Cover	129716
TURF	20504
	150280

20504	SOD- ALBUQUERQUE BLEND	
135446	Landscape Gravel / Filter Fabric 3/4" Crushed Gray/Filter Fabric	
27512	Landscape Gravel / Filter Fabric Santa Fe Brown / Filter Fabric.	
4050	Landscape Gravel / Filter Fabric 2-4" Gray/Filter Fabric	
5148	Landscape Gravel / Filter Fabric 1-2" Gray/Filter Fabric	
141242	Total Landscape Area	

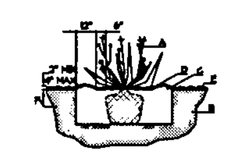
1218	lf	Steel Edging Mon Strip
45		Boulders 2-5ct To be placed at contractor discretion

GRAPHIC SCALE
50' 25' 0 25' 50'
SCALE: 1" = 50'-0"

TREE PLANTING DETAIL
NTS

GENERAL NOTES:
1. MULCH SHALL BE PLACED ON UNDISTURBED SOIL TO PREVENT TREE FROM SETTLING.
2. TOP OF ROOTBALL IS INDICATED LEVEL. AT MACH TREE PAR GROW AND USE, THIS REPRESENTS THE LEVEL AT MACH THE TREE SHOULD BE INSTALLED. THAT LEVEL MAY BE EXCEEDED BY ONLY A ONE INCH LAYER OF SOIL.
3. PRIOR TO BACKFILLING TREE, ALL WIRE, ROPE AND SYNTHETIC MATERIALS SHALL BE REMOVED FROM THE TREE AND THE PLANTING PIT.
4. PRIOR TO BACKFILLING ALL BURLAP SHALL BE CUT AWAY EXCEPT FROM BOTTOM OF THE ROOTBALL.

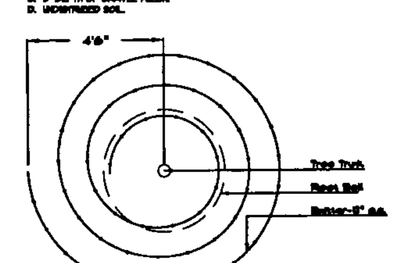
CONSTRUCTION NOTES:
A. TREE
B. BACKFILL WITH EXISTING SOIL.
C. 3" DEPTH OF GRAVEL MULCH.
D. UNDISTURBED SOIL.



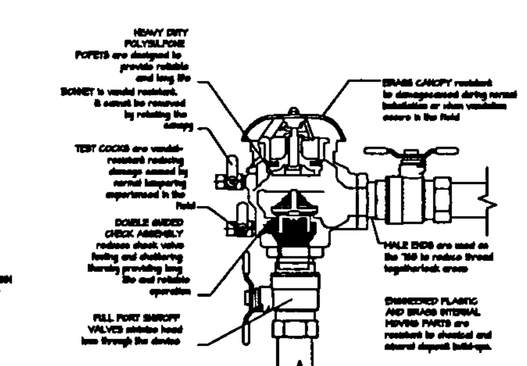
SHRUB PLANTING DETAIL
NTS

GENERAL NOTES:
1. THE OPENING DIAMETER OF THE WATER RETENTION BASIN SHALL BE TWICE THE DIAMETER OF THE SHRUB PLANTING PIT.

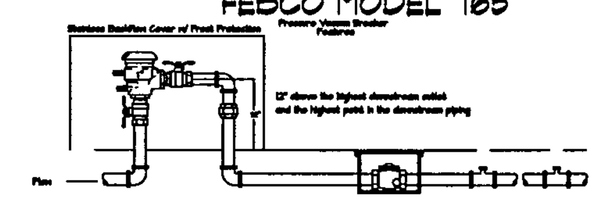
CONSTRUCTION NOTES:
A. SHRUB.
B. BACKFILL WITH EXISTING SOIL.
C. EARTH BERM AROUND WATER RETENTION BASIN.
D. 3" DEPTH OF GRAVEL MULCH.
E. FINISH GRADE.
F. UNDISTURBED SOIL.



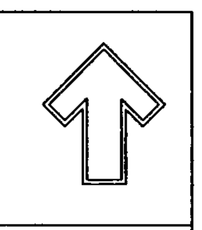
Netafim Spiral Detail



FEBCO MODEL 765
Pressure Vacuum Breaker Features



FEBCO MODEL 765
Pressure Vacuum Breaker
Outside Installation



The Hilltop
7404 Edith N.E.
Albuquerque, NM 87184
Contact: Louise Janney
Ph: (505) 243-4540
Fax: (505) 243-7131
dampehilltoplandscaping.com

Landscape Architect

STATE OF NEW MEXICO
LOUISE C. JANNEY
477
REGISTERED LANDSCAPE ARCHITECT

February 2, 2016

LEGACY NAA APARTMENTS
SAN PEDRO AND ALAMEDA
Albuquerque, NM

LANDSCAPE PLAN

The design contained herein remain the property of The Hilltop Landscape Architects and Contractors and are protected by copyright laws. This is an original design and must not be reproduced or used for any other purpose unless been paid or a job order placed.

The Hilltop
LANDSCAPE ARCHITECTS & CONTRACTORS

DRAWN BY: lcj
REVISION #: 5/24/2016
DATE: 2/2/2016

SHEET #
LS-101

CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.

DRAINAGE NARRATIVE
THE SITE WILL DISCHARGE AT ALLOWED RATES VIA GROUND STORM DRAIN. DISCHARGE WILL BE CONTROLLED BY INTERIOR PONDS WITH OVERFLOWS SIZED TO THROTTLE FLOW TO ALLOWED.

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
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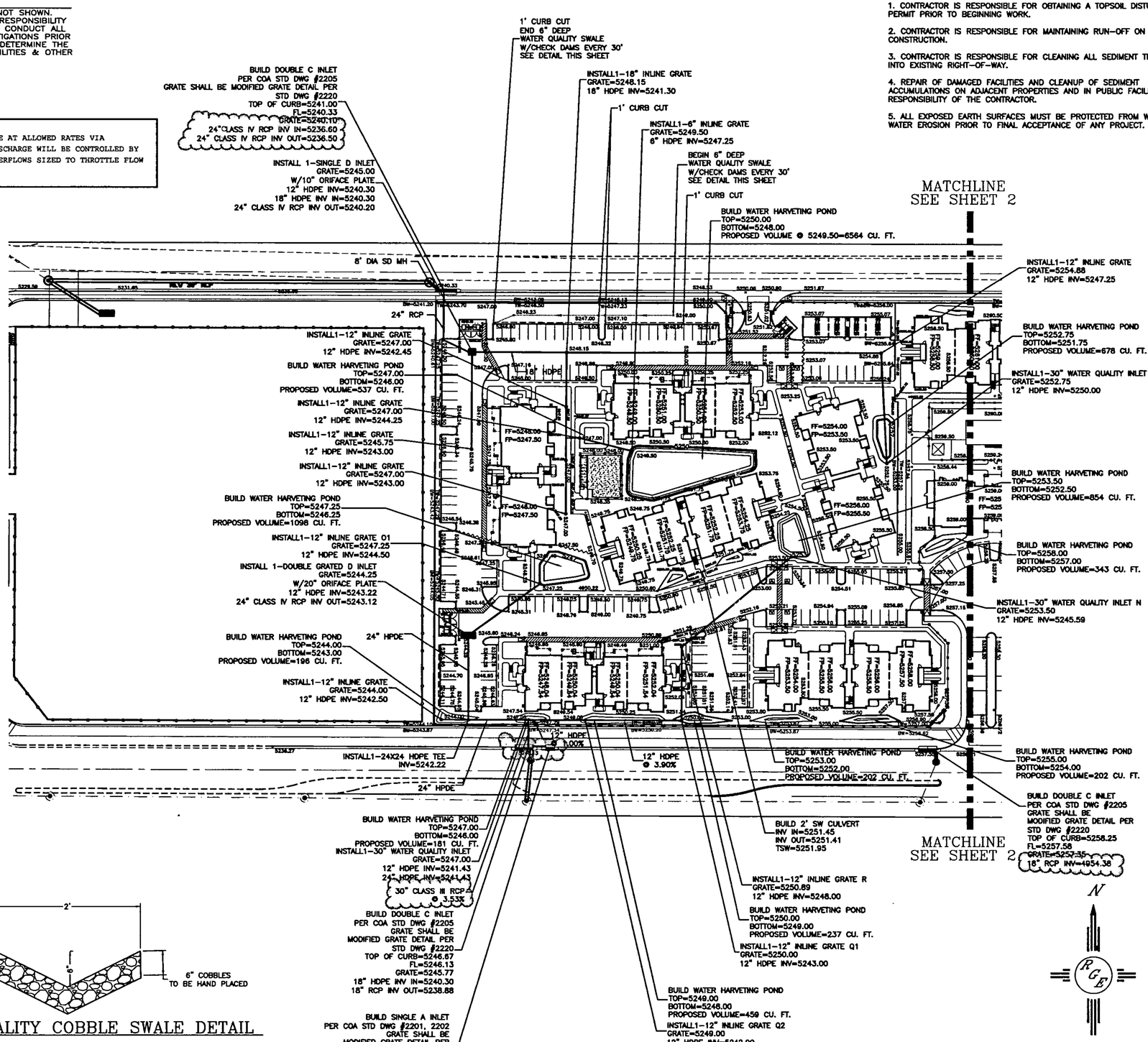

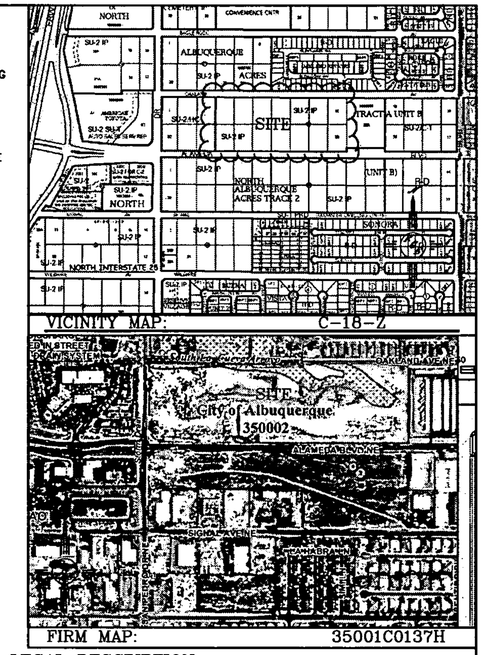

LEGAL DESCRIPTION:

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- 5414 — PROPOSED CONTOUR
- 5418 — PROPOSED INDEX CONTOUR
- SLOPE TIE
- × 4048.25 — EXISTING SPOT ELEVATION
- × 4048.25 — PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL DESIGN BY OTHERS

WATER QUALITY COBBLE SWALE DETAIL

NTS

N

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

ENGINEER'S SEAL	LEGACY NAA APARTMENTS	DRAWN BY WCWJ
DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER 4/8/16		DATE 3-14-16
	GRADING AND DRAINAGE PLAN	21401-LAUGUR-1-07-10
DAVID SOULE P.E. #14522	Rio Grande Engineering 1606 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999	SHEET # C1
		JOB # 21331

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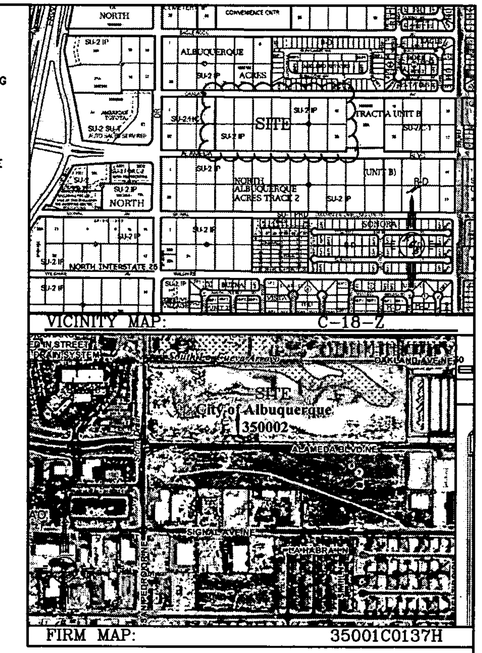
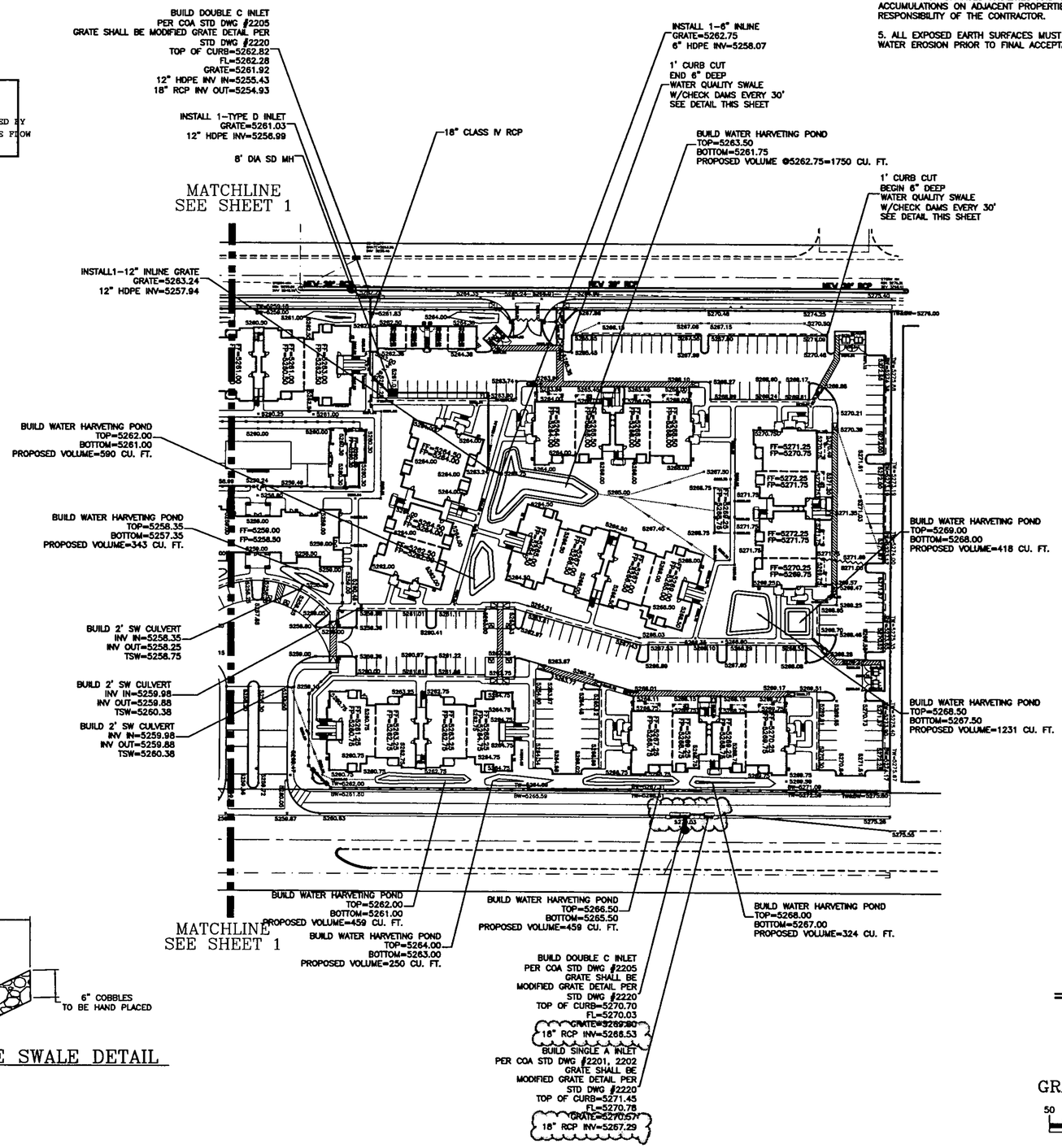
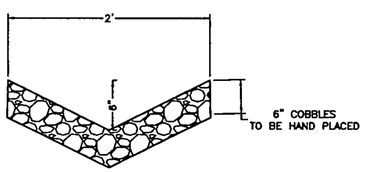


VICINITY MAP: C-18-Z





WATER QUALITY COBBLE SWALE DETAIL

NTS

LEGAL DESCRIPTION:

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	PROPOSED RETAINING WALL DESIGN BY OTHERS

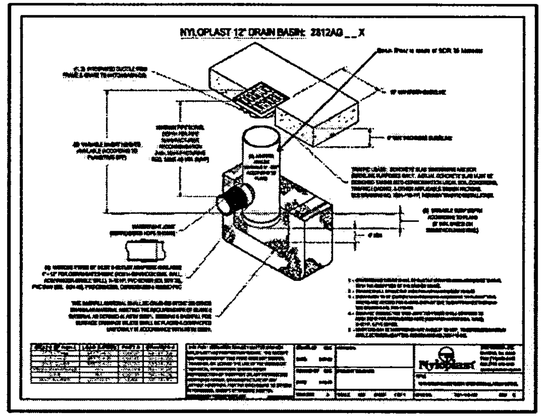
N

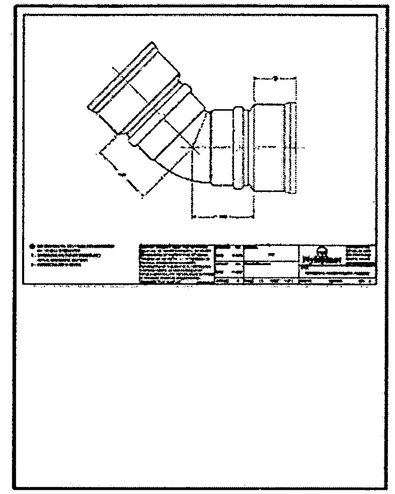
GRAPHIC SCALE

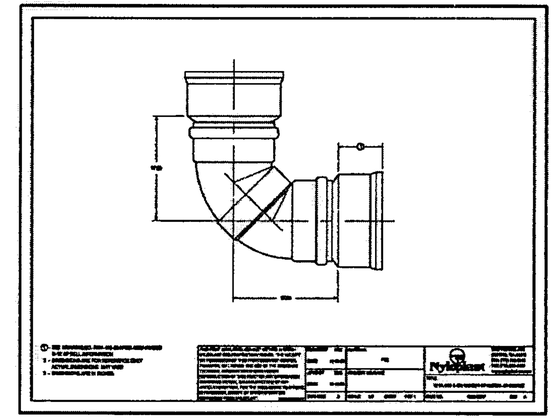
50 25 0 25 50

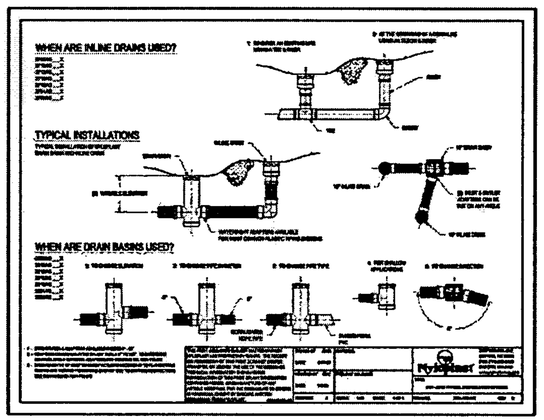
SCALE: 1"=50'

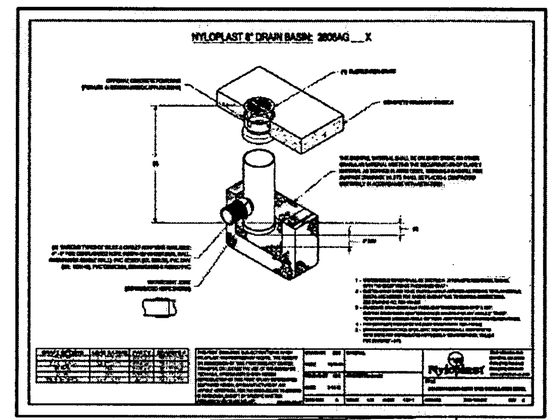
ENGINEER'S SEAL DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER 4/8/16 DAVID SOULE P.E. #14522	LEGACY NAA APARTMENTS GRADING AND DRAINAGE PLAN Rio Grande Engineering 1606 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999	DRAWN BY WCWJ DATE 3-14-16 21401-LAYOUT-1-GD-16 SHEET # C2 JOB # 21331

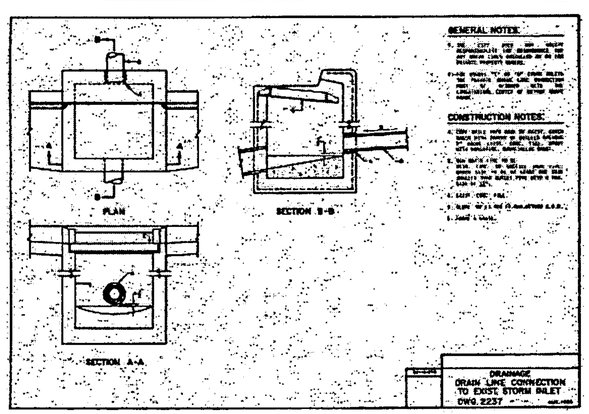


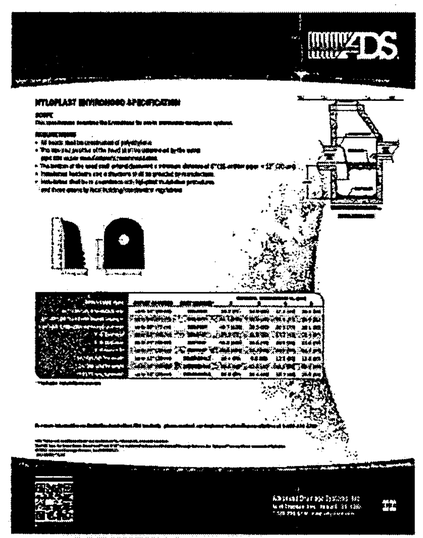


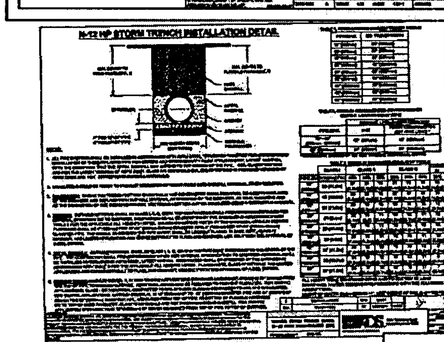












DRAWN BY WCWJ

DATE 1-23-16

SHEET # C3

DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL SURVEYOR

3/25/16

DAVID SOULE
P.E. #14522

Engineering
1808 CENTRAL AVENUE
SUITE 201
ALBUQUERQUE, NM 87106
(505) 872-0999

JOB # 21331

Didn't keep hard copy file

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: LEGACY NAA APARTMENT Building Permit #: _____ City Drainage #: C18-d064B

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES

City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____

Address: 6501 EAGLE ROCK

Phone#: _____ Fax#: _____ E-mail: _____

Architect: ROGER CINELLI Contact: _____

Address: 2418 Manuel Torres Lane N.W. ALB 87117

Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES Contact: JOHN GALLEGOS

Address: _____

Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Verbal NO AC 5/4/16

Notified thru DRB 5/4/16

TYPE OF SUBMITTAL:

x DRAINAGE REPORT
x DRAINAGE PLAN 1st SUBMITTAL
___ DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
X GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
X PRELIMINARY PLAT APPROVAL
X S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
x GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION

___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED APR 08 2016 LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided

DATE SUBMITTED: 3/25/16 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

City of Albuquerque

Planning Department

Development & Building Services Division

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Contractor: _____ Contact: _____

Address: _____

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x DRAINAGE PLAN 1st SUBMITTAL
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___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED
MAR 30 2016
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided

DATE SUBMITTED: 3/25/16 By: _____

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Abiel X. Carrillo

From: Abiel X. Carrillo
Sent: Thursday, April 07, 2016 12:00 PM
To: David Soule
Cc: Cherne, Curtis
Subject: C18D064B - Legacy NAA Apartments - Stamp Date 3/25/2016

Mr. Soule, FLOODPLAIN AO (1' Depth)

This email is being sent in lieu of an attached comment letter in order to expedite the response for initial reviews. Responses to comments should continue to be included in the re-submittal. A reply to this email with responses to comments will not be considered a re-submittal.

Based on the information provided in your submittal received 3-~~24~~ 30-2016, the above-referenced Grading and Drainage Report and Grading Plan cannot be approved for Preliminary Plat, Site Development for Building Permit, or Grading Permit. The plan can be approved for Site Plan for Subdivision, however, since it only involves the consolidation of the lots. The following sets of comments would need to be addressed prior to the applicable approval:

Preliminary Plat and Site Plan for Building Permit (DRB #1009881):

1. The Report (or a supplement) needs to show how the inlet types and sizes were selected along Alameda and Oakland. The Infrastructure List (which is tied to the SPBP) needs to reflect the sizes and types as well, since the work order involves removing and replacing inlets, and only installing a portion of the trunk along the frontage.

✓ 2. The Drainage Plan should not rely on the proposed restriction of discharge to the adjacent property, even if it is currently owned by the same entity, and even though the overage is small. This is possible, but it appears to be much more feasible to reduce the peak discharge of this project below the allowable rate per the latest NAA Drainage Master Plan.

3. All pipes in the City Right of Way need to be either RCP or HPPP, the connection into the Oakland Ave Right of Way shows a 12" HDPE extension into the inlet.

✓ 4. Show the diameter of all new and existing manholes (that are to be tied to) on Oakland and Alameda on the Plan.

Grading (ESC) Permit:

1. An Erosion and Sediment Control Plan needs to be approved by the City's Stormwater Quality Engineer.

2. Provide a Benchmark for the project.

3. There appears to be a disconnect between the information in the Grading Plan and the analysis completed in the Report.

4. Describe the check dams that are called out (dimensions, etc), or show a detail on the plan.

5. Show the modified grate detail (DWG #2220) on the plan since it is not published yet.

6. In general, the pipe layout consists of 12" diameter pipes; it is not clear that the interior inlets need to be 30" and/or Double D grated.

7. Provide a cross-section for the typical installation of the inline drains near the top of the first flush ponding areas. The typical detail provided is a general layout from the product catalog.

8. Clarify the distribution of discharge to the three outlet points by labeling the discharges on the Basin Map to facilitate future research of this project. Provide a full size Basin Map as a part of the Grading Plan.

9. Consider using drop manholes just before the outlets instead of laying the entire interior pipe network so deep (8'+). It may be difficult for the Owner to maintain deep, 12" lines that have Tee connections.

10. If the project will be phased, provide a phasing plan.

11. Minor comments: address typos on the plan labels, label the street names on the exhibits; improve the quality of Sheet C3, the HGL exhibits in the report, and provide the full page of the city projects included. Most of these are not legible or difficult to relate to the Report/Plan.

Any question just let me know.

Abiel Carrillo, P.E.

Principal Engineer - Hydrology
Planning Department
Development Review Services Division
City of Albuquerque
505-924-3986
acarrillo@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

DRAINAGE REPORT

For

LEGACY NAA APPARTMENTS

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

RECEIVED
MAR 30 2016
LAND DEVELOPMENT SECTION

March 2016

David Soule P.E. No. 14522

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Existing Conditions 3
Exhibit A-Vicinity Map 4
Proposed Conditions 5
Summary 5

Appendix

NAAMDP, San Pedro Storm drain and Eagle rock Diversion map ..... A
Site Hydrology ..... B
Hydraulic calculations C

Map

Site Grading and Drainage Plan

PURPOSE

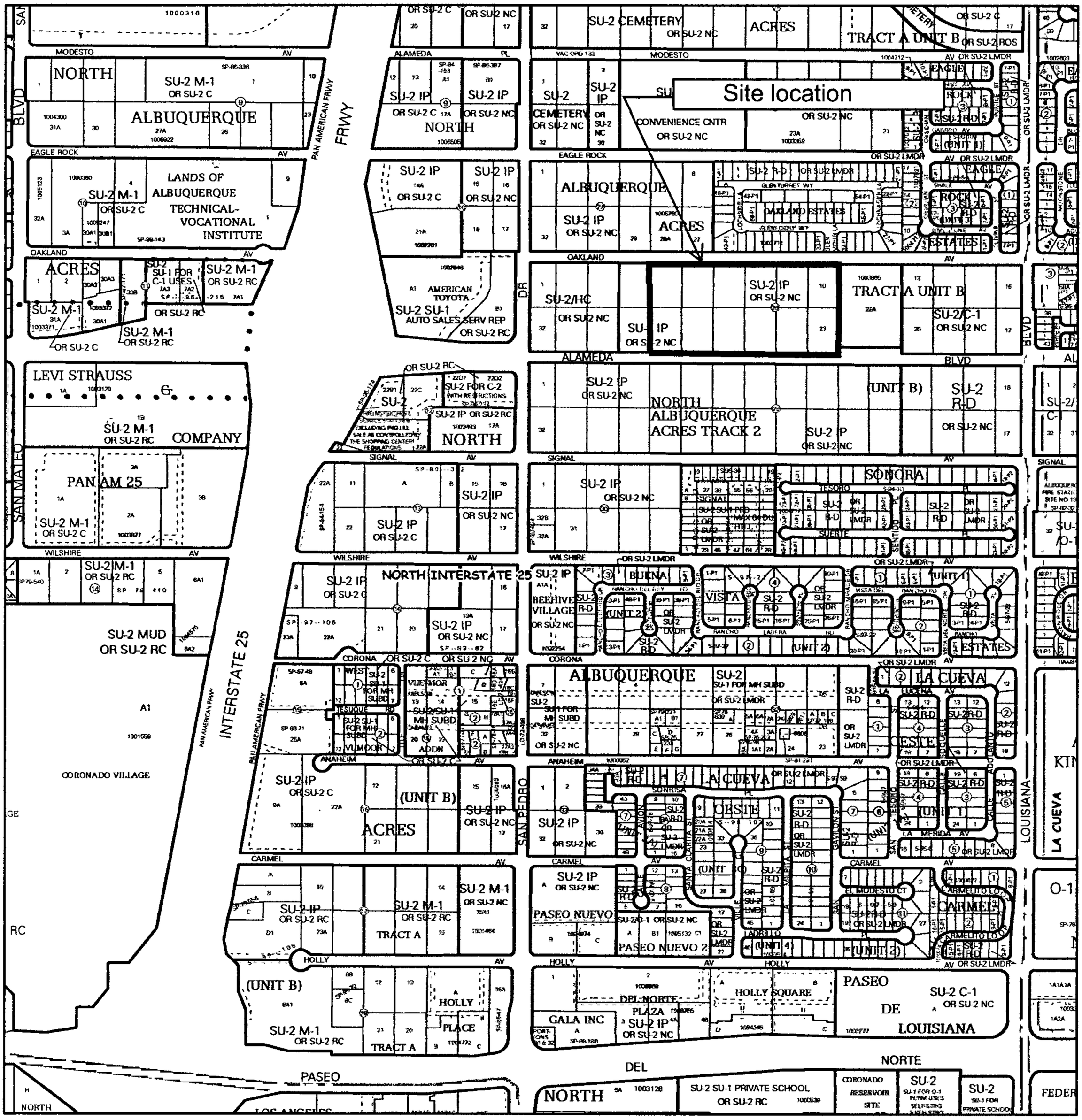
The purpose of this report is to provide the Drainage Management Plan for the development of a 12.41 acre multi family project located on Alameda Boulevard between San Pedro and Louisiana NE. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines, and HYDROCAD. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 12.41-acre parcel of land located on the south side of Oakland Avenue and the north side of Alameda Boulevard between San Pedro and Louisiana. The legal description of this site is Lots 4-10 and 23-29, block 28, tract A, unit B, North Albuquerque Acres. As shown on FIRM map35013C0137H, the majority of the entire site is located within Flood Zone X, a recent LOMR was approved removing a previous flood zone AE-1 foot. The site has had significant grading activities upon it over the past 10 years. The site is not in native condition. Due to the upstream construction, the site is not affected by any upland flow. The site free discharges to the west. The governing North Albuquerque Acres Master Drainage Plan (NAAMDP), provides flows for development of this area, which relevant excerpts can be found in appendix A.

EXISTING CONDITIONS

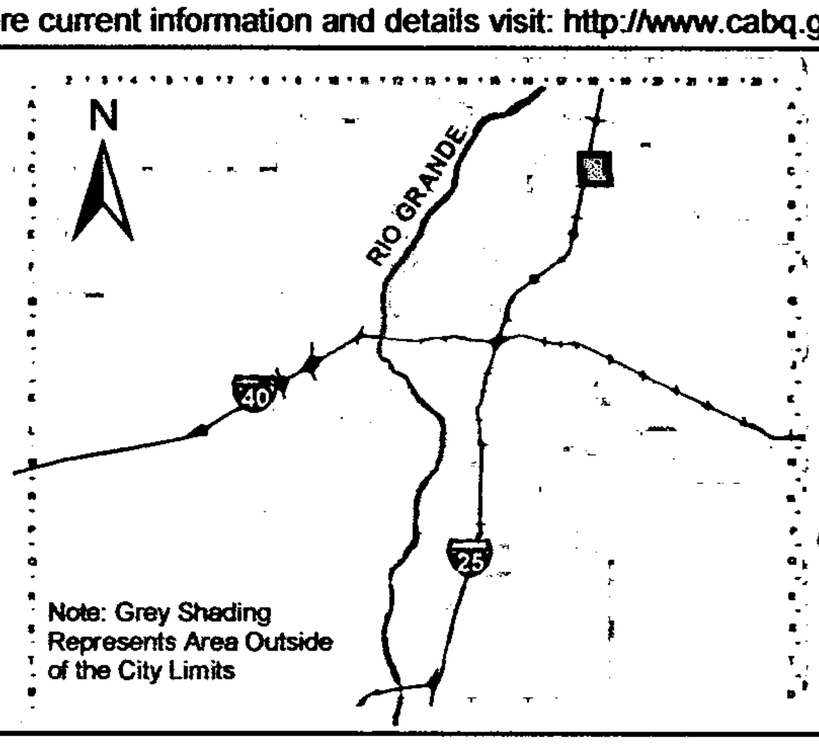
The site currently does have structures on it and has been impacted by human development over the years. The site was most recently an auto salvage and parts yard. The site is not impacted by any upland flows. The site currently discharges all of its flow to the North West



For more current information and details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System

Map amended through: 6/7/2013



Zone Atlas Page:

C-18-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 750 1,500 Feet

Exhibit A Vicinity Map

corner of the site. The site is located within basins 117.2 and 117.3 of the NAAMDP. The NAAMDP design analysis has been modified by the Eagle Rock drainage plan. The diversion of the upper 57% of basin 117.2 was designed with the construction of Oakland estates Subdivision. The upland properties have been designed to drain to the storm drain provided within Oakland and Alameda. The recently constructed San Pedro and Alameda storm drain were designed to convey the developed flow from this site.

PROPOSED CONDITIONS

The proposed improvements consist of a new multi family apartment complex with associated open space and paved parking areas. The complex shall drain to 3 different public storm drain conduits for this site. Two of these conduits are in Oakland ave. and the third is in Alameda Blvd. The eastern most conduit is in the Oakland Diversion system, the western culvert is the Oakland system and the third is the Alameda system. All three of these systems outfall to the large storm drain in San Pedro blvd.

As shown in the drainage plan, the site will contain 22 onsite basins, with an additional basins affecting Oakland and Alameda. Basins D, F and G discharge into the Oakland Diversion system. Basins I-1,I-2,J-1,J-2,L,M-1 and M-2 discharge into the Oakland system. Basins E, H, K-1, K-2, N,O, P, Q and Q-1 discharge into the Alameda system.

Two new public storm drain culverts are to be constructed in Oakland. The eastern 30 inch rcp will discharge into the Oakland Diversion system and the western 30 inch rcp will discharge into the storm drain in San Pedro blvd.

The outfall hydraulic grade lines used for these the three systems from this site were taken from the city approved plans. The Oakland Diversion system hgl was taken from City project no. 7424.81, the Oakland system was taken from City project no. 5394.91 and the Alameda system was taken from City project no. 7663.91. (pertinent portions are included in the

appendix). The Oakland Diversion system discharges 9.54cfs into the public system, the Oakland system discharges 14.84cfs into the public system and the Oakland system discharges 23.46cfs into the public system.

The analysis for each of the three storm drainage system are included in this report. The site discharges approximately 3.50cfs more than the projected discharge in the NAAMDP, this does not include the anticipated reduction due to additional infiltration/abstraction from water quality ponds, however the site to the west of this project is owned by the same entity, thus their site will need to reduce their flow by an additional 3.50cfs to account for this increase in discharge. A letter to this effect will be provided by the owners. The site just to the west of this project drains in a westerly direction, about 2 acres of runoff discharges into the new catch basin at the northwest corner of this site. These 2 acres generate 3.45cfs/ac, thus about 7cfs flow into this catch basin.

How would this be transfered to another owner? If it was difficult to achieve in this one, why would it be feasible just to the west.

SUMMARY AND RECOMMENDATIONS

This project is a development of residential subdivision with the North Albuquerque Acres Master Drainage plan. The development is consistent with the land use assumptions of the plan. The surrounding development altered the upland and onsite basin by the creation of a diversion from Oakland to Eagle rock. Our plan conforms to this diversion with the exception of only 3.50cfs. Our discharge will enter the downstream storm drain where it was anticipated. The inlets, pipes and roadways have been shown to provide the required capacity. The capacity is not a factor with this development and reduced discharge will need to be designed on the later commercial phases of this property. The site has been designed in accordance with City of Albuquerque Drainage ordinance. This drainage plan and report conforms to the governing drainage regulations of the City. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity.

Specifically ~~say~~ state the max discharge, not a relative value

APPENDIX A

North Albuquerque Acres Master Drainage Plan

and

excerpts of Oakland diversion map

and

San Pedro Storm drain design excerpts

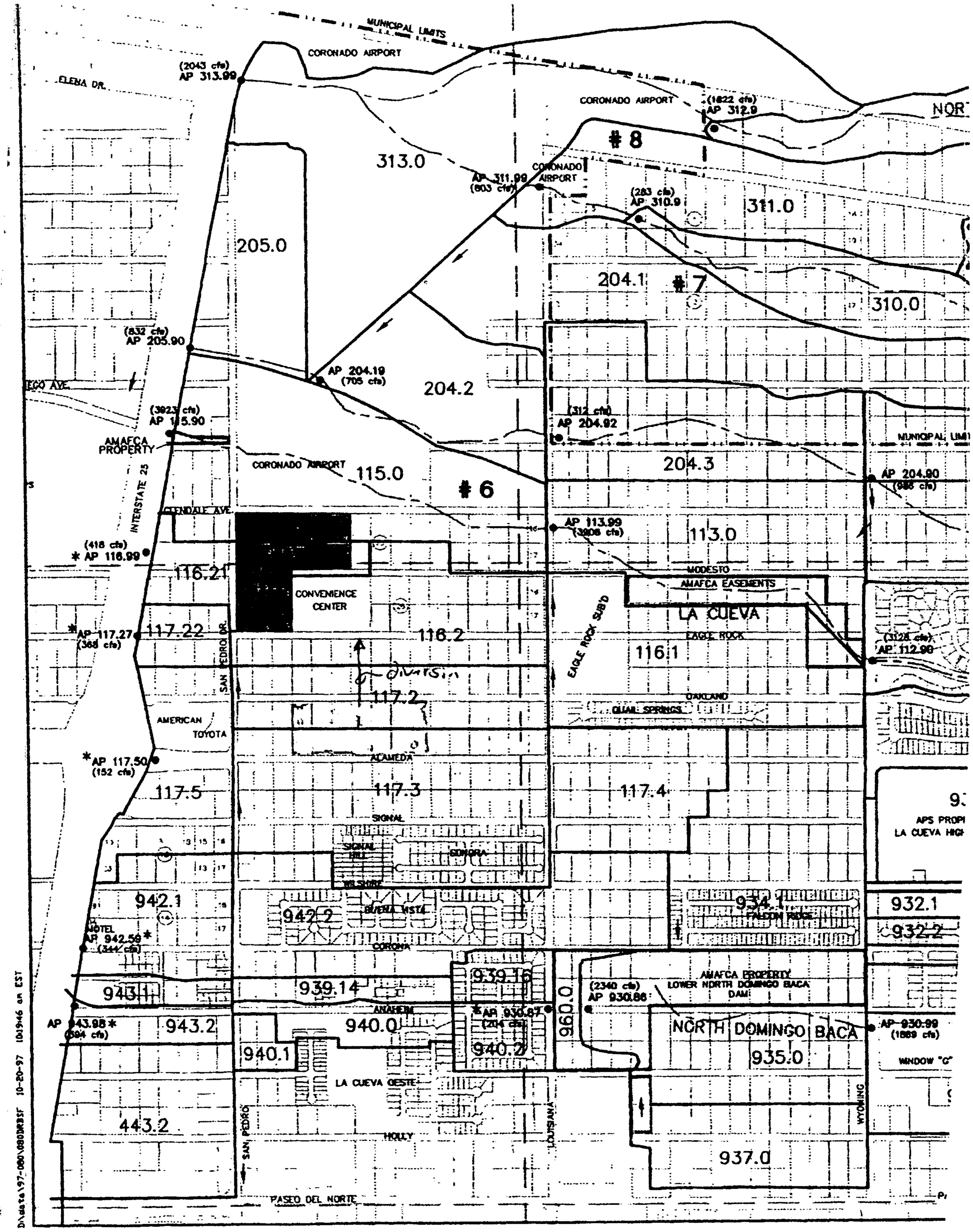
FINAL
NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN

Prepared For:

City of Albuquerque

Prepared By:

Resource Technology, Inc.
ENGINEERS AND ENVIRONMENTAL SCIENTISTS
1720-B Randolph Road SE, Albuquerque, NM 87106
Telephone (505) 243-7300
Fax (505) 243-7400
rtinc.com



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- Commercial/Industrial (C/I): The area west of Louisiana Boulevard, north of Modesto Avenue and east of I-25 would develop as high density commercial and industrial. Also used for Paseo del Norte Corridor.
- Medium Density Industrial (MI): Campus type commercial/office facilities and APS schools sites.
- Sandia Tribal Lands (ST): Sandia tribal lands south of Tramway Road and north of the Sandia Pueblo Grant Boundary were allocated land treatments consistent with moderate levels of development even though there are no current plans to develop this area.

The relative weight of each type of Land Treatment is shown in Table 2.

TABLE 2

FUTURE FULL DEVELOPMENT HYDROLOGIC CONDITION ASSUMPTIONS

	Land Treatments (%)			
	A	**B**	**C**	**D**
Sandia Heights/Tramway (SH/TB)	20	40	5	35
North Albuquerque Acres (NAA)	22	23	38	17
Low Density Residential (LR)	20	20	34	26
Residential (R)	0	34	16	50
High Density Residential (HR)	0	25	15	60
Commercial/Industrial (C/I)	0	20	10	70
Medium Density Industrial (MI)	0	20	30	50
Sandia Tribal Lands (ST)	20	20	40	20
Primrose Pointe (PP)	0	40	20	40

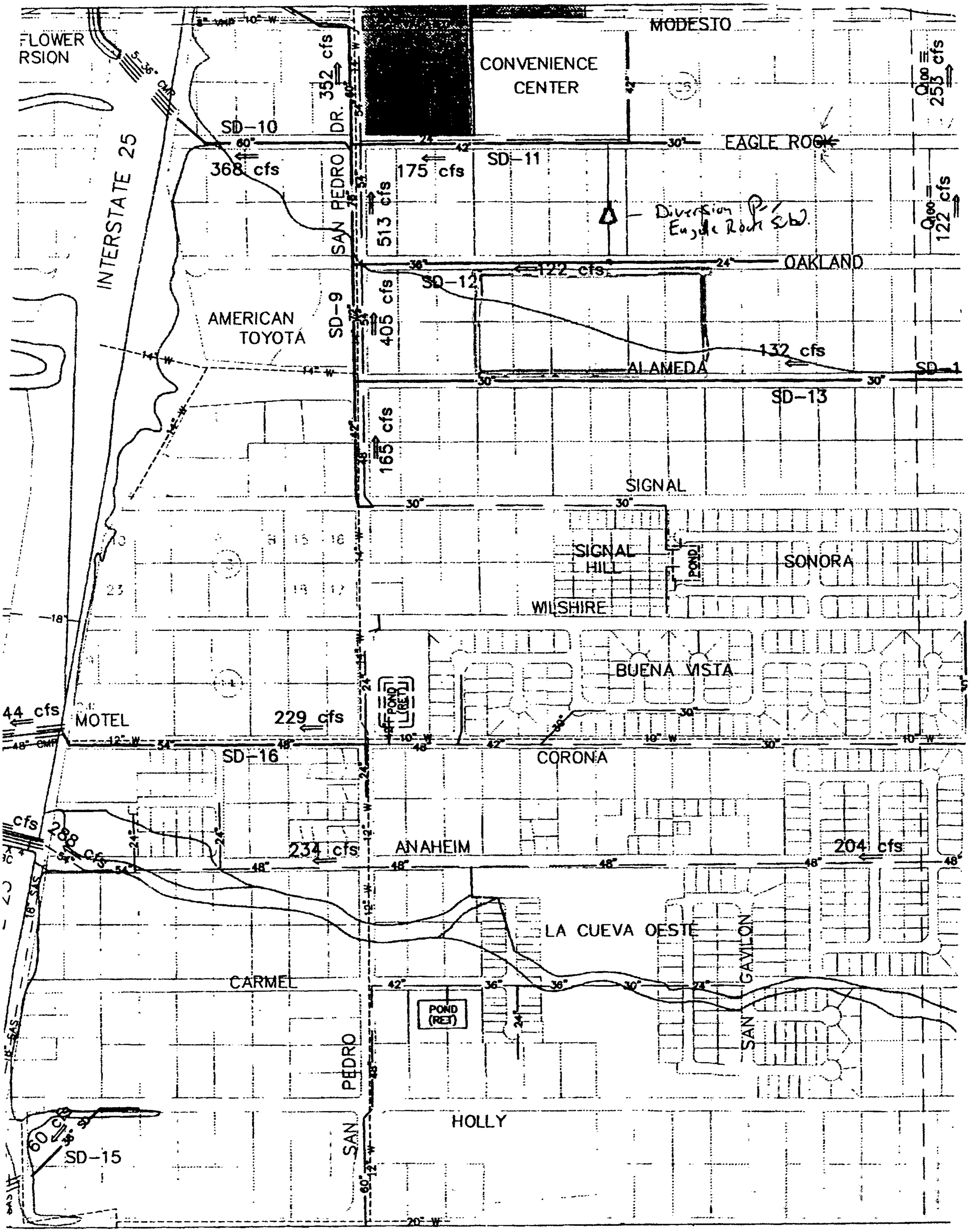
TABLE A-2 (cont.)

LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
113*	Existing	.1136	80	0	15	5	.133
	Future	.1000	0	25	15	60	.133
115*	Existing	.1337	80	0	15	5	.133
	Future	.1202	0	26	12	62	.133
116*	Existing	.1309	80	0	5	15	.133
116.1	Future	.1000	0	25	15	50	.133
116.2	Future	.0719	0	25	15	60 ~~50~~	.133
116.21	Future	.0344	0	40	20	40	.133
~~117.2*~~	Existing	.1391	73	0	7	20	.22
	~~Future~~	~~.0500~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.21*	Existing	.0234	0	34	16	50	.133
117.22*	Future	.0156	0	20	10	70	.133
~~117.3*~~	Existing	.0863	65	5	15	15	.133
	~~Future~~	~~.1172~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.31*	Existing	.0250	0	34	16	50	.133
117.32*	Existing	.0090	0	34	16	50	.133
117.4*	Existing	.0750	85	0	5	10	.133
	Future	.0512	0	25	15	60	.133
117.5*	Existing	.0550	0	10	20	70	.133
	Future	.0550	0	10	20	70	.133
118	Existing	.0649	0	20	10	70	.133
	Future	.0649	0	20	10	70	.133
118.1	Existing	.0306	75	5	10	10	.133
	Future	.0306	0	20	30	50	.133
119	Existing	.0549	0	20	10	70	.133
	Future	.0549	0	20	10	70	.133
120	Existing	.0268	50	0	0	50	.133
	Future	.0268	0	20	10	70	.133
121	Existing	.0489	80	0	15	5	.133
	Future	.0489	0	20	10	70	.133

*Modified for COA NAA MDP 9/97

Label these on the basin map


FLOWER
RSION
INTERSTATE 25
MODESTO
CONVENIENCE
CENTER
352 cfs
SD-10
368 cfs
SAN PEDRO DR.
175 cfs
SD-11
EAGLE ROCK
513 cfs
Diversion
Eagle Rock S.D.
OAKLAND
122 cfs
SD-12
AMERICAN
TOYOTA
SD-9
405 cfs
132 cfs
ALAMEDA
SD-1
SD-13
165 cfs
SIGNAL
SIGNAL
HILL
POND
SONORA
WILSHIRE
BUENA VISTA
44 cfs
MOTEL
229 cfs
POND
(RET)
SD-16
CORONA
234 cfs
ANAHEIM
204 cfs
LA CUEVA OESTE
SAN GAVILON
CARMEL
POND
(RET)
SAN PEDRO
HOLLY
SD-15

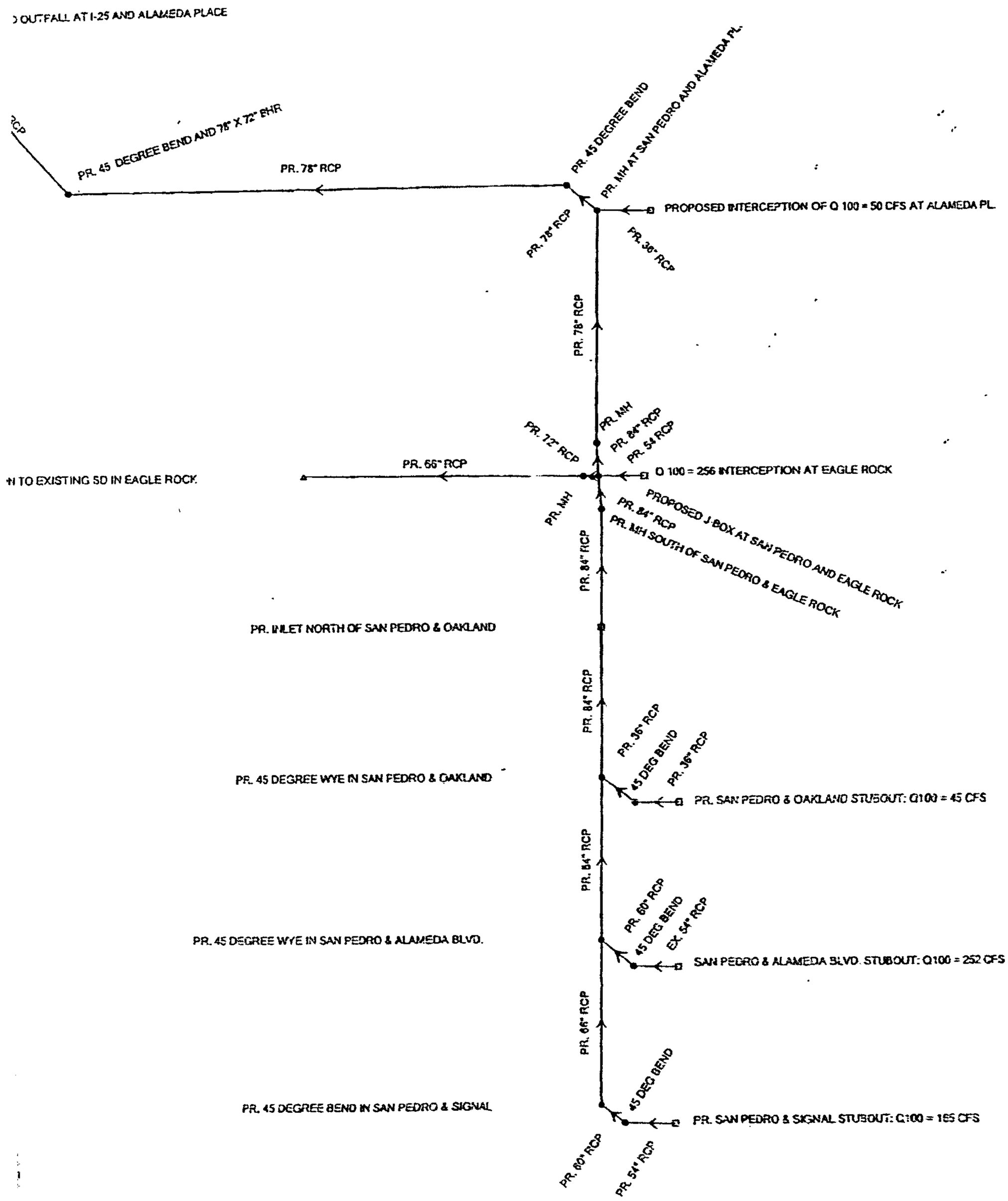
DESIGN ANALYSIS REPORT
FOR
SAN PEDRO STORM DRAIN PROJECT
CITY PROJECT NO. 5304.91

Prepared by:
Thompson Engineering Consultants, Inc.
P.O. Box 65760
Albuquerque, NM 87193

January 2010

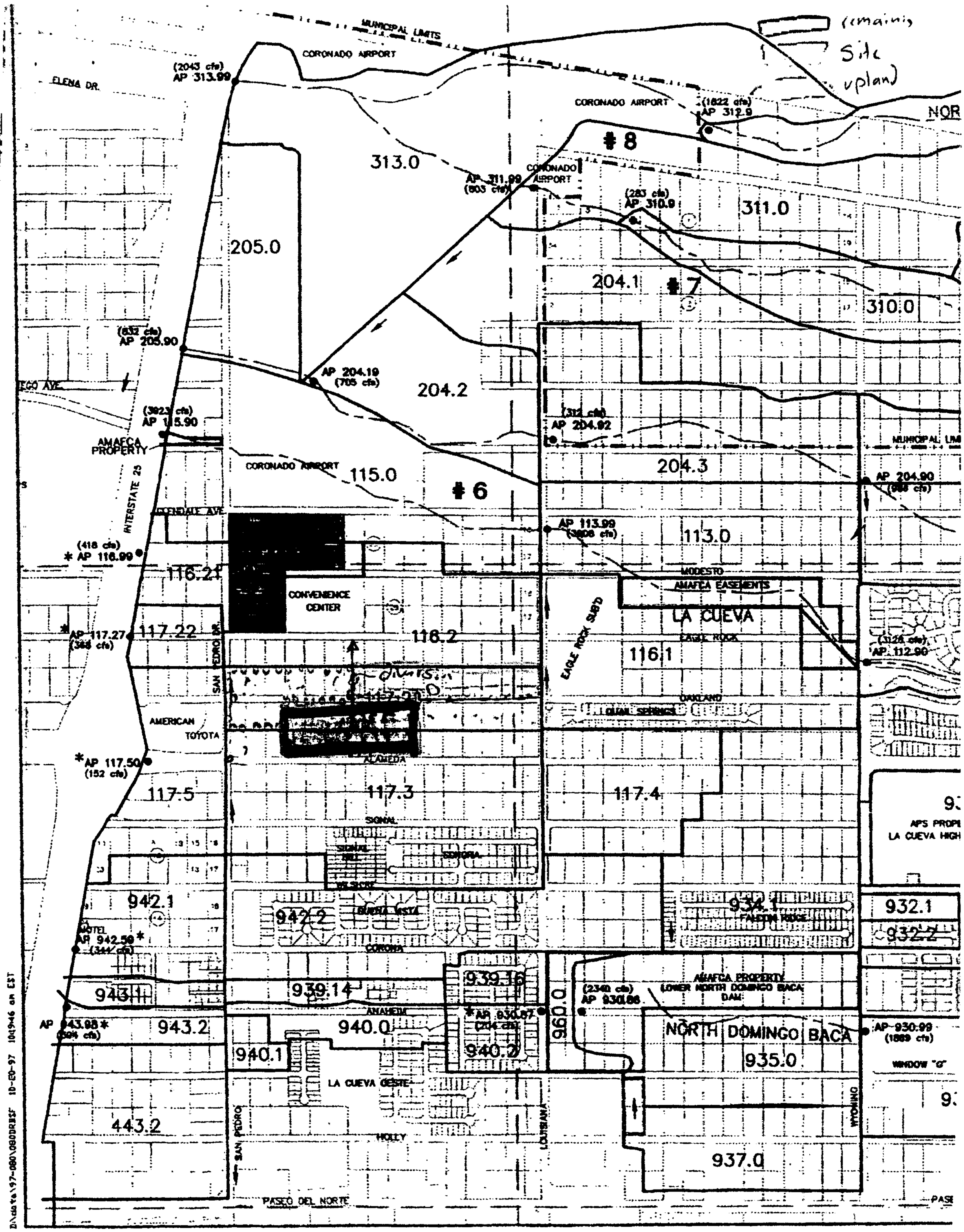
San Pedro Storm Drain

Proposed Single Pipe System



DOT Report (San Pedro SD - Final Single Pipe System with changes from coa.stc)

Label	Node Upstream Downstream	Conduit Description	Slope (Calculated) (ft/ft)	Length (ft)	Manning's n	Flow (ft³/s)	Velocity (Average) (ft/s)	Ground Upstream Downstream (ft)	Invert Upstream Downstream (ft)	HGL Upstream Downstream (ft)
PR. 66" RCP	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL	Circular Pipe - 66.0 in	0.006	532	0.013	165	6.94	5230.42	5222.97	5229.42
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.	Circular Pipe - 84.0 in	0.005	525	0.013	417	12.96	5229.65	5219.8	5225.46
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	139	0.013	462	13.62	5228	5217.29	5223.55
	PR. INLET NORTH OF SAN PEDRO & OAKLAND							5226.12	5216.57	5223.01
PR. 84" RCP	PR. INLET NORTH OF SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	335	0.013	462	13.38	5226.12	5216.57	5222.46
	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK							5224.23	5214.89	5220.83
PR. 84" RCP	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK	Circular Pipe - 84.0 in	0.006	31	0.013	462	15.09	5224.23	5214.89	5220.53
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5220.1
PR. 84" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 84.0 in	0.009	32	0.013	393	16.57	5224.03	5210.5	5215.72
	PR. MH							5223.95	5210.22	5215.94
PR. 78" RCP	PR. MH	Circular Pipe - 78.0 in	0.01	505	0.013	393	17.57	5223.95	5210.22	5215.52
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.69
PR.72" RCP	PR. 45 DEGREE BEND AND 78" X 72" BHR	Circular Pipe - 72.0 in	0.012	257	0.013	443	15.67	5208.9	5199.5	5205.55
	SAN PEDRO SD OUTFALL AT I-25 AND ALAMEDA PLACE							5203.5	5196.43	5202.74
PR. 54" RCP	PR. SAN PEDRO & SIGNAL STUBOUT: Q100 = 165 CFS	Circular Pipe - 54.0 in	0.026	50	0.013	165	10.37	5233.2	5225.75	5230.6
	45 DEG BEND							5231.8	5224.36	5230.25
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.026	50	0.013	165	8.4	5231.8	5224.36	5229.88
	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL							5230.42	5222.97	5229.67
EX. 54" RCP	SAN PEDRO & ALAMEDA BLVD. STUBOUT: Q100 = 252 CFS	Circular Pipe - 54.0 in	0.034	50	0.013	252	15.84	5232.3	5223.36	5230.29
	45 DEG BEND							5230.1	5221.58	5229.47
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.034	50	0.013	252	12.83	5230.1	5221.58	5228.6
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 36" RCP	PR. SAN PEDRO & OAKLAND STUBOUT: Q100 = 45 CFS	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5230.6	5220.05	5224.6
	45 DEG BEND							5229.3	5218.67	5224.37
PR. 36" RCP	45 DEG BEND	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5229.3	5218.67	5224.15
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 72" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 72.0 in	0.02	5	0.013	325	(N/A)	5224.03	5210.5	(N/A)
	PR. MH							5224	5210.4	(N/A)
PR. 66" RCP	PR. MH	Circular Pipe - 66.0 in	0.019	334	0.013	325	20.9	5224	5210.4	5215.31
	CONNECTION TO EXISTING SD IN EAGLE ROCK							5212.65	5204.2	5207.75
PR. 78" RCP	PR. MH AT SAN PEDRO AND ALAMEDA PL.	Circular Pipe - 78.0 in	0.017	30	0.013	443	13.35	5221.4	5205	5211.75
	PR. 45 DEGREE BEND							5220	5204.5	5211.54
PR. 78" RCP	PR. 45 DEGREE BEND	Circular Pipe - 78.0 in	0.01	496.7	0.013	443	17.77	5220	5204.5	5210.07
	PR. 45 DEGREE BEND AND 78" X 72" BHR							5208.9	5199.5	5206.85
PR. 36" RCP	PROPOSED INTERCEPTION OF Q 100 = 50 CFS AT ALAMEDA	Circular Pipe - 42.0 in	0.01	50	0.013	50	10.44	5222	5211.5	5213.71
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.85
PR. 54 RCP	Q 100 = 256 INTERCEPTION AT EAGLE ROCK	Circular Pipe - 54.0 in	0.02	50	0.013	256	16.1	5226	5216	5220.62
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5219.77


MUNICIPAL LIMITS
CORONADO AIRPORT
ELENA DR.
(2043 cfs)
AP 313.99
313.0
205.0
(1822 cfs)
AP 312.9
#8
AP 311.99
(803 cfs)
(283 cfs)
AP 310.9
311.0
204.1
#7
310.0
(832 cfs)
AP 205.90
AP 204.19
(705 cfs)
204.2
(312 cfs)
AP 204.92
204.3
AMAFCA PROPERTY
115.0
#6
INTERSTATE 25
AP 204.90
AP 113.99
113.0
(418 cfs)
AP 116.99
116.21
MODESTO
AMAFCA EASEMENTS
CONVENIENCE CENTER
LA CUEVA
EAGLE ROCK SUBD
AP 117.27
(368 cfs)
117.22
118.2
116.1
(3126 cfs)
AP 112.90
SAN PEDRO DR.
OAKLAND
AMERICAN TOYOTA
ALAMEDA
AP 117.50
(152 cfs)
117.5
117.3
117.4
SIGNAL
SONORA
942.1
942.2
934.1
932.1
932.2
HOTEL
AP 942.59
CORONA
939.16
939.14
(2340 cfs)
AP 930.86
AMAFCA PROPERTY
LOWER NORTH DOMINGO BACA DAM
AP 943.98
943.2
940.0
AP 930.67
960.0
NORTH DOMINGO BACA
AP 930.99
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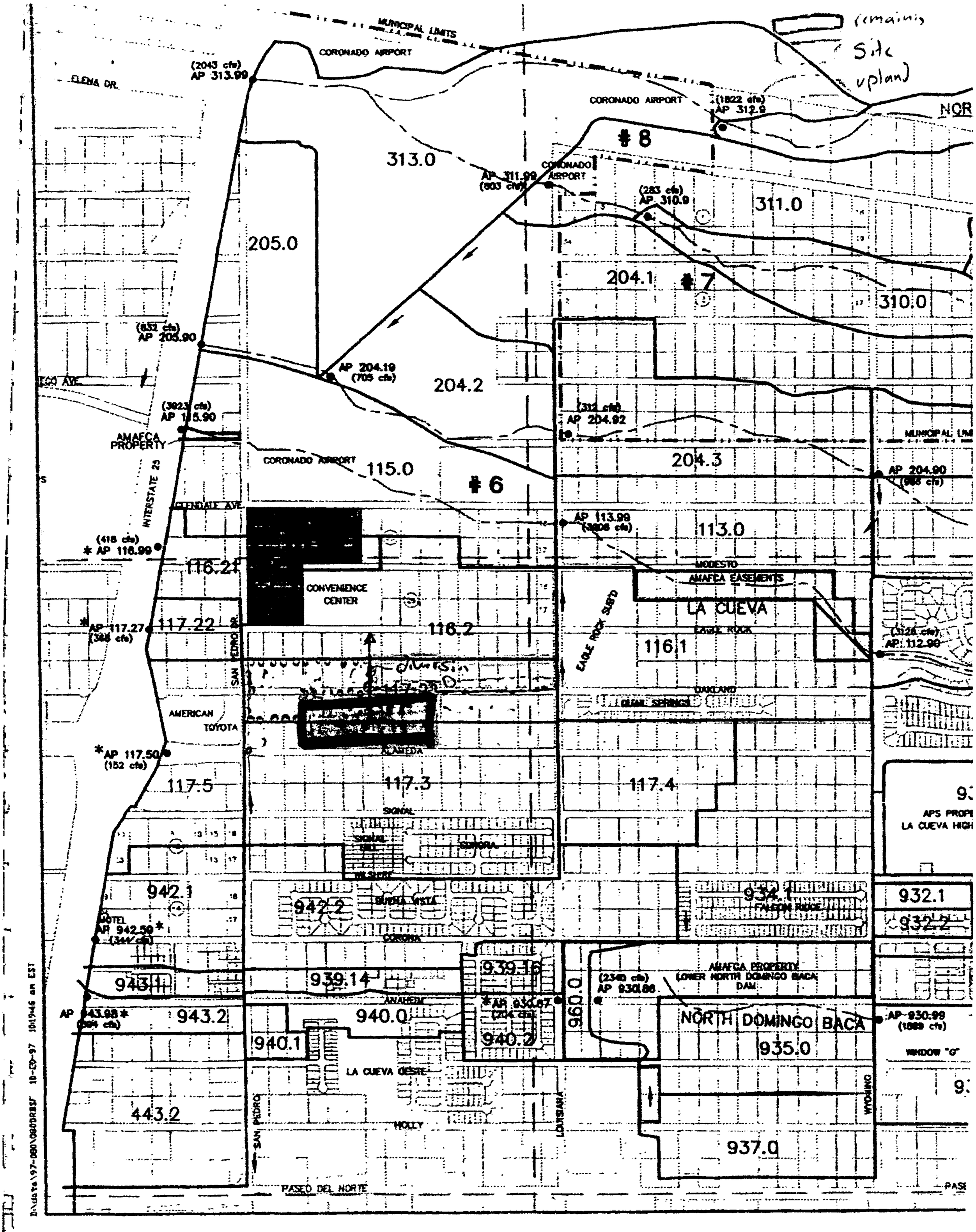
940.1
940.2
935.0
LA CUEVA OESTE
443.2
HOLLY
937.0
PASEO DEL NORTE



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APPENDIX B

SITE HYDROLOGY

Weighted E Method

legacy apts

Existing Developed Basins

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
A	27695	0.636	0%	0	27.0%	0.172	22.0%	0.13987	51%	0.324	1.736	0.092	2.56	0.135
B	4583	0.105	0%	0	26.0%	0.027	24.0%	0.02525	50%	0.053	1.729	0.015	0.42	0.022
C	69290	1.591	0%	0	22.0%	0.350	18.0%	0.28632	60%	0.954	1.851	0.245	6.69	0.373
D	38943	0.894	0%	0	38.0%	0.340	18.0%	0.16092	44%	0.393	1.620	0.121	3.41	0.173
E	7842	0.180	0%	0	27.0%	0.049	27.0%	0.04861	46%	0.083	1.682	0.025	0.71	0.036
F	4985	0.114	0%	0	27.0%	0.031	20.0%	0.02289	53%	0.061	1.757	0.017	0.46	0.025
G	57932	1.330	0%	0	21.0%	0.279	16.0%	0.21279	63%	0.838	1.886	0.209	5.67	0.321
H	13818	0.317	0%	0	29.0%	0.092	20.0%	0.06344	51%	0.162	1.728	0.046	1.27	0.067
I-1	10897	0.250	0%	0	20.0%	0.050	16.0%	0.04003	64%	0.160	1.901	0.040	1.07	0.061
I-2	13893	0.319	0%	0	20.0%	0.064	15.0%	0.04784	65%	0.207	1.912	0.051	1.37	0.078
J-1	15929	0.366	0%	0	29.0%	0.106	20.0%	0.07314	51%	0.186	1.728	0.053	1.46	0.078
J-2	24799	0.569	0%	0	30.0%	0.171	23.0%	0.13094	47%	0.268	1.682	0.080	2.24	0.115
K-1	19254	0.442	0%	0	16.0%	0.071	11.0%	0.04862	72%	0.318	1.988	0.073	1.95	0.116
K-2	50292	1.155	0%	0	18.0%	0.208	11.0%	0.127	71%	0.820	1.983	0.191	5.09	0.300
L	51669	1.186	0%	0	17.0%	0.202	10.0%	0.11862	73%	0.866	2.008	0.199	5.28	0.314
M1	20508	0.471	0%	0	34.0%	0.160	22.0%	0.10358	44%	0.207	1.635	0.064	1.81	0.092
M2	18105	0.416	0%	0	34.0%	0.141	22.0%	0.09144	44%	0.183	1.635	0.057	1.60	0.081
N	7198	0.165	0%	0	28.0%	0.046	25.0%	0.04131	47%	0.078	1.689	0.023	0.65	0.034
O	8494	0.195	0%	0	22.0%	0.043	16.0%	0.0312	62%	0.121	1.872	0.030	0.83	0.047
P	12605	0.289	0%	0	27.0%	0.078	20.0%	0.05787	53%	0.153	1.757	0.042	1.17	0.063
Q	9958	0.229	0%	0	26.0%	0.059	20.0%	0.04572	54%	0.123	1.772	0.034	0.93	0.050
Q-1	12650	0.290	0%	0	26.0%	0.076	20.0%	0.05808	54%	0.157	1.772	0.043	1.18	0.064
R-1	21163	0.486	0%	0	20.0%	0.097	25.0%	0.12146	55%	0.267	1.805	0.073	2.01	0.109
R-2	15255	0.350	0%	0	20.0%	0.070	25.0%	0.08755	55%	0.193	1.805	0.053	1.45	0.078
S-1	18239	0.419	0%	0	5.0%	0.021	20.0%	0.08374	75%	0.314	2.074	0.072	1.92	0.114
S-2	18257	0.419	0%	0	5.0%	0.021	20.0%	0.08382	75%	0.314	2.074	0.072	1.92	0.114
DRAIN TO OAKLAND DIV	101860	2.338	0%	0	27.8%	0.650	17.0%	0.3966	55%	1.292	1.778	0.347	9.54	0.519
DRAIN TO OAKLAND	155800	3.577	0%	0	25.0%	0.894	16.9%	0.606	58%	2.077	1.819	0.542	14.84	0.819
DRAIN TO ALAMEDA	243679	5.594	0%	0	22.7%	1.270	17.4%	0.9733	60%	3.346	1.845	0.860	23.46	1.306
FLOW IN DEDICATED ALAMEDA	36418	0.836	0%	0	5.0%	0.042	20.0%	0.16721	75%	0.627	2.074	0.144	3.83	0.228
FLOW IN DEDICATED OAKLAND	36496	0.838	0%	0	5.0%	0.042	20.0%	0.16757	75%	0.628	0.537	0.037	0.99	0.121
TOTAL FLOW	574253	13.183		0	22.0%	2.898	17.5%	2.310	60%	7.971	1.855	2.038	55.52	
ALLOWED PER NAADMP	574253	13.183		0	34.0%	4.4822319	16.0%	2.10929	50%	6.5915174	1.699	1.867	52.02	

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

FIRST FLUSH REQUIREMENT 9837.461683 CF
FLOW RATE EXCEEDANCE 3.50 CFS

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66	Qa= 1.87
Eb= 0.92	Qb= 2.6
Ec= 1.29	Qc= 3.45
Ed= 2.36	Qd= 5.02

FLOW SUMMARY

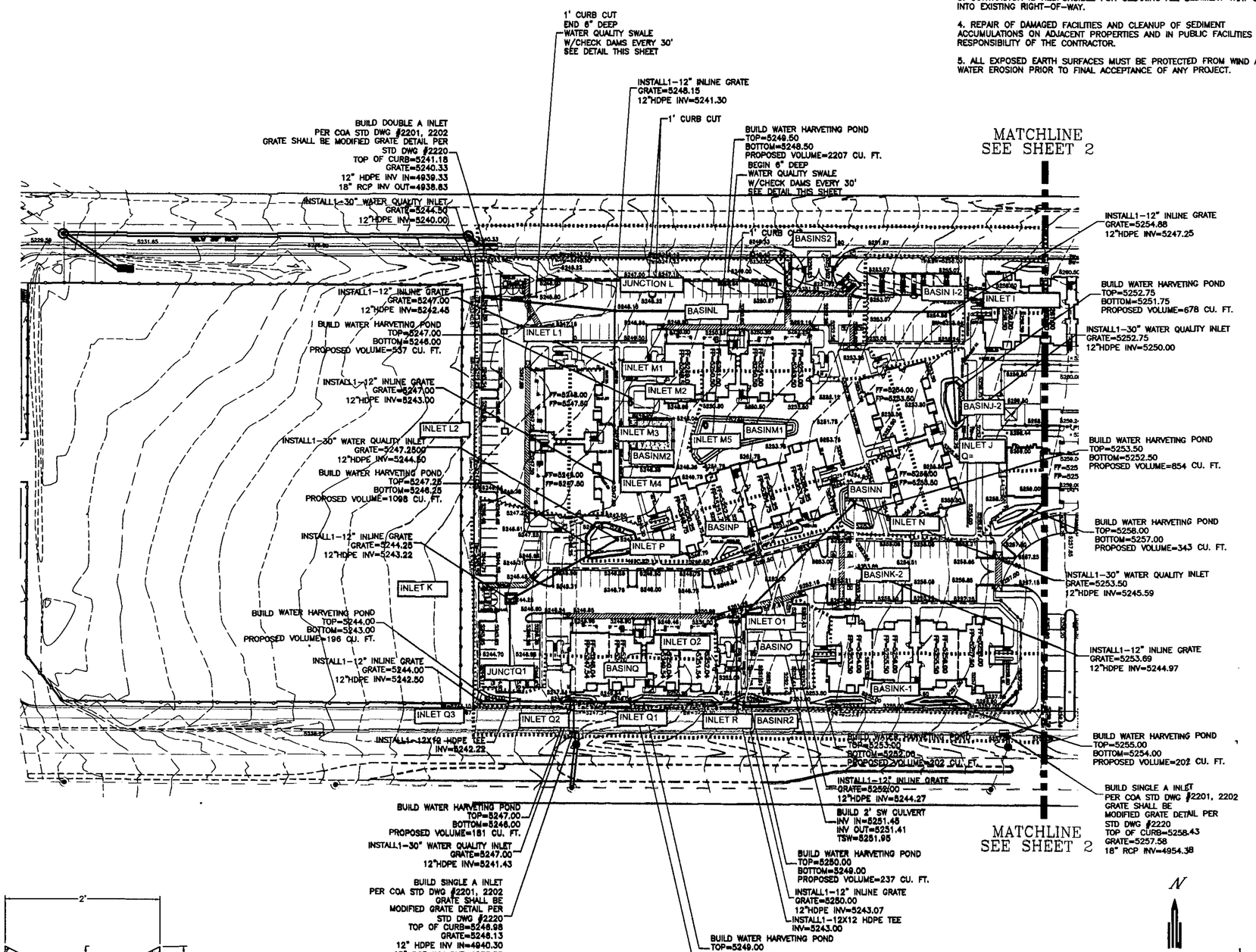
FLOW TO OAKLAND DIRVERSION	BASIN G+D+F	9.54
FLOW TO OAKLAND	BASIN 1+J+M+L	14.84
FLOW TO ALAMEDA	BASIN A+B+C+K+H+P+O+N+Q	23.46

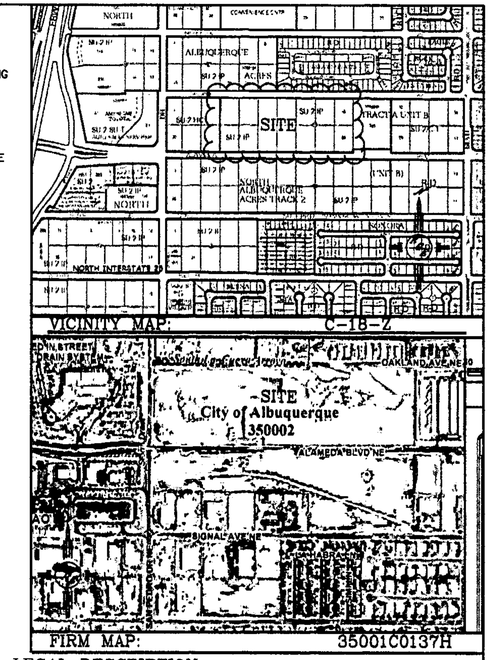
CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.





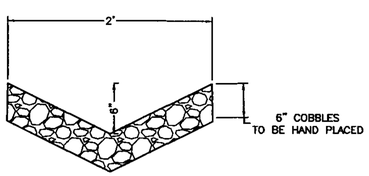
LEGAL DESCRIPTION:

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

LEGEND

5414	EXISTING CONTOUR
5415	EXISTING INDEX CONTOUR
5414	PROPOSED CONTOUR
5415	PROPOSED INDEX CONTOUR
	SLOPE TIE
x 4048.25	EXISTING SPOT ELEVATION
× 4048.25	PROPOSED SPOT ELEVATION
	BOUNDARY
	CENTERLINE
	RIGHT-OF-WAY
	PROPOSED CURB AND GUTTER
	EXISTING CURB AND GUTTER
	PROPOSED SIDEWALK
	PROPOSED SETBACK
	PROPOSED LOT LINE
	PROPOSED SCREEN WALL
	PROPOSED RETAINING WALL DESIGN BY OTHERS



WATER QUALITY COBBLE SWALE DETAIL

NTS

N

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

ENGINEER'S SEAL DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER 1/24/16 DAVID SOULE P.E. #14522	LEGACY NAA APARTMENTS GRADING AND DRAINAGE PLAN	DRAWN BY WCWJ DATE 1-23-16 21331-LA/DUF-1-07-16
	Rio Grande Engineering 1808 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999	SHEET # C1 JOB # 21331

CAUTION:

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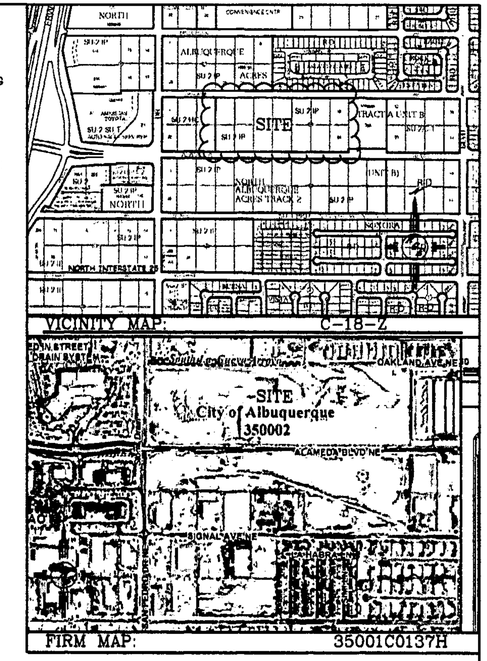

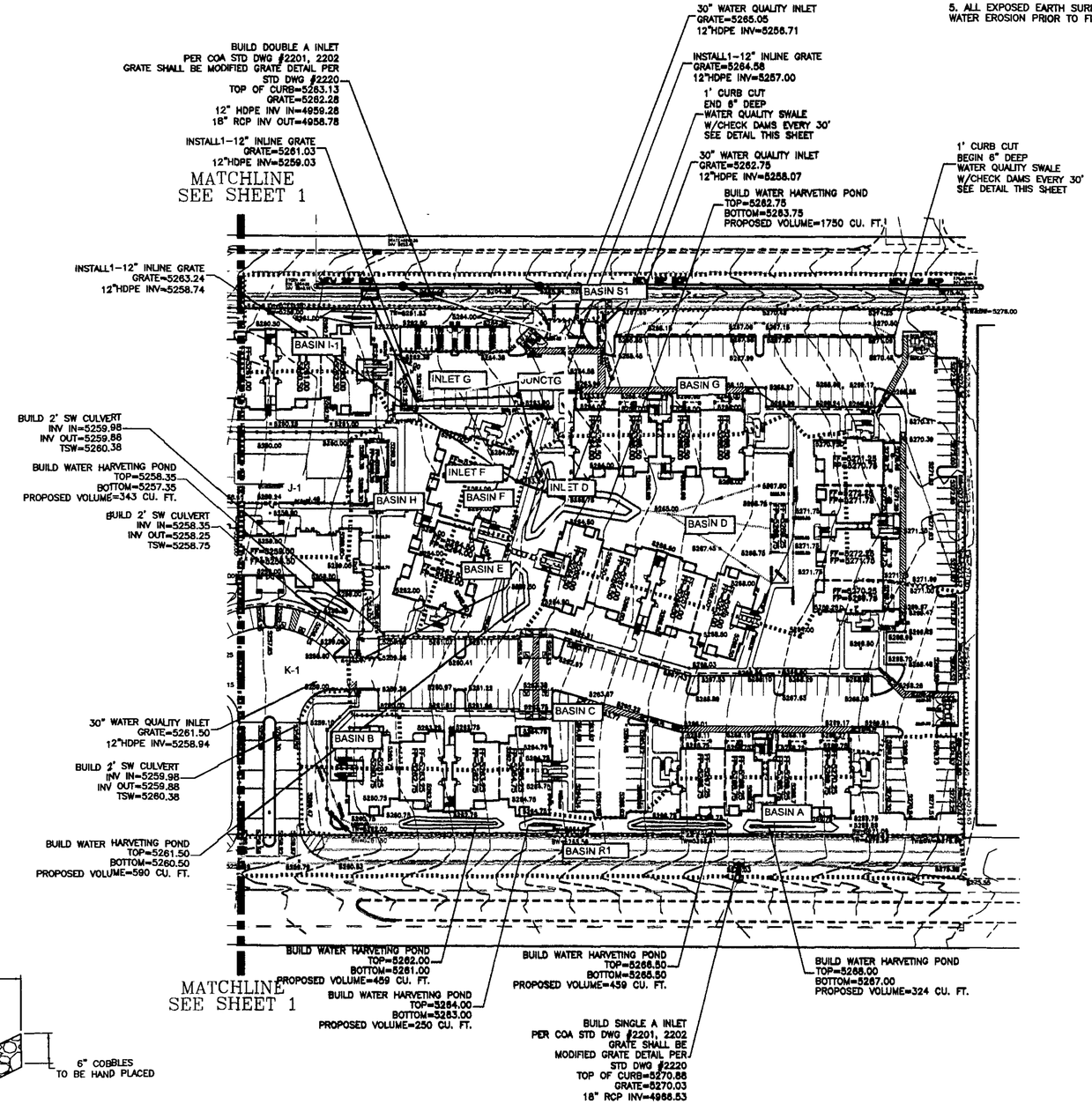

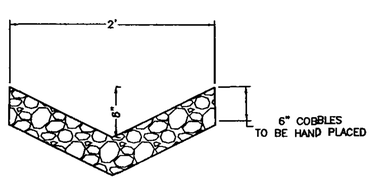

WATER QUALITY COBBLE SWALE DETAIL

NTS

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	EXISTING CURB AND GUTTER
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	PROPOSED SETBACK
	PROPOSED LOT LINE
	PROPOSED SCREEN WALL
	PROPOSED RETAINING WALL DESIGN BY OTHERS

N

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

ENGINEER'S SEAL

DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER

1/24/16

DAVID SOULE P.E. #14522

LEGACY NAA APARTMENTS

GRADING AND DRAINAGE PLAN

Rio Grande Engineering
1806 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999

DRAWN BY WCWJ

DATE 1-23-16

21001-LA/DUE-1-07-16

SHEET # C2

JOB # 21331

APPENDIX C

HYDRAULIC CALCULATIONS

DROP INLET CALCULATIONS

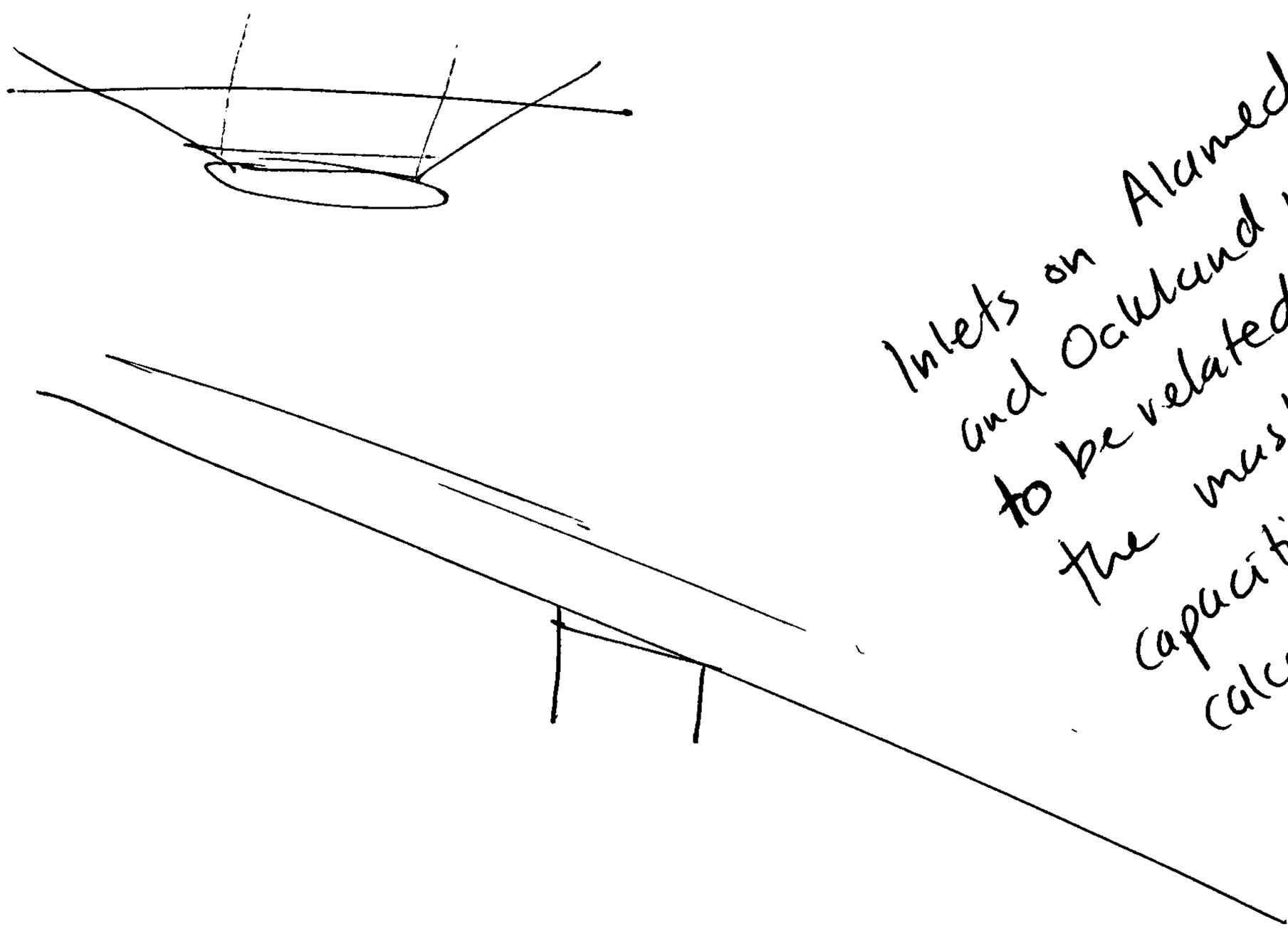
INLET	TYPE OF INLET	AREA (SF)	Q(MAX) (CFS)	H (FT)	H ALLOW (FT)
D	SINGLE A	3.87	14.84	0.6342	0.67
D	DOUBLE	7.68	23.46	0.4025	0.67

ORIFICE EQUATION

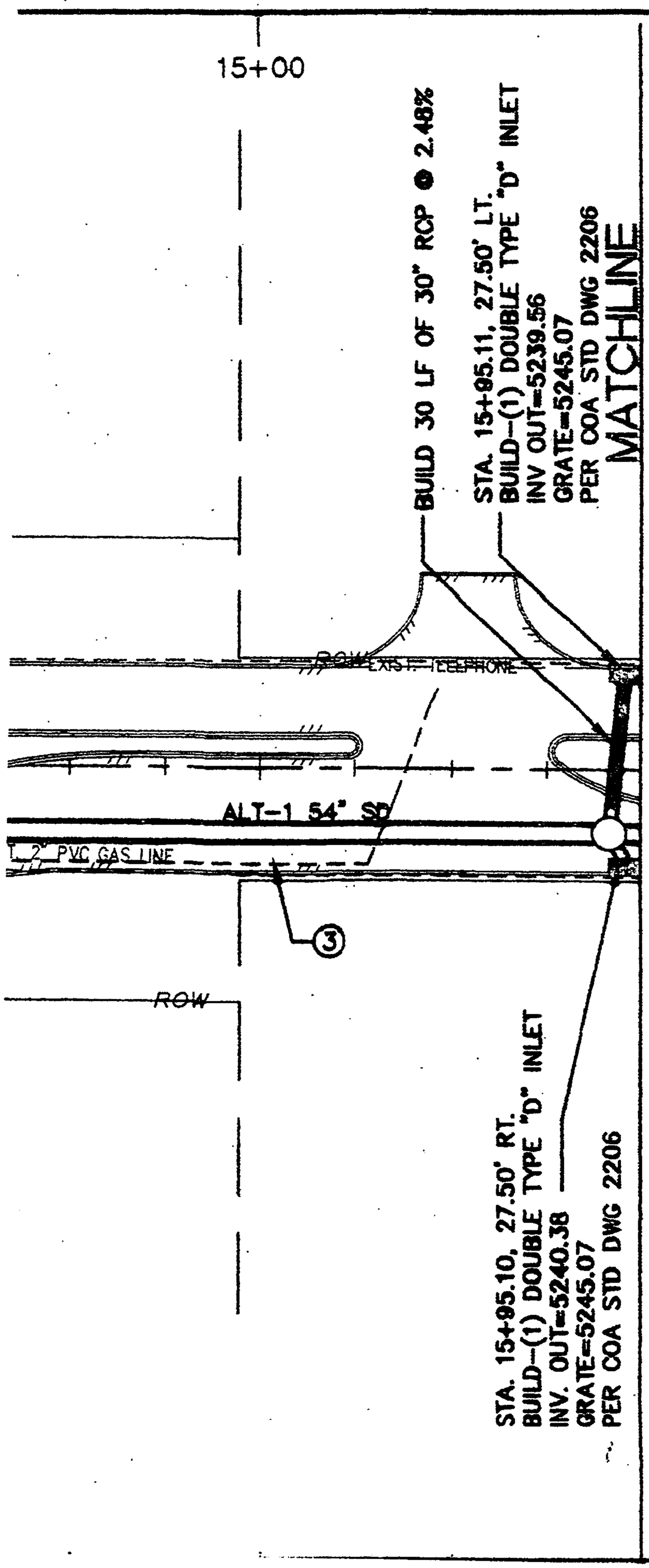
Q = CA sqrt(2gH)

C = 0.6

g = 32.2



Inlets on Alameda and Oakland need to be related to the master plan capacities or calculated.



KEYED NOTES

1. EXISTING [illegible] BE REMOVED [illegible]
2. EXISTING [illegible] TO BE R[illegible]
3. EXISTING [illegible] RELOCATED [illegible]

PO[illegible]

NO.	ELEV. AT [illegible] OF PIPE
PH-1	5230.33

7663.91

STA. 15+95.10,
BUILD-(1) DOUB
INV. OUT=5240.
GRATE=5245.07
PER COA STD I

MATCHLINE STATION 16+00.00 SEESHEET 15-AA2

5250

5240

5230

5220

42°

FIBER OPTIC

HGL

HGL

ALT-1 54" SD

NOTE:

HGL BASE
FUTURE S

#7663.91

40' 20'

TITLE:

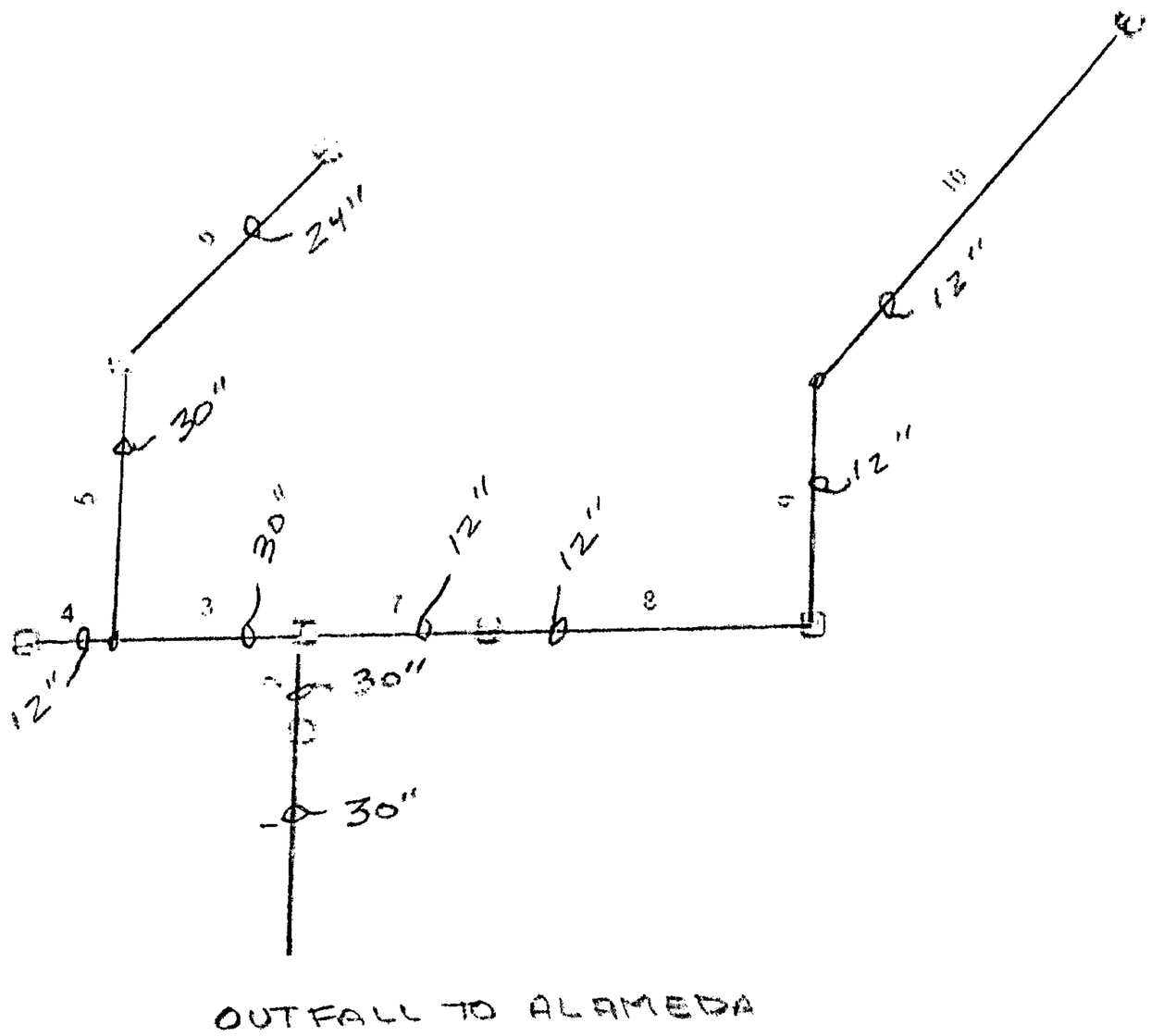
ALAI

Plan View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy apt Alameda

03-24-2016



Storm Sewer Tabulation

Project Name: Legacy apt Alameda

Stormwater Studio 2016 v 2.0.0.6

03-24-2016

Line ID	Length	Drng Area		Rational	C x Area		Tc		Intensity	Total Q	Capacity	Velocity	Pipe		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
New	60.00	0.00	0.00	0.00	0.00	0.00	0.0	5.60	6.05	25.45	16.03	5.61	30	0.15	40.30	40.39	42.39	42.67	46.13	46.57	1
Line 2	30.00	0.00	0.00	0.00	0.00	0.00	0.0	5.50	6.37	23.45	49.67	4.79	30	0.70	40.40	40.61	43.02	43.06	46.57	47.00	2
Line 3	59.87	0.00	0.00	0.00	0.00	0.00	0.0	4.36	6.37	21.00	68.05	6.05	30	1.32	41.43	42.22	43.27	43.75	47.00	47.00	3
Line 4	25.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	0.31	5.44	0.39	12	1.12	42.22	42.50	44.44	44.44	47.00	44.50	4
Line 5	85.00	0.00	0.00	0.00	0.00	0.00	0.0	4.03	6.37	20.69	0.00	4.22	30	-0.26	42.22	42.00	44.72	44.82	47.00	45.25	5
Line 6	90.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	1.17	38.93	0.38	24	1.42	42.00	43.28	45.16	45.16	45.25	47.25	6
Line 7	57.16	0.00	0.00	0.00	0.00	0.00	0.0	5.15	6.37	2.14	5.14	2.72	12	1.00	41.43	42.00	43.42	43.52	47.00	49.00	7
Line 8	100.00	0.00	0.00	0.00	0.00	0.00	0.0	4.43	6.37	1.83	5.14	2.69	12	1.00	42.00	43.00	43.62	43.71	49.00	50.00	8
Line 9	75.00	0.00	0.00	0.00	0.00	0.00	0.0	2.92	6.37	0.65	5.64	1.78	12	1.20	43.00	43.90	43.99	44.24	50.00	50.80	9
Line 10	145.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	0.65	5.55	2.39	12	1.17	43.90	45.59	44.33	45.93	50.80	53.50	10

Notes: IDF File = SampleIDF.idf, Return Period = 2-yrs.

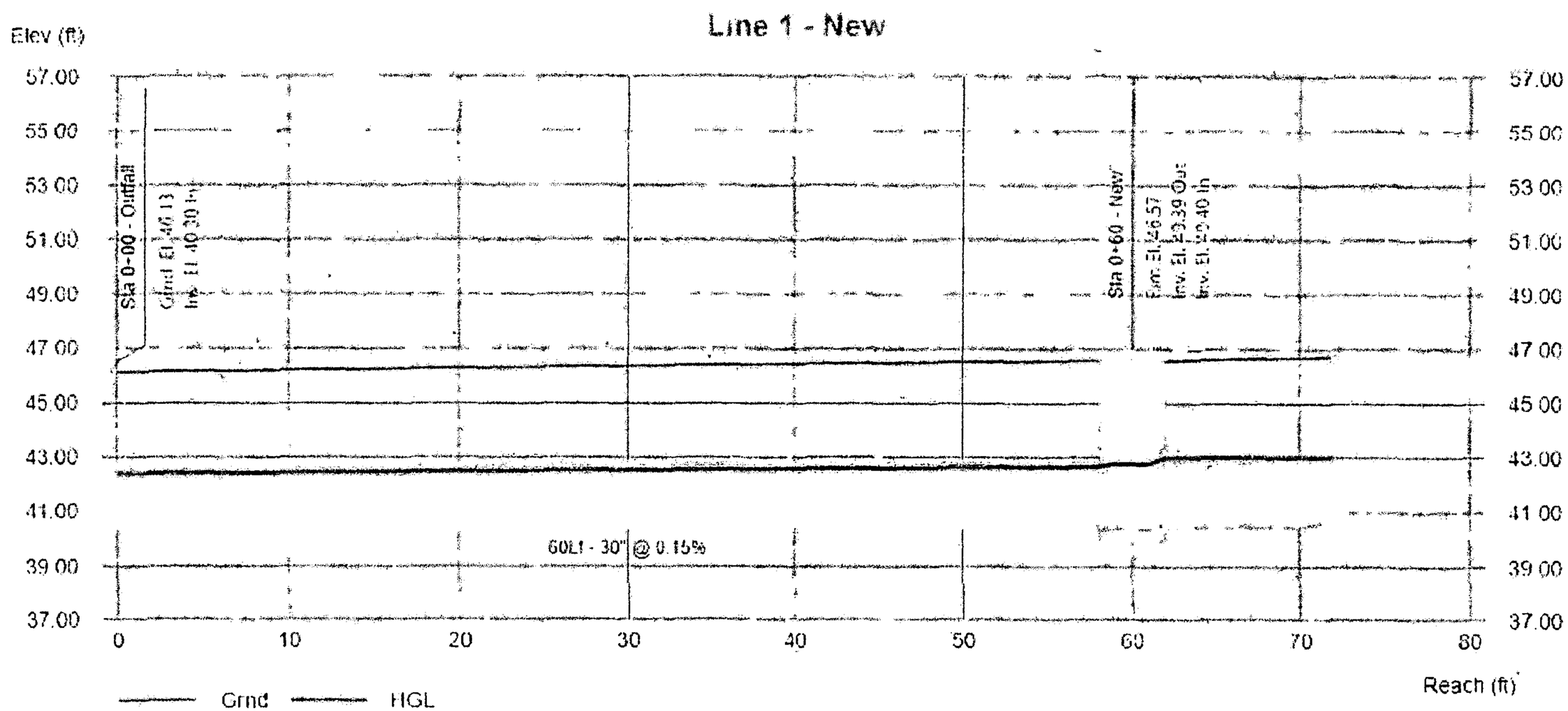
Project File: Legacy apt Alameda.sws

Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy apt Alameda

03-24-2016



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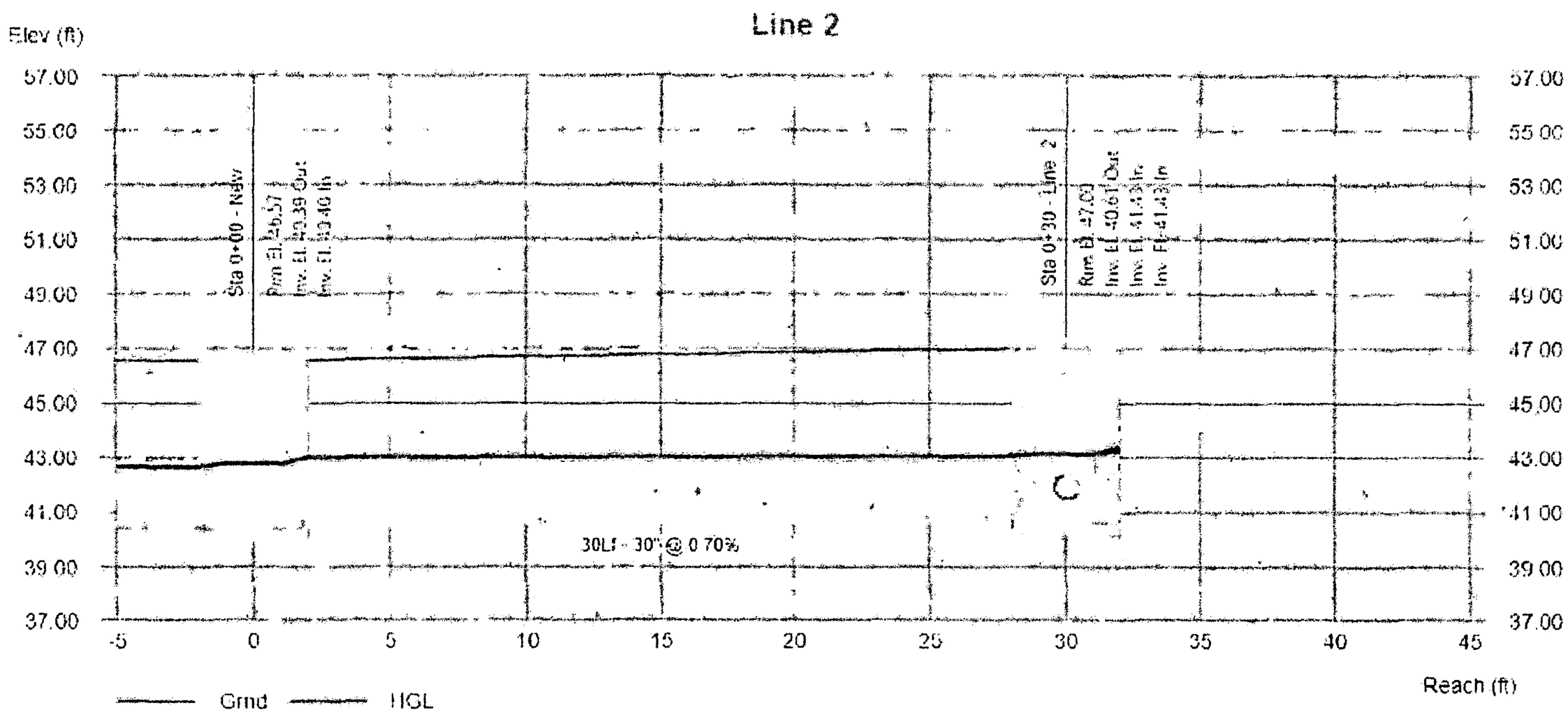

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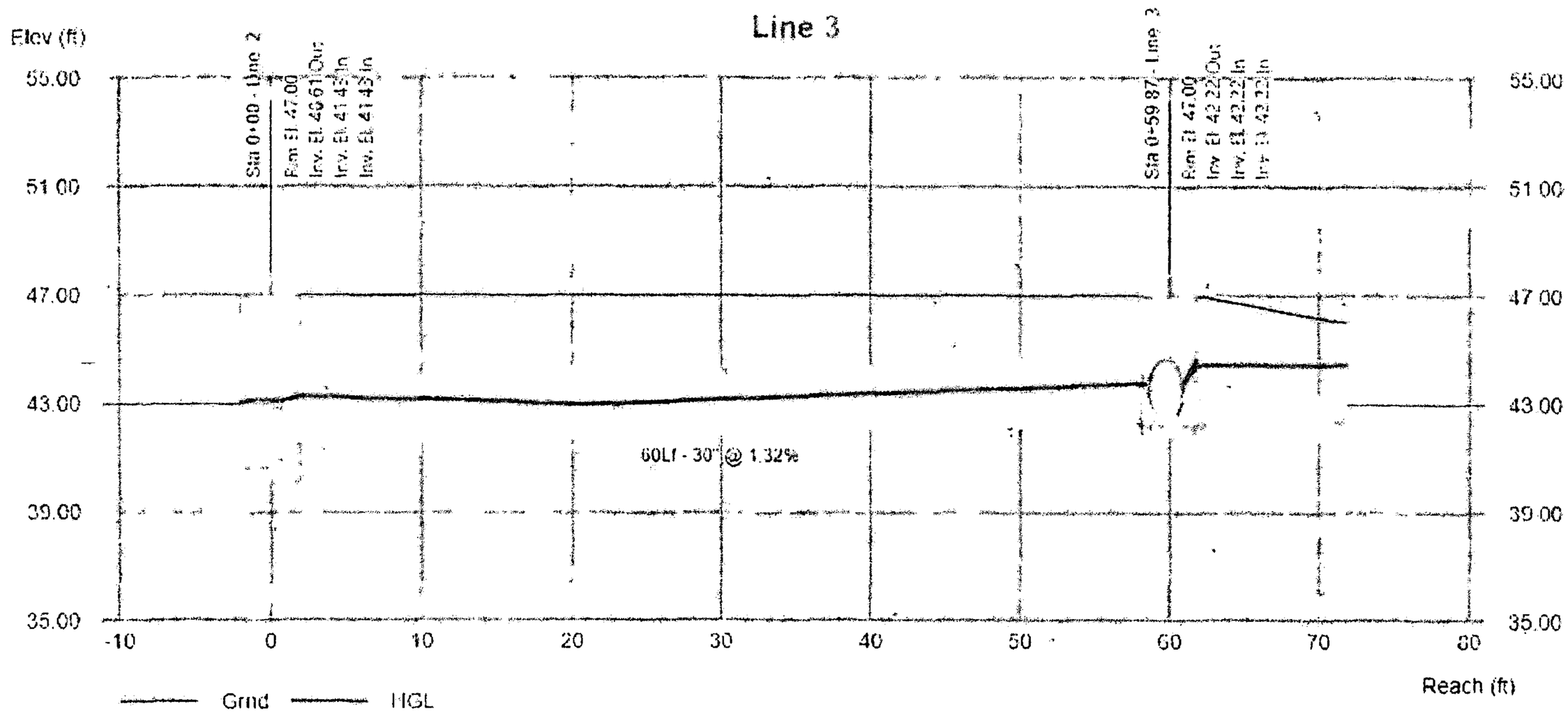

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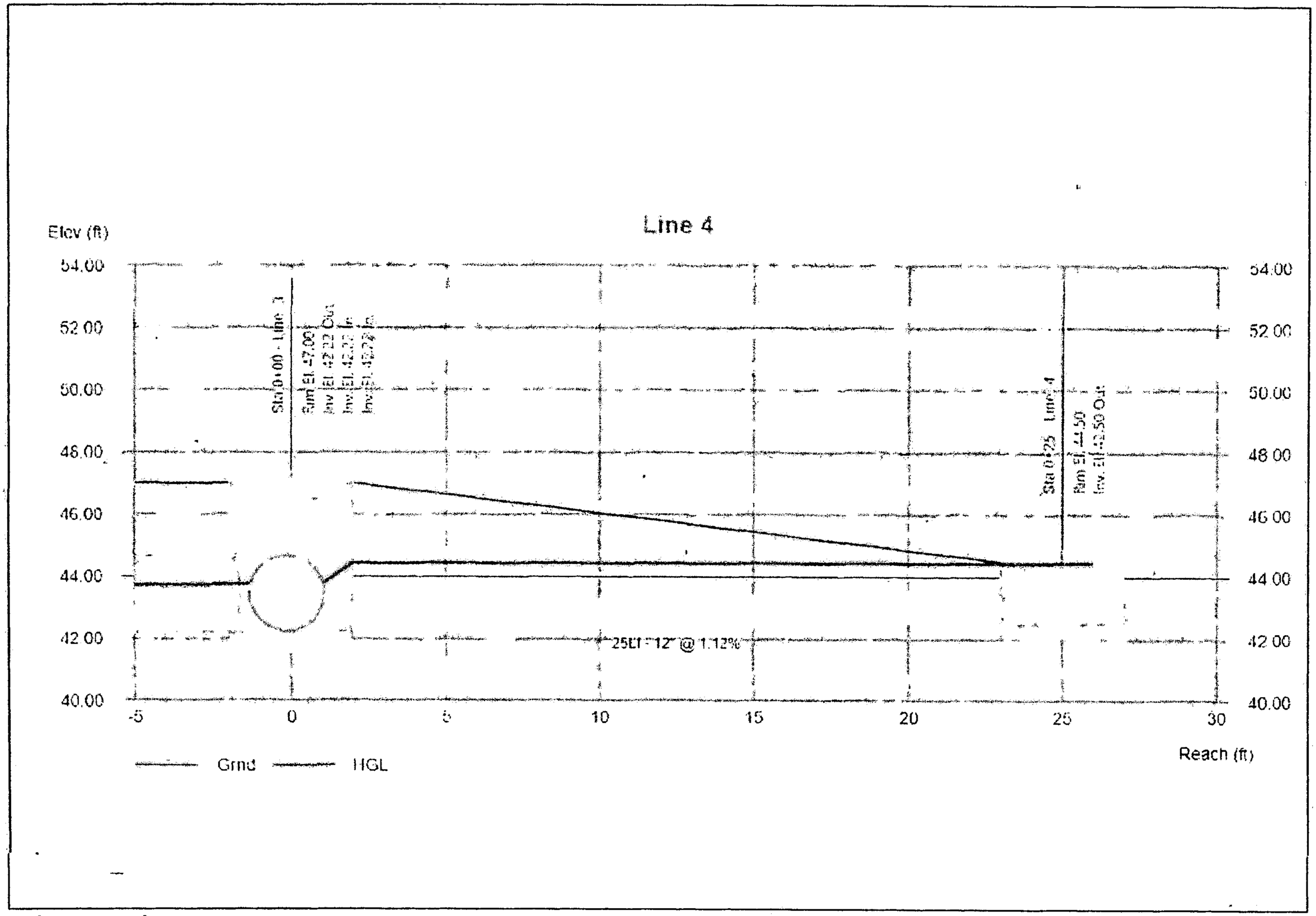

Profile View

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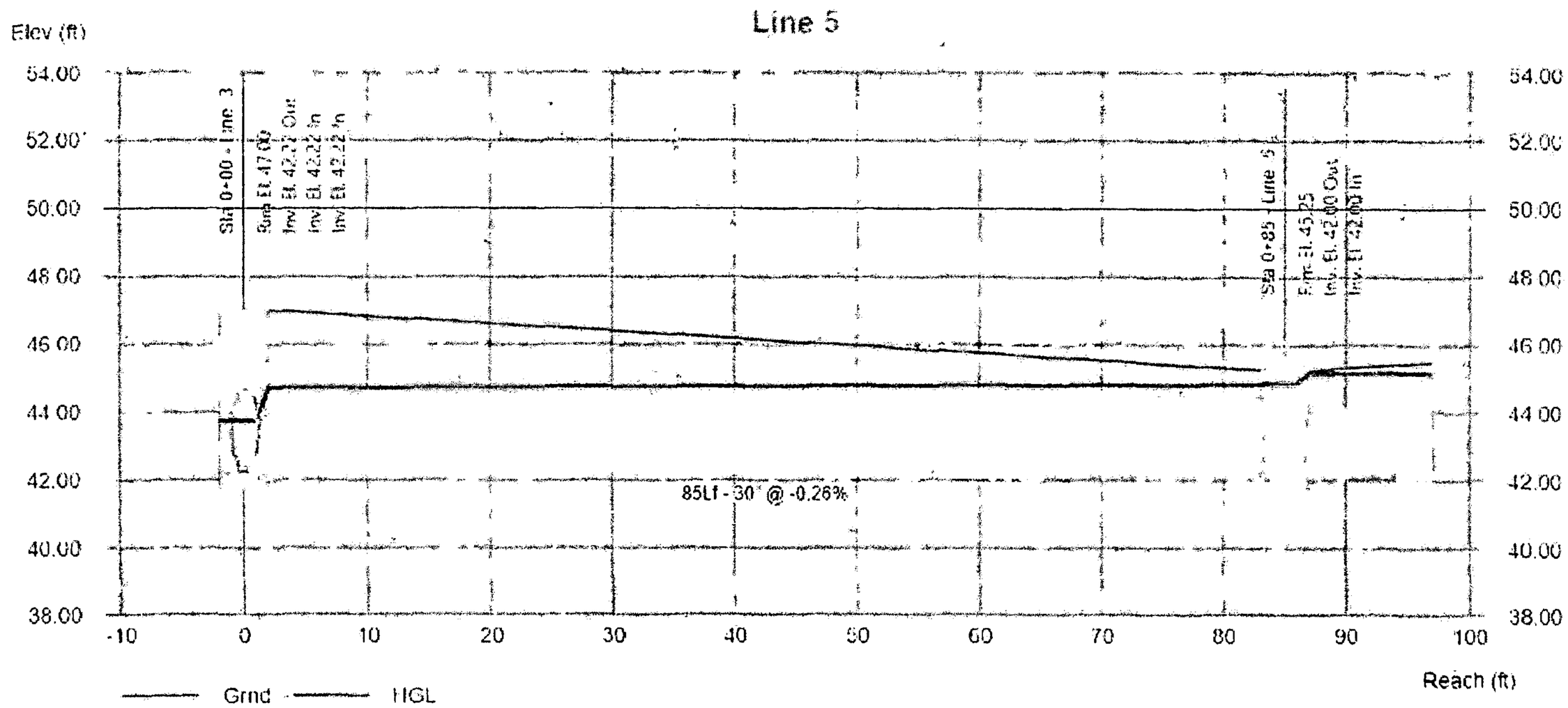

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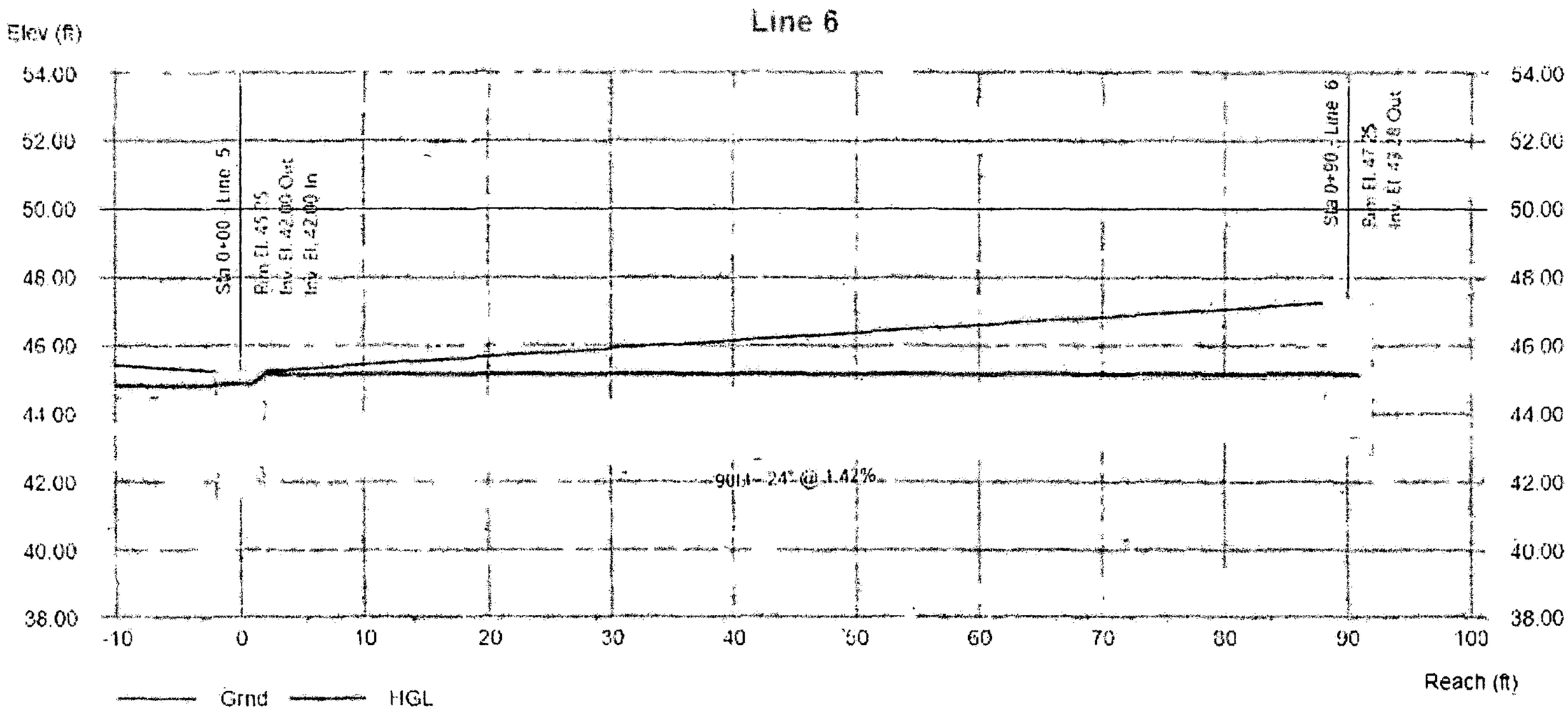

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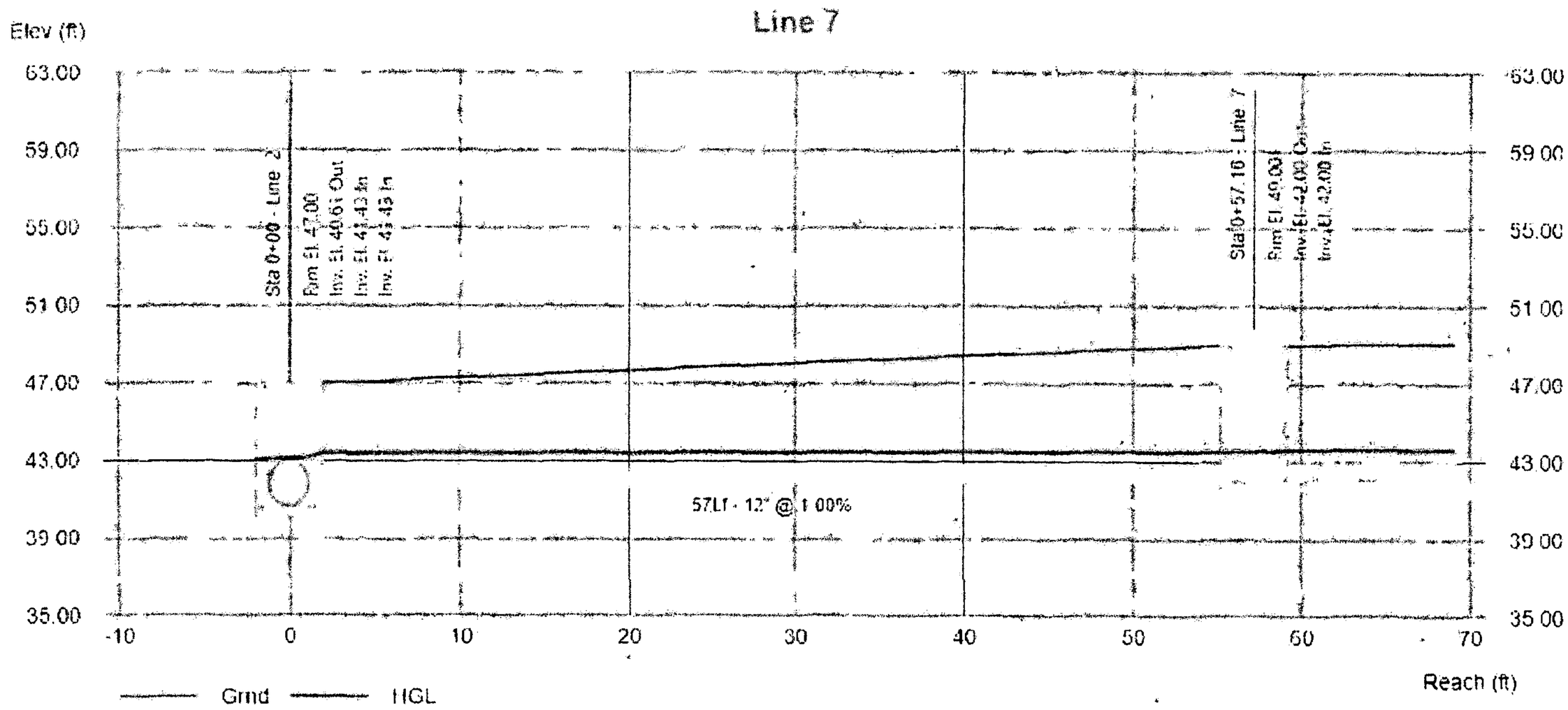

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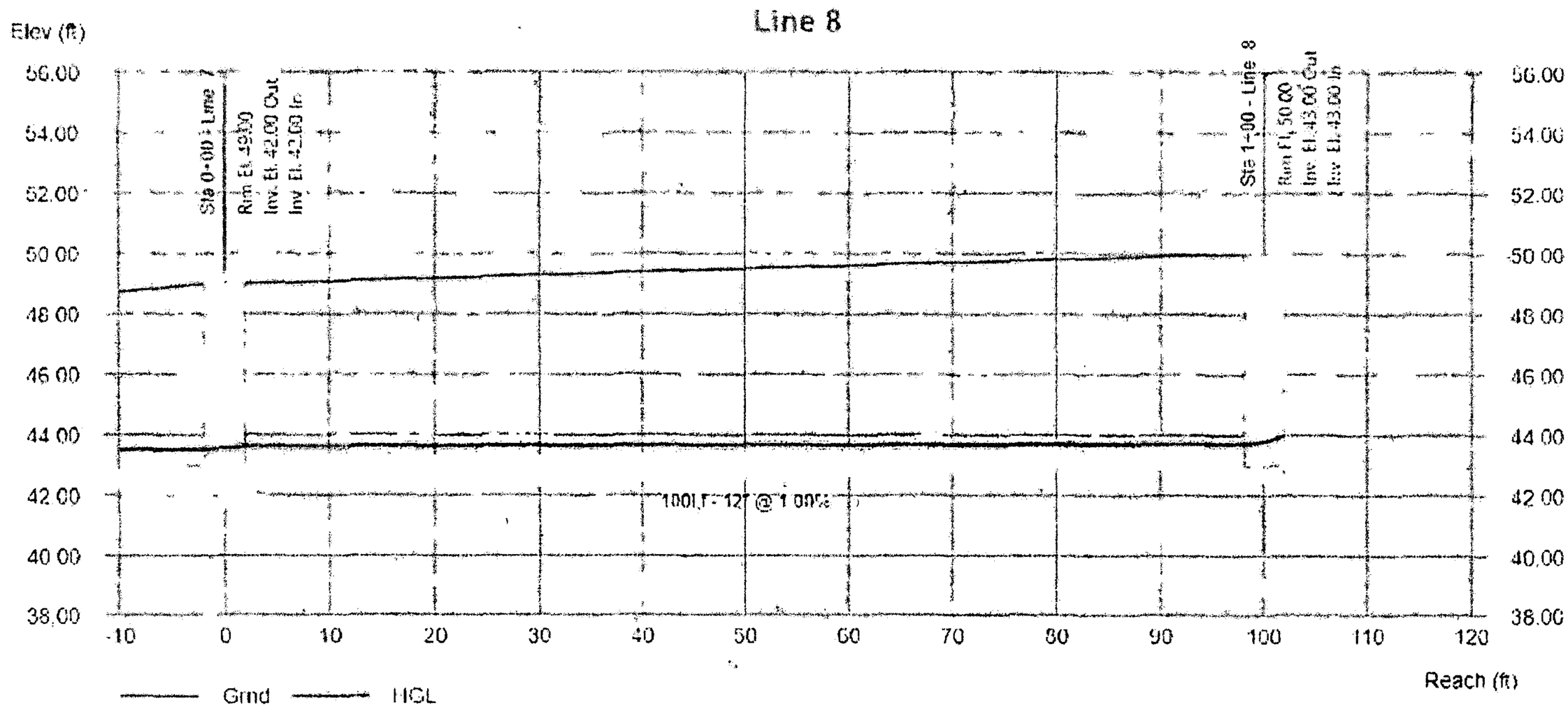

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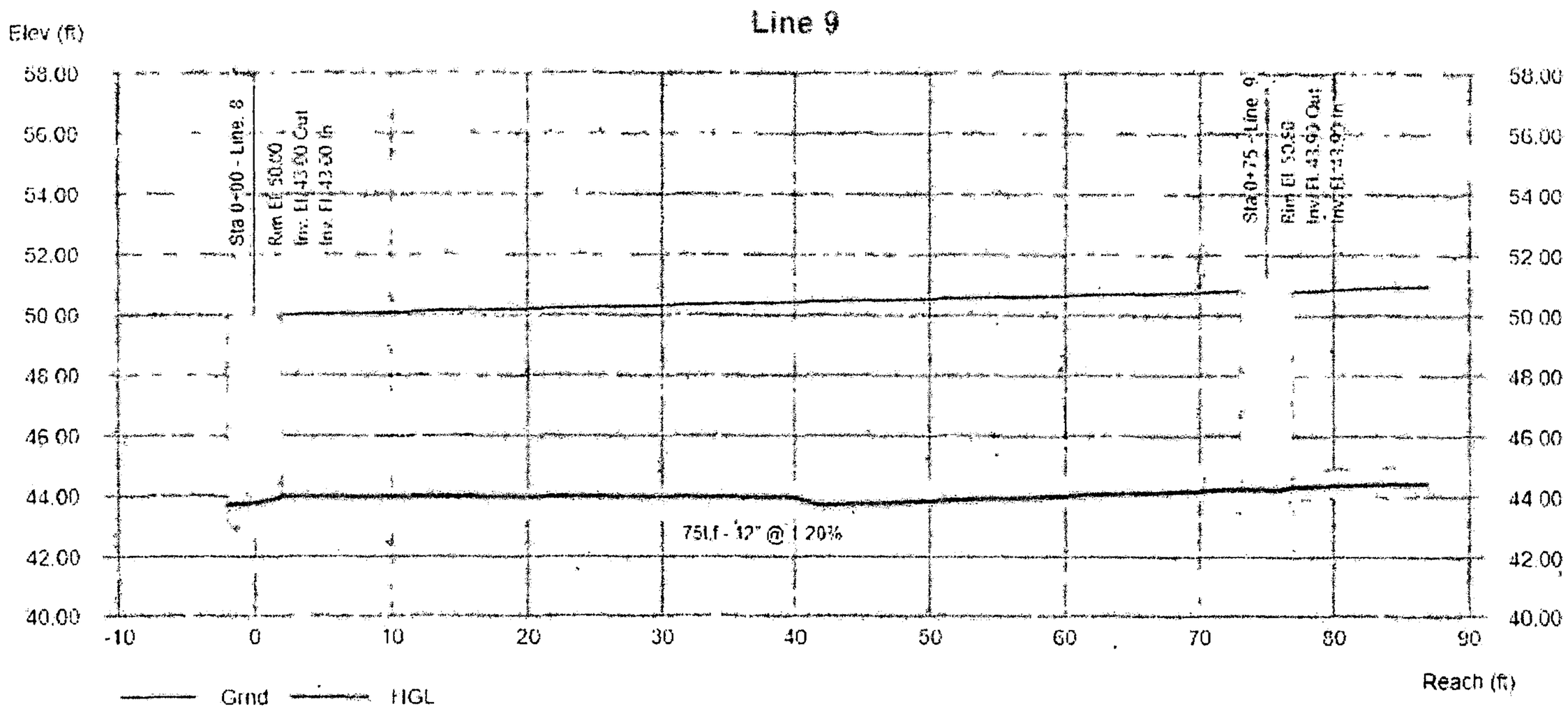

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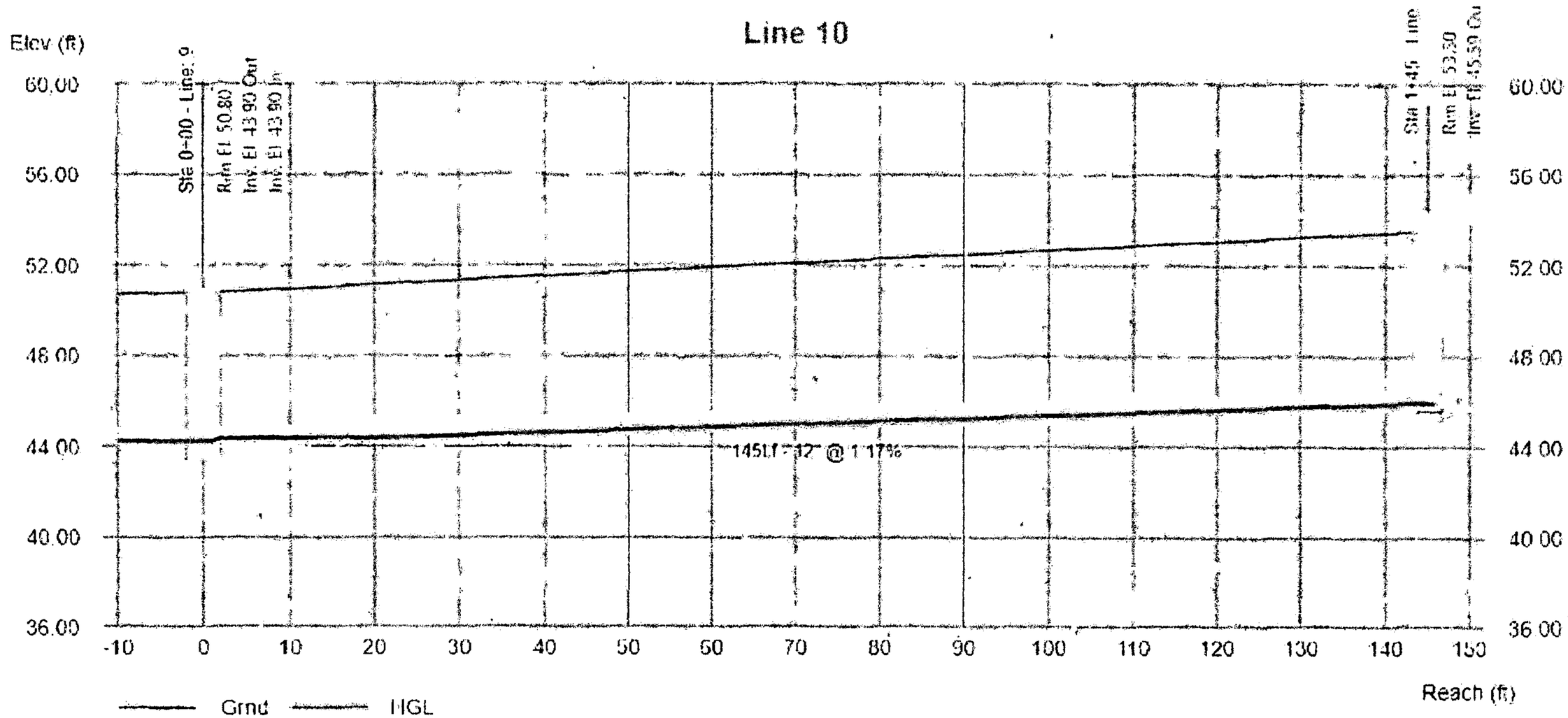


OAKLAND REACH

Signal North to Alameda Blvd.: A 66-inch pipe will be installed between Signal and Alameda Blvd. At Alameda Blvd., a 54- and 60-inch collector system will be installed east of San Pedro to collect 252 CFS and convey it to the trunk line. The main system will increase to an 84-inch pipe at Alameda Blvd.

Alameda Blvd. to Oakland: An 84-inch pipe will be installed between Alameda Blvd. and Oakland and this pipe will convey 417 CFS.

Oakland to Eagle Rock: A 36-inch storm drain system will be stubbed out to the east in Oakland to collect 45 CFS from this street. The 36-inch pipe will connect to the 84-inch main line that will convey 462 CFS to the proposed junction box that will be located at the intersection of San Pedro and Eagle Rock.

Intersection of San Pedro and Eagle Rock: A junction box will be constructed at San Pedro and Eagle Rock. This box will receive the 462 CFS from south of Eagle Rock and an additional 256 CFS from Eagle Rock east of the intersection. The total flow to the junction box will be 718 CFS. This flow will be split at the junction box using a 72-inch pipe to the west and an 84-inch pipe to the north. The invert of the j-box will be set 4 feet lower than the in-coming storm drain inverts to produce a head in the j-box sufficient to move 325 CFS to the west and 393 CFS to the north. The out-going pipes are sized so that the flows will be metered in each direction. The outlet pipes were sized to operate as culverts that are subject to inlet control conditions and this condition is achieved by 1) sizing the outlet pipes; and 2) setting the slopes of the pipes such that the outlet pipes do not backwater into the junction box.

Eagle Rock West of San Pedro: The proposed 72-inch pipe will connect to the existing storm drain located in Eagle Rock about half way between San Pedro and the I-25 frontage roads. This system will convey 325 CFS to the existing culvert head box located at the I-25 frontage road just north of Eagle Rock. As-constructed drawings indicate that these culverts will convey the planned 325 CFS to the west side of I-25 through five (5) 305 foot long 36-inch RCP culverts.

Eagle Rock to Alameda Place: This system will start as an 84-inch pipe at the j-box to allow the required flows to move out of the j-box and will reduce to a 78-inch pipe approximately 32 feet north of the j-box by the use of a bulk head reducer. The 78-inch pipe will convey the 393 CFS from the j-box north to Alameda Place.

Alameda Place to the I-25 Frontage Road: The system will turn west from the intersection of San Pedro and Alameda Place and the size will be reduced to a 72-inch pipe in Alameda Place.. An additional 50 CFS will be intercepted by the system at Alameda Place. The 72-inch pipe will carry a combined flow of 442 CFS and will continue west to a pre-determined angle point, then will continue to a planned junction box at the I-25 frontage road. The angle point located in Alameda Place will be determined during the design and will depend on the availability of an easement through the business located on the north side of Alameda Place.

#5394.91

DOT Report (San Pedro SD - Final Single Pipe System with changes from coa.stc)

Label	-Node- Upstream Downstream	Conduit Description	Slope (Calculated) (ft/ft)	Length (ft)	Manning's n	Flow (ft^3/s)	Velocity (Average) (ft/s)	-Ground- Upstream Downstream (ft)	-Invert- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)
PR. 66" RCP	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL	Circular Pipe - 66.0 in	0.006	532	0.013	165	6.94	5230.42	5222.97	5229.43
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.1
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.	Circular Pipe - 84.0 in	0.005	525	0.013	417	12.96	5229.65	5219.8	5225.46
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	139	0.013	462	13.62	5228	5217.29	5223.55
	PR. INLET NORTH OF SAN PEDRO & OAKLAND							5226.12	5216.57	5223.01
PR. 84" RCP	PR. INLET NORTH OF SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	335	0.013	462	13.38	5226.12	5216.57	5222.46
	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK							5224.23	5214.89	5220.33
PR. 84" RCP	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK	Circular Pipe - 84.0 in	0.006	31	0.013	462	15.09	5224.23	5214.89	5220.32
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5220.1
PR. 84" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 84.0 in	0.009	32	0.013	393	16.57	5224.03	5210.5	5215.7
	PR. MH							5223.95	5210.22	5215.54
PR. 78" RCP	PR. MH	Circular Pipe - 78.0 in	0.01	505	0.013	393	17.57	5223.95	5210.22	5215.54
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.80
PR.72" RCP	PR. 45 DEGREE BEND AND 78" X 72" BHR	Circular Pipe - 72.0 in	0.012	257	0.013	443	15.67	5208.9	5199.5	5205.55
	SAN PEDRO SD OUTFALL AT I-25 AND ALAMEDA PLACE							5203.5	5196.43	5202.74
PR. 54" RCP	PR. SAN PEDRO & SIGNAL STUBOUT: Q100 = 165 CFS	Circular Pipe - 54.0 in	0.026	50	0.013	165	10.37	5233.2	5225.75	5230.0
	45 DEG BEND							5231.8	5224.36	5230.25
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.026	50	0.013	165	8.4	5231.8	5224.30	5229.80
	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL							5230.42	5222.97	5229.67
EX. 54" RCP	SAN PEDRO & ALAMEDA BLVD. STUBOUT: Q100 = 252 CFS	Circular Pipe - 54.0 in	0.034	50	0.013	252	15.84	5232.3	5223.36	5230.29
	45 DEG BEND							5230.1	5221.58	5229.47
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.034	50	0.013	252	17.83	5230.1	5221.58	5229.3
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 36" RCP	PR. SAN PEDRO & OAKLAND STUBOUT: Q100 = 45 CFS	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5230.6	5220.05	5224.0
	45 DEG BEND							5229.3	5218.67	5224.37
PR. 36" RCP	45 DEG BEND	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5229.3	5218.67	5224.15
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 72" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 72.0 in	0.02	5	0.013	325	(N/A)	5224.03	5210.5	(N/A)
	PR. MH							5224	5210.4	(N/A)
PR. 66" RCP	PR. MH	Circular Pipe - 66.0 in	0.019	334	0.013	325	20.9	5224	5210.4	5215.37
	CONNECTION TO EXISTING SD IN EAGLE ROCK							5212.65	5204.2	5207.75
PR. 78" RCP	PR. MH AT SAN PEDRO AND ALAMEDA PL.	Circular Pipe - 78.0 in	0.017	30	0.013	443	13.35	5221.4	5205	5211.75
	PR. 45 DEGREE BEND							5220	5204.5	5211.54
PR. 78" RCP	PR. 45 DEGREE BEND	Circular Pipe - 78.0 in	0.01	496.7	0.013	443	17.77	5220	5204.5	5210.07
	PR. 45 DEGREE BEND AND 78" X 72" BHR							5208.9	5199.5	5206.85
PR. 36" RCP	PROPOSED INTERCEPTION OF Q 100 = 50 CFS AT ALAMEDA	Circular Pipe - 42.0 in	0.01	50	0.013	50	10.44	5222	5211.5	5213.71
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.85
PR. 54 RCP	Q 100 = 256 INTERCEPTION AT EAGLE ROCK	Circular Pipe - 54.0 in	0.02	50	0.013	256	16.1	5226	5216	5220.6
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5219.77

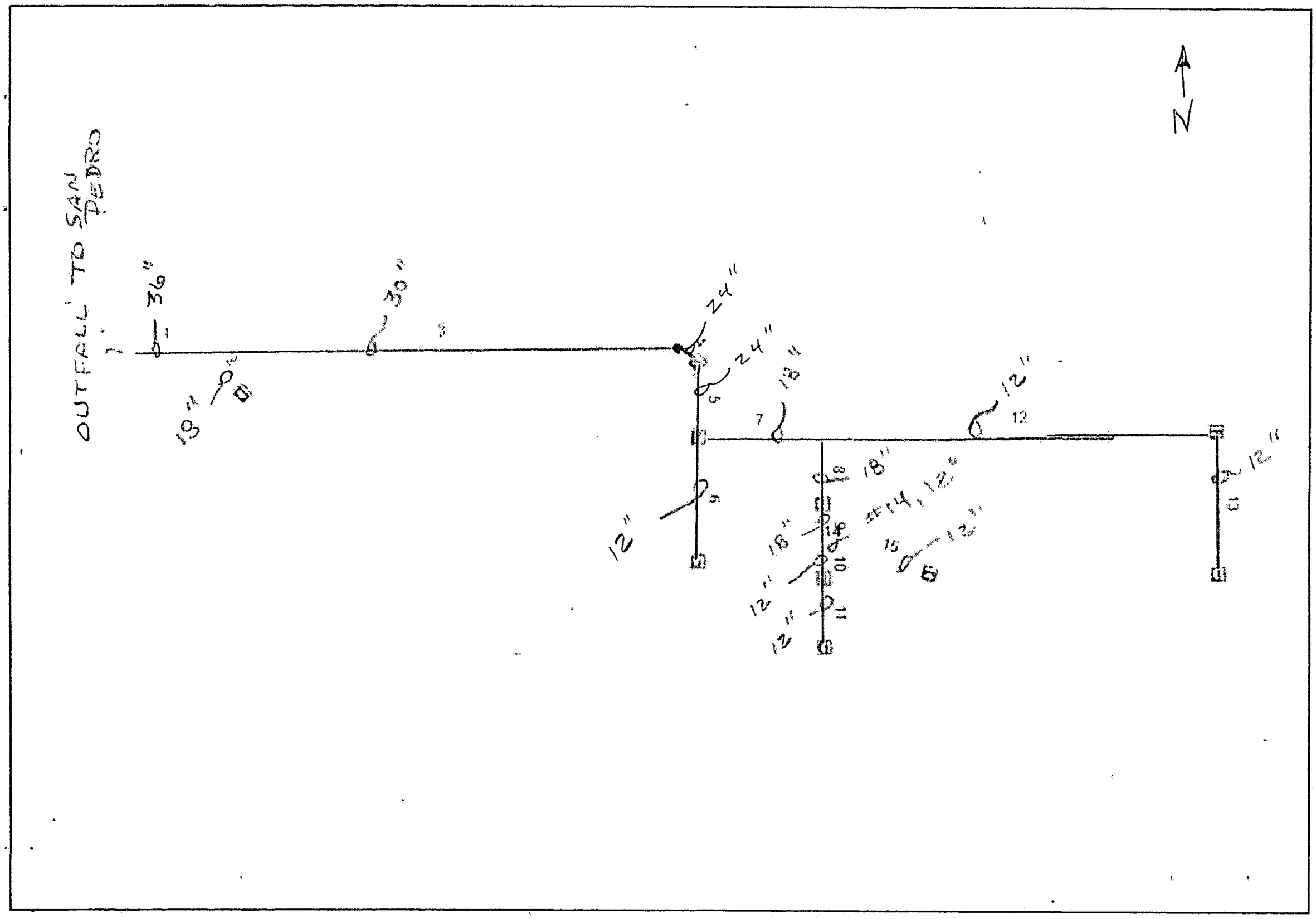
#5546.1

Plan View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-24-2016



Storm Sewer Tabulation

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-23-2016

Line ID	Length	Drng Area		Ratio	C x Area		Tc		Intensity	Total Q	Capacity	Velocity	Pipe		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
Line 1	50.00	0.00	0.00	0.00	0.00	0.00	0.0	4.45	6.37	45.00	209.21	7.36	36	9.84	18.08	23.00	24.60	25.14	27.50	31.00	1
Line 2	50.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	7.00	42.90	4.75	18	8.00	23.00	27.00	26.08	28.01	31.00	32.50	2
Line 3	390.00	0.00	0.00	0.00	0.00	0.00	0.0	3.61	6.37	38.00	64.01	8.60	30	2.44	23.50	33.00	25.66	35.06	31.00	41.00	3
Line 4	20.00	0.00	0.00	0.00	0.00	0.00	0.0	3.55	6.37	16.75	113.09	6.10	24	25.00	33.00	38.00	35.99	39.45	41.00	40.33	4
Line 5	60.00	0.00	0.00	0.00	0.00	0.00	0.0	3.33	6.37	14.83	63.96	5.61	24	3.83	38.00	40.30	39.98	41.66	40.33	44.50	5
Line 6	100.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	1.00	7.63	2.21	12	2.20	40.80	43.00	42.31	43.42	44.50	45.00	6
Line 7	100.00	0.00	0.00	0.00	0.00	0.00	0.0	3.03	6.37	9.55	15.17	5.91	18	1.00	40.30	41.30	42.05	42.48	44.50	48.15	7
Line 8	55.00	0.00	0.00	0.00	0.00	0.00	0.0	2.55	6.37	3.41	22.41	3.05	18	2.18	41.30	42.50	43.08	43.20	48.15	47.00	8
Line 9	35.00	0.00	0.00	0.00	0.00	0.00	0.0	2.21	6.37	3.01	9.93	3.09	18	0.43	42.50	42.65	43.42	43.38	47.00	47.00	9
Line 10	25.00	0.00	0.00	0.00	0.00	0.00	0.0	1.80	6.37	0.80	3.25	1.03	12	0.40	42.65	42.75	43.70	43.70	47.00	47.00	10
Line 11	55.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	0.40	3.47	0.59	12	0.45	42.75	43.00	43.72	43.72	47.00	47.00	11
Line 12	320.00	0.00	0.00	0.00	0.00	0.00	0.0	0.41	6.37	6.14	7.01	7.87	12	1.86	41.30	47.25	42.55	48.21	48.15	54.80	12
Line 13	115.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	3.70	7.95	5.05	12	2.39	47.25	50.00	48.98	50.82	54.80	52.75	13
Line 14	15.00	0.00	0.00	0.00	0.00	0.00	0.0	0.54	6.37	2.21	4.20	2.90	12	0.67	42.65	42.75	43.63	43.64	47.00	47.00	14
Line 15	74.41	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	1.81	11.55	3.11	12	5.04	42.75	46.50	43.78	47.07	47.00	49.50	15

Notes: IDF File = SampleIDF.idf, Return Period = 2-yrs.

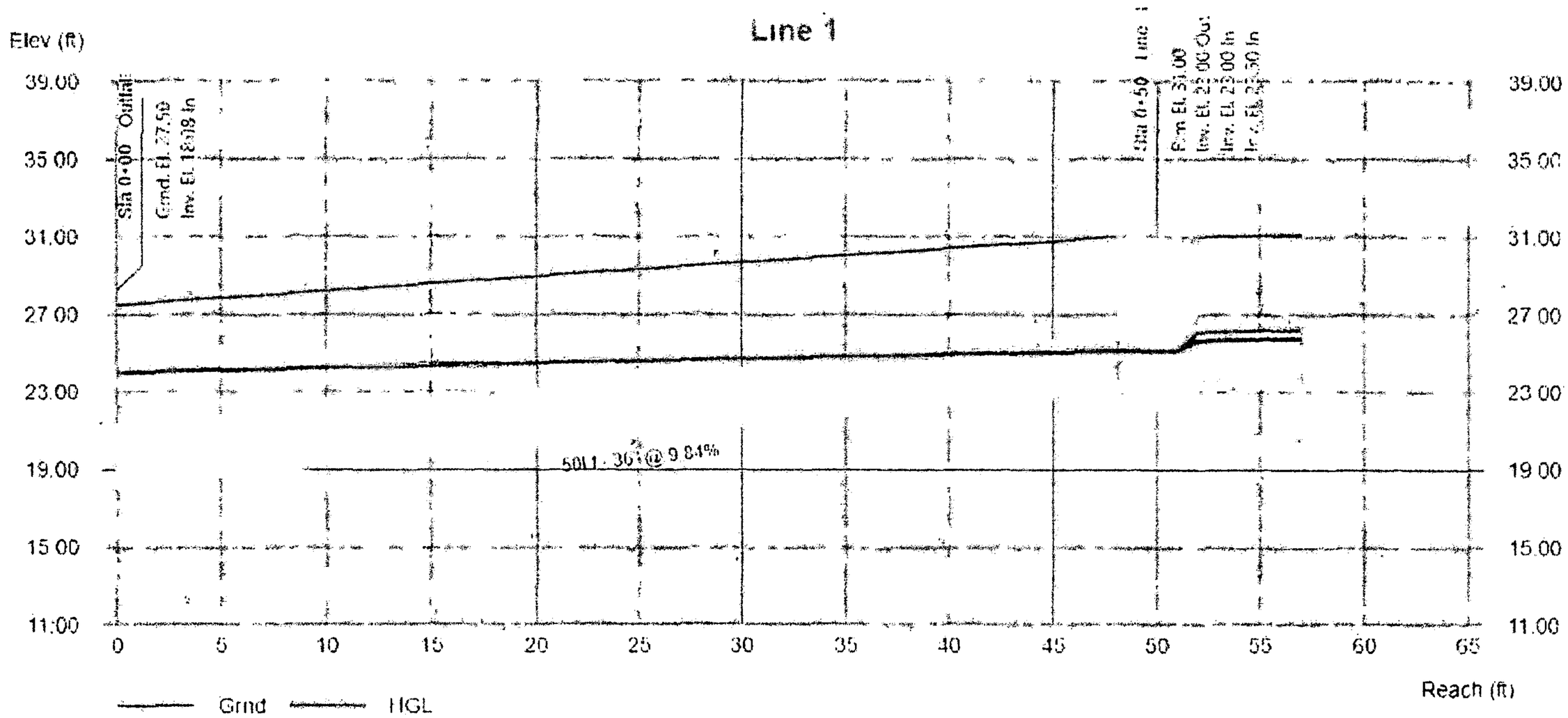
Project File: legacy apt oak.sws

Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-23-2016

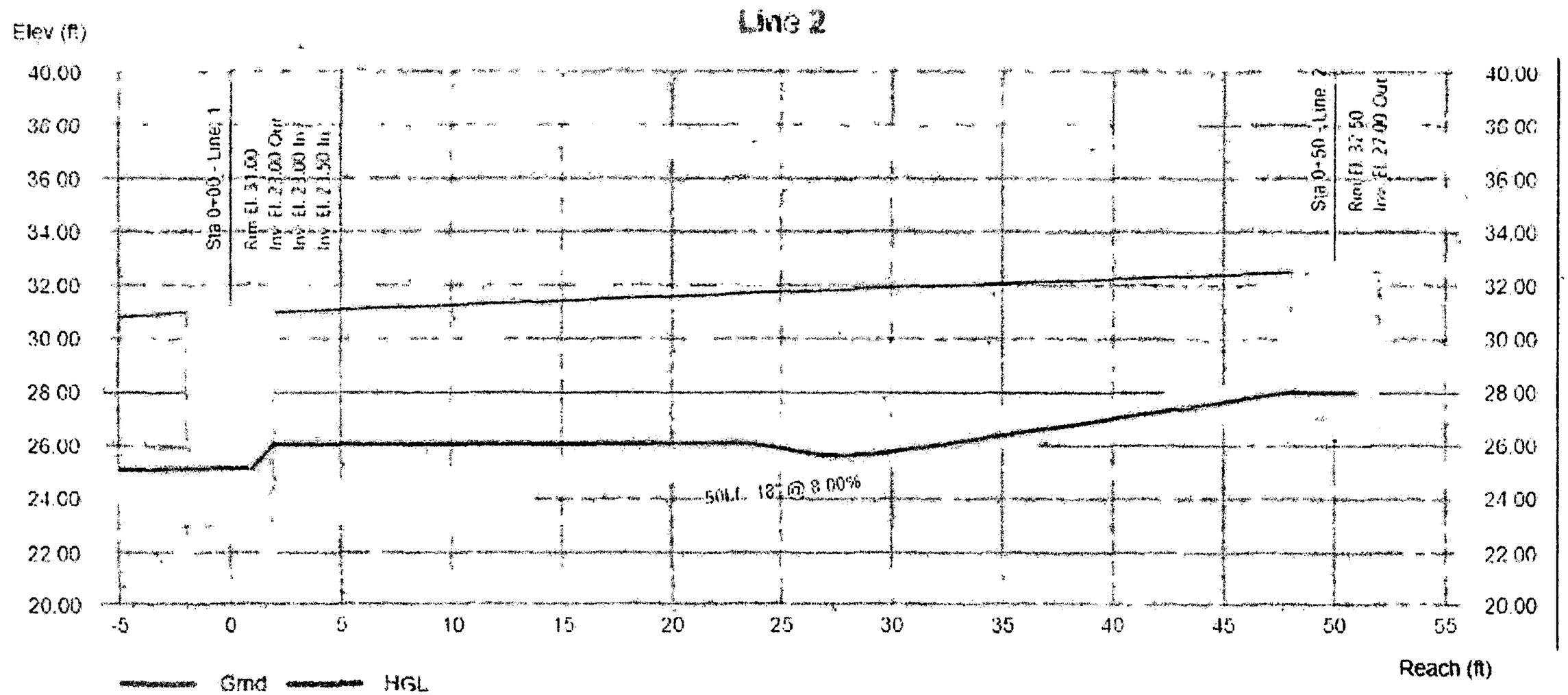


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21

03-23-2016



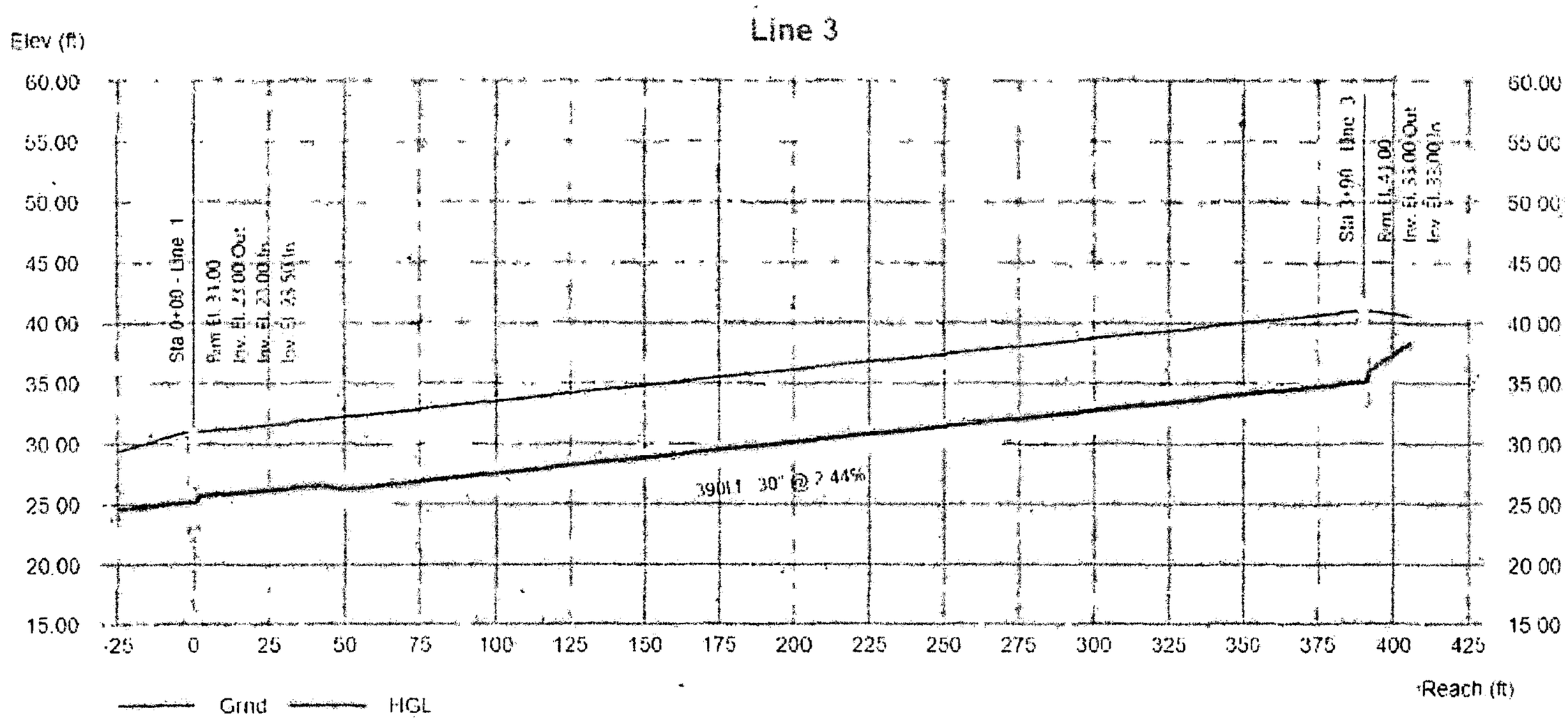
Project File: legacy apt oak.sws

Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-23-2016

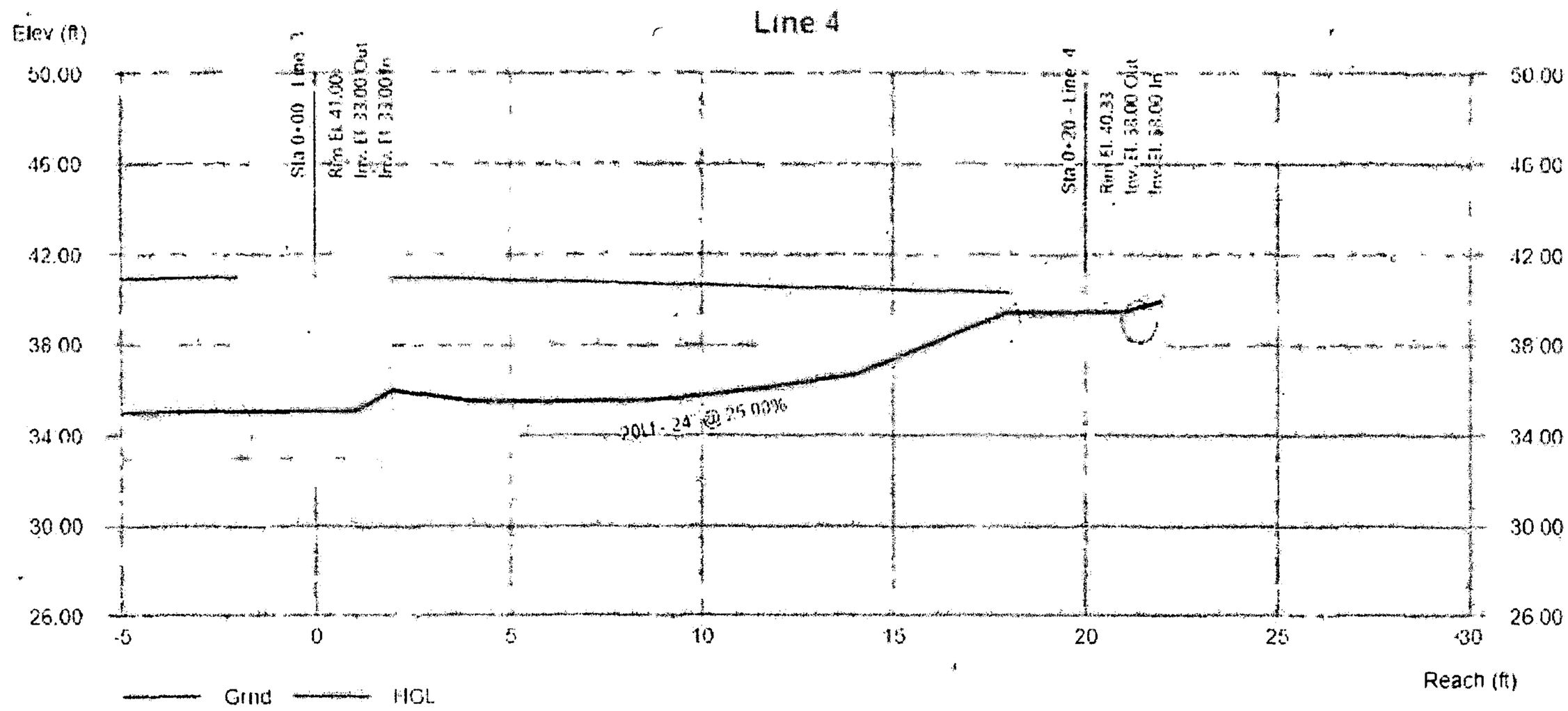


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-23-2016

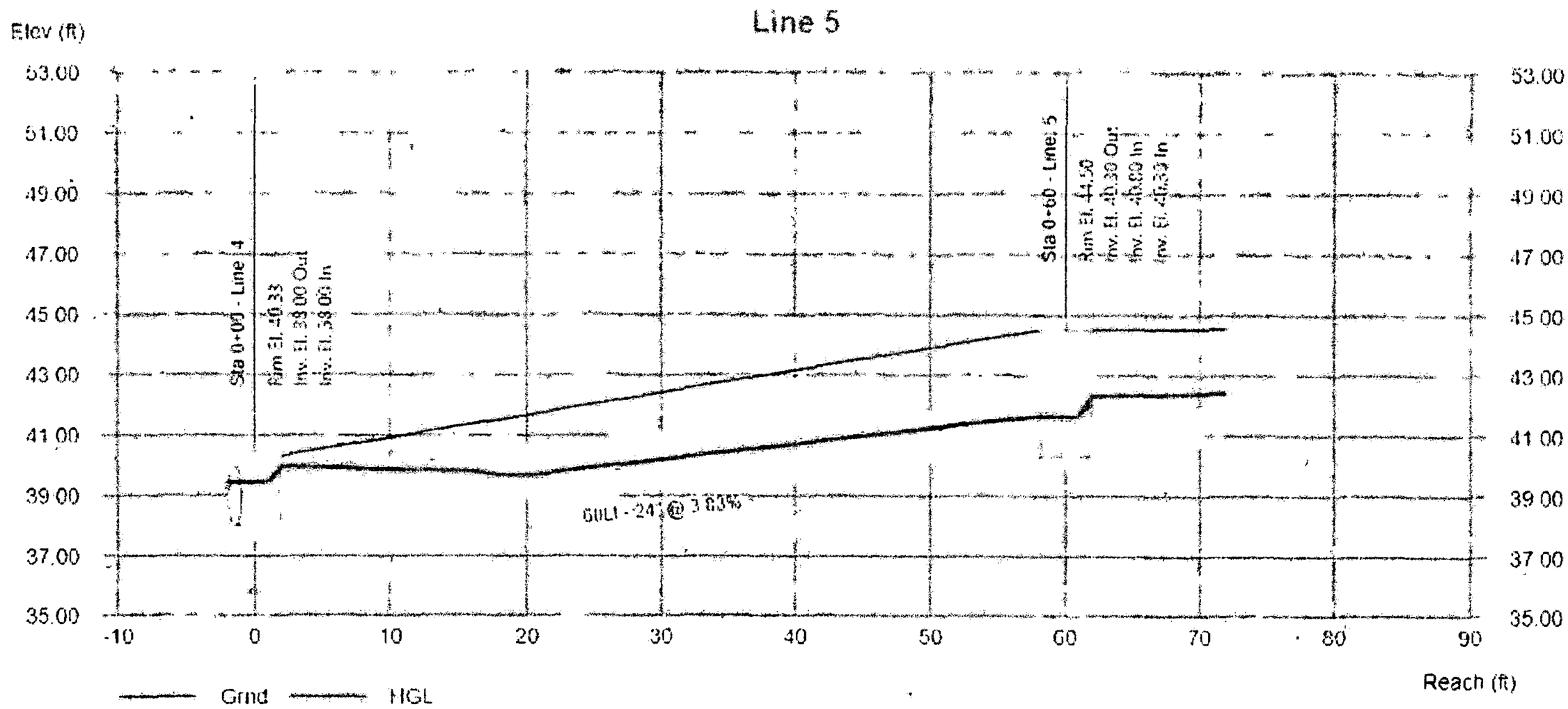


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016

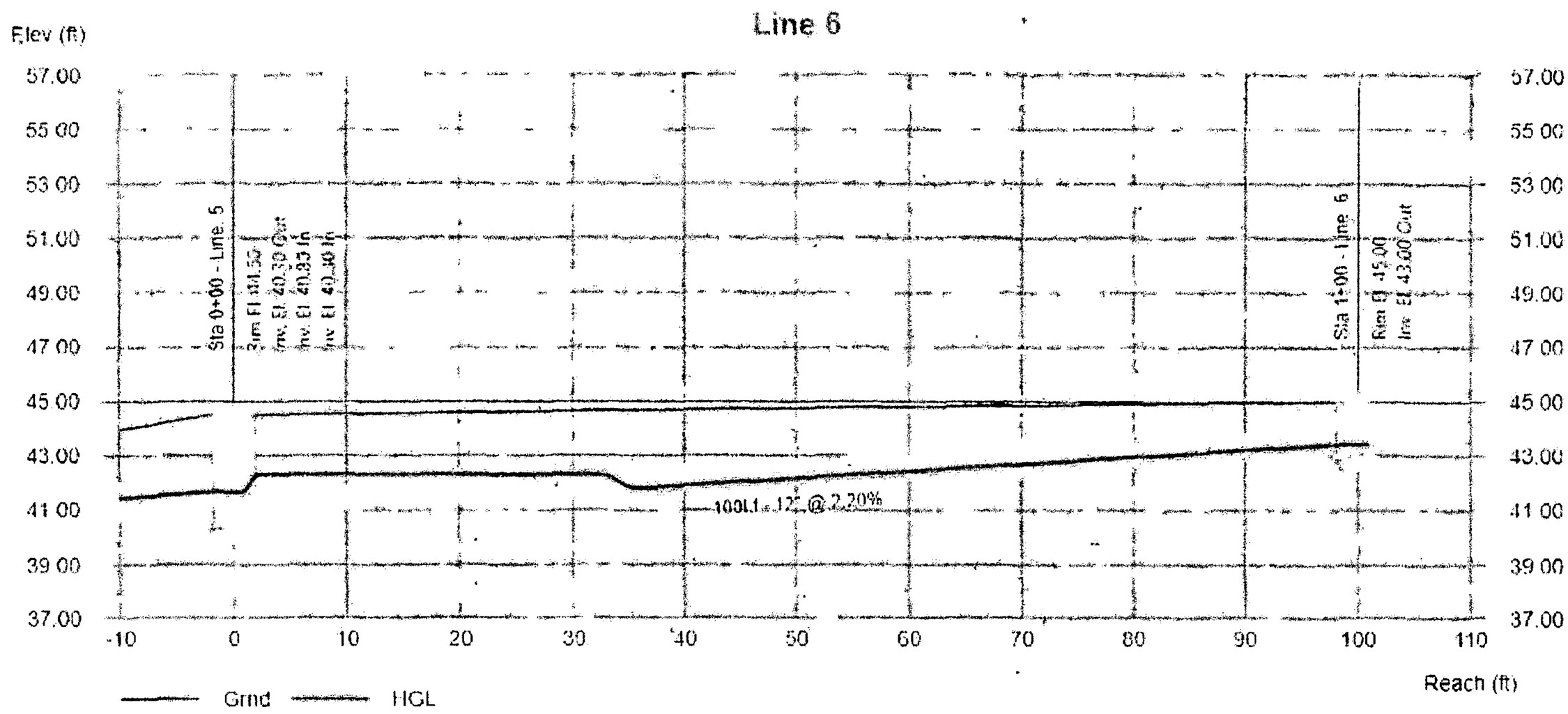


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016

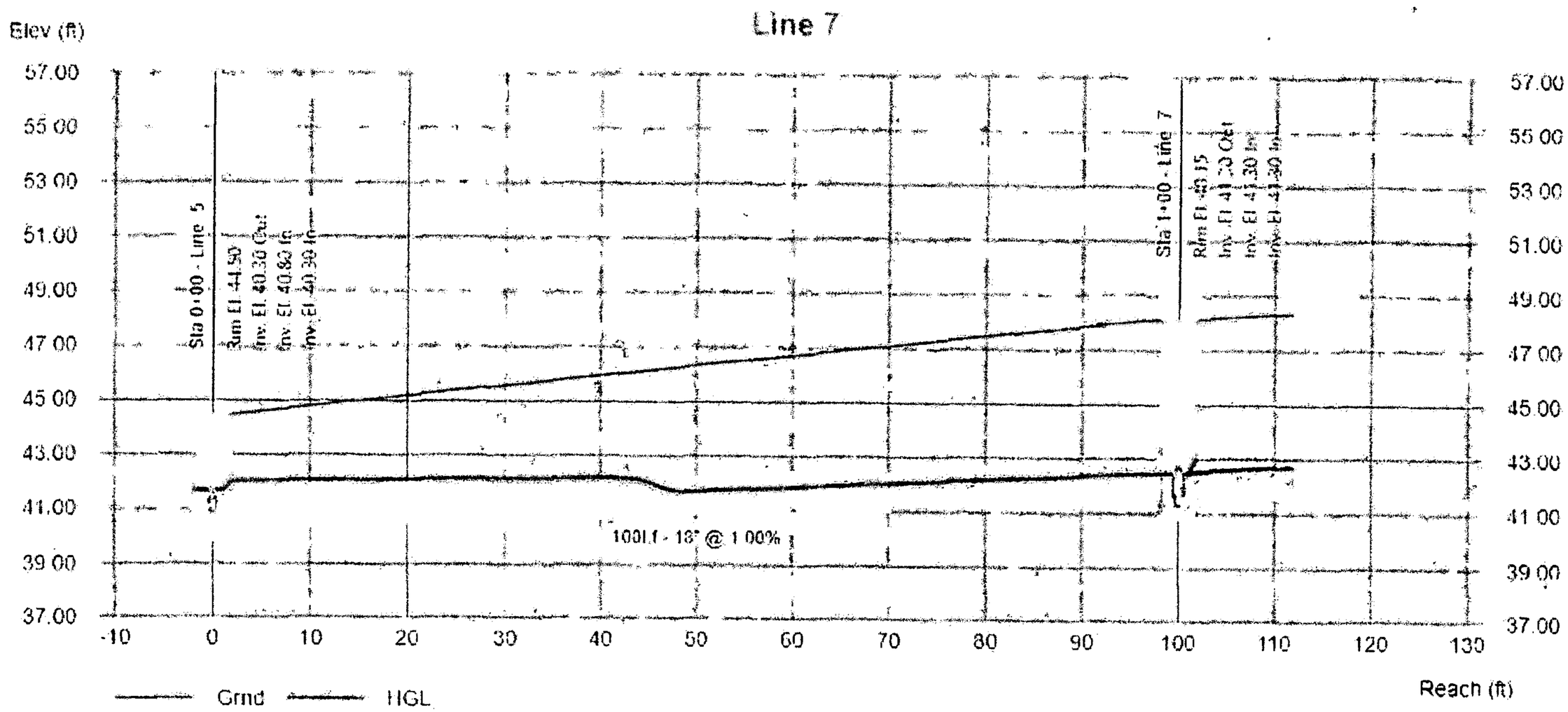


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016

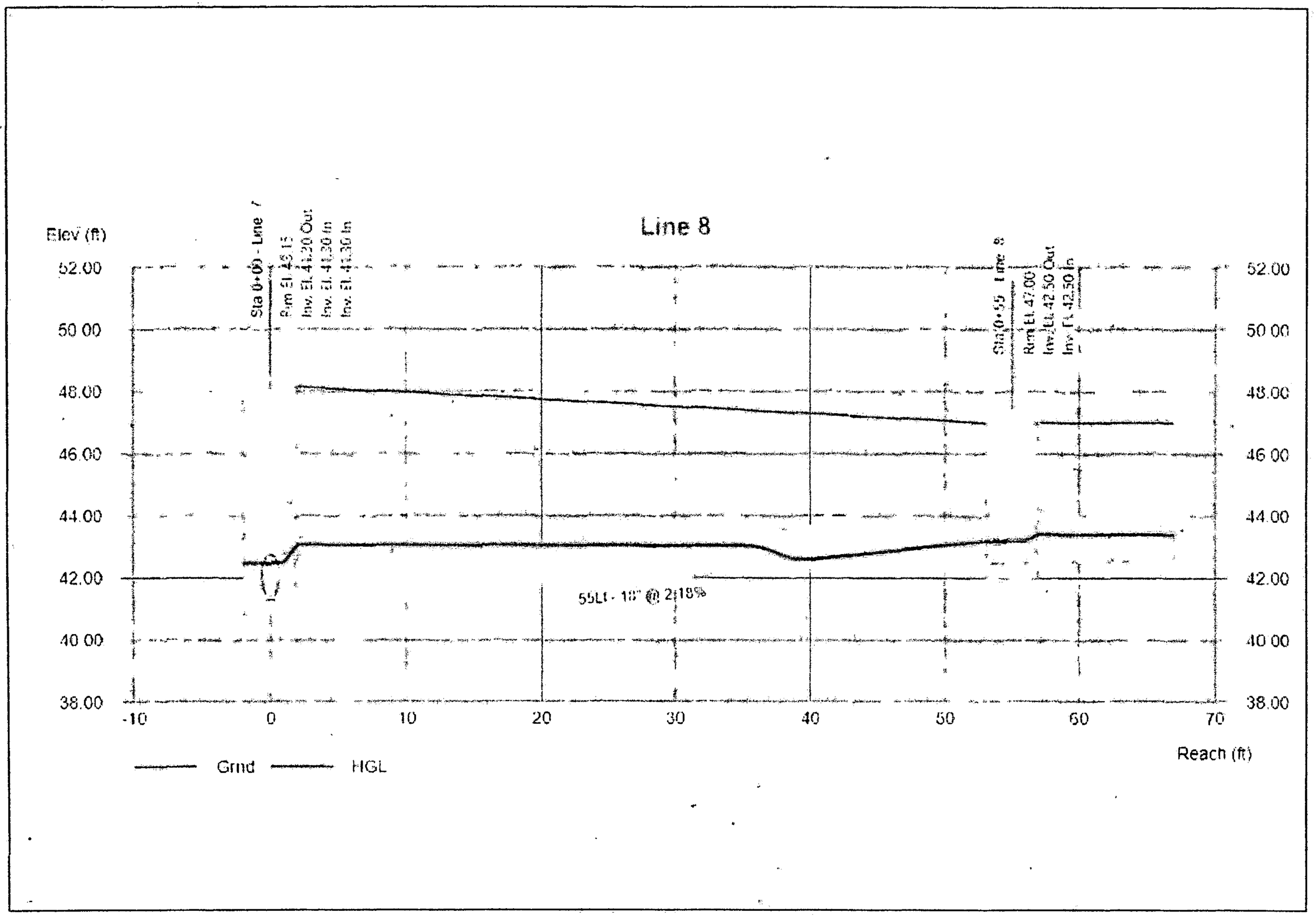


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016

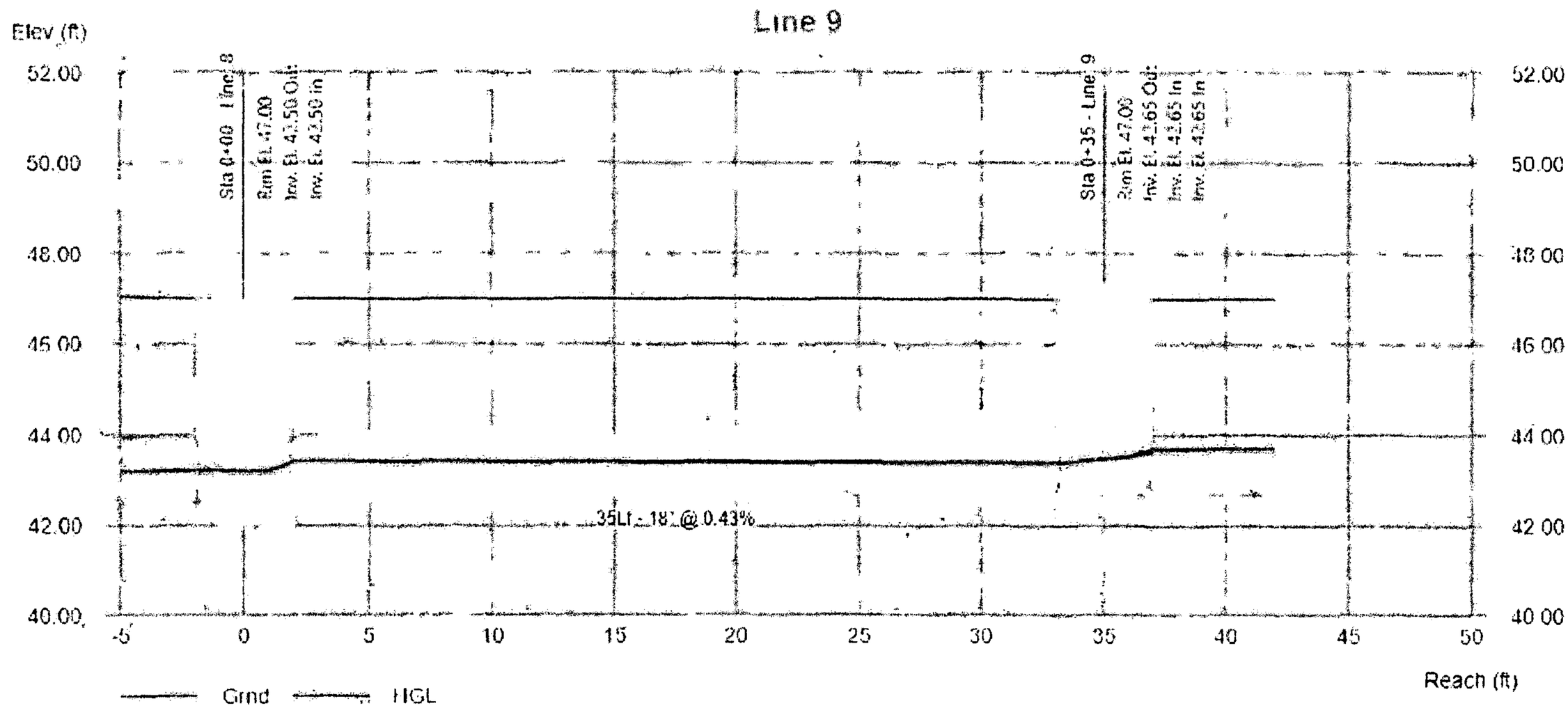


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016

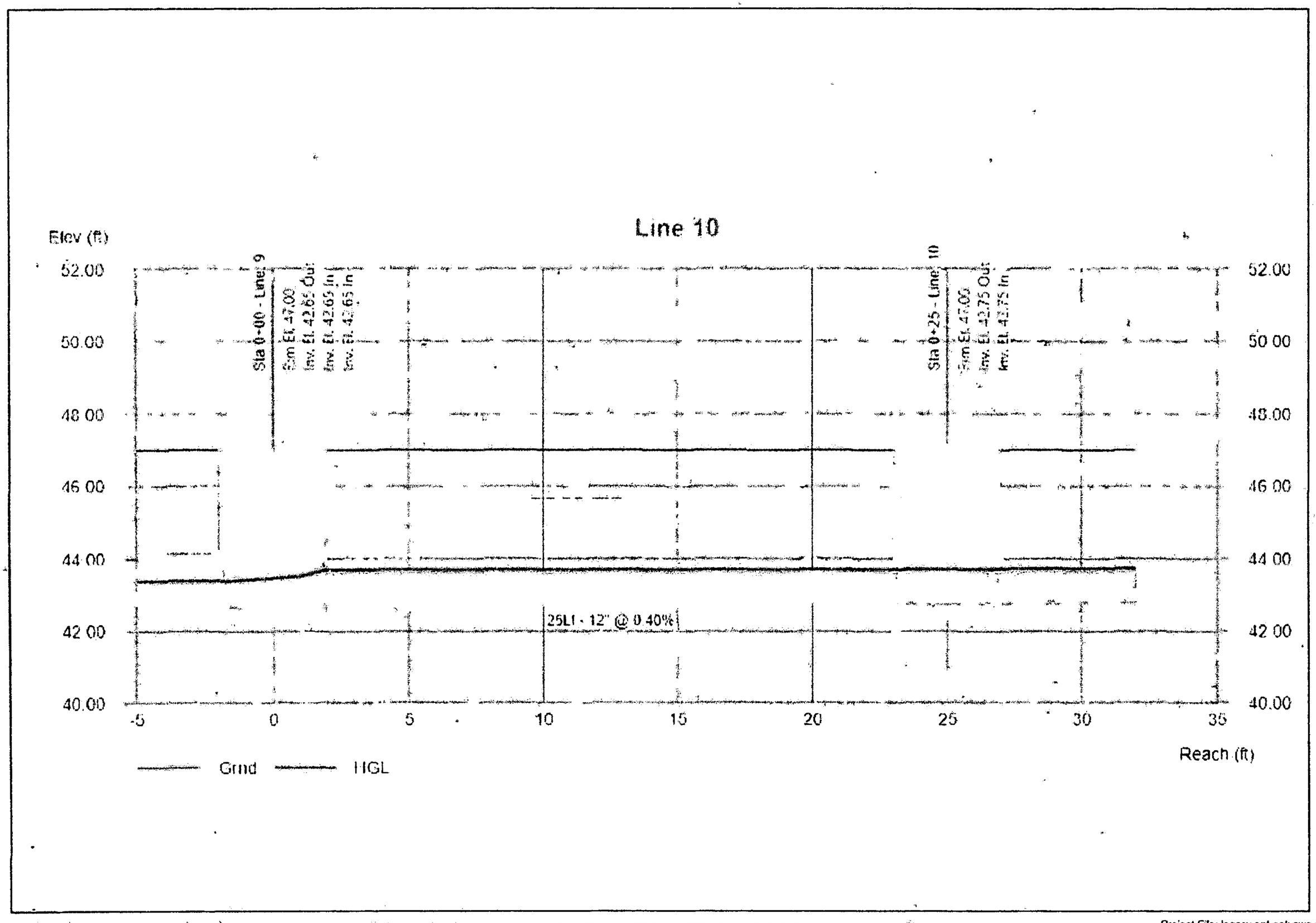


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016

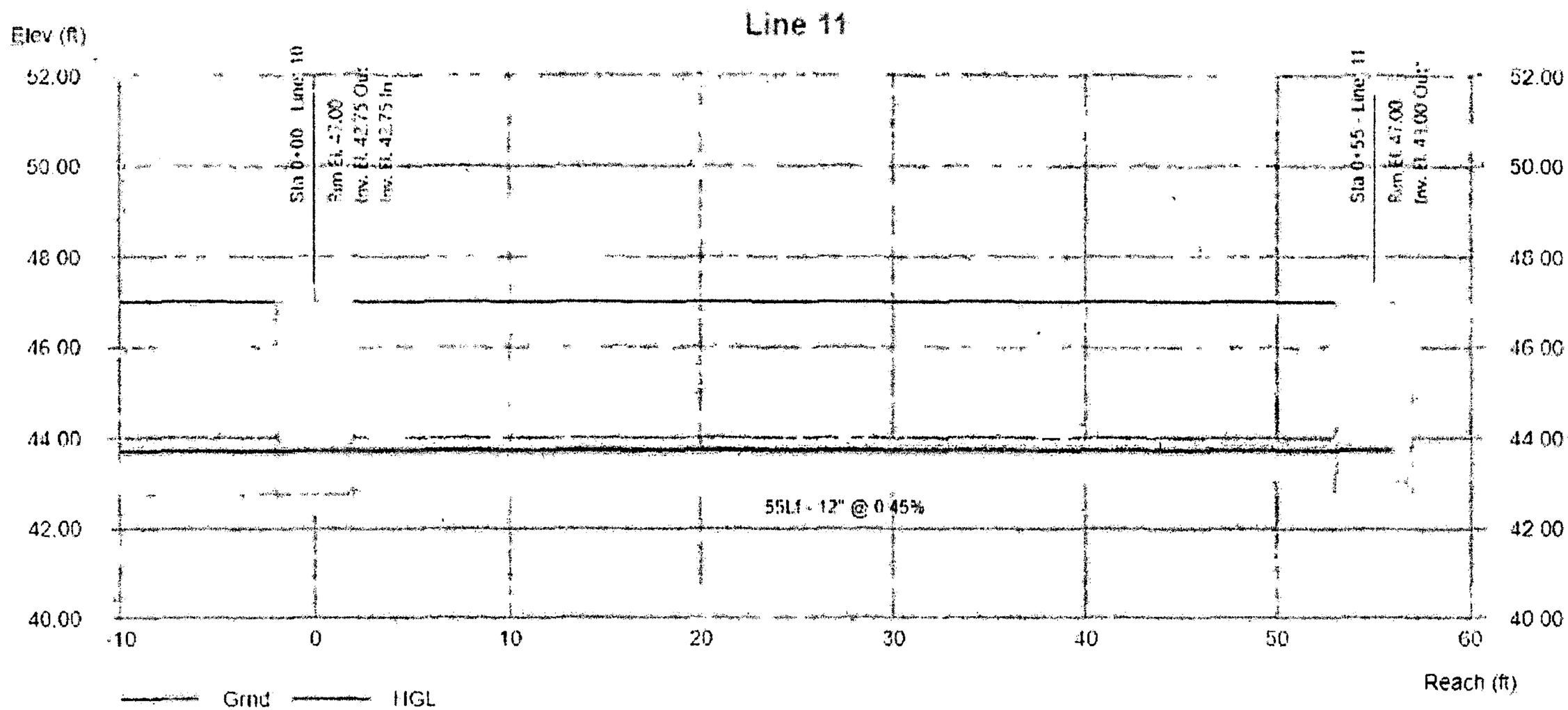


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016

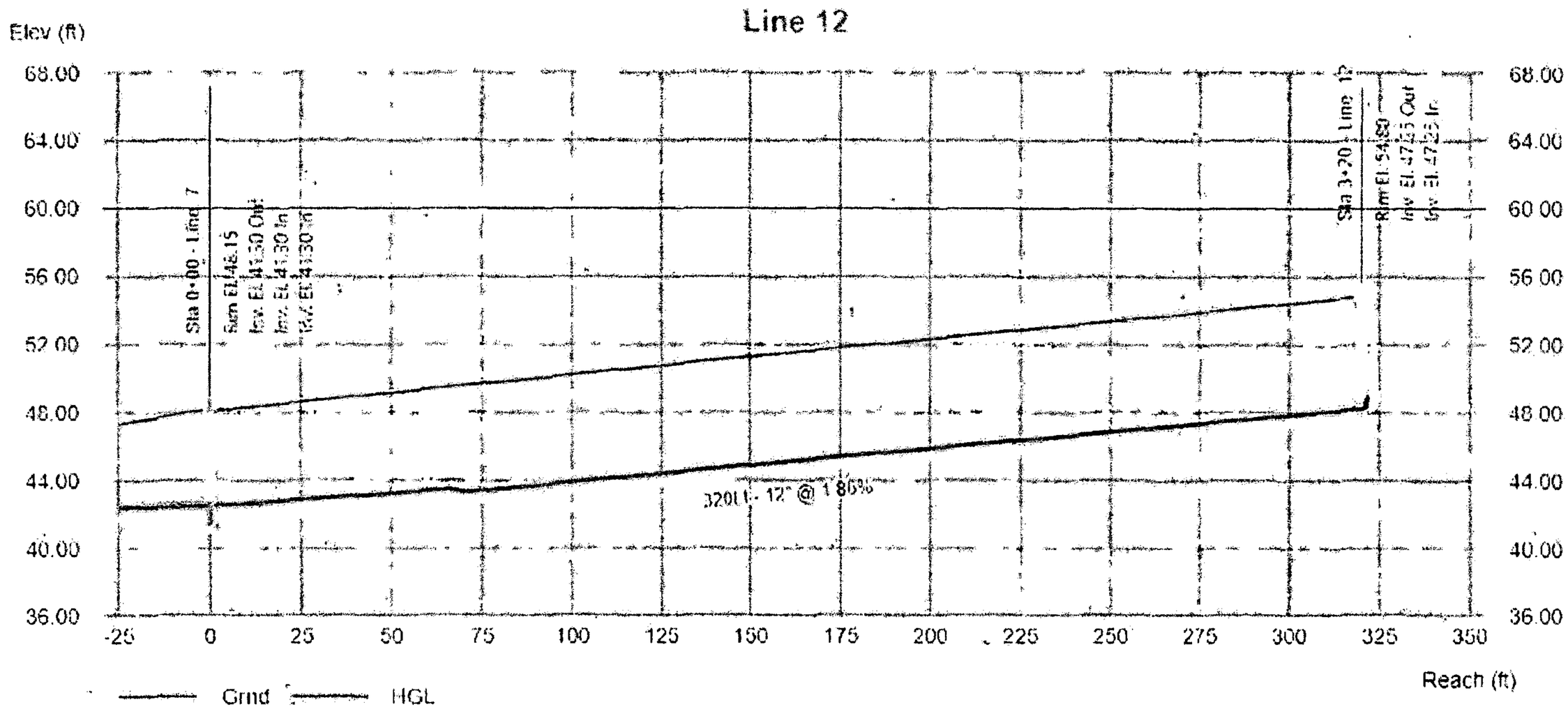


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Apt Oakland21.

03-22-2016

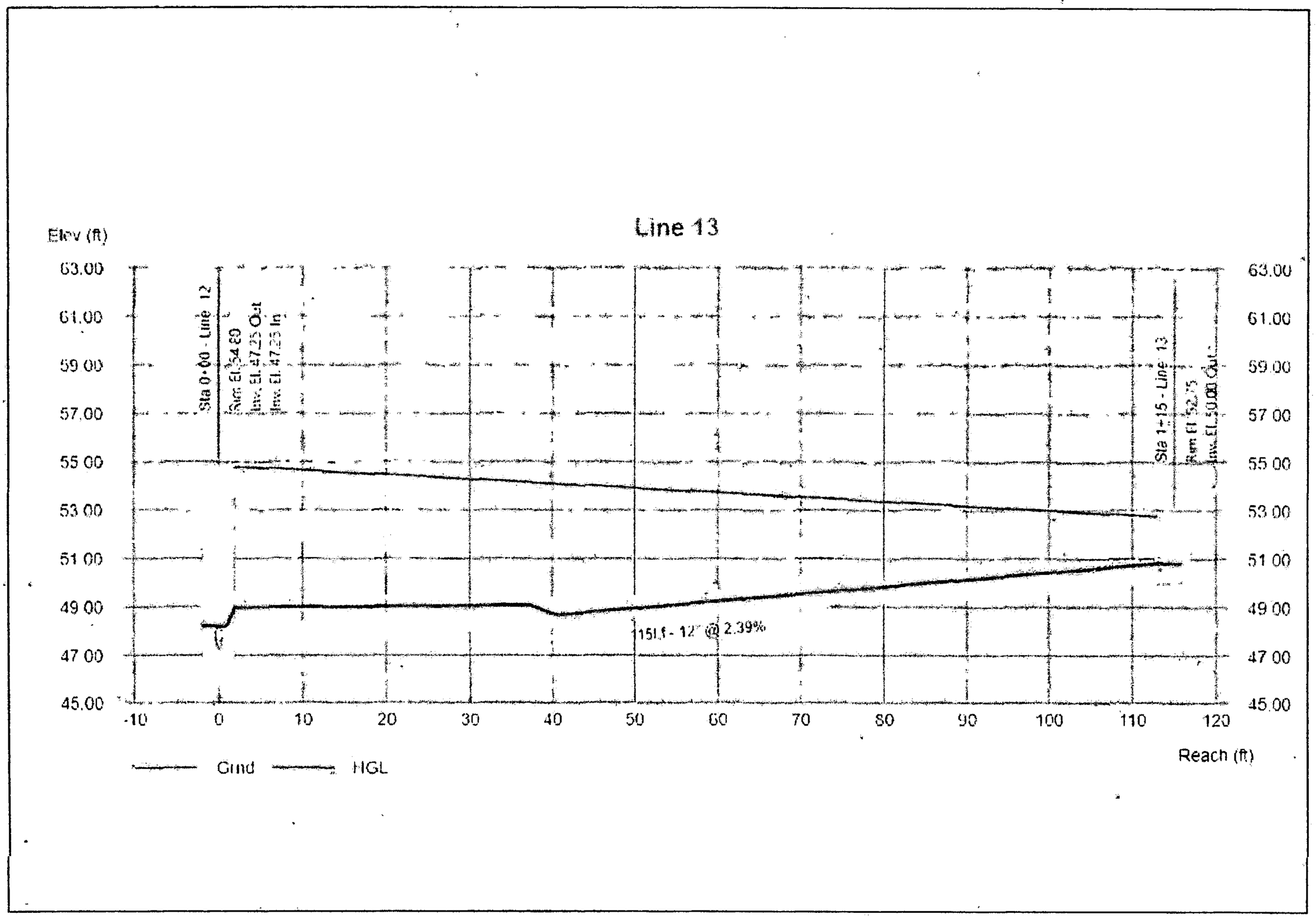


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016

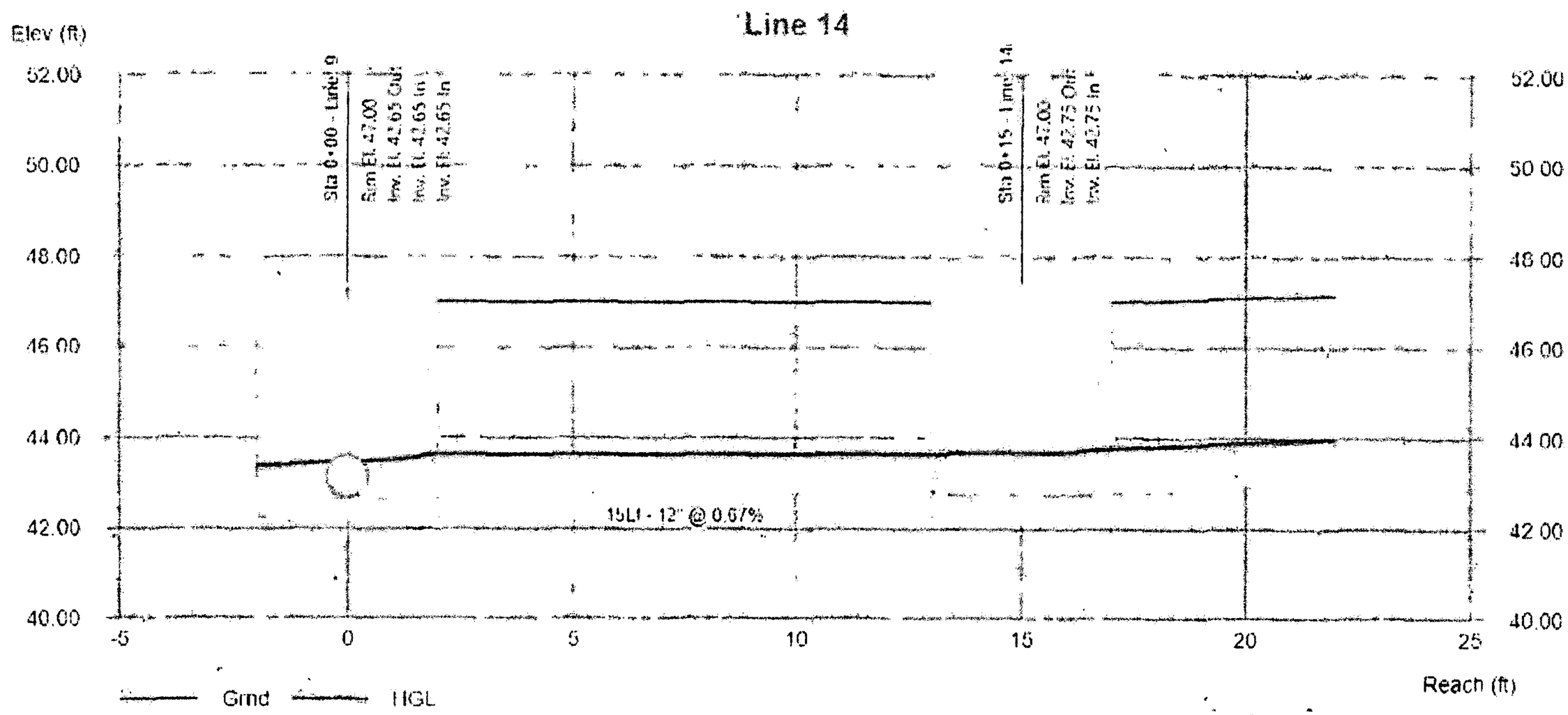


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt Oakland21.

03-22-2016



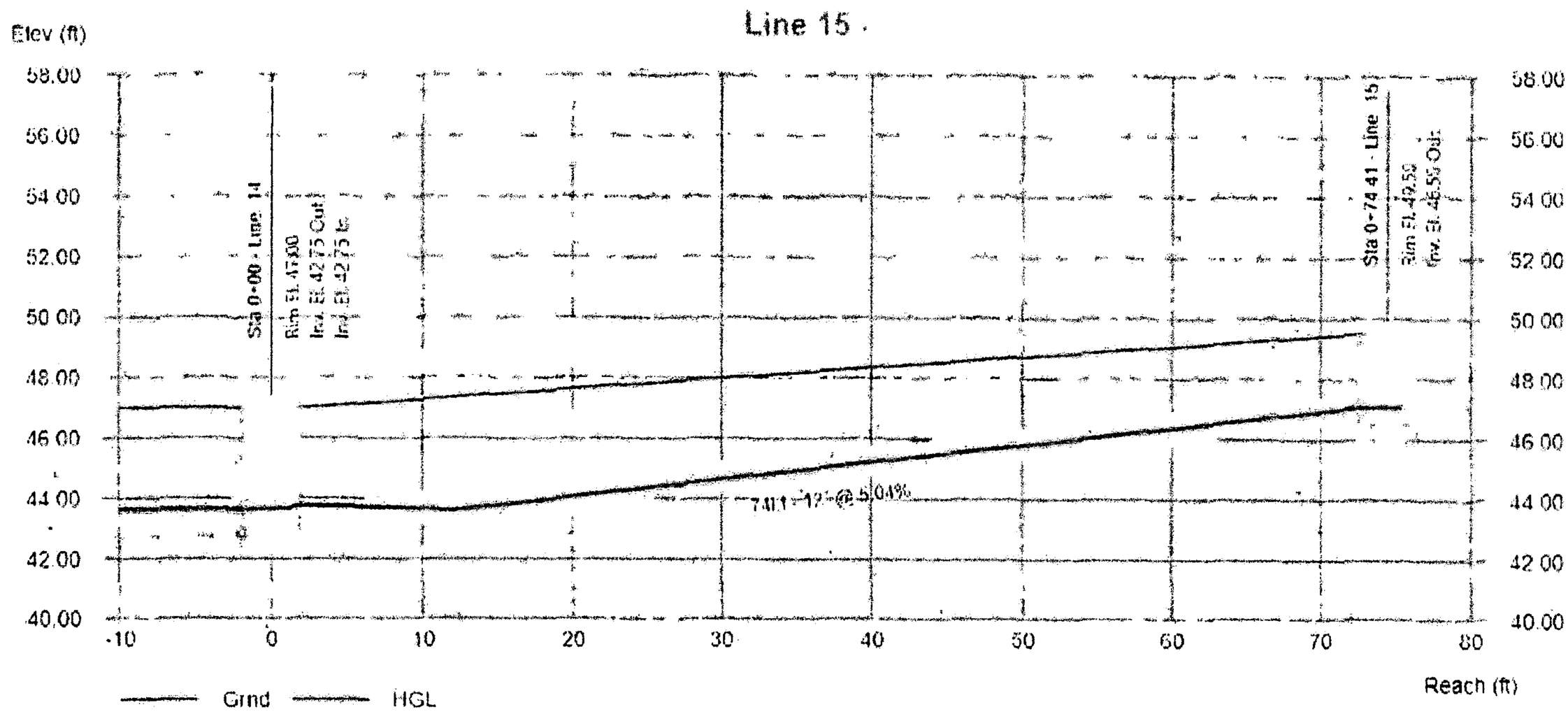
Project File: legacy apt oak.sws

Profile View

Stormwater Studio 2016 v 2.0.0.6

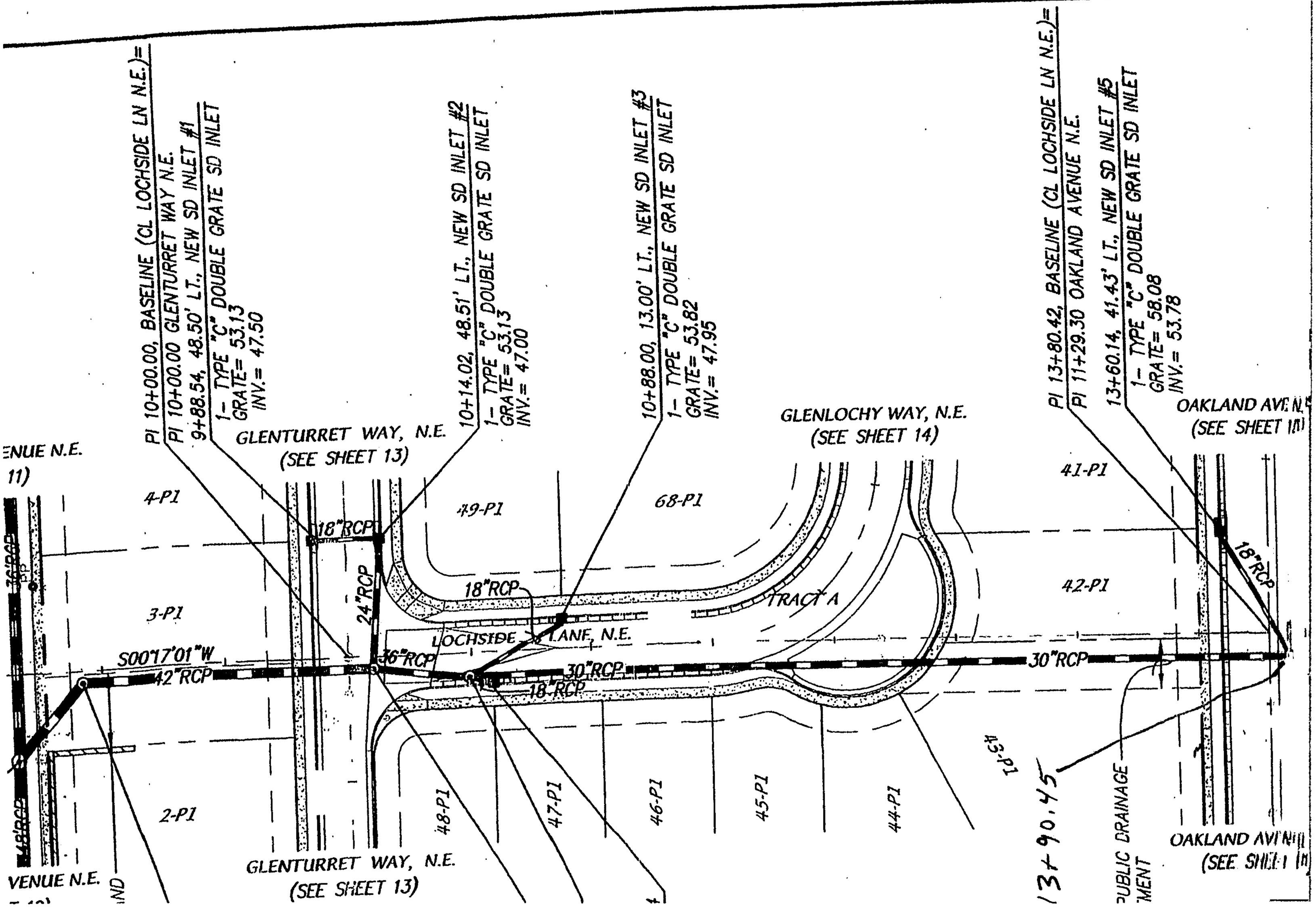
Project Name: Legacy Apt Oakland21.

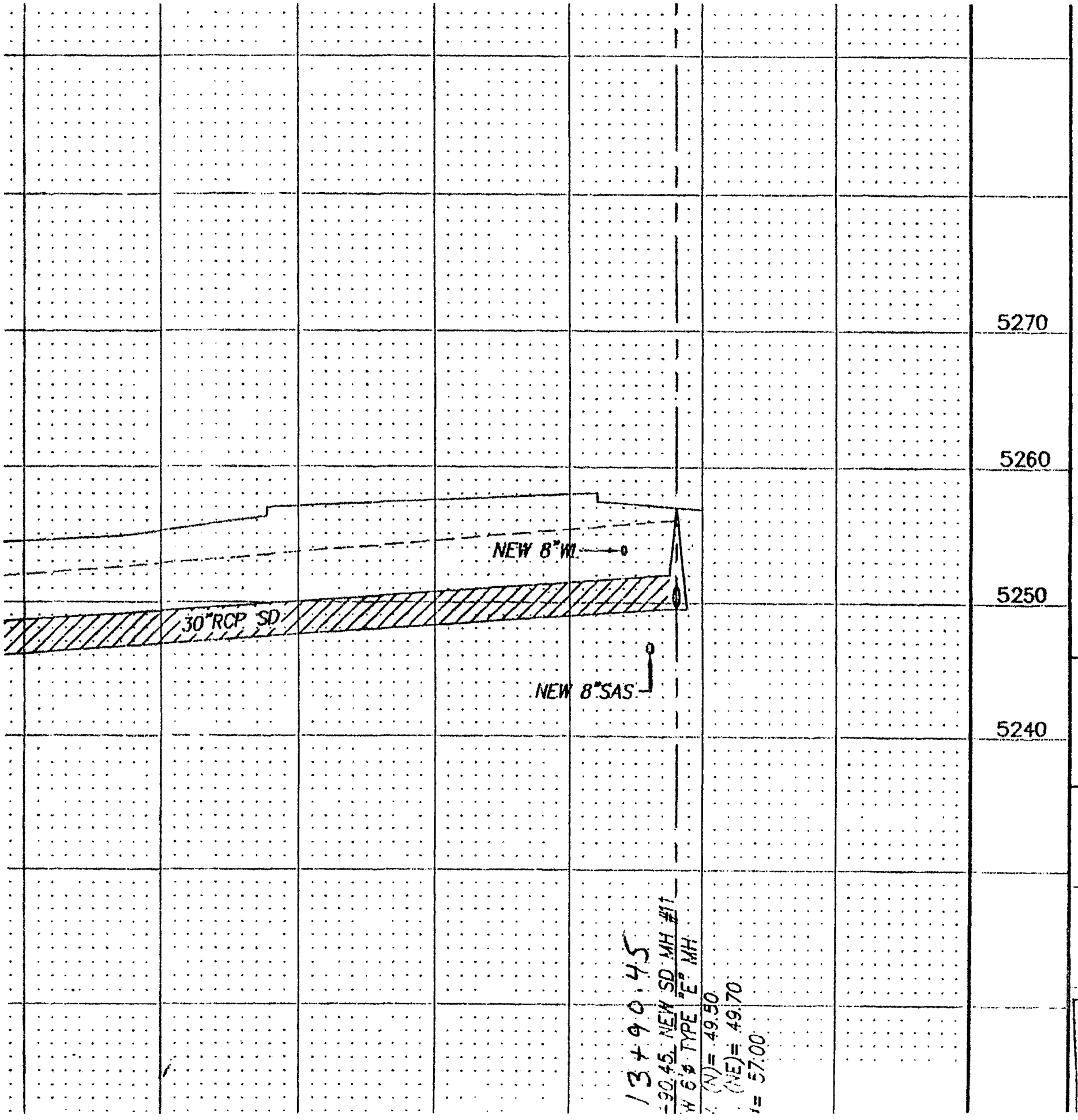
03-22-2016



OAKLAND DIVERSION REACH

7424.81


PI 10+00.00, BASELINE (CL LOCHSIDE LN N.E.)=
PI 10+00.00 GLENTURRET WAY N.E.
9+88.54, 48.50' LT., NEW SD INLET #1
1- TYPE "C" DOUBLE GRATE SD INLET
GRATE= 53.13
INV.= 47.50
10+14.02, 48.51' LT., NEW SD INLET #2
1- TYPE "C" DOUBLE GRATE SD INLET
GRATE= 53.13
INV.= 47.00
10+88.00, 13.00' LT., NEW SD INLET #3
1- TYPE "C" DOUBLE GRATE SD INLET
GRATE= 53.82
INV.= 47.95
PI 13+80.42, BASELINE (CL LOCHSIDE LN N.E.)=
PI 11+29.30 OAKLAND AVENUE N.E.
13+60.14, 41.43' LT., NEW SD INLET #5
1- TYPE "C" DOUBLE GRATE SD INLET
GRATE= 58.08
INV.= 53.78
GLENTURRET WAY, N.E.
(SEE SHEET 13)
GLENLOCHY WAY, N.E.
(SEE SHEET 14)
OAKLAND AVE N.E.
(SEE SHEET 11)
ENUE N.E.
11)
4-P1
3-P1
2-P1
49-P1
68-P1
41-P1
42-P1
43-P1
44-P1
45-P1
46-P1
47-P1
48-P1
18"RCP
24"RCP
36"RCP
30"RCP
42"RCP
S00°17'01"W
LOCHSIDE LANE N.E.
TRACT A
13+90.45
PUBLIC DRAINAGE
MENT
VENUE N.E.
GLENTURRET WAY, N.E.
(SEE SHEET 13)
OAKLAND AVE N.E.
(SEE SHEET 11)



#7424.81

dmg MARK GOODWIN
CONSUL
P.O. BOX 9060
ALBUQUERQUE,
(505) 828-220

CITY OF ALB
PUBLIC WORK

TITLE: OAK
LOCHSIDE L
UTILIT

DESIGN REVIEW COMMITTEE APPROVED

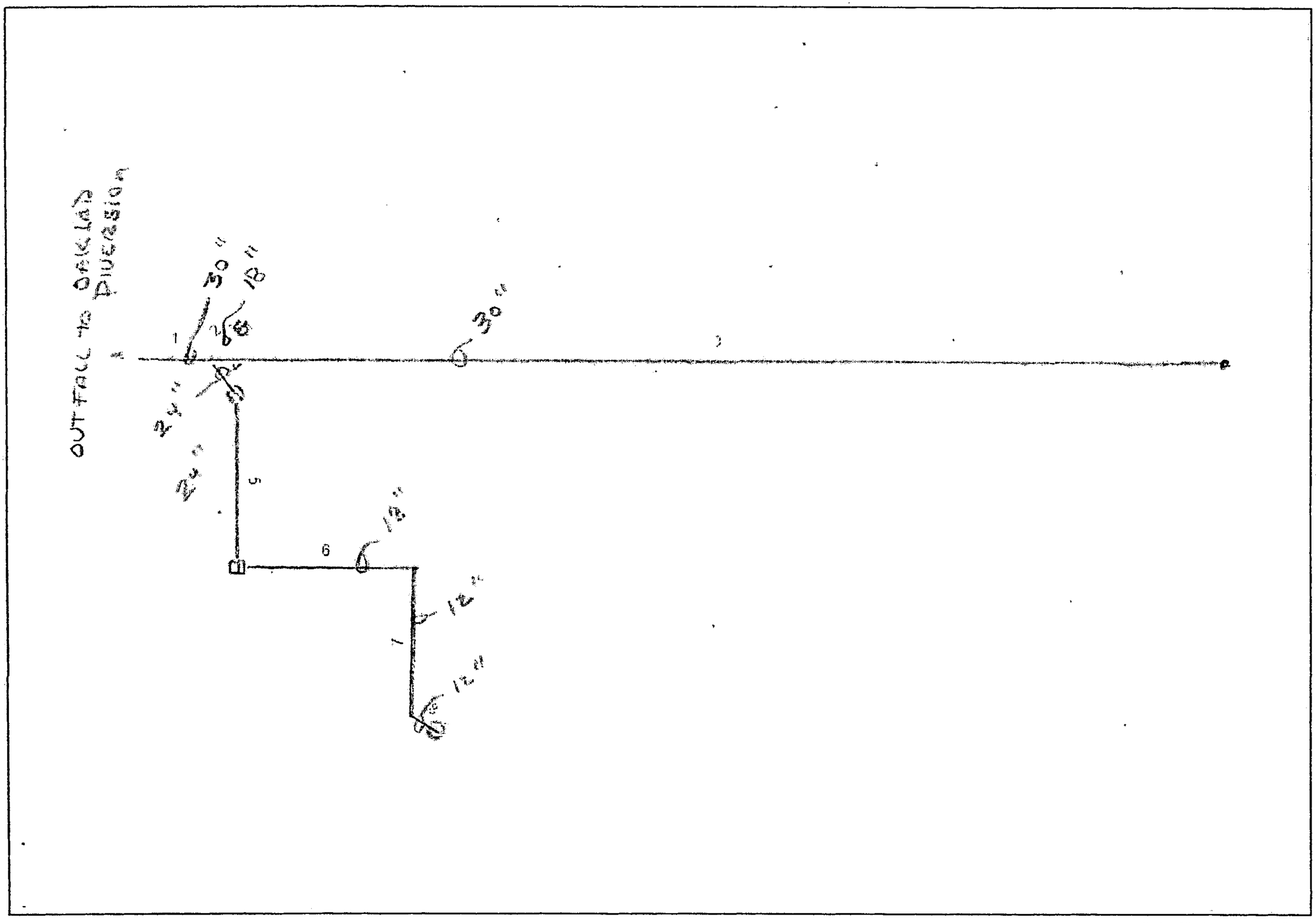
CITY ENG

Plan View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt. Oakland Diversion

03-23-2016



Storm Sewer Tabulation

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt. Oakland Diversion

03-23-2016

Line ID	Length	Drng Area		Rational	C x Area		Tc		Intensity	Total Q	Capacity	Velocity	Pipe		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
Line 1	35.00	0.00	0.00	0.00	0.00	0.00	0.0	1.45	6.37	45.70	71.03	9.31	30	3.00	48.90	49.95	58.80	59.24	59.80	60.85	1
Line 2	20.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	2.50	72.03	1.41	18	22.55	50.95	55.46	61.01	61.01	60.85	60.36	2
Line 3	475.49	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	31.74	80.81	7.23	30	3.88	49.95	68.41	60.64	70.29	60.85	76.31	3
Line 4	21.40	0.00	0.00	0.00	0.00	0.00	0.0	1.36	6.37	11.46	109.12	3.65	24	23.27	49.95	54.93	60.90	60.96	60.85	62.28	4
Line 5	80.70	0.00	0.00	0.00	0.00	0.00	0.0	0.91	6.37	9.54	45.42	3.04	24	1.93	55.43	56.99	61.12	61.19	62.28	61.03	5
Line 6	82.53	0.00	0.00	0.00	0.00	0.00	0.0	0.29	6.37	3.87	11.92	2.19	18	0.62	56.99	57.50	61.32	61.37	61.03	63.80	6
Line 7	70.00	0.00	0.00	0.00	0.00	0.00	0.0	0.05	6.37	3.87	4.08	4.93	12	0.63	57.50	57.94	61.28	61.68	63.80	63.24	7
Line 8	12.66	0.00	0.00	0.00	0.00	0.00	0.0	0.00	6.37	3.41	5.21	4.34	12	1.03	57.94	58.07	62.10	62.16	63.24	62.75	8

Notes: IDF File = SampleIDF.idf, Return Period = 2-yrs.

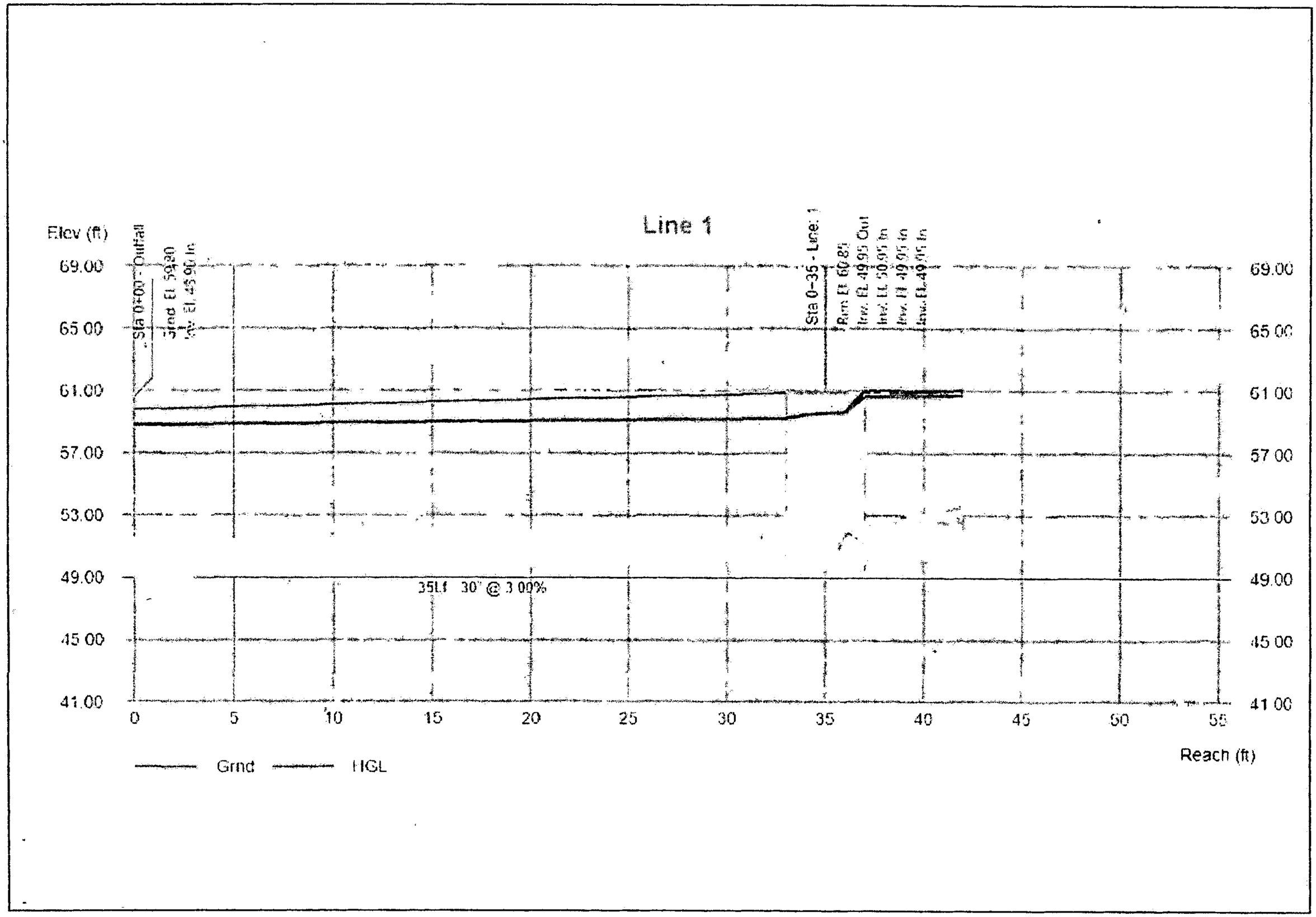
Project File: Legacy apt oak div.sws

Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt. Oakland Diversion

03-23-2016

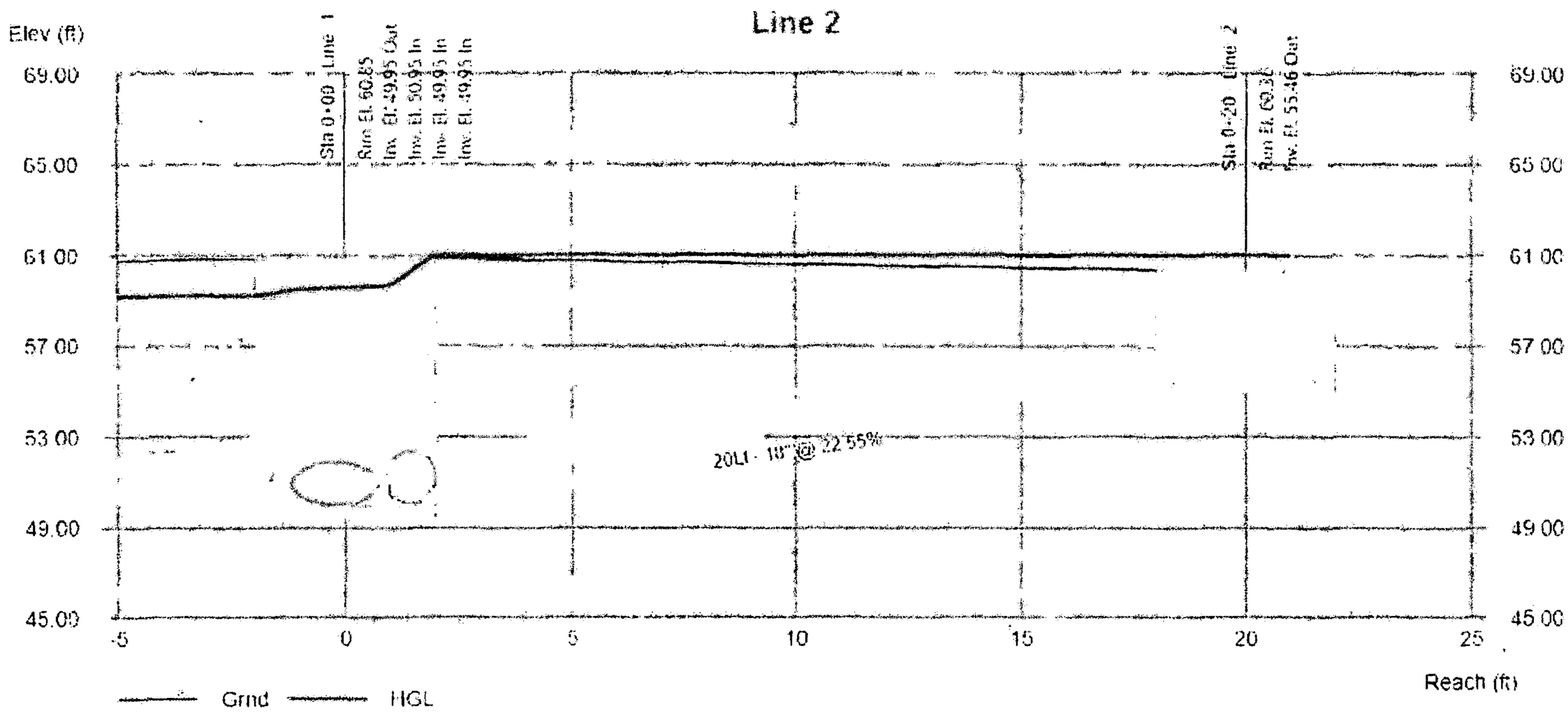


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt. Oakland Diversion

03-23-2016

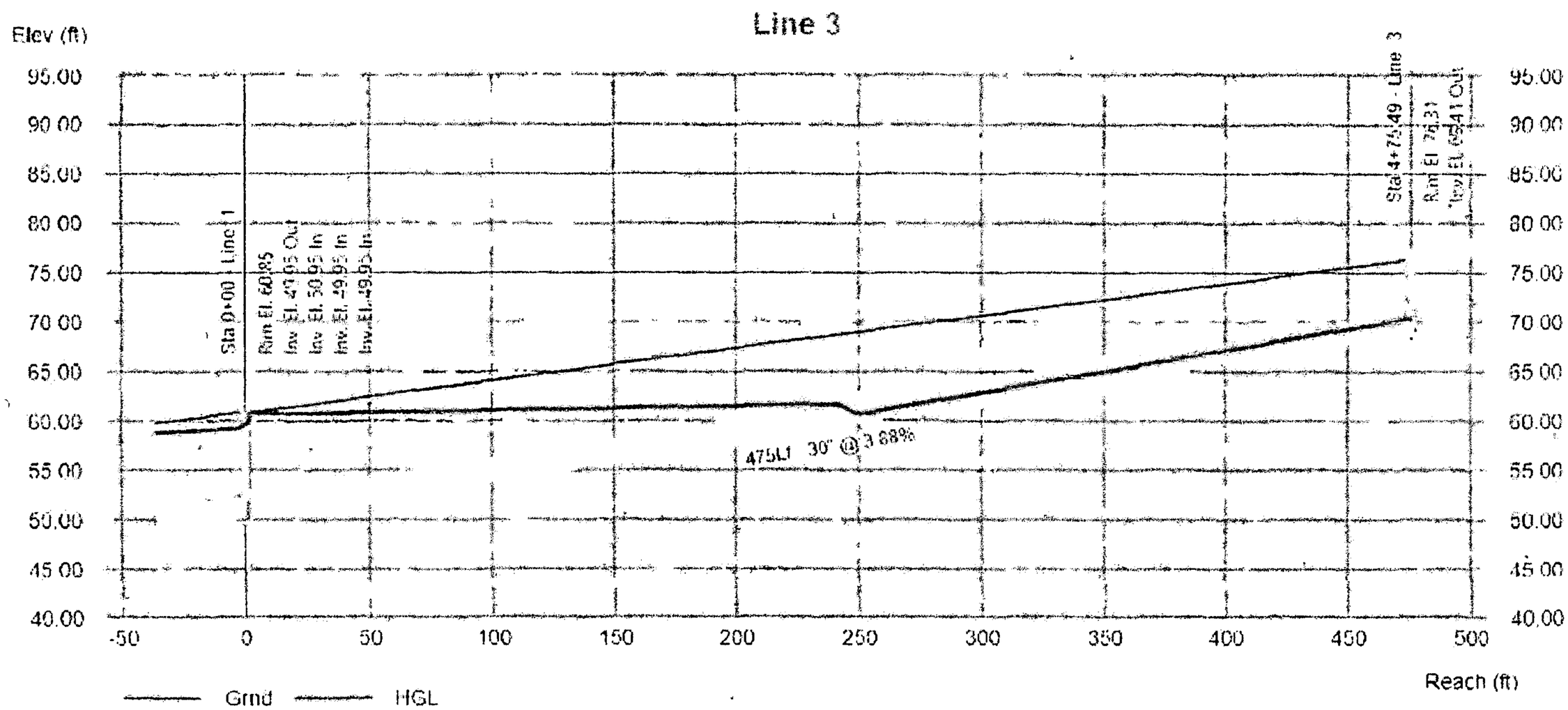


Profile View

Stormwater Studio 2016 v 2.0.0.6

Project Name: Legacy Apt. Oakland Diversion

03-23-2016



Profile View

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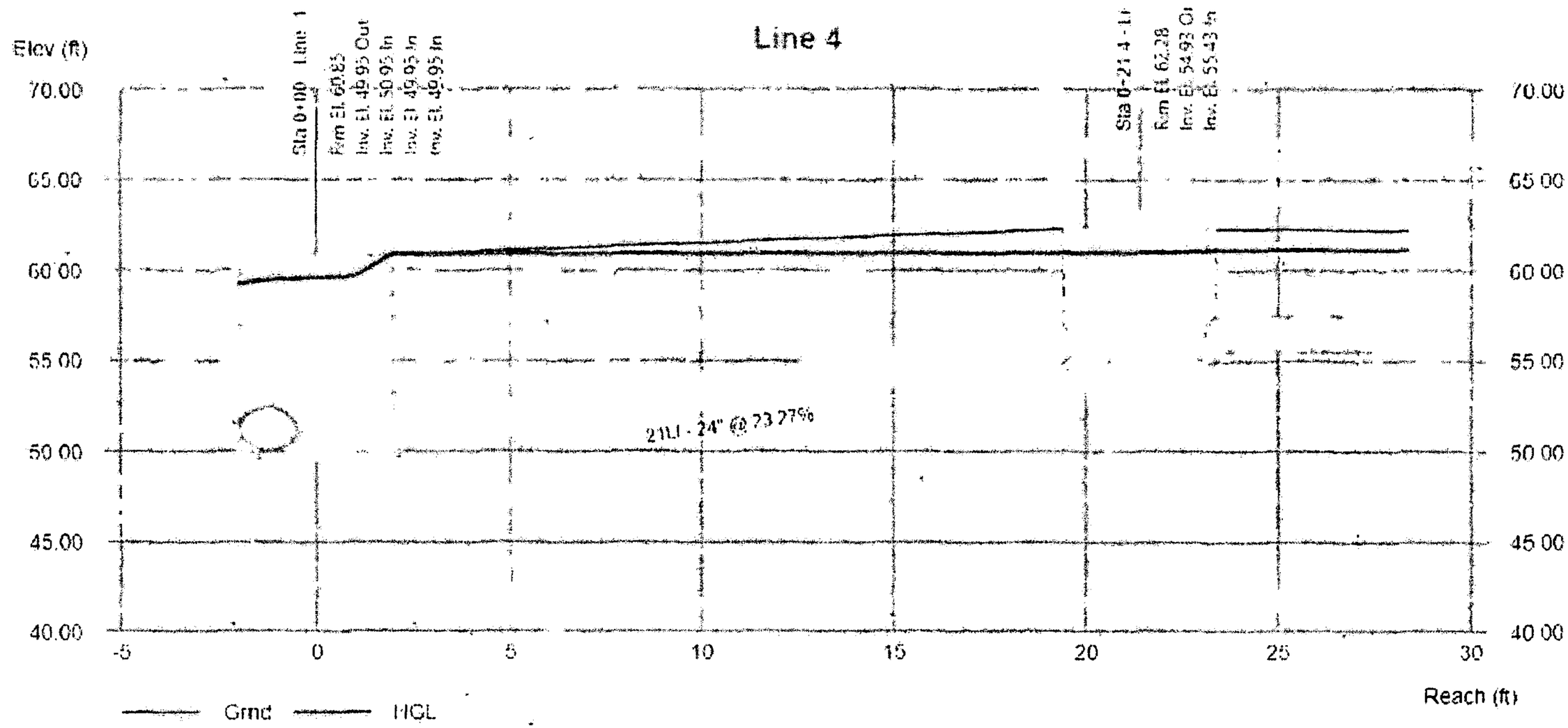
Project Name: Legacy Apt. Oakland Diversion

03-23-2016



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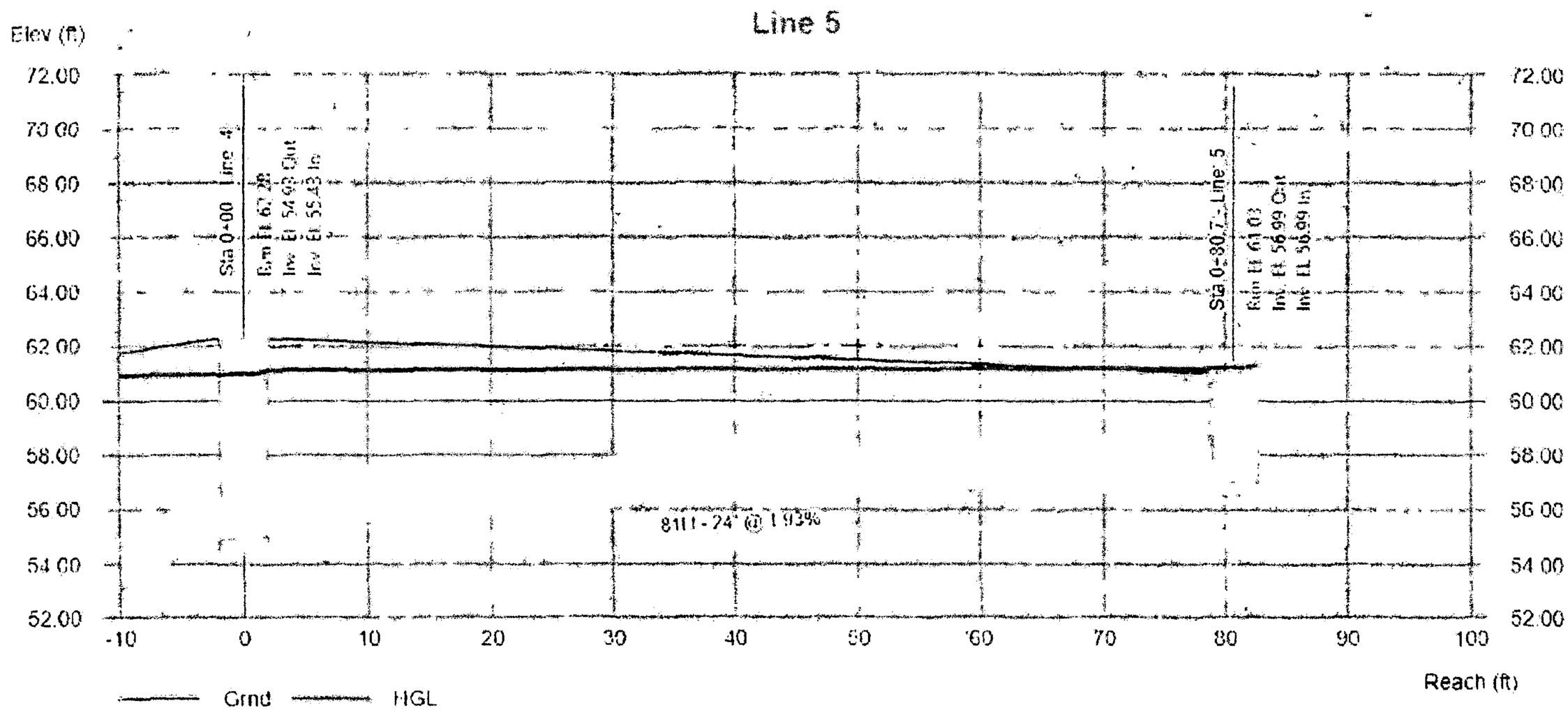

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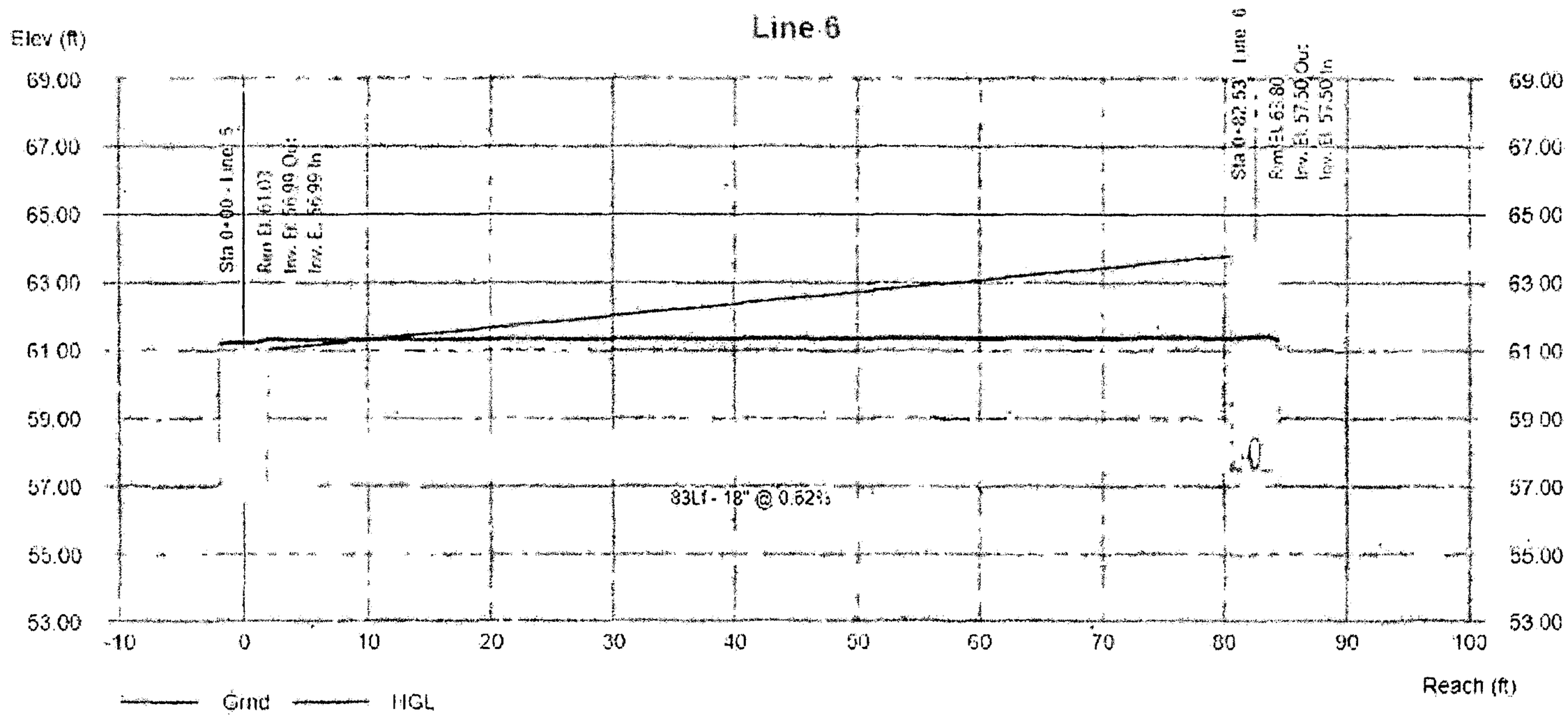

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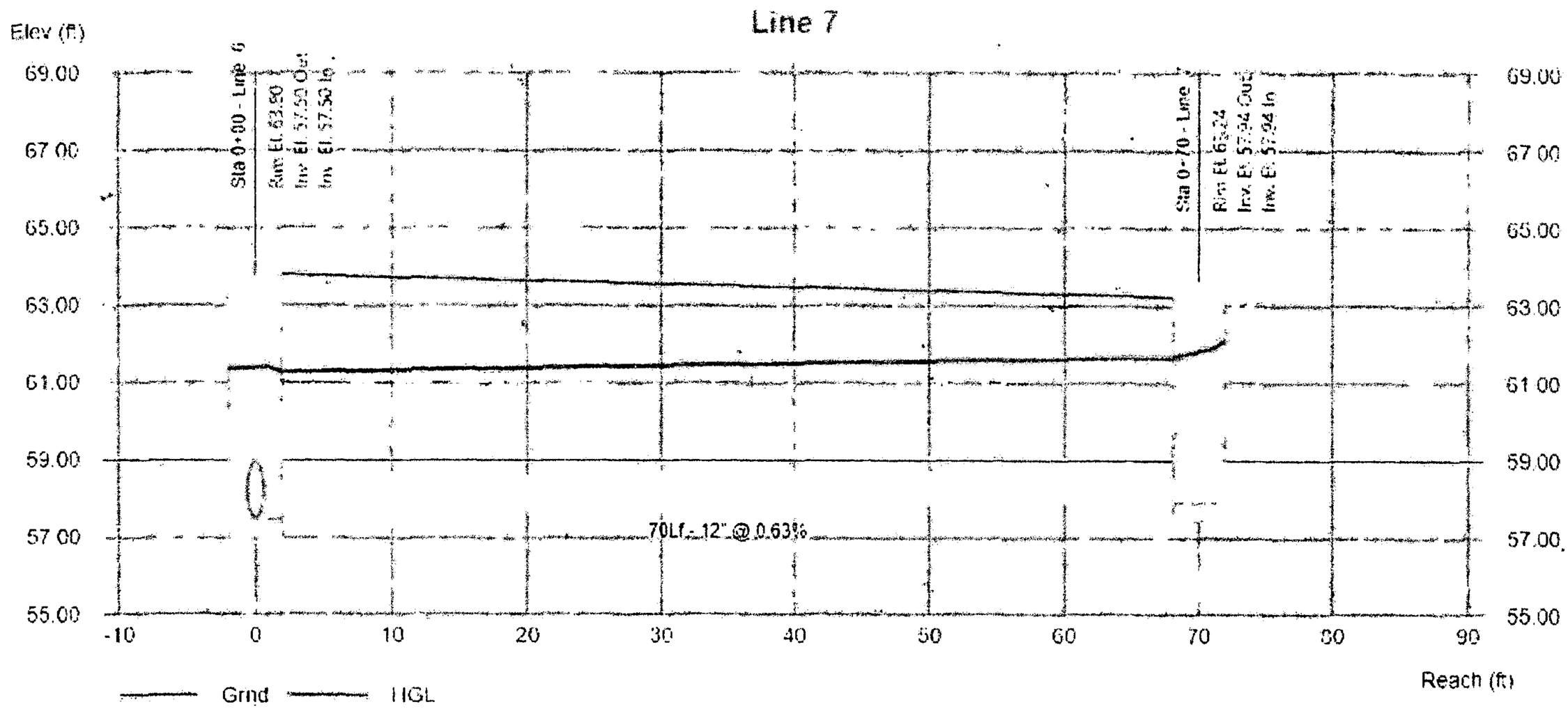

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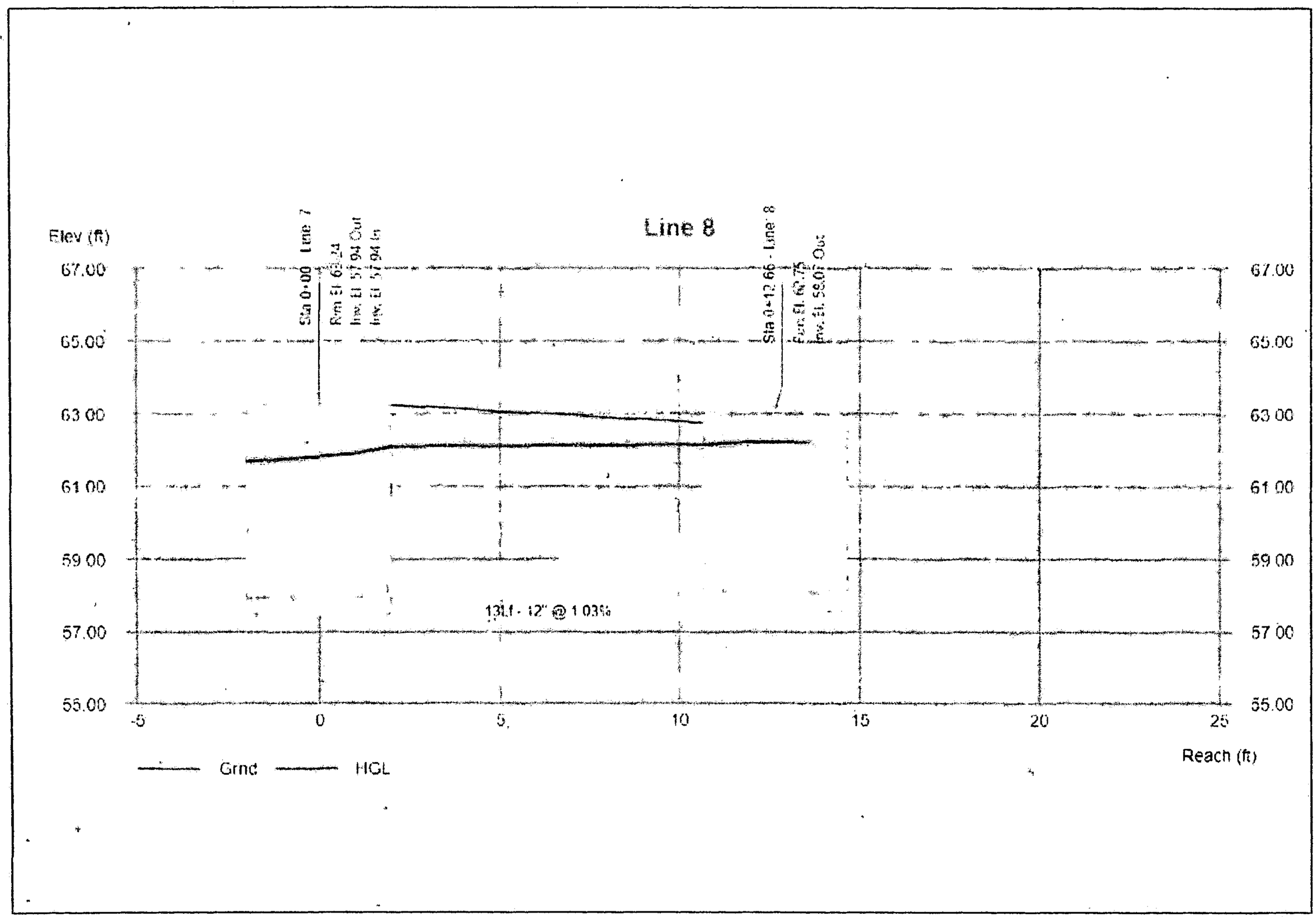

CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
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4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
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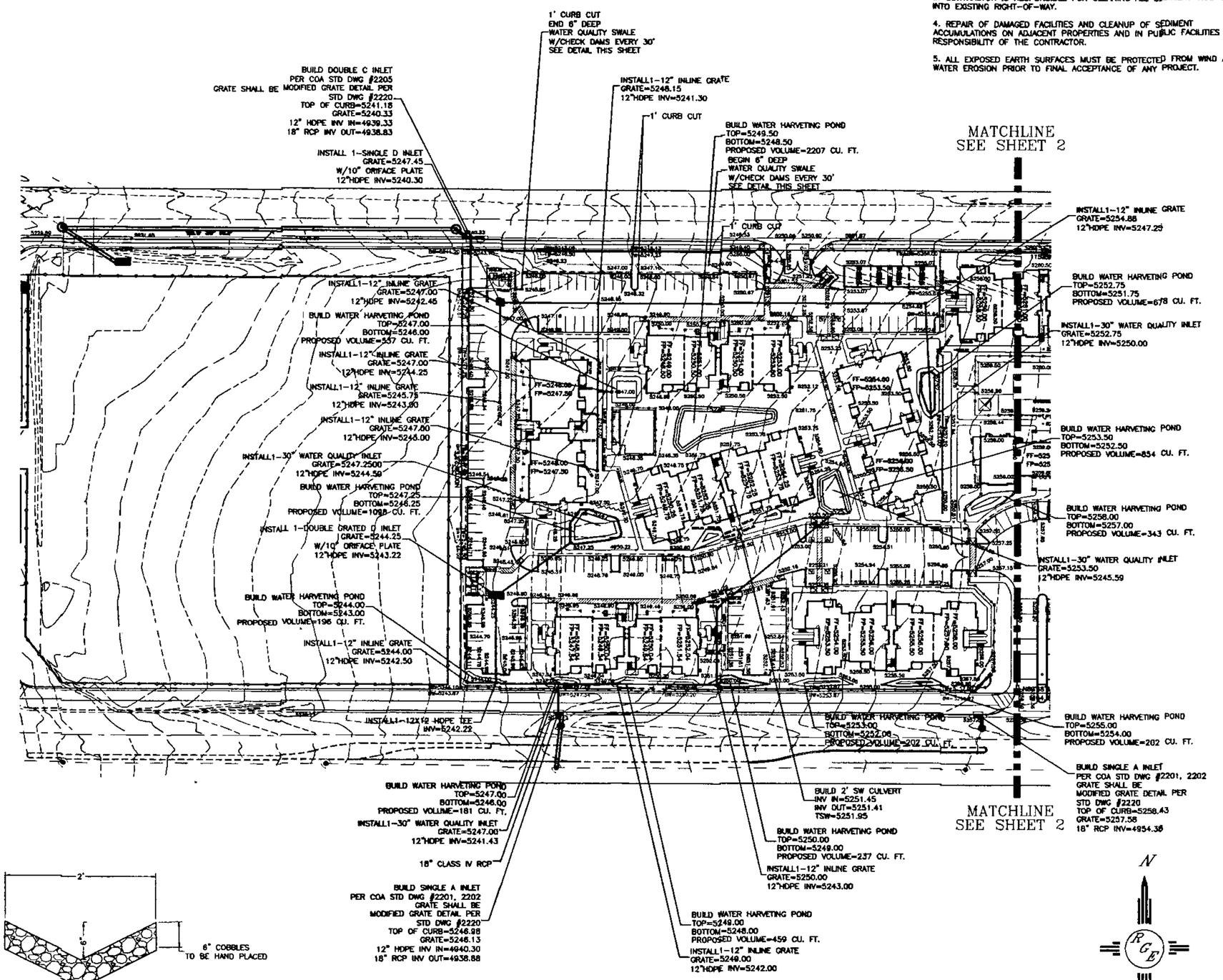
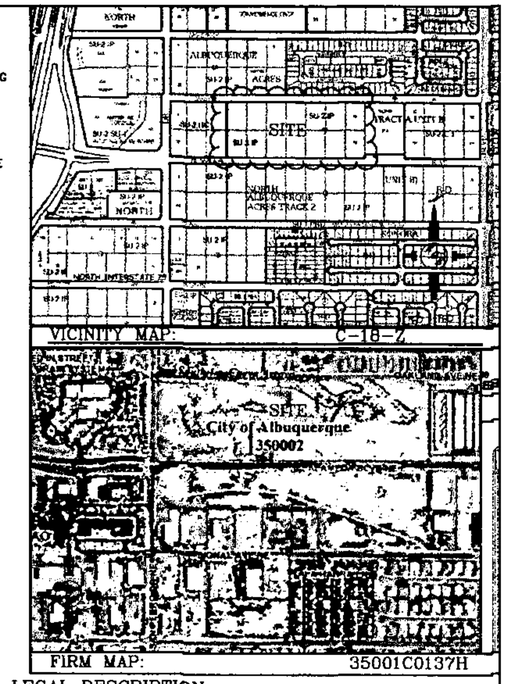




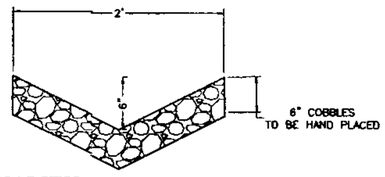
LEGAL DESCRIPTION:

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL DESIGN BY OTHERS



WATER QUALITY COBBLE SWALE DETAIL

NTS

N

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

ENGINEER'S SEAL — DAVID SOULE, NEW MEXICO, 14522, PROFESSIONAL ENGINEER — 3/25/16	LEGACY NAA APARTMENTS GRADING AND DRAINAGE PLAN	DRAWN BY WCWU DATE 3-14-16 SHEET # C1
DAVID SOULE P.E. #14522	Rio Grande Engineering, 1606 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999	JOB # 21331

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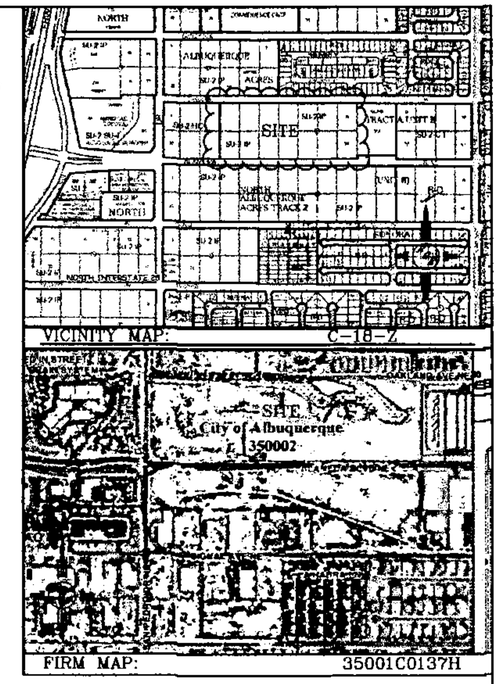
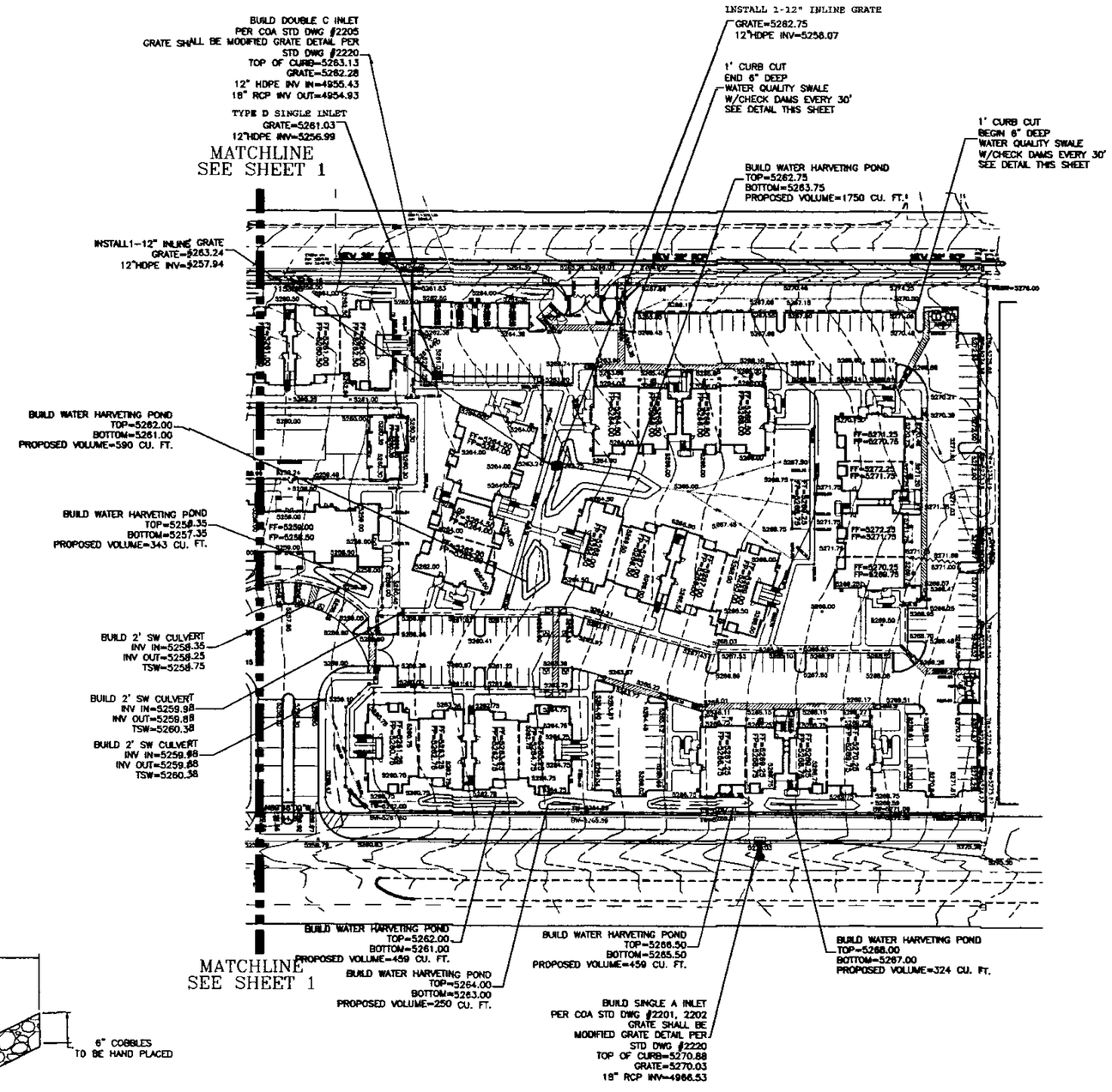
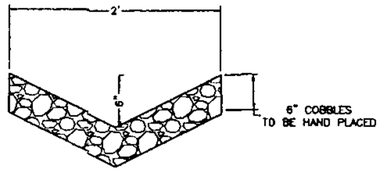


VICINITY MAP: C-18-Z

FIRM MAP: 35001C0137H





WATER QUALITY COBBLE SWALE DETAIL

NTS

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LEGEND

5414	EXISTING CONTOUR
5415	EXISTING INDEX CONTOUR
5414	PROPOSED CONTOUR
5418	PROPOSED INDEX CONTOUR
	SLOPE TIE
× 4048.25	EXISTING SPOT ELEVATION
× 4048.25	PROPOSED SPOT ELEVATION
	BOUNDARY
	CENTERLINE
	RIGHT-OF-WAY
	PROPOSED CURB AND GUTTER
	EXISTING CURB AND GUTTER
	PROPOSED SIDEWALK
	PROPOSED SETBACK
	PROPOSED LOT LINE
	PROPOSED SCREEN WALL
	PROPOSED RETAINING WALL DESIGN BY OTHERS

N

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

ENGINEER'S SEAL

DAVID SOULE N.M. REG. 14522 PROFESSIONAL ENGINEER

3/25/16

DAVID SOULE
P.E. #14522

LEGACY NAA APARTMENTS

GRADING AND DRAINAGE PLAN

Rio Grande Engineering
1608 CENTRAL AVENUE
SUITE 301
ALBUQUERQUE, NM 87106
(505) 872-0888

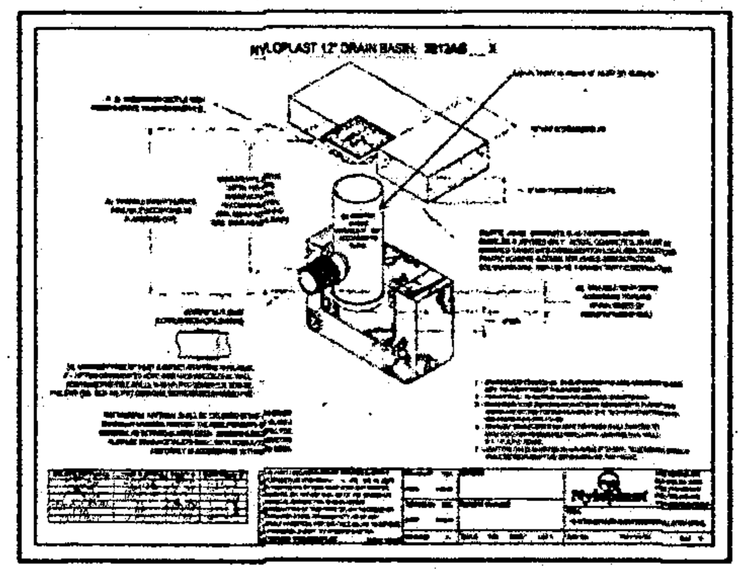
DRAWN BY WCWJ

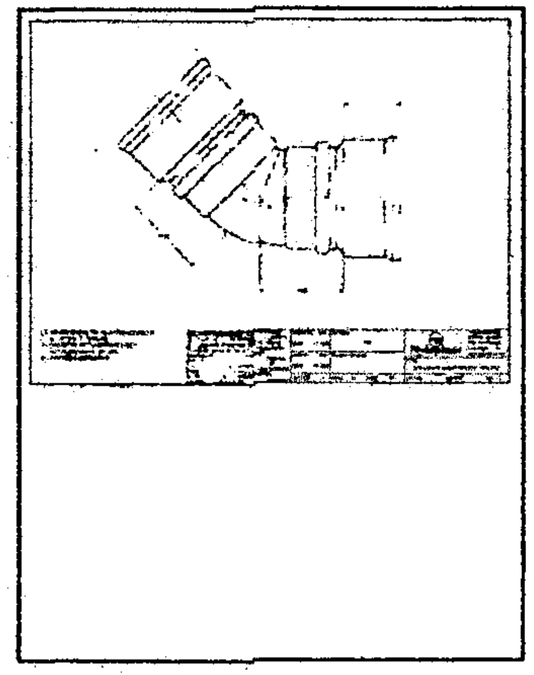
DATE 3-14-16

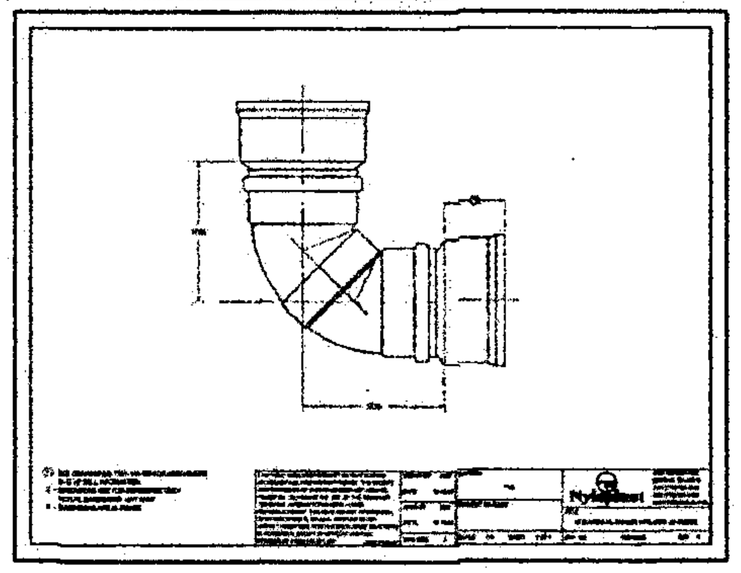
21001-LABOUR-1-03-16

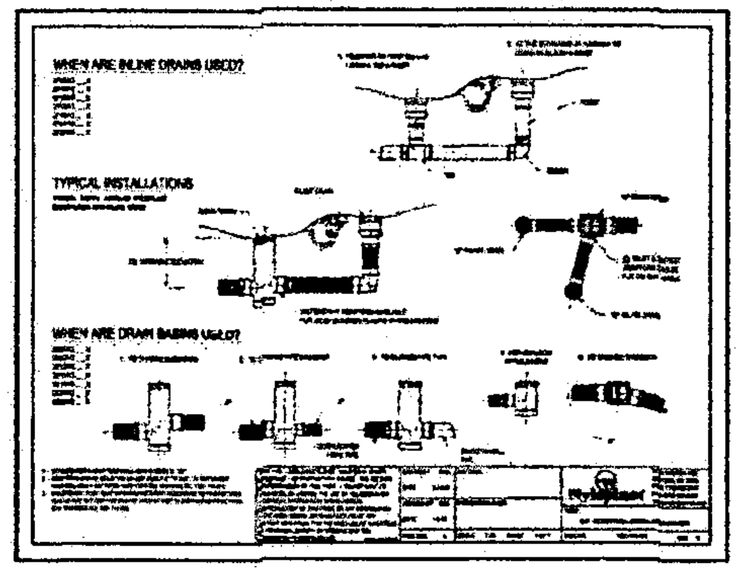
SHEET # C2

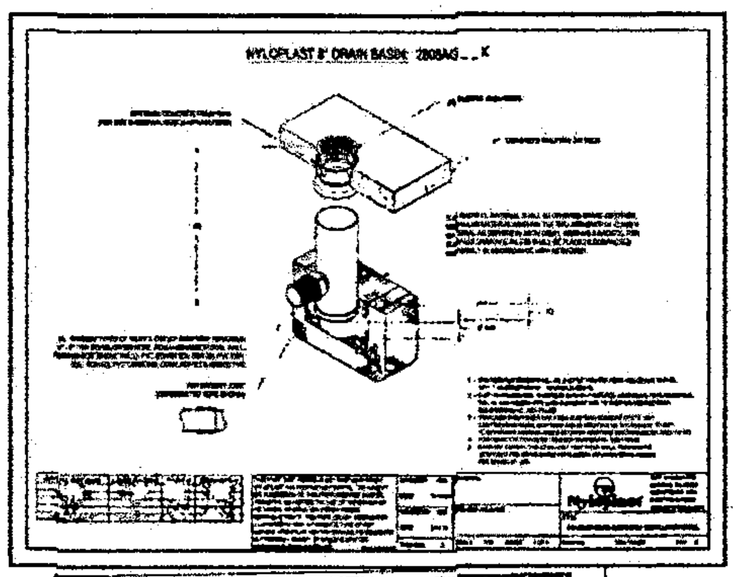
JOB # 21331

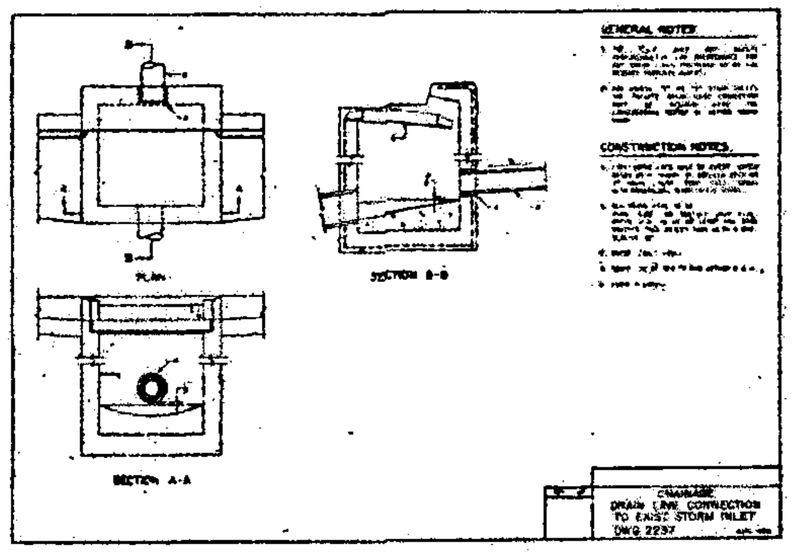


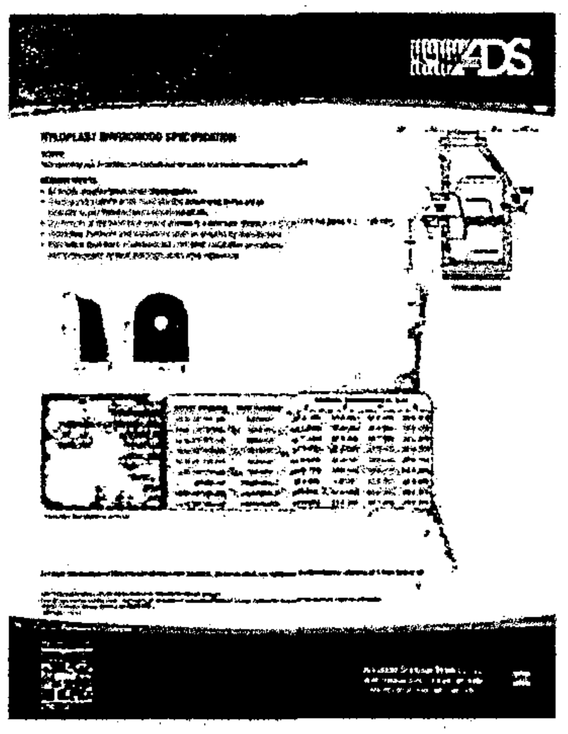


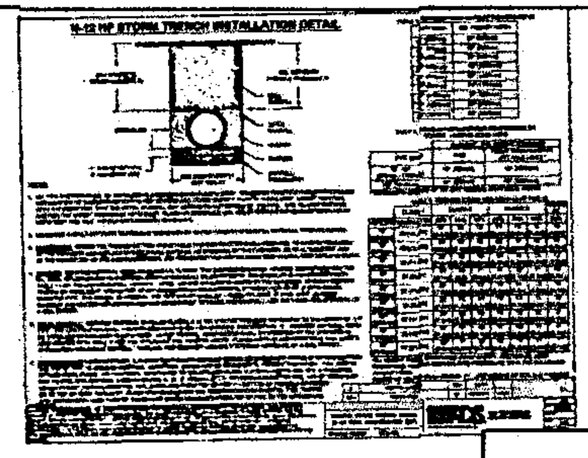












DRAWN BY WCWU

DATE 1-23-16

SHEET # C3

DAVID SOULE NEW MEXICO 14922 REGISTERED PROFESSIONAL ENGINEER

3/25/16

DAVID SOULE P.E. #14922

Engineering
1608 CENTRAL AVENUE
SUITE 301
ALBUQUERQUE, NM 87106
(505) 872-0999

JOB # 21331

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

August 8, 2014

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM 87199

RE: **Eagle Crest Subdivision (File: C18D064B)**
Drainage Report (stamped 7-3-14) and Supplemental calcs(stamped 8-1-14)
Grading and Drainage Plan, Engineer's Stamp Date 8-1-14

Dear Mr. Soule:

Based upon the information provided in your submittal received 8-1-14, the above referenced submittal cannot be approved for action by the DRB on the Site Plan for Building Permit or the Preliminary Plat until the following comments are addressed:

1. Interim Ponds need to be sized and graded on grading plan with WSEL, Vol. and emergency overflow locations. Plats must show a public drainage easement to be maintained by the developer.
2. Inlets in Alameda: Per conversation with Dave Thompson, the intent was to put the D-inlets in for the interim only, but for full build out 2 or 3 double-A or double-C inlets in series were required at each lateral. Remove the D-inlets and have the correct number of Double A or C inlets in series based on hydraulics. Provide hydraulic calculations for these inlets, which most likely will require a definition of basin "ALA 1". Update infrastructure list with inlets
3. Tie Private Storm drain to Manhole rather than back of inlet. Is there a MH at east most inlet in Alameda?
4. Define the limits of offsite basin "Basin Upoak3" on a basin boundary map. How is upstream flows handled in Oakland? (Add to report)
5. Define limits of offsite basin "Remainingoak Basin" on a basin boundary map.
6. Use a Match line to continue the Alameda frontage plan.
7. Proposed retaining wall and screen wall are difficult to differentiate. Change the hatch pattern on one or the other.
8. Show spot elevations at retaining walls
9. Update the Unit basin calculation, mainly the narrative and water harvesting in the front yard.
10. Basin map –show limits of basin per phase with different line type or color or both. It looks like B1 and B2 were reduced.
11. Water harvesting ponds – show contour elevations. Appears that another contour is needed.
12. Show flow arrows, proposed contours, street slopes, and street names.

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

13. Street capacity calculations: Show how the Q is determined. Identify on the Plan the standard curb and the mountable curb. For Soaring, upper 2/3, the depth is 4" but does not take into account the energy depth.
14. Drop inlet Calculation: Identify the drop inlet the calculation corresponds to. What about the other inlets in Oakland and in Alameda?
15. Pipe Capacity: What is HGL of Storm Drain pipes? Show calc for 30" pipe further down Oakland. Pipe 4 should be using hydrology from Alameda (the bypass flow further upstream and the remaining roadway basin further upstream) for the Q required.
16. Revise the drainage report to be consistent with any revisions in hydraulics or hydrology.

Since the disturbed area on this site exceeds 1.0 acre, an Erosion and Sediment Control (ESC) Plan, prepared by a NM PE and approved by the City's Stormwater Engineer, will be required for this site, prior to Hydrology approval of a Building Permit or Work Order.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf: via Email: Recipient

City of Albuquerque

Planning Department
Development & Building Services Division
DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(REV 02/2013)

Project Title: EAGLE CREST SUBDIVISION Building Permit #: _____ City Drainage #: C18-d064B
DRB#: _____ EPC#: _____ Work Order#: _____
Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES
City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE
Address: PO BOX 93924, ALBUQUERQUE, NM 87199
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____
Address: 6501 EAGLE ROCK
Phone#: _____ Fax#: _____ E-mail: _____

Architect: ROGER CINELLI Contact: _____
Address: 2418 Manuel Torres Lane N.W. ALB 87117
Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES Contact: JOHN GALLEGOS
Address: _____
Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

x DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
x DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
X GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
X PRELIMINARY PLAT APPROVAL
X S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
x GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION
___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED
AUG 0 5 2014
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided
DATE SUBMITTED: 7/3/14 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

July 24, 2014

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM 87199

RE: **Eagle Crest Subdivision**
Drainage Report and Grading and Drainage Plan
Engineer's Stamp Date 7-3-14 (File: C18D064B)

Dear Mr. Soule:

Based upon the information provided in your submittal received 7-3-14, the above referenced submittal cannot be approved for action by the DRB on the Site Plan for Building Permit or the Preliminary Plat; nor for Grading Permit until the following comments are addressed. Please note that the following comments are cursory, and a more detailed review will be performed after the initial comments are addressed.

1. Since the proposed subdivision is partially in a Special Flood Hazard Area (AO with 1 ft. depth) an application for a LOMR is in order. However, until such time that the LOMR is approved, the City cannot issue building permits within a flood zone. Therefore, in the interest of time, it may be beneficial to raise the finished pads above the Base Flood Elevation and apply for a LOMR-F. The finished pads would have to be 1' above the highest contour elevation that crosses the lot.
2. Since this project is to be phased, a scheme to handle drainage must be determined for all the interim conditions, and also the final condition.
3. Ponding used for the management of the "first flush" should be only on the front yard as backyards are often landscaped and modified substantially.

Since the disturbed area on this site exceeds 1.0 acre, an Erosion and Sediment Control (ESC) Plan, prepared by a NM PE and approved by the City's Stormwater Engineer, will be required for this site, prior to Hydrology approval of a Building Permit or Work Order.

If you have any questions, you can contact me at 924-3695.

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Albuquerque
New Mexico 87103
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AUG 11 2014
LAND DEVELOPMENT SECTION

C18D064B_SPSD_PP_GP_Cmmt.doc

RIO GRANDE ENGINEERING OF NEW MEXICO, LLC

August 1, 2014

Ms. Rita Harmon PE
Senior Engineer
Hydrology
City of Albuquerque

RE: Grading and Drainage Plan
Eagle Crest (C18D064B)

Dear Ms. Harmon

The purpose of this letter is to accompany the enclosed grading plan and supplemental for the referenced project. This plan was revised to address your comments. A list of your comments dated 7/24/14 (letter attached). A description as to how we addressed are as follows

1. We have denoted the lots that will be affected and shown which ones will be able to obtain a LOMR-F and which ones will require LOMR prior to issuance of building permit. The LOMR has been started and based upon the previous LOMR upstream the approval should be very straight forward.
2. We have shown the phasing as required. Phase 1-3 will temporarily retain the flows generated from each phase.
3. We have better described the berm and pond concept to contain the first flush

We have enclosed the updated basin map and the hydraulic calculations for the phasing, the basins did not change.Should you have any questions regarding this re-submittal, please do not hesitate to call me.

Sincerely,

David Soule, PE
Rio Grande Engineering
PO Box 93924
Albuquerque. NM 87199
321-9099

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AUG 05 2014
LAND DEVELOPMENT SECTION

RECEIVED
AUG 11 2014
LAND DEVELOPMENT SECTION

EROSION CONTROL NOTES:

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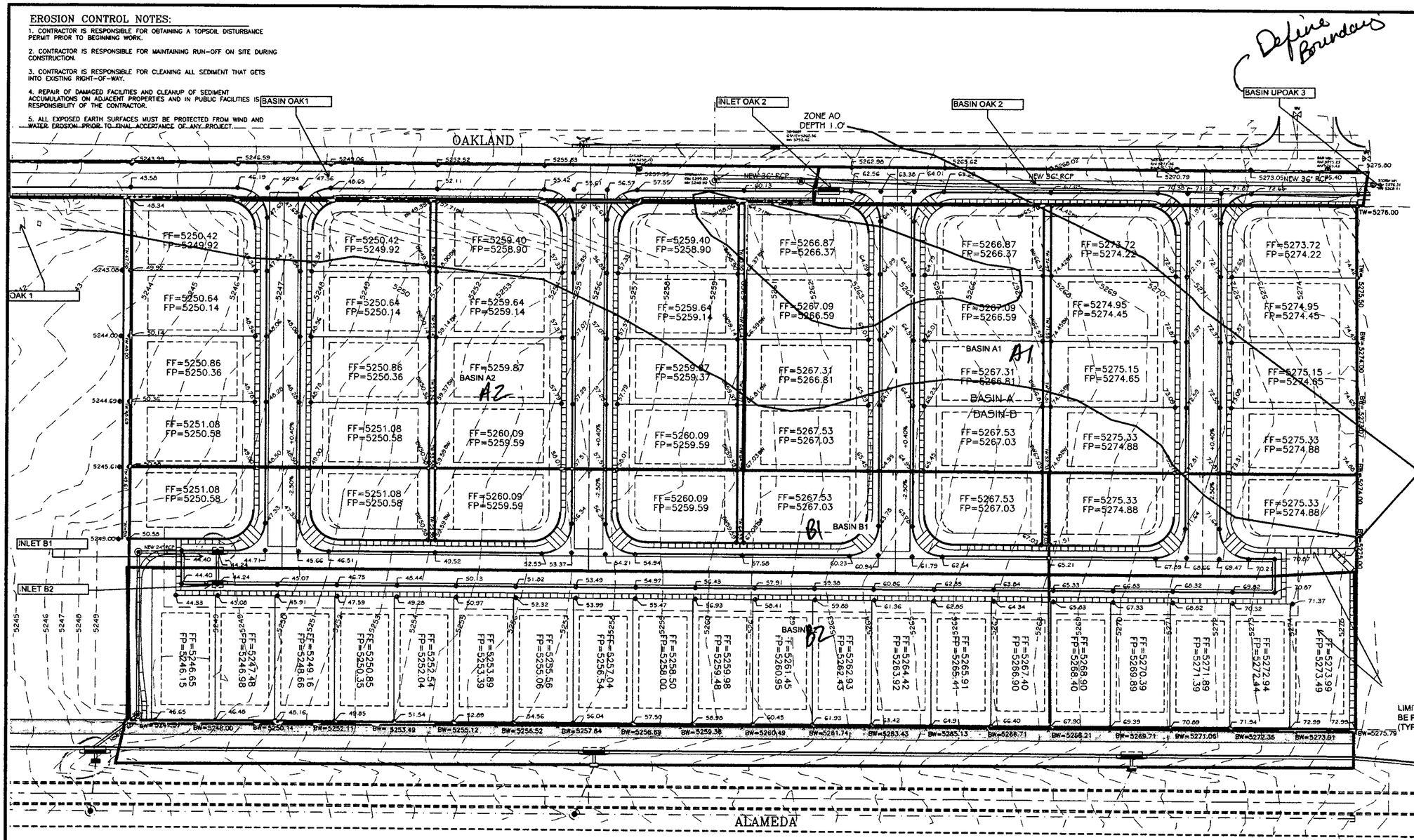
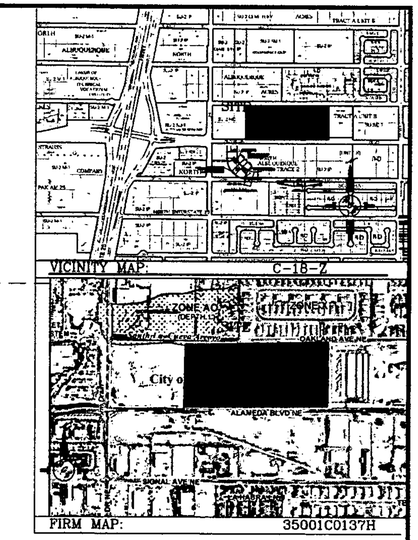
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS RESPONSIBILITY OF THE CONTRACTOR.

5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.





LEGAL DESCRIPTION:

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.

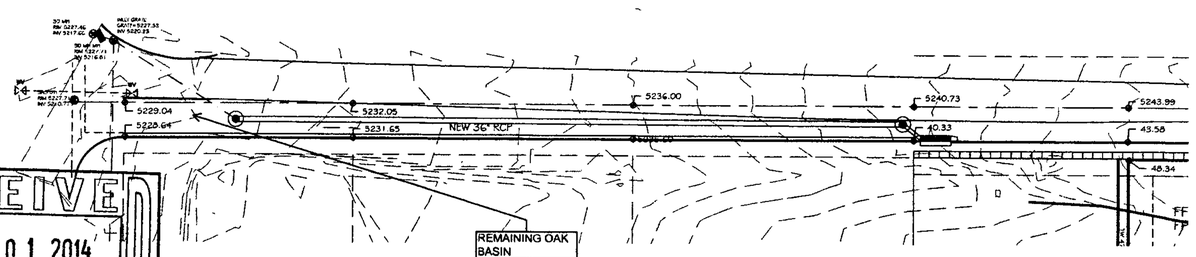
2. ALL CURB AND GUTTER TO 4" MOUNTABLE-ROLL UNLESS OTHERWISE NOTED, EXCEPTING ALAMEDA AND OAKLAND WHICH SHALL BE 8" STANDARD.

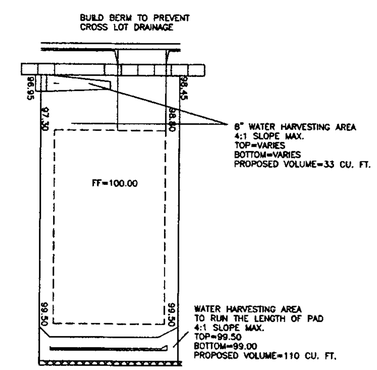
3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- 5414 — PROPOSED CONTOUR
- 5415 — PROPOSED INDEX CONTOUR
- SLOPE TIE
- 4048.25 — EXISTING SPOT ELEVATION
- 4048.25 — PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL

LIMIT OF BASIN BE PER PHASE (TYP)





TYPICAL WATER HARVETING AREAS

N

GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

Rio Grande Engineering

PROJECT TITLE: EAGLE CREST

DRAWING TITLE: GRADING AND DRAINAGE PLAN

SEAL

06-18-2014 | PROJECT NO. 21331

080613

DRAWING NO.

DRB 3.0

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LAND DEVELOPMENT SECTION

Weighted E Method

EAGLE CREST

Existing Developed Basins

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
BASIN A1	110125	2.528	0%	0	34.0%	0.860	16.0%	0.4045	50%	1.264	1.699	0.358	9.98	0.527
BASIN A2	110125	2.528	0%	0	34.0%	0.860	16.0%	0.4045	50%	1.264	1.699	0.358	9.98	0.527
BASIN B1	86527	1.986	0%	0	34.0%	0.675	16.0%	0.31782	50%	0.993	1.699	0.281	7.84	0.414
BASIN B2	133341	3.061	0%	0	34.0%	1.041	16.0%	0.48977	50%	1.531	1.699	0.433	12.08	0.638
BASIN OAK 1	17278	0.397	0%	0	5.0%	0.020	5.0%	0.01983	90%	0.357	2.235	0.074	1.91	0.121
BASIN OAK 2	17096	0.392	0%	0	5.0%	0.020	5.0%	0.01962	90%	0.353	2.235	0.073	1.89	0.120
BASIN UPOAK 3	261360	6.000	0%	0	34.0%	2.040	16.0%	0.96	50%	3.000	1.699	0.850	23.68	1.250
REMAININGOAK BASIN	146794	3.370	0%	0	34.0%	1.146	16.0%	0.53919	50%	1.685	1.699	0.477	13.30	0.702
BASIN ALA1	36971	0.849	0%	0	34.0%	0.289	36.0%	0.30555	30%	0.255	1.485	0.105	5.56	0.139
EACH PHASE	54967	1.262	0%	0	34.0%	0.429	16.0%	0.2019	50%	0.631	1.699	0.179	9.64	0.263

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66	Qa= 1.87
Eb= 0.92	Qb= 2.6
Ec= 1.29	Qc= 3.45
Ed= 2.36	Qd= 5.02

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FLOW SUMMARY

TOTAL FLOW AT INLET OAK 1 INLET AT NWCORNER	11.89	CFS				
TOTAL FLOW AT INLET OAK 2- DIVERSION PER EAGLE ROCK PLAN	11.87	CFS IN STREET	+	23.68	CFS (IN PIPE)	35.54 CFS TOTAL
TOTAL FLOW AT INLET B1	7.84	CFS IN STREET	+	12.08	CFS (IN PIPE)	19.92 CFS TOTAL
TOTAL FLOW AT INLET B2	12.08	CFS				
TOTAL FLOW AT INLET ALAMEDA1	5.56	CFS IN STREET	+	19.92	CFS (IN PIPE)	25.47 CFS TOTAL
TEMPORARY RETENION PONDS PER PHASE	11448	CUBIC FEET				

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

August 20, 2014

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM 87199

RE: **Eagle Crest Subdivision**
Drainage Report and Grading and Drainage Plan
Engineer's Stamp Date 8-19-2014 (File: C18D064B)

Dear Mr. Soule:

Since the DRB approved the Preliminary Plat and Site Plan for Subdivision on 8-20-2014, and based upon the information provided in your submittal received 8-19-14, the above referenced submittal is approved for Grading Permit. Upon completion of the project, provide an Engineer Certification for our files.

Please note that ~~since~~ the lateral pipes in Alameda are shown as 30"dia. RCP in more recent plans (as opposed to 24" RCP from earlier plans). Forthcoming as-builts should confirm this. Also, the storm drain from Soaring Avenue to Alameda (back of inlet) is sized as a 30" RCP in the report, and the DRC plans should reflect this.

If you have any questions, you can contact me at 924-3695.

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf: via Email: Recipient, Tim Simms , Monica Ortiz

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

August 19, 2014

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM 87199

RE: **Eagle Crest Subdivision**
Drainage Report and Grading and Drainage Plan
Engineer's Stamp Date 8-19-14 (File: C18D064B)

Dear Mr. Soule:

Based upon the information provided in your submittal received 8-19-14, the above referenced submittal is approved for action by the DRB on the Site Plan for Building Permit and the Preliminary Plat. Approval for Grading Permit is pending the DRB action.

If you have any questions, you can contact me at 924-3695.

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf: via Email: Recipient, Tim Simms , Monica Ortiz

City of Albuquerque

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AUG 19 2014
LAND DEVELOPMENT SECTION

Planning Department
Development & Building Services Division
DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(REV 02/2013)

Project Title: EAGLE CREST SUBDIVISION Building Permit #: _____ City Drainage #: C18-d064B
DRB#: _____ EPC#: _____ Work Order#: _____
Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES
City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE
Address: PO BOX 93924, ALBUQUERQUE, NM 87199
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____
Address: 6501 EAGLE ROCK
Phone#: _____ Fax#: _____ E-mail: _____

Architect: ROGER CINELLI Contact: _____
Address: 2418 Manuel Torres Lane N.W. ALB 87117
Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES Contact: JOHN GALLEGOS
Address: _____
Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

x DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
x DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
X GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
X PRELIMINARY PLAT APPROVAL
X S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
x GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION
___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided

DATE SUBMITTED: 8/18/14 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

David Soule

From: Ortiz, Monica [mortiz@cabq.gov]
Sent: Tuesday, August 19, 2014 8:08 AM
To: David Soule
Subject: RE: Submittal for c18-d064b

Thanks David

Monica Ortiz
Planning Department – Transportation & Hydrology
Development & Building Services Division
600 2nd St. NW, Suite 201
Albuquerque, NM 87102
t 505-924-3981
f 505-924-3864

From: David Soule [mailto:david@riograndeengineering.com]
Sent: Tuesday, August 19, 2014 8:01 AM
To: Rael, Rudy E.; Harmon Rita T.; Sims, Timothy E.; Ortiz, Monica
Subject: Submittal for c18-d064b

<<...>> <<...>> <<...>> <<...>>

RECEIVED
AUG 19 2014
LAND DEVELOPMENT SECTION

UPDATED
DRAINAGE REPORT

For

EAGLE CREST ESTATE

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

AUGUST 2014

8/19/12

David Soule P.E. No. 14522

UPDATED
DRAINAGE REPORT

For

EAGLE CREST ESTATE

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

RECEIVED
AUG 19 2014
LAND DEVELOPMENT SECTION

AUGUST 2014

David Soule P.E. No. 14522

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Purpose 3
Introduction 3
Existing Conditions 3
Exhibit A-Vicinity Map 4
Proposed Conditions 5
Summary 5

Appendix

NAAMDP, San Pedro Storm drain and Eagle rock Diversion map ..... A
Site Hydrology ..... B
Hydraulic calculations C

Map

Site Grading and Drainage Plan

PURPOSE

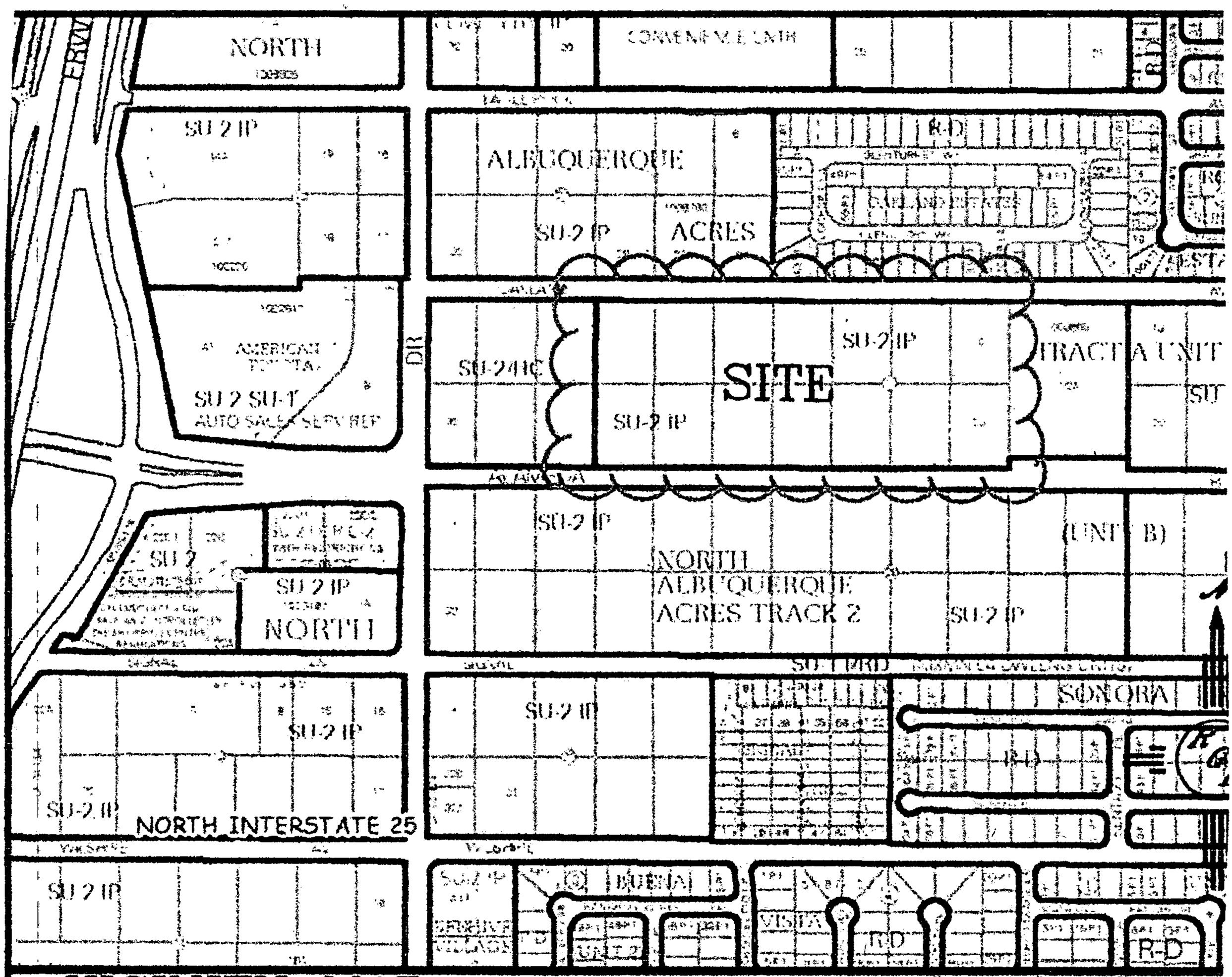
The purpose of this report is to provide the Drainage Management Plan for the development of a 60-lot subdivision located on Oakland Avenue between San Pedro and Louisiana NE. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines, and HYDROCAD. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

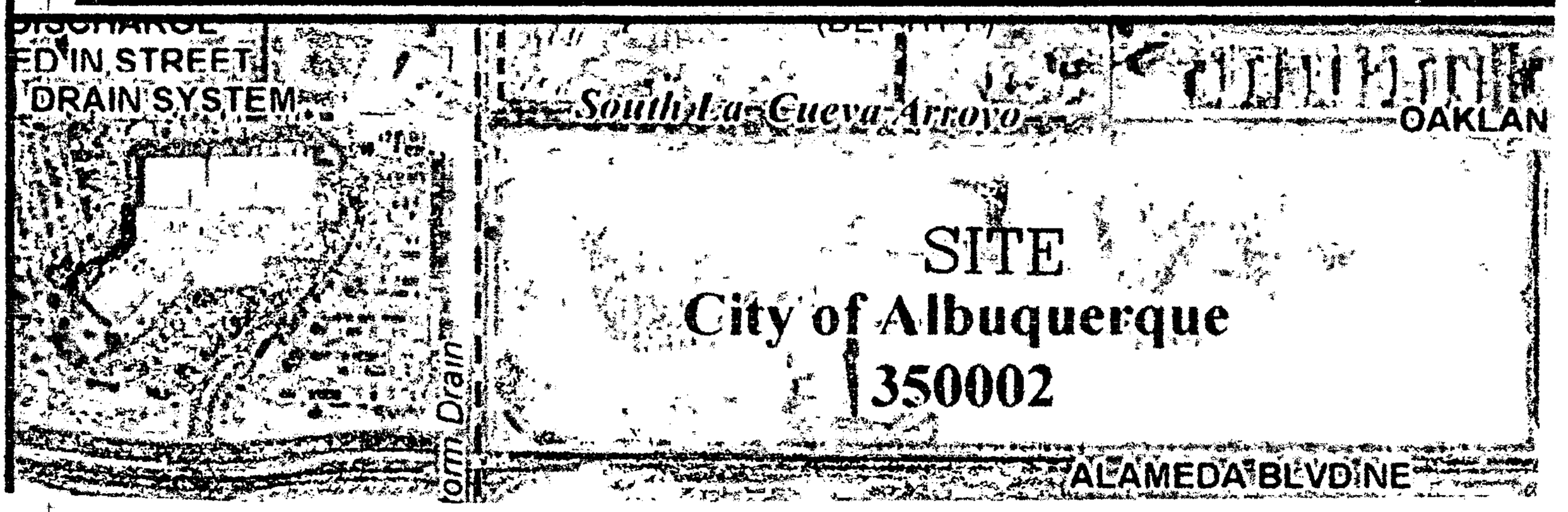
The subject of this report, as shown on the Exhibit A, is a 12.41-acre parcel of land located on the south side of Oakland Avenue and the north side of Alameda Boulevard between San Pedro and Louisiana. The legal description of this site is Lots 4-10 and 23-29, block 28, tract A, unit B, North Albuquerque Acres. As shown on FIRM map35013C0137H, the majority of the site is located within Flood Zone X; a portion of the site is impacted by flood zone AE-1 foot. The site has had significant grading activities upon it over the past 10 years. The site is not in native condition. Due to the upstream construction, the site is not affected by any upland flow. The site free discharges to the west. The development of the site will require the site to discharge at a rate equal to or less than the fully developed conditions assumed for this site in the governing North Albuquerque Acres Master Drainage Plan (NAAMDP), which relevant excerpts can be found in appendix A.

EXISTING CONDITIONS

The site currently does have structures on it and has been impacted by human development over the years. The site was most recently an auto salvage and parts yard. The site is not impacted by any upland flows. The site currently discharges all of its flow to the North West



VICINITY MAP: C-18-Z



DESIGN ANALYSIS REPORT
FOR
SAN PEDRO STORM DRAIN PROJECT
CITY PROJECT NO. 5304.91

Prepared by:
Thompson Engineering Consultants, Inc.
P.O. Box 65760
Albuquerque, NM 87193

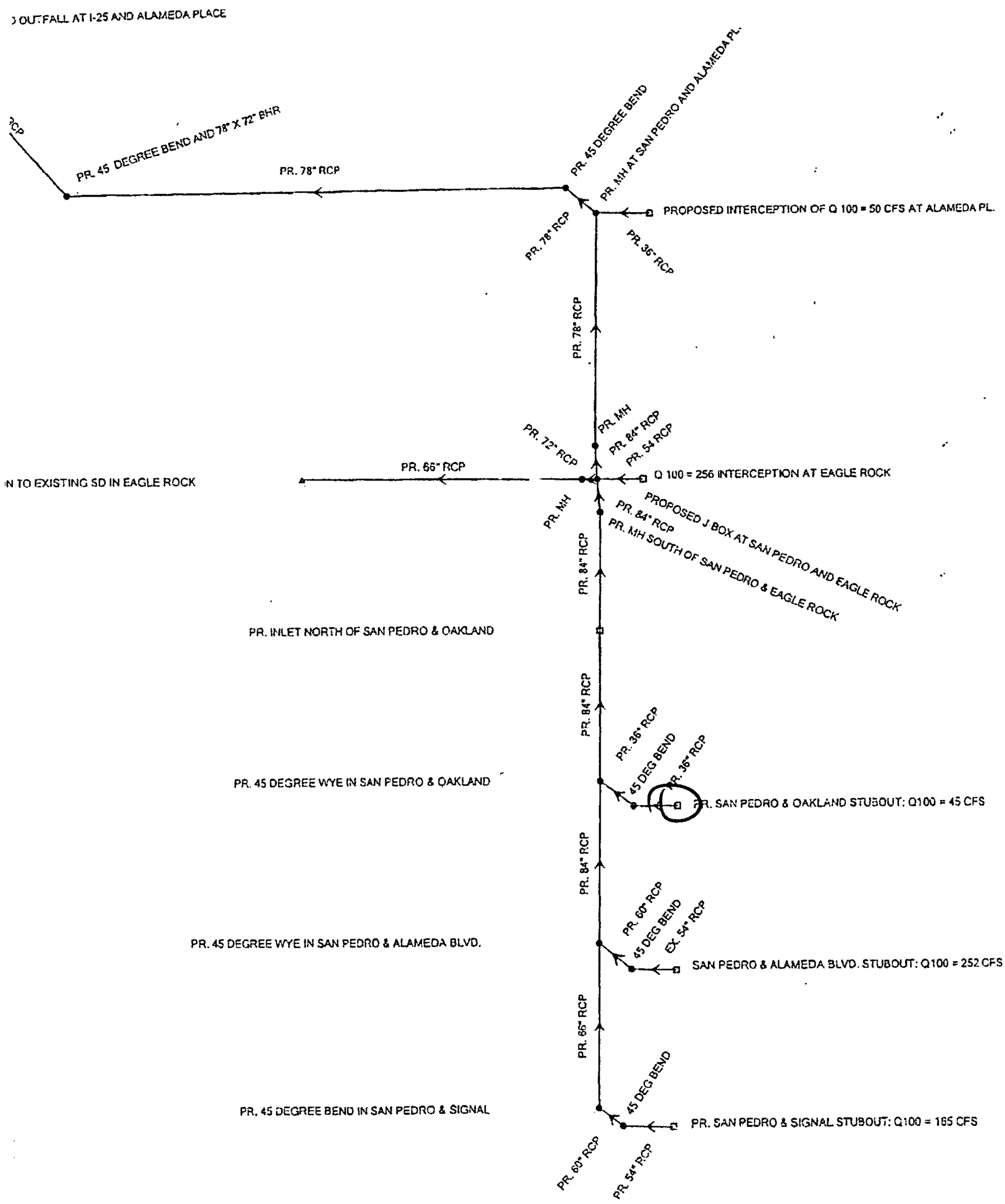
January 2010

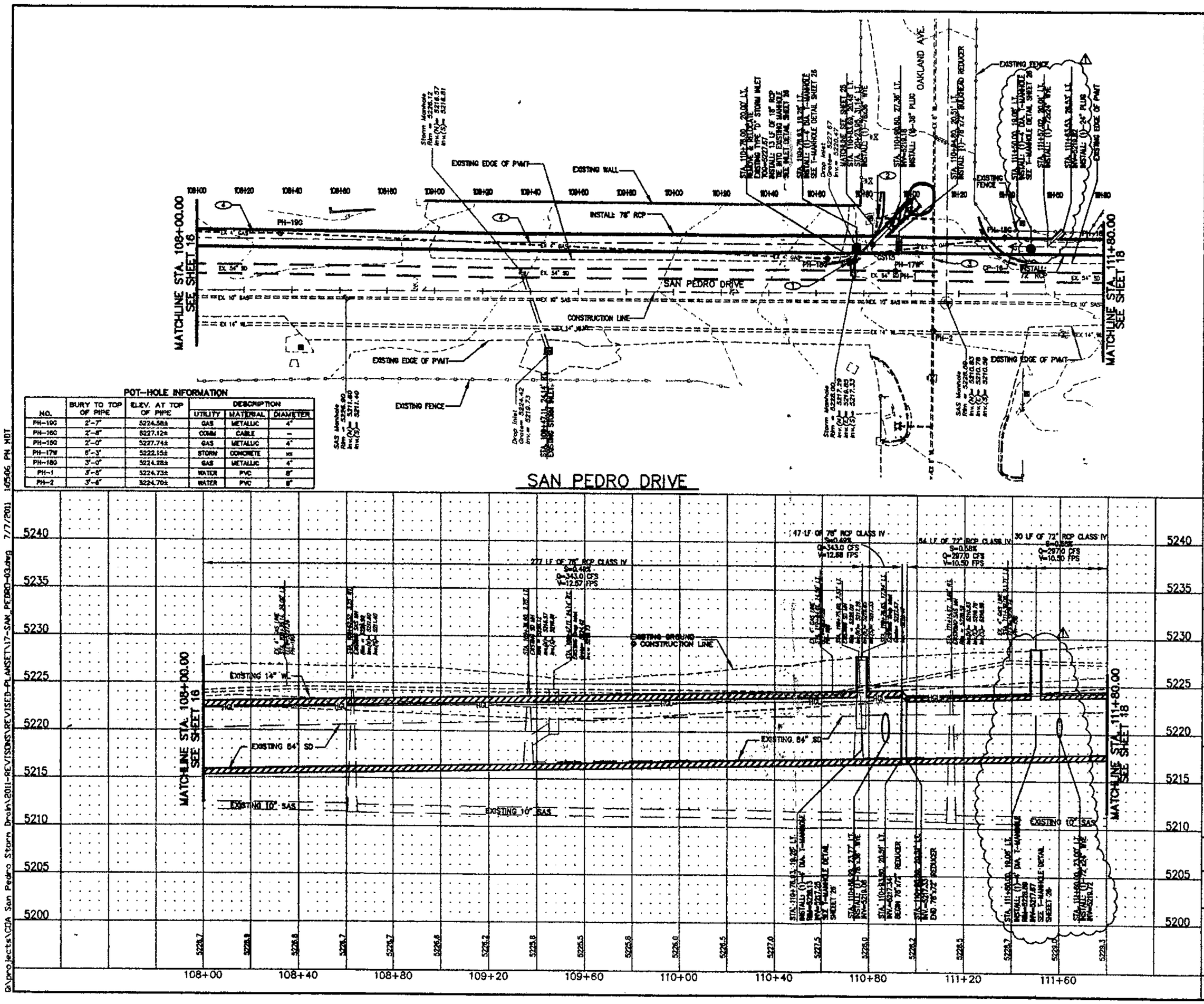
DOT Report (San Pedro SD - Final Single Pipe System with changes from coa.stc)

Label	Node- Upstream Downstream	Conduit Description	Slope (Calculated) (ft/ft)	Length (ft)	Manning's n	Flow (ft³/s)	Velocity (Average) (ft/s)	Ground- Upstream Downstream (ft)	Invert- Upstream Downstream (ft)	HGL- Upstream Downstream (ft)
PR. 66" RCP	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL	Circular Pipe - 66.0 in	0.006	532	0.013	165	6.94	5230.42	5222.97	5229.42
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.	Circular Pipe - 84.0 in	0.005	525	0.013	417	12.96	5229.65	5219.8	5225.46
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	139	0.013	462	13.62	5228	5217.29	5223.55
	PR. INLET NORTH OF SAN PEDRO & OAKLAND							5226.12	5216.57	5223.01
PR. 84" RCP	PR. INLET NORTH OF SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	335	0.013	462	13.38	5226.12	5216.57	5222.46
	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK							5224.23	5214.89	5220.83
PR. 84" RCP	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK	Circular Pipe - 84.0 in	0.006	31	0.013	462	15.09	5224.23	5214.89	5220.53
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5220.1
PR. 84" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 84.0 in	0.009	32	0.013	393	16.57	5224.03	5210.5	5215.72
	PR. MH							5223.95	5210.22	5215.94
PR. 78" RCP	PR. MH	Circular Pipe - 78.0 in	0.01	505	0.013	393	17.57	5223.95	5210.22	5215.52
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.69
PR.72" RCP	PR. 45 DEGREE BEND AND 78" X 72" BHR	Circular Pipe - 72.0 in	0.012	257	0.013	443	15.67	5208.9	5199.5	5205.55
	SAN PEDRO SD OUTFALL AT I-25 AND ALAMEDA PLACE							5203.5	5196.43	5202.74
PR. 54" RCP	PR. SAN PEDRO & SIGNAL STUBOUT: Q100 = 165 CFS	Circular Pipe - 54.0 in	0.026	50	0.013	165	10.37	5233.2	5225.75	5230.6
	45 DEG BEND							5231.8	5224.36	5230.25
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.026	50	0.013	165	8.4	5231.8	5224.36	5229.88
	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL							5230.42	5222.97	5229.67
EX. 54" RCP	SAN PEDRO & ALAMEDA BLVD. STUBOUT: Q100 = 252 CFS	Circular Pipe - 54.0 in	0.034	50	0.013	252	15.84	5232.3	5223.36	5230.29
	45 DEG BEND							5230.1	5221.58	5229.47
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.034	50	0.013	252	12.83	5230.1	5221.58	5228.6
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 36" RCP	PR. SAN PEDRO & OAKLAND STUBOUT: Q100 = 45 CFS	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5230.6	5220.05	5224.6
	45 DEG BEND							5229.3	5218.67	5224.37
PR. 36" RCP	45 DEG BEND	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5229.3	5218.67	5224.15
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 72" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 72.0 in	0.02	5	0.013	325	(N/A)	5224.03	5210.5	(N/A)
	PR. MH							5224	5210.4	(N/A)
PR. 66" RCP	PR. MH	Circular Pipe - 66.0 in	0.019	334	0.013	325	20.9	5224	5210.4	5215.31
	CONNECTION TO EXISTING SD IN EAGLE ROCK							5212.65	5204.2	5207.75
PR. 78" RCP	PR. MH AT SAN PEDRO AND ALAMEDA PL.	Circular Pipe - 78.0 in	0.017	30	0.013	443	13.35	5221.4	5205	5211.75
	PR. 45 DEGREE BEND							5220	5204.5	5211.54
PR. 78" RCP	PR. 45 DEGREE BEND	Circular Pipe - 78.0 in	0.01	496.7	0.013	443	17.77	5220	5204.5	5210.07
	PR. 45 DEGREE BEND AND 78" X 72" BHR							5208.9	5199.5	5206.85
PR. 36" RCP	PROPOSED INTERCEPTION OF Q 100 = 50 CFS AT ALAMEDA	Circular Pipe - 42.0 in	0.01	50	0.013	50	10.44	5222	5211.5	5213.71
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.85
PR. 54 RCP	Q 100 = 256 INTERCEPTION AT EAGLE ROCK	Circular Pipe - 54.0 in	0.02	50	0.013	256	16.1	5226	5216	5220.62
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5219.77

San Pedro Storm Drain

Proposed Single Pipe System





POT-HOLE INFORMATION

NO.	BURY TO TOP OF PIPE	ELEV. AT TOP OF PIPE	DESCRIPTION		
			UTILITY	MATERIAL	DIAMETER
PH-19G	2'-7"	5224.58±	GAS	METALLIC	4"
PH-16C	2'-8"	5227.12±	COMM	CABLE	–
PH-15G	2'-0"	5227.74±	GAS	METALLIC	4"
PH-17W	6'-3"	5222.15±	STORM	CONCRETE	HX
PH-18G	3'-0"	5224.28±	GAS	METALLIC	4"
PH-1	3'-5"	5224.73±	WATER	PVC	8"
PH-2	3'-6"	5224.70±	WATER	PVC	8"

KEYED NOTES:

1. REMOVE, DISPOSE AND REPLACE TYPE "D" STORM INLET SEE COA STD DWG 2208 AND CONNECTOR PIPE. CONNECT INTO EXISTING 6' DIA. MANHOLE
2. REMOVE AND REPLACE EXISTING 1" WATER SERVICE
3. REMOVE AND REPLACE EXISTING 8" WL SEE DETAIL SHEET 31
4. EXISTING GAS LINE TO BE REMOVE & RELOCATED (BY OTHERS)

CONSTRUCTION SURVEY POINTS

PT #	Northing	Easting
CS115	1543653.806	1543074.688

SCALE: 1" = 20'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc.
P.O. BOX 25760 ALBUQUERQUE, NM 87125
PHONE: (505) 271-2199 FAX: (505) 850-8245

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TITLE: SAN PEDRO STORM DRAIN
SAN PEDRO DR. PLAN & PROFILE
STA. 108+00 TO 111+80

Design Review Committee | City Engineer Approval | Last Design Update

City Project No.	Zone Map No.	Sheet	Of
5304.91	C-18-Z	17	44

AS BUILT INFORMATION
CONTRACTOR | DATE
WORK STAKED BY | DATE
AS-BUILTS REVIEWED BY | DATE
FIELD VERIFICATION BY | DATE
DRAWINGS CORRECTED BY | DATE
MICRO-FILM INFORMATION
RECORDED BY | DATE
NO.

BENCH MARKS
STATION STAMPED (10-C18 1985)
CITY OF ALBUQUERQUE SURVEY 3 1/4"
ALUMINUM DISK RIVETED TO PIPE LOCATED BETWEEN ALAMEDA PL. & EAGLE ROCK RD ON SAN PEDRO BLVD. EAST SIDE OF ROAD
X=1,524,123.885 Y=1,542,565.263
G-C=0.999965042
ΔX=0° 11' 19.43"
ELEVATION=5222.09 (NAVD 1988)

SURVEY INFORMATION
FIELD NOTES

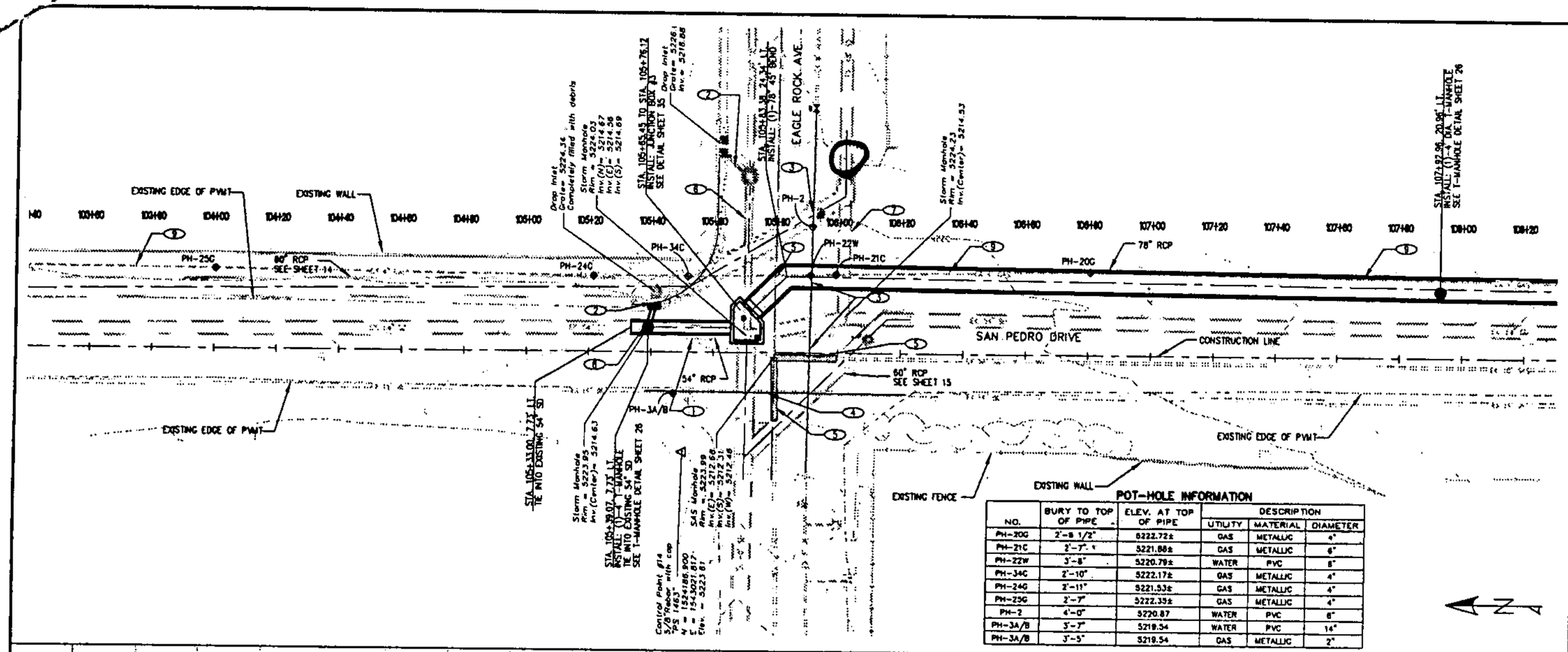
NO.	BY	DATE

ENGINEERS SEAL

NO.	DATE	REMARKS	BY
1	7-7-11	ADD T-MANHOLE & 72"x24" WYE	

REVISIONS
DESIGN
DESIGNED BY D.E.M. DATE 3-10
DRAWN BY D.E.M. DATE 3-10
CHECKED BY D.B.T. DATE 3-10

D:\projects\COA San Pedro Storm Drain\2011-REVISIONS\REVISED-PLANSET\17-SAN_PEDRO-03.dwg 7/7/2011 1:05:06 PM MDT

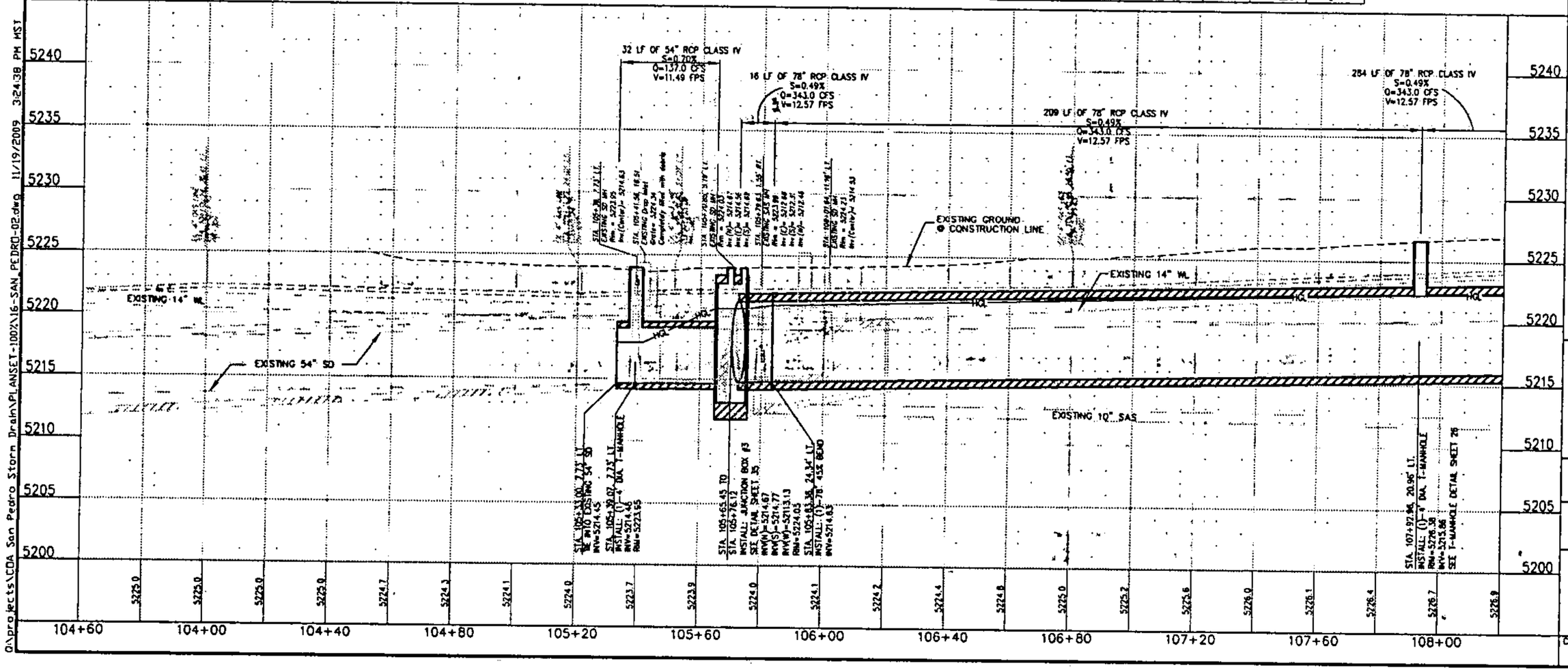


POT-HOLE INFORMATION

NO.	BURY TO TOP OF PIPE	ELEV. AT TOP OF PIPE	DESCRIPTION		
			UTILITY	MATERIAL	DIAMETER
PH-20G	2'-8 1/2"	5222.72±	GAS	METALLIC	4"
PH-21C	2'-7" ±	5221.88±	GAS	METALLIC	6"
PH-22W	3'-8"	5220.79±	WATER	PVC	8"
PH-34C	2'-10"	5222.17±	GAS	METALLIC	4"
PH-24G	2'-11"	5221.53±	GAS	METALLIC	4"
PH-25G	2'-7"	5222.35±	GAS	METALLIC	4"
PH-2	4'-0"	5220.87	WATER	PVC	8"
PH-3A/B	3'-7"	5219.54	WATER	PVC	14"
PH-3A/B	3'-5"	5219.54	GAS	METALLIC	2"

KEYED NOTES:

1. REMOVE AND DISPOSE OF 54" RCP STORM DRAIN
2. REMOVE, DISPOSE AND REPLACE TYPE "C" STORM INLET SEE COA STD DWG 2205 AND CONNECTOR PIPE SEE INLET DETAIL SHEET 26
3. RELOCATE 8" DIA WATERLINE VERTICALLY SEE DETAIL SHEET 30
4. RELOCATE 14" DIA WATERLINE VERTICALLY SEE DETAIL SHEET 29
5. PROTECT EXISTING 8", 10" AND 12" SAS LINES
6. REMOVE AND DISPOSE 56 LF OF 30" RCP STORM DRAIN
7. REMOVE AND DISPOSE 81 LF OF 48" RCP STORM DRAIN
8. REMOVE & REPLACE 6' DIA MANHOLE INSTALL: (1)-T-MANHOLE SEE T-MANHOLE DETAIL SHEET 26
9. EXISTING GAS LINE TO BE REMOVED & RELOCTED (BY OTHERS)



SCALE: 1" = 20'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc.
P.O. BOX 65760 ALBUQUERQUE, NM 87193
PHONE: (505) 271-2155 FAX: (505) 830-3246

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TITLE: SAN PEDRO DR. PLAN & PROFILE STA. 105+33.00 TO STA. 108+00.00

Design Review Committee | City Engineer Approval | Last Design Update

City Project No.	Zone Map No.	Sheet	Of
5304.91	C-18-Z	16	44

AS BUILT INFORMATION

CONTRACTOR | WORK STAKED BY | INSPECTOR | AS-BUILTS REVIEWED BY | DATE

BENCH MARKS

STATION STAMPED (10-C18 1985)
CITY OF ALBUQUERQUE SURVEY 3 1/4"
ALUMINUM DISK RIVETED TO PIPE LOCATED BETWEEN ALAMEDA PL. & EAGLE ROCK RD ON SAN PEDRO BLVD. EAST SIDE OF ROAD
X=1,524,123.885 Y=1,542,565.263
G-C=0.999665042
ΔX=0° 11' 19.43"
ELEVATION=5222.09 (NAVD 1988)

SURVEY INFORMATION

FIELD NOTES | NO. | BY | DATE

MICRO-FILM INFORMATION

RECORDED BY | DATE | NO.

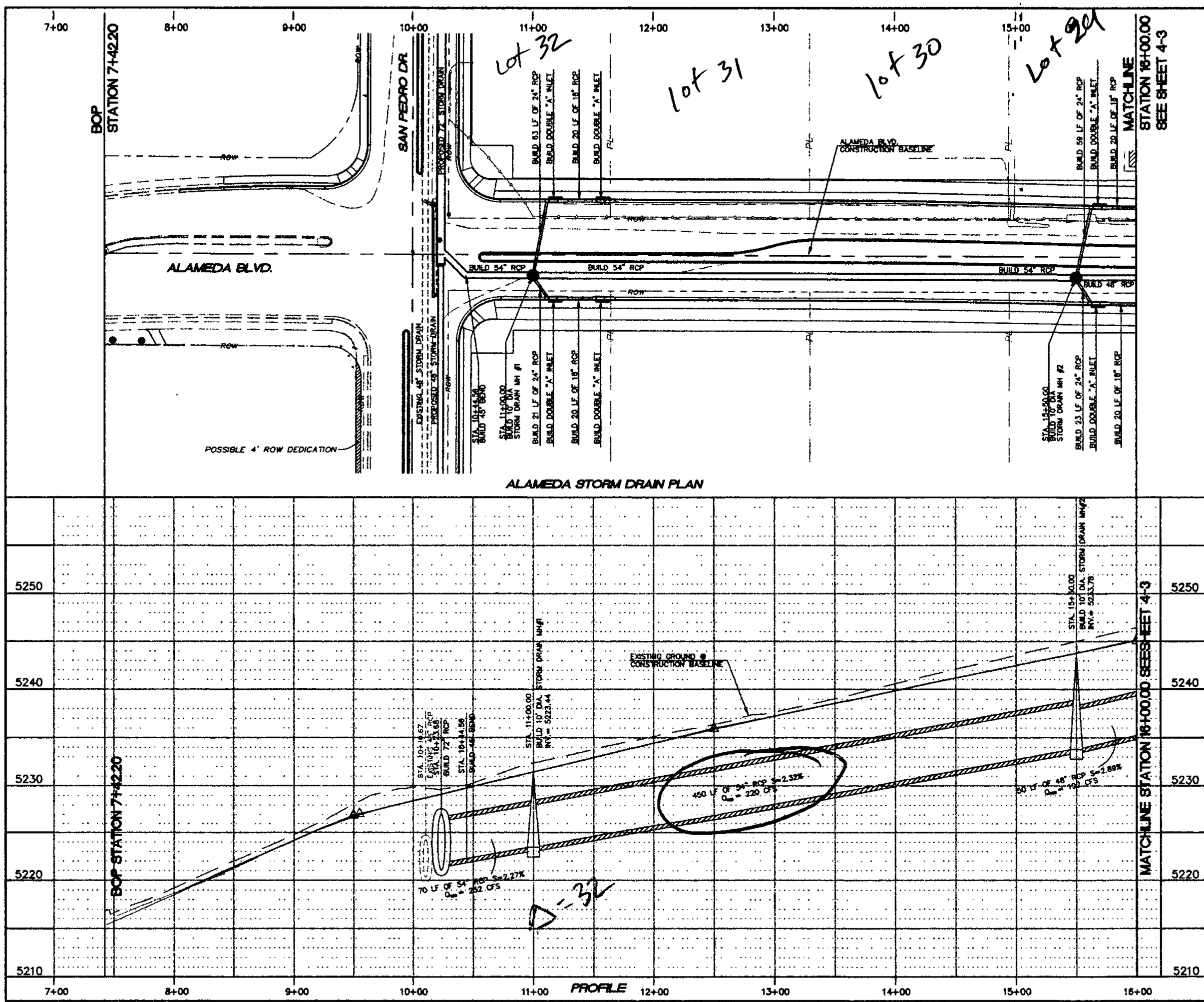
ENGINEERS SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGNED BY D.E.M. DATE 11-09
DRAWN BY D.E.M. DATE 11-09
CHECKED BY D.B.T. DATE 11-09

O:\projects\COA San Pedro Storm Drain\PLANSET-100%\16-SAN PEDRO-02.dwg 11/19/2009 3:24:38 PM MST

768-2727
Vicki Paul
VPaul@cabq.gov



Total Q In our Reach is 220-132 = 88 cfs
our half = 44

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

BENCH MARKS
Coordinates shown hereon are modified (surface)
N.M. State Plane Coordinates – Central Zone, NAD 83 and were derived by scaling Stations Plane grid coordinates by the project average combined factor of CF = 1.00033436961 around an origin of 0,0. Elevations are NAVD 88, and are adjusted to the NGS Control Station "10-C16, 1985" (published elevation = 5223.067). The coordinates and elevations are US Survey Feet.

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY
INSPECTOR
FIELD VERIFICATION BY
DATE
MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

ENGINEERS SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGN

		DATE
DESIGNED BY	DBT	01-2011
DRAWN BY	DEM	01-2011
CHECKED BY	DBT	01-2011

SCALE: 1" = 40'
SCALE: 1" = 5'

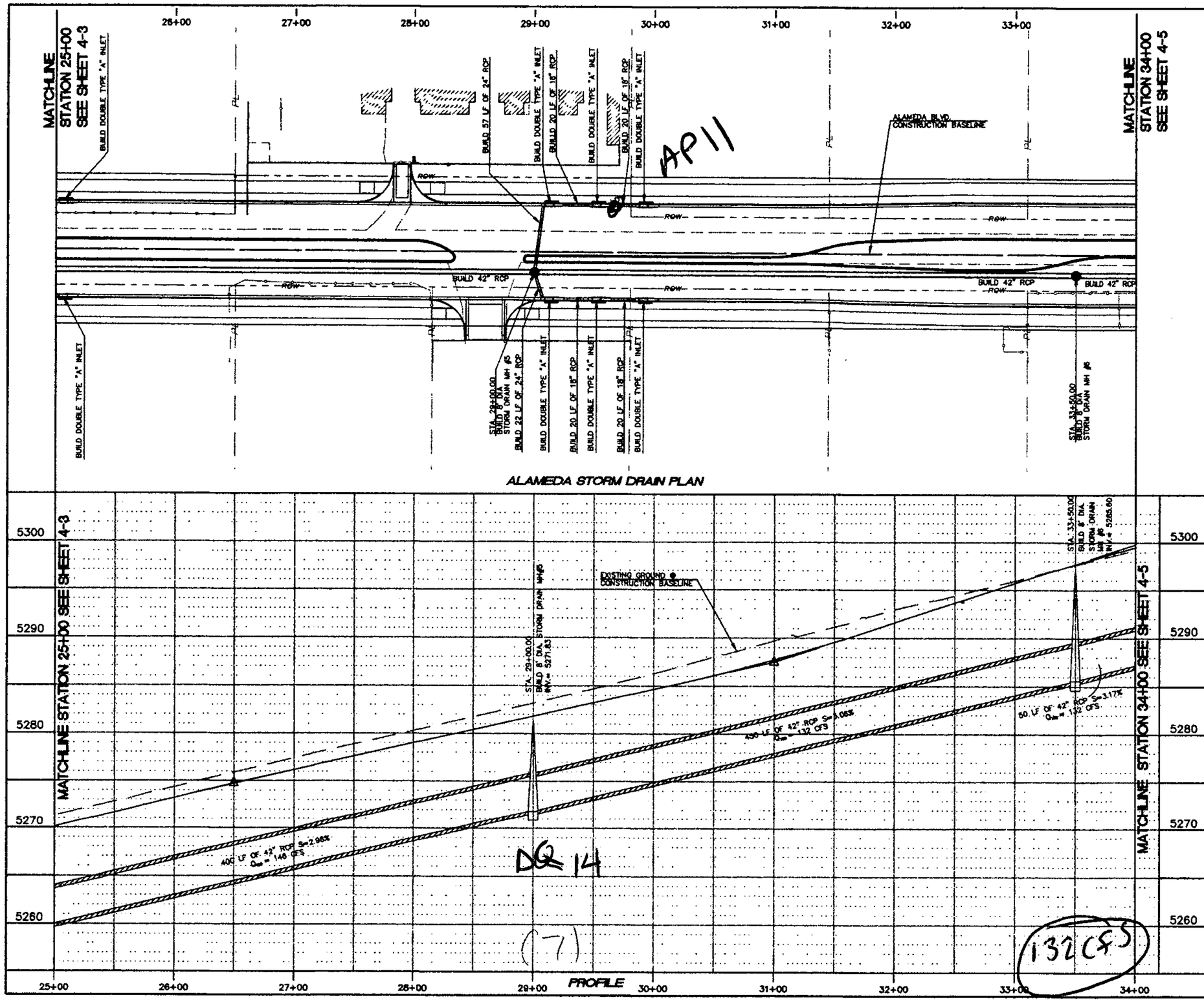
Thompson Engineering Consultants, Inc.
tecmb@yahoo.com

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TITLE: ALAMEDA BLVD. WIDENING
ALAMEDA STORM DRAIN PLAN AND PROFILE
STA. 7+42.20 TO STA. 16+00

Design Review Committee | City Engineer Approval | Last Design Update

City Project No.	Zone Map No.	Sequence No.	Sheet	Of
7663.91	C-18/C-19	4-2	10	13



AS BUILT INFORMATION

CONTRACTOR

WORK STAKED BY DATE

INSPECTOR ACCEPTANCE BY DATE

FIELD VERIFICATION BY DATE

DRAWINGS CORRECTED BY DATE

MICRO-FILM INFORMATION

RECORDED BY DATE

NO.

BENCH MARKS

Coordinates shown hereon are modified (surface) N.M. State Plane Coordinates - Central Zone, NAD 83 and were derived by scaling Stake Plane grid coordinates by the project average combined factor of CF = 1.00033(Mtn) ground on origin of C.O. Benchtone are NAVD 88, and are adjusted to the NGS Control Station "10-C15, 1988" (published elevation = 5322.080').

The coordinates and directions are US Survey Feet.

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEERS SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGN

DESIGNED BY DBT DATE 01-2011

DRAWN BY DBM DATE 01-2011

CHECKED BY DBT DATE 01-2011

SCALE: 1" = 40'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc.

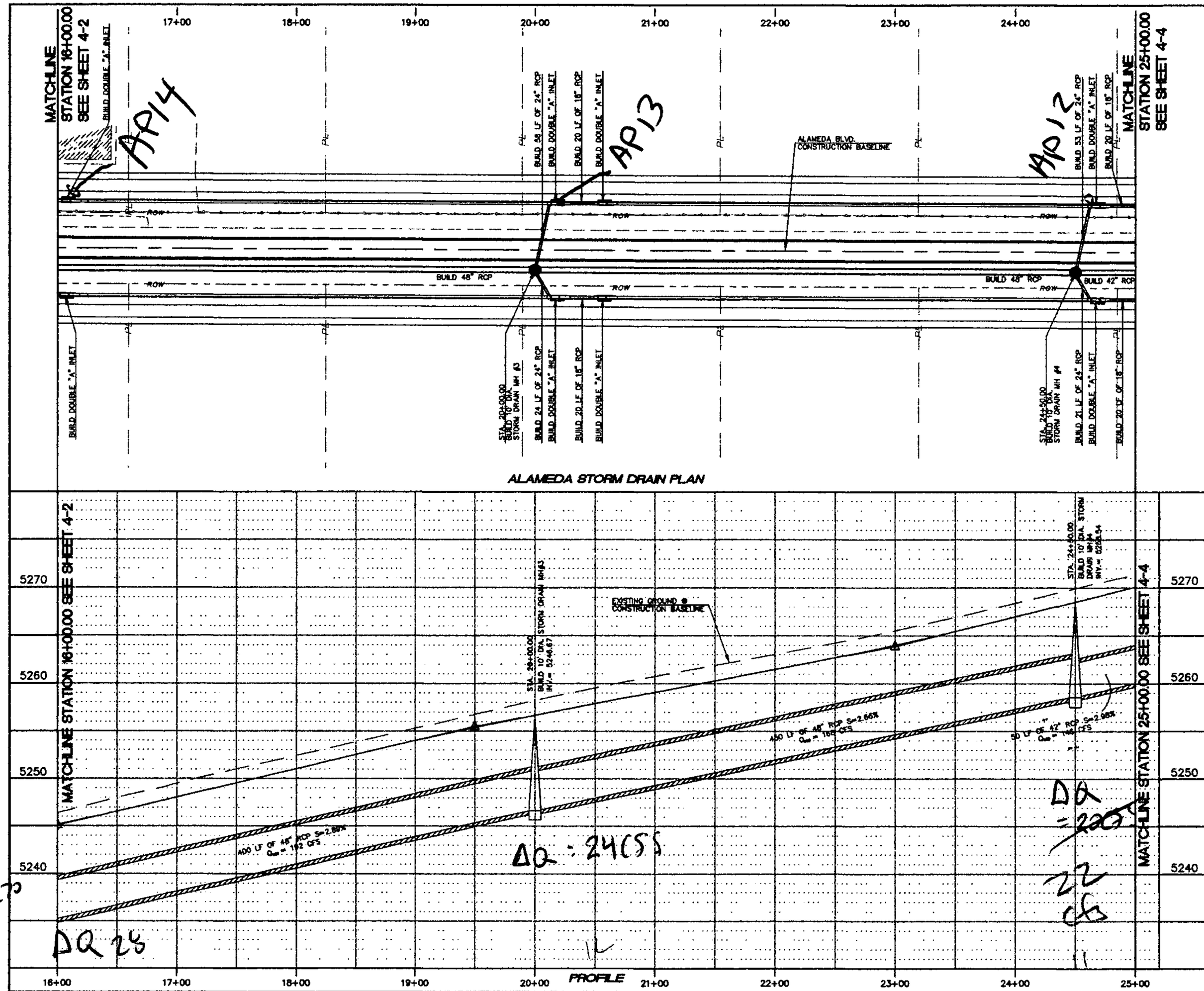
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TITLE: ALAMEDA BLVD. WIDENING

ALAMEDA STORM DRAIN PLAN AND PROFILE
STA. 25+00 TO STA. 34+00

Design Review Committee | City Engineer Approval | Last Design Update

City Project No.	Zone Map No.	Sequence No.	Sheet	Of
7663.91	C-18/C-19	4-4	12	13



AS BUILT INFORMATION

CONTRACTOR
WORK STAKED BY
INSPECTOR BY
FIELD LOCATION BY
DRAWINGS CORRECTED BY
DATE
DATE
DATE
DATE

MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

BENCH MARKS

Coordinates shown hereon are modified (surface)
N.M. State Plane Coordinates – Central Zone.
NAD 83 and were derived by scaling State
Plane grid coordinates by the project average
combined factor of CF = 1.000334861 ground
on origin of G.O. Elevations are NAVD 88, and
are adjusted to the NGS Control Station "10-C14,
1989" (published elevation = 5322.067').
The coordinates and elevations are US Survey Feet.

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	BY	REMARKS
			REVISIONS
			DESIGN

		DATE
DESIGNED BY	DBT	01-2011
DRAWN BY	DCM	01-2011
CHECKED BY	DBT	01-2011

SCALE: 1" = 40'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc.

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TITLE: ALAMEDA BLVD. WIDENING
ALAMEDA STORM DRAIN PLAN AND PROFILE
STA. 16+00 TO STA. 25+00

Design Review Committee | City Engineer Approval | Last Design Update

City Project No.	Zone Map No.	Sequence No.	Sheet	Of
7663.91	C-18/C-19	4-3	11	13

corner of the site. The site is located within basins 117.2 and 117.3 of the NAAMDP. The NAAMDP design analysis has been modified by the Eagle Rock drainage plan. The diversion of the upper 57% of basin 117.2 was designed with the construction of Oakland estates Subdivision. The upland properties have been designed to drain to the storm drain provided within Oakland. The recently constructed San Pedro and Alameda storm drain were designed to convey the developed flow from this site.

PROPOSED CONDITIONS

The proposed improvements consist of a new 60-lot subdivision serviced by public paved roadway. The lots shall free discharge to the roadway and be conveyed within the roadway to the available downstream storm drain. Each lot will be required to retain the first .34" of rain or 165 cubic feet per lot. The plan specifies the minimum dimensions of a front yard pond or an alternative underground catchment basin- stormtech SC740. A copy of the product sheet is located in appendix B. All the flow leaving the site will be conveyed via surface drainage to Oakland or underground storm drain to Alameda. The proposed land treatment will conform to the residential density assumptions of the NAADMP. The site discharge is reduced to these master plan assumptions by the creation of water quality ponds in front yards. The impervious area is consistent with table A.5 of the DPM, utilizing 4.8 dwelling units per acre.

As shown in appendix B, the site will contain 6 onsite basins, with an additional five basins affecting Oakland and 6 basins affecting Alameda. Basin A1 and A2 contain the northern half of the subdivision which corresponds to NAAMDP basin 117.2. These basins will generate 19.96 cfs. or 9.98 cfs per basin. This flow will be conveyed within the roadways double grated type A inlets. As shown in appendix B, each inlet grate has the capacity for 12 cfs or 24cfs per inlet. Basin A1 drains to a new inlet to be constructed within Oakland. This storm drain reach will be connected to the existing eagle rock diversion to the existing 24" storm drain at the west end of

our site. This reach will convey the flow from upstream Basin A1 and the he cumulative upstream basin generation of 35.07 cfs to the eagle rock diversion. Basin A2 will drain to a new inlet and storm drain reach tied to the San Pedro storm drain. This reach will capture basin A2 as well as all the down stream basins which have a combined discharge 47.60 cfs, the 9.98 cfs from basin A and 13.94 cfs from the contributing basin to the south of Oakland will be captured, the 23.68 cfs to the northern portion is programmed to enter this reach but due to existing grades the flow will enter the storm drain within San Pedro. The contributing basins are shown on the drainage basin map located in appendix b. As shown in appendix A, the allowed discharge to this reach of the San Pedro storm drain is 45cfs, which due to grades on the northern lots will not be exceeded..

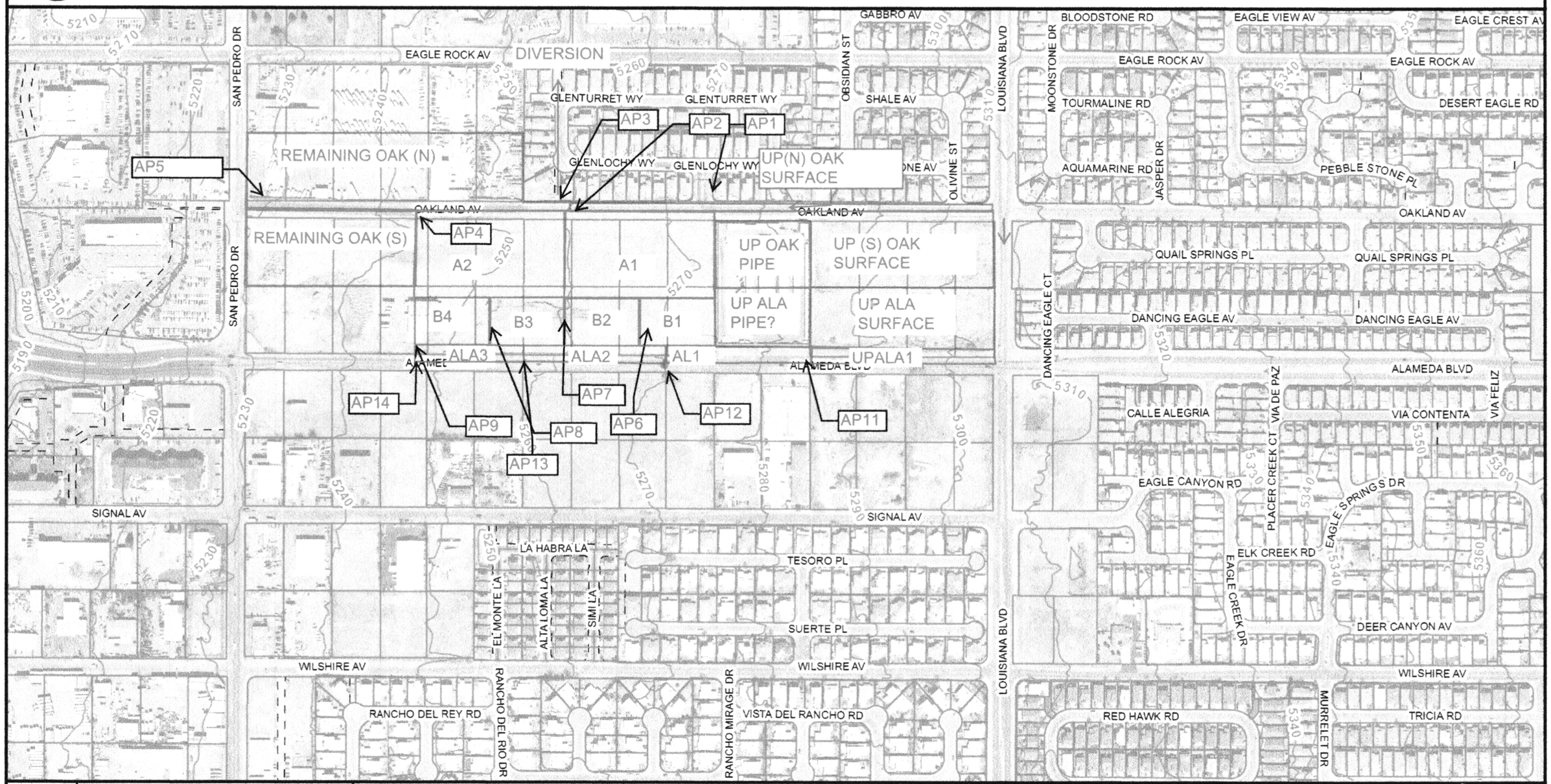
The southern half of the site contains eight onsite sub basins. The cumulative discharge from these basins is captured by inlets located at the west end of the project. Due to the phasing, phase 1-3 will temporarily retain the 100-year, 10-day volume generated. At complete build out the total flow collected by the inlets will be 7.84 cfs on the north flow line and 12.01 cfs on the south half. The cumulative flow rate of 19.85 cfs will be conveyed to the alameda storm drain via a 24" conduit. The existing inlets located within Alameda will be removed and additional inlets will be constructed at the new face of curb consistent with the ultimate condition design located in appendix C. As shown in appendix B, the maximum flow rate at each inlet will be 15.38 cfs, there for the inlets have excess capacity. As shown in the ultimate condition the storm drain is anticipated to collect 88cfs in the reach from Louisiana to the inlets we are discharging to. The northerly basin is anticipated to generate 44 cfs. Our anticipated discharge is for the northerly half is 50.06 cfs. The excess of 6.4 cfs will be attenuated with the development of the westerly commercial property owned by the same developer. As shown the remaining reach between our site and San Pedro is anticipated to collect and additional 32 cfs of which 16 cfs will be from the north, so the commercial site will be allowed to discharge 10 cfs. The attenuation of this peak can

be accomplished within commercial developments without difficulty

As shown in Appendix C, each grated inlet on a 3.3% slope has the capacity for 12 cfs. The inlets located within basin B are in a sump condition, there for each inlet has the capacity to capture the entire flow rate of the entire basin 19.92, two inlets have been added to allow for clogging. The hydraulic grade lines have not been computed with this submittal. The flow rates entering the downstream pipes have been accounted for and as shown in appendix C, the pipes have the capacity to convey the discharge without being full; therefore the hydraulic grade line of the reach will not exceed the ground level at any time. The street capacities are also shown in appendix C,

SUMMARY AND RECOMMENDATIONS

This project is a development of residential subdivision with the North Albuquerque Acres Master Drainage plan. The development is consistent with the land use assumptions of the plan. The surrounding development altered the upland and onsite basin by the creation of a diversion from Oakland to Eagle rock. Our plan conforms to this diversion. Our discharge will enter the downstream storm drain where it was anticipated. The inlets, pipes and roadways have been shown to provide the required capacity. The new storm drain within Alameda appears to have been designed such that it has less capacity than the North Albuquerque Acres plan calls for. The capacity is not a factor with this development and reduced discharge will need to be designed on the later commercial phases of this property. The site has been designed in accordance with City of Albuquerque Drainage ordinance. This drainage plan and report conforms to the governing drainage regulations of the City. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity. A letter of Map revision (LOMA-F) will be required to be submitted and accepted prior to the release of building permits on annotated lots. In addition a LOMR will be required to be submitted prior to release of financial guarantee as well as prior to release of annotated lots



8/15/14

This information is for reference only. Bernalillo County assumes no liability for errors associated with the use of these data. Users are solely responsible for confirming data accuracy when necessary. For current infromation visit www.bernco.gov/gis-program.

0 373.20 746.4 Feet

Notes

EROSION CO

1. CONTRACTOR IS PERMIT PRIOR TO B

2. CONTRACTOR IS CONSTRUCTION.

3. CONTRACTOR IS INTO EXISTING RIGH

4. REPAIR OF DAMA ACCUMULATIONS ON RESPONSIBILITY OF THE CONTRACTOR.

5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

DISTURBANCE

ON SITE DURING

NT THAT GETS

ENT FACILITIES IS THE

ANALYSIS POINT 5
AT INLET
QSTREET(n)= 23.68CFS
QSTREET(S)=13.94
QPIPE=9.98 CFS
AFTER INLET
QSTREET(S)=0
QPIPE=47.60CFS

ANALYSIS POINT 3
QPIPE=35.07CFS
QSTREET(N/S)=0

ANALYIS POINT 1
AT INLET
Q STREET(S)=13.42CFS
(N)=3.50CFS
QPIPE=6.85 CFS

AFTER INLET
Q PIPE=18.85
Q STREET (S)=1.42CFS
QSTREET (N)=4.82 CFS

ANALYSIS POINT 4
AT INLET
QSTREET= 9.98CFS
AFTER INLET
QSTREET(S)=0
QPIPE=9.98CFS

ANALYSIS POINT 2
AT INLET
QSTREET= 11.40CFS
Q PIPE=18.85
AFTER INLET
QSTREET(S)=0
QSTREET(N)=4.82
QPIPE=30.25CFS

ANALYSIS POINT6
Q STREET (N)=1.96CFS
(S)=3.01CFS
VOLUME=11.432 CF

ANALYSIS POINT7
Q STREET (N)=3.92CFS
(S)=6.02CFS
VOLUME=22,864 CF

ANALYSIS POINT8
Q STREET (N)=5.88CFS
(S)=9.03CFS
VOLUME=34,296 CF

ANALYSIS POINT9
Q STREET (N)=7.84CFS
(S)=12.01CFS

ANALYSIS POINT10
Q PIPE=19.85CFS

ZONE AO
DEPTH 1.0'

OAKLAND

ALAMEDA

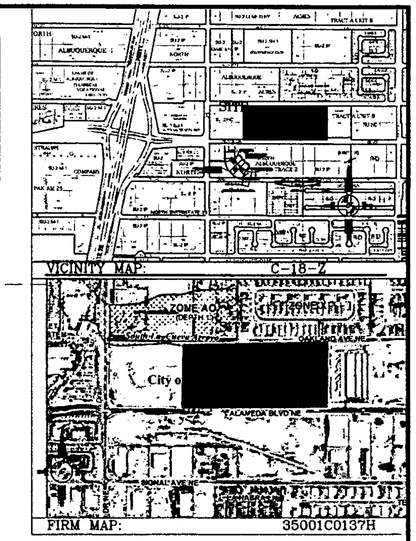
NEW 36" RCP

BASIN A1
BASIN A2
BASIN A
BASIN B
BASIN B1N
BASIN B2N
BASIN B3N
BASIN B4N
BASIN B1S
BASIN B2S
BASIN B3S
BASIN B4S

INLET B1
INLET B2

AP14
AP13
AP12

REMAINING OAK BASIN



LEGAL DESCRIPTION:

NOTES:

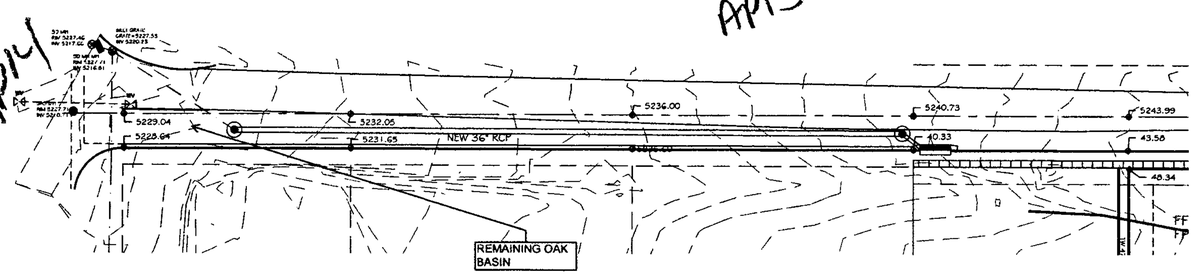
1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.

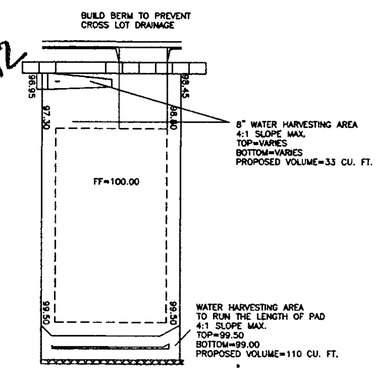
2. ALL CURB AND GUTTER TO 4" MOUNTABLE-ROLL UNLESS OTHERWISE NOTED, EXCEPTING ALAMEDA AND OAKLAND WHICH SHALL BE 8" STANDARD.

3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

LEGEND

	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
5414	PROPOSED CONTOUR
5415	PROPOSED INDEX CONTOUR
	SLOPE TIE
4048.23	EXISTING SPOT ELEVATION
4048.25	PROPOSED SPOT ELEVATION
	BOUNDARY
	CENTERLINE
	RIGHT-OF-WAY
	PROPOSED CURB AND GUTTER
	EXISTING CURB AND GUTTER
	PROPOSED SIDEWALK
	PROPOSED SETBACK
	PROPOSED LOT LINE
	PROPOSED SCREEN WALL
	PROPOSED RETAINING WALL





TYPICAL WATER HARVETING AREAS

N

GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

Rio Grande Engineering

PROJECT TITLE: EAGLE CREST

DRAWING TITLE: GRADING AND DRAINAGE PLAN

SEAL

06-18-2014	PROJECT NO.
080613	21331

DRAWING NO.

DRB 3.0

APPENDIX A

North Albuquerque Acres Master Drainage Plan

and

excerpts of Oakland diversion map

and

San Pedro Storm drain design excerpts

FINAL
NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN

Prepared For:

City of Albuquerque

Prepared By:

Resource Technology, Inc.
ENGINEERS AND ENVIRONMENTAL SCIENTISTS
1720-B Randolph Road SE, Albuquerque, NM 87106
Telephone (505) 243-7300
Fax (505) 243-7400
[illegible].com

- Commercial/Industrial (C/I): The area west of Louisiana Boulevard, north of Modesto Avenue and east of I-25 would develop as high density commercial and industrial. Also used for Paseo del Norte Corridor.
- Medium Density Industrial (MI): Campus type commercial/office facilities and APS schools sites.
- Sandia Tribal Lands (ST): Sandia tribal lands south of Tramway Road and north of the Sandia Pueblo Grant Boundary were allocated land treatments consistent with moderate levels of development even though there are no current plans to develop this area.

The relative weight of each type of Land Treatment is shown in Table 2.

TABLE 2

FUTURE FULL DEVELOPMENT HYDROLOGIC CONDITION ASSUMPTIONS

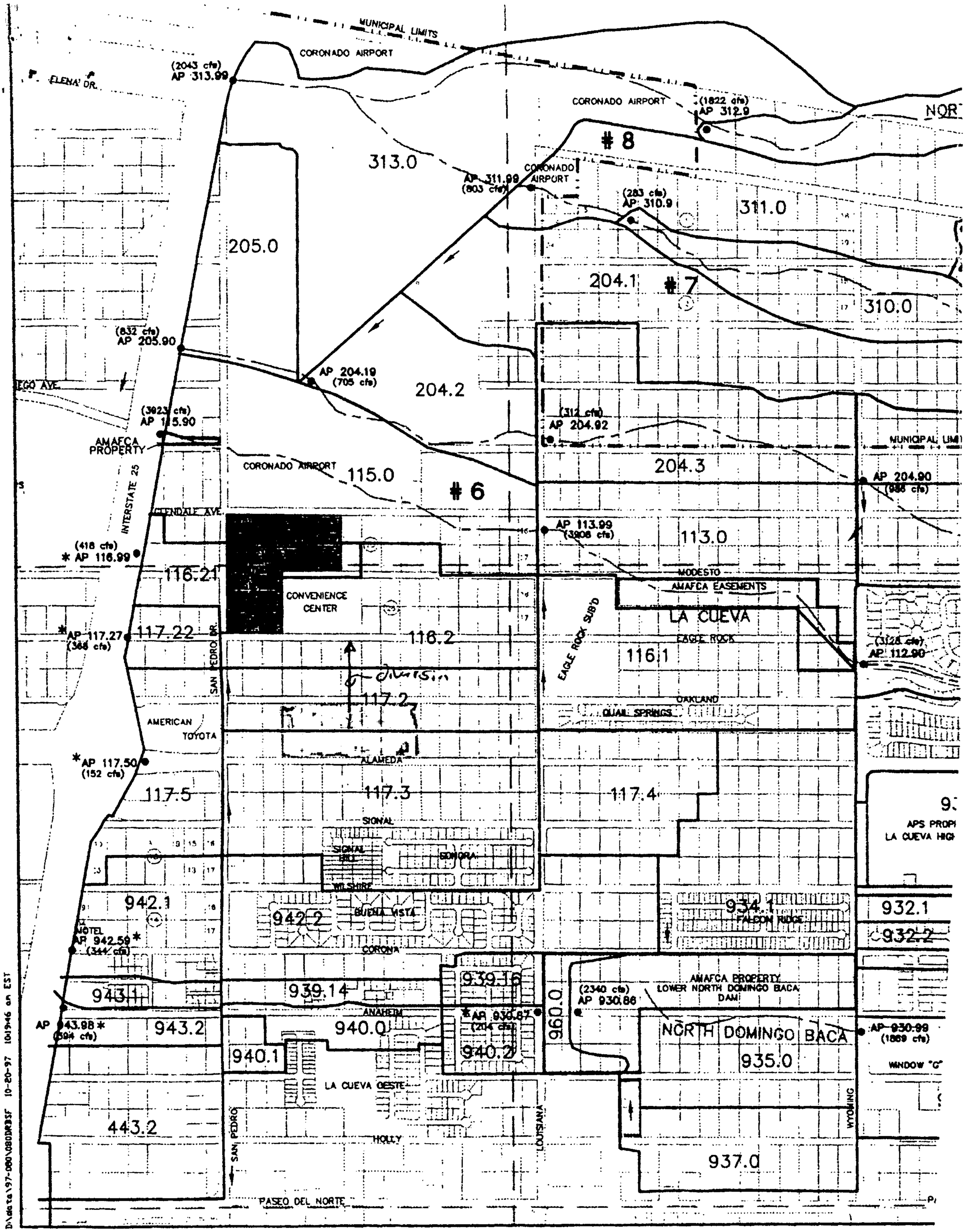
	Land Treatments (%)			
	A	**B**	**C**	**D**
Sandia Heights/Tramway (SH/TB)	20	40	5	35
North Albuquerque Acres (NAA)	22	23	38	17
Low Density Residential (LR)	20	20	34	26
Residential (R)	0	34	16	50
High Density Residential (HR)	0	25	15	60
Commercial/Industrial (C/I)	0	20	10	70
Medium Density Industrial (MI)	0	20	30	50
Sandia Tribal Lands (ST)	20	20	40	20
Primrose Pointe (PP)	0	40	20	40

TABLE A-2 (cont.)

LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
113*	Existing	.1136	80	0	15	5	.133
	Future	.1000	0	25	15	60	.133
115*	Existing	.1337	80	0	15	5	.133
	Future	.1202	0	26	12	62	.133
116*	Existing	.1309	80	0	5	15	.133
116.1	Future	.1000	0	25	15	50	.133
116.2	Future	.0719	0	25	15	60 50	.133
116.21	Future	.0344	0	40	20	40	.133
~~117.2*~~	Existing	.1391	73	0	7	20	.22
	~~Future~~	~~.0500~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.21*	Existing	.0234	0	34	16	50	.133
117.22*	Future	.0156	0	20	10	70	.133
~~117.3*~~	Existing	.0863	65	5	15	15	.133
	~~Future~~	~~.1172~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.31*	Existing	.0250	0	34	16	50	.133
117.32*	Existing	.0090	0	34	16	50	.133
117.4*	Existing	.0750	85	0	5	10	.133
	Future	.0512	0	25	15	60	.133
117.5*	Existing	.0550	0	10	20	70	.133
	Future	.0550	0	10	20	70	.133
118	Existing	.0649	0	20	10	70	.133
	Future	.0649	0	20	10	70	.133
118.1	Existing	.0306	75	5	10	10	.133
	Future	.0306	0	20	30	50	.133
119	Existing	.0549	0	20	10	70	.133
	Future	.0549	0	20	10	70	.133
120	Existing	.0268	50	0	0	50	.133
	Future	.0268	0	20	10	70	.133
121	Existing	.0489	80	0	15	5	.133
	Future	.0489	0	20	10	70	.133

*Modified for COA NAA MDP 9/97



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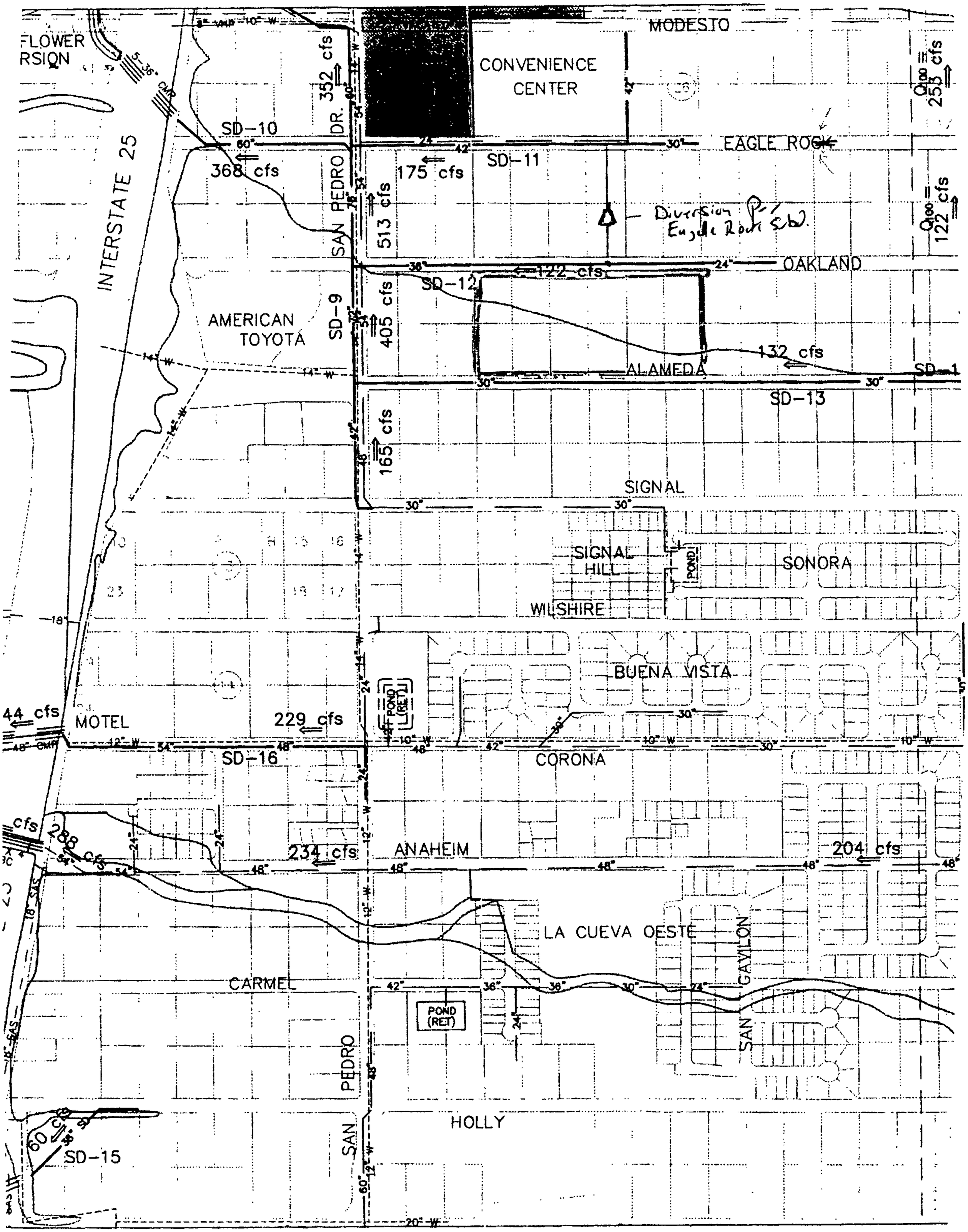

MODESTO
CONVENIENCE CENTER
FLOWER DIVERSION
INTERSTATE 25
SAN PEDRO DR.
SD-10
368 cfs
352 cfs
175 cfs
SD-11
EAGLE ROCK
Q100 = 253 cfs
Q100 = 122 cfs
Diversion Eagle Rock S.D.
513 cfs
OAKLAND
122 cfs
SD-12
AMERICAN TOYOTA
SD-9
405 cfs
132 cfs
ALAMEDA
SD-1
SD-13
165 cfs
SIGNAL
SIGNAL HILL
POND
SONORA
WILSHIRE
BUENA VISTA
44 cfs
MOTEL
229 cfs
POND (RET)
SD-16
CORONA
288 cfs
234 cfs
ANAHEIM
204 cfs
LA CUEVA OESTE
GAVILON
CARMEL
POND (RET)
SAN PEDRO
HOLLY
SD-15
60 cfs

APPENDIX B

SITE HYDROLOGY

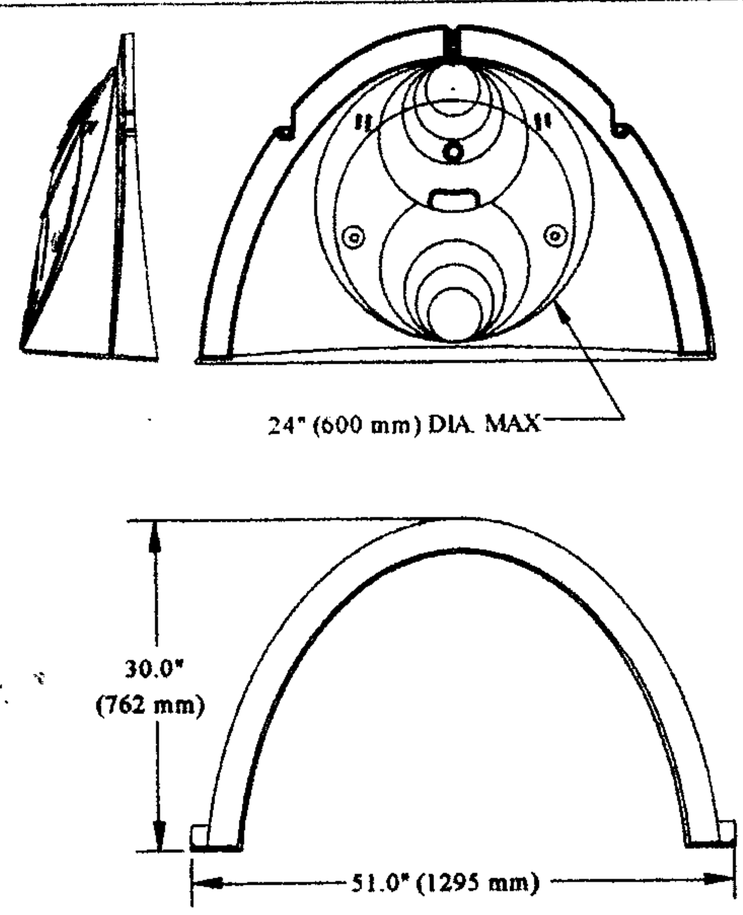
2.0 Product Information

StormTech

Figure 1 – StormTech SC-740 Chamber (not to scale)

Nominal Chamber Specifications

Size (W x H x Installed L)	51.0" (1295 mm) x 30.0" (762 mm) x 85.4" (2169 mm)
Chamber Storage	45.9 ft³ (1.30 m³)
Min. Installed Storage*	74.9 ft³ (2.12 m³)
Nominal Weight	75 lbs (34 kg)
Color	Yellow



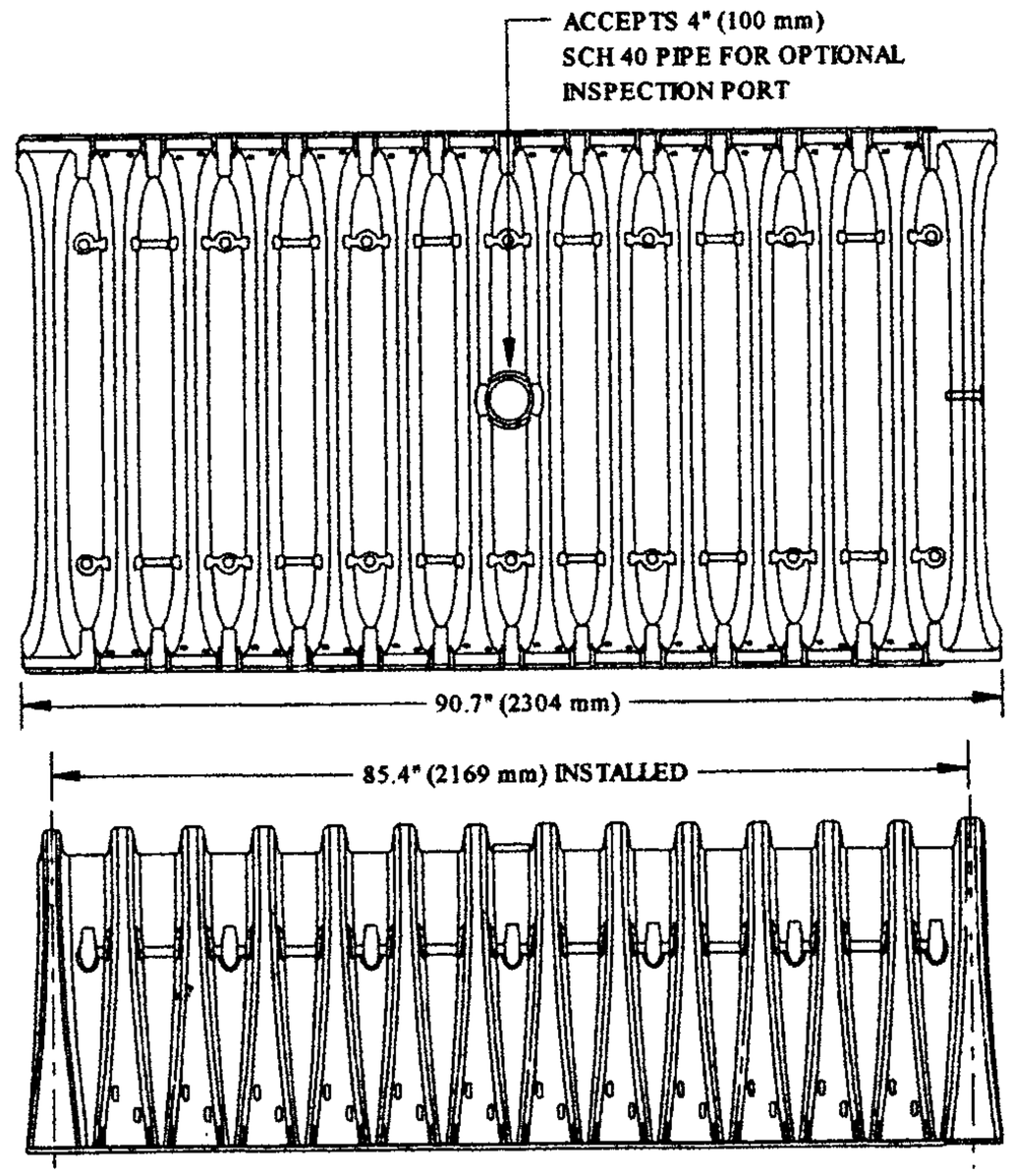
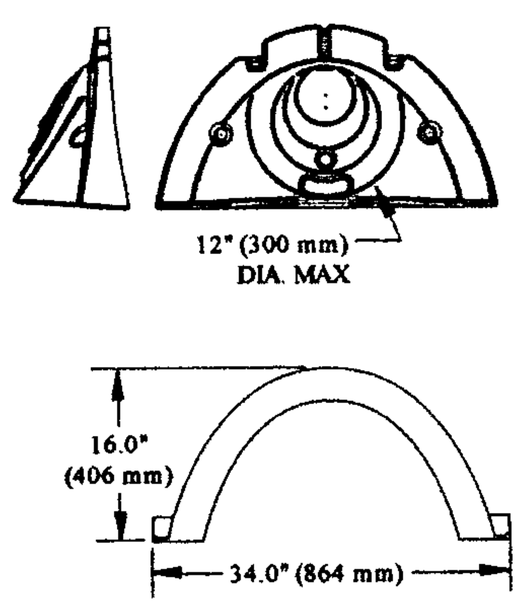
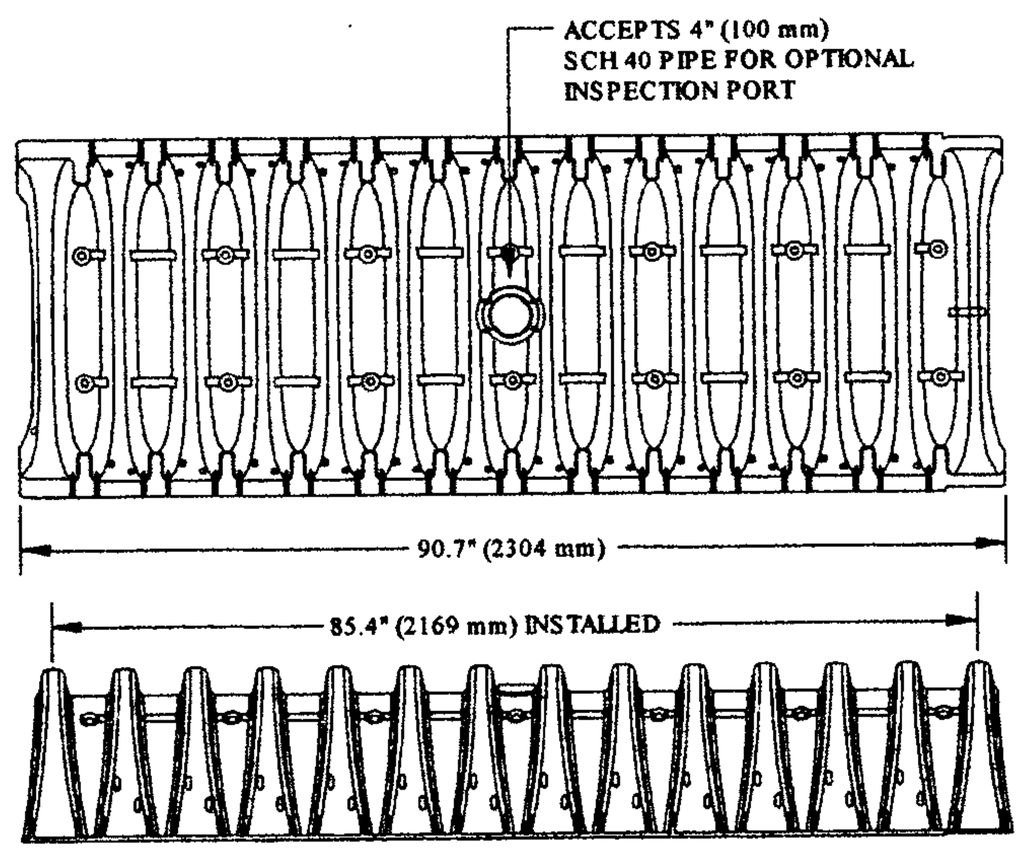


Figure 2 – StormTech SC-310 Chamber (not to scale)

Nominal Chamber Specifications

Size (W x H x Installed L)	34.0" (864 mm) x 16.0" (406 mm) x 85.4" (2169 mm)
Chamber Storage	14.7 ft³ (0.42 m³)
Min. Installed Storage*	31.0 ft³ (0.88 m³)
Nominal Weight	37 lbs (16.8 kg)
Color	Yellow





*This assumes a minimum of 6" (152 mm) of stone below, above and between chamber rows and 40% stone porosity.

Weighted E Method

EAGLE CREST

Existing Developed Basins

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
BASIN A1	110125	2.528	0%	0	34.0%	0.860	16.0%	0.4045	50%	1.264	1.699	0.358	9.98	0.527
BASIN A2	110125	2.528	0%	0	34.0%	0.860	16.0%	0.4045	50%	1.264	1.699	0.358	9.98	0.527
BASIN B1N	21627	0.496	0%	0	34.0%	0.169	16.0%	0.07944	50%	0.248	1.699	0.070	1.96	0.103
BASIN B1S	33260	0.764	0%	0	34.0%	0.260	16.0%	0.12217	50%	0.382	1.699	0.108	3.01	0.159
BASIN B2N	21627	0.496	0%	0	34.0%	0.169	16.0%	0.07944	50%	0.248	1.699	0.070	1.96	0.103
BASIN B2S	33260	0.764	0%	0	34.0%	0.260	16.0%	0.12217	50%	0.382	1.699	0.108	3.01	0.159
BASIN B3N	21627	0.496	0%	0	34.0%	0.169	16.0%	0.07944	50%	0.248	1.699	0.070	1.96	0.103
BASIN B3S	33260	0.764	0%	0	34.0%	0.260	16.0%	0.12217	50%	0.382	1.699	0.108	3.01	0.159
BASIN B4N	21627	0.496	0%	0	34.0%	0.169	16.0%	0.07944	50%	0.248	1.699	0.070	1.96	0.103
BASIN B4S	33260	0.764	0%	0	34.0%	0.260	16.0%	0.12217	50%	0.382	1.699	0.108	3.01	0.159
										3.014				
UPOAK(S-SURF)	183170	4.205	0%	0	5.0%	0.210	16.0%	0.6728	50%	2.103	1.432	0.502	13.42	0.782
UPOAK(N-SURF)	44290	1.017	0%	0	5.0%	0.051	10.0%	0.10168	85%	0.864	2.181	0.185	4.82	0.300
UPOAK PIPE	75660	1.737	0%	0	34.0%	0.591	16.0%	0.27791	50%	0.868	1.699	0.246	6.85	0.362
REMAINING OAK (N)	261401	6.001	0%	0	34.0%	2.040	16.0%	0.96015	50%	3.000	1.699	0.850	23.68	1.250
REMAINING OAK (3)	153847	3.532	0%	0	34.0%	1.201	16.0%	0.56509	50%	1.766	1.699	0.500	13.94	0.736
UP ALA SURF	158860	3.647	0%	0	5.0%	0.182	16.0%	0.58351	50%	1.823	1.432	0.435	11.64	0.678
UP ALA 1	34307	0.788	0%	0	5.0%	0.039	10.0%	0.07876	85%	0.669	2.181	0.143	3.73	0.232
UP ALA PIPE	75660	1.737	0%	0	34.0%	0.591	16.0%	0.27791	50%	0.868	1.699	0.246	6.85	0.362
ALA1	22165	0.509	0%	0	0.0%	0.000	15.0%	0.07633	85%	0.433	2.200	0.093	2.43	0.151
ALA2	28528	0.655	0%	0	0.0%	0.000	15.0%	0.09824	85%	0.557	2.200	0.120	3.13	0.194
ALA3	22165	0.509	0%	0	0.0%	0.000	15.0%	0.07633	85%	0.433	2.200	0.093	2.43	0.151

Total Treatment D: 5.0 Ac

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66	Qa= 1.87
Eb= 0.92	Qb= 2.6
Ec= 1.29	Qc= 3.45
Ed= 2.36	Qd= 5.02

FLOW SUMMARY	AT INLET			AFTER INLET			10-DAY VOLUME
	STREET FLOW(CFS)		PIPE FLOW(CFS)	STREET FLOW(CFS)		PIPE FLOW(CFS)	(CF)
	N	S		N	S		
ANALYSIS POINT 1	3.5	13.42	6.85	3.5	1.42	18.85	
ANALYSIS POINT 2	4.82	11.4	6.85	0	4.82	30.28	
ANALYSIS POINT 3	4.82	0	30.28	0	0	35.07	
ANALYSIS POINT 4	n/a	9.98	0.00	n/a	0	9.98	
ANALYSIS POINT 5	23.68(ult)	13.94(ult)	9.98	0	0	47.6	
ANALYSIS POINT 6	1.96	3.01					11,432
ANALYSIS POINT 7	3.92	6.02					22,664
ANALYSIS POINT 8	5.88	9.03					34,096
ANALYSIS POINT 9	7.84	12.04					N/A
ANALYSIS POINT 10						19.88	
ANALYSIS POINT 11(SURF)	15.38						
ANALYSIS POINT 12(SURF)	9.29						
ANALYSIS POINT 13(SURF)	3.13						
ANALYSIS POINT 14(SURF)	2.43						

EROSION CO

1. CONTRACTOR IS PERMIT PRIOR TO B DISTURBANCE
2. CONTRACTOR IS CONSTRUCTION. ON SITE DURING
3. CONTRACTOR IS INTO EXISTING RIGH NT THAT GETS
4. REPAIR OF DAMA ACCUMULATIONS OM FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

ANALYSIS POINT 5
AT INLET
QSTREET(n)= 23.66CFS
QSTREET(S)=13.94
QPIPE=9.98 CFS
AFTER INLET
QSTREET(S)=0
QPIPE=47.80CFS

ANALYSIS POINT 3
QPIPE=36.07CFS
QSTREET(N/S)=0

ANALYSIS POINT 1
AT INLET
Q STREET(S)=13.42CFS
(N)=3.50CFS
QPIPE=6.86 CFS
AFTER INLET
Q PIPE=18.85
Q STREET (S)=1.42CFS
QSTREET (N)=4.82 CFS

ZONE AO
DEPTH 1.0'

OAKLAND

ANALYSIS POINT 4
AT INLET
QSTREET= 9.98CFS
AFTER INLET
QSTREET(S)=0
QPIPE=9.98CFS

ANALYSIS POINT 2
AT INLET
QSTREET= 11.40CFS
Q PIPE=18.85
AFTER INLET
QSTREET(S)=0
QSTREET(N)=4.82
QPIPE=30.25CFS

BASIN A1
BASIN A
BASIN B
BASIN A2
BASIN B4N
BASIN B3N
BASIN B2N
BASIN B1N
BASIN B4S
BASIN B3S
BASIN B2S
BASIN B1S
INLET B1
INLET B2

ANALYSIS POINT6
Q STREET (N)= 9.98CFS
(S)=3.91CFS
VOLUME=11,412 CF

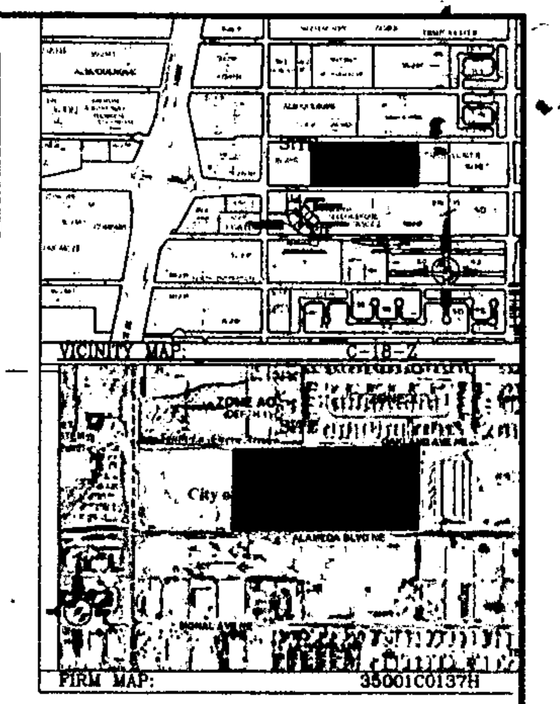
ANALYSIS POINT9
Q STREET (N)=7.84CFS
(S)=12.01CFS

ANALYSIS POINT8
Q STREET (N)=5.88CFS
(S)=9.03CFS
VOLUME=34,296 CF

ANALYSIS POINT7
Q STREET (N)=3.82CFS
(S)=6.32CFS
VOLUME=22,884 CF

ANALYSIS POINT10
Q PIPE=19.85CFS

ALAMEDA

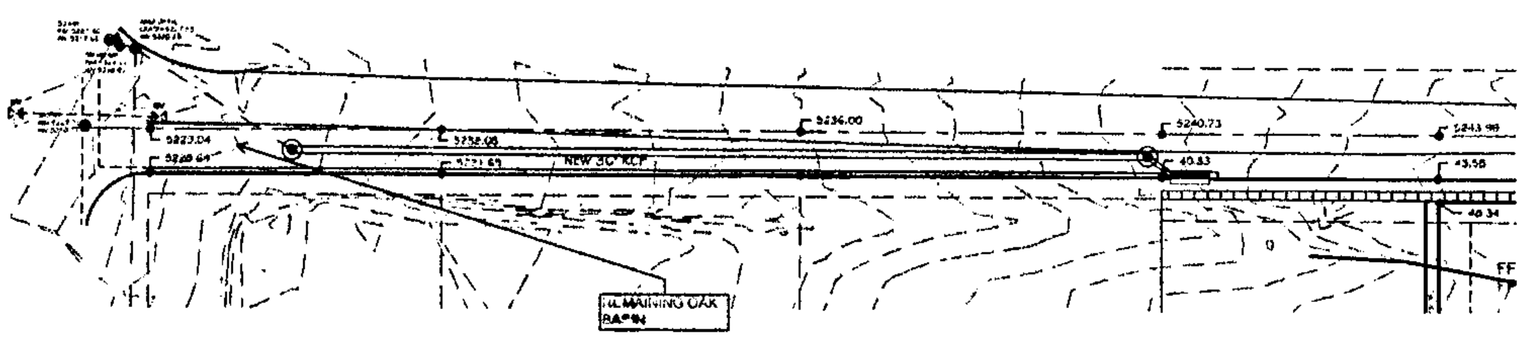


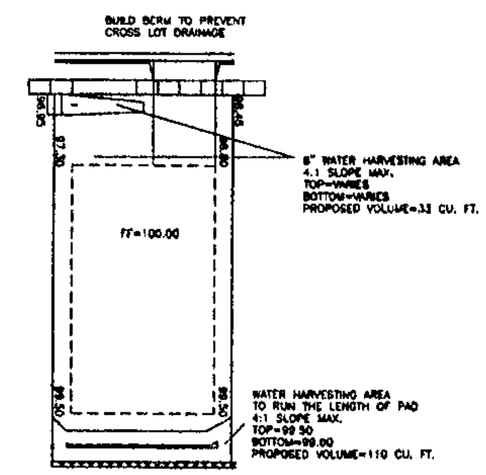
LEGAL DESCRIPTION:

NOTES:
1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL CURB AND GUTTER TO 4" MOUNTABLE-ROLL UNLESS OTHERWISE NOTED, EXCEPTING ALAMEDA AND OAKLAND WHICH SHALL BE 8" STANDARD.
3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL





TYPICAL WATER HARVESTING AREAS

N

GRAPHIC SCALE
40 20 0 20 40
SCALE: 1"=40'

Rio Grande Engineering

PROJECT TITLE: EAGLE CREST

DRAWING TITLE: GRADING AND DRAINAGE PLAN

SEAL

09-10-2014 | PROJECT NO. 21131

DRAWING NO.

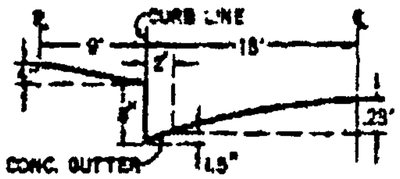
DRB 3.0

APPENDIX C

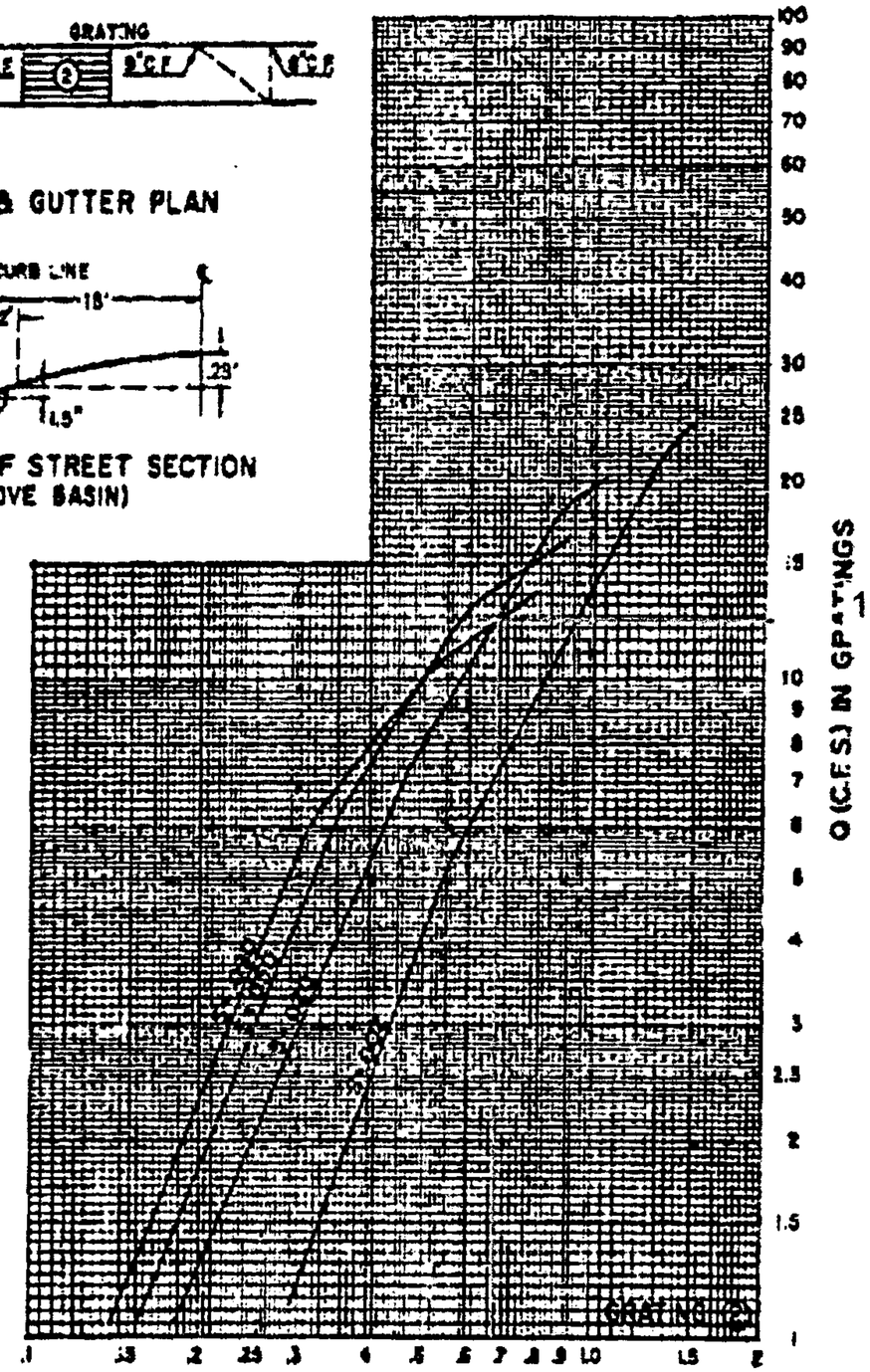
HYDRAULIC CALCULATIONS

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

GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



12 CFS PER GRATE @ 3.38

Inlets in Oakland & Alameda.

DROP INLET CALCULATIONS

POND	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
	Single 'A'	5.92	19.92	0.4884	0.67

ORIFICE EQUATION

Q = CA sqrt(2gH)

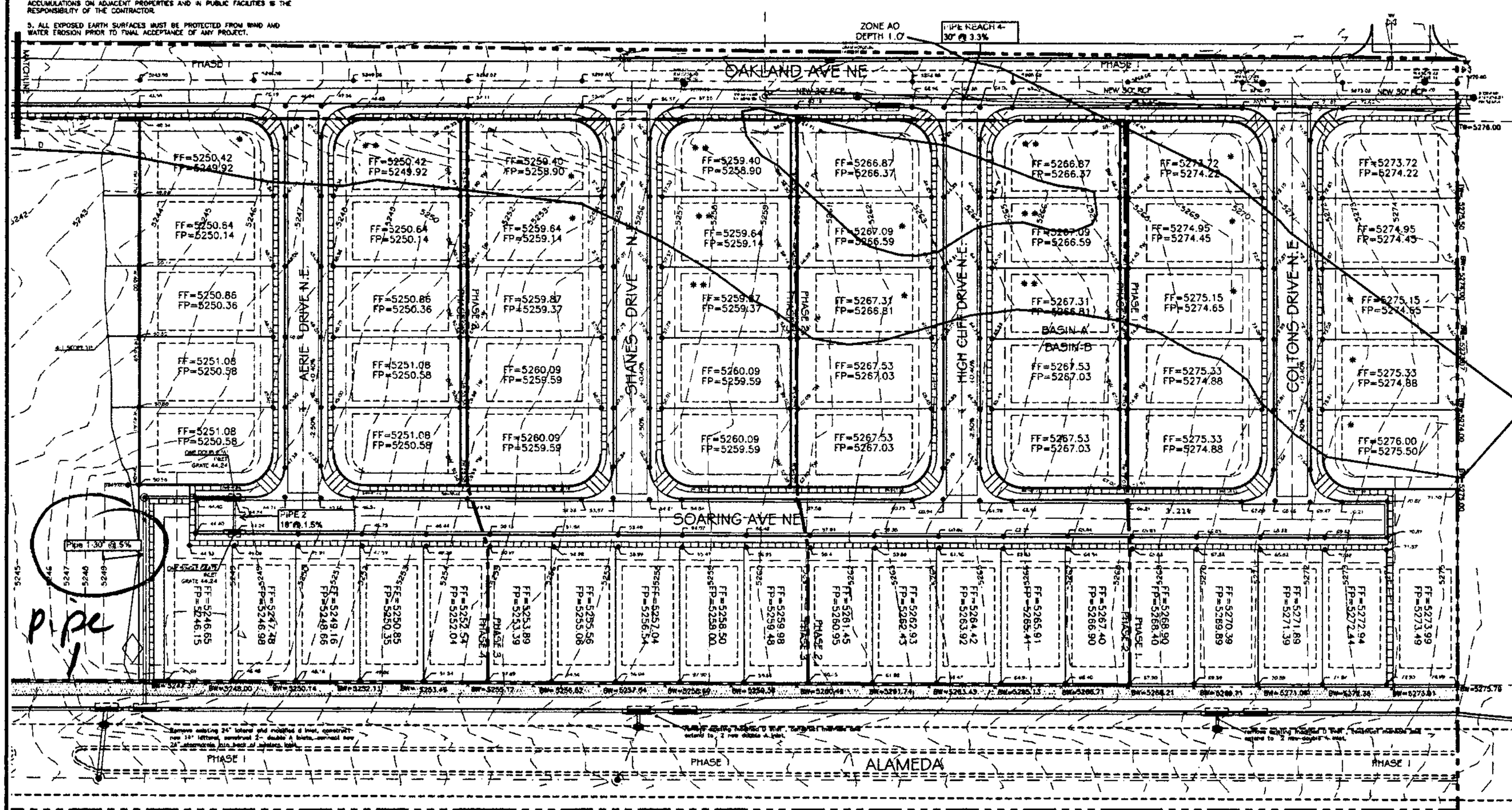
C = 0.6

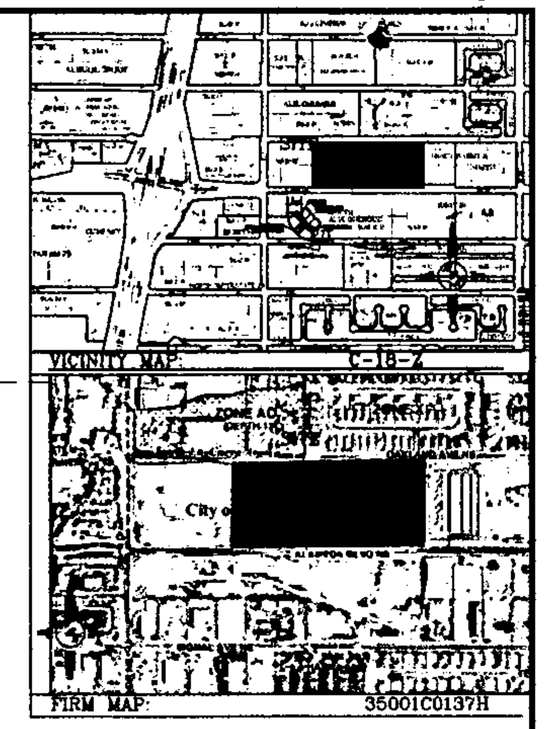
g = 32.2

INLETS IN SUMP CONDITION. ONE INLET CAN HANDLE THE FLOW , DOUBLED TO ALLOW FOR CLOGGING.

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.





LEGAL DESCRIPTION:

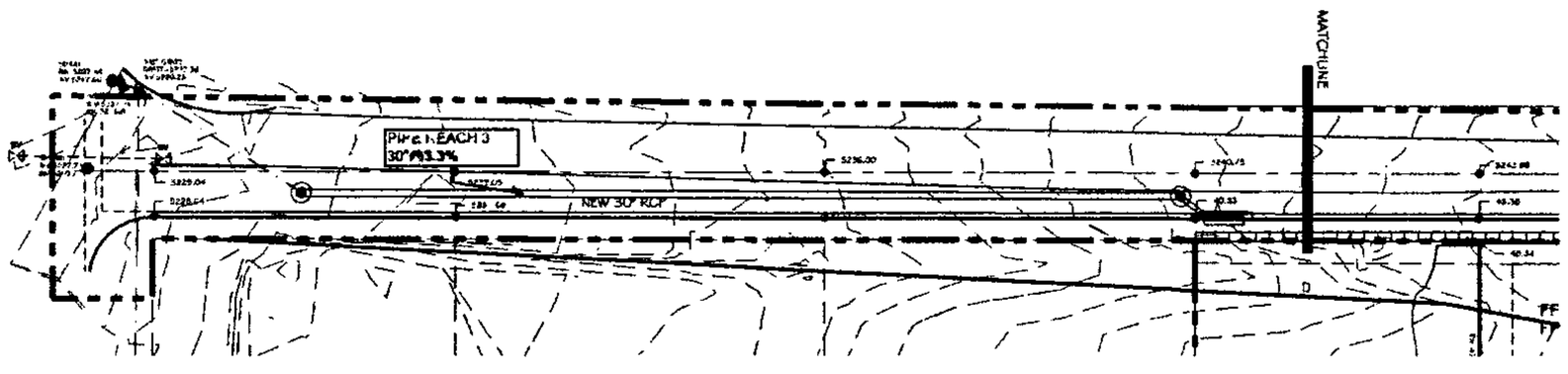
NOTES:

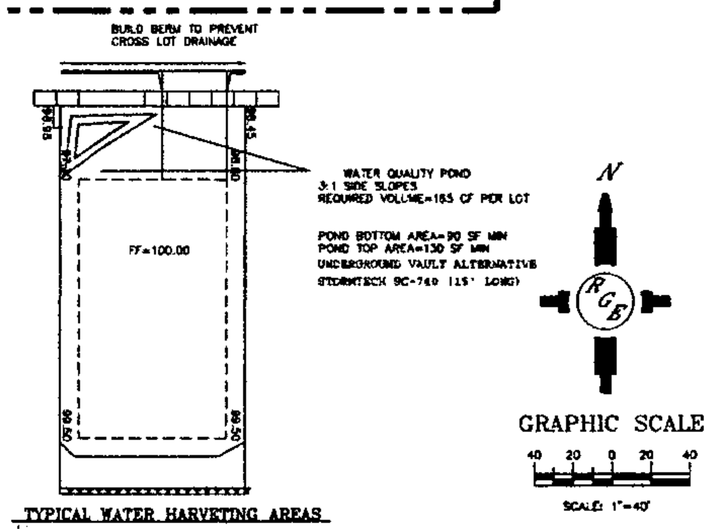
1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED
2. ALL CURB AND GUTTER TO 4" MOUNTABLE-ROLL UNLESS OTHERWISE NOTED, EXCEPTING ALAMEDA AND OAKLAND WHICH SHALL BE 8" STANDARD.
3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

* DENOTES LOTS REQUIRING LOMR-F AND ELEVATION CERTIFICATE PRIOR TO ISSUANCE OF BUILDING PERMIT

LEGEND: LOTS REQUIRING LOMAR PRIOR TO ISSUANCE OF BUILDING PERMIT

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- 6414 PROPOSED CONTOUR
- 6410 PROPOSED INDEX CONTOUR
- SLOPE TIE
- 4048.25 EXISTING SPOT ELEVATION
- 4048.25 PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL





TYPICAL WATER HARVESTING AREAS

N

GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

Rio Grande Engineering

PROJECT TITLE: EAGLE CREST

DRAWING TITLE: GRADING AND DRAINAGE PLAN-PHASED PONDING

SEAL

06-16-2014 | PROJECT NO. 21231

DRAWING NO. DRB 3.0

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
1	30	0.5	4.91	0.625	29.08	20.00	4.07
2	18	1.5	1.77	0.375	12.90	12.01	6.80
3	30	3.3	4.91	0.625	74.71	47.60	9.70
4	30	3.3	4.91	0.625	74.71	25.17	5.13

<u>Manning's Equation:</u>

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

Street Capacity Calculations

AERIE/SHANE/HIGHLIF/COLTON IN BASIN A

28' F-F Street Section with 4" curb

Slope= 0.004 Q=4.99

For water depths less than 0.0625 feet

Y= Water depth

Area = 16*Y^2

P= SQRT(1025*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.16	0.00	0.28	0.00137
0.02	0.0064	0.66	0.01	0.00	0.00	0.25	0.01	0.31	0.00336
0.025	0.01	0.83	0.01	0.00	0.01	0.29	0.01	0.33	0.00448
0.035	0.0196	1.16	0.02	0.01	0.01	0.36	0.01	0.34	0.00691
0.045	0.0324	1.49	0.02	0.01	0.03	0.43	0.02	0.36	0.00954
0.052	0.043264	1.72	0.03	0.02	0.04	0.48	0.02	0.37	0.01149
0.06	0.0576	1.98	0.03	0.03	0.06	0.52	0.03	0.38	0.0138
0.0625	0.0625	2.06	0.03	0.03	0.07	0.54	0.03	0.38	0.01454

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.03	0.07	0.54	0.03	0.38	0.01462
0.1	0.172656	3.98	0.04	0.12	0.24	0.68	0.07	0.38	0.02347
0.13	0.311406	5.51	0.06	0.25	0.51	0.81	0.11	0.40	0.03289
0.16	0.495156	7.04	0.07	0.47	0.93	0.94	0.15	0.42	0.04338
0.2	0.810156	9.08	0.09	0.89	1.79	1.10	0.22	0.44	0.05857
0.207	0.873506	9.43	0.09	0.99	1.98	1.13	0.23	0.44	0.06134
0.2612	1.446942	12.20	0.12	1.93	3.86	1.33	0.35	0.46	0.08377
0.3025	**1.9825**	**14.31**	**0.14**	**2.94**	**5.87**	**1.48**	**0.45**	**0.47**	**0.10185**

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	2.95	5.90	1.48	0.45	0.48	0.10226
0.3039	2.0021	14.31	0.14	2.98	5.97	1.49	0.45	0.48	0.103
0.3062	2.0343	14.31	0.14	3.06	6.13	1.51	0.46	0.48	0.10491
0.31	2.0875	14.31	0.15	3.20	6.40	1.53	0.47	0.48	0.10806
0.3125	2.1225	14.32	0.15	3.29	6.57	1.55	0.48	0.49	0.11014
0.32	2.2275	14.32	0.16	3.56	7.12	1.60	0.51	0.50	0.11641
0.3317	2.3913	14.34	0.17	4.01	8.01	1.68	0.56	0.51	0.12626
0.333	2.4095	14.34	0.17	4.06	8.11	1.68	0.56	0.51	0.12736

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333

A4= A3 + 14 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	4.12	8.23	1.69	0.57	0.51	0.12815
0.3601	2.80726	15.69	0.18	4.93	9.85	1.76	0.63	0.52	0.13827
0.38	3.122725	16.69	0.19	5.65	11.30	1.81	0.69	0.52	0.14662
0.4196	3.809389	18.67	0.20	7.30	14.60	1.92	0.80	0.52	0.16399
0.4603	4.596832	20.70	0.22	9.32	18.64	2.03	0.93	0.53	0.18271
0.504	5.534525	22.89	0.24	11.88	23.75	2.15	1.08	0.53	0.20367
0.513	5.7395	23.34	0.25	12.46	24.91	2.17	1.11	0.53	0.20809

Street Capacity Calculations

SOARING UPPER 2/3

28' F-F Street Section with 4" curb

Slope= 0.03 13.25

For water depths less than 0.0625 feet

Y= Water depth

Area = 16*Y^2

P= SQRT(1025*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.43	0.00	0.76	0.00691
0.02	0.0064	0.66	0.01	0.00	0.01	0.69	0.01	0.86	0.01624
0.025	0.01	0.83	0.01	0.01	0.02	0.80	0.02	0.89	0.02136
0.035	0.0196	1.16	0.02	0.02	0.04	1.00	0.03	0.94	0.03228
0.045	0.0324	1.49	0.02	0.04	0.08	1.18	0.05	0.98	0.04391
0.052	0.043264	1.72	0.03	0.06	0.11	1.30	0.07	1.01	0.0524
0.06	0.0576	1.98	0.03	0.08	0.16	1.43	0.09	1.03	0.0624
0.0625	0.0625	2.06	0.03	0.09	0.18	1.47	0.09	1.04	0.06559

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.09	0.19	1.47	0.09	1.04	0.06598
0.1	0.172656	3.98	0.04	0.32	0.65	1.87	0.19	1.04	0.10566
0.13	0.311406	5.51	0.06	0.69	1.39	2.23	0.29	1.09	0.14572
0.16	0.495156	7.04	0.07	1.28	2.56	2.58	0.41	1.14	0.1894
0.2	0.810156	9.08	0.09	2.45	4.90	3.02	0.60	1.19	0.25153
0.207	0.873506	9.43	0.09	2.71	5.41	3.10	0.64	1.20	0.26277
0.2612	1.446942	12.20	0.12	5.29	10.58	3.65	0.95	1.26	0.35291
0.3025	**1.9825**	**14.31**	**0.14**	**8.04**	**16.08**	**4.05**	**1.23**	**1.30**	**0.42471**

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	8.09	16.17	4.06	1.23	1.30	0.42622
0.3039	2.0021	14.31	0.14	8.17	16.34	4.08	1.24	1.30	0.42894
0.3062	2.0343	14.31	0.14	8.39	16.78	4.12	1.26	1.31	0.43588
0.31	2.0875	14.31	0.15	8.76	17.51	4.19	1.30	1.33	0.44737
0.3125	2.1225	14.32	0.15	9.00	18.00	4.24	1.33	1.34	0.45494
0.32	2.2275	14.32	0.16	9.75	19.51	4.38	1.40	1.36	0.47767
0.3317	2.3913	14.34	0.17	10.97	21.94	4.59	1.52	1.40	0.51325
0.333	2.4095	14.34	0.17	11.11	22.22	4.61	1.54	1.41	0.51721

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333

A4= A3 + 14 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	11.27	22.55	4.63	1.55	1.41	0.52038
0.3601	2.80726	15.69	0.18	13.49	26.99	4.81	1.73	1.41	0.56106
0.38	3.122725	16.69	0.19	15.47	30.94	4.95	1.88	1.42	0.59436
0.4196	3.809389	18.67	0.20	19.99	39.98	5.25	2.20	1.43	0.66299
0.4603	4.596832	20.70	0.22	25.52	51.04	5.55	2.56	1.44	0.73635
0.504	5.534525	22.89	0.24	32.52	65.05	5.88	2.96	1.46	0.81782
0.513	5.7395	23.34	0.25	34.11	68.22	5.94	3.05	1.46	0.8349

Street Capacity Calculations

SOARING(LOWER 1/3)

28' F-F Street Section with 8" curb

Slope= 0.03 Q=20CFS

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.42	0.00	0.75	0.0067048
0.02	0.00	0.34	0.01	0.00	0.00	0.67	0.01	0.84	0.0157771
0.04	0.01	0.68	0.02	0.01	0.03	1.07	0.04	0.94	0.0369621
0.06	0.03	1.02	0.03	0.04	0.08	1.40	0.08	1.01	0.0607017
0.08	0.05	1.36	0.04	0.09	0.17	1.70	0.14	1.06	0.0862391
0.1	0.08	1.70	0.05	0.16	0.32	1.97	0.20	1.10	0.1131876
0.12	0.12	2.04	0.06	0.26	0.51	2.23	0.27	1.13	0.1413075
0.125	0.13	2.13	0.06	0.29	0.57	2.29	0.29	1.14	0.1485001

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.30	0.61	2.24	0.29	1.09	0.1464784
0.16	0.23	3.91	0.06	0.51	1.02	2.26	0.36	1.00	0.1590045
0.2	0.42	5.95	0.07	1.07	2.13	2.57	0.51	1.01	0.2030387
0.24	0.69	8.00	0.09	2.02	4.04	2.94	0.71	1.06	0.2589738
0.2846	1.08	10.27	0.11	3.65	7.30	3.38	0.96	1.11	0.3284706
0.32	1.47	12.08	0.12	5.44	10.88	3.71	1.19	1.16	0.3871506
0.3551	1.91	13.87	0.14	7.71	15.41	4.04	1.43	1.19	0.44766
0.365	2.05	14.37	0.14	8.44	16.88	4.13	1.51	1.20	0.4650869

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.12	14.38	0.15	8.92	17.85	4.22	1.56	1.22	0.4808442
0.4556	**3.31**	**14.46**	**0.23**	**18.78**	**37.57**	**5.67**	**2.58**	**1.48**	**0.7526503**
0.4848	3.72	14.49	0.26	22.77	45.54	6.12	2.97	1.55	0.8465309
0.5	3.94	14.51	0.27	24.97	49.93	6.34	3.17	1.58	0.8956596
0.54	4.50	14.55	0.31	31.11	62.21	6.92	3.74	1.66	1.0257991
0.5584	4.75	14.56	0.33	34.10	68.21	7.18	4.01	1.69	1.0860745
0.63	5.76	14.64	0.39	46.76	93.53	8.13	5.12	1.80	1.322998
0.667	6.27	14.67	0.43	53.90	107.80	8.59	5.73	1.85	1.4468366

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 14 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.76	16.32	0.41	56.89	113.79	8.41	5.89	1.77	1.4389182
0.72	7.09	17.32	0.41	59.10	118.21	8.34	6.01	1.73	1.4404596
0.74	7.43	18.32	0.41	61.60	123.20	8.29	6.14	1 70	1.4460009
0.76	7.79	19.32	0.40	64.38	128.76	8.26	6.28	1.67	1.4550338
0.78	8.17	20 32	0.40	67.43	134.86	8.25	6.43	1 65	1.4671379
0.8	8.58	21.32	0.40	70.76	141.52	8.25	6.60	1.63	1.481962
0.847	9.60	23.68	0.41	79.67	159.33	8.30	7.03	1.59	1.5258996

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT

HYDROLOGY DEVELOPMENT SECTION
DEVELOPMENT REVIEW BOARD MEMO

DRB PROJECT NO: 1004606 **AGENDA ITEM NO: 10**

SUBJECT:
Valle Vista-overall

ENGINEERING COMMENTS:

Site Plan for Subdivision — Where is the driveway for Lot 11 of Unit 3?

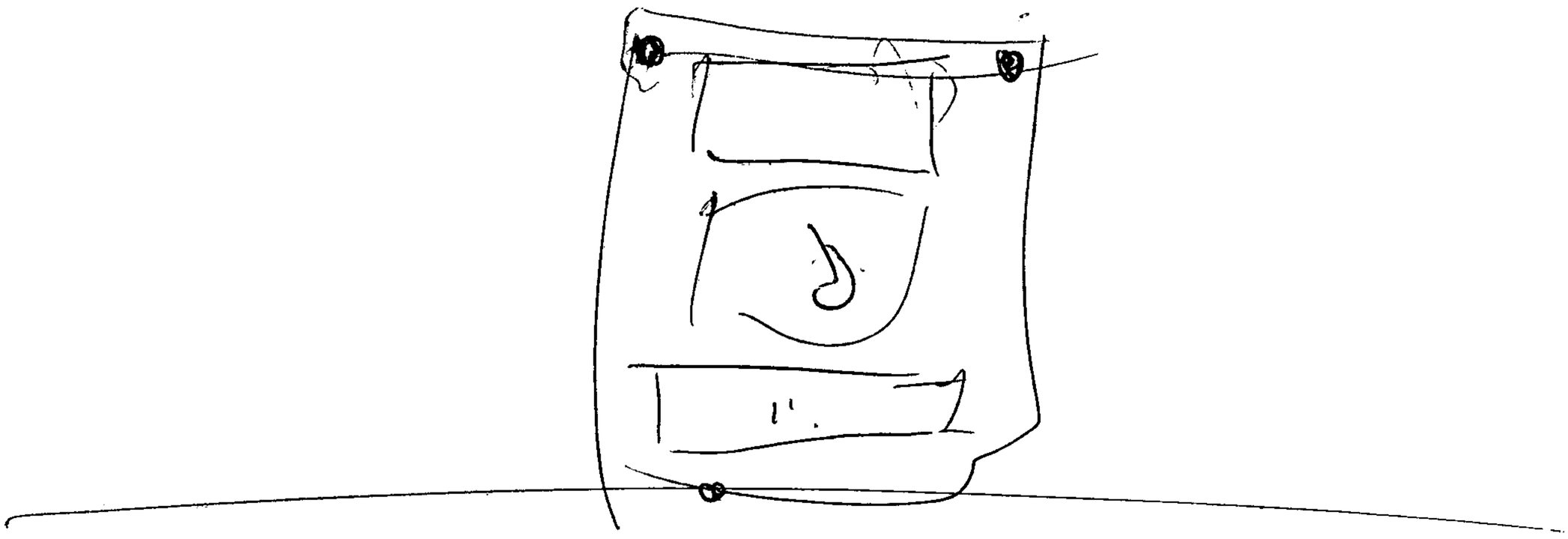
Vacation of Easements — Hydrology has no objection.

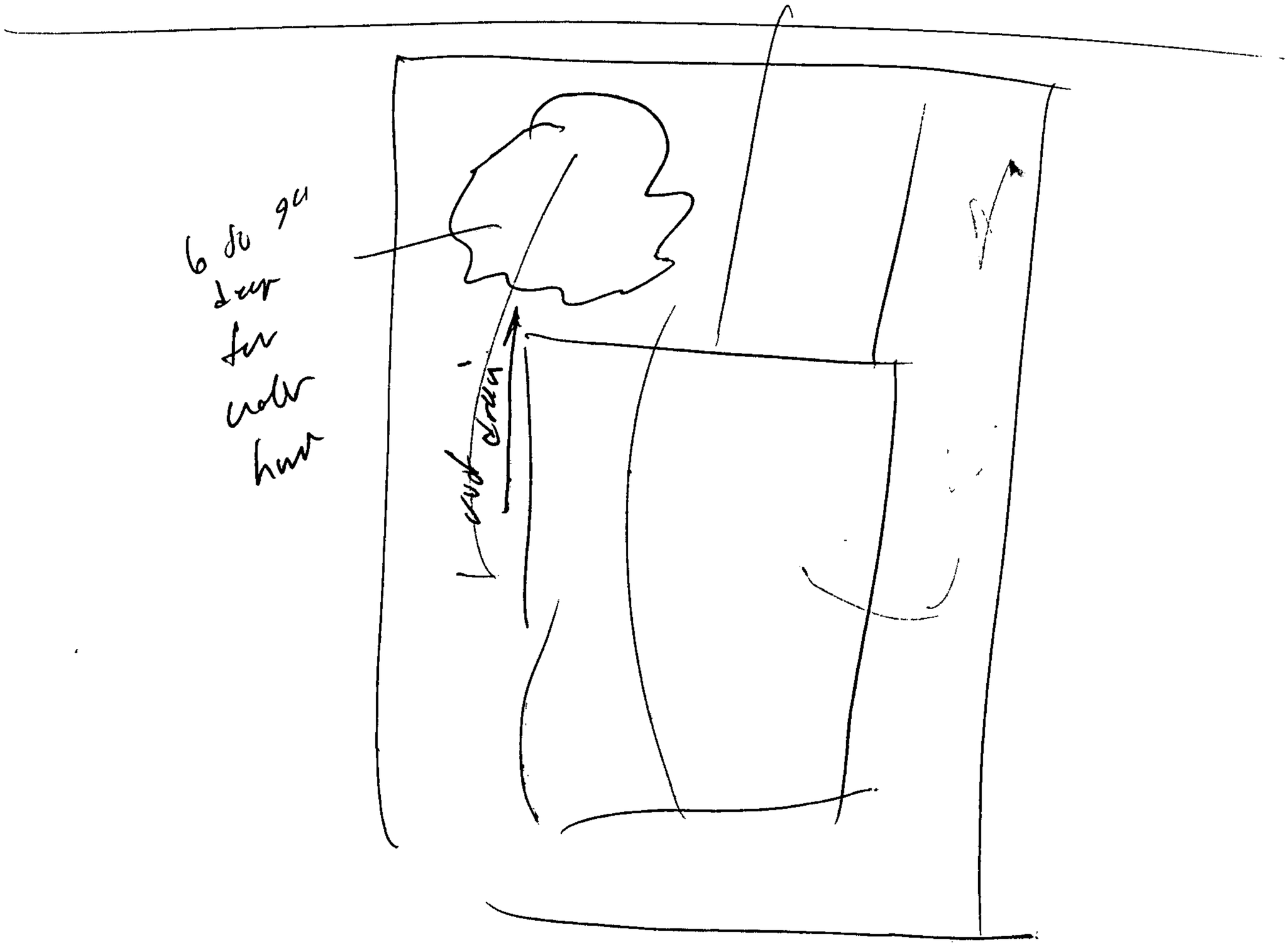
Subd Design Variance — Hydrology defers to Transportation and Planning.

RESOLUTION/COMMENTS:

SIGNED: **DATE**: 6-25-14

Curtis Cherne
Hydrology Section
City Engineer Designee
AMAFCA Designee
924-3986

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CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

July 24, 2014

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM 87199

RE: **Eagle Crest Subdivision**
Drainage Report and Grading and Drainage Plan
Engineer's Stamp Date 7-3-14 (File: C18D064B)

Dear Mr. Soule:

Based upon the information provided in your submittal received 7-3-14, the above referenced submittal cannot be approved for action by the DRB on the Site Plan for Building Permit or the Preliminary Plat; nor for Grading Permit until the following comments are addressed. Please note that the following comments are cursory, and a more detailed review will be performed after the initial comments are addressed.

1. Since the proposed subdivision is partially in a Special Flood Hazard Area (AO with 1 ft. depth) an application for a LOMR is in order. However, until such time that the LOMR is approved, the City cannot issue building permits within a flood zone. Therefore, in the interest of time, it may be beneficial to raise the finished pads above the Base Flood Elevation and apply for a LOMR-F. The finished pads would have to be 1' above the highest contour elevation that crosses the lot.
2. Since this project is to be phased, a scheme to handle drainage must be determined for all the interim conditions, and also the final condition.
3. Ponding used for the management of the "first flush" should be only on the front yard as backyards are often landscaped and modified substantially.

Since the disturbed area on this site exceeds 1.0 acre, an Erosion and Sediment Control (ESC) Plan, prepared by a NM PE and approved by the City's Stormwater Engineer, will be required for this site, prior to Hydrology approval of a Building Permit or Work Order.

If you have any questions, you can contact me at 924-3695.

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf: via Email: Recipient

City of Albuquerque

Planning Department
Development & Building Services Division
DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(REV 02/2013)

Project Title: EAGLE CREST SUBDIVISION Building Permit #: _____ City Drainage #: C18-d064B
DRB#: _____ EPC#: _____ Work Order#: _____
Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES
City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE
Address: PO BOX 93924, ALBUQUERQUE, NM 87199
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____
Address: 6501 EAGLE ROCK
Phone#: _____ Fax#: _____ E-mail: _____

Architect: ROGER CINELLI Contact: _____
Address: 2418 Manuel Torres Lane N.W. ALB 87117
Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES Contact: JOHN GALLEGOS
Address: _____
Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

- x DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL
- x DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL G & D PLAN
- X GRADING PLAN
- ___ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ___ ENGINEER'S CERT (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEER'S CERT (TCL)
- ___ ENGINEER'S CERT (DRB SITE PLAN)
- ___ ENGINEER'S CERT (ESC)
- ___ SO-19
- ___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ___ SIA/FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- X S. DEV. PLAN FOR SUB'D APPROVAL
- ___ S. DEV. FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM)
- ___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- x GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ GRADING CERTIFICATION
- ___ SO-19 APPROVAL
- ___ ESC PERMIT APPROVAL
- ___ ESC CERT. ACCEPTANCE
- ___ OTHER (SPECIFY)

RECEIVED
JUL 03 2014
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided
DATE SUBMITTED: 7/3/14 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

David Soule
From: David Soule [david@riograndeengineering.com]
Sent: Thursday, July 03, 2014 3:45 PM
To: 'David Soule'; mortiz@cabq.gov; 'Sims, Timothy E.'; rmichel@cabq.gov; rharmon@cabq.gov; rrael@cabq.gov
Subject: RE: Eagle Crest Subdivision C18-D064B

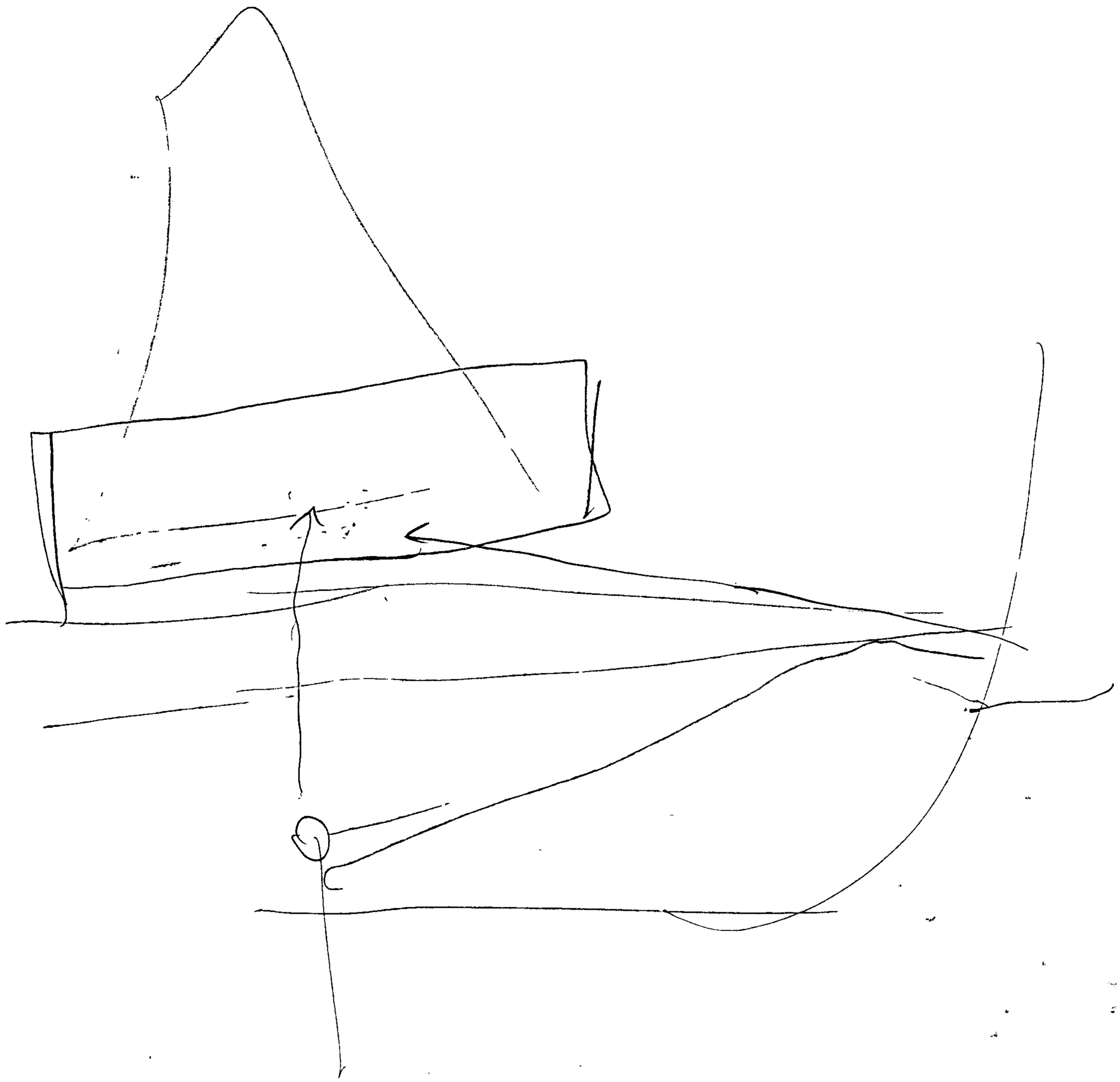
Attachments: sheet3-grading plan.pdf

sheet3-grading plan.pdf (3 MB)...

From: David Soule [mailto:david@riograndeengineering.com]
Sent: Thursday, July 03, 2014 3:36 PM
To: 'mortiz@cabq.gov'; 'Sims, Timothy E.'; 'rmichel@cabq.gov'; 'rharmon@cabq.gov'; 'rrael@cabq.gov'
Subject: Eagle Crest Subdivision C18-D064B

ELECTRONIC SUBMITTAL << File: sheet3-grading plan.pdf >> << File: drainage report070314.pdf >>

RECEIVED
JUL 03 2014
LAND DEVELOPMENT SECTION



DRAINAGE REPORT

For

EAGLE CREST ESTATE

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

July 2014

David Soule P.E. No. 14522

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Purpose 3
Introduction 3
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Proposed Conditions 5
Summary 5

Appendix

NAAMDP, San Pedro Storm drain and Eagle rock Diversion map ..... A
Site Hydrology ..... A
Hydraulic calculations ..... A

Map

Site Grading and Drainage Plan

PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the development of a 60-lot subdivision located on Oakland Avenue between San Pedro and Louisiana NE. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines, and HYDROCAD. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

60 units

INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 12.41-acre parcel of land located on the south side of Oakland Avenue and the north side of Alameda Boulevard between San Pedro and Louisiana. The legal description of this site is Lots 4-10 and 23-29, block 28, tract A, unit B, North Albuquerque Acres. As shown on FIRM map 35013C0137H, the majority of the site is located within Flood Zone X; a portion of the site is impacted by flood zone AE-1 foot. AO The site has had significant grading activities upon it over the past 10 years. The site is not in native condition. Due to the upstream construction, the site is not affected by any upland flow. The site free discharges to the west. The development of the site will require the site to discharge at a rate equal to or less than the fully developed conditions assumed for this site in the governing North Albuquerque Acres Master Drainage Plan (NAAMDP), which relevant excerpts can be found in appendix A.

EXISTING CONDITIONS

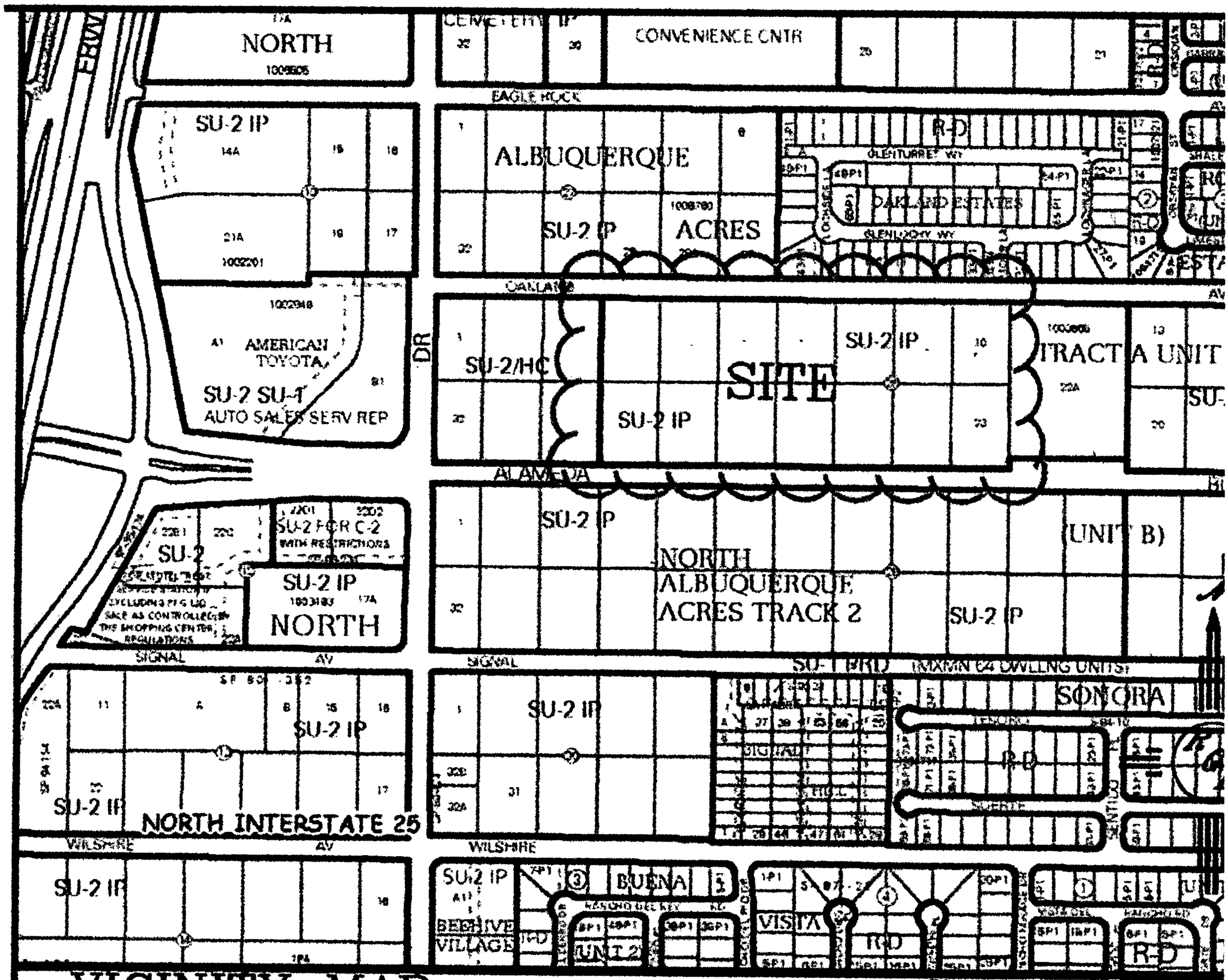
The site currently does have structures on it and has been impacted by human development over the years. The site was most recently an auto salvage and parts yard. The site is not impacted by any upland flows. The site currently discharges all of its flow to the North West

corner of the site. The site is located within basins 117.2 and 117.3 of the NAAMDP. The NAAMDP design analysis has been modified by the Eagle Rock drainage plan. The diversion of the upper 57% of basin 117.2 was designed with the construction of Oakland estates THAT DIVERTS TO EAGLE ROCK The upland properties have been designed to drain to the storm drain provided within Oakland. The recently constructed San Pedro and Alameda storm drain were designed to convey the developed flow from this site.

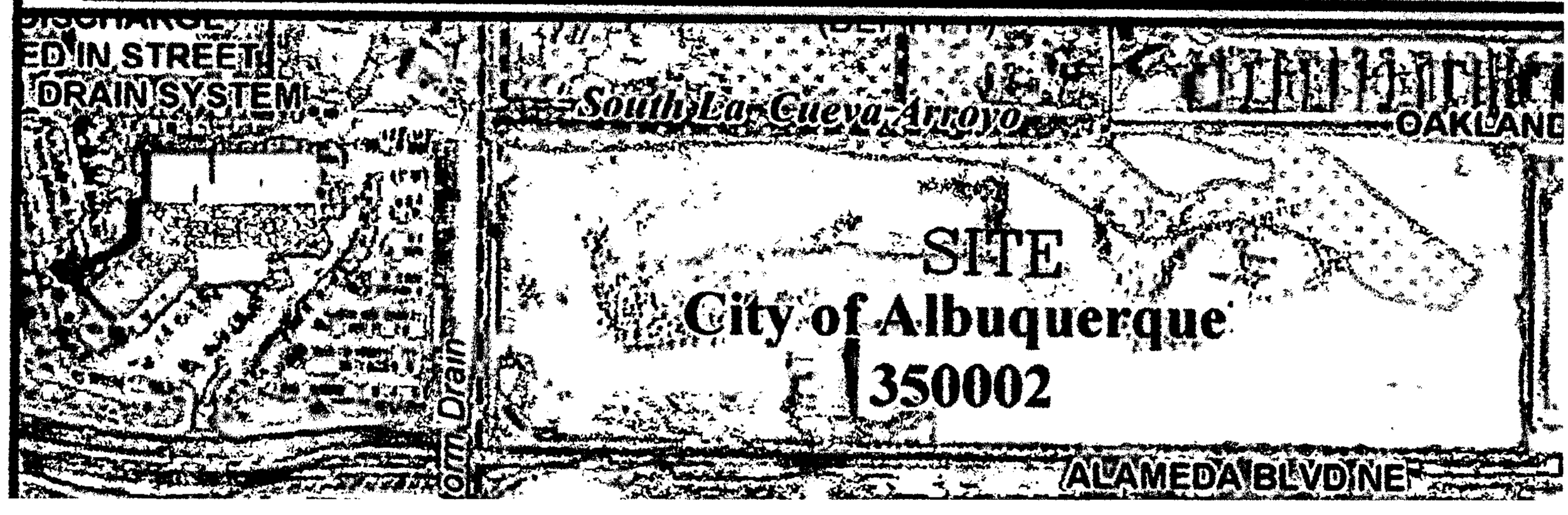
PROPOSED CONDITIONS

The proposed improvements consist of a new 60-lot subdivision serviced by public paved roadway. The lots shall free discharge to the roadway and be conveyed within the roadway to the available downstream storm drain. All the flow leaving the site will be conveyed via surface drainage to Oakland or buried storm drain to Alameda. The proposed land treatment will conform to the residential density assumptions of the NAADMP. The site discharge is reduced to these master plan assumptions by the creation of rear yard ponding and water quality ponds in front yards. Appendix B contains a unit example and calculations for the standard lot segment with roadway, where the rear portion retains only the flows generated by its self.

As shown in appendix B, the site will contain 4 onsite basins, three adjacent offsite roadway basins and one upland basin. Basin A1 and A2 contain the northern half of the subdivision which corresponds to NAAMDP basin 117.2. This basin will generate 19.96 cfs. or 9.96 cfs per basin. This flow will be conveyed within the roadways single grated type A inlets. Basin A1 drains to a new inlet to be constructed within Oakland. This storm drain reach will be constructed from the existing eagle rock diversion to the existing 24" storm drain at the west end of our site. This reach will convey the basin A-1, the Oakland frontage and the 23.68 cfs that will be accepted from upstream. Basin A2 will be captured by an inlet located at the projects west boundary. This inlet will collect the Oakland frontage and Basin A2. It has the capacity to convey



VICINITY MAP: C-18-Z



45 cfs capacity

the remaining undeveloped land down. It will connect to an existing stub from the San Pedro storm drain. Basin B1 and B2 contain the southern half of the subdivision. The flows from these basins are conveyed within Soaring Avenue to a pair of single-A inlets, in a sump condition at the west end of the project. This storm drain will convey the 19.92 cfs from these basins to the Alameda storm drain. The conduits will be connected to an existing inlet located in alameda.

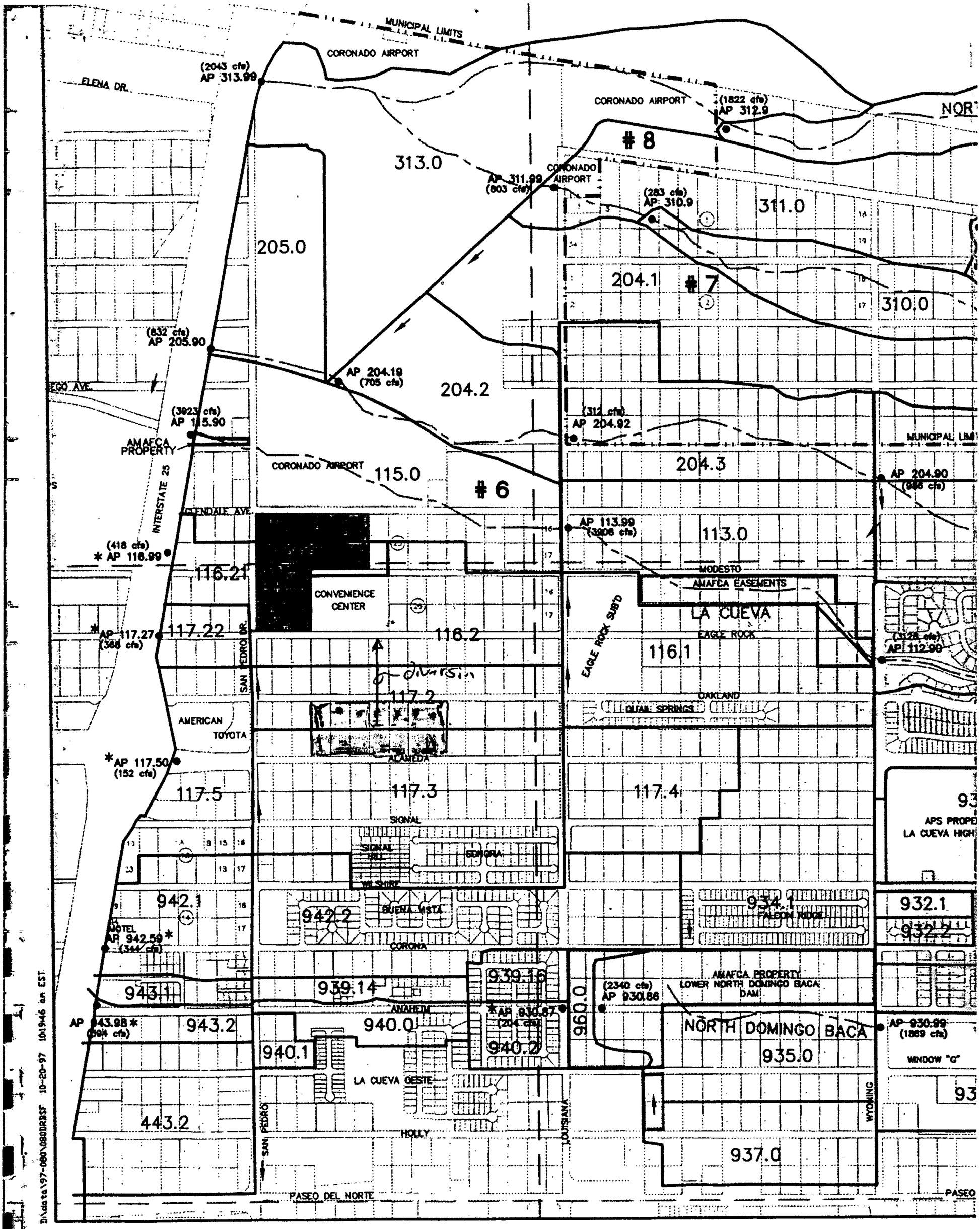
This project is anticipated to be constructed in phases. In each phase the required down stream improvements will be constructed in Oakland. In the interim case for basin B1 and B2, a temporary retention pond may be constructed at the end of the pavement section. The pond shall be designed for the 100-year, 10-day volume. A phase grading plan will be required prior to grading approval.

SUMMARY AND RECOMMENDATIONS

This project is a development of residential subdivision with the North Albuquerque Acres Master Drainage plan. The development is consistent with the land use assumptions of the plan. The surrounding development altered the upland and onsite basin by the creation of a diversion from Oakland to Eagle rock. Our plan conforms to this diversion. Our discharge will enter the downstream storm drain where it was anticipated. The inlets, pipes and roadways have been shown to provide the required capacity. The site has been designed in accordance with City of Albuquerque Drainage ordinance. This drainage plan and report conforms to the governing drainage regulations of the City. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity. A letter of Map revision (LOMR-F) will be required to be submitted.

LOMA

STARTED



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APPENDIX A

North Albuquerque Acres Master Drainage Plan

and

excerpts of Oakland diversion map

and

San Pedro Storm drain design excerpts

FINAL
NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN

Prepared For:

City of Albuquerque

Prepared By:

Resource Technology, Inc.
ENGINEERS AND ENVIRONMENTAL SCIENTISTS
720-B Randolph Road SE, Albuquerque, NM 87106
Telephone (505) 243-7300
Fax (505) 243-7400
rti@rtinc.com

- Commercial/Industrial (C/I): The area west of Louisiana Boulevard, north of Modesto Avenue and east of I-25 would develop as high density commercial and industrial. Also used for Paseo del Norte Corridor.
- Medium Density Industrial (MI): Campus type commercial/office facilities and APS schools sites.
- Sandia Tribal Lands (ST): Sandia tribal lands south of Tramway Road and north of the Sandia Pueblo Grant Boundary were allocated land treatments consistent with moderate levels of development even though there are no current plans to develop this area.

The relative weight of each type of Land Treatment is shown in Table 2.

TABLE 2

FUTURE FULL DEVELOPMENT HYDROLOGIC CONDITION ASSUMPTIONS

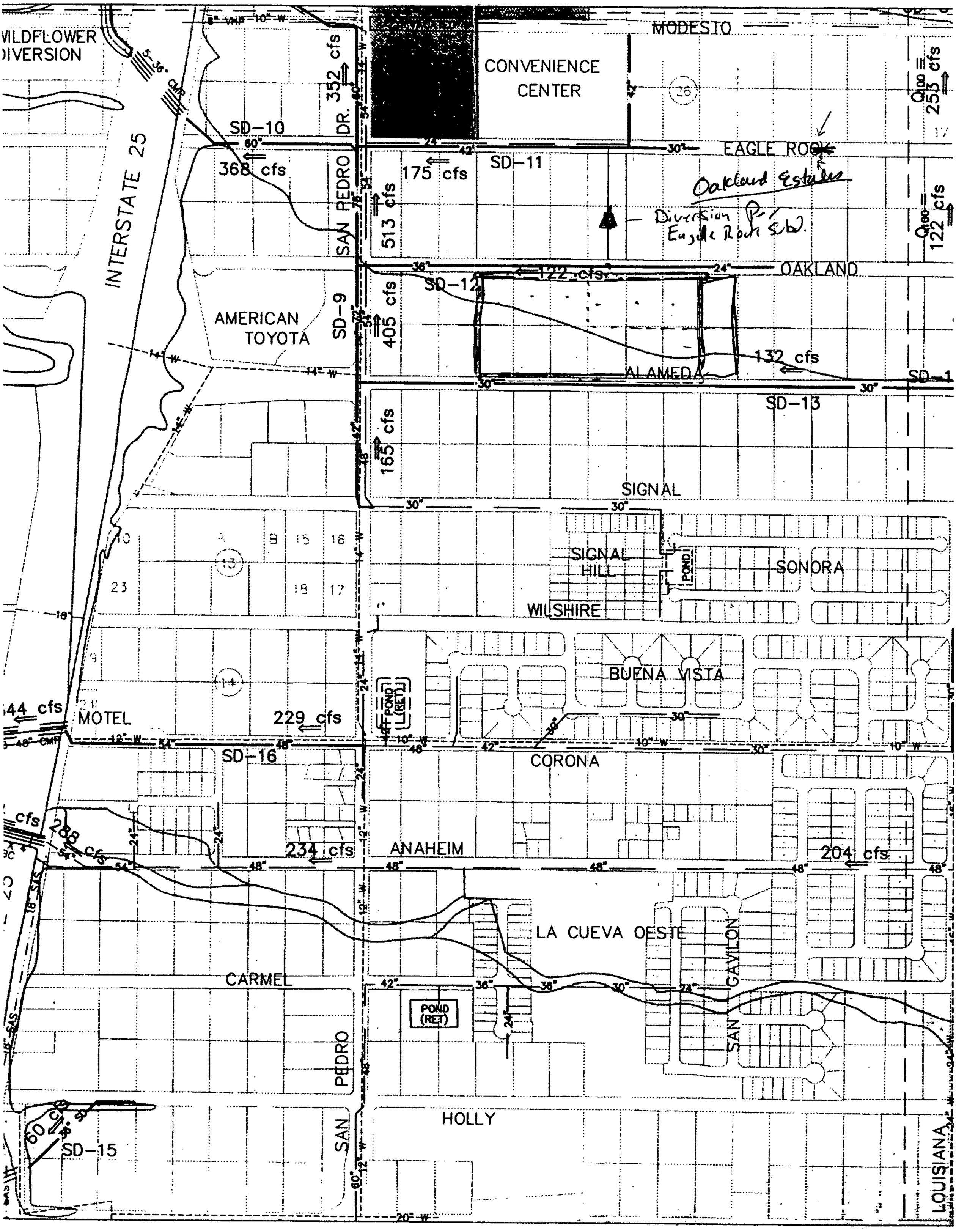
	Land Treatments (%)			
	A	B	C	D
Sandia Heights/Tramway (SH/TB)	20	40	5	35
North Albuquerque Acres (NAA)	22	23	38	17
Low Density Residential (LR)	20	20	34	26
Residential (R)	0	34	16	50
High Density Residential (HR)	0	25	15	60
Commercial/Industrial (C/I)	0	20	10	70
Medium Density Industrial (MI)	0	20	30	50
Sandia Tribal Lands (ST)	20	20	40	20
Primrose Pointe (PP)	0	40	20	40

TABLE A-2 (cont.)

LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
113*	Existing	.1136	80	0	15	5	.133
	Future	.1000	0	25	15	60	.133
115*	Existing	.1337	80	0	15	5	.133
	Future	.1202	0	26	12	62	.133
116*	Existing	.1309	80	0	5	15	.133
116.1	Future	.1000	0	25	15	50	.133
116.2	Future	.0719	0	25	15	60 50	.133
116.21	Future	.0344	0	40	20	40	.133
~~117.2*~~	Existing	.1391	73	0	7	20	.22
	~~Future~~	~~.0500~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.21*	Existing	.0234	0	34	16	50	.133
117.22*	Future	.0156	0	20	10	70	.133
~~117.3*~~	Existing	.0863	65	5	15	15	.133
	~~Future~~	~~.1172~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.31*	Existing	.0250	0	34	16	50	.133
117.32*	Existing	.0090	0	34	16	50	.133
117.4*	Existing	.0750	85	0	5	10	.133
	Future	.0512	0	25	15	60	.133
117.5*	Existing	.0550	0	10	20	70	.133
	Future	.0550	0	10	20	70	.133
118	Existing	.0649	0	20	10	70	.133
	Future	.0649	0	20	10	70	.133
118.1	Existing	.0306	75	5	10	10	.133
	Future	.0306	0	20	30	50	.133
119	Existing	.0549	0	20	10	70	.133
	Future	.0549	0	20	10	70	.133
120	Existing	.0268	50	0	0	50	.133
	Future	.0268	0	20	10	70	.133
121	Existing	.0489	80	0	15	5	.133
	Future	.0489	0	20	10	70	.133

*Modified for COA NAA MDP 9/97


WILDFLOWER DIVERSION
INTERSTATE 25
MODESTO
CONVENIENCE CENTER
SAN PEDRO DR.
352 cfs
SD-10
368 cfs
175 cfs
SD-11
EAGLE ROCK
Oakland Estates
Diversion P-1 Eagle Rock S.D.
513 cfs
OAKLAND
122 cfs
SD-12
AMERICAN TOYOTA
SD-9
405 cfs
132 cfs
ALAMEDA
SD-1
SD-13
165 cfs
SIGNAL
SIGNAL HILL
POND
SONORA
WILSHIRE
BUENA VISTA
MOTEL
229 cfs
POND (RET)
SD-16
CORONA
234 cfs
ANAHEIM
204 cfs
LA CUEVA OESTE
GAVILON
CARMEL
POND (RET)
SAN PEDRO
HOLLY
SD-15
LOUISIANA

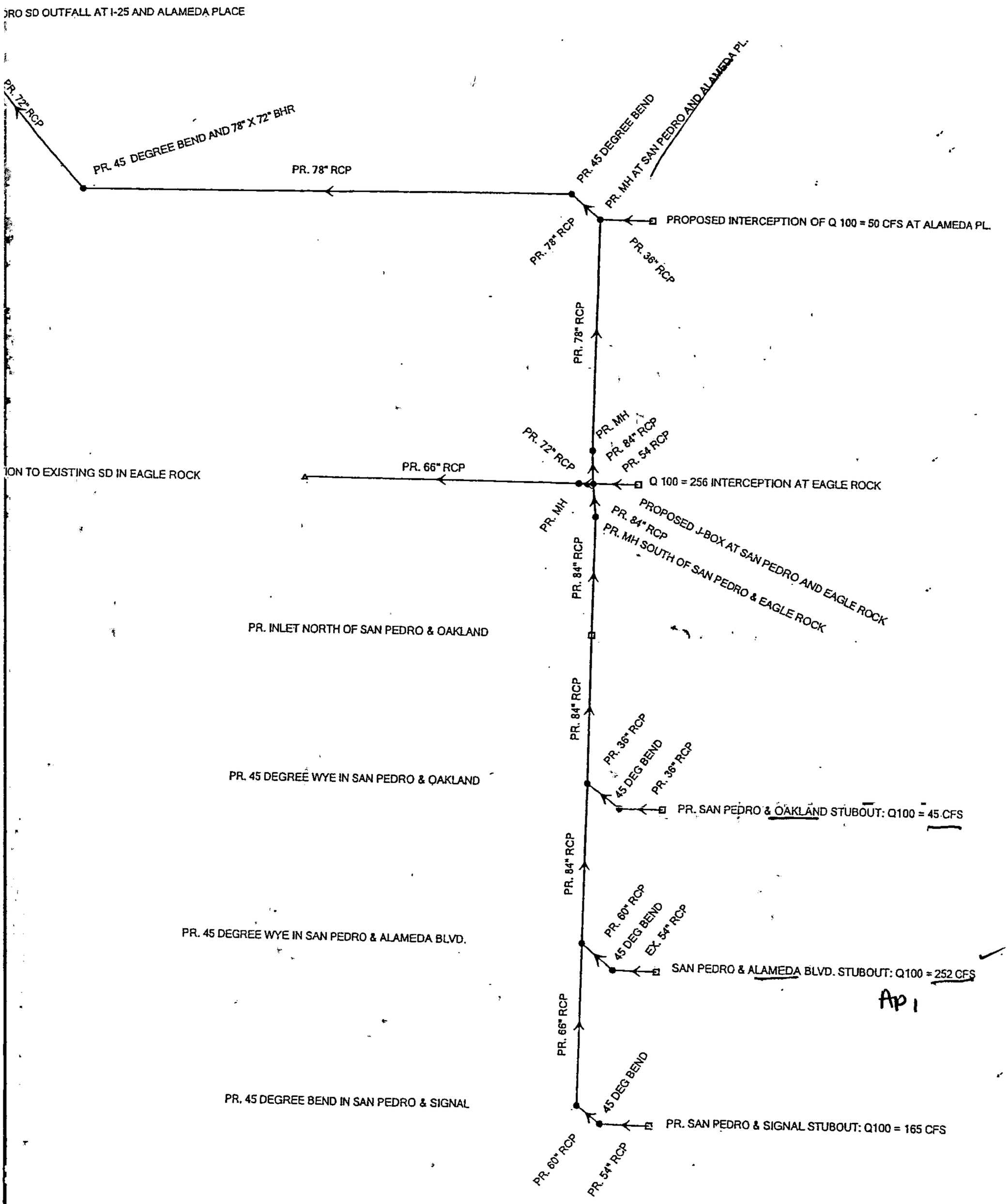
DESIGN ANALYSIS REPORT
FOR
SAN PEDRO STORM DRAIN PROJECT
CITY PROJECT NO. 5304.91

Prepared by:
Thompson Engineering Consultants, Inc.
P.O. Box 65760
Albuquerque, NM 87193

January 2010

San Pedro Storm Drain

Proposed Single Pipe System



DOT Report (San Pedro SD - Final Single Pipe System with changes from coa.stc)

Label	Node: Upstream Downstream	Conduit Description	Slope (Calculated) (ft/ft)	Length (ft)	Manning's n	Flow (ft^3/s)	Velocity (Average) (ft/s)	Ground Upstream Downstream (ft)	Invert Upstream Downstream (ft)	HGL Upstream Downstream (ft)
PR. 66" RCP	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL	Circular Pipe - 66.0 in	0.006	532	0.013	165	6.94	5230.42	5222.97	5229.42
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.	Circular Pipe - 84.0 in	0.005	525	0.013	417	12.96	5229.65	5219.8	5225.46
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	139	0.013	462	13.62	5228	5217.29	5223.55
	PR. INLET NORTH OF SAN PEDRO & OAKLAND							5226.12	5216.57	5223.01
PR. 84" RCP	PR. INLET NORTH OF SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	335	0.013	462	13.38	5226.12	5216.57	5222.46
	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK							5224.23	5214.89	5220.83
PR. 84" RCP	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK	Circular Pipe - 84.0 in	0.006	31	0.013	462	15.09	5224.23	5214.89	5220.53
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5220.1
PR. 84" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 84.0 in	0.009	32	0.013	393	16.57	5224.03	5210.5	5215.72
	PR. MH							5223.95	5210.22	5215.94
PR. 78" RCP	PR. MH	Circular Pipe - 78.0 in	0.01	505	0.013	393	17.57	5223.95	5210.22	5215.52
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.69
PR.72" RCP	PR. 45 DEGREE BEND AND 78" X 72" BHR	Circular Pipe - 72.0 in	0.012	257	0.013	443	15.67	5208.9	5199.5	5205.55
	SAN PEDRO SD OUTFALL AT I-25 AND ALAMEDA PLACE							5203.5	5196.43	5202.74
PR. 54" RCP	PR. SAN PEDRO & SIGNAL STUBOUT: Q100 = 165 CFS	Circular Pipe - 54.0 in	0.026	50	0.013	165	10.37	5233.2	5225.75	5230.6
	45 DEG BEND							5231.8	5224.36	5230.25
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.026	50	0.013	165	8.4	5231.8	5224.36	5229.88
	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL							5230.42	5222.97	5229.67
EX. 54" RCP	SAN PEDRO & ALAMEDA BLVD. STUBOUT: Q100 = 252 CFS	Circular Pipe - 54.0 in	0.034	50	0.013	252	15.84	5232.3	5223.36	5230.29
	45 DEG BEND							5230.1	5221.58	5229.47
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.034	50	0.013	252	12.83	5230.1	5221.58	5228.6
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 36" RCP	PR. SAN PEDRO & OAKLAND STUBOUT: Q100 = 45 CFS	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5230.6	5220.05	5224.6
	45 DEG BEND							5229.3	5218.67	5224.37
PR. 36" RCP	45 DEG BEND	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5229.3	5218.67	5224.15
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 72" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 72.0 in	0.02	5	0.013	325	(N/A)	5224.03	5210.5	(N/A)
	PR. MH							5224	5210.4	(N/A)
PR. 66" RCP	PR. MH	Circular Pipe - 66.0 in	0.019	334	0.013	325	20.9	5224	5210.4	5215.31
	CONNECTION TO EXISTING SD IN EAGLE ROCK							5212.65	5204.2	5207.75
PR. 78" RCP	PR. MH AT SAN PEDRO AND ALAMEDA PL.	Circular Pipe - 78.0 in	0.017	30	0.013	443	13.35	5221.4	5205	5211.75
	PR. 45 DEGREE BEND							5220	5204.5	5211.54
PR. 78" RCP	PR. 45 DEGREE BEND	Circular Pipe - 78.0 in	0.01	496.7	0.013	443	17.77	5220	5204.5	5210.07
	PR. 45 DEGREE BEND AND 78" X 72" BHR							5208.9	5199.5	5206.85
PR. 36" RCP	PROPOSED INTERCEPTION OF Q 100 = 50 CFS AT ALAMEDA	Circular Pipe - 42.0 in	0.01	50	0.013	50	10.44	5222	5211.5	5213.71
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.85
PR. 54 RCP	Q 100 = 256 INTERCEPTION AT EAGLE ROCK	Circular Pipe - 54.0 in	0.02	50	0.013	256	16.1	5226	5216	5220.62
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5219.77

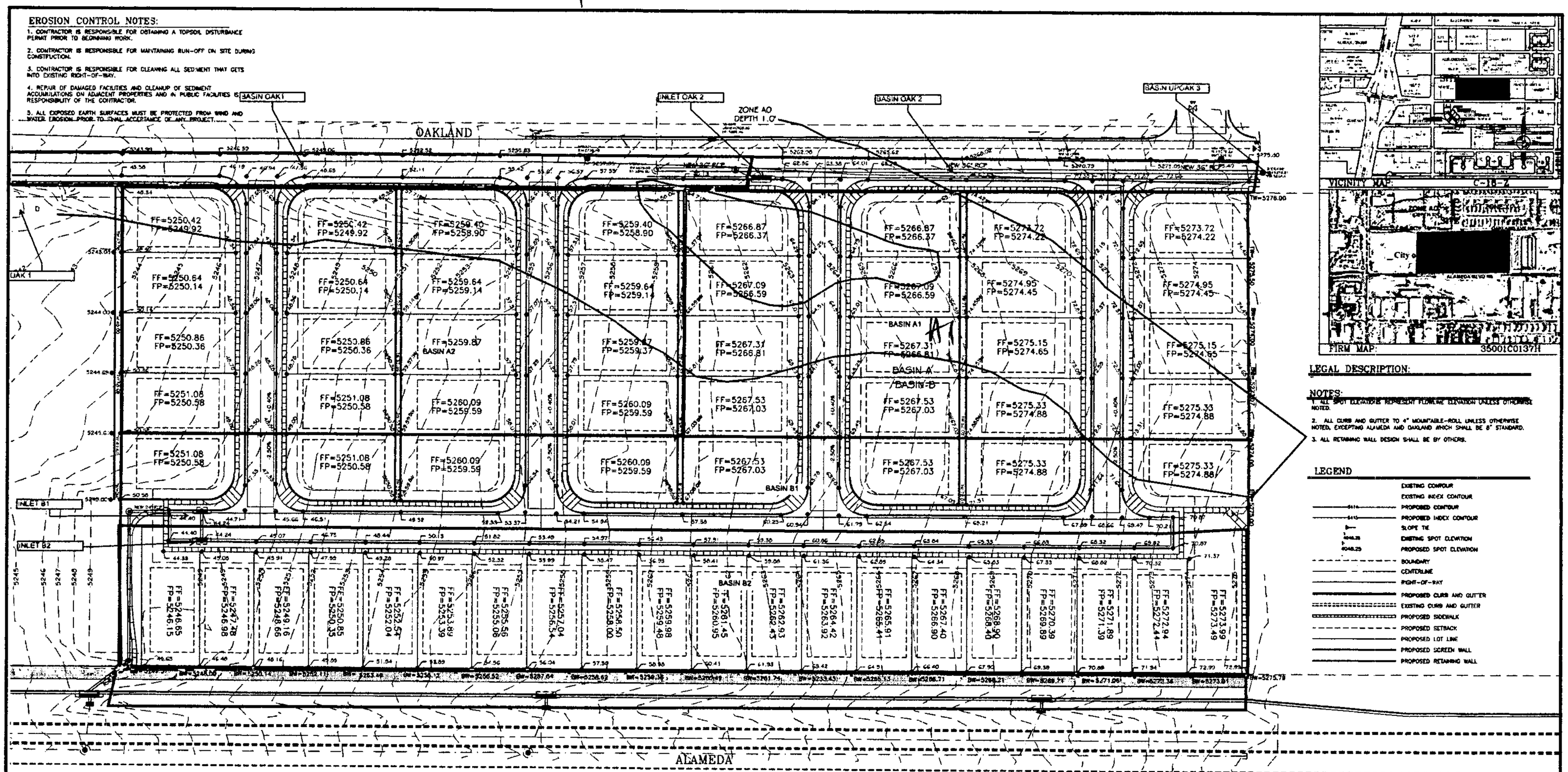
APPENDIX B

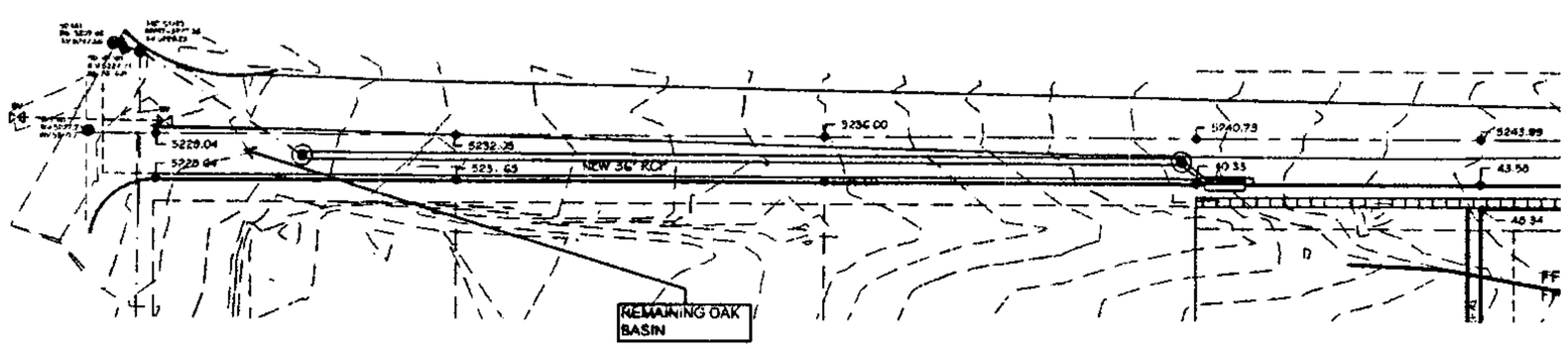
SITE HYDROLOGY

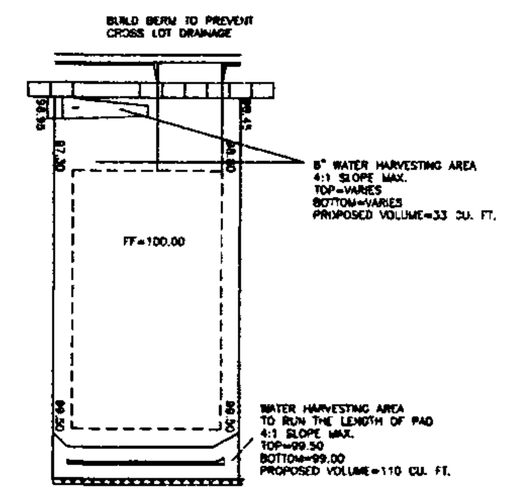
A1+A2=20cfs

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.







TYPICAL WATER HARVESTING AREAS

N

GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

LEGAL DESCRIPTION:

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL CURB AND GUTTER TO 4" MOUNTABLE-ROLL UNLESS OTHERWISE NOTED, EXCEPTING ALAMEDA AND OAKLAND WHICH SHALL BE 8" STANDARD.
3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL

Rio Grande Engineering

PROJECT TITLE: EAGLE CREST

DRAWING TITLE: GRADING AND DRAINAGE PLAN

SEAL

DATE: 06-18-2014 | PROJECT NO.: 21331

DRAWING NO.: DRB 3.0

Weighted E Method

EAGLE CREST

Existing Developed Basins

											100-Year, 6-hr.		
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
BASIN A1	110125	2.528	0%	0	34.0%	0.860	16.0%	0.4045	50%	1.264	1.699	0.358	9.98
BASIN A2	110125	2.528	0%	0	34.0%	0.860	16.0%	0.4045	50%	1.264	1.699	0.358	9.98
BASIN B1	86527	1.986	0%	0	34.0%	0.675	16.0%	0.31782	50%	0.993	1.699	0.281	7.84
BASIN B2	133341	3.061	0%	0	34.0%	1.041	16.0%	0.48977	50%	1.531	1.699	0.433	12.08
BASIN OAK 1	17278	0.397	0%	0	5.0%	0.020	5.0%	0.01983	90%	0.357	2.235	0.074	1.91
BASIN OAK 2	17096	0.392	0%	0	5.0%	0.020	5.0%	0.01962	90%	0.353	2.235	0.073	1.89
BASIN UPOAK 3	261360	6.000	0%	0	34.0%	2.040	16.0%	0.96	50%	3.000	1.699	0.850	23.68
REMAININGOAK BASIN	146794	3.370	0%	0	34.0%	1.146	16.0%	0.53919	50%	1.685	1.699	0.477	13.30
BASIN ALA1	36971	0.849	0%	0	34.0%	0.289	36.0%	0.30555	30%	0.255	1.288	0.091	5.56

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

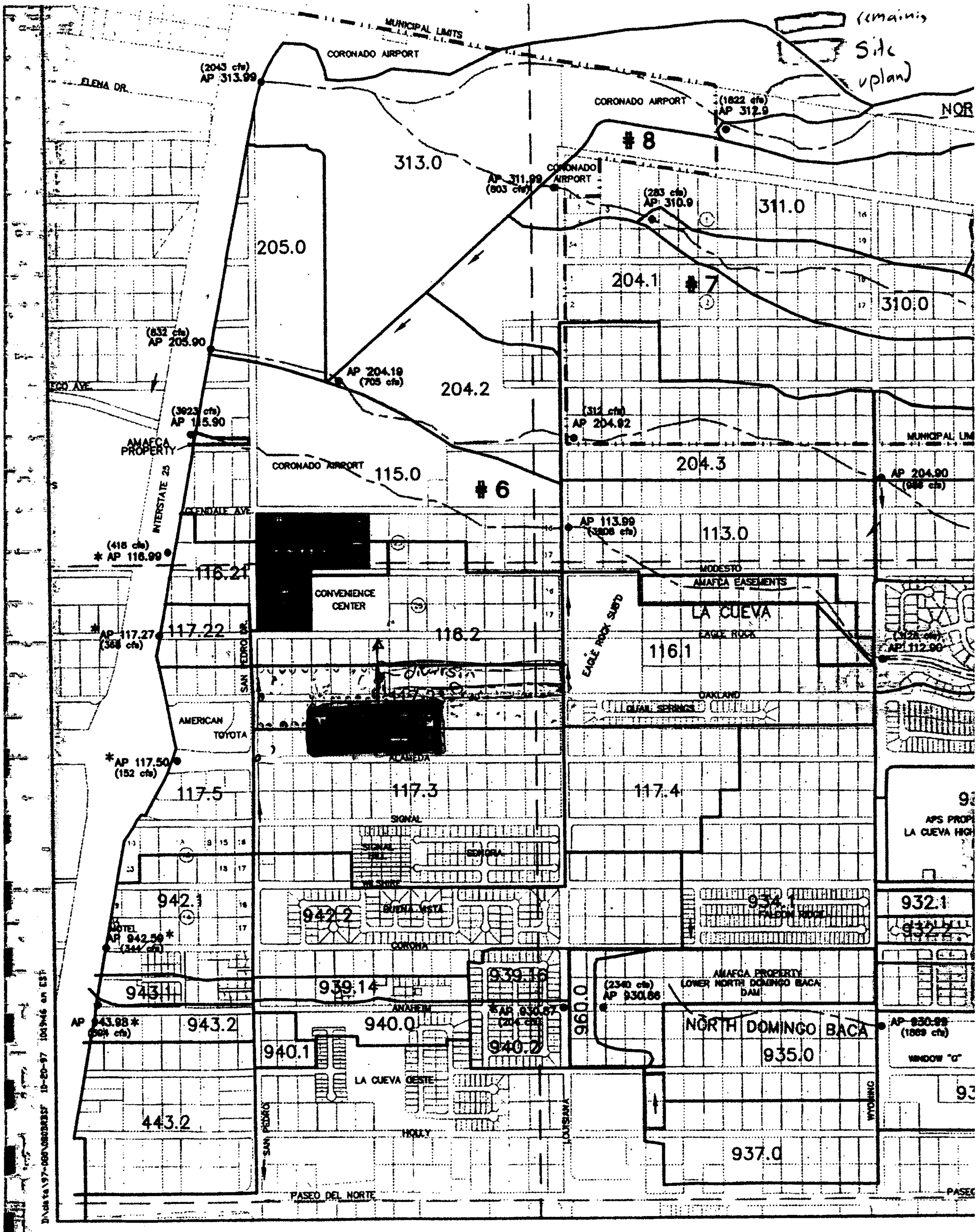
Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 3)

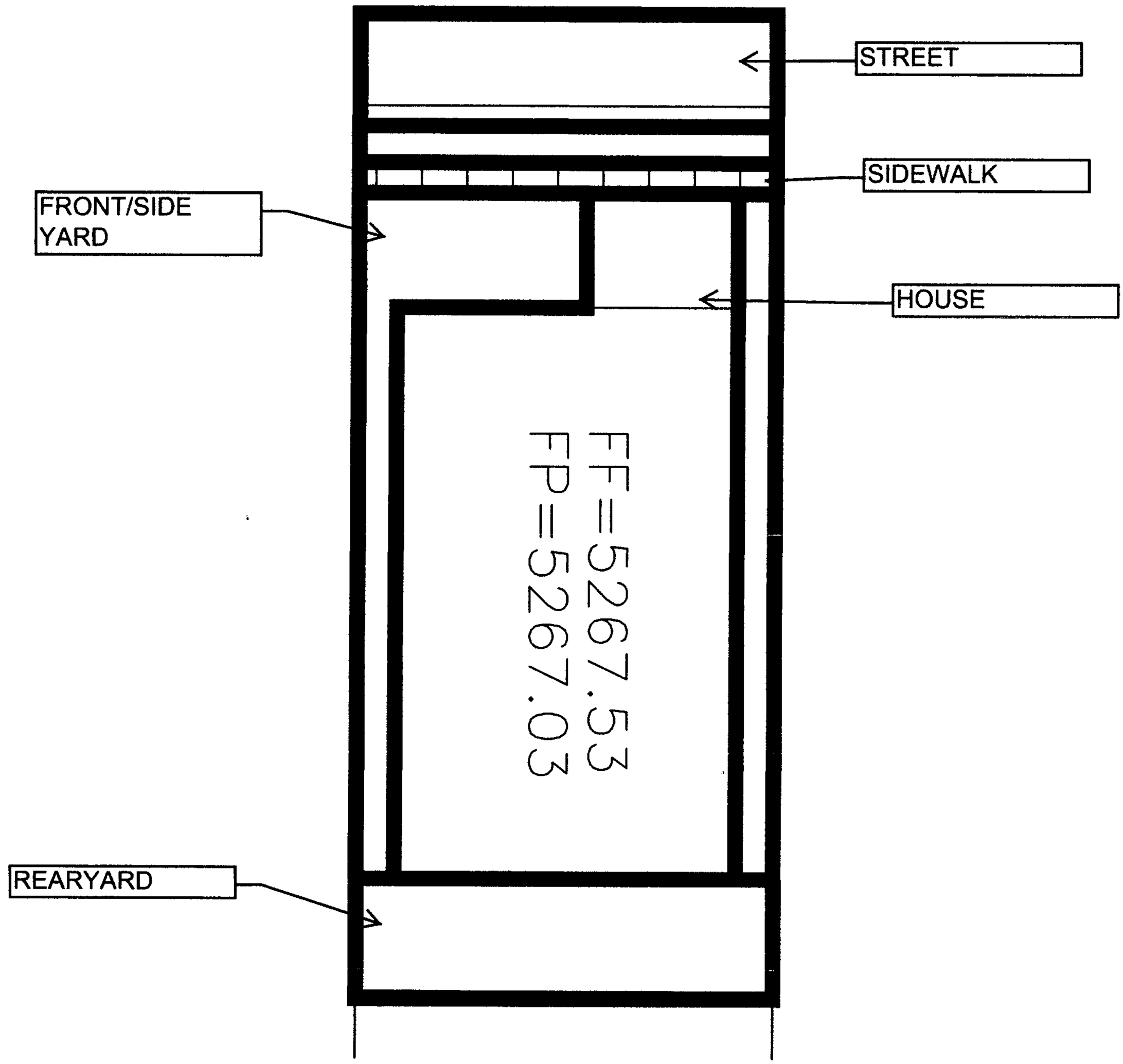
Ea= 0.66	Qa= 1.87
Eb= 0.92	Qb= 2.6
Ec= 1.29	Qc= 3.45
Ed= 2.36	Qd= 5.02

FLOW SUMMARY

TOTAL FLOW AT INLET OAK 1 INLET AT NWCORNER	11.89	CFS					
TOTAL FLOW AT INLET OAK 2- DIVERSION PER EAGLE ROCK PLAN	11.87	CFS IN STREET	+	23.68	CFS (IN PIPE)	35.54	CFS TOTAL
TOTAL FLOW AT INLET B1	7.84	CFS IN STREET	+	12.08	CFS (IN PIPE)	19.92	CFS TOTAL
TOTAL FLOW AT INLET B2	12.08	CFS					
TOTAL FLOW AT INLET ALAMEDA1	5.56	CFS IN STREET	+	19.92	CFS (IN PIPE)	25.47	CFS TOTAL


remaining site uplan
MUNICIPAL LIMITS
CORONADO AIRPORT
ELENA DR.
(2043 cfs) AP 313.99
313.0
205.0
(832 cfs) AP 205.90
AP 204.19 (705 cfs)
204.2
(3923 cfs) AP 115.90
AMAFCA PROPERTY
INTERSTATE 25
115.0
#6
#7
#8
(1822 cfs) AP 312.9
AP 311.99 (803 cfs)
(283 cfs) AP 310.9
311.0
204.1
310.0
(312 cfs) AP 204.92
204.3
AP 204.90
AP 113.99 (3806 cfs)
113.0
(416 cfs) AP 116.99
116.21
CONVENIENCE CENTER
MODESTO
AMAFCA EASEMENTS
LA CUEVA
EAGLE ROCK
EAGLE ROCK SUBD
116.1
AP 117.27 (368 cfs)
117.22
116.2
SAN PEDRO DR.
OAKLAND
DUAL SPRINGS
AMERICAN TOYOTA
ALAMEDA
AP 117.50 (152 cfs)
117.5
117.3
117.4
SIGNAL
SONORA
942.1
942.2
BUENA VISTA
934.1
FALCON RIDGE
932.1
HOTEL AP 942.59 (344 cfs)
CORONA
939.16
939.14
943.1
AMAFCA PROPERTY LOWER NORTH DOMINGO BACA DAM
(2340 cfs) AP 930.86
960.0
ANAHEIM
AP 943.98 (304 cfs)
943.2
940.0
940.2
NORTH DOMINGO BACA
935.0
940.1
LA CUEVA OESTE
443.2
HOLLY
LOUISIANA
WYOMING
937.0
PASEO DEL NORTE

Unit Basin (typical Lot w Road)



Weighted E Method

UNIT BASIN CALCULATION

Existing Developed Basins

											100-Year, 6-hr.		
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
STREET	806	0.019	0%	0	0.0%	0.000	0.0%	0	100%	0.019	2.360	0.004	0.09
SIDEWALK	219	0.005	0%	0	0.0%	0.000	0.0%	0	100%	0.005	2.360	0.001	0.03
HOUSE	3500	0.080	0%	0	0.0%	0.000	0.0%	0	100%	0.080	2.360	0.016	0.40
FRONT/SIDE YARD	1719	0.039	0%	0	50.0%	0.020	50.0%	0.01973	0%	0.000	1.105	0.004	0.12
REAR YARD	876	0.020	0%	0	50.0%	0.010	50.0%	0.01006	0%	0.000	1.105	0.002	0.06
TOTAL UNIT	7120	0.163											0.70
UNIT LESS REAR YARD													0.64
EQUVALENT YARD	7120	0.163	0%	0	34.0%	0.056	16.0%	0.02615	50%	0.082	1.699	0.023	0.64

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

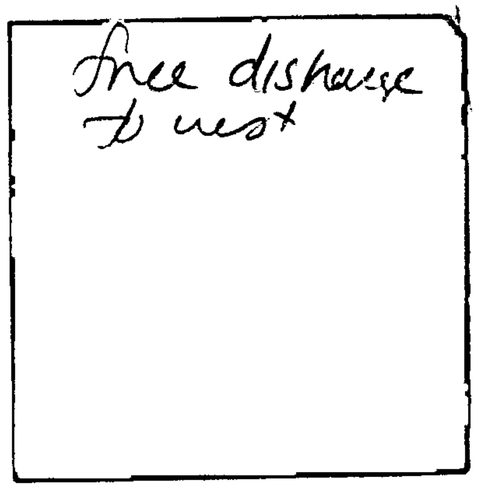
Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66	Qa= 1.87
Eb= 0.92	Qb= 2.6
Ec= 1.29	Qc= 3.45
Ed= 2.36	Qd= 5.02

NARRATIVE

THE REAR YARDS POND AND DO NOT DISCHARGE. THIS REDUCES THE EFFECTIVE BASIN AREA OF THE LOT. TO CALCULATE ~~THE~~ WHAT THIS TOTAL YARD DISCHARGE IS EQUAVALENT TO WE DETERMINED THE TOTAL DISCHARE IS .64 CFS. WE THEN ITTERATE THE LAND TREATMENTS ON THE ENTIRE UNIT AREA TO COME UP WITH AN EQUIVALENT LAND TREATMENT AREA. AS SHOWN THIS EQUIVALENT AREA IS EQUAL TO THE DEVELOPED CONDITION ASSUMPTIONIN THE NAA MDP. IN ADDITION THE FRONT YARDS WILL HARVEST ADDITIONAL ~~33~~ 165 CF.

~~Vicinity~~



165 cf in front yard only.

first flush.

$\frac{.34}{12} \times (.019 + .005 + .08)(43560)$

= 128 ✓ cfs

David used. .44"

APPENDIX C

HYDRAULIC CALCULATIONS

Street Capacity Calculations

AERIE/SHANE/HIGHLIF/COLTON,IN BASIN A

28' F-F Street Section with 4" curb

Slope= 0.004 Q=4.99

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.16	0.00	0.28	0.00137
0.02	0.0064	0.66	0.01	0.00	0.00	0.25	0.01	0.31	0.00336
0.025	0.01	0.83	0.01	0.00	0.01	0.29	0.01	0.33	0.00448
0.035	0.0196	1.16	0.02	0.01	0.01	0.36	0.01	0.34	0.00691
0.045	0.0324	1.49	0.02	0.01	0.03	0.43	0.02	0.36	0.00954
0.052	0.043264	1.72	0.03	0.02	0.04	0.48	0.02	0.37	0.01149
0.06	0.0576	1.98	0.03	0.03	0.06	0.52	0.03	0.38	0.0138
0.0625	0.0625	2.06	0.03	0.03	0.07	0.54	0.03	0.38	0.01454

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.03	0.07	0.54	0.03	0.38	0.01462
0.1	0.172656	3.98	0.04	0.12	0.24	0.68	0.07	0.38	0.02347
0.13	0.311406	5.51	0.06	0.25	0.51	0.81	0.11	0.40	0.03289
0.16	0.495156	7.04	0.07	0.47	0.93	0.94	0.15	0.42	0.04338
0.2	0.810156	9.08	0.09	0.89	1.79	1.10	0.22	0.44	0.05857
0.207	0.873506	9.43	0.09	0.99	1.98	1.13	0.23	0.44	0.06134
0.2612	1.446942	12.20	0.12	1.93	3.86	1.33	0.35	0.46	0.08377
0.3025	**1.9825**	**14.31**	**0.14**	**2.94**	**5.87**	**1.48**	**0.45**	**0.47**	**0.10185**

from where

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	2.95	5.90	1.48	0.45	0.48	0.10226
0.3039	2.0021	14.31	0.14	2.98	5.97	1.49	0.45	0.48	0.103
0.3062	2.0343	14.31	0.14	3.06	6.13	1.51	0.46	0.48	0.10491
0.31	2.0875	14.31	0.15	3.20	6.40	1.53	0.47	0.48	0.10806
0.3125	2.1225	14.32	0.15	3.29	6.57	1.55	0.48	0.49	0.11014
0.32	2.2275	14.32	0.16	3.56	7.12	1.60	0.51	0.50	0.11641
0.3317	2.3913	14.34	0.17	4.01	8.01	1.68	0.56	0.51	0.12626
0.333	2.4095	14.34	0.17	4.06	8.11	1.68	0.56	0.51	0.12736

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	4.12	8.23	1.69	0.57	0.51	0.12815
0.3601	2.80726	15.69	0.18	4.93	9.85	1.76	0.63	0.52	0.13827
0.38	3.122725	16.69	0.19	5.65	11.30	1.81	0.69	0.52	0.14662
0.4196	3.809389	18.67	0.20	7.30	14.60	1.92	0.80	0.52	0.16399
0.4603	4.596832	20.70	0.22	9.32	18.64	2.03	0.93	0.53	0.18271
0.504	5.534525	22.89	0.24	11.88	23.75	2.15	1.08	0.53	0.20367
0.513	5.7395	23.34	0.25	12.46	24.91	2.17	1.11	0.53	0.20809

Street Capacity Calculations

SOARING(LOWER 1/3)

28' F-F Street Section with 8" curb

Slope= 0.03 Q=20CFS

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.42	0.00	0.75	0.0067048
0.02	0.00	0.34	0.01	0.00	0.00	0.67	0.01	0.84	0.0157771
0.04	0.01	0.68	0.02	0.01	0.03	1.07	0.04	0.94	0.0369621
0.06	0.03	1.02	0.03	0.04	0.08	1.40	0.08	1.01	0.0607017
0.08	0.05	1.36	0.04	0.09	0.17	1.70	0.14	1.06	0.0862391
0.1	0.08	1.70	0.05	0.16	0.32	1.97	0.20	1.10	0.1131876
0.12	0.12	2.04	0.06	0.26	0.51	2.23	0.27	1.13	0.1413075
0.125	0.13	2.13	0.06	0.29	0.57	2.29	0.29	1.14	0.1485001

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.30	0.61	2.24	0.29	1.09	0.1464784
0.16	0.23	3.91	0.06	0.51	1.02	2.26	0.36	1.00	0.1590045
0.2	0.42	5.95	0.07	1.07	2.13	2.57	0.51	1.01	0.2030387
0.24	0.69	8.00	0.09	2.02	4.04	2.94	0.71	1.06	0.2589738
0.2846	1.08	10.27	0.11	3.65	7.30	3.38	0.96	1.11	0.3284706
0.32	1.47	12.08	0.12	5.44	10.88	3.71	1.19	1.16	0.3871506
0.3551	1.91	13.87	0.14	7.71	15.41	4.04	1.43	1.19	0.44766
0.365	2.05	14.37	0.14	8.44	16.88	4.13	1.51	1.20	0.4650869

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.12	14.38	0.15	8.92	17.85	4.22	1.56	1.22	0.4808442
0.4556	**3.31**	**14.46**	**0.23**	**18.78**	**37.57**	**5.67**	**2.58**	**1.48**	**0.7526503**
0.4848	3.72	14.49	0.26	22.77	45.54	6.12	2.97	1.55	0.8465309
0.5	3.94	14.51	0.27	24.97	49.93	6.34	3.17	1.58	0.8956596
0.54	4.50	14.55	0.31	31.11	62.21	6.92	3.74	1.66	1.0257991
0.5584	4.75	14.56	0.33	34.10	68.21	7.18	4.01	1.69	1.0860745
0.63	5.76	14.64	0.39	46.76	93.53	8.13	5.12	1.80	1.322998
0.667	6.27	14.67	0.43	53.90	107.80	8.59	5.73	1.85	1.4468366

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 14 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.76	16.32	0.41	56.89	113.79	8.41	5.89	1.77	1.4389182
0.72	7.09	17.32	0.41	59.10	118.21	8.34	6.01	1.73	1.4404596
0.74	7.43	18.32	0.41	61.60	123.20	8.29	6.14	1.70	1.4460009
0.76	7.79	19.32	0.40	64.38	128.76	8.26	6.28	1.67	1.4550338
0.78	8.17	20.32	0.40	67.43	134.86	8.25	6.43	1.65	1.4671379
0.8	8.58	21.32	0.40	70.76	141.52	8.25	6.60	1.63	1.481962
0.847	9.60	23.68	0.41	79.67	159.33	8.30	7.03	1.59	1.5258996

Street Capacity Calculations

SOARING UPPER 2/3

28' F-F Street Section with 4" curb

Slope= 0.03 13.25

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.43	0.00	0.76	0.00691
0.02	0.0064	0.66	0.01	0.00	0.01	0.69	0.01	0.86	0.01624
0.025	0.01	0.83	0.01	0.01	0.02	0.80	0.02	0.89	0.02136
0.035	0.0196	1.16	0.02	0.02	0.04	1.00	0.03	0.94	0.03228
0.045	0.0324	1.49	0.02	0.04	0.08	1.18	0.05	0.98	0.04391
0.052	0.043264	1.72	0.03	0.06	0.11	1.30	0.07	1.01	0.0524
0.06	0.0576	1.98	0.03	0.08	0.16	1.43	0.09	1.03	0.0624
0.0625	0.0625	2.06	0.03	0.09	0.18	1.47	0.09	1.04	0.06559

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.09	0.19	1.47	0.09	1.04	0.06598
0.1	0.172656	3.98	0.04	0.32	0.65	1.87	0.19	1.04	0.10566
0.13	0.311406	5.51	0.06	0.69	1.39	2.23	0.29	1.09	0.14572
0.16	0.495156	7.04	0.07	1.28	2.56	2.58	0.41	1.14	0.1894
0.2	0.810156	9.08	0.09	2.45	4.90	3.02	0.60	1.19	0.25153
0.207	0.873506	9.43	0.09	2.71	5.41	3.10	0.64	1.20	0.26277
0.2612	1.446942	12.20	0.12	5.29	10.58	3.65	0.95	1.26	0.35291
0.3025	**1.9825**	**14.31**	**0.14**	**8.04**	**16.08**	**4.05**	**1.23**	**1.30**	**0.42471**

over 4"

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	8.09	16.17	4.06	1.23	1.30	0.42622
0.3039	2.0021	14.31	0.14	8.17	16.34	4.08	1.24	1.30	0.42894
0.3062	2.0343	14.31	0.14	8.39	16.78	4.12	1.26	1.31	0.43588
0.31	2.0875	14.31	0.15	8.76	17.51	4.19	1.30	1.33	0.44737
0.3125	2.1225	14.32	0.15	9.00	18.00	4.24	1.33	1.34	0.45494
0.32	2.2275	14.32	0.16	9.75	19.51	4.38	1.40	1.36	0.47767
0.3317	2.3913	14.34	0.17	10.97	21.94	4.59	1.52	1.40	0.51325
0.333	2.4095	14.34	0.17	11.11	22.22	4.61	1.54	1.41	0.51721

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	11.27	22.55	4.63	1.55	1.41	0.52038
0.3601	2.80726	15.69	0.18	13.49	26.99	4.81	1.73	1.41	0.56106
0.38	3.122725	16.69	0.19	15.47	30.94	4.95	1.88	1.42	0.59436
0.4196	3.809389	18.67	0.20	19.99	39.98	5.25	2.20	1.43	0.66299
0.4603	4.596832	20.70	0.22	25.52	51.04	5.55	2.56	1.44	0.73635
0.504	5.534525	22.89	0.24	32.52	65.05	5.88	2.96	1.46	0.81782
0.513	5.7395	23.34	0.25	34.11	68.22	5.94	3.05	1.46	0.8349

DROP INLET CALCULATIONS

POND	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
	Single 'A'	5.92	19.92	0.4884	0.67

ORIFICE EQUATION

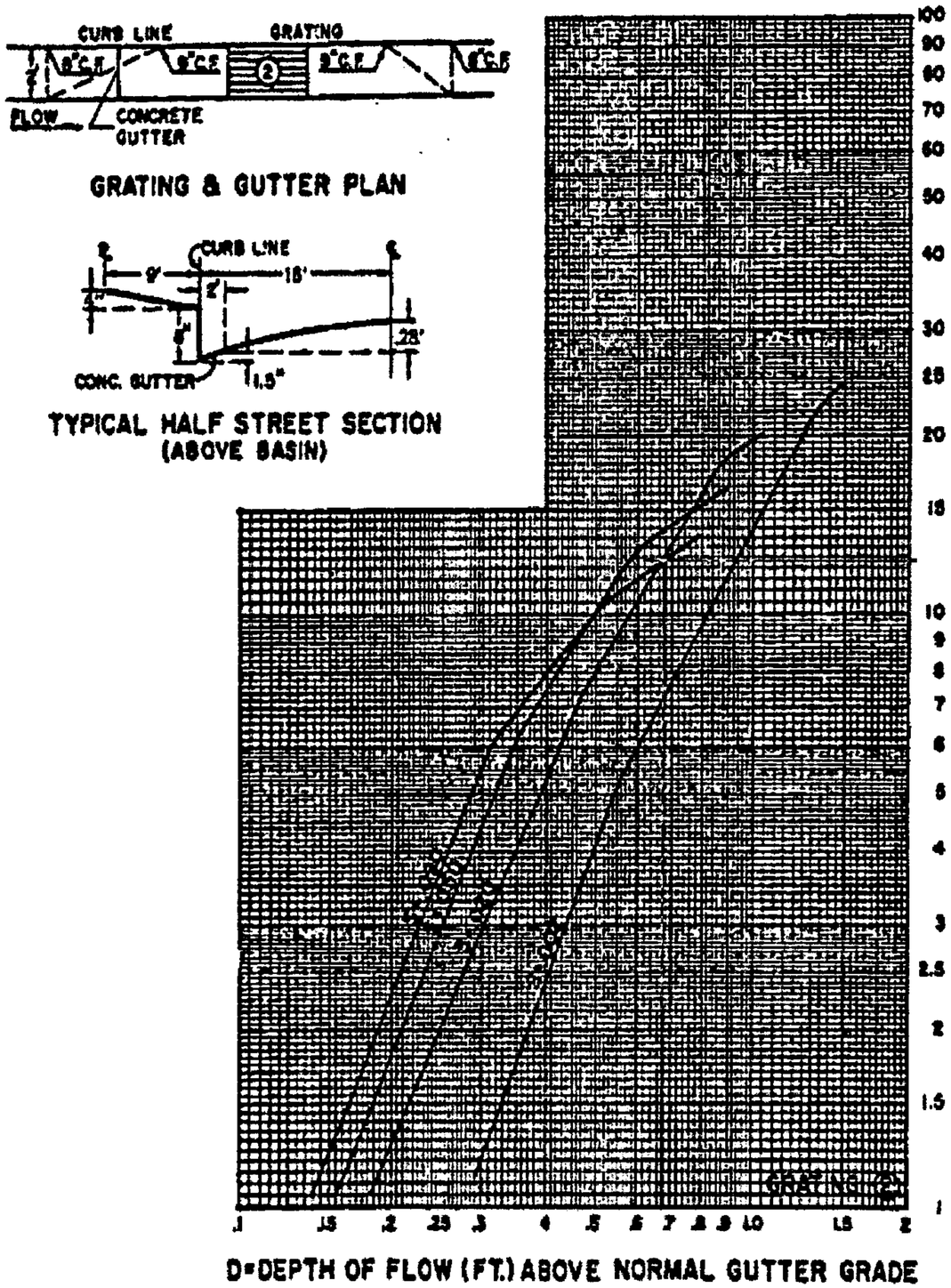
Q = CA sqrt(2gH)

C = 0.6

g = 32.2

INLETS IN SUMP CONDITION. ONE INLET CAN HANDLE THE FLOW , DOUBLED TO ALLOW FOR CLOGGING.

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

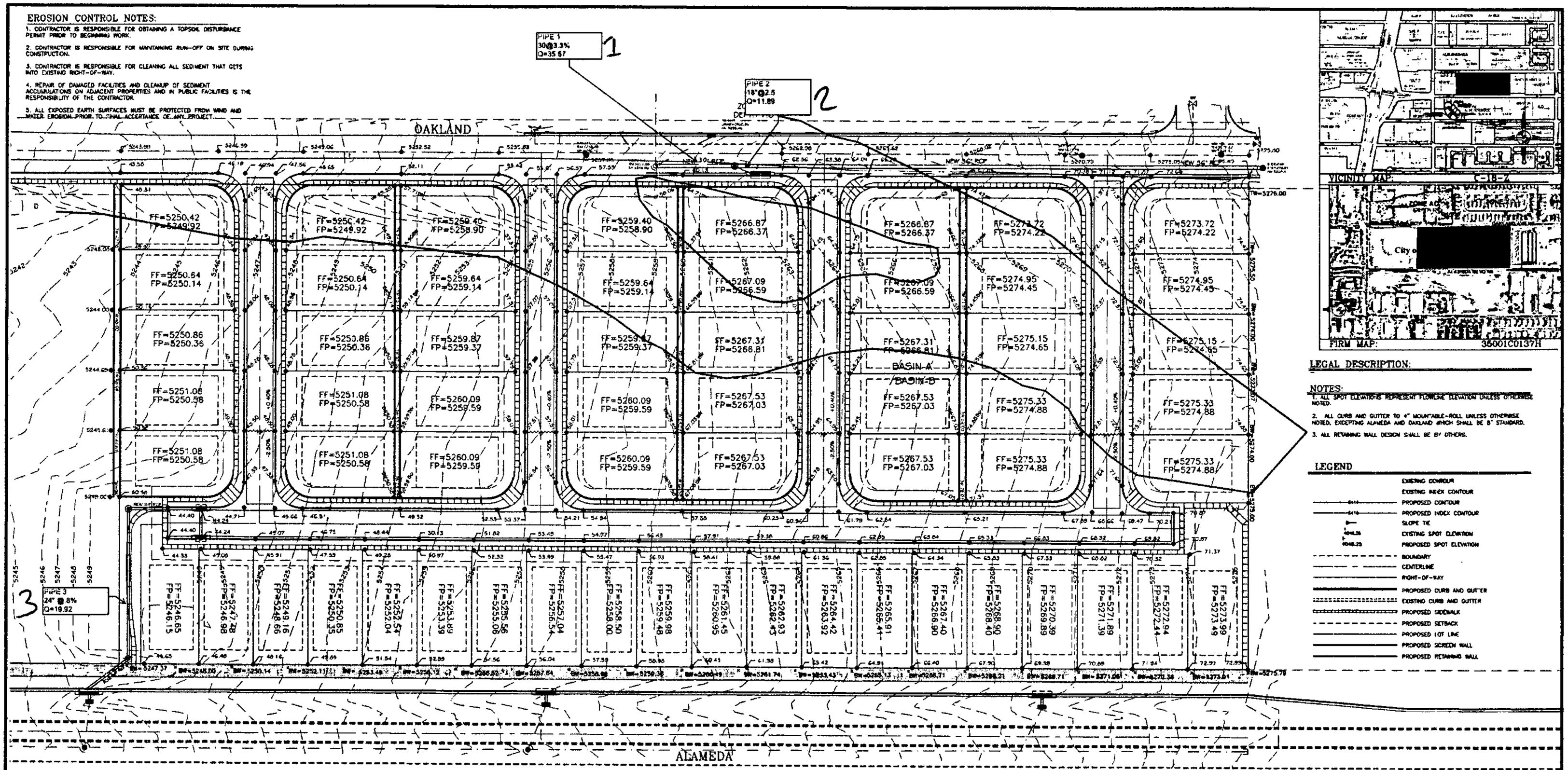


12 CFS PER GRATE

Inlets in Oakland

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.



VICINITY MAP: C-18-2

FIRM MAP: 06001C0137H

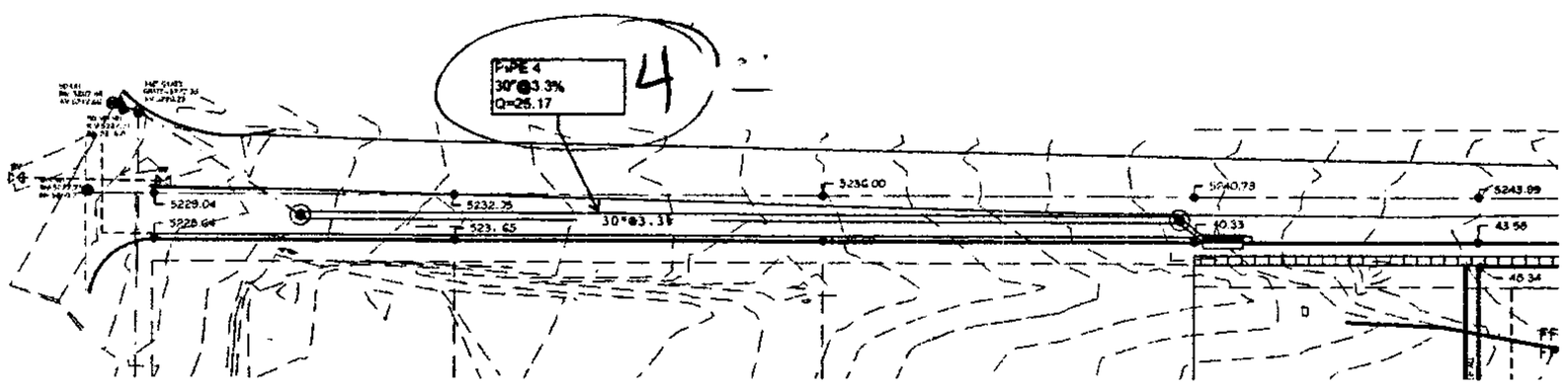
LEGAL DESCRIPTION:

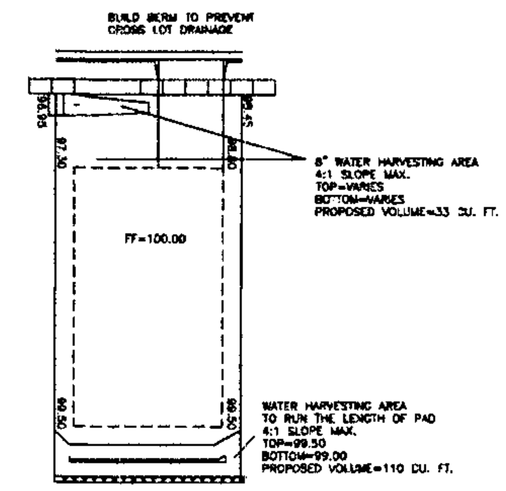
NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL CURB AND GUTTER TO 4" MOUNTABLE-ROLL UNLESS OTHERWISE NOTED, EXCEPTING ALAMEDA AND OAKLAND WHICH SHALL BE 8" STANDARD.
3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL





TYPICAL WATER HARVESTING AREAS

N

GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

Rio Grande Engineering

PROJECT TITLE: EAGLE CREST

DRAWING TITLE: GRADING AND DRAINAGE PLAN

SEAL

08-18-2014 | PROJECT NO. 21381

DRAWING NO. DRB 3.0

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
1	30	3.3	4.91	0.625	74.71	35.57	7.25
2	18	2.5	1.77	0.375	16.65	11.89	6.73
3	24	0.8	3.14	0.5	20.29	19.92	6.34
4	30	3.3	4.91	0.625	74.71	25.17	5.13

Revised w/ Planned flow

<u>Manning's Equation:</u>

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

CITY OF ALBUQUERQUE

January 29, 2014

David Soule, P.E.
Rio Grande Engineering
PO Box 93924
Albuquerque, NM 87199

Re: Eagle Crest Subdivision
Grading and Drainage Plan
Engineer's Stamp Date 1/28/14 and
Drainage Report
Engineer's Stamp Date 1-25-14
Drainage file number (C18D064B)

Dear Mr. Soule,

Based upon the information provided in your submittal received 1-28-14, the above referenced plan and report are approved for Preliminary Plat action by the DRB.

Grading Permit can be approved after the DRB has approved the Preliminary Plat and the Erosion and Sediment control plan has been approved and accepted.

If you have any questions, you can contact me at 924-3986 or Rudy Rael at 924-3977.

Sincerely,

Curtis Cherne, P.E.
Principal Engineer, Planning Dept.
Development Review Services

RR/CC
C: e-mail

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

City of Albuquerque

Planning Department
Development & Building Services Division
DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(REV 02/2013)

Project Title: EAGLE CREST SUBDIVISION Building Permit #: _____ City Drainage #: C18-d064B
DRB#: _____ EPC#: _____ Work Order#: _____
Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES
City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE
Address: PO BOX 93924, ALBUQUERQUE, NM 87199
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____
Address: 6501 EAGLE ROCK
Phone#: _____ Fax#: _____ E-mail: _____

Architect: ROGER CINELLI Contact: _____
Address: 2418 Manuel Torres Lane N.W. ALB 87117
Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES Contact: JOHN GALLEGOS
Address: _____
Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

x DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
x DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
X GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
X PRELIMINARY PLAT APPROVAL
X S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
x GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION
___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED
JAN 28 2014
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided
DATE SUBMITTED: 1/28/14 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

DRAINAGE REPORT

For

EAGLE CREST ESTATE

Albuquerque, New Mexico

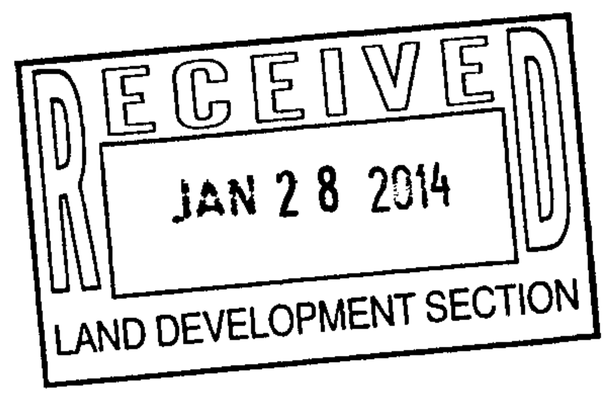
Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

1/25/14

December 2013

David Soule P.E. No. 14522



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Purpose 3
Introduction 3
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Exhibit A-Vicinity Map 4
Proposed Conditions 5
Summary 5

Appendix

NAAMDP, San Pedro Storm drain and Eagle rock Diversion map ..... A
Site Hydrology ..... A
Hydraulic calculations ..... A

Map

Site Grading and Drainage Plan

PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the development of a 68-lot subdivision located on Oakland Avenue between San Pedro and Louisiana NE. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines, and HYDROCAD. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 12.41-acre parcel of land located on the south side of Oakland Avenue and the north side of Alameda Boulevard between San Pedro and Louisiana. The legal description of this site is Lots 4-10 and 23-29, block 28, tract A, unit B, North Albuquerque Acres. As shown on FIRM map35013C0137H, the majority of the site is located within Flood Zone X; a portion of the site is impacted by flood zone AE-1 foot. The site has had significant grading activities upon it over the past 10 years. The site is not in native condition. Due to the upstream construction, the site is not affected by any upland flow. The site free discharges to the west. The development of the site will require the site to discharge at a rate equal to or less than the fully developed conditions assumed for this site in the governing North Albuquerque Acres Master Drainage Plan (NAAMDP), which relevant excerpts can be found in appendix A.

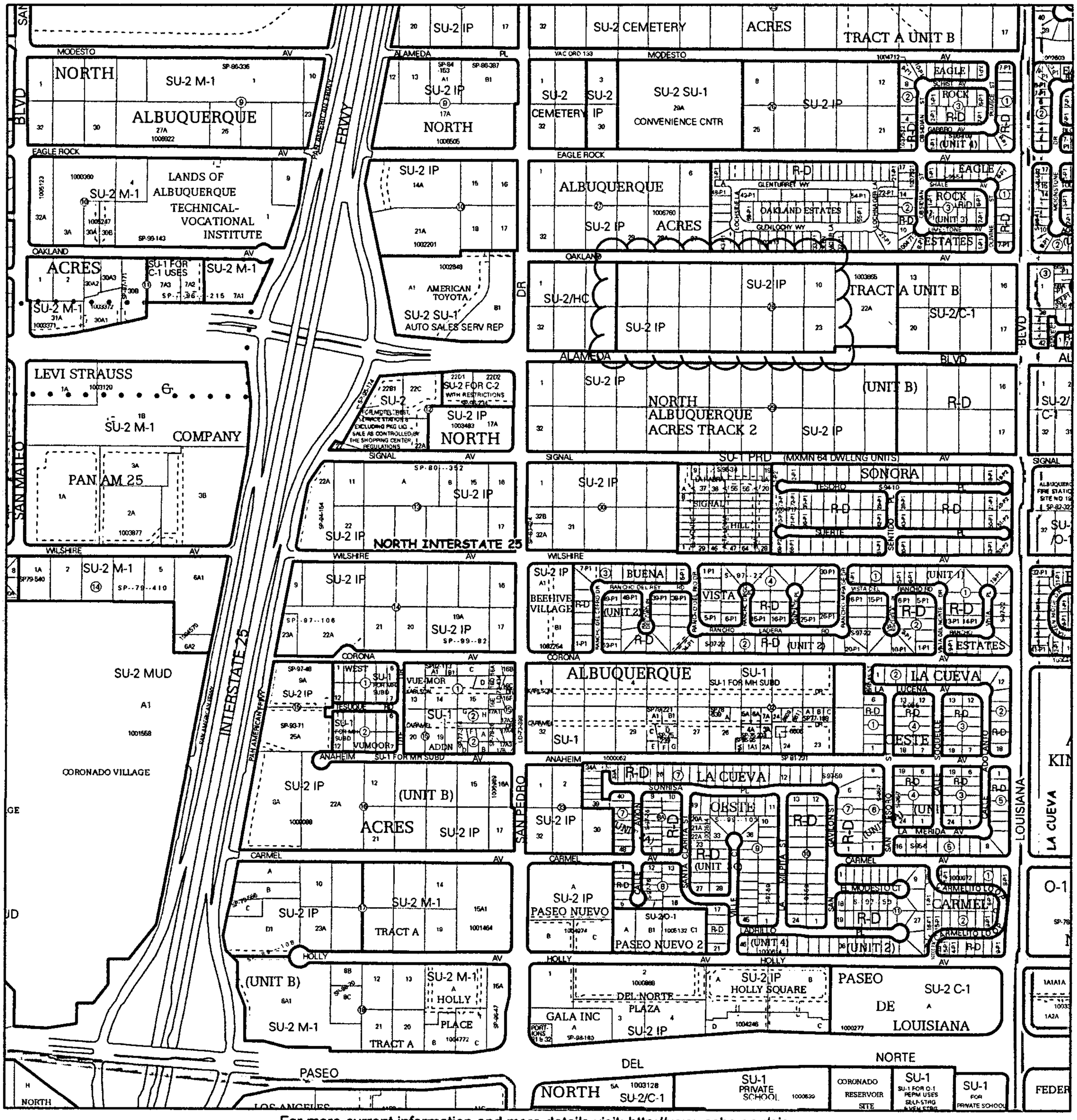
EXISTING CONDITIONS

The site currently does have structures on it and has been impacted by human development over the years. The site was most recently an auto salvage and parts yard. The site is not impacted by any upland flows. The site currently discharges all of its flow to the North West

corner of the site. The site is located within basins 117.2 and 117.3 of the NAAMDP. The NAAMDP design analysis has been modified by the Eagle Rock drainage plan. The diversion of the upper 57% of basin 117.2 was designed with the construction of Oakland estates. The upland properties have been designed to drain to the storm drain provided within Oakland. The recently constructed San Pedro Storm drain was designed to convey the developed flow from this site.

PROPOSED CONDITIONS

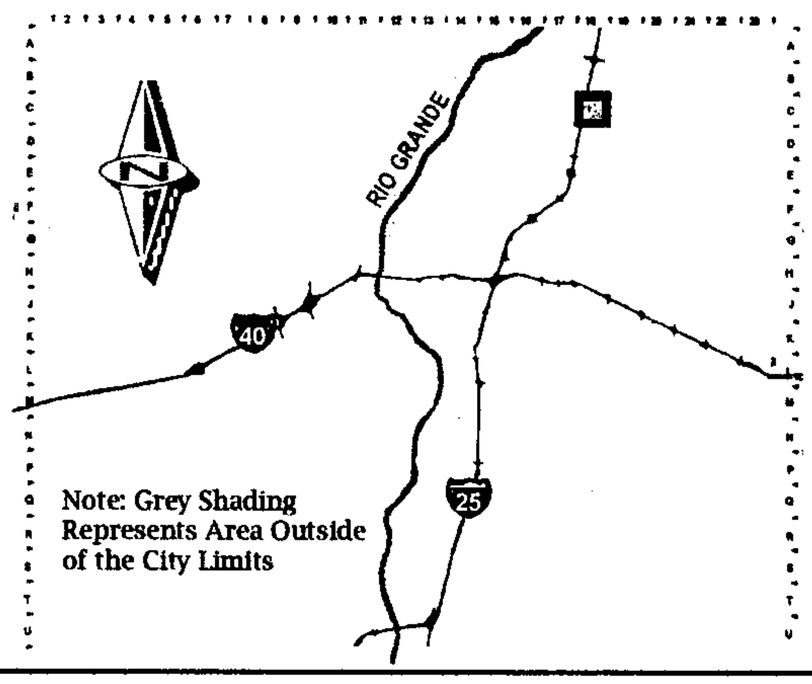
The proposed improvements consist of a new 68-lot subdivision serviced by a private paved roadway. The lots shall free discharge to the roadway and be conveyed to the west within the roadway. All the flow leaving the site will be conveyed via buried storm drains. The proposed land treatment will conform to the residential density assumptions of the NAADMP. As shown in appendix B, the site will contain 3 onsite basins, three adjacent offsite roadway basins and one upland basin. Basin A is the southern half of the subdivision which corresponds to NAAMDP basin 117.3. This basin will generate 21.73 cfs. This flow will be conveyed within the Aerie Roadway and captured by one double grated A inlet and two single grated inlets located at the western end of the street. Basin B contains the northwest portion of the site corresponding to basin 117.2. This basin will generate14.36 cfs which will be conveyed within the Soaring Roadway and captured by an one double grated A inlet and two single grated inlets located at the north west end of the street. Basin C contains the remaining northeast portion of the site which corresponds to the diverted portion of basin 117.2. This basin generates 9.05 cfs. This flow is conveyed within the eastern portion of Soaring, and captured by two single A inlets located east of High Cliff. Basin Oak 1 contains the southern half of Oakland below the Eagle rock diversion, this basin generates 1.91 cfs, this flow is captured by a single A inlet located at the western end of the project. Basin Oak 2 contains the southern half of Oakland east of the Eagle rock diversion, and generates 1.89 cfs, this flow is captured by a single A inlet



For more current information and more details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System

Map amended through: 2/4/2010



Zone Atlas Page:

C-18-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 750 1,500 Feet

located east of High Cliff. The upland flow that we need to accommodate is Upoak 3. This basin contains the future development of basin 117.2. This basin will have 23.68 cfs generated. The flow from this inlet will be captured upstream and enter our limits within an existing storm drain. The alameda expansion is ALA1. This basin will generate 6.65 cfs, this discharge will be captured by the existing inlets located with Alameda, that have been designed for fully developed condition.

The development of this site will conform to the design parameters of the NAAMDP. The conveyance to the San Pedro Storm drain will be modified due to the moratorium for work in Alameda. As shown in the San Pedro storm drain the flows from Basins 117.2 are conveyed within San Pedro with the same drainage system. We will convey basin A to the north where is combines with basin B and oak 1, generating a total of 38 cfs which will be conveyed within a new 24" storm drain within Oakland, connecting to the San Pedro Stub at Oakland. This diversion has no impact on the storm drain function. The remaining portion of downstream basin 117.2 will generate 36.09 cfs, this will be captured by inlets at the time of development. Therefore the total flow entering the storm drain at San Pedro and Oakland will be 74.09, which is less than proposed within the NAAMDP. The model of this reach of storm drain is labeled lower Oakland in appendix C.

The flows from onsite C, oak 2 and up oak 3 will be conveyed by the connection of the existing 30" storm drain east of this site with the diversion stub provided just west of High cliff. This diversion is in accordance with the Eagle rock diversion. The model of this reach is labeled upper Oakland in appendix C. The Alameda storm drain has not been modeled since no new pipe is proposed and the fully developed condition was anticipated. No work will be done in Alameda at this time due the moratorium, at the time permission is granted adjustment of any affected inlets will be done with work order.

SUMMARY AND RECOMMENDATIONS

This project is a development of residential subdivision with the North Albuquerque Acres Master Drainage plan. The development is consistent with the land use assumptions of the plan. The surrounding development altered the upland and onsite basin by the creation of a diversion from Oakland to Eagle rock. Our plan conforms to this diversion. Our discharge point will enter the downstream storm drain farther down stream than initially planned, but the capacity and conveyance of the overall system will remain unchanged. The site has been designed in accordance with City of Albuquerque Drainage ordinance which each site will retain the first .41" of rain. This drainage plan and report conforms to the governing drainage regulations of the City. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity. A letter of Map revision (LOMR-F) will be required to be submitted.

APPENDIX A

North Albuquerque Acres Master Drainage Plan

and

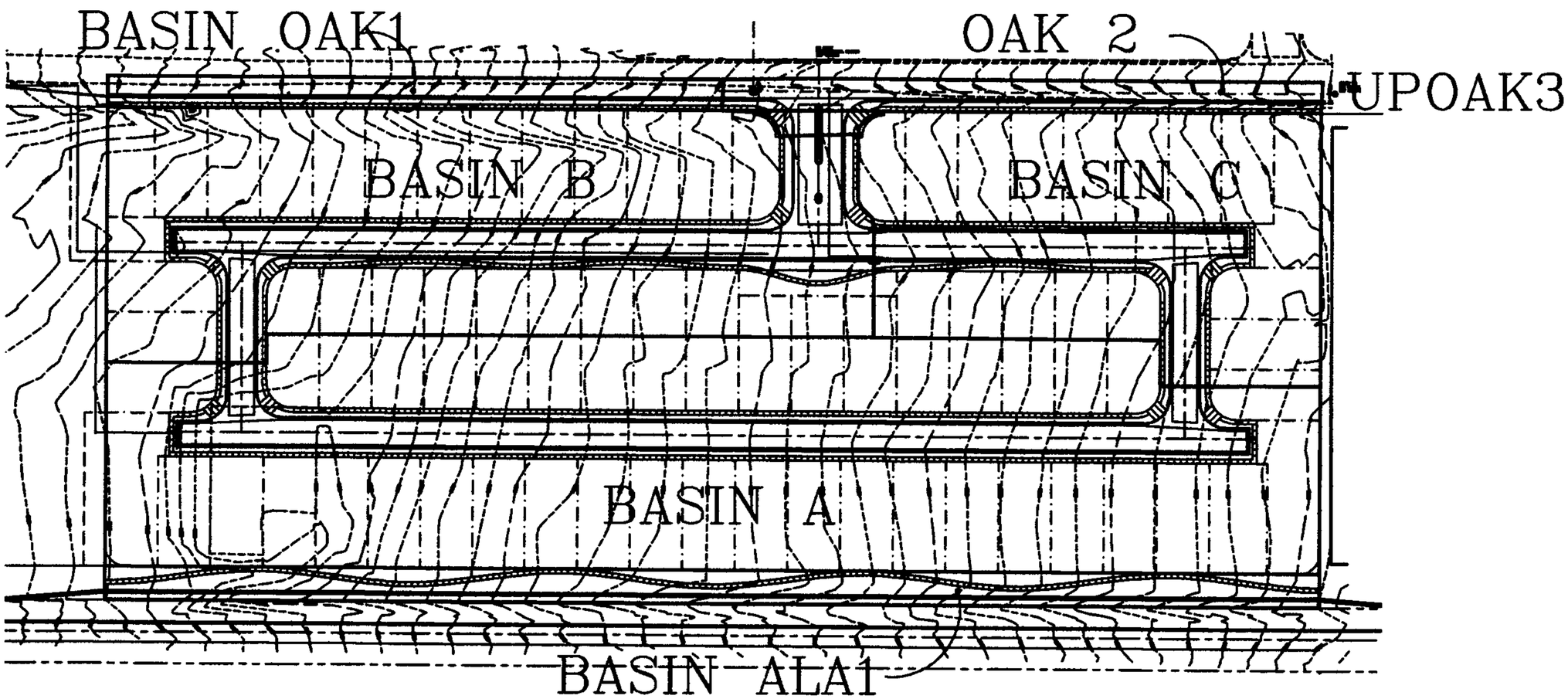
excerpts of Oakland diversion map

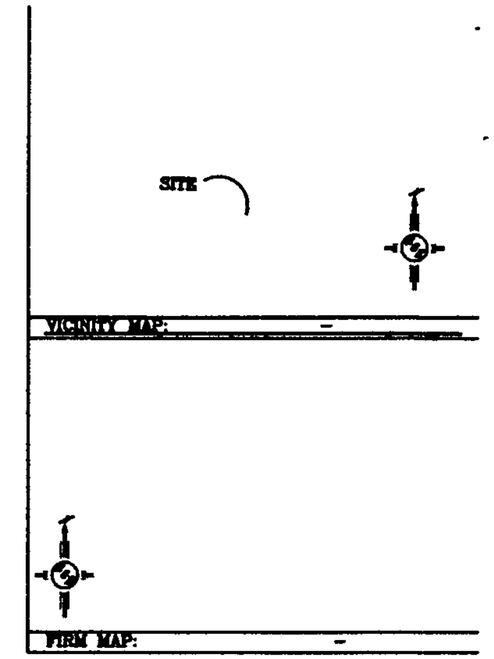
and

San Pedro Storm drain design excerpts

APPENDIX B

SITE HYDROLOGY





LEGAL DESCRIPTION:
-

NOTES:
1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB
- PROPOSED SIDEWALK

DRAINAGE BASIN PLAN

Cinelli Architects
Roger Cinelli & Assoc.
2418 Manuel Torres Lane N.W.
Albuquerque, New Mexico 87107
(505) 243-8211

Rio Grande Engineering

PROJECT TITLE:
ALAMEDA SUBDIVISION

DRAWING TITLE: DRAINAGE BASIN PLAN

SEAL

DATE: 080813
PROJECT NO: 21331
DRAWING NO: C3.0

Weighted E Method

EAGLE CREST

Existing Developed Basins

											100-Year, 6-hr.		
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
BASIN A	239887	5.507	0%	0	34.0%	1.872	16.0%	0.88113	50%	2.754	1.699	0.780	21.73
BASIN B	158566	3.640	0%	0	34.0%	1.238	16.0%	0.58243	50%	1.820	1.699	0.515	14.36
BASIN C	99922	2.294	0%	0	34.0%	0.780	16.0%	0.36702	50%	1.147	1.699	0.325	9.05
BASIN OAK 1	17278	0.397	0%	0	5.0%	0.020	5.0%	0.01983	90%	0.357	2.235	0.074	1.91
BASIN OAK 2	17096	0.392	0%	0	5.0%	0.020	5.0%	0.01962	90%	0.353	2.235	0.073	1.89
BASIN UPOAK 3	261360	6.000	0%	0	34.0%	2.040	16.0%	0.96	50%	3.000	1.699	0.850	23.68
REMAINING BASIN	402040	9.230	0%	0	34.0%	3.138	16.0%	1.47673	50%	4.615	1.699	1.307	36.42
BASIN ALA1	36971	0.849	0%	0	34.0%	0.289	36.0%	0.30555	30%	0.255	1.288	0.091	8.56

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66	Qa= 1.87
Eb= 0.92	Qb= 2.6
Ec= 1.29	Qc= 3.45
Ed= 2.36	Qd= 5.02

FLOW SUMMARY

TOTAL FLOW AT D- EXISTING INLET AT NWCORNER	23.68	CFS
TOTAL FLWO AT C- DIVERSION PER EAGLE ROCK PLAN	34.62	CFS
TOTAL FLOW AT E- LEAVING SITE BELOW DIVERSION	36.09	CFS
TOTAL FLOW AT A- INTERSECTION OF SAN PEDRO AND OAKLAND	74.43	CFS
TOTAL ALLOWABLE FLOW AT A PER NAA	160	CFS

APPENDIX C

HYDRAULIC CALCULATIONS

Street Capacity Calculations

AERIE IN BASIN A

28' F-F Street Section with 4" curb

Slope= 0.03

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.43	0.00	0.76	0.00691
0.02	0.0064	0.66	0.01	0.00	0.01	0.69	0.01	0.86	0.01624
0.025	0.01	0.83	0.01	0.01	0.02	0.80	0.02	0.89	0.02136
0.035	0.0196	1.16	0.02	0.02	0.04	1.00	0.03	0.94	0.03228
0.045	0.0324	1.49	0.02	0.04	0.08	1.18	0.05	0.98	0.04391
0.052	0.043264	1.72	0.03	0.06	0.11	1.30	0.07	1.01	0.0524
0.06	0.0576	1.98	0.03	0.08	0.16	1.43	0.09	1.03	0.0624
0.0625	0.0625	2.06	0.03	0.09	0.18	1.47	0.09	1.04	0.06559

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.09	0.19	1.47	0.09	1.04	0.06598
0.1	0.172656	3.98	0.04	0.32	0.65	1.87	0.19	1.04	0.10566
0.13	0.311406	5.51	0.06	0.69	1.39	2.23	0.29	1.09	0.14572
0.16	0.495156	7.04	0.07	1.28	2.56	2.58	0.41	1.14	0.1894
0.2	0.810156	9.08	0.09	2.45	4.90	3.02	0.60	1.19	0.25153
0.207	0.873506	9.43	0.09	2.71	5.41	3.10	0.64	1.20	0.26277
0.2612	1.446942	12.20	0.12	5.29	10.58	3.65	0.95	1.26	0.35291
0.3025	1.9825	14.31	0.14	8.04	16.08	4.05	1.23	1.30	0.42471

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	8.09	16.17	4.06	1.23	1.30	0.42622
0.3039	2.0021	14.31	0.14	8.17	16.34	4.08	1.24	1.30	0.42894
0.3062	2.0343	14.31	0.14	8.39	16.78	4.12	1.26	1.31	0.43588
0.31	2.0875	14.31	0.15	8.76	17.51	4.19	1.30	1.33	0.44737
0.3125	2.1225	14.32	0.15	9.00	18.00	4.24	1.33	1.34	0.45494
0.32	2.2275	14.32	0.16	9.75	19.51	4.38	1.40	1.36	0.47767
0.3317	**2.3913**	**14.34**	**0.17**	**10.97**	**21.94**	**4.59**	**1.52**	**1.40**	**0.51325**
0.333	2.4095	14.34	0.17	11.11	22.22	4.61	1.54	1.41	0.51721

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	11.27	22.55	4.63	1.55	1.41	0.52038

Street Capacity Calculations

SOARING IN BASIN b

28' F-F Street Section with 4" curb

Slope= 0.03

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.43	0.00	0.76	0.00691
0.02	0.0064	0.66	0.01	0.00	0.01	0.69	0.01	0.86	0.01624
0.025	0.01	0.83	0.01	0.01	0.02	0.80	0.02	0.89	0.02136
0.035	0.0196	1.16	0.02	0.02	0.04	1.00	0.03	0.94	0.03228
0.045	0.0324	1.49	0.02	0.04	0.08	1.18	0.05	0.98	0.04391
0.052	0.043264	1.72	0.03	0.06	0.11	1.30	0.07	1.01	0.0524
0.06	0.0576	1.98	0.03	0.08	0.16	1.43	0.09	1.03	0.0624
0.0625	0.0625	2.06	0.03	0.09	0.18	1.47	0.09	1.04	0.06559

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.09	0.19	1.47	0.09	1.04	0.06598
0.1	0.172656	3.98	0.04	0.32	0.65	1.87	0.19	1.04	0.10566
0.13	0.311406	5.51	0.06	0.69	1.39	2.23	0.29	1.09	0.14572
0.16	0.495156	7.04	0.07	1.28	2.56	2.58	0.41	1.14	0.1894
0.2	0.810156	9.08	0.09	2.45	4.90	3.02	0.60	1.19	0.25153
0.207	0.873506	9.43	0.09	2.71	5.41	3.10	0.64	1.20	0.26277
0.2612	1.446942	12.20	0.12	5.29	10.58	3.65	0.95	1.26	0.35291
0.3025	**1.9825**	**14.31**	**0.14**	**8.04**	**16.08**	**4.05**	**1.23**	**1.30**	**0.42471**

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	8.09	16.17	4.06	1.23	1.30	0.42622
0.3039	2.0021	14.31	0.14	8.17	16.34	4.08	1.24	1.30	0.42894
0.3062	2.0343	14.31	0.14	8.39	16.78	4.12	1.26	1.31	0.43588
0.31	2.0875	14.31	0.15	8.76	17.51	4.19	1.30	1.33	0.44737
0.3125	2.1225	14.32	0.15	9.00	18.00	4.24	1.33	1.34	0.45494
0.32	2.2275	14.32	0.16	9.75	19.51	4.38	1.40	1.36	0.47767
0.3317	2.3913	14.34	0.17	10.97	21.94	4.59	1.52	1.40	0.51325
0.333	2.4095	14.34	0.17	11.11	22.22	4.61	1.54	1.41	0.51721

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	11.27	22.55	4.63	1.55	1.41	0.52038

Street Capacity Calculations

SOARING IN BASIN C

28' F-F Street Section with 4" curb

Slope= 0.03

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.43	0.00	0.76	0.00691
0.02	0.0064	0.66	0.01	0.00	0.01	0.69	0.01	0.86	0.01624
0.025	0.01	0.83	0.01	0.01	0.02	0.80	0.02	0.89	0.02136
0.035	0.0196	1.16	0.02	0.02	0.04	1.00	0.03	0.94	0.03228
0.045	0.0324	1.49	0.02	0.04	0.08	1.18	0.05	0.98	0.04391
0.052	0.043264	1.72	0.03	0.06	0.11	1.30	0.07	1.01	0.0524
0.06	0.0576	1.98	0.03	0.08	0.16	1.43	0.09	1.03	0.0624
0.0625	0.0625	2.06	0.03	0.09	0.18	1.47	0.09	1.04	0.06559

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.09	0.19	1.47	0.09	1.04	0.06598
0.1	0.172656	3.98	0.04	0.32	0.65	1.87	0.19	1.04	0.10566
0.13	0.311406	5.51	0.06	0.69	1.39	2.23	0.29	1.09	0.14572
0.16	0.495156	7.04	0.07	1.28	2.56	2.58	0.41	1.14	0.1894
0.2	0.810156	9.08	0.09	2.45	4.90	3.02	0.60	1.19	0.25153
0.207	0.873506	9.43	0.09	2.71	5.41	3.10	0.64	1.20	0.26277
0.2612	**1.446942**	**12.20**	**0.12**	**5.29**	**10.58**	**3.65**	**0.95**	**1.26**	**0.35291**
0.3025	1.9825	14.31	0.14	8.04	16.08	4.05	1.23	1.30	0.42471

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

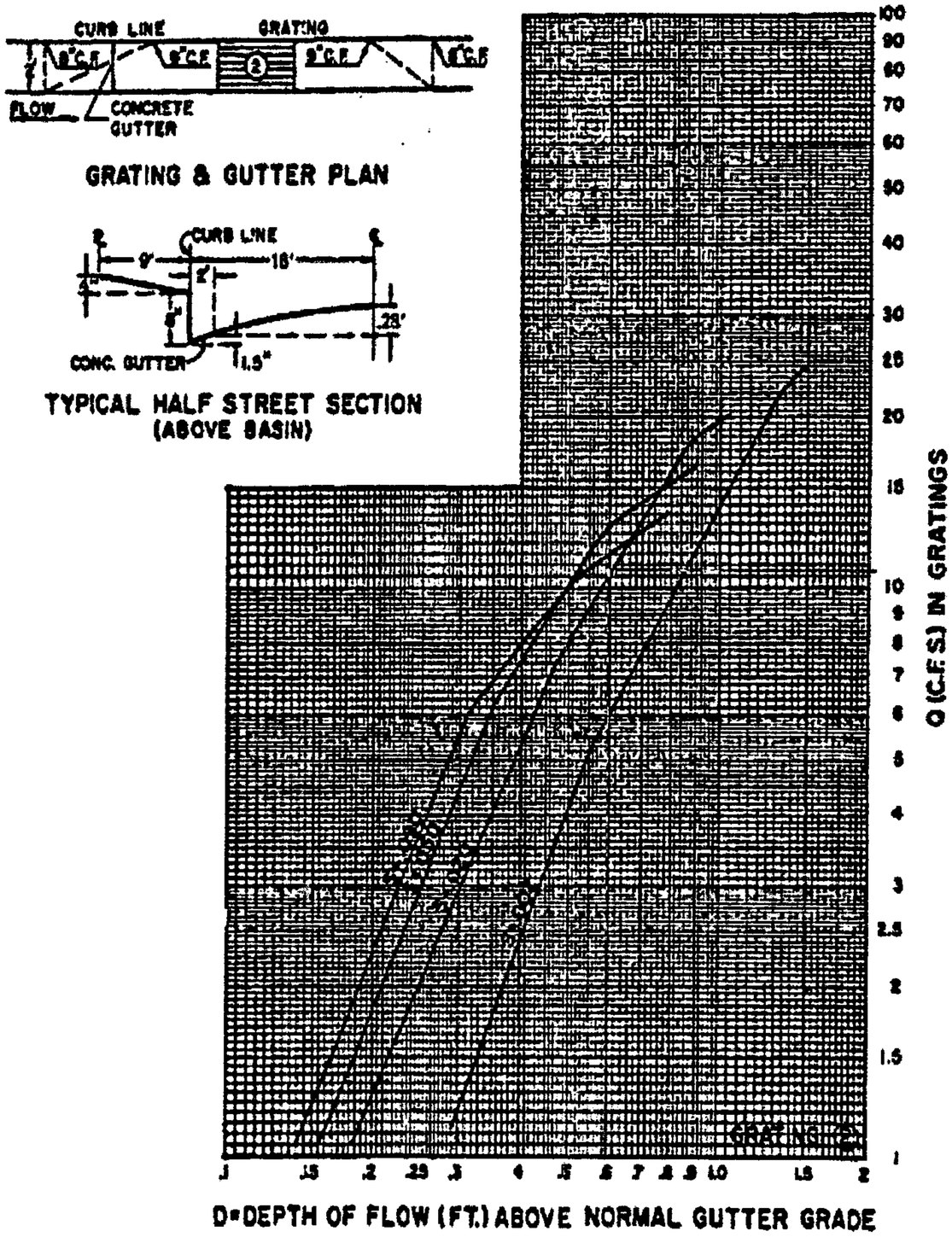
Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	8.09	16.17	4.06	1.23	1.30	0.42622
0.3039	2.0021	14.31	0.14	8.17	16.34	4.08	1.24	1.30	0.42894
0.3062	2.0343	14.31	0.14	8.39	16.78	4.12	1.26	1.31	0.43588
0.31	2.0875	14.31	0.15	8.76	17.51	4.19	1.30	1.33	0.44737
0.3125	2.1225	14.32	0.15	9.00	18.00	4.24	1.33	1.34	0.45494
0.32	2.2275	14.32	0.16	9.75	19.51	4.38	1.40	1.36	0.47767
0.3317	2.3913	14.34	0.17	10.97	21.94	4.59	1.52	1.40	0.51325
0.333	2.4095	14.34	0.17	11.11	22.22	4.61	1.54	1.41	0.51721

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	11.27	22.55	4.63	1.55	1.41	0.52038

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



10 CFS PER GRATE

DROP INLET CALCULATIONS

POND	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
	Single 'A'	5.92	14.36	0.2538	0.67
	Double 'A'	11.84	21.73	0.1453	0.67

ORIFICE EQUATION

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

DUE TO SUMP CONDITION THE FLOW RATE FOR EACH HALF OF STREET DOUBLED TO ALLOW FOR CLOGGING.

OAKLAND

40' F-F Street Section with 8" curb

Slope= 0.03

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.42	0.00	0.75	0.0067048
0.02	0.00	0.34	0.01	0.00	0.00	0.67	0.01	0.84	0.0157771
0.04	0.01	0.68	0.02	0.01	0.03	1.07	0.04	0.94	0.0369621
0.06	0.03	1.02	0.03	0.04	0.08	1.40	0.08	1.01	0.0607017
0.08	0.05	1.36	0.04	0.09	0.17	1.70	0.14	1.06	0.0862391
0.1	0.08	1.70	0.05	0.16	0.32	1.97	0.20	1.10	0.1131876
0.12	0.12	2.04	0.06	0.26	0.51	2.23	0.27	1.13	0.1413075
0.125	0.13	2.13	0.06	0.29	0.57	2.29	0.29	1.14	0.1485001

For water depths greater than 0.125 ft but less than 0.565 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.30	0.61	2.24	0.29	1.09	0.1464784
0.18	0.31	4.93	0.06	0.74	1.49	2.40	0.43	1.00	0.1788415
0.25	0.77	8.51	0.09	2.33	4.66	3.04	0.76	1.07	0.2740298
0.3	1.24	11.06	0.11	4.37	8.74	3.52	1.06	1.13	0.3536741
0.3841	2.32	15.35	0.15	9.98	19.96	4.30	1.65	1.22	0.4991131
0.401	2.58	16.21	0.16	11.48	22.97	4.45	1.78	1.24	0.5296376
0.4136	2.78	16.85	0.17	12.69	25.39	4.56	1.89	1.25	0.5526353
0.5604	5.74	24.34	0.24	33.13	66.25	5.78	3.24	1.36	0.8332496
0.565	5.85	24.57	0.24	33.97	67.95	5.81	3.28	1.36	0.8423705

For water depths greater than 0.565 ft but less than 0.667 ft

Y2= Y - 0.565
A3= A2 + Y2*22
P3= P2 + Y2

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.57	5.96	24.58	0.24	35.04	70.08	5.88	3.35	1.37	0.8582481
0.5758	6.08	24.58	0.25	36.29	72.59	5.97	3.44	1.39	0.8766826
0.5935	6.47	24.60	0.26	40.23	80.46	6.22	3.69	1.42	0.9330527
0.6	6.62	24.61	0.27	41.72	83.43	6.31	3.78	1.43	0.9537976
0.61	6.84	24.62	0.28	44.04	88.08	6.44	3.93	1.45	0.9857602
0.6188	7.03	24.63	0.29	46.13	92.26	6.56	4.06	1.47	1.0139355
0.6484	7.68	24.66	0.31	53.43	106.85	6.96	4.51	1.52	1.1090458
0.667	8.09	24.68	0.33	58.23	116.45	7.20	4.80	1.55	1.1690827

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667
A4= A3 + 22 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	8.84	26.33	0.34	64.69	129.37	7.32	5.12	1.54	1.2150545
0.73	9.57	27.83	0.34	71.18	142.35	7.43	5.43	1.53	1.2595375
0.75	10.09	28.83	0.35	75.84	151.68	7.52	5.64	1.53	1.2904677
0.77	10.62	29.83	0.36	80.78	161.55	7.61	5.86	1.53	1.3223319
0.79	11.17	30.83	0.36	86.00	171.99	7.70	6.08	1.53	1.3550653
0.82	12.04	32.33	0.37	94.37	188.73	7.84	6.43	1.53	1.4056703
0.847	12.86	33.68	0.38	102.47	204.93	7.97	6.75	1.53	1.4526346

City of Albuquerque

Urbal NO

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: EAGLE CREST SUBDIVISION Building Permit #: _____ City Drainage #: C18-d064B

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES

City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____

Address: 6501 EAGLE ROCK

Phone#: _____ Fax#: _____ E-mail: _____

Architect: ROGER CINELLI Contact: _____

Address: 2418 Manuel Torres Lane N.W. ALB 87117

Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES Contact: JOHN GALLEGOS

Address: _____

Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

- x DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL
- x DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL G & D PLAN
- X GRADING PLAN
- ___ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ___ ENGINEER'S CERT (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEER'S CERT (TCL)
- ___ ENGINEER'S CERT (DRB SITE PLAN)
- ___ ENGINEER'S CERT (ESC)
- ___ SO-19
- ___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ___ SIA/FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- X S. DEV. PLAN FOR SUB'D APPROVAL
- ___ S. DEV. FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM)
- ___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- x GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ GRADING CERTIFICATION
- ___ SO-19 APPROVAL
- ___ ESC PERMIT APPROVAL
- ___ ESC CERT. ACCEPTANCE
- ___ OTHER (SPECIFY)

RECEIVED JAN 17 2014 LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided

DATE SUBMITTED: 01/17/14 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

DRAINAGE REPORT

For

EAGLE CREST ESTATE

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

DAVID SOULE
NEW MEXICO
14522
REGISTERED PROFESSIONAL ENGINEER

12/21/13

December 2013

RECEIVED
DEC 2 3 2013
LAND DEVELOPMENT SECTION

David Soule P.E. No. 14522

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Introduction 3
Existing Conditions 3
Exhibit A-Vicinity Map 4
Proposed Conditions 5
Summary 5

Appendix

NAAMDP, San Pedro Storm drain and Eagle rock Diversion map ..... A
Site Hydrology ..... A
Hydraulic calculations ..... A

Map

Site Grading and Drainage Plan

PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the development of a 68-lot subdivision located on Oakland Avenue between San Pedro and Louisiana NE. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines, and HYDROCAD. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 12.41-acre parcel of land located on the south side of Oakland Avenue and the north side of Alameda Boulevard between San Pedro and Louisiana. The legal description of this site is Lots 4-10 and 23-29, block 28, tract A, unit B, North Albuquerque Acres. As shown on FIRM map35013C0137H, the majority of the site is located within Flood Zone X; a portion of the site is impacted by flood zone AE-1 foot. The site has had significant grading activities upon it over the past 10 years. The site is not in native condition. Due to the upstream construction, the site is not affected by any upland flow. The site free discharges to the west. The development of the site will require the site to discharge at a rate equal to or less than the fully developed conditions assumed for this site in the governing North Albuquerque Acres Master Drainage Plan (NAAMDP), which relevant excerpts can be found in appendix A.

EXISTING CONDITIONS

The site currently does have structures on it and has been impacted by human development over the years. The site was most recently an auto salvage and parts yard. The site is not impacted by any upland flows. The site currently discharges all of its flow to the North West

corner of the site. The site is located within basins 117.2 and 117.3 of the NAAMDP. The NAAMDP design analysis has been modified by the Eagle Rock drainage plan. The diversion of the upper 57% of basin 117.2 was designed with the construction of Oakland estates. The upland properties have been designed to drain to the storm drain provided within Oakland. The recently constructed San Pedro Storm drain was designed to convey the developed flow from this site.

PROPOSED CONDITIONS

The proposed improvements consist of a new 68-lot subdivision serviced by a private paved roadway. The lots shall free discharge to the roadway and be conveyed to the west within the roadway. All the flow leaving the site will be conveyed via buried storm drains. The proposed land treatment will conform to the residential density assumptions of the NAADMP. As shown in appendix B, the site will contain 3 onsite basins, three adjacent offsite roadway basins and one upland basin. Basin A is the southern half of the subdivision which corresponds to NAAMDP basin 117.3. This basin will generate 21.73 cfs. This flow will be conveyed within the Aerie Roadway and captured by two single A inlets located at the western end of the street. Basin B contains the northwest portion of the site corresponding to basin 117.2. This basin will generate14.36 cfs which will be conveyed within the Soaring Roadway and captured by an single A inlet located at the north west end of the street. Basin C contains the remaining northeast portion of the site which corresponds to the diverted portion of basin 117.2. This basin generates 9.05 cfs. This flow is conveyed within the eastern portion of Soaring, and captured by two single A inlets located east of High Cliff. Basin Oak 1 contains the southern half of Oakland below the Eagle rock diversion, this basin generates 1.91 cfs, this flow is captured by a single A inlet located at the western end of the project. Basin Oak 2 contains the southern half of Oakland east of the Eagle rock diversion, and generates 1.89 cfs, this flow is captured by a single A inlet

NORTH
CONVENIENCE CNTR
SU-2 IP
ALBUQUERQUE
SU-2 IP
ACRES
R-D
OAKLAND ESTATES
AMERICAN TOYOTA
SU 2 SU-1
AUTO SALES SERV REP
SU-2 HC
SITE
SU-2 IP
TRACT A UNIT
SU-2 IP
NORTH
ALBUQUERQUE
ACRES TRACK 2
(UNIT B)
SU-2 IP
SU 2 IP
NORTH
SU-2 IP
SU-2 IP
SU-2 IP
SONORA
R-D
NORTH INTERSTATE 25
SU-2 IP
SU-2 IP
BUENA
VISTA
R-D
R-D
VICINITY MAP:
C-18-Z
DRAIN SYSTEM
South La Cueva Arroyo
OAKLAND
SITE
City of Albuquerque
350002
ALAMEDA BLVD NE

located east of High Cliff. The upland flow that we need to accommodate is Upoak 3. This basin contains the future development of basin 117.2. This basin will have 23.68 cfs generated. The flow from this inlet will be captured upstream and enter our limits within an existing storm drain. The alameda expansion is ALA1. This basin will generate 6.65 cfs, this discharge will be captured by the existing inlets located with Alameda, that have been designed for fully developed condition.

The development of this site will conform to the design parameters of the NAAMDP. The conveyance to the San Pedro Storm drain will be modified due to the moratorium for work in Alameda. As shown in the San Pedro storm drain the flows from Basins 117.2 are conveyed within San Pedro with the same drainage system. We will convey basin A to the north where ~~is~~ it combines with basin B and oak 1, generating a total of 38 cfs which will be conveyed within a new 24" storm drain within Oakland, connecting to the San Pedro Stub at Oakland. This diversion has no impact on the storm drain function. The remaining portion of downstream basin 117.2 will generate 36.09 cfs, this will be captured by inlets at the time of development. Therefore the total flow entering the storm drain at San Pedro and Oakland will be 74.09, which is less than proposed within the NAAMDP. The model of this reach of storm drain is labeled lower Oakland in appendix C.

The flows from onsite C, oak 2 and up oak 3 will be conveyed by the connection of the existing 30" storm drain east of this site with the diversion stub provided just west of High cliff. This diversion is in accordance with the Eagle rock diversion. The model of this reach is labeled upper Oakland in appendix C. The Alameda storm drain has not been modeled since no new pipe is proposed and the fully developed condition was anticipated. No work will be done in Alameda at this time due the moratorium, at the time permission is granted adjustment of any affected inlets will be done with work order.

SUMMARY AND RECOMMENDATIONS

This project is a development of residential subdivision with the North Albuquerque Acres Master Drainage plan. The development is consistent with the land use assumptions of the plan. The surrounding development altered the upland and onsite basin by the creation of a diversion from Oakland to Eagle rock. Our plan conforms to this diversion. Our discharge point will enter the downstream storm drain farther down stream than initially planned, but the capacity and conveyance of the overall system will remain unchanged. The site has been designed in accordance with City of Albuquerque Drainage ordinance which each site will retain the first .41" of rain. This drainage plan and report conforms to the governing drainage regulations of the City. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity. A letter of Map revision (LOMR-F) will be required to be submitted.

APPENDIX A

North Albuquerque Acres Master Drainage Plan

and

excerpts of Oakland diversion map

and

San Pedro Storm drain design excerpts

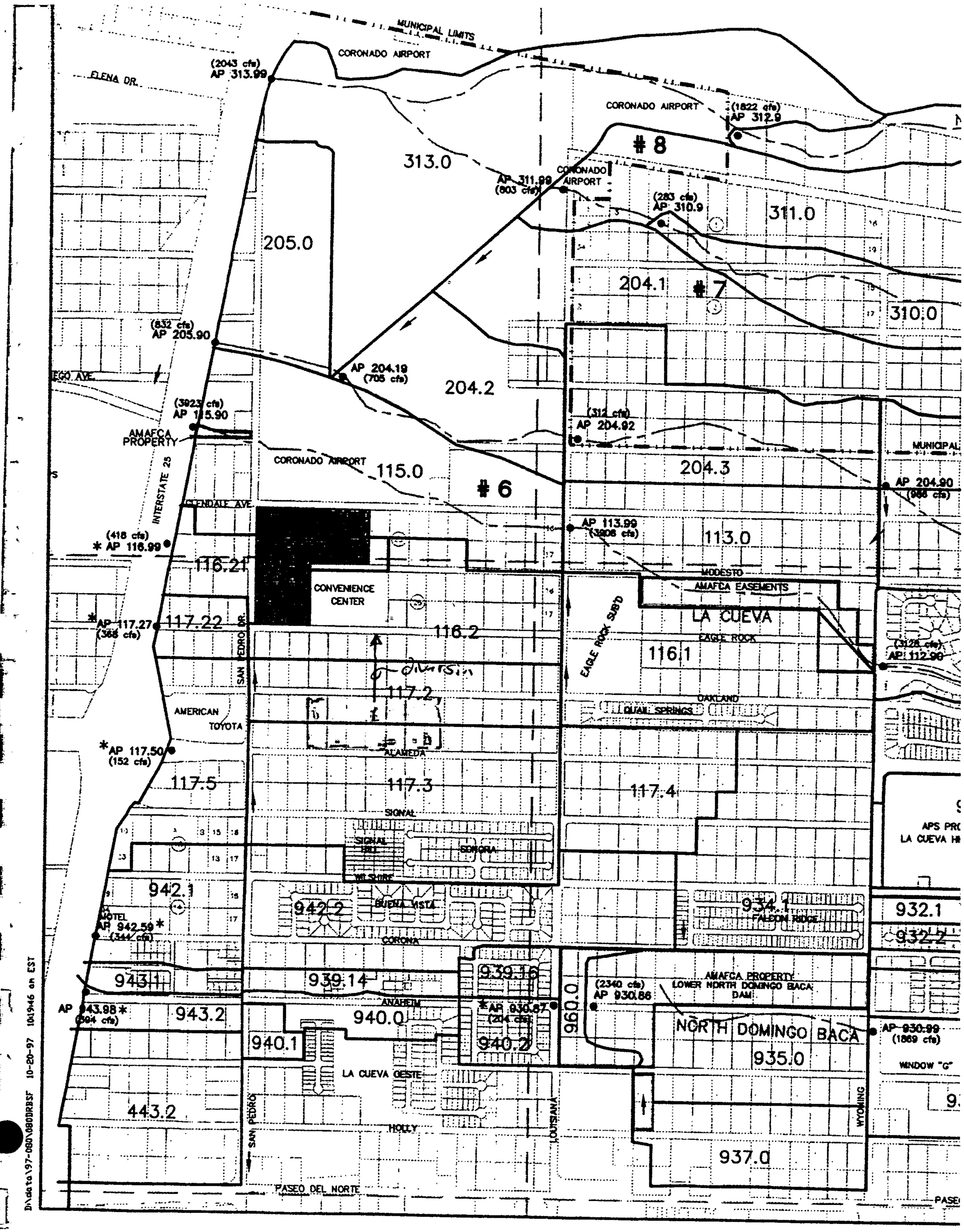
FINAL
NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN

Prepared For:

City of Albuquerque

Prepared By:

Resource Technology, Inc.
ENGINEERS AND ENVIRONMENTAL SCIENTISTS
[illegible] Road SE, Albuquerque, NM 87106
Telephone (505) 243-7300
Fax 505 243-7400


MUNICIPAL LIMITS
CORONADO AIRPORT
ELENA DR.
(2043 cfs)
AP 313.99
313.0
CORONADO AIRPORT
(1822 cfs)
AP 312.9
8
AP 311.99
(803 cfs)
CORONADO AIRPORT
(283 cfs)
AP 310.9
311.0
205.0
204.1
7
310.0
(832 cfs)
AP 205.90
AP 204.19
(705 cfs)
204.2
(3923 cfs)
AP 115.90
AMAFCA PROPERTY
(312 cfs)
AP 204.92
CORONADO AIRPORT
115.0
6
204.3
AP 204.90
(966 cfs)
INTERSTATE 25
GLENDALE AVE.
(418 cfs)
AP 116.99
116.21
AP 113.99
(3906 cfs)
113.0
CONVENIENCE CENTER
MODESTO
AMAFCA EASEMENTS
LA CUEVA
EAGLE ROCK SUB'D
EAGLE ROCK
AP 117.27
(368 cfs)
117.22
116.2
116.1
(3128 cfs)
AP 112.90
SAN PEDRO DR.
117.2
OAKLAND
QUAIL SPRINGS
AMERICAN TOYOTA
ALAMEDA
AP 117.50
(152 cfs)
117.5
117.3
117.4
SIGNAL
SONORA
WILSHIRE
942.1
942.2
BUENA VISTA
934.1
FALCON RIDGE
932.1
932.2
MOTEL
AP 942.59
(344 cfs)
CORONA
943.1
939.14
939.16
(2340 cfs)
AP 930.86
AMAFCA PROPERTY
LOWER NORTH DOMINGO BACA DAM
AP 943.98
(594 cfs)
943.2
ANAHEIM
940.0
AP 930.87
(204 cfs)
960.0
NORTH DOMINGO BACA
AP 930.99
(1869 cfs)
940.1
940.2
935.0
WINDOW "G"
LA CUEVA OESTE
443.2
SAN PEDRO
HOLLY
LOUISIANA
WYOMING
937.0
PASEO DEL NORTE
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- Commercial/Industrial (C/I): The area west of Louisiana Boulevard, north of Modesto Avenue and east of I-25 would develop as high density commercial and industrial. Also used for Paseo del Norte Corridor.
- Medium Density Industrial (MI): Campus type commercial/office facilities and APS schools sites.
- Sandia Tribal Lands (ST): Sandia tribal lands south of Tramway Road and north of the Sandia Pueblo Grant Boundary were allocated land treatments consistent with moderate levels of development even though there are no current plans to develop this area.

The relative weight of each type of Land Treatment is shown in Table 2.

TABLE 2

FUTURE FULL DEVELOPMENT HYDROLOGIC CONDITION ASSUMPTIONS

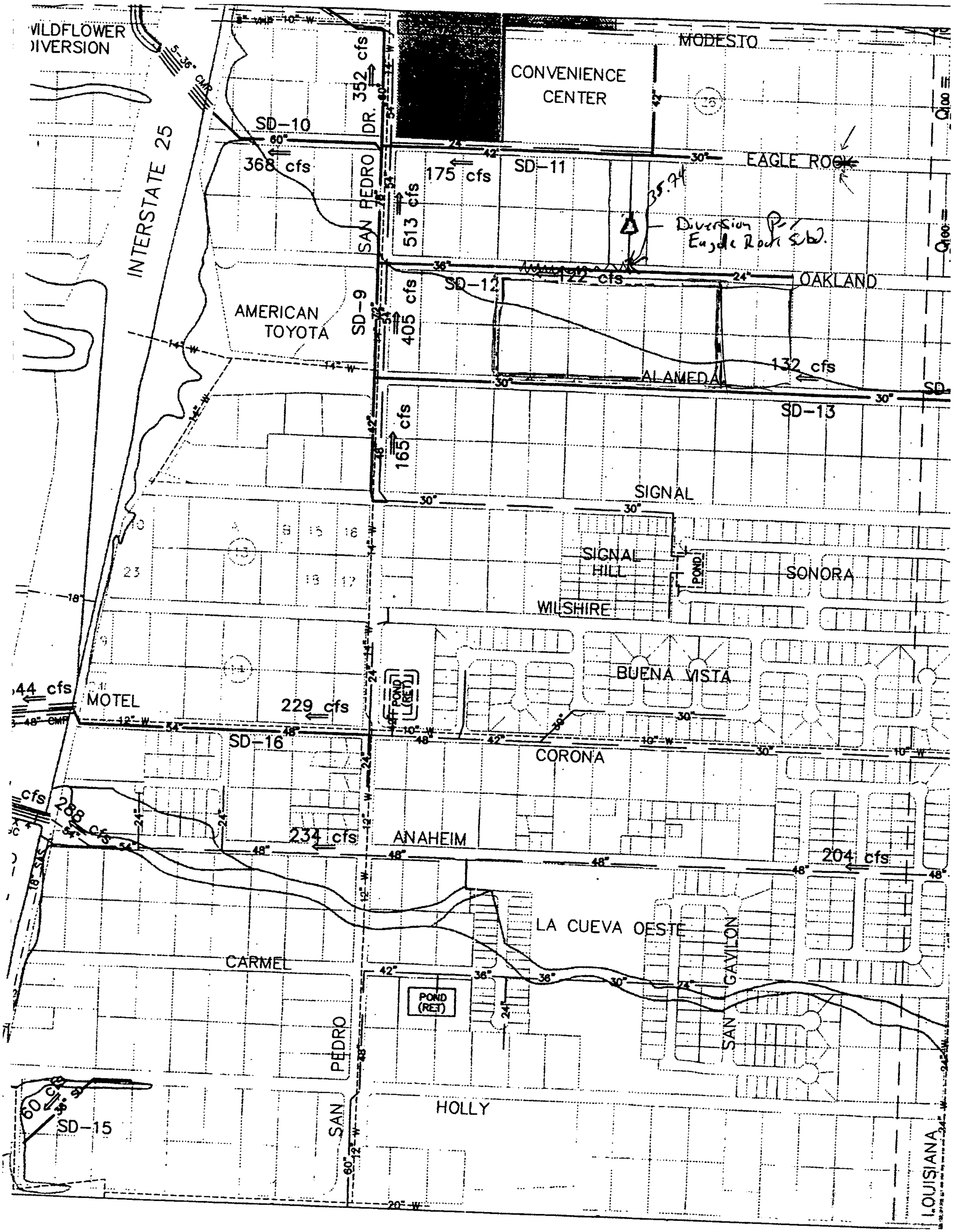
	Land Treatments (%)			
	A	B	C	D
Sandia Heights/Tramway (SH/TB)	20	40	5	35
North Albuquerque Acres (NAA)	22	23	38	17
Low Density Residential (LR)	20	20	34	26
Residential (R)	0	34	16	50
High Density Residential (HR)	0	25	15	60
Commercial/Industrial (C/I)	0	20	10	70
Medium Density Industrial (MI)	0	20	30	50
Sandia Tribal Lands (ST)	20	20	40	20
Primrose Pointe (PP)	0	40	20	40

TABLE A-2 (cont.)

LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
113*	Existing	.1136	80	0	15	5	.133
	Future	.1000	0	25	15	60	.133
115*	Existing	.1337	80	0	15	5	.133
	Future	.1202	0	26	12	62	.133
116*	Existing	.1309	80	0	5	15	.133
116.1	Future	.1000	0	25	15	50	.133
116.2	Future	.0719	0	25	15	60 ~~50~~	.133
116.21	Future	.0344	0	40	20	40	.133
~~117.2*~~	Existing	.1391	73	0	7	20	.22
	~~Future~~	~~.0500~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.21*	Existing	.0234	0	34	16	50	.133
117.22*	Future	.0156	0	20	10	70	.133
~~117.3*~~	Existing	.0863	65	5	15	15	.133
	~~Future~~	~~.1172~~	~~0~~	~~34~~	~~16~~	~~50~~	~~.133~~
117.31*	Existing	.0250	0	34	16	50	.133
117.32*	Existing	.0090	0	34	16	50	.133
117.4*	Existing	.0750	85	0	5	10	.133
	Future	.0512	0	25	15	60	.133
117.5*	Existing	.0550	0	10	20	70	.133
	Future	.0550	0	10	20	70	.133
118	Existing	.0649	0	20	10	70	.133
	Future	.0649	0	20	10	70	.133
118.1	Existing	.0306	75	5	10	10	.133
	Future	.0306	0	20	30	50	.133
119	Existing	.0549	0	20	10	70	.133
	Future	.0549	0	20	10	70	.133
120	Existing	.0268	50	0	0	50	.133
	Future	.0268	0	20	10	70	.133
121	Existing	.0489	80	0	15	5	.133
	Future	.0489	0	20	10	70	.133

*Modified for COA NAA MDP 9/97


WILDFLOWER DIVERSION
INTERSTATE 25
MODESTO
CONVENIENCE CENTER
SD-10
368 cfs
352 cfs
SAN PEDRO DR.
175 cfs
SD-11
EAGLE ROCK
513 cfs
Diversion P-1 Eagle Rock S.D.
OAKLAND
SD-12
122 cfs
AMERICAN TOYOTA
SD-9
405 cfs
132 cfs
ALAMEDA
SD-13
165 cfs
SIGNAL
SIGNAL HILL
POND
SONORA
WILSHIRE
BUENA VISTA
MOTEL
229 cfs
POND (RET)
SD-16
CORONA
234 cfs
ANAHEIM
204 cfs
LA CUEVA OESTE
GAVILON
CARMEL
POND (RET)
SAN PEDRO
SAN GAVILON
HOLLY
SD-15
LOUISIANA

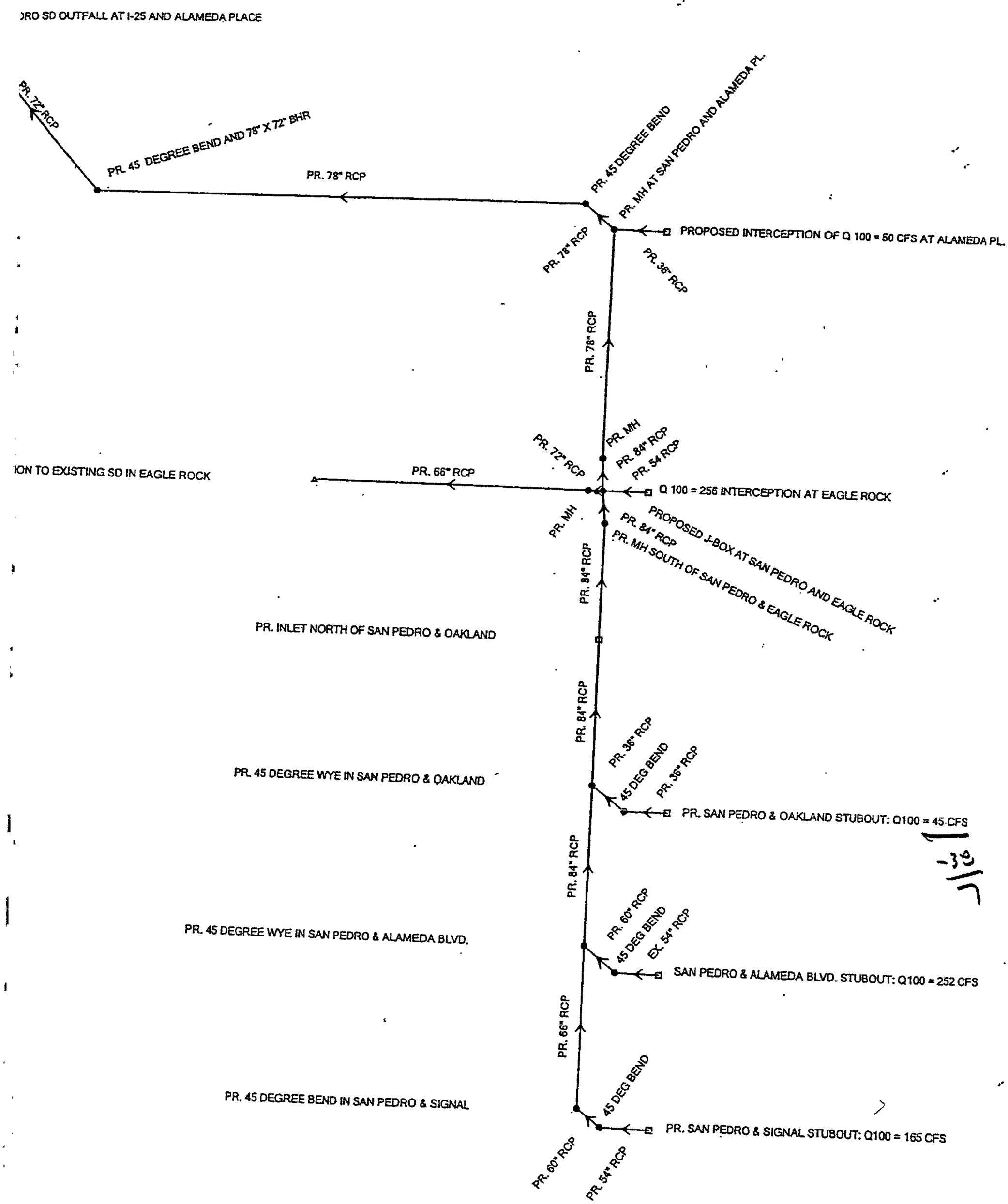
DESIGN ANALYSIS REPORT
FOR
SAN PEDRO STORM DRAIN PROJECT
CITY PROJECT NO. 5304.91

Prepared by:
Thompson Engineering Consultants, Inc.
P.O. Box 65760
Albuquerque, NM 87193

January 2010

San Pedro Storm Drain

Proposed Single Pipe System

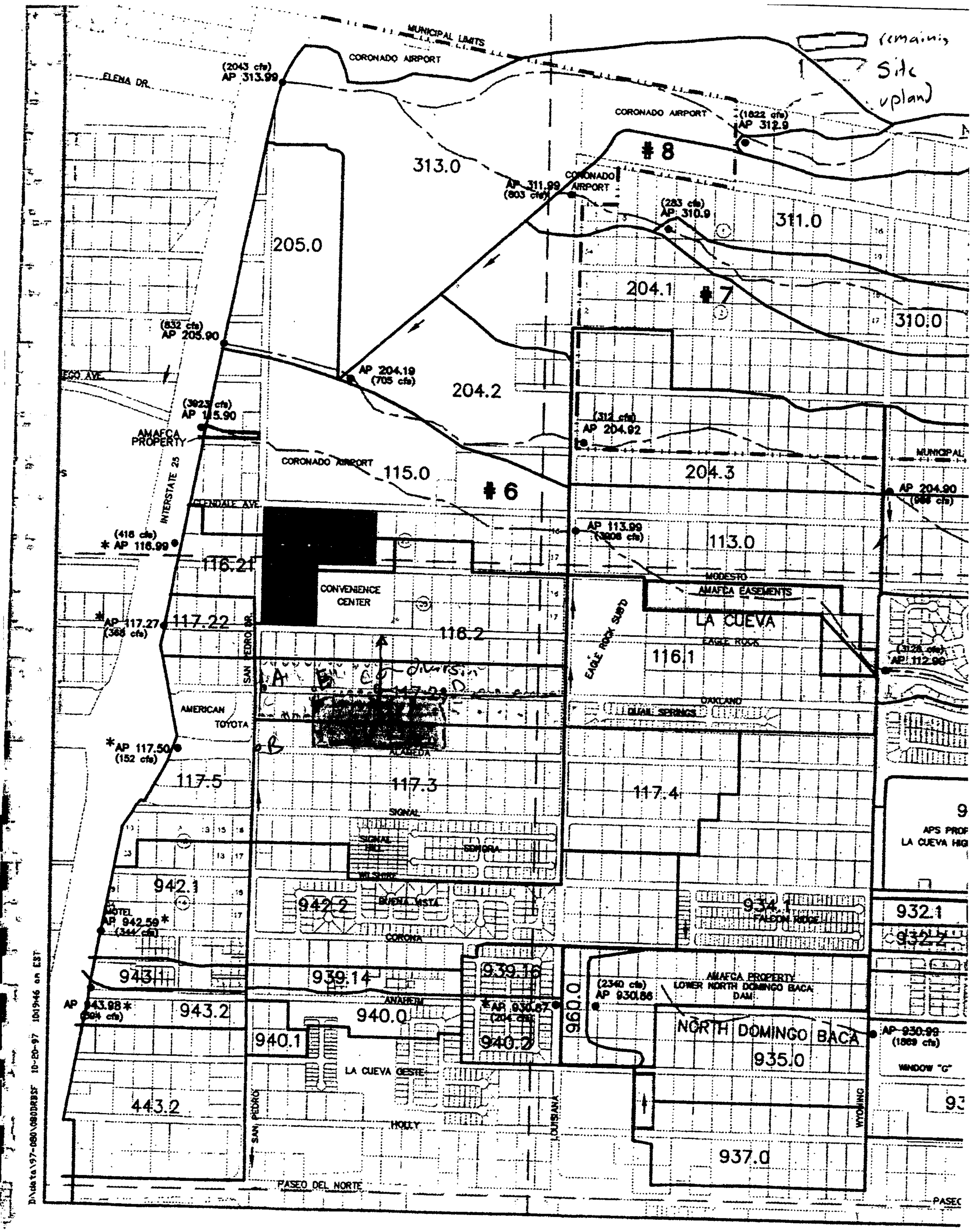


DOT Report (San Pedro SD - Final Single Pipe System with changes from coa.stc)

Label	Node Upstream Downstream	Conduit Description	Slope (Calculated) (ft/ft)	Length (ft)	Manning's n	Flow (ft^3/s)	Velocity (Average) (ft/s)	Ground Upstream Downstream (ft)	Invert Upstream Downstream (ft)	HGL Upstream Downstream (ft)
PR. 66" RCP	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL	Circular Pipe - 66.0 in	0.006	532	0.013	165	6.94	5230.42	5222.97	5229.42
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.	Circular Pipe - 84.0 in	0.005	525	0.013	417	12.96	5229.65	5219.8	5225.46
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 84" RCP	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	139	0.013	462	13.62	5228	5217.29	5223.55
	PR. INLET NORTH OF SAN PEDRO & OAKLAND							5226.12	5216.57	5223.01
PR. 84" RCP	PR. INLET NORTH OF SAN PEDRO & OAKLAND	Circular Pipe - 84.0 in	0.005	335	0.013	462	13.38	5226.12	5216.57	5222.46
	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK							5224.23	5214.89	5220.83
PR. 84" RCP	PR. MH SOUTH OF SAN PEDRO & EAGLE ROCK	Circular Pipe - 84.0 in	0.006	31	0.013	462	15.09	5224.23	5214.89	5220.53
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5220.1
PR. 84" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 84.0 in	0.009	32	0.013	393	16.57	5224.03	5210.5	5215.72
	PR. MH							5223.95	5210.22	5215.94
PR. 78" RCP	PR. MH	Circular Pipe - 78.0 in	0.01	505	0.013	393	17.57	5223.95	5210.22	5215.52
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.69
PR.72" RCP	PR. 45 DEGREE BEND AND 78" X 72" BHR	Circular Pipe - 72.0 in	0.012	257	0.013	443	15.67	5208.9	5199.5	5205.55
	SAN PEDRO SD OUTFALL AT I-25 AND ALAMEDA PLACE							5203.5	5196.43	5202.74
PR. 54" RCP	PR. SAN PEDRO & SIGNAL STUBOUT: Q100 = 165 CFS	Circular Pipe - 54.0 in	0.026	50	0.013	165	10.37	5233.2	5225.75	5230.6
	45 DEG BEND							5231.8	5224.36	5230.25
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.026	50	0.013	165	8.4	5231.8	5224.36	5229.88
	PR. 45 DEGREE BEND IN SAN PEDRO & SIGNAL							5230.42	5222.97	5229.67
EX. 54" RCP	SAN PEDRO & ALAMEDA BLVD. STUBOUT: Q100 = 252 CFS	Circular Pipe - 54.0 in	0.034	50	0.013	252	15.84	5232.3	5223.36	5230.29
	45 DEG BEND							5230.1	5221.58	5229.47
PR. 60" RCP	45 DEG BEND	Circular Pipe - 60.0 in	0.034	50	0.013	252	12.83	5230.1	5221.58	5228.6
	PR. 45 DEGREE WYE IN SAN PEDRO & ALAMEDA BLVD.							5229.65	5219.8	5228.13
PR. 36" RCP	PR. SAN PEDRO & OAKLAND STUBOUT: Q100 = 45 CFS	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5230.6	5220.05	5224.6
	45 DEG BEND							5229.3	5218.67	5224.37
PR. 36" RCP	45 DEG BEND	Circular Pipe - 36.0 in	0.026	50	0.013	45	6.37	5229.3	5218.67	5224.15
	PR. 45 DEGREE WYE IN SAN PEDRO & OAKLAND							5228	5217.29	5223.93
PR. 72" RCP	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK	Circular Pipe - 72.0 in	0.02	5	0.013	325	(N/A)	5224.03	5210.5	(N/A)
	PR. MH							5224	5210.4	(N/A)
PR. 66" RCP	PR. MH	Circular Pipe - 66.0 in	0.019	334	0.013	325	20.9	5224	5210.4	5215.31
	CONNECTION TO EXISTING SD IN EAGLE ROCK							5212.65	5204.2	5207.75
PR. 78" RCP	PR. MH AT SAN PEDRO AND ALAMEDA PL.	Circular Pipe - 78.0 in	0.017	30	0.013	443	13.35	5221.4	5205	5211.75
	PR. 45 DEGREE BEND							5220	5204.5	5211.54
PR. 78" RCP	PR. 45 DEGREE BEND	Circular Pipe - 78.0 in	0.01	496.7	0.013	443	17.77	5220	5204.5	5210.07
	PR. 45 DEGREE BEND AND 78" X 72" BHR							5208.9	5199.5	5206.85
PR. 36" RCP	PROPOSED INTERCEPTION OF Q 100 = 50 CFS AT ALAMEDA	Circular Pipe - 42.0 in	0.01	50	0.013	50	10.44	5222	5211.5	5213.71
	PR. MH AT SAN PEDRO AND ALAMEDA PL.							5221.4	5205	5212.85
PR. 54 RCP	Q 100 = 256 INTERCEPTION AT EAGLE ROCK	Circular Pipe - 54.0 in	0.02	50	0.013	256	16.1	5226	5216	5220.62
	PROPOSED J-BOX AT SAN PEDRO AND EAGLE ROCK							5224.03	5210.5	5219.77

APPENDIX B

SITE HYDROLOGY



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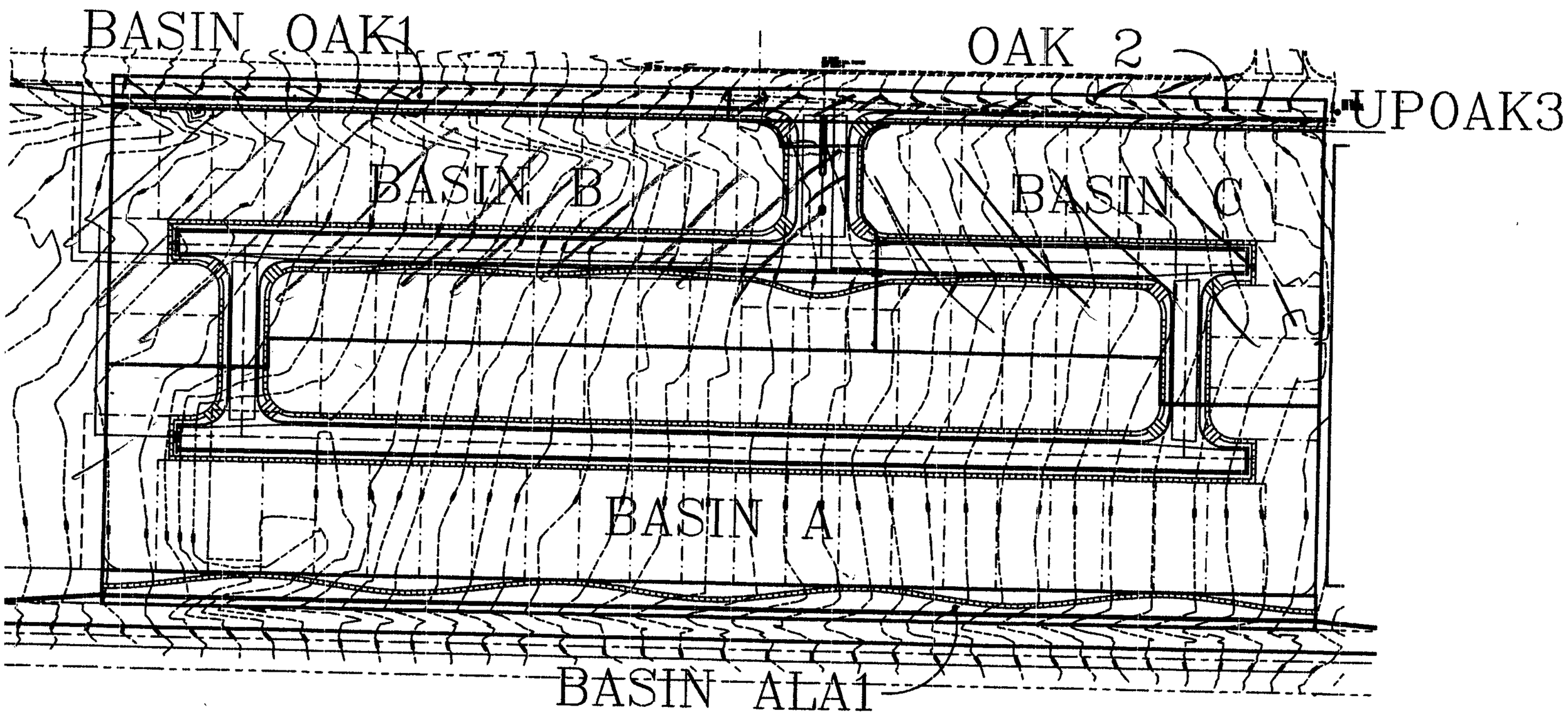


DRAINAGE BASIN PLAN

Weighted E Method

EAGLE CREST

Existing Developed Basins

Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	100-Year, 6-hr. Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
BASIN A	239887	5.507	0%	0	34.0%	1.872	16.0%	0.88113	50%	2.754	1.699	0.780	21.73
BASIN B	158566	3.640	0%	0	34.0%	1.238	16.0%	0.58243	50%	1.820	1.699	0.515	14.36
BASIN C	99922	2.294	0%	0	34.0%	0.780	16.0%	0.36702	50%	1.147	1.699	0.325	9.05
BASIN OAK 1	17278	0.397	0%	0	5.0%	0.020	5.0%	0.01983	90%	0.357	2.235	0.074	1.91
BASIN OAK 2	17096	0.392	0%	0	5.0%	0.020	5.0%	0.01962	90%	0.353	2.235	0.073	1.89
BASIN UPOAK 3	261360	6.000	0%	0	34.0%	2.040	16.0%	0.96	50%	3.000	1.699	0.850	23.68
REMAINING BASIN	402040	9.230	0%	0	34.0%	3.138	16.0%	1.47673	50%	4.615	1.699	1.307	36.42
BASIN ALA1	36971	0.849	0%	0	34.0%	0.289	36.0%	0.30555	30%	0.255	1.288	0.091	8.56

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66	Qa= 1.87
Eb= 0.92	Qb= 2.6
Ec= 1.29	Qc= 3.45
Ed= 2.36	Qd= 5.02

FLOW SUMMARY

TOTAL FLOW AT D- EXISTING INLET AT NWCORNER	23.68	CFS
TOTAL FLWO AT C- DIVERSION PER EAGLE ROCK PLAN	34.62	CFS
TOTAL FLOW AT E- LEAVING SITE BELOW DIVERSION	36.09	CFS
TOTAL FLOW AT A- INTERSECTION OF SAN PEDRO AND OAKLAND	74.43	CFS
TOTAL ALLOWABLE FLOW AT A PER NAA	160	CFS

APPENDIX C

HYDRAULIC CALCULATIONS

Street Capacity Calculations

SOARING IN BASIN C

28' F-F Street Section with 4" curb

Slope= 0.03

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.43	0.00	0.76	0.00691
0.02	0.0064	0.66	0.01	0.00	0.01	0.69	0.01	0.86	0.01624
0.025	0.01	0.83	0.01	0.01	0.02	0.80	0.02	0.89	0.02136
0.035	0.0196	1.16	0.02	0.02	0.04	1.00	0.03	0.94	0.03228
0.045	0.0324	1.49	0.02	0.04	0.08	1.18	0.05	0.98	0.04391
0.052	0.043264	1.72	0.03	0.06	0.11	1.30	0.07	1.01	0.0524
0.06	0.0576	1.98	0.03	0.08	0.16	1.43	0.09	1.03	0.0624
0.0625	0.0625	2.06	0.03	0.09	0.18	1.47	0.09	1.04	0.06559

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.09	0.19	1.47	0.09	1.04	0.06598
0.1	0.172656	3.98	0.04	0.32	0.65	1.87	0.19	1.04	0.10566
0.13	0.311406	5.51	0.06	0.69	1.39	2.23	0.29	1.09	0.14572
0.16	0.495156	7.04	0.07	1.28	2.56	2.58	0.41	1.14	0.1894
0.2	0.810156	9.08	0.09	2.45	4.90	3.02	0.60	1.19	0.25153
0.207	0.873506	9.43	0.09	2.71	5.41	3.10	0.64	1.20	0.26277
0.2612	**1.446942**	**12.20**	**0.12**	**5.29**	**10.58**	**3.65**	**0.95**	**1.26**	**0.35291** ?
0.3025	1.9825	14.31	0.14	8.04	16.08	4.05	1.23	1.30	0.42471

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	8.09	16.17	4.06	1.23	1.30	0.42622
0.3039	2.0021	14.31	0.14	8.17	16.34	4.08	1.24	1.30	0.42894
0.3062	2.0343	14.31	0.14	8.39	16.78	4.12	1.26	1.31	0.43588
0.31	2.0875	14.31	0.15	8.76	17.51	4.19	1.30	1.33	0.44737
0.3125	2.1225	14.32	0.15	9.00	18.00	4.24	1.33	1.34	0.45494
0.32	2.2275	14.32	0.16	9.75	19.51	4.38	1.40	1.36	0.47767
0.3317	2.3913	14.34	0.17	10.97	21.94	4.59	1.52	1.40	0.51325
0.333	2.4095	14.34	0.17	11.11	22.22	4.61	1.54	1.41	0.51721

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	11.27	22.55	4.63	1.55	1.41	0.52038
0.3601	2.80726	15.69	0.18	13.49	26.99	4.81	1.73	1.41	0.56106
0.38	3.122725	16.69	0.19	15.47	30.94	4.95	1.88	1.42	0.59436
0.4196	3.809389	18.67	0.20	19.99	39.98	5.25	2.20	1.43	0.66299
0.4603	4.596832	20.70	0.22	25.52	51.04	5.55	2.56	1.44	0.73635
0.504	5.534525	22.89	0.24	32.52	65.05	5.88	2.96	1.46	0.81782
0.513	5.7395	23.34	0.25	34.11	68.22	5.94	3.05	1.46	0.8349

Street Capacity Calculations

SOARING IN BASIN B

28' F-F Street Section with 4" curb

Slope= 0.03

For water depths less than 0.0625 feet

Y= Water depth

Area = 16*Y^2

P= SQRT(1025*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.43	0.00	0.76	0.00691
0.02	0.0064	0.66	0.01	0.00	0.01	0.69	0.01	0.86	0.01624
0.025	0.01	0.83	0.01	0.01	0.02	0.80	0.02	0.89	0.02136
0.035	0.0196	1.16	0.02	0.02	0.04	1.00	0.03	0.94	0.03228
0.045	0.0324	1.49	0.02	0.04	0.08	1.18	0.05	0.98	0.04391
0.052	0.043264	1.72	0.03	0.06	0.11	1.30	0.07	1.01	0.0524
0.06	0.0576	1.98	0.03	0.08	0.16	1.43	0.09	1.03	0.0624
0.0625	0.0625	2.06	0.03	0.09	0.18	1.47	0.09	1.04	0.06559

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.09	0.19	1.47	0.09	1.04	0.06598
0.1	0.172656	3.98	0.04	0.32	0.65	1.87	0.19	1.04	0.10566
0.13	0.311406	5.51	0.06	0.69	1.39	2.23	0.29	1.09	0.14572
0.16	0.495156	7.04	0.07	1.28	2.56	2.58	0.41	1.14	0.1894
0.2	0.810156	9.08	0.09	2.45	4.90	3.02	0.60	1.19	0.25153
0.207	0.873506	9.43	0.09	2.71	5.41	3.10	0.64	1.20	0.26277
0.2612	1.446942	12.20	0.12	5.29	10.58	3.65	0.95	1.26	0.35291
0.3025	**1.9825**	**14.31**	**0.14**	**8.04**	**16.08**	**4.05**	**1.23**	**1.30**	**0.42471**

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	8.09	16.17	4.06	1.23	1.30	0.42622
0.3039	2.0021	14.31	0.14	8.17	16.34	4.08	1.24	1.30	0.42894
0.3062	2.0343	14.31	0.14	8.39	16.78	4.12	1.26	1.31	0.43588
0.31	2.0875	14.31	0.15	8.76	17.51	4.19	1.30	1.33	0.44737
0.3125	2.1225	14.32	0.15	9.00	18.00	4.24	1.33	1.34	0.45494
0.32	2.2275	14.32	0.16	9.75	19.51	4.38	1.40	1.36	0.47767
0.3317	2.3913	14.34	0.17	10.97	21.94	4.59	1.52	1.40	0.51325
0.333	2.4095	14.34	0.17	11.11	22.22	4.61	1.54	1.41	0.51721

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333

A4= A3 + 14 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	11.27	22.55	4.63	1.55	1.41	0.52038
0.3601	2.80726	15.69	0.18	13.49	26.99	4.81	1.73	1.41	0.56106
0.38	3.122725	16.69	0.19	15.47	30.94	4.95	1.88	1.42	0.59436
0.4196	3.809389	18.67	0.20	19.99	39.98	5.25	2.20	1.43	0.66299
0.4603	4.596832	20.70	0.22	25.52	51.04	5.55	2.56	1.44	0.73635
0.504	5.534525	22.89	0.24	32.52	65.05	5.88	2.96	1.46	0.81782
0.513	5.7395	23.34	0.25	34.11	68.22	5.94	3.05	1.46	0.8349

Street Capacity Calculations

AERIE

28' F-F Street Section with 4" curb

Slope= 0.03

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.43	0.00	0.76	0.00691
0.02	0.0064	0.66	0.01	0.00	0.01	0.69	0.01	0.86	0.01624
0.025	0.01	0.83	0.01	0.01	0.02	0.80	0.02	0.89	0.02136
0.035	0.0196	1.16	0.02	0.02	0.04	1.00	0.03	0.94	0.03228
0.045	0.0324	1.49	0.02	0.04	0.08	1.18	0.05	0.98	0.04391
0.052	0.043264	1.72	0.03	0.06	0.11	1.30	0.07	1.01	0.0524
0.06	0.0576	1.98	0.03	0.08	0.16	1.43	0.09	1.03	0.0624
0.0625	0.0625	2.06	0.03	0.09	0.18	1.47	0.09	1.04	0.06559

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.09	0.19	1.47	0.09	1.04	0.06598
0.1	0.172656	3.98	0.04	0.32	0.65	1.87	0.19	1.04	0.10566
0.13	0.311406	5.51	0.06	0.69	1.39	2.23	0.29	1.09	0.14572
0.16	0.495156	7.04	0.07	1.28	2.56	2.58	0.41	1.14	0.1894
0.2	0.810156	9.08	0.09	2.45	4.90	3.02	0.60	1.19	0.25153
0.207	0.873506	9.43	0.09	2.71	5.41	3.10	0.64	1.20	0.26277
0.2612	1.446942	12.20	0.12	5.29	10.58	3.65	0.95	1.26	0.35291
0.3025	1.9825	14.31	0.14	8.04	16.08	4.05	1.23	1.30	0.42471

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.31	0.14	8.09	16.17	4.06	1.23	1.30	0.42622
0.3039	2.0021	14.31	0.14	8.17	16.34	4.08	1.24	1.30	0.42894
0.3062	2.0343	14.31	0.14	8.39	16.78	4.12	1.26	1.31	0.43588
0.31	2.0875	14.31	0.15	8.76	17.51	4.19	1.30	1.33	0.44737
0.3125	2.1225	14.32	0.15	9.00	18.00	4.24	1.33	1.34	0.45494
0.32	2.2275	14.32	0.16	9.75	19.51	4.38	1.40	1.36	0.47767
0.3317	**2.3913**	**14.34**	**0.17**	**10.97**	**21.94**	**4.59**	**1.52**	**1.40**	**0.51325**
0.333	2.4095	14.34	0.17	11.11	22.22	4.61	1.54	1.41	0.51721

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.44	0.17	11.27	22.55	4.63	1.55	1.41	0.52038
0.3601	2.80726	15.69	0.18	13.49	26.99	4.81	1.73	1.41	0.56106
0.38	3.122725	16.69	0.19	15.47	30.94	4.95	1.88	1.42	0.59436
0.4196	3.809389	18.67	0.20	19.99	39.98	5.25	2.20	1.43	0.66299
0.4603	4.596832	20.70	0.22	25.52	51.04	5.55	2.56	1.44	0.73635
0.504	5.534525	22.89	0.24	32.52	65.05	5.88	2.96	1.46	0.81782
0.513	5.7395	23.34	0.25	34.11	68.22	5.94	3.05	1.46	0.8349

DROP INLET CALCULATIONS

POND	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
SOARING	Single 'A'	5.92	14.36	0.2538	0.67
AERIE	Single 'A'	5.92	21.73	0.5811	0.67

ORIFICE EQUATION

Q = CA sqrt(2gH)

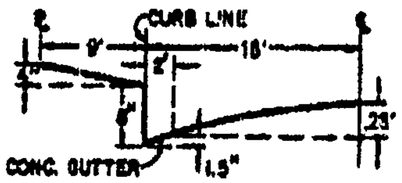
C = 0.6

g = 32.2

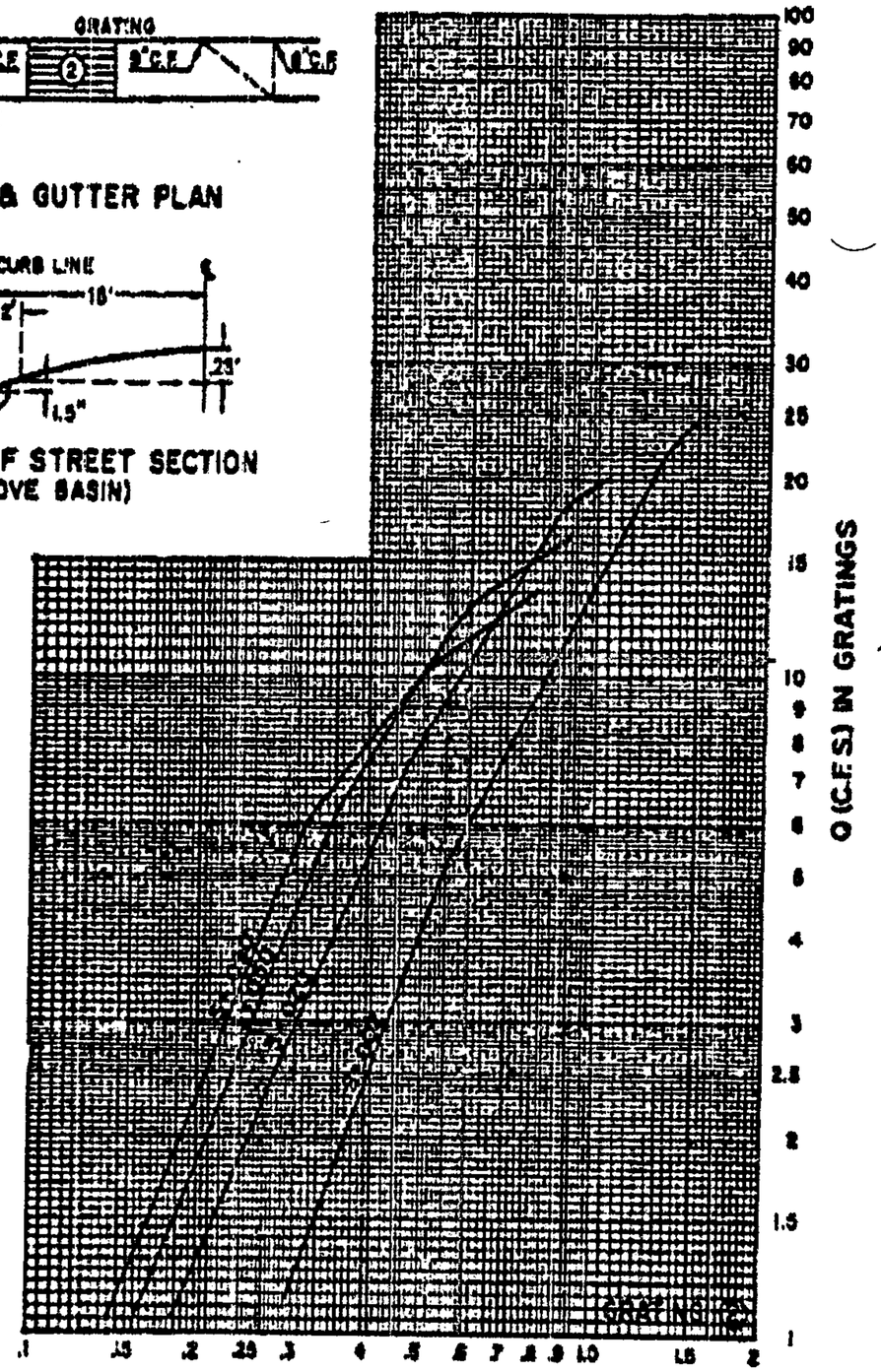
DUE TO SUMP CONDITION THE FLOW RATE FOR EACH HALF OF STREET DOUBLED TO ALLOW FOR CLOGGING.

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

GRATING & GUTTER PLAN

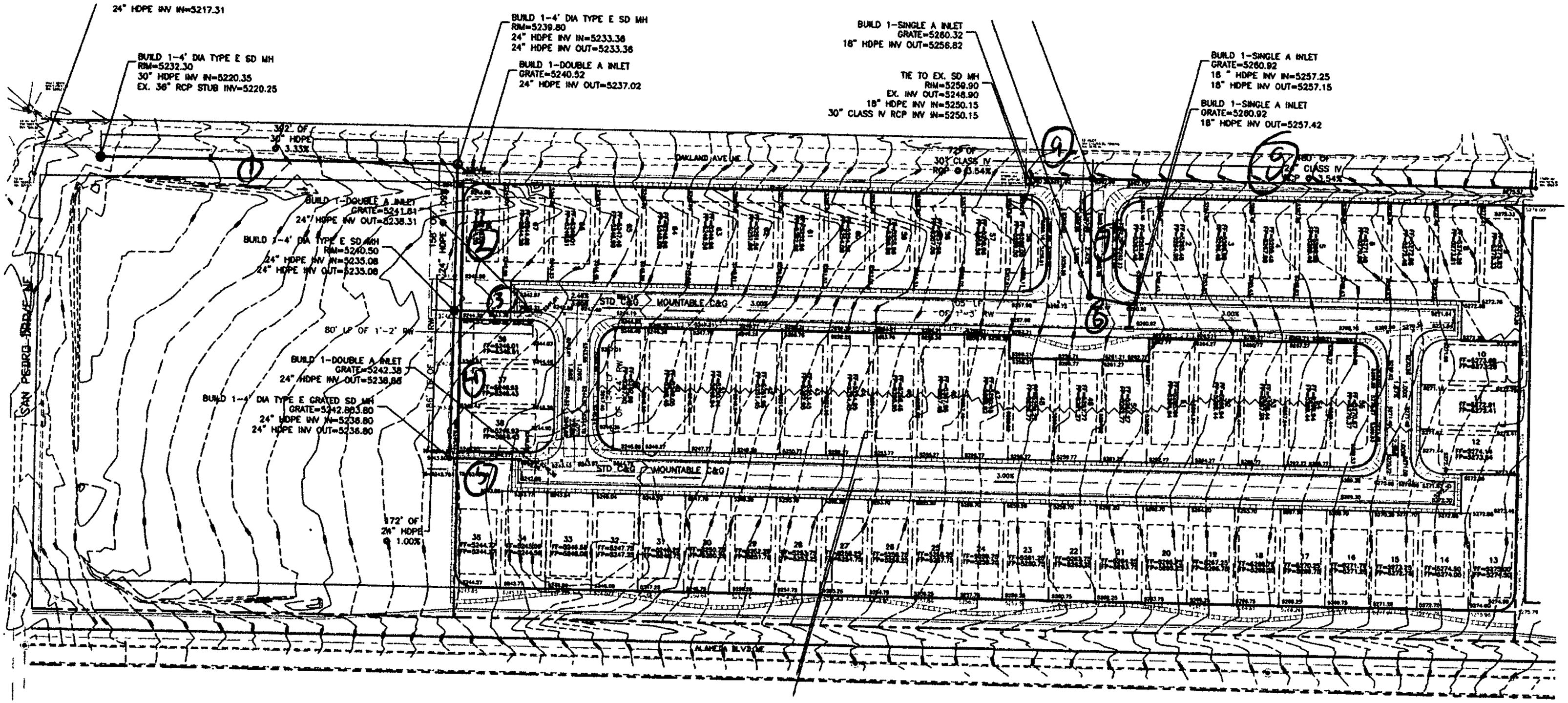


TYPICAL HALF STREET SECTION
(ABOVE BASIN)



10 CFS PER GRATE

Inlets in outlaw & Sourring.


24" HDPE INV IN=5217.31
BUILD 1-4' DIA TYPE E SD MH
RIM=5232.30
30" HDPE INV IN=5220.35
EX. 36" RCP STUB INV=5220.25
392' OF
30" HDPE
@ 3.33%
BUILD 1-4' DIA TYPE E SD MH
RIM=5239.80
24" HDPE INV IN=5233.36
24" HDPE INV OUT=5233.36
BUILD 1-DOUBLE A INLET
GRATE=5240.52
24" HDPE INV OUT=5237.02
BUILD 1-SINGLE A INLET
GRATE=5260.32
18" HDPE INV OUT=5256.82
TIE TO EX. SD MH
RIM=5259.90
EX. INV OUT=5248.90
18" HDPE INV IN=5250.15
30" CLASS IV RCP INV IN=5250.15
BUILD 1-SINGLE A INLET
GRATE=5260.92
18 " HDPE INV IN=5257.25
18" HDPE INV OUT=5257.15
BUILD 1-SINGLE A INLET
GRATE=5260.92
18" HDPE INV OUT=5257.42
OAKLAND AVE NE
729' OF
30" CLASS IV
RCP @ 3.54%
BUILD 1-DOUBLE A INLET
GRATE=5241.84
24" HDPE INV OUT=5238.31
BUILD 1-4' DIA TYPE E SD MH
RIM=5240.50
24" HDPE INV IN=5235.08
24" HDPE INV OUT=5235.08
STD C&G
MOUNTABLE C&G
80' LF OF 1'-2' RW
BUILD 1-DOUBLE A INLET
GRATE=5242.38
24" HDPE INV OUT=5238.86
BUILD 1-4' DIA TYPE E GRATED SD MH
GRATE=5242.80
24" HDPE INV IN=5236.80
24" HDPE INV OUT=5236.80
SAN PEDRO DRIVE NE
172' OF
24" HDPE
@ 1.00%
3.00%
ALAMEDA BLVD NE
BUILD BERM TO PREVENT
CROSS LOT DRAINAGE

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
1	30	3.3	4.91	0.625	74.71	74.09	15.09
2	30	1.09	4.91	0.625	42.94	36.09	7.35
3	24	2	3.14	0.5	32.08	14.36	4.57
4	24	1	3.14	0.5	22.68	22.73	7.24
5	24	2	3.14	0.5	32.08	22.73	7.24
6	24	1	3.14	0.5	22.68	9.05	2.88
7	24	2	3.14	0.5	32.08	9.05	2.88
8	24	3.5	3.14	0.5	42.44	23.68	7.54
9	30	2.5	4.91	0.625	65.03	1.43	0.29

<u>Manning's Equation:</u>

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

CITY OF ALBUQUERQUE

January 27, 2014

David Soule, P.E.
Rio Grande Engineering
PO Box 93924
Albuquerque, NM 87199

Re: Eagle Crest Subdivision
Grading and Drainage Plan
Engineer's Stamp Date 1-23-14 (C18D064B)

Dear Mr. Soule,

Based upon the information provided in your submittal received 1-24-14, the above referenced plan cannot be approved for Preliminary Plat action by the DRB until the following comments are addressed.

1. Half the flows are not accounted for in Soaring St. and Aerie St. – spreadsheet doesn't
2. A different flow calculation is needed for the west ends of Soaring St. and Aerie St. change by adding inlet
3. Label the streets on the G&D plan. ✓
4. A different typical lot layout is needed for Soaring St. and Aerie St. showing flows leaving the lots through the front. ✓
5. The typical water harvesting area should be reverse or flipped to avoid any possible chance of confusion. ✓
6. Show the 24" wye just to the west of the commercial site from San Pedro. This wye should be the storm drain connection for the commercial site. ✓
7. For the proposed lot 47, it appears the FF is 1.6 feet above the FP grade. ✓
8. At the west end of Soaring St. and Aerie St. an arrow should be placed showing an emergency overflow escape path into the commercial site just to the west. ✓
9. Show TOW and BOW. ✓
10. Show the size of the SD pipe in Oakland heading north. What are the inverts? ✓
11. All new text should be bolded. ✓

The Grading Permit can be approved after DRB has approved the Preliminary Plat and the Erosion and Sediment control plan is also approved.

If you have any questions, you can contact me at 924-3986 or Rudy Rael at 924-3977.

Sincerely,

Curtis Cherne, P.E.
Principal Engineer, Planning Dept.
Development Review Services

RR/CC

RECEIVED
JAN 28 2014
LAND DEVELOPMENT SECTION

Reinst. Dra. Cert.

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: EAGLE CREST SUBDIVISION Building Permit #: _____ City Drainage #: C18D064B

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES

City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____

Address: 6501 EAGLE ROCK

Phone#: _____ Fax#: _____ E-mail: _____

Architect: ROGER CINELLI Contact: _____

Address: 2418 Manuel Torres Lane N.W. ALB 87117

Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES Contact: JOHN GALLEGOS

Address: _____

Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

X DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
___ DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
X GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
X PRELIMINARY PLAT APPROVAL
X S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION

___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED
DEC 2 3 2013
LAND DEVELOPMENT SECTION

$ 730.00

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided

DATE SUBMITTED: 12/21/13 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

need an elevation certificate

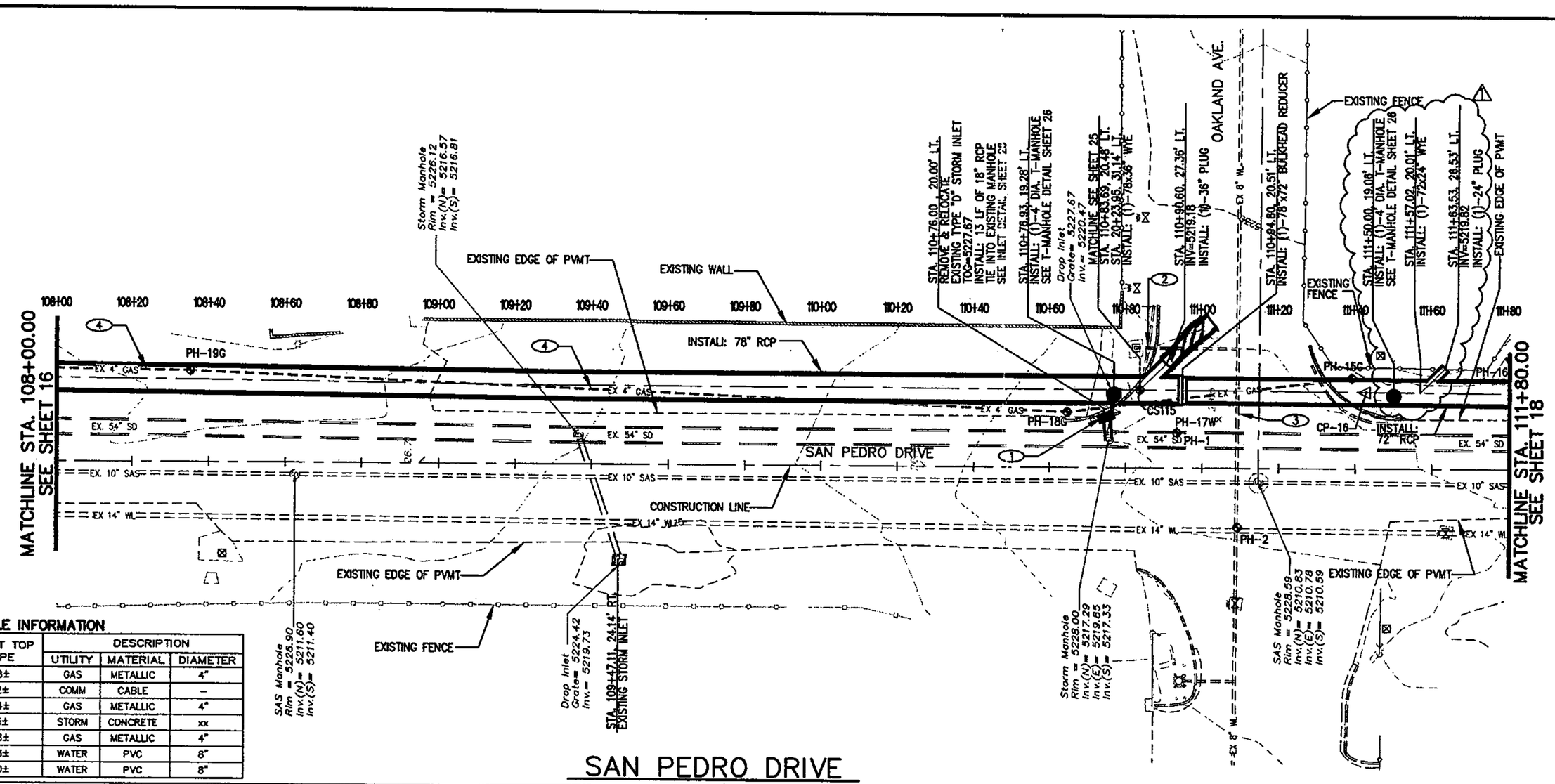
Josephine Vigil

~~e-tech~~ 10910 edith Blvd NE

87113

505 899 8099-0552

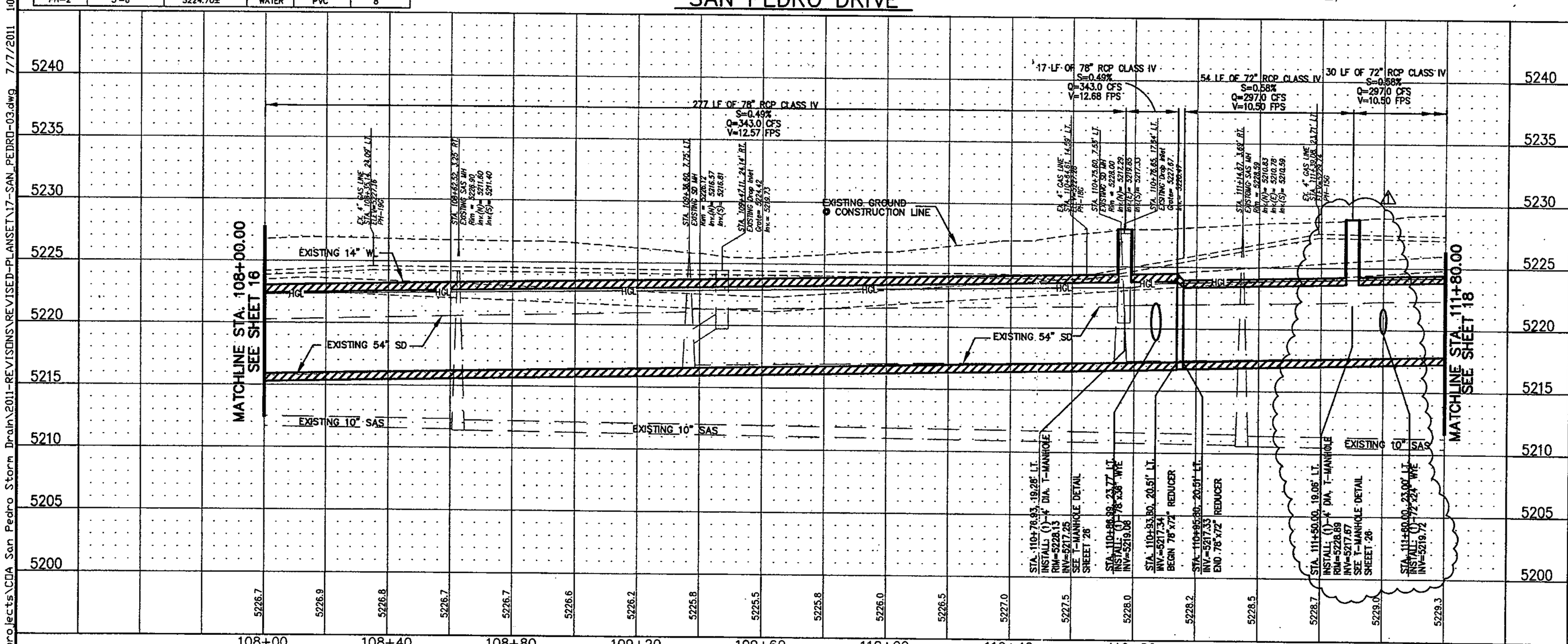
in the early



POT-HOLE INFORMATION

NO.	BURY TO TOP OF PIPE	ELEV. AT TOP OF PIPE	DESCRIPTION		
			UTILITY	MATERIAL	DIAMETER
PH-19G	2'-7"	5224.58±	GAS	METALLIC	4"
PH-16C	2'-8"	5227.12±	COMM	CABLE	–
PH-15G	2'-0"	5227.74±	GAS	METALLIC	4"
PH-17W	6'-3"	5222.15±	STORM	CONCRETE	xx
PH-18G	3'-0"	5224.28±	GAS	METALLIC	4"
PH-1	3'-8"	5224.73±	WATER	PVC	8"
PH-2	3'-6"	5224.70±	WATER	PVC	8"

SAN PEDRO DRIVE



KEYED NOTES:

1. REMOVE, DISPOSE AND REPLACE TYPE "D" STORM INLET SEE COA STD DWG 2205 AND CONNECTOR PIPE. CONNECT INTO EXISTING 6' DIA. MANHOLE
2. REMOVE AND REPLACE EXISTING 1" WATER SERVICE
3. REMOVE AND REPLACE EXISTING 8" WL SEE DETAIL SHEET 31
4. EXISTING GAS LINE TO BE REMOVE & RELOCATED (BY OTHERS)

CONSTRUCTION SURVEY POINTS

PT #	Northing	Easting
CS115	1523653.806	1543074.668

SCALE: 1" = 20'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc.
tecnm@yahoo.com
P.O. BOX 65760 ALBUQUERQUE, NM 87193
PHONE: (505) 271-2199
FAX: (505) 630-8248

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TITLE: SAN PEDRO STORM DRAIN
SAN PEDRO DR. PLAN & PROFILE
STA. 108+00 TO 111+80

Design Review Committee | City Engineer Approval | Last Design Update

City Project No. 5304.91 | Zone Map No. C-18-Z | Sheet 17 Of 44

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY
INSPECTOR'S ACCEPTANCE BY — DATE
VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS
STATION STAMPED (10-C18 1985)
CITY OF ALBUQUERQUE SURVEY 3 1/4"
ALUMINUM DISK RIVETED TO PIPE LOCATED BETWEEN ALAMEDA PL. & EAGLE ROCK RD ON SAN PEDRO BLVD. EAST SIDE OF ROAD
X=1,524,123.885 Y=1,542,565.263
G-C=0.999665042
ΔX=0° 11' 19.43"
ELEVATION=5222.09 (NAVD 1988)

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEERS SEAL

7-7-11 ADD T-MANHOLE & 72"x24" WYE

REVISIONS
NO. | DATE | REMARKS | BY

DESIGN
DESIGNED BY D.E.M. DATE 3-10
DRAWN BY D.E.M. DATE 3-10
CHECKED BY D.B.T. DATE 3-10

Q:\projects\CDA San Pedro Storm Drain\2011-REVISIONS\REVISED-PLANSET\17-SAN_PEDRO-03.dwg 7/7/2011 10:06 PM MDT

Cherne, Curtis

From: Cherne, Curtis
Sent: Wednesday, January 22, 2014 4:01 PM
To: 'David Soule'; Gallegos, Wilfred A.
Cc: Wolfe, Bryan K.; Rael, Rudy E.
Subject: RE: Storm drain alignment-Eagle Crest Subd

David,
I just met with Wilfred Gallegos and Bryan Wolfe concerning the horizontal alignment of the storm drain. First, I informed Wilfred that the subdivision has private streets. That changed the conversation and DMD recommends the storm drain be privately maintained.

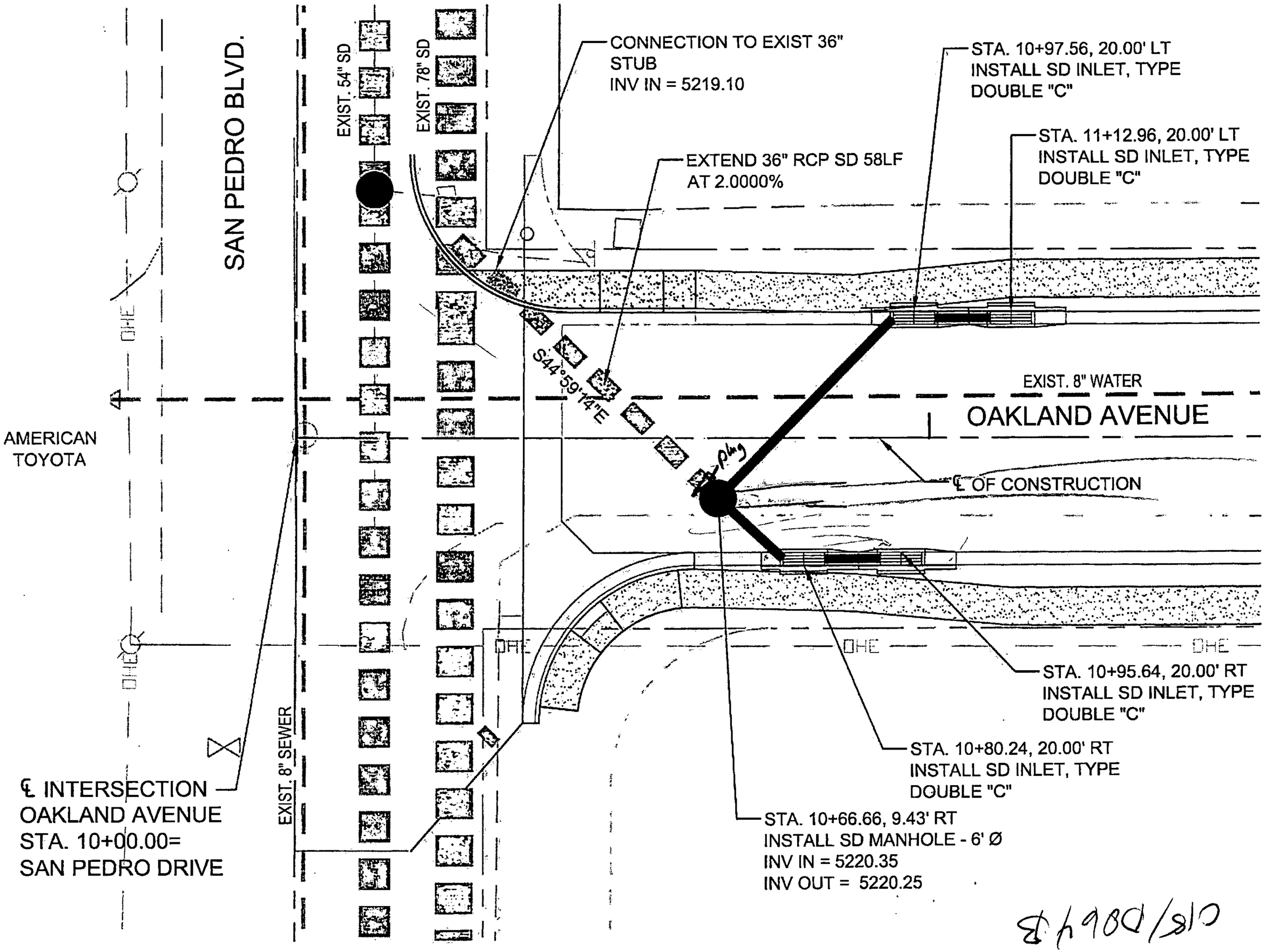
So I feel better about it, show a flow arrow pointing west in the tract to the west labeled Emergency Spillway or similar and a Private Facilities Drainage Covenant is required. The Covenant should be on the Infrastructure List and will be required prior to Work Order or Final Plat approval.

Curtis

From: David Soule [mailto:david@riograndeengineering.com]
Sent: Wednesday, January 22, 2014 7:23 AM
To: Gallegos, Wilfred A.; Cherne, Curtis
Subject: Storm drain alignment

Wilford, I am requesting your comments on the proposed alignment of our storm sewer. My client owns all the property in question. Curtis feels out alignment should be within our subdivsion. I understand Curtis's reasoningc but I really would like to keep it the way I have shown. The adjacent parcel is zones SU2 for C2, My logic is there will be a buffer required between the residential subdivision and any buildings. The line will be in an easement that the city has say over. Any development on the adjacent tract will be dealing with this easement in addition to the ABCWUA easement right next to it, and is zoned su2 so drb has control of the site plan approval. The alternate alignment would be to adjust the lots and have 20' easement interior, I propose what I have would be easier to maintain. Curtis has authorized me to inquire with you since your department will be the maintainer of the line. I will adjust the layout if you do not accept what I propose, but my client wants me to ask

David Soule
321.9099
<<...>> <<...>>


SAN PEDRO BLVD.
EXIST. 54" SD
EXIST. 78" SD
CONNECTION TO EXIST 36"
STUB
INV IN = 5219.10
STA. 10+97.56, 20.00' LT
INSTALL SD INLET, TYPE
DOUBLE "C"
STA. 11+12.96, 20.00' LT
INSTALL SD INLET, TYPE
DOUBLE "C"
EXTEND 36" RCP SD 58LF
AT 2.0000%
S44°59'14"E
EXIST. 8" WATER
OAKLAND AVENUE
AMERICAN
TOYOTA
℄ OF CONSTRUCTION
OHE
STA. 10+95.64, 20.00' RT
INSTALL SD INLET, TYPE
DOUBLE "C"
STA. 10+80.24, 20.00' RT
INSTALL SD INLET, TYPE
DOUBLE "C"
EXIST. 8" SEWER
℄ INTERSECTION
OAKLAND AVENUE
STA. 10+00.00=
SAN PEDRO DRIVE
STA. 10+66.66, 9.43' RT
INSTALL SD MANHOLE - 6' Ø
INV IN = 5220.35
INV OUT = 5220.25

CITY OF ALBUQUERQUE

January 9, 2014

David Soule, P.E.
Rio Grande Engineering
PO Box 93924
Albuquerque, NM 87199

Re: Eagle Crest Subdivision
Grading and Drainage Plan
Engineer's Stamp Date 12-21-13 (C18D064B)

Dear Mr. Soule,

Based upon the information provided in your submittal received 12-23-13, the above referenced plan cannot be approved for Preliminary Plat action by the DRB until the following comments are addressed.

1. The horizontal location of the storm drain, west of the subdivision, should be located in the subdivision or in a public drainage easement. This easement can be placed in the proposed lot number 68 in the NW corner and enlarging lots 67-56 evenly.
2. A LOMR-F is not sufficient for this subdivision, a LOMR is required.
3. Make the proposed contour labels larger, and add existing contours with a lighter line.
4. A Flood plain permit is needed before any work commences.
5. The proposed 24" storm drain within Oakland does not appear to carry enough flow for the proposed 74.09 cfs. A quick calculation using Manning's equation proved that a 30" pipe would be the sufficient size.
6. Show the 24" wye just to the west of the commercial site from San Pedro. This wye should be the storm drain connection for the commercial site.
7. The proposed HDPE is not allowed in traffic right of ways, change to RCP.
8. For the proposed lots 39-55, it appears the FF is 2 feet above grade causing a 10% slope for the driveway and the backyard. This slope is not recommended for drives and yards. What is the reasoning for this height?
9. For the proposed lots 39-55, turn a block with openings facing out at least 6" above grade or at pad level, with fabric placed in front, to avoid erosion and sediment escaping out onto the sidewalk and road.

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

The Grading Permit can be approved after DRB has approved the Preliminary Plat and the Erosion and Sediment control plan is also approved.

If you have any questions, you can contact me at 924-3986 or Rudy Rael at 924-3977.

Sincerely,

Curtis Cherne, P.E.
Principal Engineer, Planning Dept.
Development Review Services

RR/CC

RIO GRANDE ENGINEERING OF NEW MEXICO, LLC

January 17, 2014

Mr. Curtis Cherne, PE
Principal Engineer
Hydrology
City of Albuquerque

RE: Revised Grading and Drainage Plan
Eagle Crest Subdivision
C18-D064B

Dear Mr. Cherne:

The purpose of this letter is to accompany the enclosed revised grading plan for the referenced project. This plan has been modified to address your comments dated January 9, 2014. The following is a summary of your comments with the annotation as to how the plans were modified to address the comments.

1. The horizontal location of the storm drain west of the subdivision should be located within the subdivision or a public drainage easement. This easement can be placed in the proposed lot 68
   The developer owns the lots west of this site. After discussions I understand the concern is the ability to maintain the line. We feel the alignment inside the subdivision on lot 68 compared to being in a public drainage easement on the adjacent tract, which will be commercial is less accessible than what we propose. There for we request reconsideration of the upgraded existing alignment be maintained. To assist in the maintenance and accessibility we have revised the plan to show driveway cut and crusher fine surface. In the future this area will be a buffer between the residential and commercial, and any improvements if allowed would need to be acceptable to the city and will be entirely at the city discretion. I believe this alignment serve the public best.

2. A LOMR-F is not sufficient
   The LOMR-F was a mistype; a LOMR will be required and is on the infrastructure list.

3. Make contour labels larger.
   We have changes the scale and line weight so the labels are legible.

4. A Flood Plain permit is required prior to work commencing
   Acknowledged

5. The proposed 24" storm drain within Oakland does not appear to carry enough flow, for 74.09 cfs, provide 30"
   We have increased the pipe size to 30" for the reach in question

6. Show the 24" wye just west of san pedro to the commercial site
   We have added this information to the plan.

7. HDPE not allowed in traffic right of ways
   We have changed all of the pipe to RCP

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8. For the proposed lots 39-55 it appears the ff is 2' above grade causing 10% driveways, what is reasoning?
   The grade of the pad was set by using the highest elevation at the front property line, then rising along that side yard at 1% to the break point at the middle of the lot. We set *our finished floor 6" above this. The slope of the road is over 3% and the lots are 50'* wide so there is 1.5' of fall across the lot, I would expect the builder to build the driveway on the high side.
9. For the proposed lots 39-55 turn blocks with at 6" above grade or at pad level with erosion protection
   We have added turned blocks We have placed them at finished grade at edge or right of way. We have added note about 2' wide cobble protection to provide adequate overflow for these lots

It is understood a grading permit can only be approved once DRB approves the plan and an Erosion and sediment control plan is approved. Thank you for your comments.
Should you have any questions regarding this re-submittal, please do not hesitate to call me.

Sincerely,

David Soule, PE
Rio Grande Engineering
505.321.9099

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LAND DEVELOPMENT SECTION

Cherne, Curtis

From: Cherne, Curtis
Sent: Wednesday, January 22, 2014 4:01 PM
To: 'David Soule'; Gallegos, Wilfred A.
Cc: Wolfe, Bryan K.; Rael, Rudy E.
Subject: RE: Storm drain alignment-Eagle Crest Subd

David,
I just met with Wilfred Gallegos and Bryan Wolfe concerning the horizontal alignment of the storm drain. First, I informed Wilfred that the subdivision has private streets. That changed the conversation and DMD recommends the storm drain be privately maintained.

So I feel better about it, show a flow arrow pointing west in the tract to the west labeled Emergency Spillway or similar and a Private Facilities Drainage Covenant is required. The Covenant should be on the Infrastructure List and will be required prior to Work Order or Final Plat approval.

Curtis

From: David Soule [mailto:david@riograndeengineering.com]
Sent: Wednesday, January 22, 2014 7:23 AM
To: Gallegos, Wilfred A.; Cherne, Curtis
Subject: Storm drain alignment

Wilford, I am requesting your comments on the proposed alignment of our storm sewer. My client owns all the property in question. Curtis feels out alignment should be within our subdivsion. I understand Curtis's reasoningc but I really would like to keep it the way I have shown. The adjacent parcel is zones SU2 for C2, My logic is there will be a buffer required between the residential subdivision and any buildings. The line will be in an easement that the city has say over. Any development on the adjacent tract will be dealing with this easement in addition to the ABCWUA easement right next to it, and is zoned su2 so drb has control of the site plan approval. The alternate alignment would be to adjust the lots and have 20' easement interior, I propose what I have would be easier to maintain. Curtis has authorized me to inquire with you since your department will be the maintainer of the line. I will adjust the layout if you do not accept what I propose, but my client wants me to ask

David Soule
321.9099
<<...>> <<...>>

CITY OF ALBUQUERQUE

May 4, 2016

Nevin K. Harwick, P.E.
Harwick Transportation Group, Inc.
1440 Camino Cerrito SE
Albuquerque, NM 87123

Re: Legacy NAA Developments
North East Corner of Alameda and San Pedro
Traffic Impact Study
Engineer's Stamp dated 04-19-16 (C18-D064B)

Dear Mr. Harwick,

The subject Traffic Impact Study received on April 19, 2016 has been reviewed and approved by the Transportation Development Section. All comments have been adequately addressed.

The final Traffic Impact Study shall be valid for a period of three years. Should significant modifications to the approved development proposal occur, the approved study shall be revised to incorporate the changes.

If you have any questions, please feel free to contact me at (505) 924-3991.

Sincerely,

Racquel M. Michel, P.E.
Traffic Engineer, Planning Dept.
Development Review Services

via: email
C: Applicant, File

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

Michel, Racquel M.

From: Michel, Racquel M.
Sent: Monday, April 11, 2016 3:16 PM
To: 'Nevin Harwick'
Cc: 'Faizel Kassam'
Subject: RE: Legacy TIS

Hi Nevin,
So sorry, I forgot to send this last week.

Based upon the information provided in your submittal received 01-18-16, Transportation Development cannot approve the TIS for the above referenced project.

Prior to approval, the following items must be addressed:

- The commercial entrance on Alameda does not appear to match up to the existing median cut.
- Please add a recommendation for re-striping on San Pedro.

Once corrections are complete resubmit along with a completed Drainage Transportation Information Sheet to front counter personnel for log in and evaluation by Transportation. For digital submittal please submit to PLNDRS@cabq.gov. If you have any questions, please contact me at (505) 924-3991.

Thanks,

Racquel M. Michel, P.E.
Traffic Engineer
City of Albuquerque
Transportation Development Section
505-924-3991
rmichel@cabq.gov

From: Nevin Harwick [mailto:nevin@harwicktg.com]
Sent: Thursday, April 07, 2016 6:03 AM
To: Michel, Racquel M.
Cc: 'Faizel Kassam'
Subject: Legacy TIS
Importance: High

Racquel,

Thanks for the call on Tuesday. I was wondering if you would please summarize your comments in an e-mail so we have that for the record. You were correct on your primary comment concerning the median opening alignment with the commercial driveway. The primary change in the final report is the discussion of shortening the westbound left-turn lane on Alameda Blvd @ San Pedro Dr to accommodate the site access. This has no impact on the left-turn lane operations as the volume on that approach is very small. There are also some minor changes to the commercial site plan.

Again if you would forward me your comments, I'd appreciate it. I look forward to hearing from you so we can finalize the project. Thanks.

Take care.

Nevin Harwick, PE, PTOE
Harwick Transportation Group, Inc.
1440 Camino Cerrito SE
Albuquerque, NM 87123
505-228-9776

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Legacy NAA Building Permit #: _____ City Drainage #: C18D024B

DRB#: 1009881 EPC#: _____ Work Order#: _____

Legal Description: Lots 1-10 and 23-32, Block 28, Tract A Unit B, North Albuquerque Acres

City Address: _____

Engineering Firm: Rio Grande Engineering Contact: David Soule

Address: _____

Phone#: (505) 321-9099 Fax#: _____ E-mail: david@riograndeengineering.com

Owner: Legacy Development and Management Contact: Faizel Kassam

Address: _____

Phone#: (505) 489-4474 Fax#: _____ E-mail: fkassam@legacy-hospitality.com

Architect: ORB Architects Contact: Rich Barber

Address: _____

Phone#: (602) 957-4630 Fax#: _____ E-mail: RAB@ORBarch.com

Other Contact: Harwick Transportation Group Contact: Nevin Harwick

Address: _____

Phone#: (505) 228-9776 Fax#: _____ E-mail: nevin@harwicktg.com

Check all that Apply:

DEPARTMENT:

____ HYDROLOGY/ DRAINAGE
X TRAFFIC/ TRANSPORTATION
____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

____ ENGINEER/ ARCHITECT CERTIFICATION

____ CONCEPTUAL G & D PLAN
____ GRADING PLAN
____ DRAINAGE MASTER PLAN
____ DRAINAGE REPORT
____ CLOMR/LOMR

____ TRAFFIC CIRCULATION LAYOUT (TCL)
X TRAFFIC IMPACT STUDY (TIS) **Final**
____ EROSION & SEDIMENT CONTROL PLAN (ESC)

____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY

____ PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
____ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL
____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
____ GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR

____ PRE-DESIGN MEETING
____ OTHER (SPECIFY) _____

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$150.00 Paid

IS THIS A RESUBMITTAL?: X Yes ____ No

DATE SUBMITTED: _____ By: _____

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ____

Harwick Transportation Group, Inc.

Memorandum of Transmittal

1440 Camino Cerrito SE Albuquerque, NM 87123 505.228.9776

PROJECT NO.: P-TIS-15-02

TO: Racquel Michel, PE

City of Albuquerque Planning

DATE: April 19, 2016

RE: Legacy NAA Development

Traffic Impact Study

☐ Mail ☒ Hand Deliver ☐ Overnight ☐ Weekend Overnight ☐ Saturday Delivery

WE ARE FORWARDING TO YOU

# of Copies	Dated	Description
2	4/15/2016	Traffic Impact Study – Final

THESE ARE TRANSMITTED

☒ For Approval ☐ As Requested ☐ To Return
☐ For Your Use ☐ For Review and Comment ☐ Other

PLEASE NOTE: Raquel, Attached is the final traffic impact study for the Legacy NAA Development on Alameda Blvd @ San Pedro Dr. The changes are a graphic showing proposed mitigation, the addition of a driveway to Oakland Ave for the commercial tract and changes to the WB Alameda left-turn lane to accommodate the commercial left-turn ingress. Please let me know if you have any questions or concerns. Thanks. Take care

CC:

BY:

☒ Receipt Not Requested ☐ Please Call Upon Receipt ☐ Please Return Signed and Dated Copy

RECEIVED BY: DATE:

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Legacy NAA Apartments & Retail Building Permit #: _____ City Drainage #: C18D064B

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: Lots 1-10 and 23-32, Block 28, Tract A Unit B, North Albuquerque Acres

City Address: _____

Engineering Firm: Rio Grande Engineering Contact: David Soule

Address: _____

Phone#: (505) 321-9099 Fax#: _____ E-mail: david@riograndeengineering.com

Owner: Legacy Development and Management Contact: Faizel Kassam

Address: _____

Phone#: (505) 489-4474 Fax#: _____ E-mail: fkassam@legacy-hospitality.com

Architect: ORB Architects Contact: Rich Barber

Address: _____

Phone#: (602) 957-4630 Fax#: _____ E-mail: RAB@ORBarch.com

Other Contact: Harwick Transportation Group Contact: Nevin Harwick

Address: _____

Phone#: (505) 228-9776 Fax#: _____ E-mail: nevin@harwicktg.com

Check all that Apply:

DEPARTMENT:

____ HYDROLOGY/ DRAINAGE
X TRAFFIC/ TRANSPORTATION
____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

____ ENGINEER/ ARCHITECT CERTIFICATION

____ CONCEPTUAL G & D PLAN
____ GRADING PLAN
____ DRAINAGE MASTER PLAN
____ DRAINAGE REPORT
____ CLOMR/LOMR

____ TRAFFIC CIRCULATION LAYOUT (TCL)
X TRAFFIC IMPACT STUDY (TIS)
____ EROSION & SEDIMENT CONTROL PLAN (ESC)

____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY

____ PRELIMINARY PLAT APPROVAL
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____ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL
____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
____ GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR

____ PRE-DESIGN MEETING
____ OTHER (SPECIFY) _____

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Paid $150.00

IS THIS A RESUBMITTAL?: _____ Yes _____ No

DATE SUBMITTED: _____ By: _____

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ____

NO Elec Sub rec'd MAO 1/19/16

Harwick Transportation Group, Inc.

Memorandum of Transmittal

1440 Camino Cerrito SE Albuquerque, NM 87123 505.228.9776

PROJECT NO.: P-TIS-15-02

TO: Racquel Michel, PE

City of Albuquerque Planning

DATE: January 11, 2016

RE: Legacy NAA Development

Traffic Impact Study

☐ Mail ☒ Hand Deliver ☐ Overnight ☐ Weekend Overnight ☐ Saturday Delivery

WE ARE FORWARDING TO YOU

# of Copies	Dated	Description
2	1/9/2016	Traffic Impact Study - Draft

THESE ARE TRANSMITTED

☐ For Approval ☐ As Requested ☐ To Return
☐ For Your Use ☒ For Review and Comment ☐ Other

RECEIVED
JAN 11 2016
LAND DEVELOPMENT SECTION

PLEASE NOTE: Raquel,

Attached is the draft traffic impact study for the Legacy NAA Development on Alameda Blvd @ San Pedro Dr.

Please let me know if you have any questions or concerns. Thanks. Take care.

CC:

BY:

☒ Receipt Not Requested ☐ Please Call Upon Receipt ☐ Please Return Signed and Dated Copy

RECEIVED BY: DATE: