$$V = \cancel{1.33}\ 1.67 + 1.2\, v^2/2g + d$$

v = Pipe Velocity
$= 5.95$ ft/s

$g = 32.2$ ft/s^2

$d = 1.5'$

18" SD @ 1.0%

$Q_{FULL} = V \cdot A$

$Q = 10.53$ cfs (FULL)

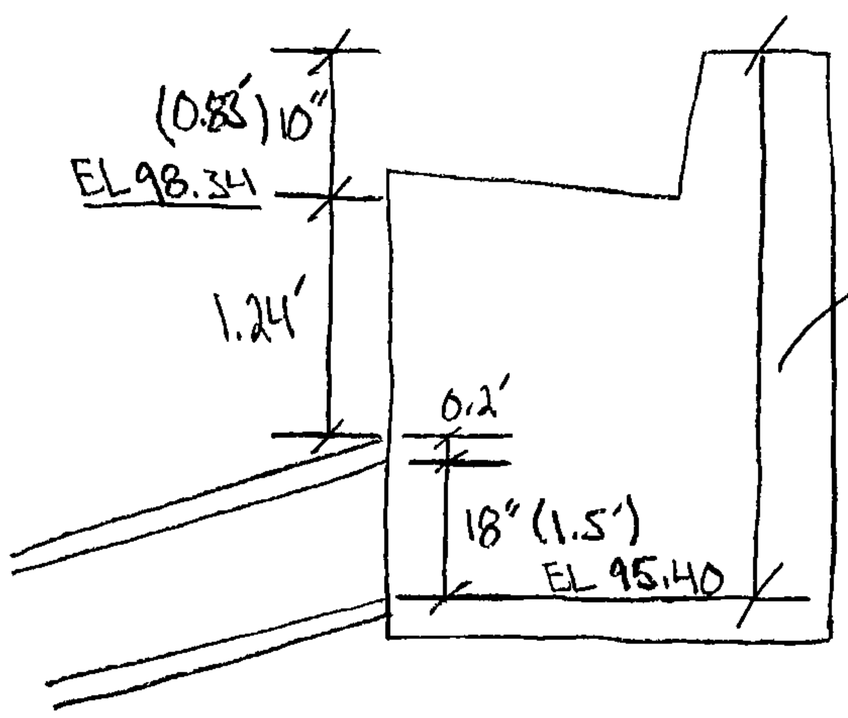
$A = \frac{\pi (1.5)^2}{4} = 1.77$ ft^2

$\therefore V = 5.95$ ft/s

FIND V → DEPTH OF BASIN

$$V = 1.33 + 1.2 \cdot \frac{(5.95)^2}{64.4} + 1.5$$

$$\boxed{V = 3.49' \text{ MIN DEPTH}}$$



$\boxed{3.77' > 3.49'}$

PROPOSED BASIN

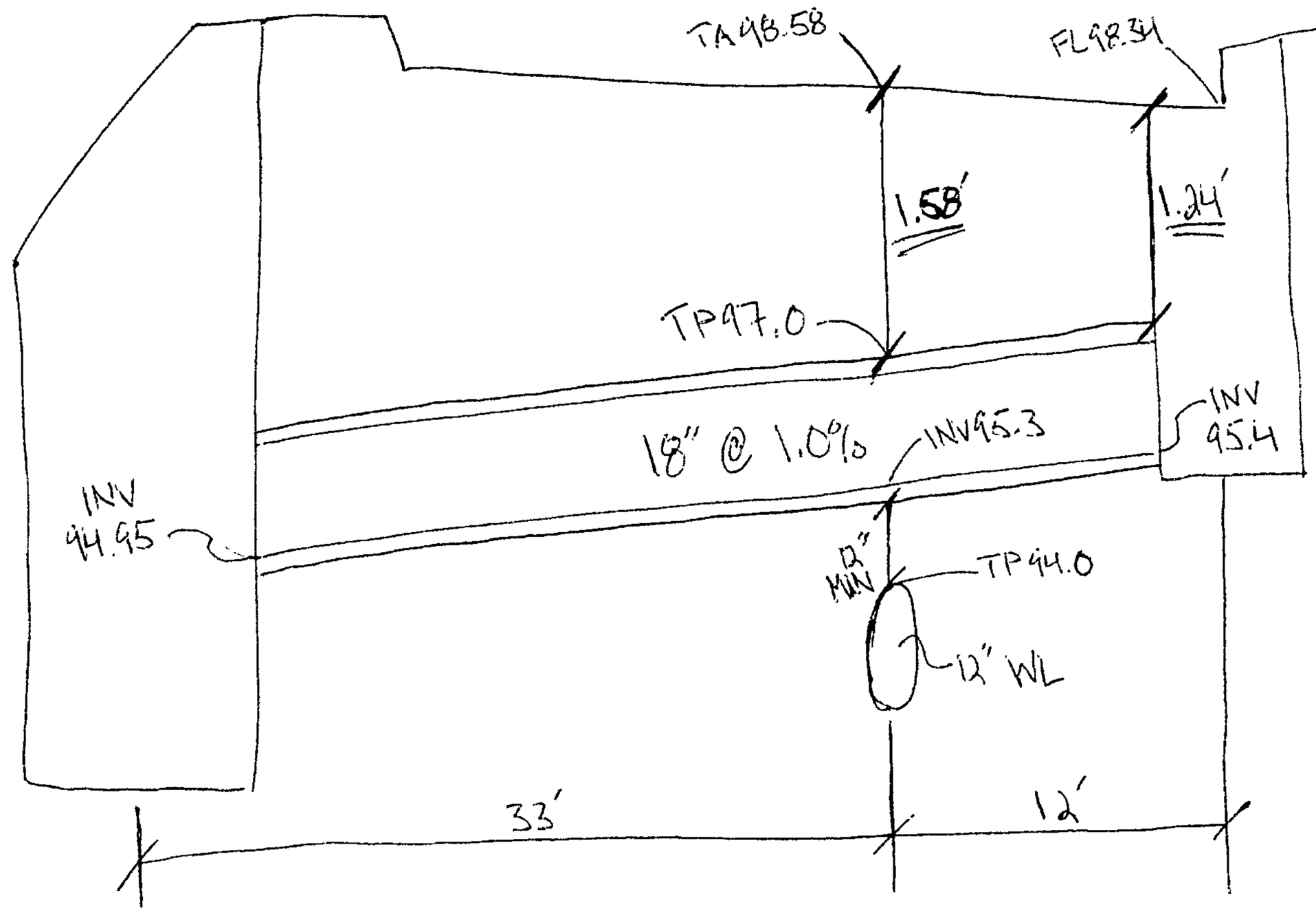
$= 1.5 + .2 + 1.24 + 1.33$

$= 4.21'$

MESA DEL SOL

Bohannan Huston INC.

PROJECT NAME TRACT I & G INFRAST. SHEET 1 OF 1 ENGINEERING
PROJECT NO CPN 7754476 BY BWS DATE 6/29/11 SPATIAL DATA
SUBJECT MIN DEPTH OF BASIN CH'D DATE ADVANCED TECHNOLOGIES


TA98.58
FL98.34
1.58'
1.24'
TP97.0
18" @ 1.0%
INV95.3
INV
95.4
INV
94.95
12" MIN
TP94.0
12" WL
33'
12'

~~675 in²~~ 250 in²

2-4-10

1. 798-7891 8:40 am

mike B

Crick IL

new proposal

south ½ of Crick

Towing to watson

he new to do

OAO/ Fidelity pond bank

high point in towing to move north

going all the way to watson?

watson not built on as on other side of

basin divide

CITY OF ALBUQUERQUE

June 27, 2008

Michael Balaskovits, P.E.
Bohannan Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109

Re: Innovation Park II Infrastructure COA Work Order 7754.89 Design Analysis Report

Engineer's Stamp dated 6-24-08 (R16/DA0100)

Dear Mr. Balaskovits,

Based upon the information provided in your submittal received 6-24-08, the above referenced report is approved for Work Order.

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

Sincerely,

Curtis A. Cherne, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: file

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(REV. 1/11/2002)

R-16/DA0100

PROJECT TITLE: INNOVATION PARK II, MDS ZONE MAP/DRG. FILE # ~~R-16/Q-16~~
DRB #: _____ EPC#: _____ WORK ORDER#: ~~###~~ 775489

LEGAL DESCRIPTION: Bulk Land Plat for Mesa del Sol Innovation Park II
CITY ADDRESS: _____

ENGINEERING FIRM: Bohannan Huston, Inc. CONTACT: Jeff Mulbery
ADDRESS: 7500 Jefferson NE – Courtyard I PHONE: (505) 823-1000
CITY, STATE: Albuquerque, NM ZIP CODE: 87109

OWNER: Forest City Covington, N.M., LLC CONTACT: Manny Barrera
ADDRESS: 801 University Blvd. SE, Suite 200 PHONE: 505-400-3021
CITY, STATE: Albuquerque, NM ZIP CODE: 87106

ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:
- X DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER (REVISED MASTER DRAINAGE PLAN)

CHECK TYPE OF APPROVAL SOUGHT:
- ___ SIA / FINANCIAL GUARANTEE RELEASE
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ___ S. DEV. PLAN FOR DRB APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT (DRB HYDROLOGY APPROVAL)
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM.)
- ___ CERTIFICATE OF OCCUPANCY (TEMP.)
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- X WORK ORDER (~~CHANGE ORDER~~) APPROVAL
- ___ OTHER (DRC HYDROLOGY APPROVAL)

WAS A PRE-DESIGN CONFERENCE ATTENDED:
- ___ YES
- ___ NO
- ___ COPY PROVIDED

RECEIVED
JUN 24 2008
HYDROLOGY SECTION

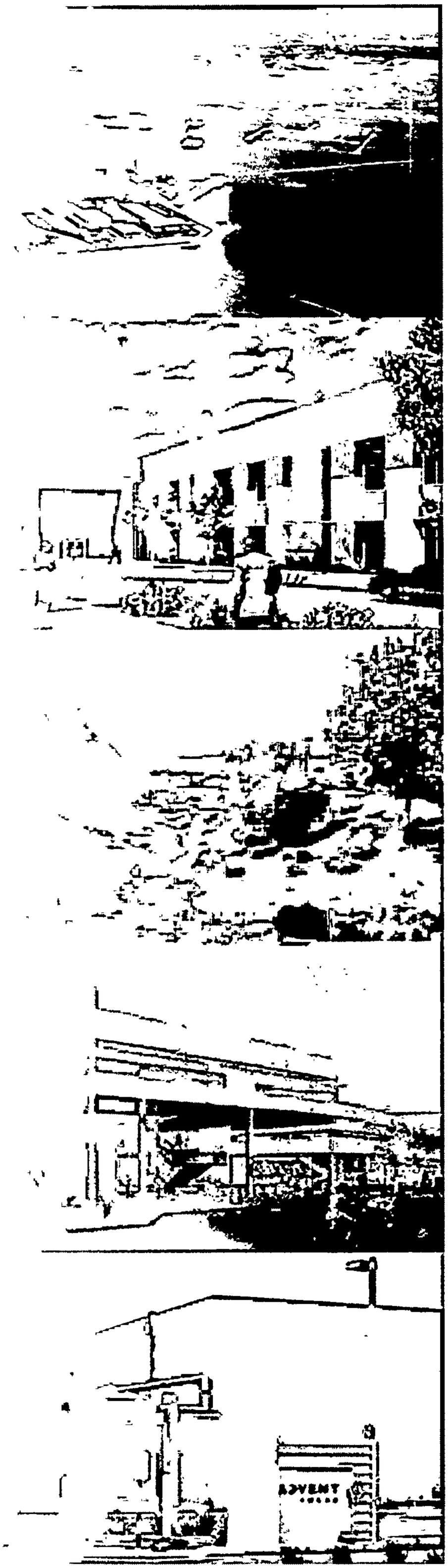
DATE SUBMITTED: 6/24/08 BY: Michael Balaskovits

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

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 subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

Mesa del Sol
Master Planned Community
Albuquerque's Southeast Mesa

INNOVATION PARK II INFRASTRUCTURE COA WORK ORDER #7754.89 DESIGN ANALYSIS REPORT



Prepared for:
Mesa del Sol, LLC
Forest City Covington LLC

Prepared by:
Bohannan Huston Inc.

Mesa del Sol

FORESTCITY
COVINGTON NM, LLC

MESA DEL SOL
INNOVATION PARK II INFRASTRUCTURE
COA WORK ORDER 7754.89
DESIGN ANALYSIS REPORT

JUNE 23, 2008

Prepared for:

MESA DEL SOL, LLC
FOREST CITY COVINGTON, LLC
801 UNIVERSITY BLVD SE – SUITE 200
ALBUQUERQUE, NM 87106

Prepared by:

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

RECEIVED
JUN 24 2008
HYDROLOGY SECTION

Prepared by:

6/24/08
Michael Balaskovits, P.E. Date
NMPE# 18187

6/24/08
Brian Warren, E.I. Date

Bohannan ▲ Huston INC.

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I. PURPOSE

This Design Analysis Report (DAR) presents an analysis of the drainage concepts for the full construction of the Infrastructure needed to service Tract 1-A of Mesa del Sol Innovation Park II and Tract D of Mesa del Sol Innovation Park II. The Innovation Park Infrastructure project consists of approximately 3,900 feet of Crick Avenue(114'ROW), 240 feet of Turing Drive(50'ROW), 950 feet of Watson Drive(72'ROW), and 1,600 feet of Hawking Drive(134'ROW). The drainage concepts described in this report are consistent to the following approved Drainage Management Plans: "Mesa Del Sol Innovation Park – Drainage Area 0" (DA0), stamped January 17, 2008, and "Mesa Del Sol Innovation Park – Drainage Area 6" (DA6), stamped April 11, 2008. This DAR will address all individual basins within the specified drainage areas that are affected by the proposed construction and the drainage yielded by that construction as well as the analysis of storm drain carrying the flow to respective regional retention ponds. ***With this submittal, we are requesting COA hydrology department approval for DRC work order approval (COA Project number 7754.89)***

II. SITE LOCATION AND CHARACTERISITICS

The project is located east of University Boulevard and north of the existing Advent Solar building. This infrastructure will serve numerous tracts along its frontage, which will be developed at a later date. The land slopes from west to east at approximately 0.5%.

III. HYDROLOGY

The methodology selected for hydrological analysis of the project area is the City of Albuquerque's 1997 Development Process Manual (DPM), chapter 22, section 2. All basin discharges were calculated using the rational method, as per DPM requirements.

A. Precipitation

Historically, the majority of rainfall occurring in Albuquerque is the result of local thunderstorms that occur during the summer months. This can result in flash flooding downstream. Rainfall values for this Drainage Area were determined from the City of Albuquerque DPM for Zone 2. The total rainfall depths used in the calculations for runoff models are:

Rain One (I hour – 100 year) 2.01 inches

Rain Six (6 hour – 100 year) 2.35 inches

Rain Day (24 hour – 100 year) 2.75 inches

B. Time to Peak

The time of concentration is defined as the time it takes for runoff to travel from the farthest upstream point in a basin to the basin outfall. The time to peak is defined as the time it takes for the

runoff hydrograph at the outlet of a basin to reach its peak and is estimated as two-thirds of the time of concentration. This report utilizes the SCS Upland Method to calculate time of concentration for basins with reach lengths less than 4,000 ft as presented in the DPM Section 22.2.

C. Land Treatments

Land treatment types describe land usage. Table A-4 in Section 22.2 of the DPM describes the land conditions associated with each treatment type. There are four treatment types: A, B, C, and D. Type A is the most pervious, and Type D is the most impervious. All developed basins analyzed within this DAR were assumed to be 90% Treatment D and 10% Treatment B for conservative and simplistic approach. The land treatments associated with the undeveloped areas are assumed to be 50% treatment A and 50% treatment B.

D. Sediment Bulking Factors

Sediment bulking accounts for increases in flow rates as well as an increase in volumes in the runoff. For this study, a bulking factor was not used because under developed conditions the majority of the area will be covered with either irrigated grass or asphalt.

E. Routing

The runoff flows routed through each Drainage Area will utilize street flow and storm drainage. The Manning's coefficient (N) value used for routing was 0.017 for street flow and 0.013 for a concrete storm drain.

F. Drainage Infrastructure Design

All conveyance facilities (streets, pipes, catch basins, etc.) are sized for the 100 year, 6 hour storm event. The regional retention ponds are sized for the 100 year, 10 day storm event.

IV. HYDRAULICS

The hydraulic calculations contained in this report were performed using the DPM Section 22 Standard Roadway Drainage Criteria. Hydraulic grade lines can be found on the construction documents (Appendix B) and were calculated assuming the ponds contained the 100 year, 6 hour storm when the design storm occurred. All remaining hydraulic calculations can be found in Appendix A Hydraulic Calculations.

V. INTRODUCTION

The COA approved DA0 (COA Hydro file R16/DA0) and DA6 (COA Hydro file Q16/DA6) Drainage Management Plans previously set the framework for the analysis of these roadway sections (See Appendix D and E for Approved Copies). Those plans state that each drainage area will outfall to their respective regional retention pond(s) sized to accept the 100 year, 10 day storm event. Refer to those plans for the private basins

shown in the reports that will outfall directly to the retention ponds and not affect the design of the public infrastructure. This Drainage Analysis Report (DAR) will only analyze the portions of each Drainage Area that will affect the public infrastructure design. These portions will be broken into sub-basins and analyzed based on their corresponding Drainage Areas. The Drainage Area and sub-basins are as follows:

1. Drainage Area 0 sub-basins:
    A. The drainage basins contributing to the Crick Avenue Infrastructure (Figure 1)
    B. The drainage basins contributing to the Watson Drive Infrastructure (Figure 2&3)
2. Drainage Area 6 sub-basins:
    A. The drainage basins contributing to the Crick Avenue Infrastructure (Figure 4)
    B. The drainage basins contributing to the Hawking Drive Infrastructure (Figure 5).

Schott extreme Rd

VI. DRAINAGE AREAS

The two drainage areas and their associated sub-basins related to the construction of the COA Project Number 7754.89 Infrastructure are discussed in further detail below. This infrastructure was sized for the 100 year 6 hour storm event.

A. Drainage Area 0 (DA0)

1. Crick Avenue Infrastructure Drainage Basin

The drainage basin contributing to the design of the Crick Avenue infrastructure is approximately 5.48 acres (see Figure 1). This basin consists of approximately 1930 LF Crick Avenue and 240 LF Turing Drive. Drainage was analyzed at two low points where storm drain inlets will be placed (Points 1 and 2, See Figure 1).

The drainage resulting from the 100 year, 6 hour storm event from these contributing basins is conveyed to a low point within the road via surface flow. Once the drainage reaches the respective low point, this flow will enter the storm drain via two type "A" inlets at points 1 and 2, approximately 17.5cfs and 8.26 cfs respectively (see Figure 1). The inlets and storm drain at each low point have been sized to accommodate the contributing flow generated by each sub-basin (see Appendix A for hydraulic calculations and inlet capacities).

2. Watson Drive Infrastructure Drainage Basin

The drainage basin contributing to the design of Watson Drive infrastructure is approximately 25.08 acres (see Figure 2 & 3). This basin consists of roughly 2400 LF of Watson Drive as well as approximately 21 acres of two northern sub-basins (Basin 0D and 0E) as shown in Figure 2. Drainage was analyzed at four points for this basin; two low points being constructed under COA Project No. 7754.89 and one future low point about 650 LF north of the project limits and one within the storm drain at the end of the project limits. At

Points 4 and 5, the drainage from each contributing basin is conveyed to a low point within the road via surface flow. Once the drainage reaches the respective low point, the flow will enter the storm drain via two type "A" inlets. The inlets and storm drain at each low point have been sized to accommodate the contributing flow generated by each sub-basin (See Appendix A for hydraulic calculations and inlet capacities).

The storm drain within Watson Drive was sized to accept future developed flows from Watson Drive (Basin 0A5) as well as offsite Basin 0D as defined in the approved DA0. The future drainage from Basin 0D and 0A5 will be conveyed to a low point within Watson Drive (Point 7) where flow will enter the storm drain via two type "A" inlets. In addition a portion of Basin 0E (Q=±33.4cfs) will enter the storm drain at a point south of Point 7. The total of future drainage in the storm drain is noted as Point 6. The storm drain constructed under COA Project #7754.89 at this point was sized to accept this drainage and capped for its future use. (See Appendix A for hydraulic calculations and inlet capacities).

B. Drainage Area 6 (DA6)

1. Crick Avenue Infrastructure Drainage Basin

The drainage basin contributing to the design of the Crick Avenue infrastructure is approximately 5.98 acres (see Figure 4). This basin consists of Crick Avenue from Watson Drive to Hawking Drive approximately 1900 LF as well as 350 LF of the western portion of Hawking Drive. Drainage was analyzed at two low points in Crick Avenue where storm drain inlets will be placed (Points 8 and 9, See Figure 4).

The drainage resulting from the 100 year, 6 hr storm event from these contributing basins is conveyed to a low point within the road via surface flow. Once the drainage reaches the respective low point, this flow will enter the storm drain via two type "A" inlets at Points 8 and 9 (See Figure 4). The inlets and storm drain at the low point have been sized to accommodate the contributing flow generated by this sub-basin (see Appendix A for hydraulic calculations and inlet capacities).

2. Hawking Drive Infrastructure Drainage Basin

The drainage basin contributing to the design of Hawking Drive infrastructure is approximately 3.15 acres (see Figure 5). This basin consists of Hawking Drive from 350 LF beyond Crick Avenue to the first access point for Schott Solar, roughly 1,200 LF. Drainage was analyzed at the low point (Point 4) for this basin (Basin 6A1) and the drainage resulting from the 100 year, 6 hour storm event from this contributing basin is conveyed via surface flow within the road (See Figure 5). Two type "A" inlets will be located at this low point to capture the surface runoff and will enter a storm drain system then discharging the drainage into the

Regional Retention pond south of Schott Solar and Crick Avenue. The inlets and storm drain at the low point have been sized to accommodate the contributing flow generated by this sub-basin (See Appendix A for hydraulic calculations and capacities and Appendix B for hydraulic grade line locations).

VII. INTERIM POND SIZING

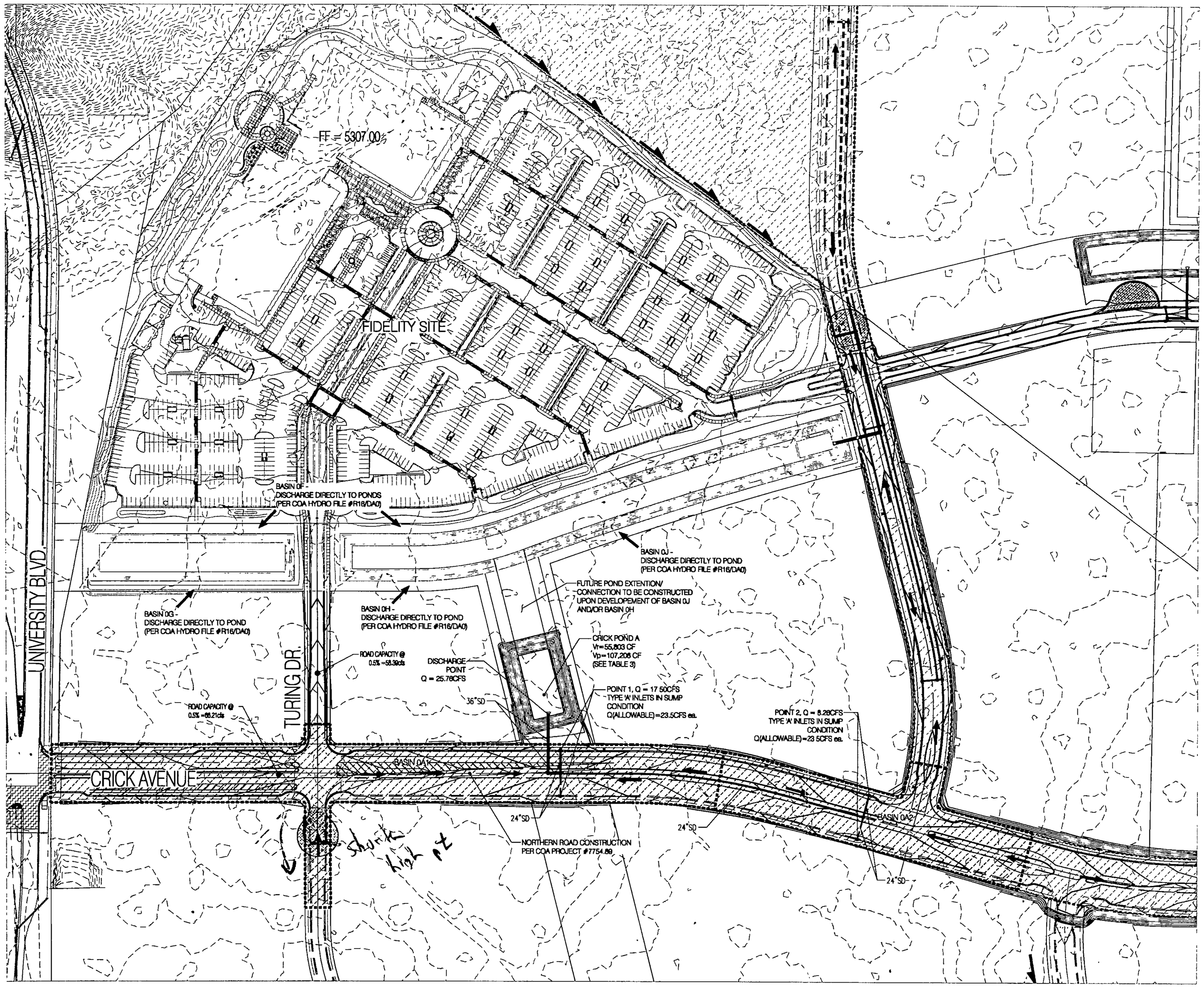
Portions of the regional retention ponds will be constructed with this Innovation Park infrastructure along with an additional interim pond to control offsite drainage from entering the project limits. The Regional Retention Ponds have only been sized to accept the drainage associated with infrastructure constructed with COA Project #7754.89, and any undeveloped offsite drainage for the 100 year, 10 day storm event (See Table 3).

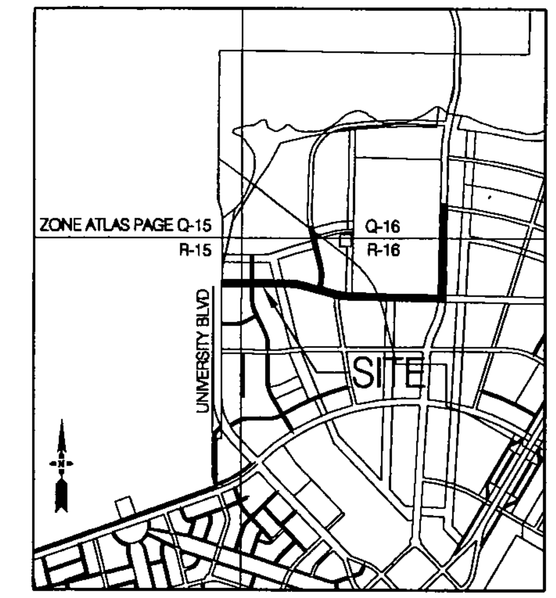
The interim pond will be constructed to accept undeveloped offsite drainage north of the Level B Boundary. Future hydrology submittals will address this area upon development (See Figure 6 and Table 3 for pond calculations).

VIII. RESULTS AND RECOMMENDATIONS

This report demonstrates that the infrastructure constructed under COA Project #7754.89 will safely convey the 100 year, 6 hr storm event to the appropriate retention ponds which were sized for the 100 year, 10 day storm event. This report has been prepared in accordance with the COA DPM and the approved Mesa del Sol Level B Document.

FIGURES





LOCATION MAP

ZONE ATLAS INDEX MAP Q-16, R-15, R-16

N

0 50 100 200

SCALE: 1"=100'

LEGEND

- CONTRIBUTING DRAINAGE AREA BASIN LINE
- DEVELOPED FLOW ARROW
- EXISTING FLOW ARROW (EXISTING FLOW)
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

AS-BUILT INFORMATION

CONTRACTOR	DATE
CONTROL STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO.	DATE

BENCH MARKS

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY	BW	DATE 06/2008
DRAWN BY	BW	DATE 06/2008
CHECKED BY	MB	DATE 06/2008

Bohannan ▲ Huston INC.

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

Mesa del Sol - Innovation Park

Drainage Area Contributing to Crick Avenue - FIGURE 1

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

CITY PROJECT NO	ZONE MAP NO	SHEET	OF
	R-16	1	

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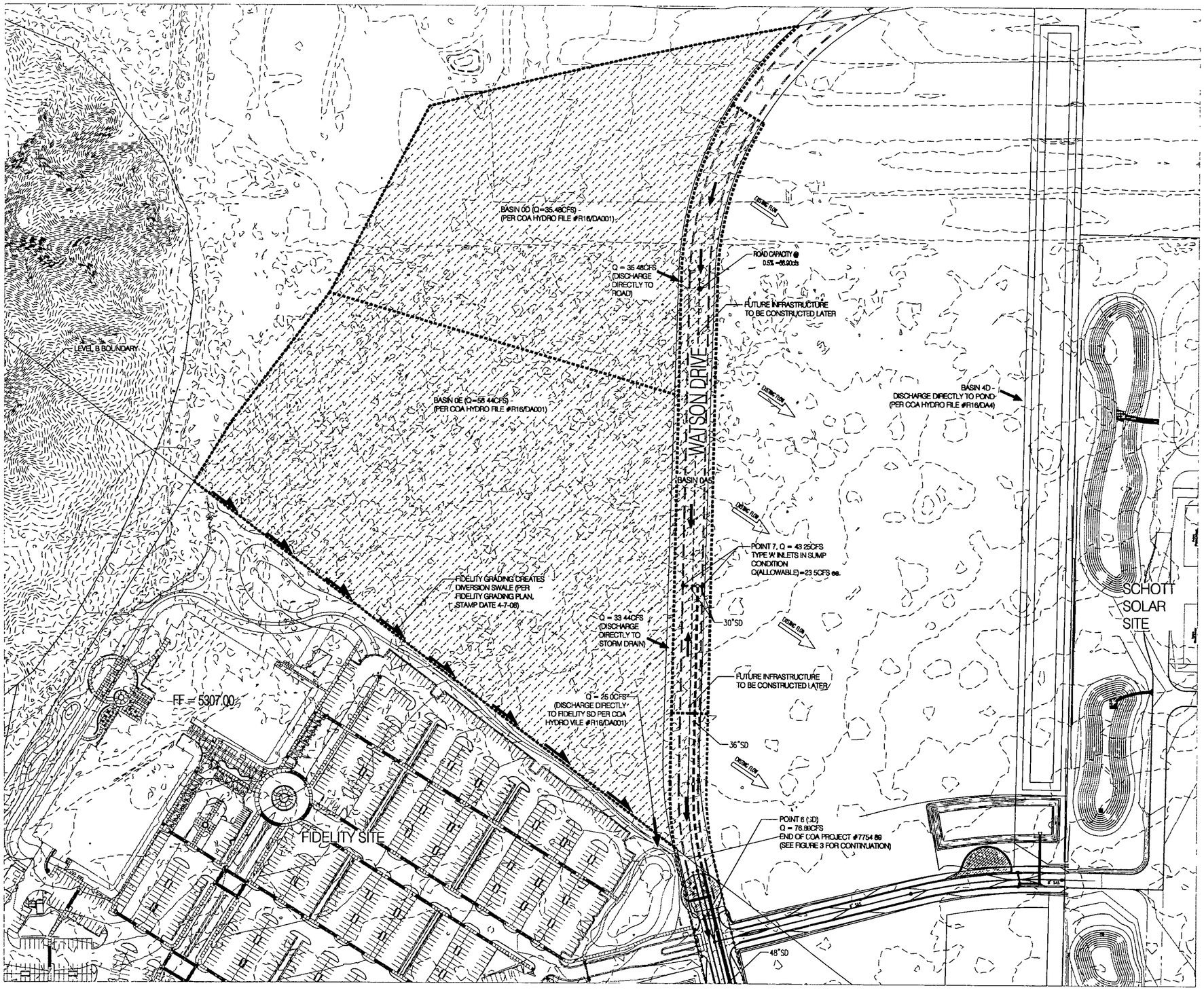

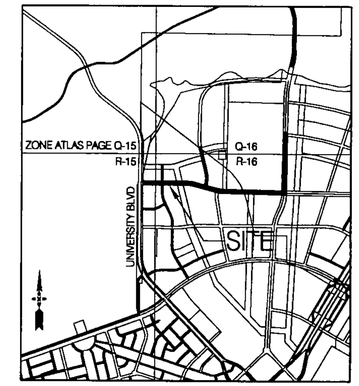

LOCATION MAP

ZONE ATLAS INDEX MAP Q-16, R-15, R-16

N

0 50 100 200

SCALE: 1"=100'

LEGEND

- CONTRIBUTING DRAINAGE AREA BASIN LINE
- DEVELOPED FLOW ARROW
- EXISTING FLOW ARROW
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

AS-BUILT INFORMATION

	DATE
CONTRACTOR WORK STAKED BY	
INSPECTOR'S ACCEPTANCE BY	
FIELD VERIFICATION BY	
DRAWINGS CORRECTED BY	

MICRO-FILM INFORMATION

	DATE
RECORDED BY	
NO	

BENCH MARKS

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGN

		DATE
DESIGNED BY	BW	06/2008
DRAWN BY	BW	06/2008
CHECKED BY	MB	06/2008

Bohannan ▲ Huston INC.

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

Mesa del Sol - Innovation Park
Drainage Area Contributing
to Watson Drive - FIGURE 2

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

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	R-16	2	

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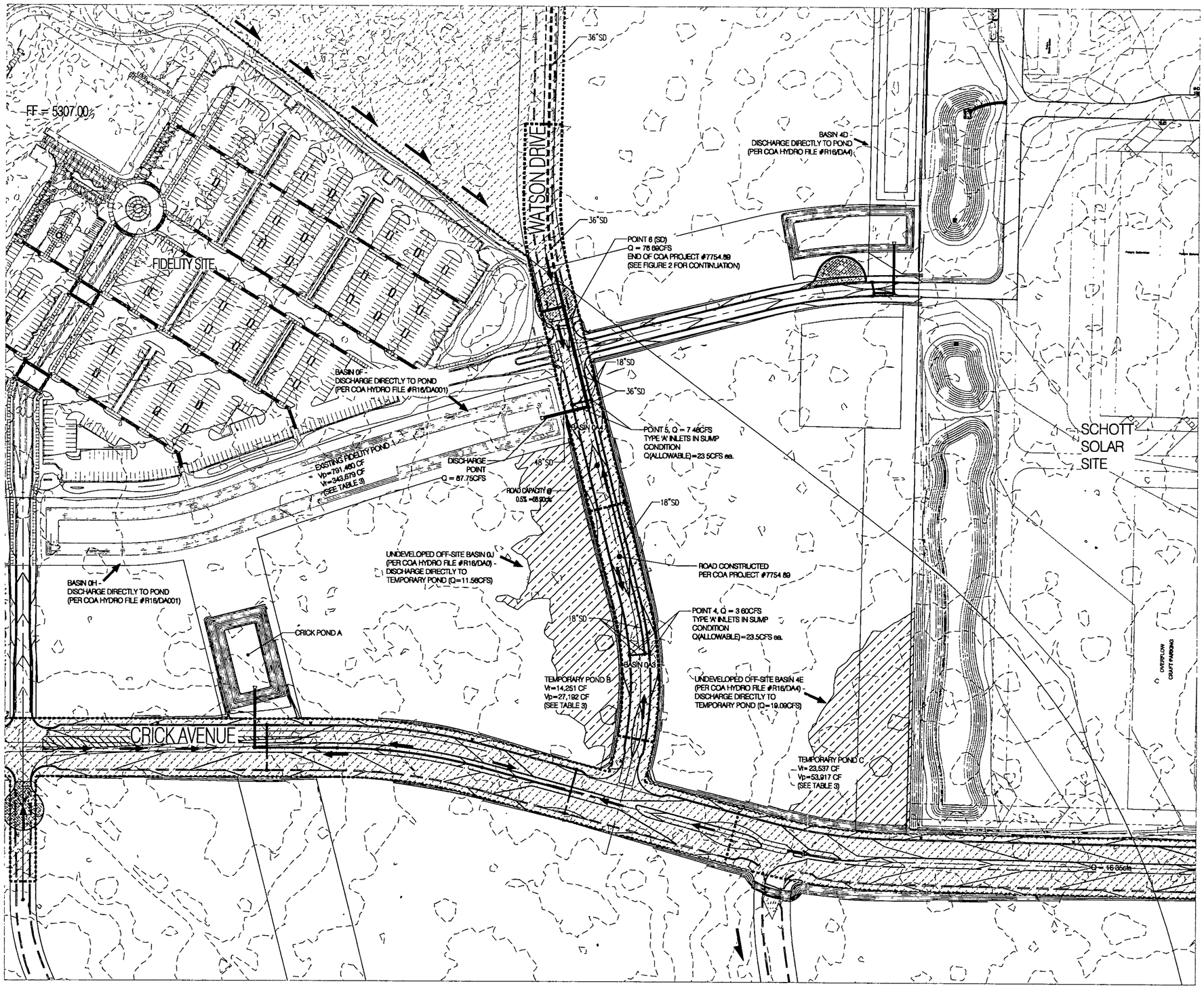

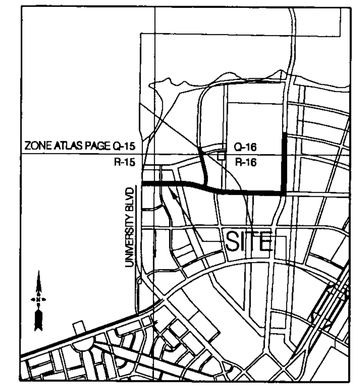

LOCATION MAP

ZONE ATLAS INDEX MAP Q-16, R-15, R-16

N

0 50 100 200

SCALE: 1"=100'

LEGEND

- CONTRIBUTING DRAINAGE AREA BASIN LINE
- DEVELOPED FLOW ARROW
- EXISTING FLOW ARROW (EXISTING FLOW)
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

AS-BUILT INFORMATION

	DATE
CONTRACTOR WORK STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

	DATE
RECORDED BY	DATE
NO	DATE

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY	BW	DATE 06/2008
DRAWN BY	BW	DATE 06/2008
CHECKED BY	MB	DATE 06/2008

Bohannan ▲ Huston INC.

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

Mesa del Sol - Innovation Park

Drainage Area Contributing to Watson Drive - FIGURE 3

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

CITY PROJECT NO	ZONE MAP NO	SHEET	OF
	R-16	3	

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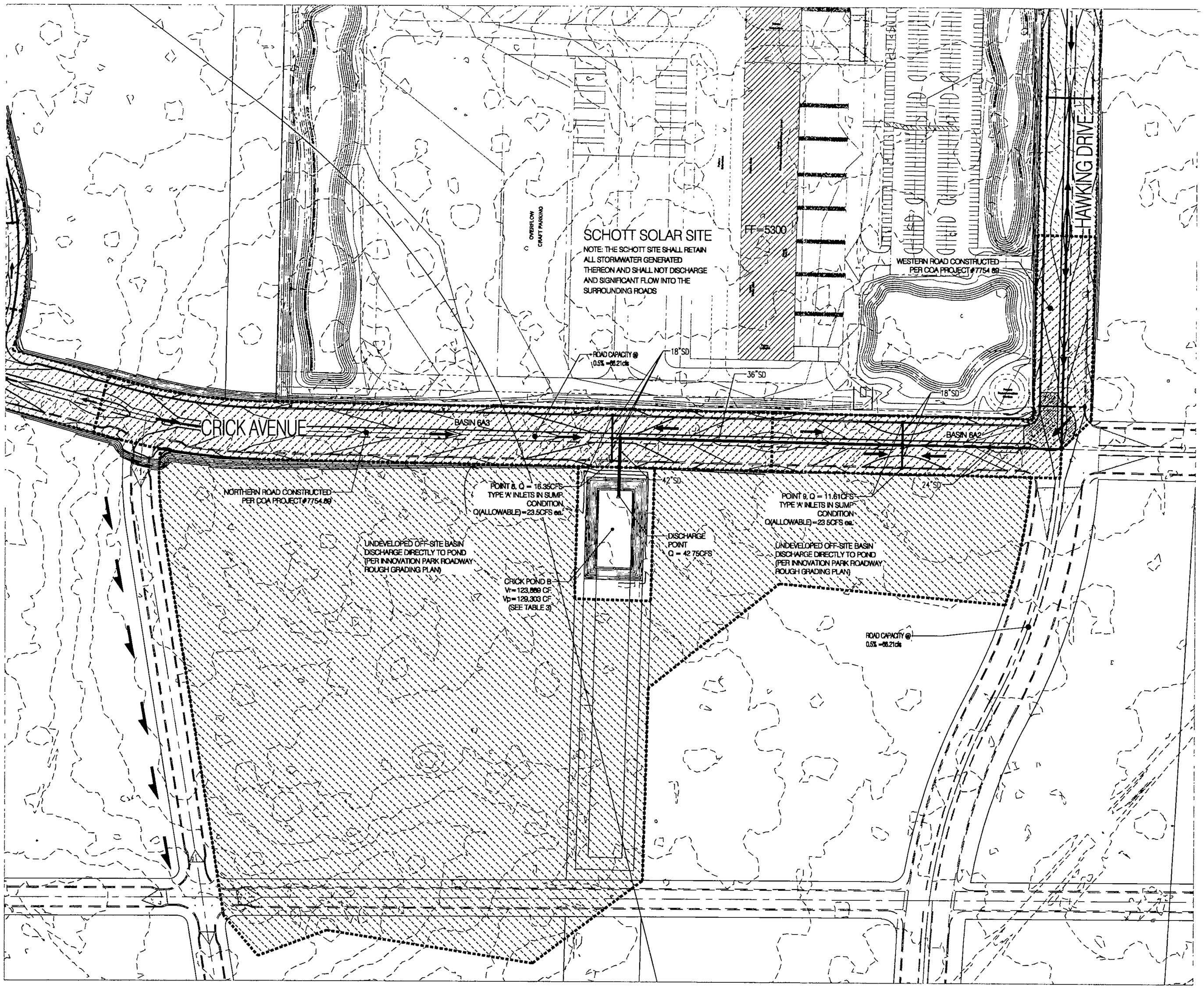
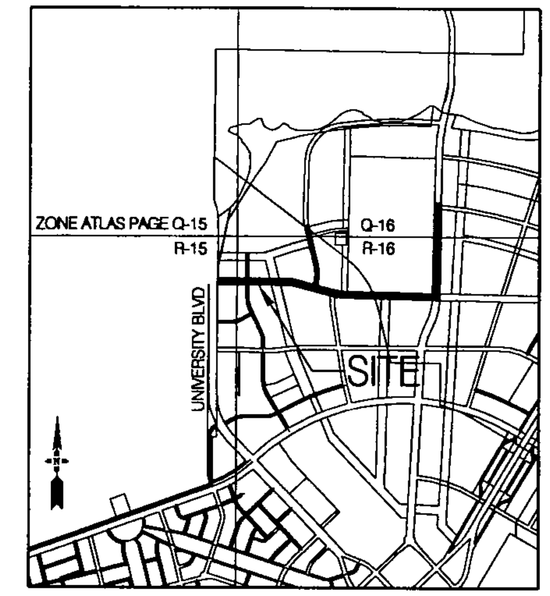
BHI JOB NO. 080344





LOCATION MAP

ZONE ATLAS INDEX MAP Q-16, R-15, R-16

N

0 50 100 200

SCALE: 1"=100'

LEGEND

- CONTRIBUTING DRAINAGE AREA BASIN LINE
- DEVELOPED FLOW ARROW
- EXISTING FLOW ARROW
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

AS-BUILT INFORMATION

CONTRACTOR WORK STAKED BY	DATE
INSPECTOR'S COMPLIANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO.	DATE

BENCH MARKS

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY BW DATE 06/2008

DRAWN BY BW DATE 06/2008

CHECKED BY MB DATE 06/2008

Bohannan ▲ Huston INC.

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

Mesa del Sol - Innovation Park

Drainage Area Contributing to Crick Avenue - FIGURE 4

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

CITY PROJECT NO	ZONE MAP NO	SHEET	OF
	R-16	4	

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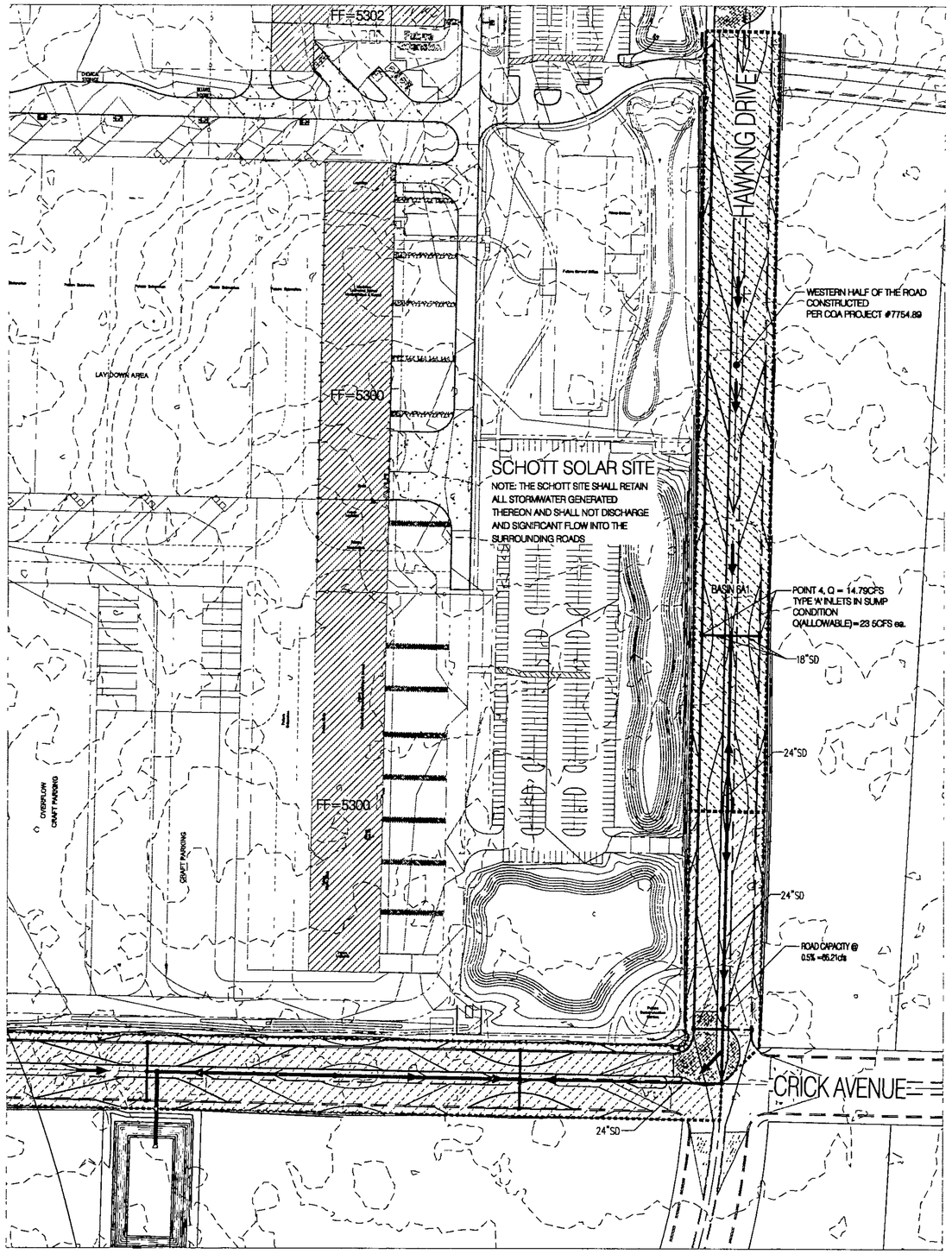
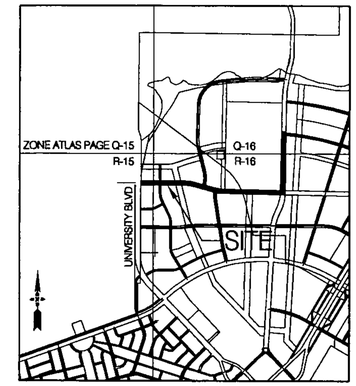
BHI JOB NO. 080344





LOCATION MAP

ZONE ATLAS INDEX MAP Q-16, R-15, R-16

N

0 50 100 200

SCALE: 1"=100'

LEGEND

- CONTRIBUTING DRAINAGE AREA BASIN LINE
- DEVELOPED FLOW ARROW
- EXISTING FLOW ARROW
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

AS-BUILT INFORMATION

CONTRACTOR — DATE
WORK STAKED BY — DATE
INSPECTOR'S ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION

RECORDED BY — DATE
NO. — DATE

BENCH MARKS

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

REMARKS

REVISIONS

DESIGN

NO.	DATE	BY

DESIGNED BY BW DATE 06/2008
DRAWN BY BW DATE 06/2008
CHECKED BY MB DATE 06/2008

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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

Mesa del Sol - Innovation Park
Drainage Area Contributing to Hawking Drive - FIGURE 5

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

CITY PROJECT NO	ZONE MAP NO	SHEET	OF
	R-16	5	

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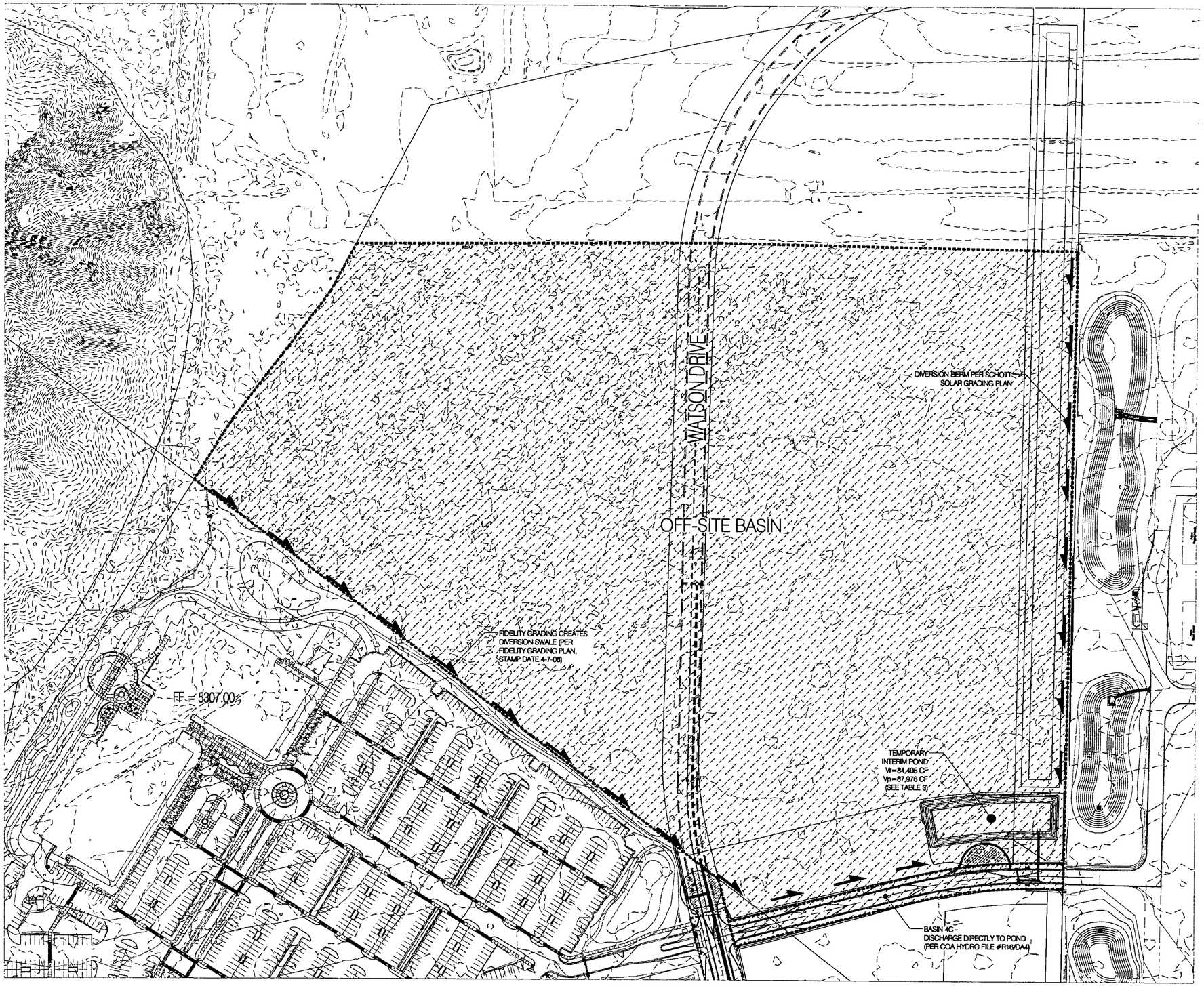
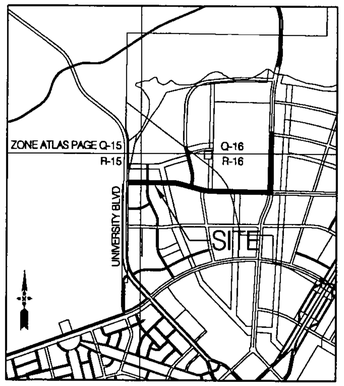
BHI JOB NO. 080344





LOCATION MAP

ZONE ATLAS INDEX MAP Q-16, R-15, R-16

N

0 50 100 200

SCALE. 1"=100'

LEGEND

- CONTRIBUTING DRAINAGE AREA BASIN LINE
- DEVELOPED FLOW ARROW
- EXISTING FLOW ARROW
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

AS-BUILT INFORMATION

CONTRACTOR WORK STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO.	DATE

BENCH MARKS

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGN

DESIGNED BY	BW	DATE 06/2008
DRAWN BY	BW	DATE 06/2008
CHECKED BY	MB	DATE 06/2008

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DEPARTMENT OF MUNICIPAL DEVELOPMENT

Mesa del Sol - Innovation Park

Drainage Area Contributing to the Interim Condition - FIGURE 6

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

CITY PROJECT NO	ZONE MAP NO	SHEET	OF
	R-16	6	

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Wed, 18-Jun-2008 - 4:30:pm, Plotted by: BWARREN

BHI JOB NO. 080344

APPENDIX A

HYDRAULIC CALCULATIONS

TABLE 1
Drainage calculations at specific points - Ultimate Conditions.

		This table is based on the DPM Section 22.2, Zone: 2										
BASIN	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	WT E	$V(100)_{360}$	$V(100)_{10day}$	$V(100)_{10day}$
ID	(SQ. FT)	(AC.)	A	B	C	D	(cfs/ac.)	(csf)	(inches)	(CF)	(CF)	(ACFT)
DRAINGAGE AREA 0												
Crick Avenue (0A1)	162154	3.72	0.0%	0.0%	0.0%	100.0%	4.70	17.50	2.12	28647	50268	1.15
Total Point 1	162154	3.72						17.50				
Crick Avenue (0A2)	76556	1.76	0.0%	0.0%	0.0%	100.0%	4.70	8.26	2.12	13525	23732	0.54
Total Point 2	76556	1.76						8.26				
Watson Drive (0A3)	33373	0.77	0.0%	0.0%	0.0%	100.0%	4.70	3.60	2.12	5896	10346	0.24
Total Point 4	33373	0.77						3.60				
Watson Drive (0A4)	69153	1.59	0.0%	0.0%	0.0%	100.0%	4.70	7.46	2.12	12217	21437	0.49
Total Point 5	69153	1.59						7.46				
Basin 0D	346719	7.96	0.0%	10.0%	0.0%	90.0%	4.46	35.48	1.99	57382	98988	2.27
Basin 0E	326723	7.50	0.0%	10.0%	0.0%	90.0%	4.46	33.44	1.99	54073	93279	2.14
Watson Drive (0A5)	71975	1.65	0.0%	0.0%	0.0%	100.0%	4.70	7.77	2.12	12716	22312	0.51
Total Point 6	398698	9.15						76.69				
Basin 0D	346719	7.96	0.0%	10.0%	0.0%	90.0%	4.46	35.48	1.99	57382	98988	2.27
Watson Drive (0A5)	71975	1.65	0.0%	0.0%	0.0%	100.0%	4.70	7.77	2.12	12716	22312	0.51
Total Point 7	71975	1.65						43.25				
DRAINGAGE AREA 4												
Schott Access Road (4C)	33330	0.77	0.0%	0.0%	0.0%	100.0%	4.70	3.60	2.12	5888	10332	0.24
Total Point 1	33330	0.77						3.60				
DRAINAGE AREA 6												
Crick Avenue (6A3)	151505	3.48	0.0%	0.0%	0.0%	100.0%	4.70	16.35	2.12	26766	46967	1.08
Total Point 8	151505	3.48						16.35				
Crick Avenue/Hawking Drive (6A2)	107636	2.47	0.0%	0.0%	0.0%	100.0%	4.70	11.61	2.12	19016	33367	0.77
Total Point 9	107636	2.47						11.61				
Hawking Drive (6A1)	137082	3.15	0.0%	0.0%	0.0%	100.0%	4.70	14.79	2.12	24218	42495	0.98
Total Point 10	137082	3.15						14.79				

TABLE 2

ANALYSIS OF AN INLET IN A SUMP CONDITION - **Single Type "A" Inlet**

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

WEIR: Q=C*L*H^1.5		ORIFICE: Q=C*A*(2*G*H)**0.5	
Wing opening	Grate opeining	Grate opening	Wing opening
C= 3.0	C=3.0	C=0.6	C=0 6
L= 4.0 ft	L(single grate)=[(2.67')+2(1.8')]=6.27 ft	A(single grate)=4.09 sf	A=2.0 sf
Q=3.0(4.0')H**1.5= 12.0H**1.5	Q=3.0(6.27)H^1.5=18.81*H^1 5	Q=2.46*(64.4*H)^0.5	Q=1.2*(64.4*H)^0.5

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR WING OPENING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0 38	0.59	6.24	1.35	Weir controls on grate analysis
	0 20	0 20	1 07	1.68	8.82	3 83	
	0.30	0.30	1.97	3.09	10.80	7.03	
	0.40	0.40	3.04	4.76	12.47	10 83	
	0.50	0.50	4 24	6.65	13.94	15.14	
	0 60	0 60	5.58	8.74	15.27	19.90	
TOP OF CURB	0.67	0.67	6.58	10.32	16.14	23.48	
	0.70	0.70	7.03	11.02	16.50	25.07	
	0.80	0.80	8.59	13.46	17.64	30.63	
	0.90	0.90	10.25	16.06	18.71	36.55	

ANALYSIS OF AN INLET IN A SUMP CONDITION - **Double Type "A" Inlets**

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

WEIR: Q=C*L*H^1.5		ORIFICE: Q=C*A*(2*G*H)**0.5	
Wing opening	Grate opeining	Grate opening	Wing opening
C= 3.0	C=3.0	C=0.6	C=0.6
L= 4.0 ft	L(double grate)=[2(2.67')+2(1.8')]=8 94	A(double grate)=8.19 s	A=2.0 sf
Q=3.0(4.0')H**1.5= 12.0H**1.5	Q=3.0(8.94)H^1.5=26.82*H^1.5	Q=4.194*(64.4*H)^0.5	Q=1.2*(64.4*H)^0.5

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR "A" OPENING	Q (CFS) WEIR DOUBLE GRATE	Q (CFS) ORIFICE DOUBLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0 00	0.00	0.00	0 00	Flow at double "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.85	12.47	1.61	Weir controls on grate analysis
	0.20	0.20	1.07	2.40	17.64	4.55	
	0.30	0.30	1.97	4.41	21.60	8.35	
	0.40	0.40	3.04	6.78	24.94	12.86	
	0.50	0.50	4.24	9.48	27.88	17.97	
	0.60	0.60	5.58	12.46	30.55	23.62	
TOP OF CURB	0.67	0.67	6.58	14.71	32.28	27.87	
	0.70	0 70	7.03	15.71	32.99	29.76	
	0.80	0.80	8.59	19 19	35.27	36.36	
	0 90	0.90	10.25	22.90	37.41	43.39	

TABLE 3
Pond Sizing

BASIN ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (csf)	WT E (inches)	$V(100)_{360}$ (CF)	$V(100)_{10day}$ (CF)	$V(100)_{10day}$ (ACFT)
This table is based on the DPM Section 22.2, Zone: 2												
CRICK POND A												
Crick Developed	154400	3.54	0.0%	0.0%	0.0%	100.0%	4.70	16.66	2.12	27277	47864	1.10
Crick Undeveloped	84309	1.94	0.0%	0.0%	100.0%	0.0%	3.14	6.08	1.13	7939	7939	0.18
TOTAL	*238,710*	*5*						*22.74*		*35,217*	*55,803*	*1.28*
								Total Interim Pond Required =		*55,803*		
								Total Interim Pond Provided =		*107,206*		
CRICK POND B												
Crick Developed	107645	2.47	0.0%	0.0%	0.0%	100.0%	4.70	11.61	2.12	19017	33370	0.77
Crick Undeveloped	108458	2.49	0.0%	0.0%	100.0%	0.0%	3.14	7.82	1.13	10213	10213	0.23
Hawking Developed	89162	2.05	0.0%	0.0%	0.0%	100.0%	4.70	9.62	2.12	15752	27640	0.63
Hawking Undeveloped	90786	2.08	0.0%	0.0%	100.0%	0.0%	3.14	6.54	1.13	8549	8549	0.20
Undeveloped Off-site Basin	998862	22.93	100.0%	0.0%	0.0%	0.0%	1.56	35.77	0.53	44116	44116	1.01
TOTAL	*1,394,913*	*32.02*						*71.37*		*97,648*	*123,889*	*2.84*
								Total Interim Pond Required =		*123,889*		
								Total Interim Pond Provided =		*129,303*		
EXISTING FIDELITY PONDS												
Fidelity	1080186	24.80	0.0%	10.0%	0.0%	90.0%	4.46	110.55	1.99	178771	308393	7.08
Turing Developed	19023	0.44	0.0%	0.0%	0.0%	100.0%	4.70	2.05	2.12	3361	5897	0.14
Watson Developed	59509	1.37	0.0%	0.0%	0.0%	100.0%	4.70	6.42	2.12	10513	18448	0.42
Basin 0G	148461	3.41	100.0%	0.0%	0.0%	0.0%	1.56	5.32	0.53	6557	6557	0.15
Basin 0H	99266	2.28	100.0%	0.0%	0.0%	0.0%	1.56	3.55	0.53	4384	4384	0.10
TOTAL	*1,406,445*	*32.29*						*127.89*		*203,586*	*343,679*	*7.89*
								Total Interim Pond Required =		*343,679*		
								Total Existing Pond Provided =		*791,460*		
TEMPORARY INTERIM POND A												
Undeveloped Off-Site Basin	1679166	38.55	100.0%	0.0%	0.0%	0.0%	1.56	60.14	0.53	74163	74163	1.70
Basin 4C (Access Road)	33330	0.77	0.0%	0.0%	0.0%	100.0%	4.70	3.60	2.12	5888	10332	0.24
TOTAL	*1,712,496*	*39.31*						*63.73*		*80,051*	*84,495*	*1.94*
								Total Interim Pond Required =		*84,495*		
								Total Interim Pond Provided =		*87,976*		
TEMPORARY INTERIM POND B												
Undeveloped Off-site Basin 0J	322664	7.41	100.0%	0.0%	0.0%	0.0%	1.56	11.56	0.53	14251	14251	0.33
TOTAL	*322,664*	*7.41*						*11.56*		*14,251*	*14,251*	*0.33*
								Total Interim Pond Required =		*14,251*		
								Total Interim Pond Provided =		*27,192*		
TEMPORARY INTERIM POND C												
Undeveloped Off-Site Basin 4E	532919	12.23	100.0%	0.0%	0.0%	0.0%	1.56	19.09	0.53	23537	23537	0.54
TOTAL	*532,919*	*12.23*						*19.09*		*23,537*	*23,537*	*0.54*
								Total Interim Pond Required =		*23,537*		
								Total Interim Pond Provided =		*53,917*		

where?

Day pond

Day water

Mannings Analysis for Crick Avenue/Hawking Drive 36' F-M (1/2 Road,114' ROW):

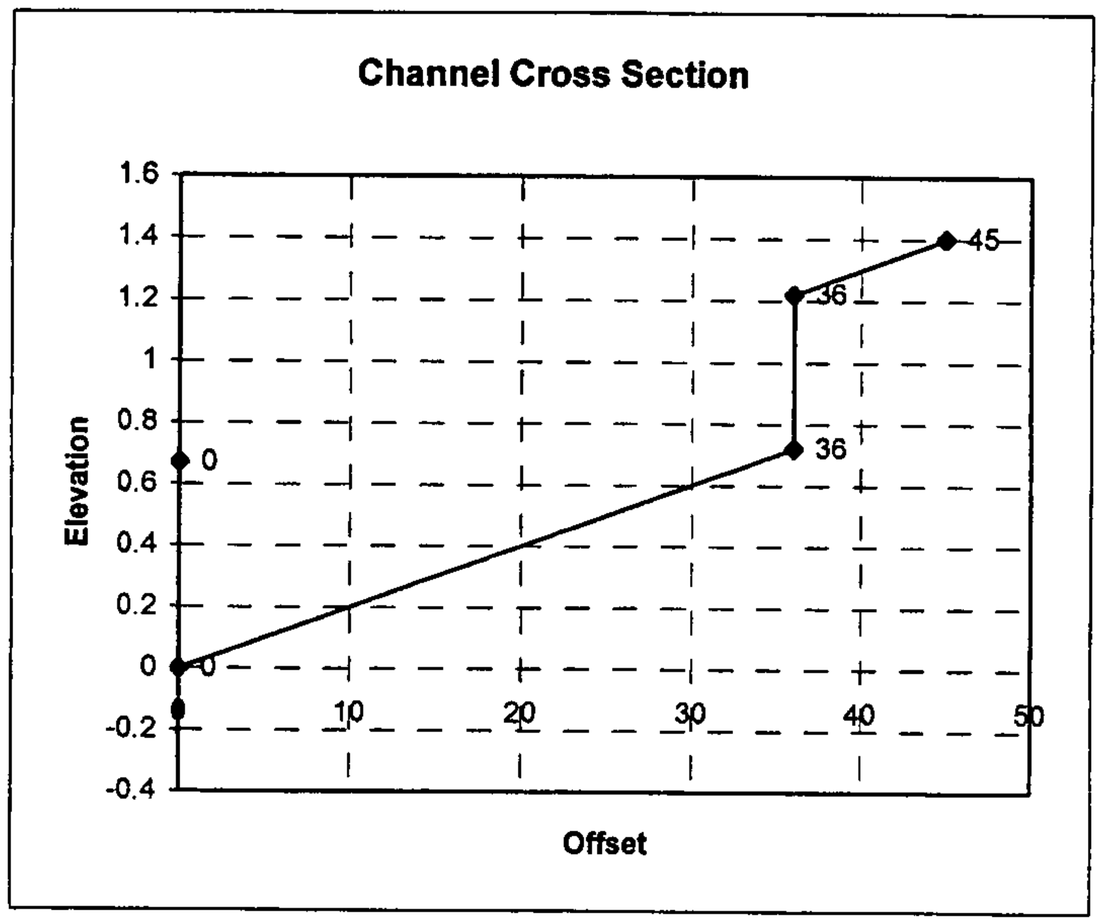
Manning's Eqn: Q = 1.49/n x AR^2/3 x S^1/2

Channel Coordinates - Offset and Elevation

Point #	Offset	Elevation
1	0	0.67
2	0	0
3	36	0.72
4	36	1.22
5	45	1.4

A	11.2225	sq. ft
WP	34.1767	ft.
R	0.32836699	ft.
Slope	0.5000%	
n	0.017	

Q = 33.104
TOTAL Q = 66.209
V = 2.95



Mannings Analysis for Watson Drive 40' F-F (72' ROW):

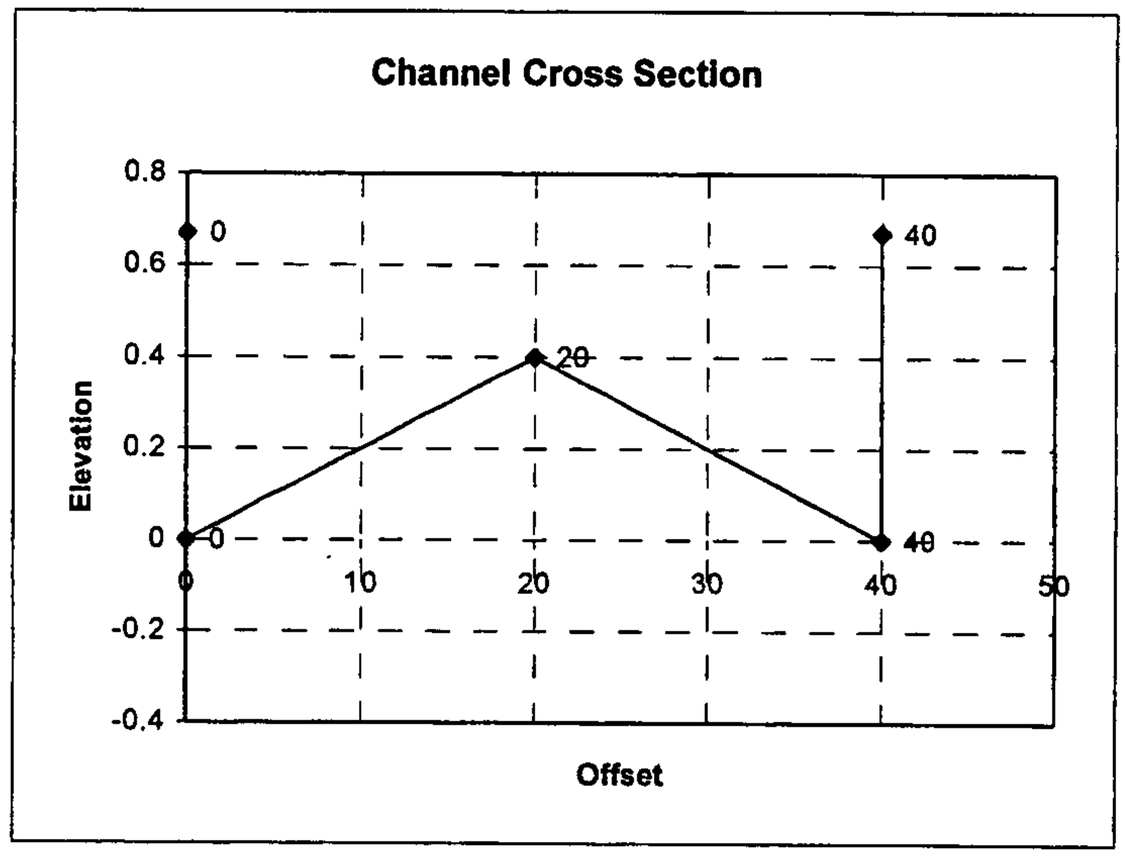
Manning's Eqn: Q = 1.49/n x AR^2/3 x S^1/2

Channel Coordinates - Offset and Elevation

Point #	Offset	Elevation
1	0	0.67
2	0	0
3	20	0.4
4	40	0
5	40	0.67

A	18.8000 sq. ft
WP	41.3400 ft.
R	0.454765 ft.
Slope	0.5000%
n	0.017

Q= 68.903
V= 3.67



Mannings Analysis for Turing Drive 28' F-F (50' ROW):

Manning's Eqn: Q = 1.49/n x AR^2/3 x S^1/2

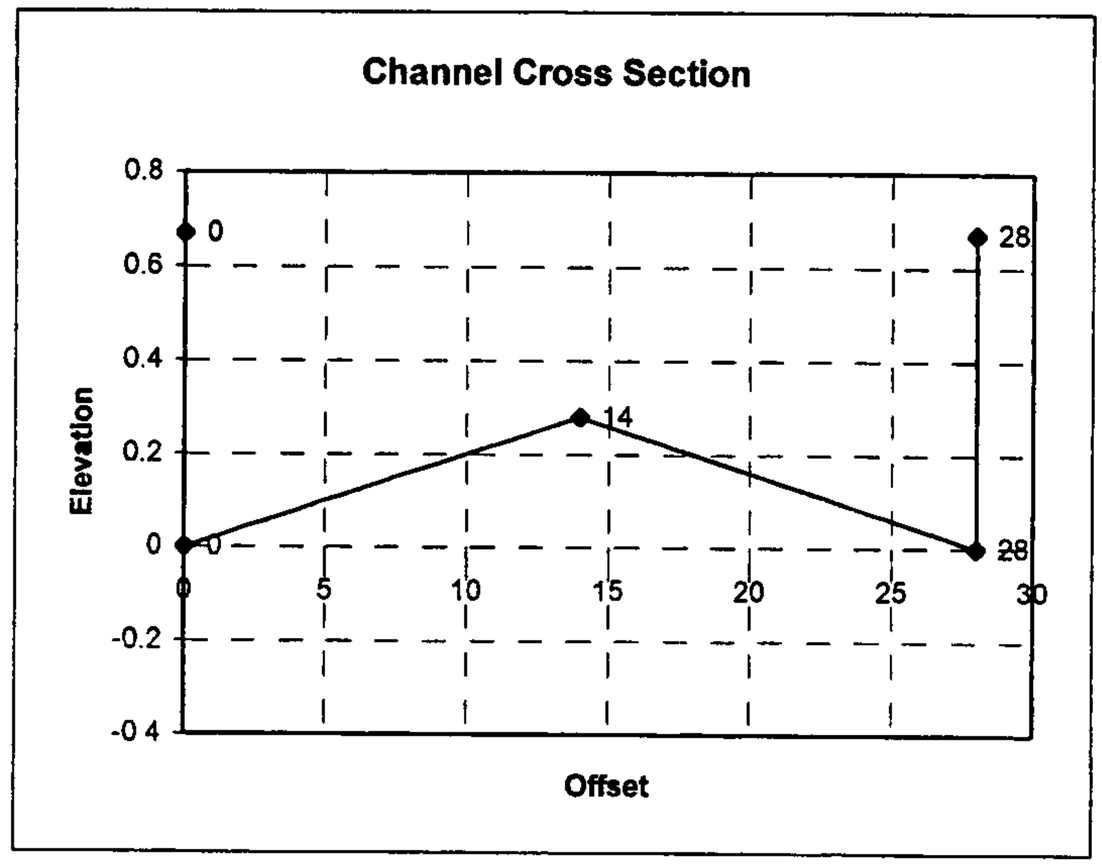
Channel Coordinates - Offset and Elevation

Point #	Offset	Elevation
1	0	0.67
2	0	0
3	14	0.28
4	28	0
5	28	0.67

A	14.8400	sq. ft
WP	29.3400	ft.
R	0.50579414	ft.
Slope	0.5000%	
n	0.017	

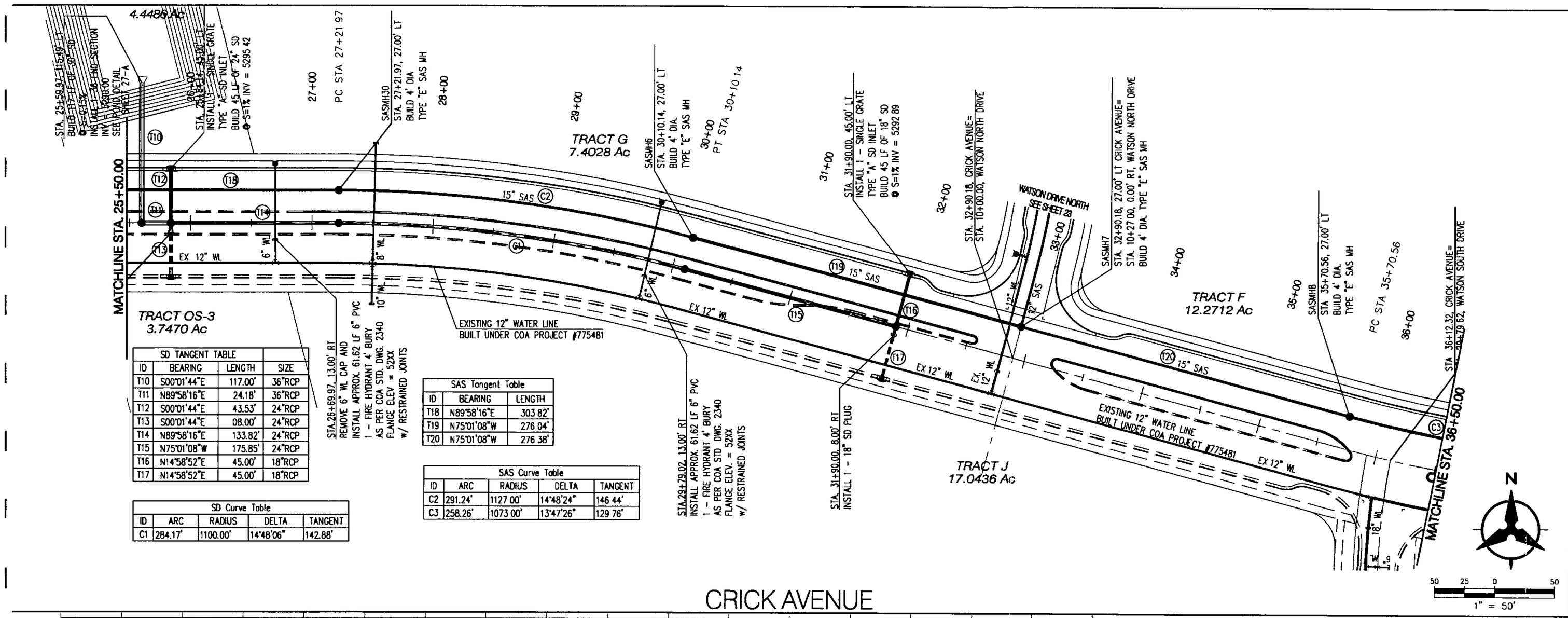
Q= 58.386

V= 3.93



APPENDIX B

HGL CALCULATIONS



SD TANGENT TABLE			
ID	BEARING	LENGTH	SIZE
T10	S00°01'44"E	117.00'	36"RCP
T11	N89°58'16"E	24.18'	36"RCP
T12	S00°01'44"E	43.53'	24"RCP
T13	S00°01'44"E	08.00'	24"RCP
T14	N89°58'16"E	133.82'	24"RCP
T15	N75°01'08"W	175.85'	24"RCP
T16	N14°58'52"E	45.00'	18"RCP
T17	N14°58'52"E	45.00'	18"RCP

SD Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C1	284.17'	1100.00'	14°48'06"	142.88'

SAS Tangent Table		
ID	BEARING	LENGTH
T18	N89°58'16"E	303.82'
T19	N75°01'08"W	276.04'
T20	N75°01'08"W	276.38'

SAS Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C2	291.24'	1127.00'	14°48'24"	146.44'
C3	258.26'	1073.00'	13°47'26"	129.76'

GENERAL NOTES

1 THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES

2 ALL CURVE DATA AND DIMENSIONS ARE CALCULATED FROM CENTERLINE OF PIPE OR MANHOLE ALL SAS & SD SLOPES ARE CALCULATED TO TRUE PIPE DIMENSIONS FROM INVERT TO INVERT (PAY ITEMS ARE SHOWN IN PARENTHESES)

3 GRADE ELEVATIONS, WHERE NOTED, ARE FOR FLOWLINE OF STANDARD CURB UNLESS OTHERWISE SPECIFIED

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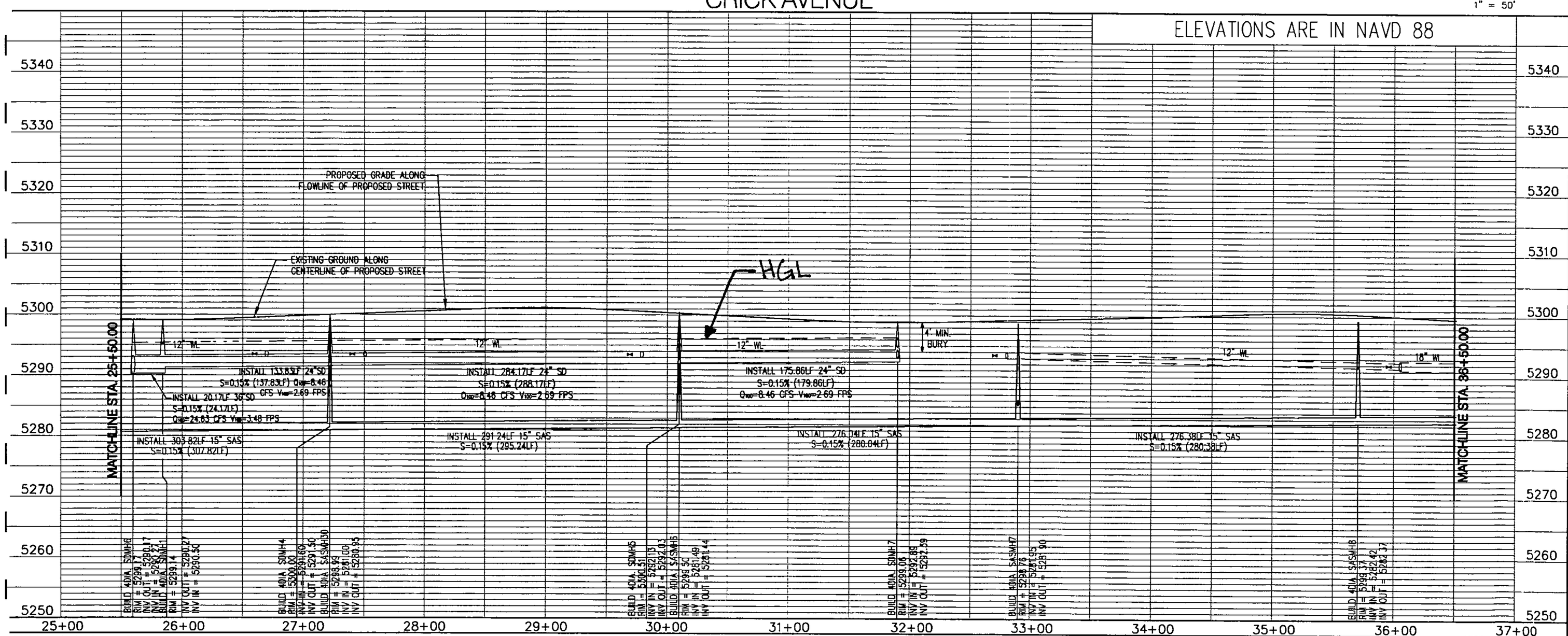

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June 16, 2008 - 10:00am

SCALE: 1" = 50' (HORIZ.) 1" = 10' (VERT.)

LEGEND

- DOUBLE WATER METER
- SINGLE WATER METER
- WATER LINE SHUTOFF VALVE
- WATER LINE TEE
- SAS LATERAL
- SAS MANHOLE
- STORM DRAIN MANHOLE
- STORM DRAIN INLET
- PROPOSED FIRE HYDRANT
- EXISTING WATER VALVE

Mesa del Sol

Bohannan ▲ Huston INC.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MESA DEL SOL - CRICK AVE PUBLIC INFRASTRUCTURE
CRICK AVENUE
UTILITY PLAN AND PROFILE STA. 25+50 TO STA. 36+50

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No	Zone Map No.	Sheet	Of
775489	R15 - R16	17	27

AS-BUILT INFORMATION

	DATE
CONTRACTOR	DATE
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INSPECTOR'S ACCEPTANCE BY	DATE
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DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

	DATE
RECORDED BY	DATE
NO	

BENCH MARKS
ACS 3-1/4" ALUMINUM CAP RIVETED TO A TUBE SET IN A CONCRETE BASE IN THE GROUND STAMPED "5-Q-14, 1987" FROM THE RIO BRAVO BLVD AND BROADWAY INTERSECTION CO SOUTH 0.9 MILES AND PROCEED 123' WEST OF THE CENTERLINE. STATE PLANE COORDINATES (CENTRAL ZONE, NAD83/NAVD88) N=1460471.432, E=1521388.180 (GROUND) ELEVATION=4981.17

SURVEY INFORMATION
FIELD NOTES

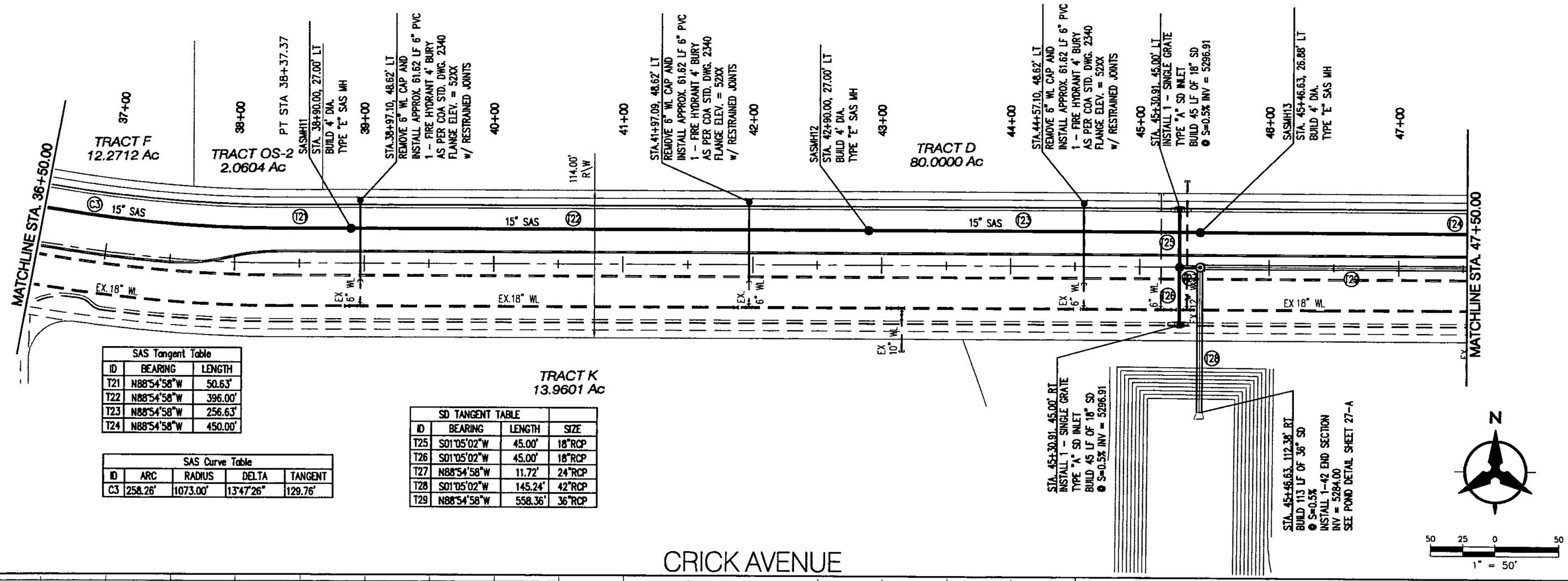
NO.	BY	DATE

ENGINEER'S SEAL
CHRISTIAN J. SHOLTS
NEW MEXICO
16244
LICENSED PROFESSIONAL ENGINEER

No.	Date	REMARKS	By
		REVISIONS	

DESIGN

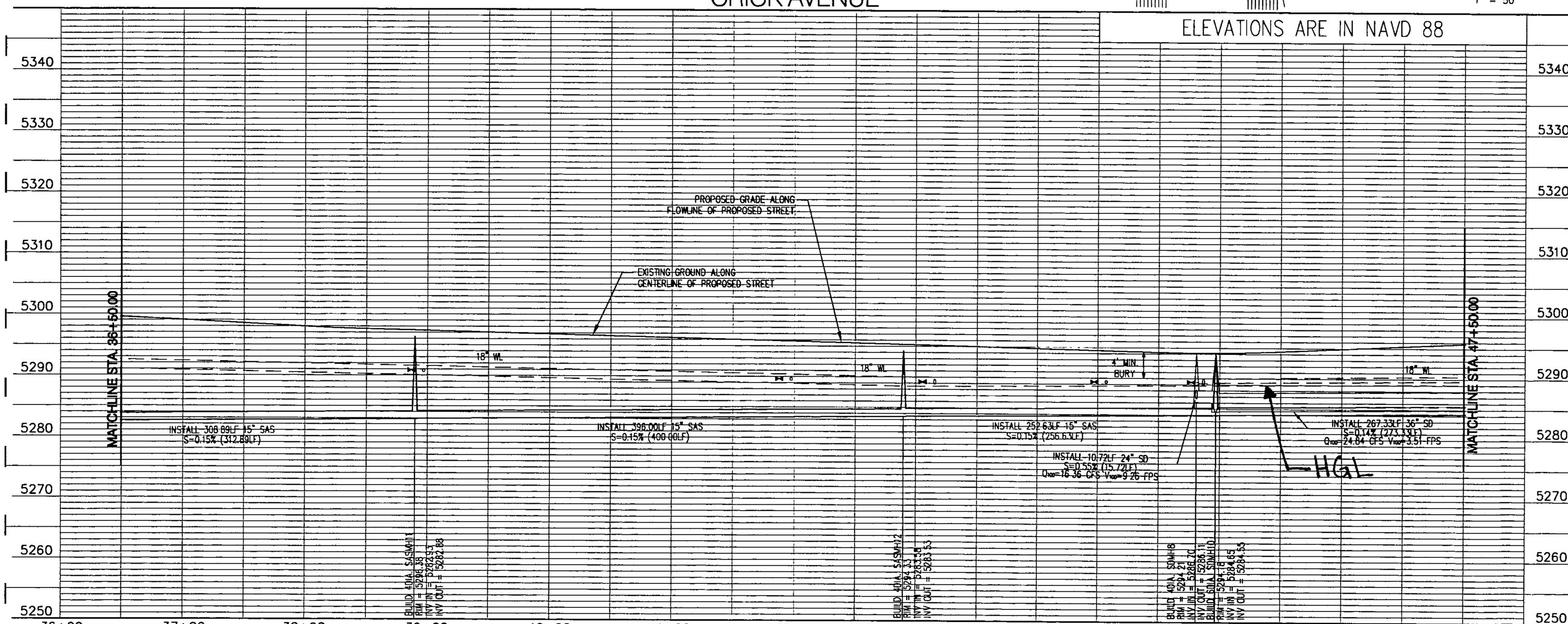
		DATE
Designed By:	CJS	DATE 06/05/08
Drawn By:	LsM	DATE 06/05/08
Checked By	CJS	DATE 06/05/08



SAS Tangent Table		
ID	BEARING	LENGTH
T21	N88°54'58"W	50.63'
T22	N88°54'58"W	396.00'
T23	N88°54'58"W	256.63'
T24	N88°54'58"W	450.00'

SAS Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C3	258.26'	1073.00'	13°47'26"	129.76'

SD TANGENT TABLE			
ID	BEARING	LENGTH	SIZE
T25	S01°05'02"W	45.00'	18"RCP
T26	S01°05'02"W	45.00'	18"RCP
T27	N88°54'58"W	11.72'	24"RCP
T28	S01°05'02"W	145.24'	42"RCP
T29	N88°54'58"W	558.36'	36"RCP



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June 16, 2008 - 10:04am

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AS-BUILT INFORMATION

		DATE
CONTRACTOR		
PDPE STAKED BY		DATE
PDPE ACCEPTANCE BY		DATE
FIELD VERIFICATION BY		DATE
RED LINE REVISIONS CORRECTED BY		DATE

BENCH MARKS

ACS 3-1/4" ALUMINUM CAP RIVETED TO A TUBE SET IN A CONCRETE BASE IN THE GROUND STAMPED "5-Q-14, 1987", FROM THE RIO BRAVO BLVD AND BROADWAY INTERSECTION GO SOUTH 0.9 MILES AND PROCEED 123' WEST OF THE CENTERLINE STATE PLANE COORDINATES (CENTRAL ZONE, NAD83/NAVD88) N=1460471 432, E=1521388 180 (GROUND) ELEVATION=4981 17

MICRO-FILM INFORMATION

	DATE
RECORDED BY	
NO	

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

CHRISTIAN J. SHOLTIS
NEW MEXICO
16244
LICENSED PROFESSIONAL ENGINEER

No.	Date	REMARKS	By

REVISIONS

DESIGN

		DATE
Designed By:	CJS	06/06/08
Drawn By	LSM	DATE: 06/06/08
Checked By	CJS	DATE: 06/06/08

Mesa del Sol

Bohannan ▲ Huston INC

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

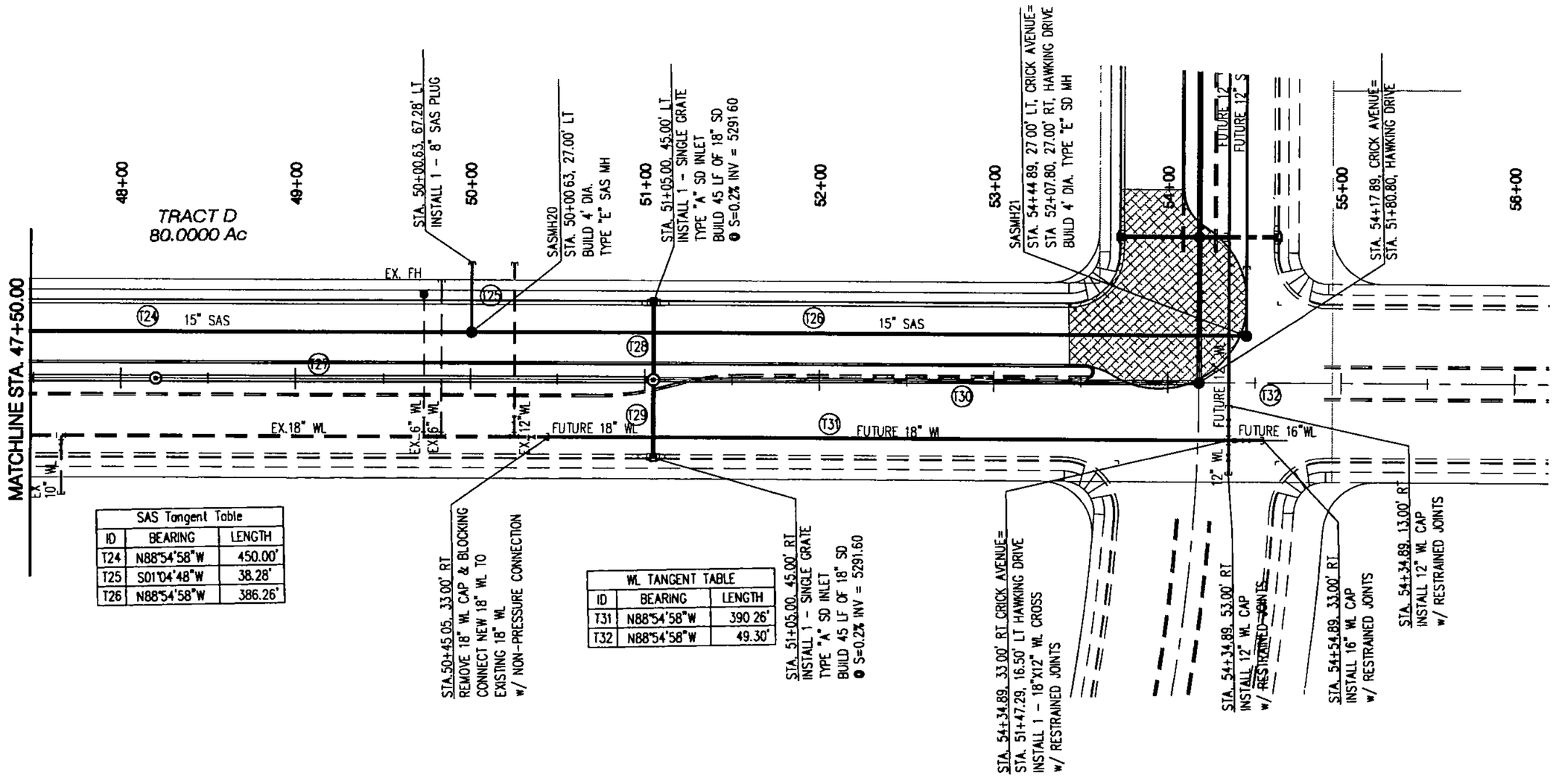
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MESA DEL SOL - CRICK AVE PUBLIC INFRASTRUCTURE
CRICK AVENUE
UTILITY PLAN AND PROFILE STA. 36+50 TO STA. 47+50

Design Review Committee	City Engineer Approval	Last Design Update	Mo /Day/Yr	Mo /Day/Yr

City Project No	Zone Map No	Sheet	Of
775489	R15 - R16	18	27



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T24	N88°54'58"W	450.00'
T25	S01°04'48"W	38.28'
T26	N88°54'58"W	386.26'

WL TANGENT TABLE		
ID	BEARING	LENGTH
T31	N88°54'58"W	390.26'
T32	N88°54'58"W	49.30'

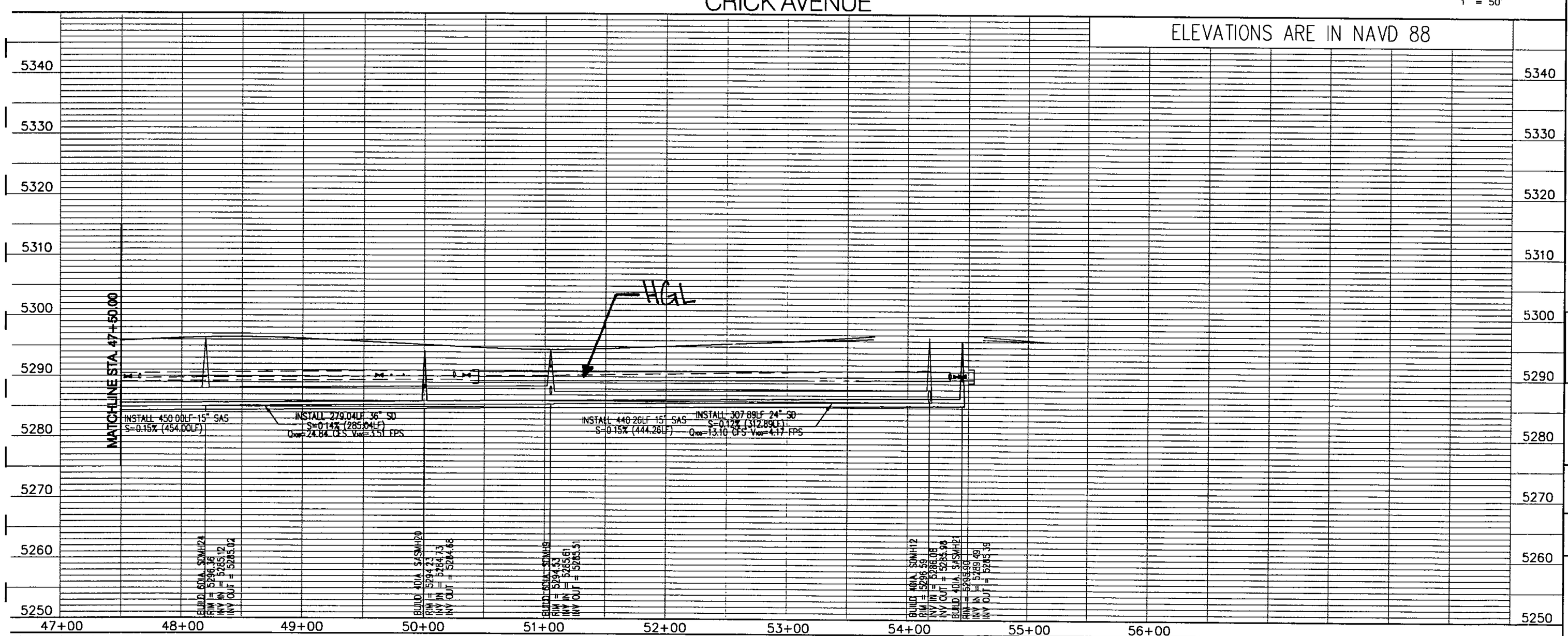
CRICK AVENUE

N

50 25 0 50

1" = 50'

ELEVATIONS ARE IN NAVD 88



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June 16, 2008 - 10:05am

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AS-BUILT INFORMATION

CONTRACTOR	DATE
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MICRO-FILM INFORMATION

RECORDED BY	DATE
NO	

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

CHRISTIAN J. SKOLITS
NEW MEXICO
16244
LICENSED PROFESSIONAL ENGINEER

No.	Date	REMARKS	By

REVISIONS

DESIGN

Designed By: CJS DATE: 06/06/08
Drawn By: LsM DATE: 06/06/08
Checked By: CJS DATE: 06/06/08

Mesa del Sol

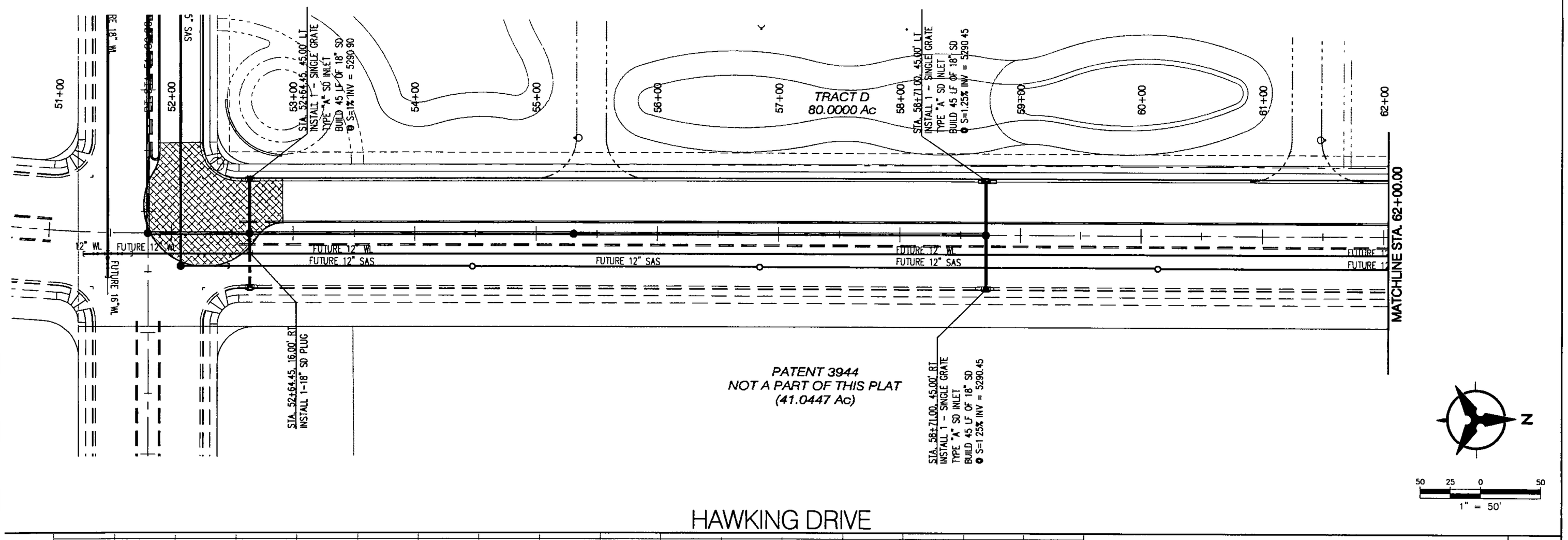
Bohannan ▲ Huston INC.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MESA DEL SOL - CRICK AVE PUBLIC INFRASTRUCTURE
CRICK AVENUE
UTILITY PLAN AND PROFILE STA. 47+50 TO STA. 55+00

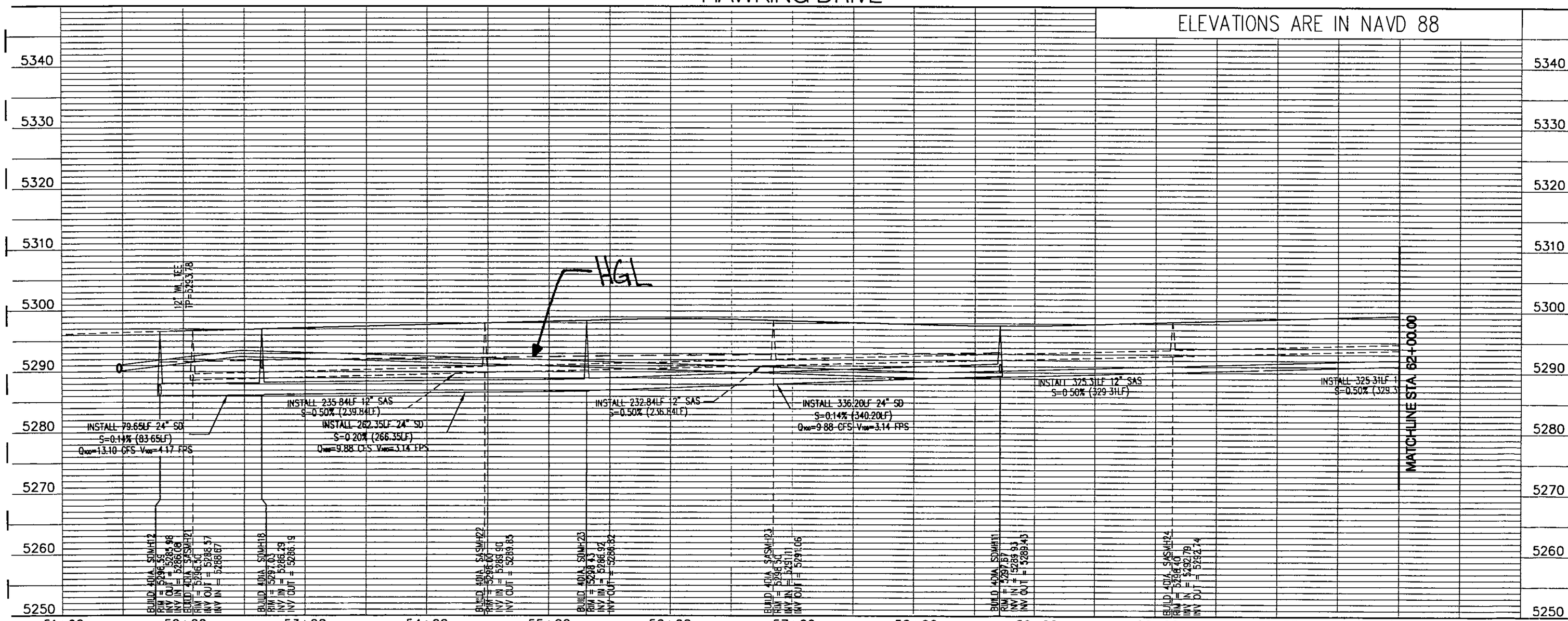
Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr	Mo./Day/Yr

City Project No	Zone Map No.	Sheet	Of
775489	R15 - R16	19	27



HAWKING DRIVE

ELEVATIONS ARE IN NAVD 88



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FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

CHRISTIAN J. SHOLTIS
NEW MEXICO
16244
LICENSED PROFESSIONAL ENGINEER

No.	Date	REMARKS	By
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		DESIGN	

Designed By: CJS DATE: 06/06/08
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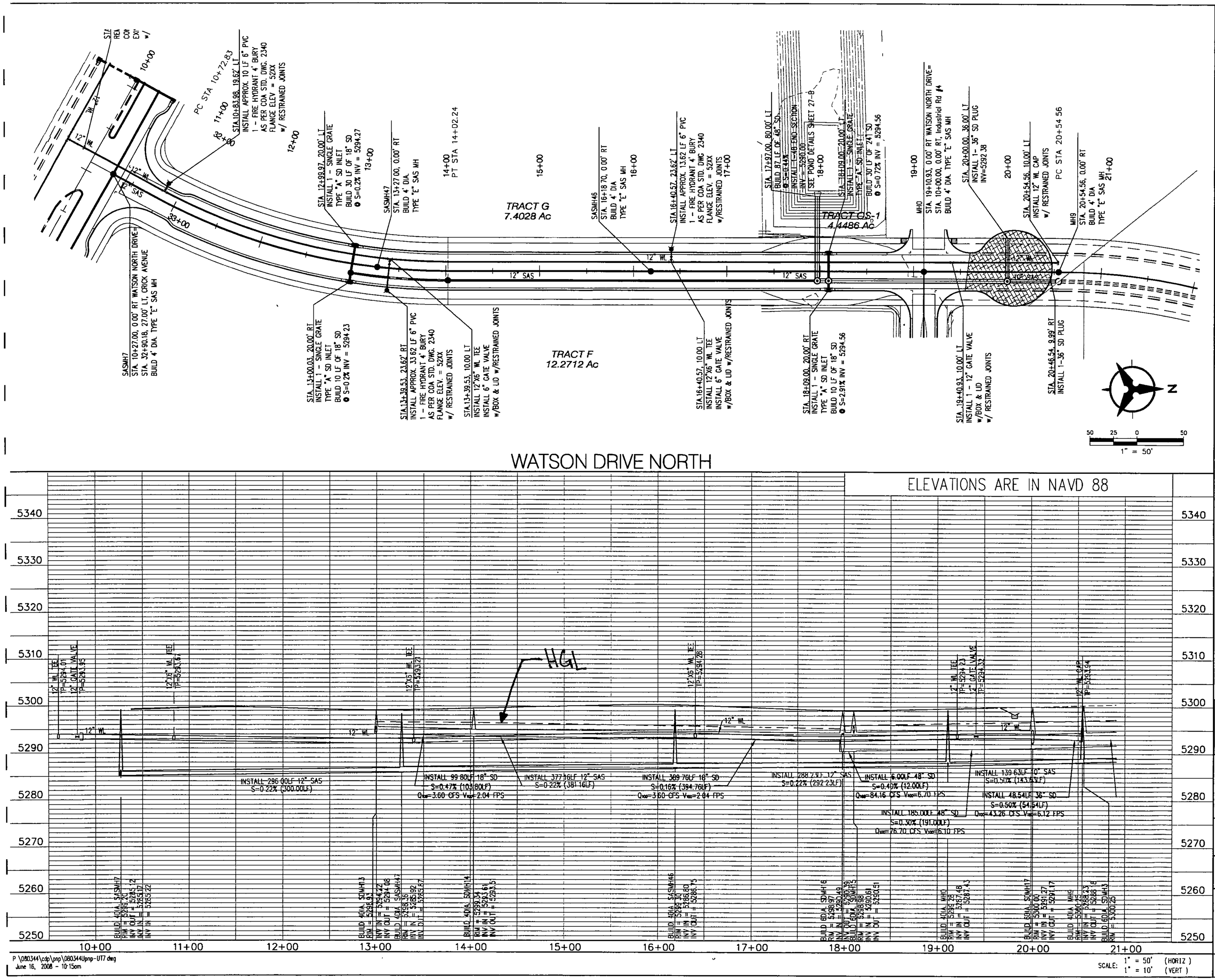
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MESA DEL SOL - CRICK AVE PUBLIC INFRASTRUCTURE
HAWKING DRIVE
UTILITY PLAN AND PROFILE STA. 51+00 TO STA. 62+00

Design Review Committee	City Engineer Approval	Last Design Update	Mo /Day/Yr	Mo /Day/Yr

City Project No	Zone Map No	Sheet	Of
775489	R15 - R16	20	27



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June 16, 2008 - 10:15am

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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MESA DEL SOL - CRICK AVE PUBLIC INFRASTRUCTURE
WATSON DRIVE NORTH
UTILITY PLAN AND PROFILE

Design Review Committee	City Engineer Approval	Last Design Update	Mo /Day/Yr	Mo /Day/Yr

City Project No.	Zone Map No.	Sheet	Of
775489	R15 - R16	23	27

AS-BUILT INFORMATION

CONTRACTOR	DATE
WORK STAKED BY	DATE
CONTRACTOR'S SURVEYOR'S ACCEPTANCE BY	DATE
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MICRO-FILM INFORMATION

RECORDED BY	DATE
NO.	

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SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

CHRISTIAN J. SKOLITS
NEW MEXICO
16244
LICENSED PROFESSIONAL ENGINEER

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		REVISIONS	
		DESIGN	

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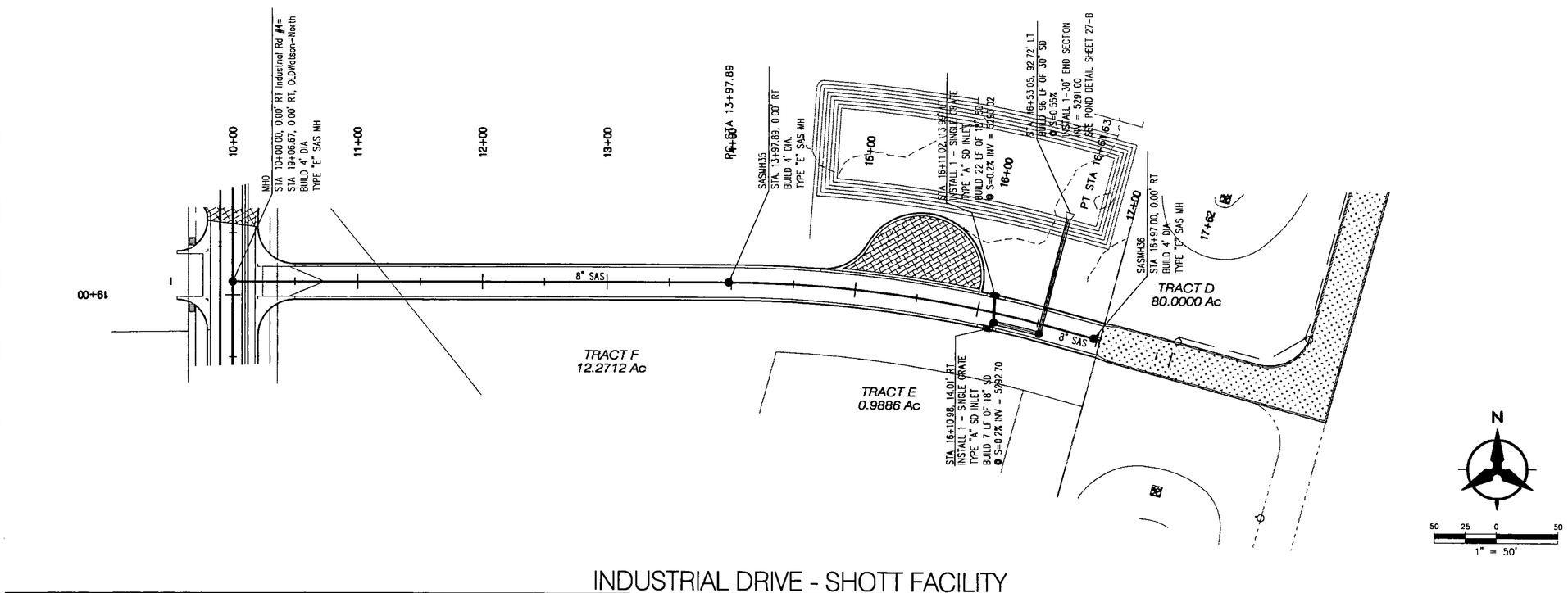
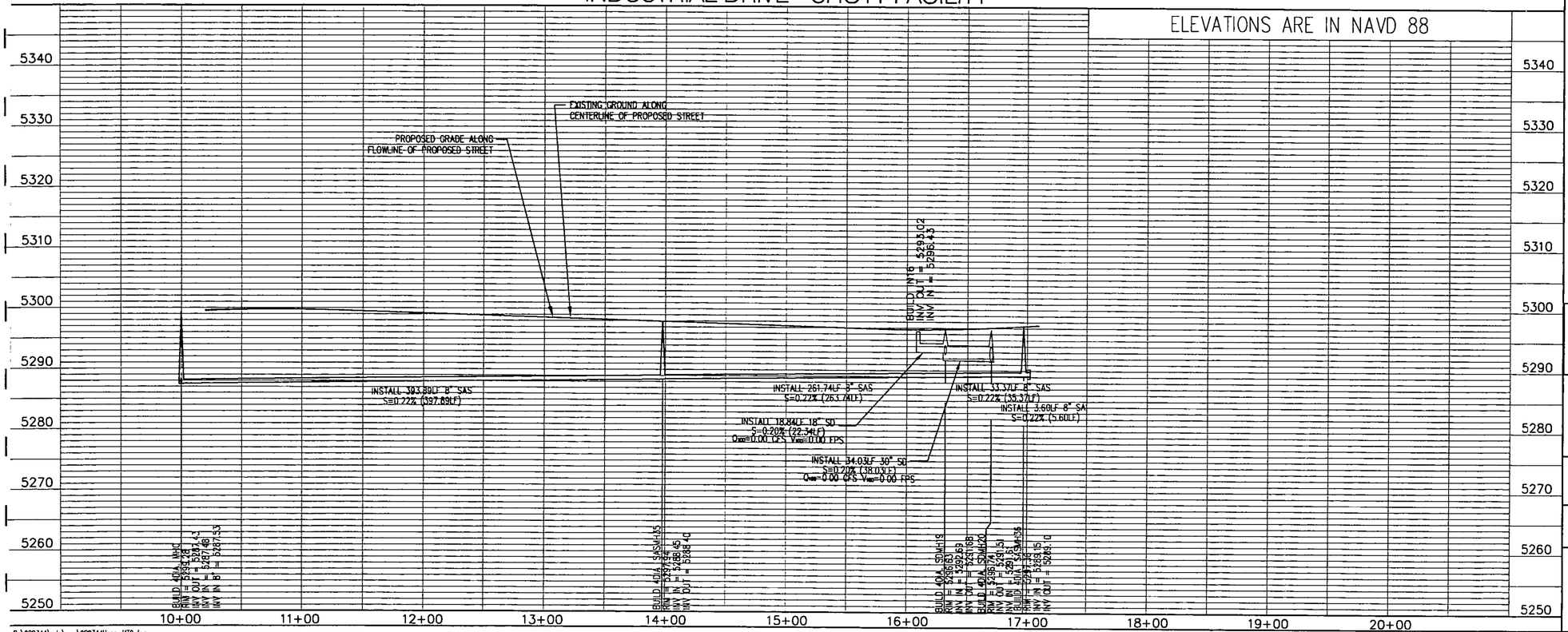


INDUSTRIAL DRIVE - SHOTT FACILITY

ELEVATIONS ARE IN NAVD 88



SCALE 1" = 50' (HORIZ.)
1" = 10' (VERT.)

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June 16, 2008 - 10:21am

GENERAL NOTES

1 THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES

2 ALL CURVE DATA AND DIMENSIONS ARE CALCULATED FROM CENTERLINE OF PIPE OR MANHOLE ALL SAS & SD SLOPES ARE CALCULATED TO TRUE PIPE DIMENSIONS FROM INVERT TO INVERT (PAY ITEMS ARE SHOWN IN PARENTHESES)

3 GRADE ELEVATIONS, WHERE NOTED, ARE FOR FLOWLINE OF STANDARD CURB UNLESS OTHERWISE SPECIFIED

4 CONTRACTOR IS TO INSTALL A 4" X 4" X 5' POST AND END AT THE END OF EACH SANITARY SEWER SERVICE.

5 CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL UTILITY CONDUITS AND EXISTING LINES

6 CONTRACTOR SHALL PROVIDE THE INSPECTORS WITH THE PROPOSED TESTING PLAN THE PLAN MUST BE APPROVED BEFORE TESTING OPERATIONS BEGIN

7 CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE

8 ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, CONDUITS, LANDSCAPING, UTILITY LINES, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE

9 MH RIMS & CATCH BASIN INLET ELEVATIONS, FIRE HYDRANT & FLANGE ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY AND ADJUST TO FINAL PAVEMENT GRADES

10 SAS STATIONING FOLLOWS CL OF ROAD UNLESS OTHERWISE NOTED

11 STATIONING OF DROP INLET IS TO MIDDLE OF DOWN HILL GRATE AT FACE OF CURB

12 FLOWLINE ELEVATIONS FOR DROP INLETS ARE PROJECTED FROM FLOWLINE OF STANDARD CURB TO MIDDLE OF DOWNHILL GRATE.

13. ALL WATERLINE APPURTENANCES SHALL USE RESTRAINED JOINTS

14. FOR STORM DRAIN CONSTRUCTION. ALL RCP JOINTS SHALL NOT BE GROUTED PRIOR TO FINAL INSPECTION FINAL INSPECTION SHALL DETERMINE WHICH JOINTS ARE TO BE GROUTED FOR FINAL ACCEPTANCE OF THE CONSTRUCTION

LEGEND

- DOUBLE WATER METER
- SINGLE WATER METER
- WATER LINE SHUTOFF VALVE
- WATER LINE TEE
- SAS LATERAL
- SAS MANHOLE
- STORM DRAIN MANHOLE
- STORM DRAIN INLET
- PROPOSED FIRE HYDRANT
- EXISTING WATER VALVE

Mesa del Sol

Bohannan ▲ Huston INC.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MESA DEL SOL - CRICK AVE PUBLIC INFRASTRUCTURE
INDUSTRIAL DRIVE - SHOTT FACILITY
UTILITY PLAN AND PROFILE

Design Review Committee	City Engineer Approval	Last Design Update	Mo /Day/Yr	Mo /Day/Yr

City Project No	Zone Map No.	Sheet	Of
775489	R15 - R16	25	27

AS-BUILT INFORMATION

CONTRACTOR	DATE
WORK STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO	

BENCH MARKS

ACS 3-1/4" ALUMINUM CAP RIVETED TO A TUBE SET IN A CONCRETE BASE IN THE GROUND STAMPED "5-Q-14, 1987" FROM THE RIO BRAVO BLVD AND BROADWAY INTERSECTION GO SOUTH 0.9 MILES AND PROCEED 123' WEST OF THE CENTERLINE STATE PLANE COORDINATES (CENTRAL ZONE, NAD83/NAVD88) N=1460471.432, E=1521388.180 (GROUND) ELEVATION=4981.17

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL
CHRISTIAN J. SHOTTS
NEW MEXICO
16244
LICENSED PROFESSIONAL ENGINEER

No.	Date	REMARKS	By
		REVISIONS	
		DESIGN	

Designed By	CJS	DATE: 06/06/08
Drawn By	LSM	DATE: 06/06/08
Checked By	CJS	DATE: 06/06/08

APPENDIX C

MESA DEL SOL INNOVATION PARK

DRAINAGE MANAGEMENT PLAN

APPENDIX D

MESA DEL SOL INNOVATION PARK – DRAINAGE AREA 0

DRAINAGE MANAGEMENT PLAN

APPENDIX E

MESA DEL SOL INNOVATION PARK – DRAINAGE AREA 6

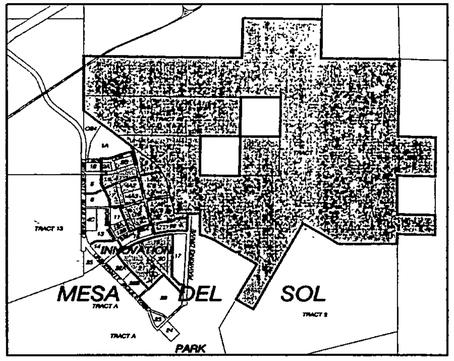
DRAINAGE MANAGEMENT PLAN

APPENDIX F

BULK LAND PLAT (DRAFT)

MESA DEL SOL INNOVATION PARK II

SP-2008113125



LOCATION MAP

ZONE ATLAS INDEX MAP Nos. Q-15, Q-16, Q-17, Q-18, R-16, R-17 & R-18

NOT TO SCALE

SUBDIVISION DATA

1. DRB No.
2. Zone Atlas Index Nos. Q-15, Q-16, Q-17, Q-18, R-16, R-17 & R-18
3. Zoning: PC.
4. Gross Subdivision Acreage: 1567.5357 Acres.
5. Total number of tracts Created: Twenty-five (25) Tracts.
6. Total Area of dedicated public street right-of-way: 21.3557 acres.
7. Total Area of vacated public street right-of-way: 12.4383 acres.
8. Date of Survey: January, 2008.
9. Plat is located within Sections 14, 15, 22 and 23 Township 9 North, Range 3 East, New Mexico Principal Meridian, Bernalillo County, New Mexico.
10. Total mileage of full width street created: 1.72 miles.

PUBLIC UTILITY EASEMENTS

PUBLIC UTILITY EASEMENTS shown on this plat are for the common joint use of Utility Service Providers (dry utilities only), including but not limited to:

A. PNM Electric Services for the installation, maintenance and service of underground electrical lines, transformers, and other equipment, fixtures, structures, and related facilities reasonably necessary to provide electrical service.

B. PNM Gas services for installation, maintenance, and service of natural gas lines, valves and other equipment and facilities reasonably necessary to provide natural gas.

C. QWEST for the installation, maintenance, and service of all buried communication lines and other related equipment and facilities reasonably necessary to provide communication services, including but not limited to above ground pedestals and closures.

D. Comcast Cable for the installation, maintenance, and service of such lines, cable, and other related equipment and facilities reasonably necessary to provide Cable TV service.

E. Time Warner for the installation, maintenance, and service of all buried communication lines and other related equipment and facilities and cable and other related equipment and facilities reasonably necessary to provide communication services and cable TV service including but not limited to above ground pedestals and closures.

Included is the right to build, rebuild, construct, reconstruct, locate, relocate, change, remove, modify, renew, operate, and maintain facilities for the purposes described above, together with free access to, from, and over said easements, including sufficient working area space for electric transformers, with the right and privilege to trim and remove trees, shrubs or bushes which interfere with the purposes set forth herein. No building, sign, pool, (above ground or subsurface), hot tub, concrete or wood pool decking, or other structure shall be erected or constructed on said easements, nor shall any well be drilled or operated thereon. Property owners shall be solely responsible for correcting any violations of National Electric Safety Code caused by construction of pools, decking, or any structures adjacent to or near easements shown on this plat.
Easements for electric transformers/switchgears, as installed shall extend ten feet (10) in front of transformer/switchgear doors and five feet (5') on each side.

DESCRIPTION - SOUTH BOUNDARY

A certain parcel of land situate within Section 22, Township 9 North, Range 3 East, New Mexico Principal Meridian, Bernalillo County, New Mexico, being and comprising all of Tracts 18, 19, 20, 21 and OS-1 of the Bulkplat for Mesa Del Sol Innovation Park, Albuquerque, New Mexico as the same is shown and designated on the plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico on September 13, 2007 in Book 2007C, page 259 as Document No. 2007131551.

Parcel contains 52.6355 acres, more or less.

DESCRIPTION - NORTH BOUNDARY

SEE SHEET 7 OF 7

DISCLOSURE STATEMENT

The purpose of this Plat is to subdivide Tracts 1, 12 and 15 of the Bulk Land Plat of Mesa Del Sol Tracts 1-15, Albuquerque, New Mexico as the same is shown and designated on the plat thereof, filed in the office of the County Clerk of Bernalillo County, New Mexico on June 21, 2006 in Book 2006C, page 195 as Document No. 2006091342 together with all of Tracts 4A-2, 4A-3 and 4A-4 of the Plat of Mesa Del Sol Tracts 4-A-1 thru 4-A-4, Albuquerque, New Mexico as the same is shown and designated on the Plat thereof filed in the Office of the County Clerk of Bernalillo County, New Mexico on April 17, 2007 in Book 2007C, page 96 as Document No. 2007056330 together with all of Tracts 3, 4, 7, 8, 9, 10, 16, 18, 19, 20, 21, OS-1, OS-2 and OS-3 of the Bulkplat for Mesa Del Sol Innovation Park, Albuquerque, New Mexico as the same is shown and designated on the plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico on September 13, 2007 in Book 2007C, page 259 as Document No. 2007131551, together with all of Tracts 2-A, 2-B, and OS-6 of the Plat of Tracts 1-A, 1-B, 2-A, 2-B, OS-5 and OS-6, Mesa Del Sol Innovation Park Albuquerque, New Mexico as the same is shown and designated on the Plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico on April 11, 2008 in Book 2008C, page 69 as Document No. 2008041551 into twenty-five new tracts, to vacate public street right-of-way, to vacate easements, to dedicate public street right-of-way to the City of Albuquerque, and to grant easements.

NOTES

1. *Bearings are New Mexico State Plane Grid Bearings (Central Zone) NAD 1983 and the basis of bearings is the Bulk Land Plat For Mesa Del Sol, Innovation Park, Albuquerque, New Mexico, filed on September 13, 2007 in Book 2007C, Page 259 as Document No. 2007131551.*
2. *Record Bearings and distances are the same as shown on this plat and the same as shown on the Bulk Land Plat of Mesa Del Sol Tracts 1-15, Albuquerque, New Mexico, filed in the office of the County Clerk of Bernalillo County, New Mexico on June 21, 2006 in Book 2006C, page 195 as Document No. 2006091342; the Plat of Mesa Del Sol Tracts 4-A-1 thru 4-A-4, Albuquerque, New Mexico, filed in the Office of the County Clerk of Bernalillo County, New Mexico on April 17, 2007 in Book 2007C, page 96 as Document No. 2007056330; the Bulkplat for Mesa Del Sol Innovation Park, Albuquerque, New Mexico filed in the Office of the County Clerk of Bernalillo County, New Mexico on September 13, 2007 in Book 2007C, page 259 as Document No. 2007131551, and the Plat of Tracts 1-A, 1-B, 2-A, 2-B, OS-5 and OS-6, Mesa Del Sol Innovation Park Albuquerque, New Mexico, filed in the Office of the County Clerk of Bernalillo County, New Mexico on April 11, 2008 in Book 2008C, page 69 as Document No. 2008041551.*
3. *Distances are ground distances.*
4. *All easements of record are as shown on the Plat of record or made known to me by the owner, utility companies, or other interested parties.*
5. *The location of pipeline, powerline, and communication line easements and/or rights-of-way shown hereon were plotted from the granting documents in conjunction with field ties of existing infrastructure.*
6. *Centerline monumentation to be installed at installed at centerline PC's, PT's, angle points and street intersections prior to acceptance of subdivision street improvements and will consist of a standard 3-1/4" aluminum alloy cap stamped "CITY OF ALBUQUERQUE", "CENTERLINE MONUMENTATION", "SURVEY MARKER", "DO NOT DISTURB", "PLS 16469".*
7. *All interior tract corners to be monumented by a #5 rebar and yellow plastic survey cap stamped "GROMATZKY PS 16469".*
8. *All streets are public, to be dedicated to the City of Albuquerque with the filing of this plat.*
9. *Tracts OS-1 thru OS-6 are private open space, owned and maintained by Mesa Del Sol, LLC or its assignees and are subject to a public pedestrian access and public drainage easement granted with the filing of this plat.*
10. *Tract OS-7 is private open space, owned and maintained by Mesa Del sol, LLC or its assignees and is subject to an existing public pedestrian access and public drainage easement filed September 13, 2007 in Book 2007C, page 259.*
11. *Pursuant to section 14-14-4-7 of the City of Albuquerque Code of Ordinances, "No property within the area of this Plat shall at anytime be subject to a deed restriction, covenant, or binding agreement prohibiting solar collectors from being installed on buildings or erected on the lots or parcels within the area of proposed plat. The foregoing requirements shall be a condition to approval of this plat."*

JURISDICTIONAL AFFIDAVIT

I, Robert Gromatzky, a registered Professional New Mexico Surveyor, hereby affirm that the property described does lie within the platting and subdivision jurisdiction of the City of Albuquerque

Robert Gromatzky
New Mexico Professional Surveyor 16469

Date: May 19, 2008

OFFICIAL SEAL
KAREN LEE ARFMAN
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires 11-13-2009

FREE CONSENT AND DEDICATION

The foregoing plat of that certain tract of land situate within Sections 15 and 22 Township 9 North, Range 3 East, New Mexico Principal Meridian, Bernalillo County, New Mexico, being and comprising all of Tracts 1, 12 and 15 of the Bulk Land Plat of Mesa Del Sol Tracts 1-15, Albuquerque, New Mexico as the same is shown and designated on the plat thereof, filed in the office of the County Clerk of Bernalillo County, New Mexico on June 21, 2006 in Book 2006C, page 195 as Document No. 2006091342 together with all of Tracts 4A-2, 4A-3 and 4A-4 of the Plat of Mesa Del Sol Tracts 4-A-1 thru 4-A-4, Albuquerque, New Mexico as the same is shown and designated on the Plat thereof filed in the Office of the County Clerk of Bernalillo County, New Mexico on April 17, 2007 in Book 2007C, page 96 as Document No. 2007056330 together with all of Tracts 3, 4, 7, 8, 9, 10, 16, 18, 19, 20, 21, OS-1, OS-2 and OS-3 of the Bulkplat for Mesa Del Sol Innovation Park, Albuquerque, New Mexico as the same is shown and designated on the plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico on September 13, 2007 in Book 2007C, page 259 as Document No. 2007131551, together with all of Tracts 2-A-1, 2-B-1 and OS-6 of the Plat of Tracts 1-A, 1-B, 2-A, 2-B, OS-5 and OS-6, Mesa Del Sol Innovation Park Albuquerque, New Mexico as the same is shown and designated on the Plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico on April 11, 2008 in Book 2008C, page 69 as Document No. 2008041551 together with a portion of vacated public street right-of-way, now comprising Mesa Del Sol Innovation Park II is with the free consent and in accordance with the desires of the undersigned owner(s) and/or proprietor(s) thereof. Said owner(s) and/or proprietor(s) do hereby dedicate all streets and public rights-of-way as shown hereon to the City of Albuquerque in fee simple with warranty covenants and do hereby grant: All Access, Utility and Drainage Easements shown hereon including the right to construct, operate, inspect, and maintain facilities therein; and all Public Utility Easements shown hereon for the common and joint use of Gas, Electrical Power, and Communication Services for buried distribution lines, conduits, and pipes for underground utilities where shown or indicated, including the right of ingress and egress for construction and maintenance, and the right to trim interfering trees and shrubs. The City has the right to enter upon the Grantees Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the City. If the Work effects any improvements or Encroachments made by the Grantee, the City will not be financially or otherwise responsible for rebuilding or repairing of improvements or encroachments. If in the opinion of the City, the Work to be performed by the City could endanger the structural integrity or otherwise damage the improvements or encroachments, the Grantee shall, at its own expense, take whatever protective measures are required to safeguard the improvements or encroachments. Said owner warrants that he holds complete and indefeasible title in fee simple to the land subdivided. Said owner(s) and/or proprietor(s) do hereby consent to all of the foregoing and do hereby certify that this subdivision is their free act and deed.

The State of New Mexico, acting by and through its Commissioner of Public Lands, owns the minerals on all lands acquired by the State pursuant to the Act of June 20, 1910, Pub. L. No. 61-219, 36 stat. 557, ch. 310 (the "Enabling Act"), including the lands depicted on this plat. The minerals estate in all such lands is reserved to the State, including without limitation, the mineral estate in the lands depicted hereon which are being or have been dedicated to the City of Albuquerque by this plat or by prior plats or which the Commissioner conveyed in those certain patents filed in the real estate records of the County of Bernalillo on June 21, 2006 in Book A119, Page 1045 and in Book A119, Page 1049. As owner of the mineral estate, the State of New Mexico shall not exercise its rights thereto in a manner that would unreasonably interfere with the use of the surface estate in the land dedicated to the City of Albuquerque by this and prior plats for public rights of way and thoroughfares.

MESA DEL SOL, LLC, a New Mexico Limited Liability Company
By: FC Covington Manager, LLC, a New Mexico Limited Liability Company, Member
By: Forest City NM, LLC, a New Mexico Limited Liability Company, Member
By: Forest City Commercial Group, Inc., an Ohio Corporation, Member

BY: Harry Relkin, Vice President
Forest City Commercial Group, Inc.

State of New Mexico)
SS
County of Bernalillo)

This instrument was acknowledged before me on 19th day of May, 2008, by Harry Relkin, Vice President of Forest City Commercial Group, Inc., an Ohio Corporation, as Member of Forest City NM, LLC, a New Mexico Limited Liability Company, as Member of FC Covington Manager, LLC, a New Mexico Limited Liability Company, as Member of Mesa Del Sol, LLC, a New Mexico Limited Liability Company.

My Commission Expires: Karen Lee Arfman
Notary Public

COMMISSIONER OF PUBLIC LANDS OF THE STATE OF NEW MEXICO

Trustee for the Enabling Act Trust, Act of June 29, 1910 36 stat. 557, ch. 310

By: Patrick H. Lyons *Date: May 21, 2008*
Patrick H. Lyons, Commissioner

COMMISSIONER OF PUBLIC LANDS · STATE OF NEW MEXICO · SEAL

SURVEYOR'S CERTIFICATION

I, Robert Gromatzky, a registered Professional New Mexico Surveyor, certify that I am responsible for this survey and that this plat was prepared by me or under my supervision, shows all existing easements as shown on the plats of record, or made known to me by the owner, utility companies, or other interested parties and conforms to the Minimum Requirements of the Board of Registration for Professional Engineers and Professional Surveyors and meets the minimum requirements for monumentation and surveys contained in the Albuquerque Subdivision Ordinance, and is true and accurate to the best of my knowledge and belief.

Robert Gromatzky
New Mexico Professional Surveyor 16469

Date: May 19, 2008

ROBERT GROMATZKY · NEW MEXICO · 16469 · LICENSED PROFESSIONAL SURVEYOR

BULK LAND PLAT FOR

MESA DEL SOL INNOVATION PARK II

(A REPLAT OF TRACTS 1, 12, 15, 4-A-2, 4-A-3 & 4-A-4, MESA DEL SOL AND TRACTS 2-A, 2-B, 3, 4, 7, 8, 9, 10, 16, 18, 19, 20 , 21, OS-1, OS-2, OS-3, & OS-6 MESA DEL SOL INNOVATION PARK)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
MAY, 2008

PROJECT NUMBER _____

APPLICATION NUMBER _____

PLAT APPROVAL

UTILITY APPROVALS:

QWEST TELECOMMUNICATIONS	*DATE*
COMCAST CABLE	*DATE*
PNM ELECTRIC SERVICES	*DATE*
PNM GAS SERVICES	*DATE*
TIME WARNER	*DATE*
CITY APPROVALS:	
CITY SURVEYOR	*5-29-08* *DATE*
TRAFFIC ENGINEERING, TRANSPORTATION DIVISION	*DATE*
ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY	*DATE*
PARKS & RECREATION DEPARTMENT	*DATE*
A.M.A.F.C.A.	*DATE*
CITY ENGINEER	*DATE*
DRB CHAIRPERSON, PLANNING DEPARTMENT	*DATE*
REAL PROPERTY DIVISION	*DATE*

TAX CERTIFICATION

THIS IS TO CERTIFY THAT TAXES ARE CURRENT AND PAID ON UPC # _____

PROPERTY OWNER OF RECORD _____

BERNALILLO COUNTY TREASURER'S OFFICE	*DATE*

In approving this plat, PNM Electric Services and Gas Services (PNM) did not conduct a Title Search of the properties shown hereon. Consequently, PNM does not waive nor release any easement or easement rights to which it may be entitled.

Bohannan ▲ Huston

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

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JOB NO 080344

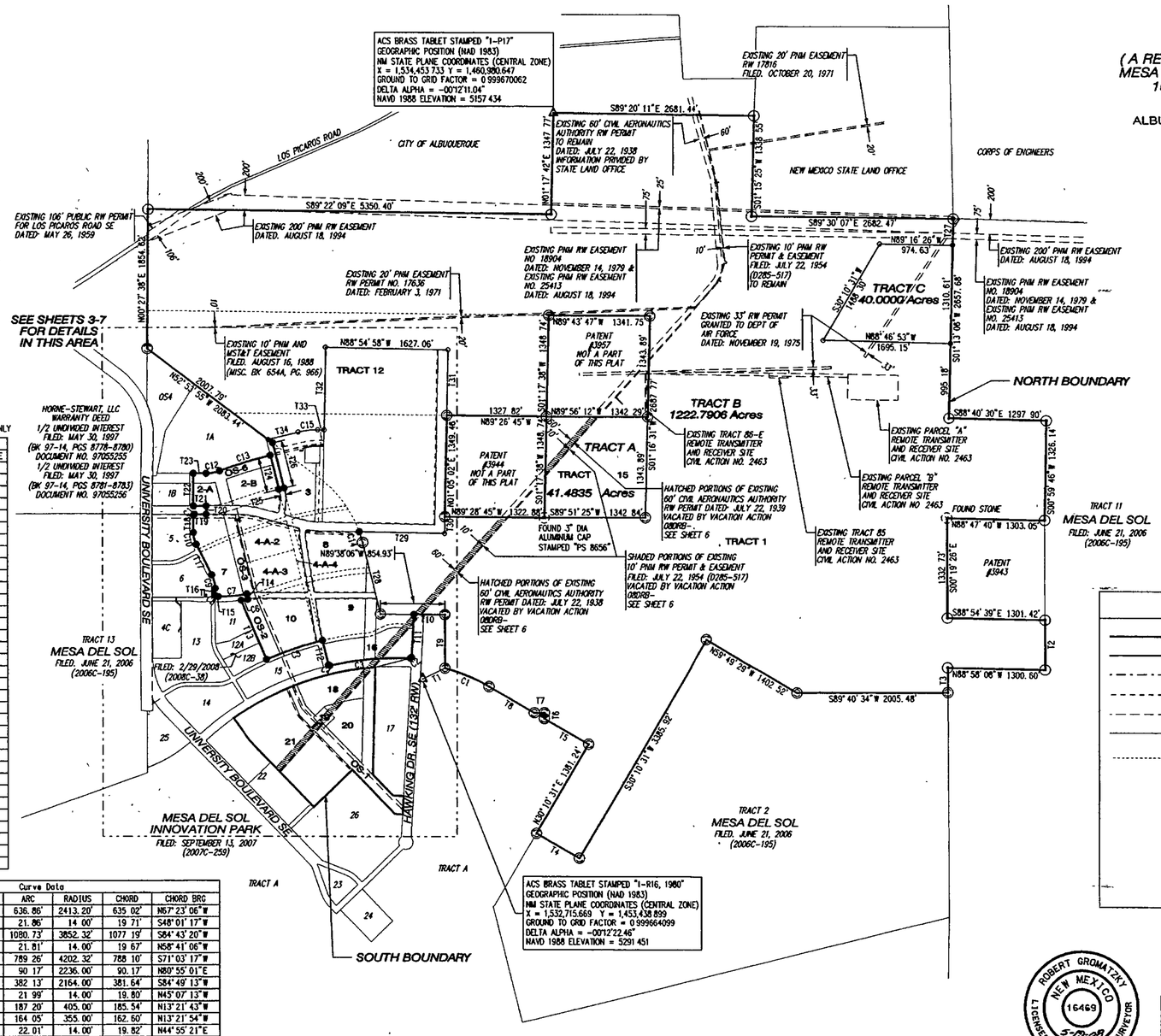
BULK LAND PLAT FOR
MESA DEL SOL INNOVATION PARK II

(A REPLAT OF TRACTS 1, 12, 15, 4-A-2, 4-A-3 & 4-A-4, MESA DEL SOL AND TRACTS 2-A, 2-B, 3, 4, 7, 8, 9, 10, 16, 18, 19, 20 , 21, OS-1, OS-2, OS-3, & OS-6 MESA DEL SOL INNOVATION PARK)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
MAY, 2008

N

1000 500 0 1000
SCALE: 1" = 1000'



NOTE: TABLES ARE FOR THIS SHEET ONLY

Tangent Data		
ID	BEARING	DISTANCE
T1	S64°05'21"W	328.32'
T2	S00°15'24"E	665.02'
T3	S00°19'26"E	329.86'
T4	N59°49'29"W	659.90'
T5	N59°49'29"W	680.37'
T6	N00°00'22"W	78.25'
T7	N89°47'27"W	135.42'
T8	N59°49'29"W	694.35'
T9	N00°02'06"W	716.21'
T10	N89°38'06"W	411.78'
T11	S03°17'02"W	576.55'
T12	N14°03'20"W	336.17'
T13	N22°57'44"W	858.79'
T14	N10°14'19"W	72.00'
T15	S89°52'45"W	28.14'
T16	N00°07'12"W	92.83'
T17	N26°36'13"W	454.05'
T18	N00°07'34"W	228.42'
T19	N89°58'16"E	154.50'
T20	N00°01'44"W	114.00'
T21	S89°58'16"W	168.72'
T22	N00°07'34"W	433.00'
T23	N89°58'16"E	169.45'
T24	S14°03'20"E	468.47'
T25	N75°56'40"E	72.00'
T26	N14°03'20"W	620.42'
T27	S01°13'06"W	351.89'
T28	N14°03'53"W	982.93'
T29	N88°54'58"W	1132.14'
T30	S01°05'02"W	225.15'
T31	S01°05'02"W	873.39'
T32	S01°05'02"W	1100.49'
T33	N88°54'58"W	85.05'
T34	S75°56'40"W	409.35'

Curve Data						
ID	DELTA	TANGENT	ARC	RADIUS	CHORD	CHORD BRG
C1	15°07'15"	320.29'	636.86'	2413.20'	635.02'	N67°23'06"W
C2	89°28'31"	13.87'	21.86'	14.00'	19.71'	S48°01'17"W
C3	16°04'25"	543.94'	1080.73'	3852.32'	1077.19'	S84°43'20"W
C4	89°15'32"	13.82'	21.81'	14.00'	19.67'	N58°41'06"W
C5	10°45'40"	395.79'	789.26'	4202.32'	788.10'	S71°03'17"W
C6	02°18'38"	45.09'	90.17'	2236.00'	90.17'	N80°55'01"E
C7	10°07'04"	191.56'	382.13'	2164.00'	381.64'	S84°49'13"W
C8	90°00'02"	14.00'	21.99'	14.00'	19.80'	N45°07'13"W
C9	26°29'01"	95.30'	187.20'	405.00'	185.54'	N13°21'43"W
C10	26°28'39"	83.52'	164.05'	355.00'	162.60'	N13°21'54"W
C11	90°05'50"	14.02'	22.01'	14.00'	19.82'	N44°55'21"E
C12	20°19'05"	90.85'	179.79'	507.00'	178.85'	N79°48'43"E
C13	05°59'11"	353.75'	706.86'	6765.32'	706.54'	N72°38'47"E
C14	05°36'52"	74.53'	148.95'	1520.00'	148.89'	N16°52'19"W
C15	15°08'22"	132.89'	264.23'	1000.00'	263.46'	S83°30'51"W

LEGEND

- SUBDIVISION BOUNDARY LINE
- NEW LOT LINE
- CENTERLINE
- PROPOSED EASEMENT LINE
- EXISTING EASEMENT LINE
- ADJOINING PROPERTY LINE
- EXISTING (OLD) PROPERTY LINE VACATED WITH THE FILING OF THIS PLAT
- CITY OF ALBUQUERQUE CONTROL MONUMENT
- #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR WITH ORANGE PLASTIC SURVEY CAP STAMPED "BENHAM LS 15700"
- FOUND #5 REBAR WITH RED PLASTIC SURVEY CAP STAMPED "LS 5978"
- FOUND AS NOTED

ROBERT GROMATZKY NEW MEXICO 16469 LICENSED PROFESSIONAL SURVEYOR 5-19-08

SHEET 2 OF 7

Bohannan ▲ Huston

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

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JOB NO 080344

BULK LAND PLAT FOR

MESA DEL SOL INNOVATION PARK II

(A REPLAT OF TRACTS 1, 12, 15, 4-A-2, 4-A-3 & 4-A-4, MESA DEL SOL AND TRACTS 2-A, 2-B, 3, 4, 7, 8, 9, 10, 16, 18, 19, 20 , 21, OS-1, OS-2, OS-3, & OS-6 MESA DEL SOL INNOVATION PARK)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
MAY, 2008

NOTE: SEE SHEET 6 FOR CURVE & TANGENT DATA

LEGEND

- SUBDIVISION BOUNDARY LINE
- NEW LOT LINE
- CENTERLINE
- PROPOSED EASEMENT LINE
- EXISTING EASEMENT LINE
- ADJOINING PROPERTY LINE
- EXISTING (OLD) PROPERTY LINE VACATED WITH THE FILING OF THIS PLAT
- CITY OF ALBUQUERQUE CONTROL MONUMENT
- #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR WITH ORANGE PLASTIC SURVEY CAP STAMPED "BENHAM LS 15700"
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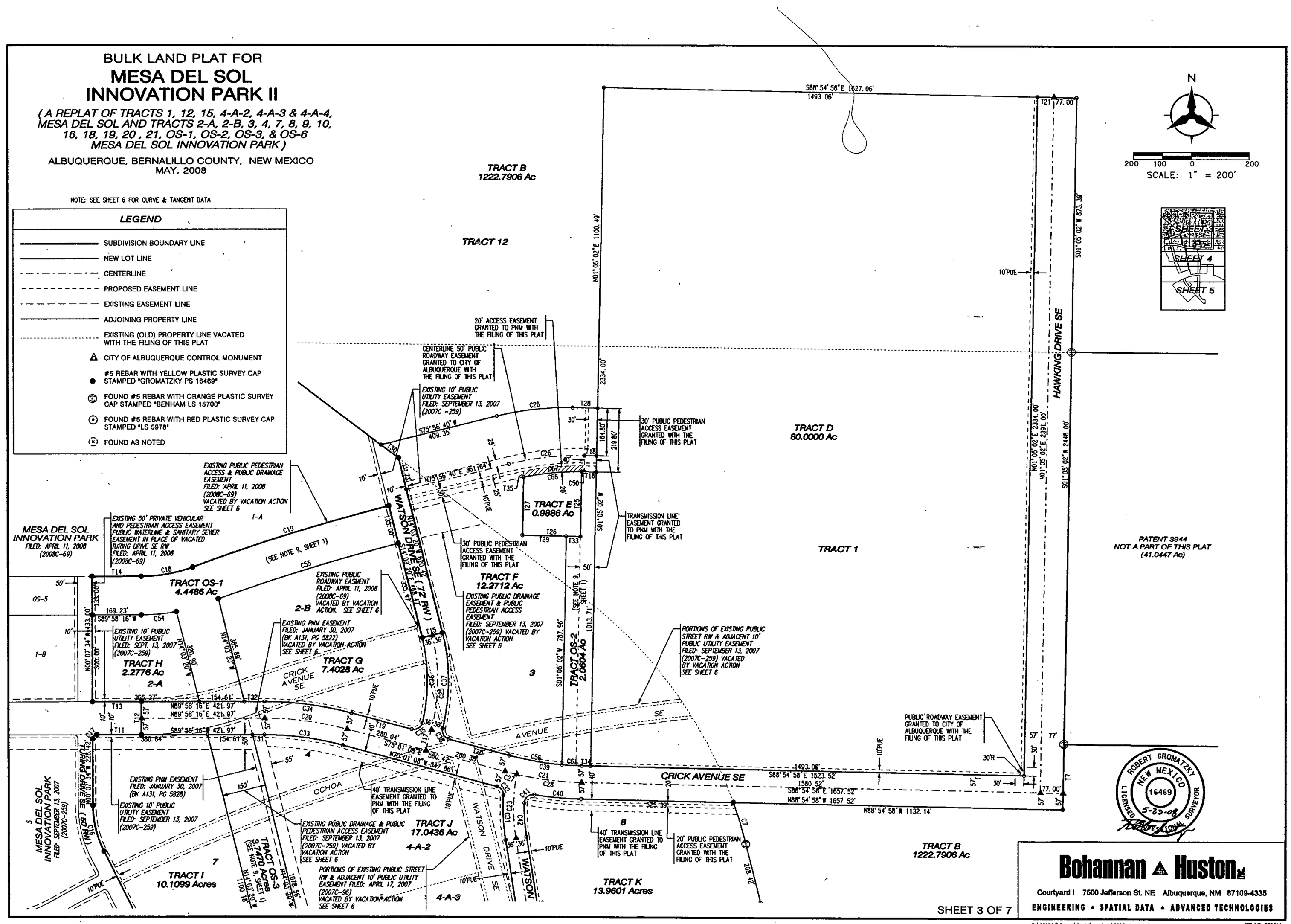

SHEET 3 OF 7

Bohannan ▲ Huston

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

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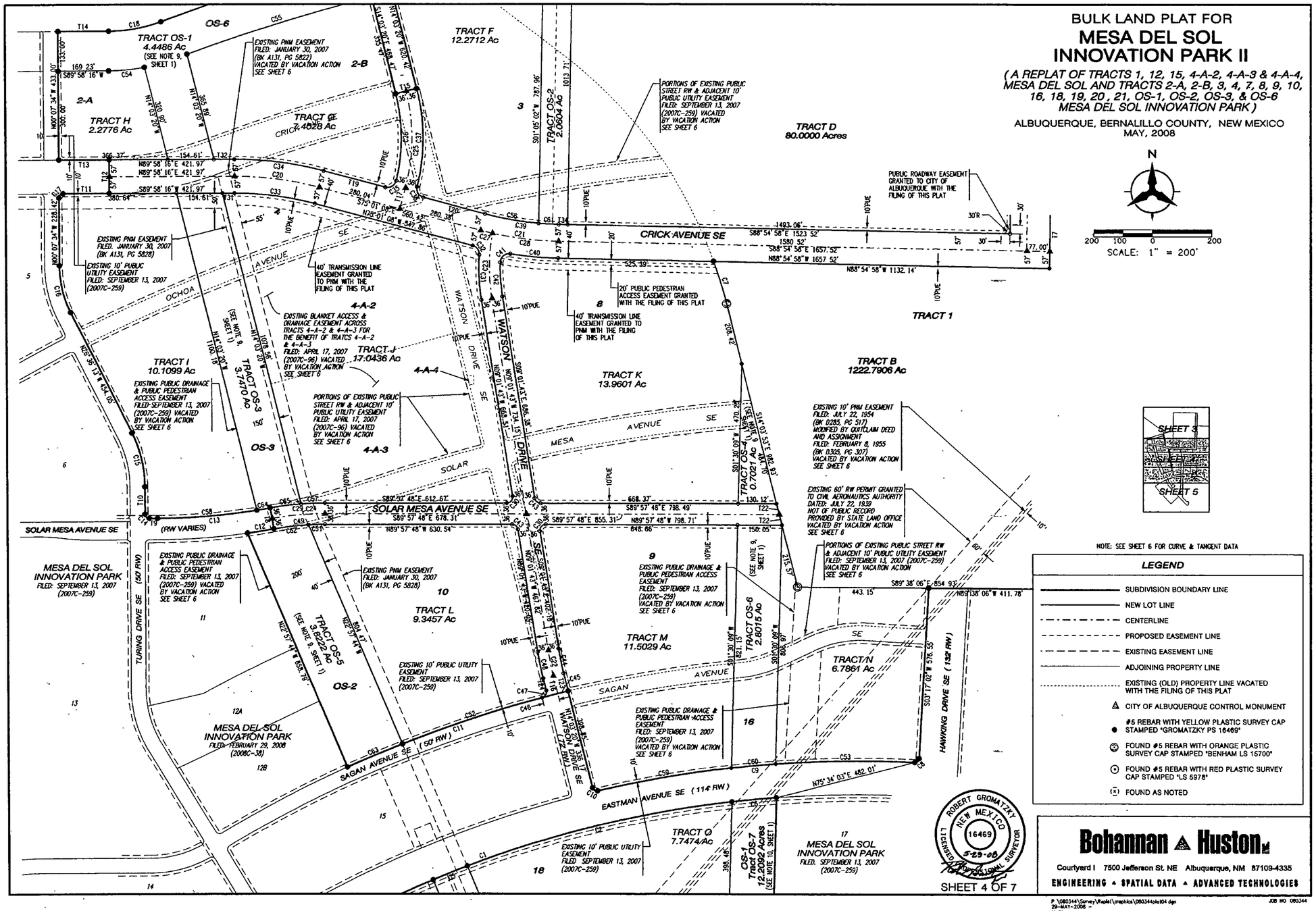
BULK LAND PLAT FOR
MESA DEL SOL INNOVATION PARK II

(A REPLAT OF TRACTS 1, 12, 15, 4-A-2, 4-A-3 & 4-A-4, MESA DEL SOL AND TRACTS 2-A, 2-B, 3, 4, 7, 8, 9, 10, 16, 18, 19, 20 , 21, OS-1, OS-2, OS-3, & OS-6 MESA DEL SOL INNOVATION PARK)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
MAY, 2008



NOTE: SEE SHEET 6 FOR CURVE & TANGENT DATA

LEGEND

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Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
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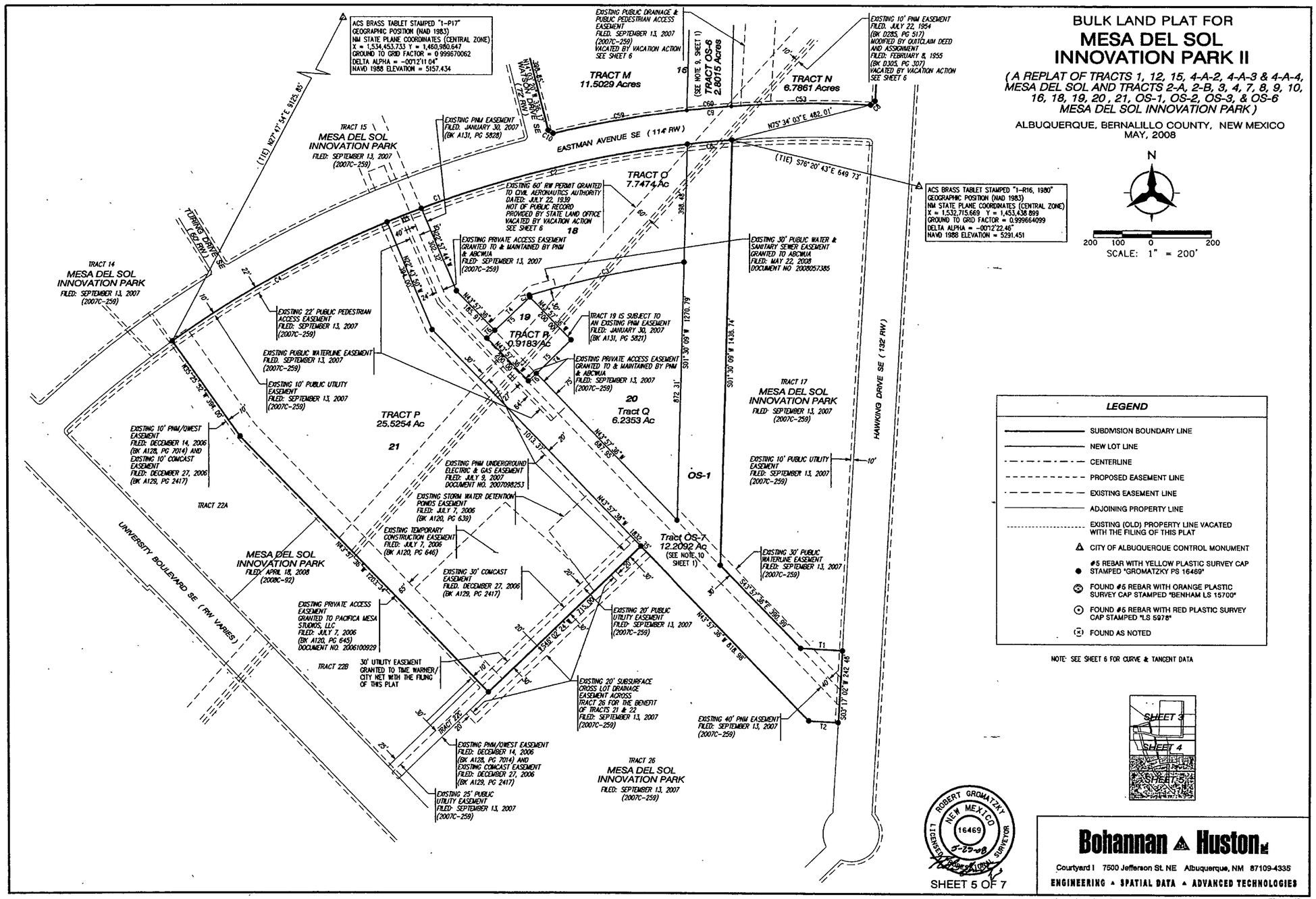
JOB NO 080344

BULK LAND PLAT FOR
MESA DEL SOL INNOVATION PARK II

(A REPLAT OF TRACTS 1, 12, 15, 4-A-2, 4-A-3 & 4-A-4, MESA DEL SOL AND TRACTS 2-A, 2-B, 3, 4, 7, 8, 9, 10, 16, 18, 19, 20 , 21, OS-1, OS-2, OS-3, & OS-6 MESA DEL SOL INNOVATION PARK)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
MAY, 2008



SCALE: 1" = 200'

LEGEND

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NOTE: SEE SHEET 6 FOR CURVE & TANGENT DATA

ROBERT GROMATZKY
NEW MEXICO
16469
5-29-08
LICENSED PROFESSIONAL SURVEYOR

SHEET 5 OF 7

Bohannan ▲ Huston

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

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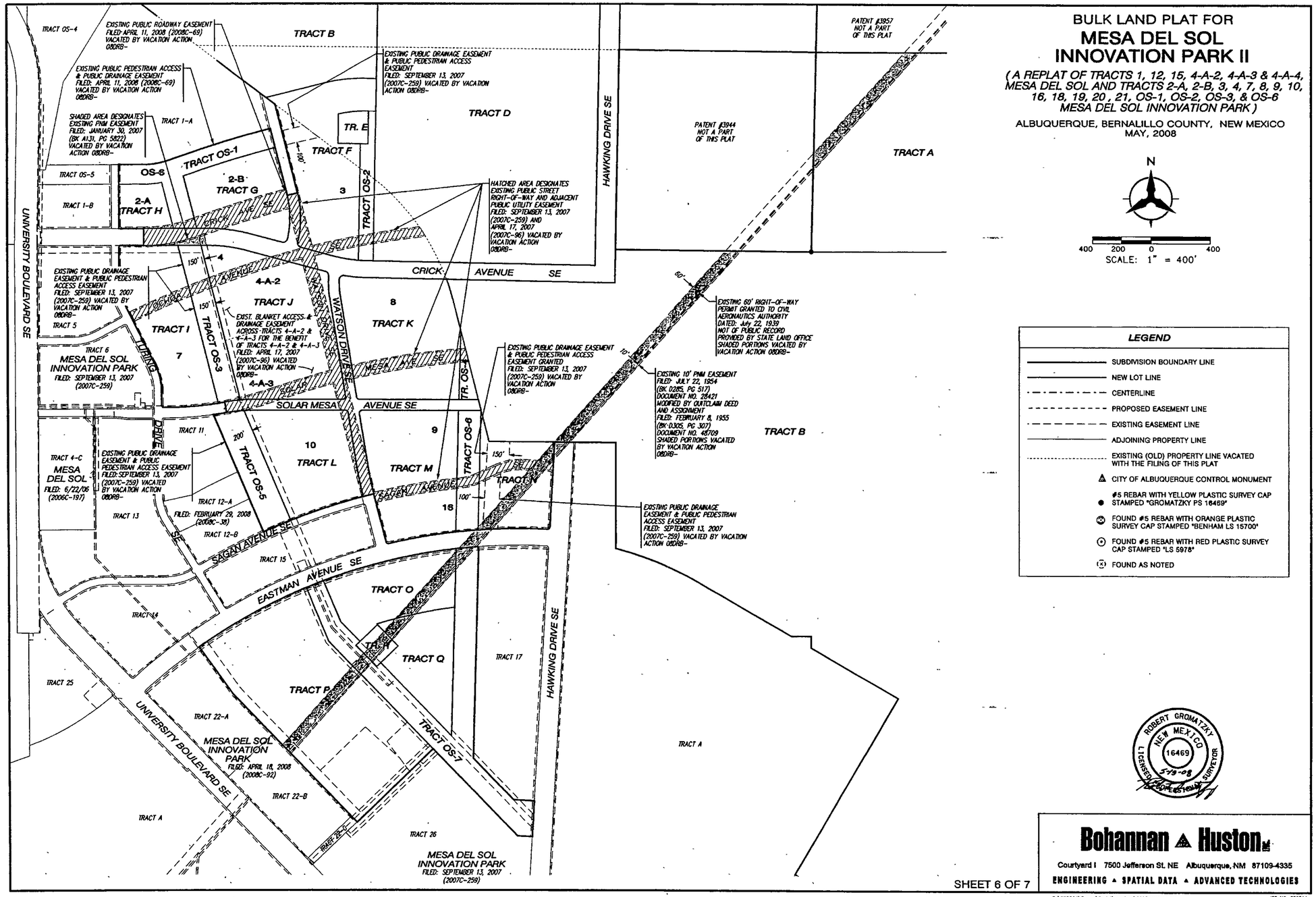
JOB NO 080344

BULK LAND PLAT FOR
MESA DEL SOL INNOVATION PARK II

(A REPLAT OF TRACTS 1, 12, 15, 4-A-2, 4-A-3 & 4-A-4, MESA DEL SOL AND TRACTS 2-A, 2-B, 3, 4, 7, 8, 9, 10, 16, 18, 19, 20 , 21, OS-1, OS-2, OS-3, & OS-6 MESA DEL SOL INNOVATION PARK)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
MAY, 2008



LEGEND

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ROBERT GROMATZKY NEW MEXICO 16469 LICENSED PROFESSIONAL SURVEYOR 5-19-08

Bohannan ▲ Huston

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

SHEET 6 OF 7

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JOB NO 080344

BULK LAND PLAT FOR
MESA DEL SOL INNOVATION PARK II

(A REPLAT OF TRACTS 1, 12, 15, 4-A-2, 4-A-3 & 4-A-4, MESA DEL SOL AND TRACTS 2-A, 2-B, 3, 4, 7, 8, 9, 10, 16, 18, 19, 20 , 21, OS-1, OS-2, OS-3, & OS-6 MESA DEL SOL INNOVATION PARK)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
MAY, 2008

DESCRIPTION - NORTH BOUNDARY

A certain parcel of land situate within Sections 14, 15, 22 and 23, Township 9 North, Range 3 East, New Mexico Principal Meridian, Bernalillo County, New Mexico, being and comprising all of Tracts 1, 12 and 15 of the Bulk Land Plat of Mesa Del Sol Tracts 1-15, Albuquerque, New Mexico as the same is shown and designated on the plat thereof, filed in the office of the County Clerk of Bernalillo County, New Mexico on June 21, 2006 in Book 2006C, page 195 as Document No. 2006091342 together with all of Tracts 4A-2, 4A-3 and 4A-4 of the Plat of Mesa Del Sol Tracts 4-A-1 thru 4-A-4, Albuquerque, New Mexico as the same as shown and designated on the Plat thereof filed in the Office of the County Clerk of Bernalillo County, New Mexico on April 17, 2007 in Book 2007C, page 96 as Document No. 2007056330 together with all of Tracts 3, 4, 7, 8, 9, 10, 16, OS-2 and OS-3 of the Bulkplat for Mesa Del Sol Innovation Park, Albuquerque, New Mexico as the same is shown and designated on the plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico on September 13, 2007 in Book 2007C, page 269 as Document No. 2007131551, together with all of Tracts 2-A-1, 2-B-1 and OS-6 of the Plat of Tracts 1-A, 1-B, 2-A, 2-B, OS-5 and OS-6, Mesa Del Sol Innovation Park Albuquerque, New Mexico as the same is shown and designated on the Plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico on April 11, 2008 in Book 2008C, page 69 as Document No. 2008041551 together with a portion of vacated public street right-of-way, and being more particularly described by New Mexico State Plane Grid Bearings 1983 (Central Zone) and ground distances as follows:

BEGINNING at the City of Albuquerque survey monument "1-P17", a brass disc set in a concrete post, the most northerly corner of said Tract 1, identical to the most northerly corner of the tract herein described, having New Mexico State Plane Grid Coordinates NAD83 (Central Zone) X = 1,534,453.733 and Y = 1,480,980.647;

THENCE coincident with said northerly boundary of Tract 1, the northerly boundary of the tract herein described, the following three (3) courses;

S89°20'11"E a distance of 2681.44 feet;
S01°15'25"W a distance of 1338.55 feet;
S89°30'07"E a distance of 2682.47 feet to the northeast corner of said Tract 1, identical to the northeast corner of the tract herein described;

THENCE along the easterly boundary of said Tract 1, coincident with the easterly boundary of the tract herein described, the following seven (7) courses;

S01°13'06"W a distance of 2657.68 feet;
S88°40'30"E a distance of 1297.90 feet;
S00°59'46"W a distance of 1326.14 feet;
N88°47'40"W a distance of 1303.05 feet;
S00°19'26"E a distance of 1332.73 feet;
S89°54'39"E a distance of 1301.42 feet;
S00°15'24"E a distance of 665.02 feet to the southeast corner of said Tract 1, identical to the southeast corner of the tract herein described;

THENCE along the southerly boundary of Tract 1, coincident with the southerly boundary of the tract herein described, the following fourteen (14) courses;

N88°58'06"W a distance of 1300.00 feet;
S00°19'26"E a distance of 329.86 feet;
S89°40'34"W a distance of 2005.48 feet;
N59°49'29"W a distance of 1402.52 feet;
S30°10'31"W a distance of 3385.92 feet;
N59°49'29"W a distance of 659.90 feet;
N30°10'31"E a distance of 1381.24 feet;
N59°49'29"W a distance of 660.37 feet;
N00°00'22"W a distance of 78.25 feet;
N89°47'27"W a distance of 135.42 feet;
N59°49'29"W a distance of 894.35 feet to a point of curvature;
936.86 feet along the arc of a curve to the left having a radius of 2413.20 feet, a central angle of 15°07'15" and a chord bearing N67°23'06"W a distance of 635.02 feet to a point (non-tangent);
N00°02'06"W a distance of 716.21 feet;
N89°38'06"W a distance of 411.78 feet to a point on the westerly right-of-way of Hawking Drive SE;

THENCE leaving said southerly boundary of Tract 1 along said westerly right-of-way of Hawking Drive SE, S03°17'02"W a distance of 576.55 feet to a point of curvature at the north northwest point of return at the intersection of Hawking Drive SE and Eastman Avenue SE;

THENCE along said return 21.86 feet along the arc of a curve to the right having a radius of 14.00 feet, a central angle of 89°26'31" and a chord bearing S48°01'17"W a distance of 19.71 feet to a point of reverse curvature on the northerly right-of-way of said Eastman Avenue SE, identical to the southeast corner of said Tract 16;

THENCE along said northerly right-of-way of Eastman Avenue SE, coincident with the southerly boundary of said Tract 16, 1080.73 feet along the arc of a curve to the left having a radius of 3852.32 feet, a central angle of 16°04'25" and a chord bearing S84°43'20"W a distance of 1077.19 feet to a point of compound curvature at the southwest corner of said Tract 16, coincident with the east northeast point of return at the intersection of said Eastman Avenue SE and Watson Drive SE;

THENCE along said return, 21.81 feet along the arc of a curve to the right having a radius of 14.00 feet, a central angle of 89°15'32" and a chord bearing N58°41'06"W a distance of 19.67 feet to a point of tangency on the westerly boundary of said Tract 16;

THENCE along said westerly boundary of Tract 16, coincident with the easterly right-of-way of Watson Drive SE, N14°03'20"W a distance of 336.17 feet to a point on curve on the northerly right-of-way of Sagan Avenue SE;

THENCE along said northerly right-of-way of Sagan Avenue SE and also along the southerly boundary of said Tract 10 and said Tract OS-2, 789.26 feet along the arc of a curve to the left having a radius of 4202.32 feet, a central angle of 10°45'40" and a chord bearing S71°03'17"W a distance of 788.10 feet to the southwest corner of said Tract OS-2;

THENCE leaving said northerly right-of-way of Sagan Avenue SE along the westerly boundary of said Tract OS-2, N22°57'44"W a distance of 858.79 feet to the northwest corner of said Tract OS-2, coincident with a non-tangent point of curvature on the southerly right-of-way of Solar Mesa Avenue SE;

THENCE along said southerly right-of-way of Solar Mesa Avenue SE, 90.17 feet along the arc of a curve to the left having a radius of 2236.00 feet, a central angle of 2°18'38" and a chord bearing N80°55'01"E a distance of 90.17 feet to a non-tangent point;

THENCE crossing Solar Mesa Avenue SE, N10°14'19"W a distance of 72.00 feet to a non-tangent point of curvature on the northerly right-of-way of Solar Mesa Avenue SE, coincident with a point on the southerly boundary of said Tract OS-3;

THENCE along the southerly boundary of said Tract OS-3 and said Tract 7, coincident with said northerly right-of-way of Solar Mesa Avenue SE, 382.13 feet along the arc of a curve to the right having a radius of 2164.00 feet, a central angle of 10°07'04" and a chord bearing S84°49'13"W a distance of 381.64 feet;

THENCE S89°52'45"W a distance of 28.14 feet to a point of curvature at the southwest corner of said Tract 7, identical to the east northeast point of return at the intersection of Solar Mesa Avenue SE and Turing Drive SE;

THENCE along said return, 21.99 feet along the arc of a curve to the right having a radius of 14.00 feet, a central angle of 90°00'02" and a chord bearing N45°07'13"W a distance of 19.80 feet to a point of tangency on the westerly boundary of said Tract 7;

THENCE along said westerly boundary of Tract 7, coincident with the easterly right-of-way of Turing Drive SE, the following five (5) courses;

N00°07'12"W a distance of 92.83 feet to a point of curvature;
187.20 feet along the arc of a curve to the left having a radius of 405.00 feet, a central angle of 26°29'01" and a chord bearing N13°21'43"W a distance of 185.54 feet to a point of tangency;
N26°36'13"W a distance of 454.05 feet to a point of curvature;
164.05 feet along the arc of a curve to the right having a radius of 355.00 feet, a central angle of 26°28'39" and a chord bearing N13°21'54"W a distance of 162.60 feet to a point of tangency;
N00°07'34"W a distance of 228.42 feet to a point of curvature at the south southeast point of return at the intersection of Turing Drive SE and Crick Avenue SE, identical to the northwest corner of said Tract 7;

THENCE along said return, 22.01 feet along the arc of a curve to the right having a radius of 14.00 feet, a central angle of 90°05'50" and a chord bearing N44°55'21"E a distance of 19.82 feet to a point of tangency on the northerly boundary of said Tract 7, identical to a point on the southerly right-of-way of Crick Avenue SE;

THENCE along said northerly boundary of Tract 7, coincident with the southerly right-of-way of Crick Avenue SE, N89°58'16"E a distance of 154.50 feet to a point;

THENCE leaving said northerly boundary of Tract 7 and crossing Crick Avenue SE right-of-way, N00°01'44"W a distance of 114.00 feet to a point on the northerly right-of-way of Crick Avenue SE, identical to a point on the southerly boundary of said Tract 2-A;

THENCE along said northerly right-of-way of Crick Avenue SE, coincident with said southerly boundary of Tract 2-A, S89°58'16"W a distance of 168.72 feet to the southwest corner of said Tract 2-A;

THENCE leaving said northerly right-of-way of Crick Avenue SE along the westerly boundary of Tract 2-A and Tract OS-6, N00°07'34"W a distance of 433.00 feet to the northwest corner of said Tract OS-6;

THENCE along the northerly boundary of said Tract OS-6 the following three (3) courses;

N89°58'16"E a distance of 169.45 feet to a point of curvature;
179.79 feet along the arc of a curve to the left having a radius of 507.00 feet, a central angle of 20°19'05" and a chord bearing N79°48'43"E a distance of 178.85 feet to a point of reverse curvature;
706.86 feet along the arc of a curve to the right having a radius of 6765.32 feet, a central angle of 5°59'11" and a chord bearing N72°38'47"E a distance of 706.54 feet to a non-tangent point at the northeast corner of said Tract OS-6, identical to a point on the westerly right-of-way of Watson Drive SE;

THENCE along said westerly right-of-way of Watson Drive SE, coincident with the easterly boundary of said Tract OS-6 and Tract 2-B, S14°03'20"E a distance of 468.47 feet to a point on the easterly boundary of said Tract 2-B;

THENCE leaving said easterly boundary of Tract 2-B, crossing Watson Drive SE right-of-way, N75°56'40"E a distance of 72.00 feet to a point on the westerly boundary of said Tract 3, coincident with a point on the easterly right-of-way of Watson Drive SE;

THENCE along said westerly boundary of Tract 3, coincident with said easterly right-of-way of Watson Drive SE, N14°03'20"W a distance of 620.42 feet to the most northerly corner of said Tract 3, coincident with a point on the westerly boundary of said Tract 1;

THENCE along said westerly boundary of Tract 1 and said Tract 12, N52°53'55"W a distance of 2083.44 feet to the southwest corner of the tract herein described;

THENCE along the westerly boundary of the tract herein described, coincident with the westerly boundary of said Tract 12 and said Tract 1, N00°27'38"E a distance of 1854.62 feet to the northwest corner of the tract herein described, identical to the northwest corner of said Tract 1;

THENCE along the northerly boundary of the tract herein described, coincident with the northerly boundary of said Tract 1 the following two (2) courses;

S89°22'09"E a distance of 5350.40 feet;
N01°17'42"E a distance of 1347.77 feet to the POINT OF BEGINNING.
The gross area of this parcel contains 1,597.4149 acres, more or less.

EXCEPTING Patent #3944, the southeast one-quarter of the southeast one-quarter of said Section 15, Township 9 North, Range 3 East, New Mexico Principal Meridian, Bernalillo County, New Mexico, being more particularly described by New Mexico State Plane Grid Bearings (Central Zone, NAD 83) and ground distances as follows:

BEGINNING at a 3" dia. Alum. survey cap stamped "PS 8656" at the southeast corner of said Patent #3944, whence the City of Albuquerque survey monument "1-P17", a brass disc set in a concrete post bears N01°17'40"E a distance of 5393.01 feet;

THENCE along the southerly boundary of said Patent #3944, N89°28'45"W a distance of 1322.88 feet to the southwest corner of said Patent;

THENCE N01°05'02"E a distance of 1349.46 feet to the northwest corner of said Patent;

THENCE S89°28'45"E a distance of 1327.82 feet to the northeast corner of said Patent;

THENCE along the easterly boundary of said Patent, S01°17'38"W a distance of 1348.74 feet to the POINT OF BEGINNING of this exception.

This EXCEPTION contains 41.0447 acres, more or less.

And EXCEPTING Patent #3957, the northwest one-quarter of the southwest one-quarter of said Section 14, Township 9 North, Range 3 East, New Mexico Principal Meridian, Bernalillo County, New Mexico, being more particularly described by New Mexico State Plane Grid Bearings (Central Zone, NAD 83) and ground distances as follows:

BEGINNING at the southwest corner of said Patent, WHENCE the City of Albuquerque survey monument "1-P17", a brass disc set in a concrete post bears N01°17'41"E a distance of 4044.27 feet;

THENCE along the westerly boundary of said Patent #3957, N01°17'38"E a distance of 1348.74 feet to the northwest corner of said Patent;

THENCE along the northerly boundary of said Patent #3957, S89°43'47"E a distance of 1341.75 feet to the northeast corner of said Patent;

THENCE along the easterly boundary of said Patent, S01°16'31"W a distance of 1343.89 feet to the southeast corner of said Patent;

THENCE along the southerly boundary of said Patent #3957, N89°56'12"W a distance of 1342.29 feet to POINT OF BEGINNING of this exception.

This EXCEPTION contains 41.4700 acres, more or less.

The net area of this parcel of land contains 1514.9002 acres, more or less.

Tangent Data		
ID	BEARING	DISTANCE
T1	S86°42'58"E	141.28'
T2	N86°42'58"W	100.00'
T3	N16°47'30"W	6.76'
T4	S46°02'24"W	163.00'
T5	S46°02'24"W	200.00'
T6	S46°02'24"W	37.00'
T7	S01°05'02"W	225.15'
T8	N10°14'19"W	72.00'
T9	S89°52'45"W	28.14'
T10	N00°07'12"W	92.83'
T11	N89°58'16"E	154.50'
T12	N00°01'44"W	114.00'
T13	S89°58'16"W	168.72'
T14	N89°58'16"E	169.45'
T15	N75°56'40"E	72.00'
T16	N14°03'20"W	62.52'
T17	N14°58'52"E	72.83'
T18	S88°54'58"E	40.72'
T19	S75°01'08"E	213.87'
T20	S75°01'08"E	214.52'
T21	S88°54'58"E	57.00'
T22	S14°03'53"E	37.12'
T23	S14°03'20"E	62.68'
T24	N14°03'20"W	42.90'
T25	S01°05'02"W	223.42'
T26	N88°54'58"W	200.00'
T27	S01°05'02"W	200.00'
T28	N88°54'58"W	85.05'
T29	N88°54'58"W	150.50'
T30	N52°53'55"W	75.66'
T31	S89°58'16"W	41.23'
T32	S89°58'16"W	69.71'
T33	N88°54'58"W	49.50'
T34	N88°54'58"W	30.46'
T35	N01°05'02"E	21.54'

Curve Data						
ID	DELTA	TANGENT	ARC	RADIUS	CHORD	CHORD BRG
C1	31°06'53"	1040.76'	2030.11'	3738.32'	2005.26'	N70°07'35"E
C2	14°11'00"	465.08'	925.41'	3738.32'	923.04'	N76°16'33"E
C3	09°11'35"	268.85'	536.54'	3343.97'	535.97'	S77°48'18"W
C4	12°42'02"	416.03'	828.66'	3738.32'	826.96'	N60°55'09"E
C5	01°54'52"	62.46'	124.92'	3738.32'	124.91'	N68°13'36"E
C6	02°18'59"	75.57'	151.13'	3738.32'	151.12'	N84°31'32"E
C7	05°36'52"	74.53'	148.95'	1520.00'	148.89'	S16°52'19"E
C8	89°28'31"	13.87'	21.86'	14.00'	19.71'	S48°01'17"W
C9	16°04'25"	543.94'	1080.73'	3852.32'	1077.19'	S84°43'20"W
C10	89°15'32"	13.82'	21.81'	14.00'	19.67'	N58°41'06"W
C11	10°45'40"	395.79'	789.26'	4202.32'	788.10'	S71°03'17"W
C12	02°18'38"	45.09'	90.17'	2236.00'	90.17'	N80°55'01"E
C13	10°07'04"	191.56'	382.13'	2164.00'	381.64'	S84°49'13"W
C14	90°00'02"	14.00'	21.99'	14.00'	19.80'	N45°07'13"W
C15	26°29'01"	95.30'	187.20'	405.00'	185.54'	N13°21'43"W
C16	26°28'39"	83.52'	164.05'	355.00'	162.60'	N13°21'54"W
C17	90°05'50"	14.02'	22.01'	14.00'	19.82'	N44°55'21"E
C18	20°19'05"	90.85'	179.79'	507.00'	178.85'	N79°48'43"E
C19	05°59'11"	353.75'	706.86'	6765.32'	706.54'	N72°38'47"E
C20	15°00'36"	144.92'	288.17'	1100.00'	287.35'	S82°31'26"E
C21	13°53'50"	134.06'	266.81'	1100.00'	266.15'	S81°58'03"E
C22	05°01'37"	43.90'	87.74'	1000.00'	87.71'	N11°32'31"W
C23	19°25'35"	111.26'	220.39'	650.00'	219.33'	N00°41'05"E
C24	10°16'31"	89.91'	179.34'	1000.00'	179.10'	N84°53'57"E
C25	29°02'12"	168.32'	329.41'	650.00'	325.90'	N00°27'46"E
C26	15°08'22"	132.89'	264.23'	1000.00'	263.46'	N83°30'51"E
C27	02°10'30"	20.88'	41.76'	1100.00'	41.75'	S76°06'23"E
C28	11°43'20"	112.92'	225.05'	1100.00'	224.66'	S83°03'18"E
C29	10°16'31"	93.15'	185.79'	1036.00'	185.54'	N84°53'57"E
C30	99°03'55"	23.44'	34.58'	20.00'	30.43'	N40°30'15"E
C31	12°45'21"	76.68'	152.73'	686.00'	152.41'	N02°39'02"W
C32	78°44'46"	24.62'	41.23'	30.00'	38.06'	N35°38'45"W
C33	15°00'36"	137.41'	273.24'	1043.00'	272.46'	N82°31'26"W
C34	15°00'36"	152.42'	303.10'	1157.00'	302.24'	S82°31'26"E
C35	91°23'26"	30.74'	47.85'	30.00'	42.94'	N59°17'09"E
C36	27°38'46"	151.07'	296.26'	614.00'	293.40'	N00°13'57"W
C37	27°54'09"	170.42'	334.07'	686.00'	330.78'	S00°06'16"E
C38	88°51'57"	29.41'	46.53'	30.00'	42.00'	S30°35'10"E
C39	13°53'50"	127.11'	252.98'	1043.00'	252.36'	S81°58'03"E
C40	08°02'23"	81.31'	162.35'	1157.00'	162.22'	N84°53'47"W
C41	97°21'37"	34.12'	50.98'	30.00'	45.06'	S50°26'36"W
C42	10°47'31"	58.00'	115.65'	614.00'	115.48'	S03°37'58"E
C43	80°56'05"	17.06'	28.25'	20.00'	25.96'	S49°29'45"E
C44	05°01'37"	42.32'	84.58'	964.00'	84.55'	S11°32'31"E
C45	00°29'27"	18.00'	36.00'	4202.32'	36.00'	S76°11'24"W
C46	00°45'36"	27.87'	55.74'	4202.32'	55.74'	S75°33'52"W
C47	89°14'24"	19.74'	31.15'	20.00'	28.10'	N30°33'52"E
C48	05°01'37"	45.48'	90.90'	1036.00'	90.87'	N11°32'31"W
C49	10°16'31"	86.67'	172.88'	964.00'	172.65'	S84°53'57"W
C50	00°33'46"	4.64'	9.28'	945.00'	9.28'	S89°11'51"E
C51	03°18'36"	27.85'	55.69'	964.00'	55.68'	S88°22'54"W
C52	06°46'59"	249.04'	497.50'	4202.32'	497.21'	N71°47'35"E
C53	06°58'50"	234.96'	469.33'	3852.32'	469.04'	S89°16'08"W
C54	10°47'45"	60.47'	120.59'	640.00'	120.41'	S84°34'23"W
C55	05°35'59"	324.36'	648.21'	6632.32'	647.95'	S72°50'01"W
C56	10°06'07"	92.18'	183.89'	1043.00'	183.65'	N80°04'12"W
C57	04°26'57"	40.24'	80.45'	1036.00'	80.43'	N87°48'43"E
C58	06°54'41"	168.62'	336.57'	2164.00'	336.23'	S85°25'25"W
C59	06°50'46"	230.43'	460.31'	3852.32'	460.03'	N80°06'31"E
C60	02°14'50"	75.55'	151.09'	3852.32'	151.08'	N84°39'19"E
C61	03°47'43"	34.56'	69.09'	1043.00'	69.08'	S87°01'07"E
C62	06°57'55"	58.67'	117.19'	964.00'	117.12'	S83°14'39"W
C63	02°43'38"	100.03'	200.02'	4202.32'	200.00'	N67°02'16"E
C64	01°12'23"	22.78'	45.56'	2164.00'	45.56'	N80°21'53"E
C65	05°49'33"	52.72'	105.34'	1036.00'	105.30'	N82°40'28"E
C66	12°13'56"	101.26'	201.75'	945.00'	201.37'	N84°24'18"E
C67	12°47'42"	105.96'	211.03'	945.00'	210.59'	N84°41'11"E

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