CITY OF ALBUQUERQUE

J-15/D000

File

August 28, 2007

Dan Grochowski, PE
Bohannan Huston, Inc
7500 Jefferson NE
Albuquerque, NM 87109

Re: Lomas/Yale Intersection Improvement Plans
Engineer's Stamp dated 8-22-07

Dear Mr. Grochowski,

Based upon the information provided in your letter dated 8-22-07, the above referenced calculations have generated the following questions that should be addressed before I can sign the plans

- None of the City's nomographs come close to showing that 27.93 cfs can enter a double 'C' inlet. I am aware that it does not take the curb openings into account but your calculations did not include any clogging factor.
- My site visit indicates that the curbs in the area are less than the 8" depth you have shown in your calculations. How will this affect your calculations?
- This location is the last chance to get upstream runoff to drain to the river by gravity. Any bypass is pumped, either from the Claremont pump system or the Broadway system and improving inlet capacity may pressurize the existing pipe network better and dry up Martineztown a little. I am still of the very strong opinion that I need the same grate area and curb opening that I have now.

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

Sincerely,

Bradley L. Bingham

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

C: ✓file

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

Bohannan ▲ Huston INC.

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

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toll free: 800.877 5332

August 22, 2007

Mr. Brad Bingham, P.E.
Senior Engineer
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

Re: Lomas / Yale Signal Modifications, COA 724685

Dear Brad:

In response to your comments from the previous submittal, attached are the calculations and stamped construction drawings for the existing and proposed inlets in Lomas at the entrance to UNMH. The existing inlets have a capacity of 112.5 cfs. However, the storm drain pipes that carry the runoff to the box culverts limit the amount of flow that will actually be captured from the street to no more than 80 cfs. That flow rate is based on an averaged slope from the lowest inlet invert to the outfall into the box culverts. We were unable to open the manhole where the inlet pipe ties to the 42" to get its actual invert. Most likely the 42" pipe is at a slightly flatter slope and the actual capacity is more in line with the 62 cfs given in the previous report. Either way the pipe controls the flow that gets from the street to the boxes.

The proposed inlets have a capacity of 96.6 cfs. This is still greater than the pipe's capacity and does not change the existing condition.

The calculations in the spreadsheet are taken directly from the USDOT's Urban Drainage Design Manual, HEC No.22. If you have any questions please feel free to call.

Sincerely,

Daniel J. Grochowski

Daniel J. Grochowski, P.E., P.S.
Project Manager
Water Resources Group

DJG/tmm

Inlet Spacing Calculations
Lomas Ave Storm Drain
DRAINAGE OF HIGHWAY PAVEMENTS (HEC-22) METHOD
100 -YEAR FLOWS
Domingo Road

Last Updated:
8/7/07, bhw

Columns in Yellow require user input
[redacted]

Inlets:

		L	W
Type 'A' Drop Inlets	A	2 95	2
Type Double 'C' Drop Inlets	Double C	7 4	2
Type 'C' Drop Inlets	Single C	3 95	2

Manning's Coefficient for Street and Pavement Gutters n= 0 017

BASIN ID Existing Inlets	Contributing Area Area	Contributing Area Basin Q (cfs)	Total Rtd Q (cfs)	Inlet Width (ft)	Inlet Length (ft)	Inlet Type	Total Spread of Water T (ft)	Depth of Flow d (ft)	Intercept Q Qi (cfs)	Bypass Q Qb (cfs)	Long. Slope S_L (ft/ft)	Cross Slope S_X (ft/ft)	Splash Over V_O (fps)	Gutter Velocity V (fps)	Ratio Frontal Flow Eo	Total Frontal Flow Rf	Total Side Flow Rs	Efficiency E
Lomas Ave at Yale Blvd																		
Northern Inlet 1	50%Basin 2	71 4	71 42	2 00	7 40	Double C	[redacted]	0 63	27 93	43 49	0 0230	0 0200	10 0	7 2	0 16	1 0	0 3	0 39
Northern Inlet 2	Bypass flow	43 5	43 49	2 00	20 35	Custom	[redacted]	0 52	22 79	20 70	0 0230	0 0200	10 0	6 4	0 19	1 0	0 8	0 86
Southern Inlet 1	50%Basin 2	71 4	71 42	2 00	15 41	Custom	[redacted]	0 63	32 08	39 34	0 0230	0 0200	10 0	7 2	0 16	1 0	0 7	0 72
Southern Inlet 2	Bypass flow	39 3	39 34	2 00	7 40	Double C	[redacted]	0.50	18 24	21 10	0 0230	0 0200	10 0	6 2	0 20	1 0	0 3	0 46
Southern Inlet 3	Bypass flow	21 1	21 10	2 00	7 40	Double C	[redacted]	0 40	11 49	9 61	0 0230	0 0200	10 0	5 3	0 25	1 0	0 4	0 54
Totals		**142.8**							**112.5**									

BASIN ID New Design Inlets	Contributing Area Area	Contributing Area Basin Q (cfs)	Total Rtd Q (cfs)	Inlet Width (ft)	Inlet Length (ft)	Inlet Type	Total Spread of Water T (ft)	Depth of Flow d (ft)	Intercept Q Qi (cfs)	Bypass Q Qb (cfs)	Long. Slope S_L (ft/ft)	Cross Slope S_X (ft/ft)	Splash Over V_O (fps)	Gutter Velocity V (fps)	Ratio Frontal Flow Eo	Total Frontal Flow Rf	Total Side Flow Rs	Efficiency E
Lomas Ave at Yale Blvd																		
Northern Inlet 1 (CDI-04)	50%Basin 2	71 4	71 42	2 00	7 40	Double A	[redacted]	0 63	27 93	43 49	0 0230	0 0200	10 0	7 2	0 16	1 0	0 3	0 39
Northern Inlet 2 (CDI-05)	Bypass flow	43 5	43 49	2 00	7 40	Double C	[redacted]	0 52	19 62	23 87	0 0230	0 0200	10 0	6 4	0 19	1 0	0 3	0 45
Southern Inlet 1 (CDI-03)	50%Basin 2	71 4	71.42	2 00	5 90	Double A	[redacted]	0 63	16 04	55 38	0 0230	0 0200	10 0	7.2	0 16	1 0	0 2	0 31
Southern Inlet 2 (CDI-02)	Bypass flow	55 4	55 38	2 00	7 40	Double C	[redacted]	0 57	23 33	32 05	0 0230	0 0200	10 0	6 8	0 18	1 0	0 3	0 42
Southern Inlet 3 (CDI-01)	Bypass flow	32 0	32.05	2.00	3 95	Single C	[redacted]	0 47	9 70	22 35	0 0230	0 0200	10 0	5 9	0 21	1 0	0 1	0 30
Totals		**142.8**							**96.6**									

NOTES:

1 Design Criteria from the HEC-22 Urban Drainage Design Manual, Second Edition
Flow spread from 10-yr event must maintain one through lane open at all times Runoff from 100-year storm shall be contained within the R/W
2 Total allowable ponding width for typical section based on COA criteria
3 Flows determined using data from AHYMO INLET 100 txt.
4 Manning's n=0 016 (rough texture- asphalt pavement), HEC-22 Urban Drainage Design Manual Second Edition, pg 4-10
5 Sediment accumulation is not anticipated
6 No reduction in routed Q's for attenuation
7 Intercept Q based upon the controlling capacity of the storm drain pipeline out of an inlet or the capacity of the inlet itself

HEC-22 Spreadsheet Equations

Width of Flow

$T= ((Q*n)/(K_U*S_x^{1.67}*S_L^{0.5}))^{0.375}$ Eq (4-2)

Q= flow rate, ft^3/s

n= manning's coefficient

S_x= cross slope, ft/ft

S_L=longitudinal slope, ft/ft

Ku=0 56

Depth of Flow

d= T*Sx Eq (4-3)

The ratio of frontal flow to total gutter

$Eo= Qw/Q= 1-(1-(W/T))^{2.67}$ Eq (4-16)

Q= total gutter flow, ft^3/s

Qw= flow in width W, ft^3/s

W= width of depressed gutter or grate, ft

T= total spread of water, ft

Total Frontal Flow

Rf= 1-Ku(V-Vo) Eq (4-18)

Ku=0 09

V= velocity of flow in the gutter, ft/s

Vo= gutter velocity where splash-over first occurs, ft/s

(note Rf can not exceed 1 0)

Total Side Flow

$Rs= 1/(1+(K_U*V^{1.8})/(S_x*L^{2.3}))$ Eq (4-19)

Sx= cross slope of Road

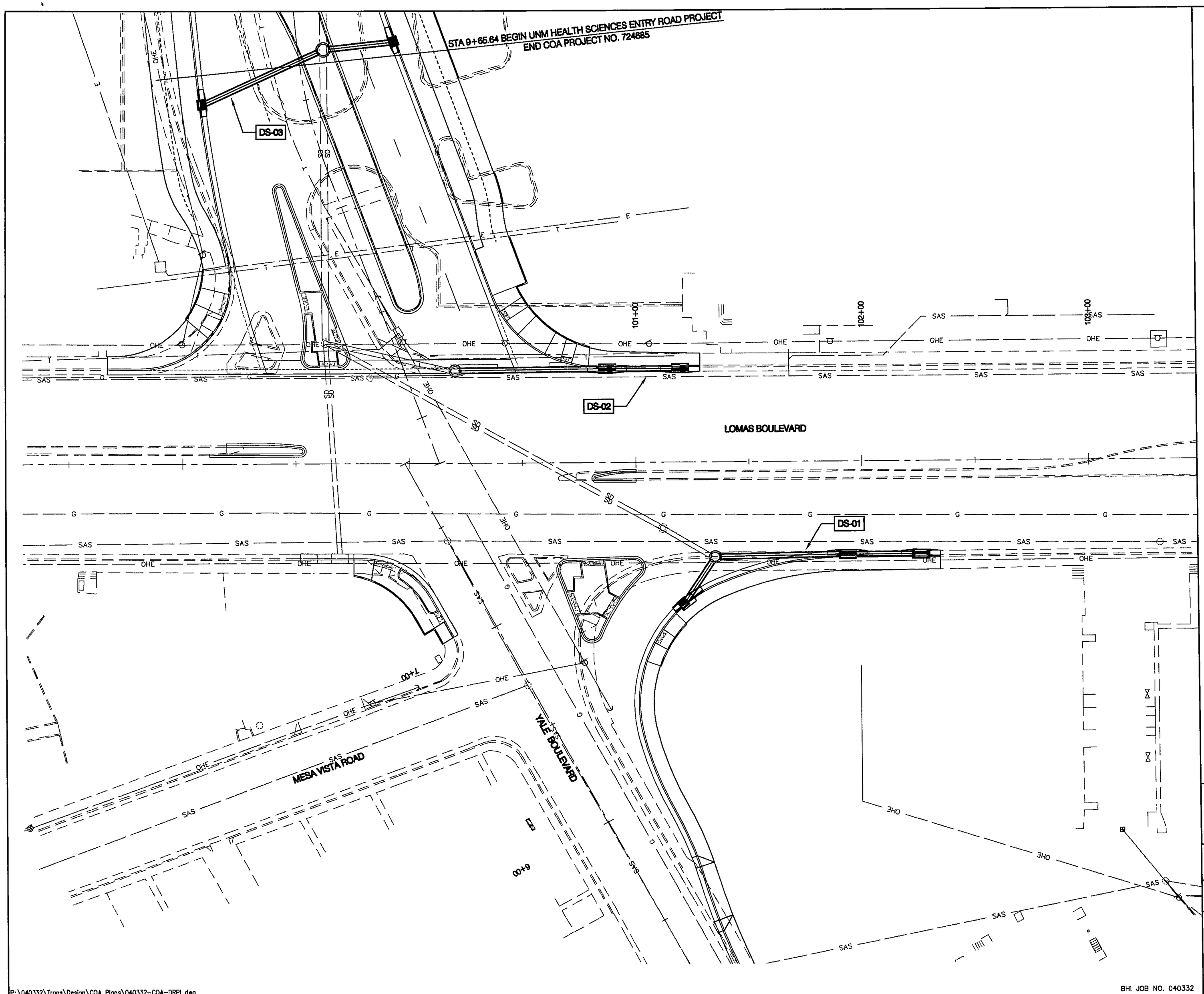
L= Length of the inlet

Efficiency

E=Rf*Eo+Rs*(1-Eo) Eq (4-20)

or

$E=Q_I/Q$ Eq (4-14)



NOTES

1. SEE NEXT SHEETS FOR DRAINAGE STRUCTURE PROFILES.

JEANETTE A. WALTHER
NEW MEXICO
11243
8/22/07
REGISTERED PROFESSIONAL ENGINEER

0 10 20 40
SCALE: 1"=20'

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

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

LOMAS BOULEVARD SIGNAL MODIFICATIONS
DRAINAGE PLAN
YALE BOULEVARD / LOMAS BOULEVARD

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

City Project No.	Zone Map No.	Sheet	Of
724685	J-15,J-16	22	24

BHI JOB NO. 040332

AS-BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY — DATE
INSPECTOR ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS
COA BRASS CAP 9-J16, 1990
N=1,487,262.99
E=388,674.67
ELEV=5141.08
(NGVD-29) GRID TO GROUND UNKNOWN
OBTAINED FROM JMA SURVEY, OCT 2003

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

No.	Date	REMARKS	By
		REVISIONS	
		DESIGN	

Designed By: JAW — DATE: 7/2007
Drawn By: LAH — DATE: 7/2007
Checked By: KOT — DATE: 7/2007

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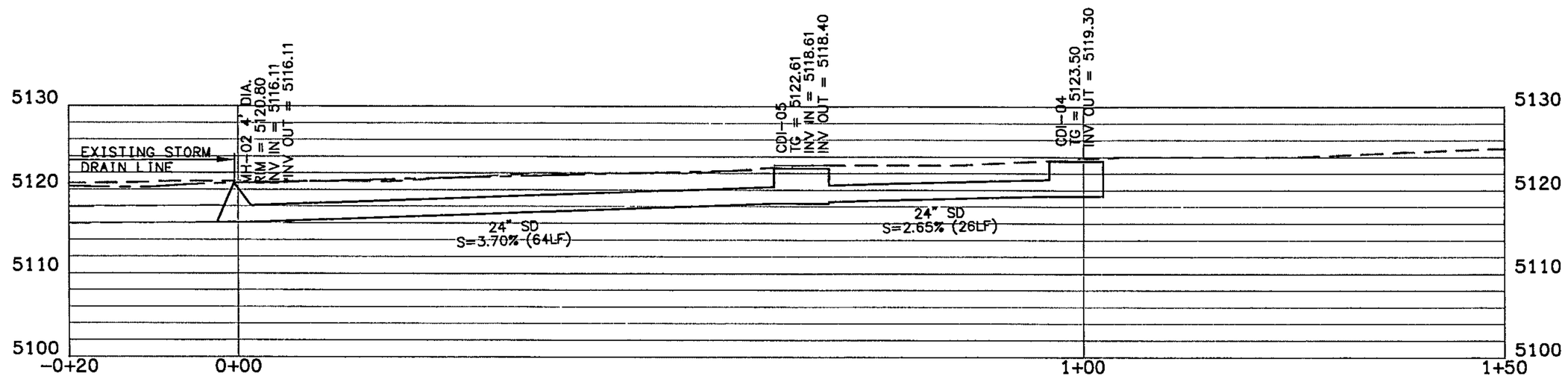
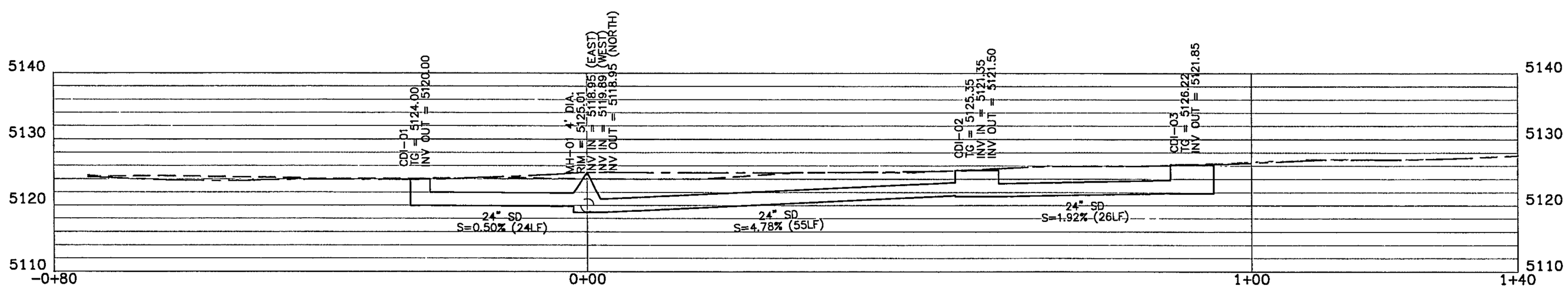
Aug 09 2007 - 7:37am



DS-02

REMOVE EXISTING CURB DROP INLET AT STA 100+28.00 (LOMAS)
REMOVE EXISTING CURB DROP INLET AT STA 100+66.00 (LOMAS)
BUILD MANHOLE 4' DIA. TYPE E (MH-02) AT STA 8+14.19, 21.0' RT (YALE)
SAWCUT EXISTING RCP PIPE AND RECONNECT TO NEW MANHOLE AS REQUIRED
BUILD 1-24"X64' RCP CLASS III
CONNECT TO NEW CURB DROP INLET
BUILD 1-CURB DROP INLET TYPE DOUBLE C (CDI-05) AT STA 100+87.62, 42.3' RT (LOMAS)
BUILD 1-24"X26' RCP CLASS III
CONNECT TO NEW CURB DROP INLET
BUILD 1-CURB DROP INLET TYPE DOUBLE A (CDI-04) AT STA 101+19.96, 42.3' RT (LOMAS)
*CONTRACTOR TO VERIFY SLOPE AND ELEVATION OF EXISTING PIPE



DS-01

BUILD 1-CURB DROP INLET TYPE C (CDI-01) AT STA 101+14.71, 69.1' RT (LOMAS)
REMOVE EXISTING CURB DROP INLET AT STA 101+40.00
BUILD 1-24"X32' RCP CLASS III
CONNECT TO NEW MANHOLE
BUILD 1-MANHOLE 4' DIA (MH-01) AT STA 101+34.72, 42' RT (LOMAS)
BUILD 1-24"X55' RCP CLASS III
CONNECT TO NEW CURB DROP INLET
BUILD 1-CURB DROP INLET TYPE DOUBLE C (CDI-02) AT STA 101+93.23, 42.0' RT (LOMAS)
BUILD 1-24"X26' RCP CLASS III
CONNECT TO NEW CURB DROP INLET
BUILD 1-CURB DROP INLET TYPE DOUBLE A (CDI-03) AT STA 102+25.59, 42.0' RT (LOMAS)
*CONTRACTOR TO VERIFY SLOPE AND ELEVATION OF EXISTING PIPE

NOTES

1. STATIONING IS CALCULATED PERPENDICULAR FROM THE CENTERLINE TO THE LONGITUDINAL CENTER OF EACH CDI OR MANHOLE.
2. CDI OFFSET DISTANCE REFERS TO THE FLOWLINE BASED ON TYPICAL SECTION.
3. SET GRADE OF CDI TO MATCH THE FLOWLINE (DETERMINED BY TYPICAL SECTIONS AND ROADWAY PROFILE) AS SPECIFIED ON COA STANDARD DETAIL SHEETS.
4. ALL TYPE C MANHOLES SHALL BE BUILT PER COA STD DWG 2101.
5. ALL TYPE E MANHOLES SHALL BE BUILT PER COA STD DWG 2102.
6. ALL TYPE A INLETS SHALL BE BUILT PER COA STD DWG 2201.
7. ALL TYPE C INLETS SHALL BE BUILT PER COA STD DWG 2205.
8. ALL TYPE D INLETS SHALL BE BUILT PER COA STD DWG 2206.
9. PIPE LENGTH IS THE HORIZONTAL LENGTH FROM CENTER OF MANHOLE TO CENTER OF MANHOLE AND FROM INSIDE WALL OF DROP INLETS.
10. ALL INLET GRATES SHALL BE INSTALLED PER COA STD DWG 2220.

AS-BUILT INFORMATION

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

MICRO-FILM INFORMATION

	DATE
RECORDED BY	
NO.	

BENCH MARKS

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ELEV=5141.08
(NGVD-29) GRID TO GROUND UNKNOWN
OBTAINED FROM JMA SURVEY, OCT 2003

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

JEANETTE A. WALTHER
NEW MEXICO
11148
REGISTERED PROFESSIONAL ENGINEER
8/22/07

No.	Date	REMARKS	By

REVISIONS

DESIGN

Designed By: JAW DATE: 7/2007
Drawn By: LAH DATE: 7/2007
Checked By: KDT DATE: 7/2007

0 5 10 20
SCALE: 1"=10'

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

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

LOMAS BOULEVARD SIGNAL MODIFICATIONS
DRAINAGE PROFILES
YALE BOULEVARD / LOMAS BOULEVARD

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

City Project No.	Zone Map No.	Sheet	Of
724685	J-15,J-16	23	24

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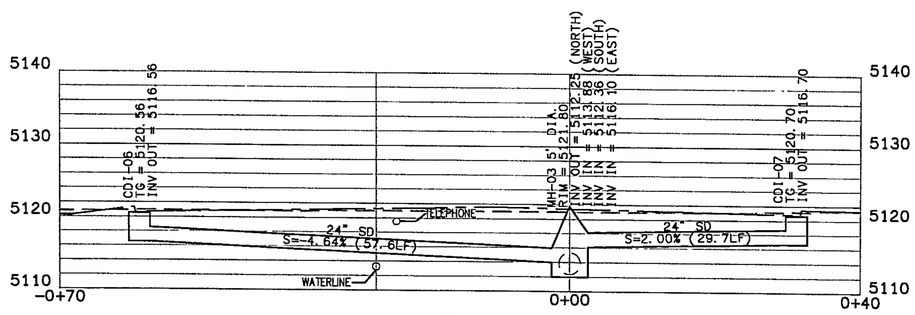
Aug 09, 2007 - 10:24am

BHI JOB NO. 040332

NOTES

1. STATIONING IS CALCULATED PERPENDICULAR FROM THE CENTERLINE TO THE LONGITUDINAL CENTER OF EACH CDI OR MANHOLE.
2. CDI OFFSET DISTANCE REFERS TO THE FLOWLINE BASED ON TYPICAL SECTION.
3. SET GRADE OF CDI TO MATCH THE FLOWLINE (DETERMINED BY TYPICAL SECTIONS AND ROADWAY PROFILE) AS SPECIFIED ON COA STANDARD DETAIL SHEETS.
4. ALL TYPE C MANHOLES SHALL BE BUILT PER COA STD DWG 2101.
5. ALL TYPE E MANHOLES SHALL BE BUILT PER COA STD DWG 2102.
6. ALL TYPE A INLETS SHALL BE BUILT PER COA STD DWG 2201.
7. ALL TYPE C INLETS SHALL BE BUILT PER COA STD DWG 2205.
8. ALL TYPE D INLETS SHALL BE BUILT PER COA STD DWG 2206.
9. PIPE LENGTH IS THE HORIZONTAL LENGTH FROM CENTER OF MANHOLE TO CENTER OF MANHOLE AND FROM INSIDE WALL OF DROP INLETS.
10. ALL INLET GRATES SHALL BE INSTALLED PER COA STD DWG 2220.



DS-03

BUILD 1-CURB DROP INLET TYPE C (CDI-06) AT STA 9+56.43, 46.3' LT (YALE)
BUILD 1-24'X58' RCP CLASS III
BUILD 1-CURB DROP INLET TYPE C (CDI-07) AT STA 9+70.64, 42.9' RT (YALE)
BUILD 1-24'X30' RCP CLASS III
CONNECT TO NEW MANHOLE
BUILD 1-MANHOLE 5' DIA. (MH-03) AT STA 9+70.95, 11.2' RT (YALE)
SAWCUT EXISTING RCP PIPE AND RECONNECT TO NEW MANHOLE AS REQUIRED
* CONTRACTOR TO VERIFY SLOPE AND ELEVATION OF EXISTING PIPE

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Aug 09, 2007 - 1:56pm

BHI JOB NO. 040332

AS-BUILT INFORMATION

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

BENCH MARKS

COA BRASS CAP 9-J16, 1990
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E=389,674.67
ELEV=5141.08
(NGVD-29) GRID TO GROUND UNKNOWN
OBTAINED FROM JMA SURVEY, OCT 2003

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

MICRO-FILM INFORMATION

RECORDED BY DATE
NO.

ENGINEER'S SEAL

JEANETTE A. WALTHER
NEW MEXICO
11243
8/22/07
REGISTERED PROFESSIONAL ENGINEER

No.	Date	REMARKS	By

REVISIONS

DESIGN

Designed By: JAW DATE: 7/2007
Drawn By: LAH DATE: 7/2007
Checked By: KDT DATE: 7/2007

0 5 10 20
SCALE: 1"=10'

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

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

LOMAS BOULEVARD SIGNAL MODIFICATIONS
DRAINAGE PROFILES
YALE BOULEVARD / LOMAS BOULEVARD

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

City Project No.	Zone Map No.	Sheet	Of
724685	J-15.J-16	24	24

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toll free: 800.877.5332

July 18, 2007

Mr. Brad Bingham
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Lomas Boulevard Signal Modifications Drainage Comments Request

Dear Mr. Bingham:

The purpose of this letter is to request some guidance and comments in regards to the proposed drainage design at Lomas and Yale for the abovementioned project. The drainage system that exists today at this intersection includes a 20' long inlet in combination with a double inlet at the northeast corner, a 15' long inlet on the southeast corner and 2 double inlets on the southwest corner of the intersection. According to the UNM Hospital North Diversion Channel Drainage Study(enclosed), the flows accumulated at the intersection (62 cfs) will allow the design to reduce the number and size of inlets. The proposed design includes a single Type A inlet followed by a single Type C inlet at the northeast corner, a single Type A inlet followed by two single Type C inlets at the southeast corner, and a single Type A inlet followed by a single Type C inlet on the southwest corner. The drainage design and connecting system can be found in the enclosures provided herein.

BHI is requesting your comments regarding the layout and whether or not the existing capacity will need to be met or if the inlets can be downsized as proposed due to the analysis.

We appreciate any comments and/or concerns with the proposed design that you can provide prior to the DRC submittal at the end of July. However, we are still in the design process and would appreciate any comments at your earliest convenience.

If you have any questions, please do not hesitate to call me or Jeanette Walther at 823-1000.

Sincerely,

Andrew E. Gallegos

Andrew E. Gallegos, E.I.
Project Engineer
Traffic & Transportation Group

AEG/tmm
Enclosures

cc: Jeanette Walther, P.E.

	Lomas Blvd (Opt. One)		
		DS-01	
	Inlet Type	Name	Capacity
**	Double "A"	CDI-01	14.50
**	Double "C"	CDI-02	14.50
		Total	29.00
		DS-02	
	Inlet Type	Name	Capacity
**	Double "A"	CDI-03	14.50
**	Double "C"	CDI-04	14.50
*	Single "C"	CDI-05	15.55
		Total	44.55
		DS-03	
	Inlet Type	Name	Capacity
**	Double "A"	CDI-06	14.50
**	Double "C"	CDI-07	14.50
		Total	29.00
	Total Flow Inlet Cap		**102.55**

	Lomas Blvd (Opt. Two)		
		DS-01	
	Inlet Type	Name	Capacity
**	Single "A"	CDI-01	12.00
**	Single "C"	CDI-02	12.00
		Total	24.00
		DS-02	
	Inlet Type	Name	Capacity
**	Single "A"	CDI-03	12.00
**	Single "C"	CDI-04	12.00
*	Single "C"	CDI-05	15.55
		Total	39.55
		DS-03	
	Inlet Type	Name	Capacity
**	Single "A"	CDI-06	12.00
**	Single "C"	CDI-07	12.00
		Total	24.00
	Total Flow Inlet Cap		**87.55**

	Yale Blvd (Opt. One)		
		DS-04	
	Inlet Type	Name	Capacity
**	Single "C"	CDI-08	15.55
**	Single "C"	CDI-09	15.55
		Total	31.10

	Yale Blvd (Opt. Two)		
		DS-04	
	Inlet Type	Name	Capacity
**	Single "C"	CDI-08	15.55
**	Single "C"	CDI-09	15.55
		Total	31.10

```
                                FROM  TO                    PEAK        RUNOFF                TIME TO    CFS
                   HYDROGRAPH    ID   ID        AREA     DISCHARGE     VOLUME      RUNOFF     PEAK     PER
COMMAND          IDENTIFICATION  NO.  NO.      (SQ MI)     (CFS)       (AC-FT)    (INCHES)   (HOURS)   ACRE      NOTATION

*S*****************************************************************************
*S*    DIVIDE OUT INLET CAPACITY AT APM28B
*S*
DIVIDE HYD          APM28BSS    42   42        .03515       48.00       3.219      1.71705    1.433    2.134
                    APM28BOL  and    39        .00925       55.33        .847      1.71705    1.533    9.345
*S*****************************************************************************
*S*
*S ADD APM28BSS AND APM28CSS AT APM28B
ADD HYD          ADD.APM28CSS 50&42   41       4.63851     2761.94     406.629      1.64369    2.233     .930
*S*     ID 41 = APM28B
*S*****************************************************************************
*S*
*S* COMPUTE BASIN U-2D
*S*
*S*
*S*
COMPUTE NM HYD           U2D   -     51        .05560      142.83       5.164      1.74161    1.500    4.014 PER IMP=  62.00
*S*
*S*****************************************************************************
*S*
*S ADD APU2D AND BASIN U2D
ADD HYD          ADD.APU2D.U2 52&51   48        .05643      142.83       5.244      1.74239    1.500    3.955
*S*     ID 48 = APU2D
*S*****************************************************************************
*S*    DIVIDE SS AT APU-2D
*S*
DIVIDE HYD          APU2DSS     48   47        .04406      162.00       4.094      1.74239    1.400    2.199
                    APU2DOL   and    45        .01237       80.83       1.149      1.74239    1.500   10.210
*S*****************************************************************************
*S*
*S ADD APU2DSS AND APM28B AT APYALE
ADD HYD          ADD.APU2DSS. 47&41   36       4.68257     2772.53     410.723      1.64462    2.233     .925
*S*     ID 36 = APYALE
*S*****************************************************************************
*S*
*S ADD APM28COL AND APM28BOL
ADD HYD          ADD.APM28COL 55&39   49        .00925       55.33        .847      1.71705    1.533    9.345
*S*     ID 49 = APM28BOL
*S*****************************************************************************
*S*
*S* COMPUTE BASIN M-28A
*S*
*S*
*S*
COMPUTE NM HYD           M28A   -     43        .01360       34.61       1.245      1.71705    1.500    3.976 PER IMP=  60.00
*S*
*S*****************************************************************************
*S*
*S ADD APM28A AND APYALE
ADD HYD          ADD.APM28A.A 43&36   36       4.69617     2774.95     411.969      1.64483    2.233     .923
*S*     ID 36 = APYALE
*S*****************************************************************************
*S*
*S ADD APYALE AND APM28BOL
ADD HYD          ADD.APM28BOL 49&36   36       4.70542     2774.95     412.816      1.64497    2.233     .921
*S*     ID 36 = APYALE
*S*****************************************************************************
*S*****************************************************************************
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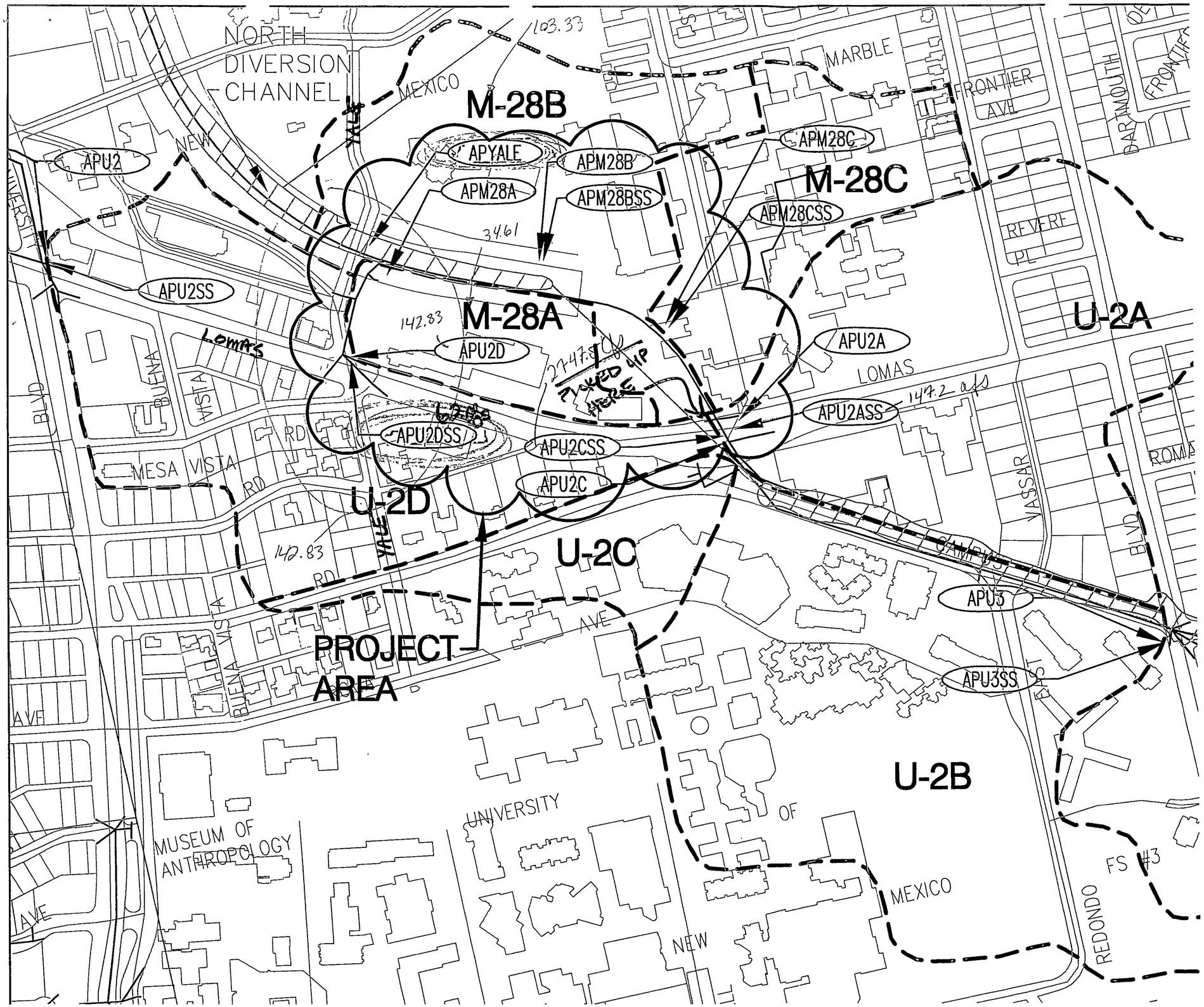
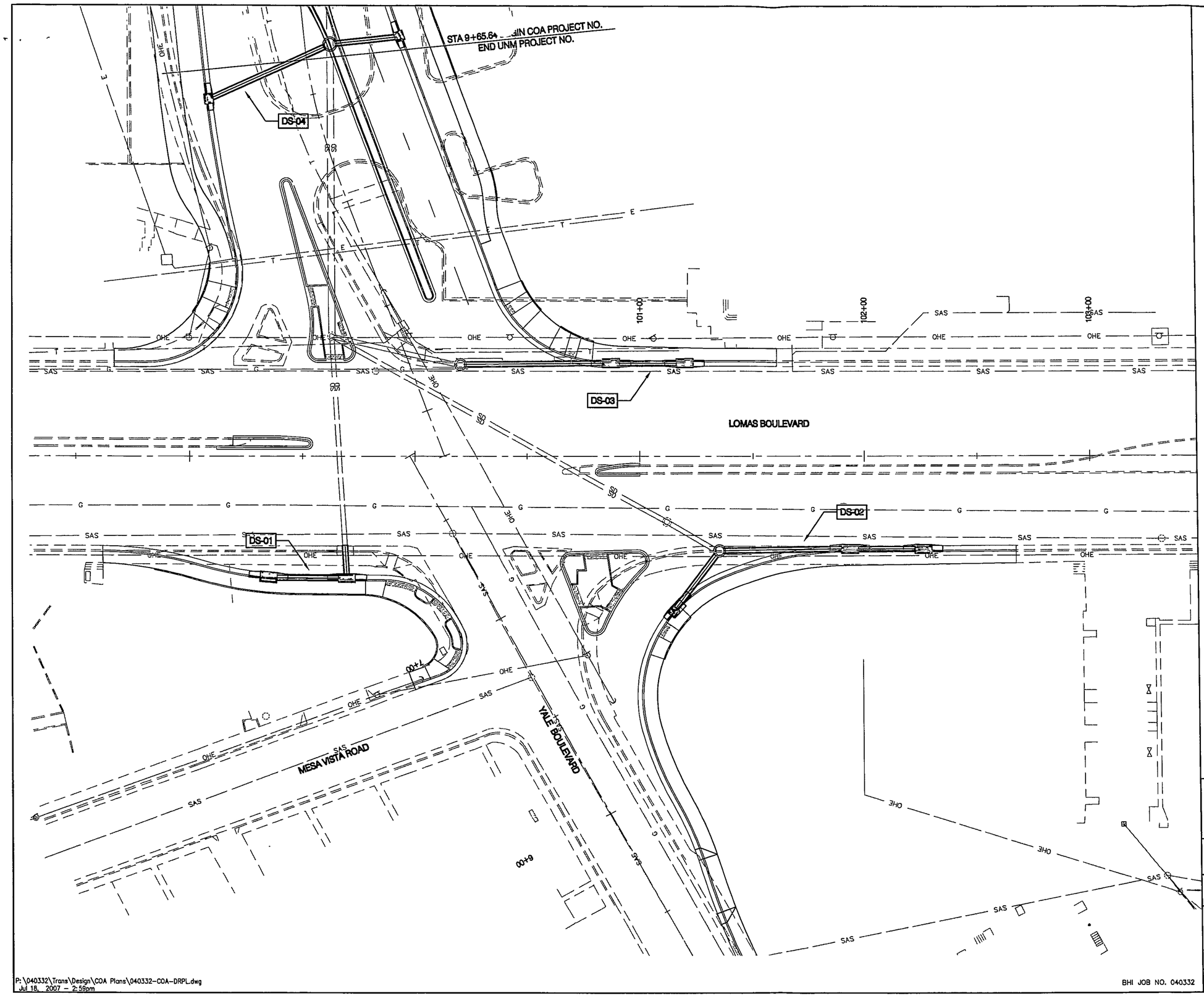


Direct Bas. Contribution

U-2A
U-2B
U-2C
U-2D
M-28A
M-28B
M-28C



NL

1. SEE NEXT SHEETS FOR DRAINAGE STRUCTURE PROFILES.

0 10 20 40
SCALE: 1"=20'

Bohannan △ Huston INC.

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

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

LOMAS BOULEVARD SIGNAL MODIFICATIONS
DRAINAGE PLAN
YALE BOULEVARD / LOMAS BOULEVARD

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

City Project No.	Zone Map No.	Sheet	Of
CITY	J-15,J-16	21	23

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
COA BRASS CAP 9-J16, 1990
N=1,487,262.99
E=389,674.67
ELEV=5141.08
(NGVD-29) GRID TO GROUND UNKNOWN
OBTAINED FROM JMA SURVEY, OCT 2003

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

No.	Date	REMARKS	By
		REVISIONS	
		DESIGN	

Designed By: JAW DATE: 7/2007
Drawn By: LAH DATE: 7/2007
Checked By: KOT DATE: 7/2007

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Jul 18, 2007 - 2:59pm

BHI JOB NO. 040332

Bohannan ▲ Huston INC.

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

www.bhinc.com

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

July 18, 2007

Mr. Brad Bingham
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Lomas Boulevard Signal Modifications Drainage Comments Request

Dear Mr. Bingham:

The purpose of this letter is to request some guidance and comments in regards to the proposed drainage design at Lomas and Yale for the abovementioned project. The drainage system that exists today at this intersection includes a 20' long inlet in combination with a double inlet at the northeast corner, a 15' long inlet on the southeast corner and 2 double inlets on the southwest corner of the intersection. According to the UNM Hospital North Diversion Channel Drainage Study(enclosed), the flows accumulated at the intersection (62 cfs) will allow the design to reduce the number and size of inlets. The proposed design includes a single Type A inlet followed by a single Type C inlet at the northeast corner, a single Type A inlet followed by two single Type C inlets at the southeast corner, and a single Type A inlet followed by a single Type C inlet on the southwest corner. The drainage design and connecting system can be found in the enclosures provided herein.

BHI is requesting your comments regarding the layout and whether or not the existing capacity will need to be met or if the inlets can be downsized as proposed due to the analysis.

We appreciate any comments and/or concerns with the proposed design that you can provide prior to the DRC submittal at the end of July. However, we are still in the design process and would appreciate any comments at your earliest convenience.

If you have any questions, please do not hesitate to call me or Jeanette Walther at 823-1000.

Sincerely,

Andrew E. Gallegos, E.I.
Project Engineer
Traffic & Transportation Group

AEG/tmm
Enclosures

cc: Jeanette Walther, P.E.

	Lomas Blvd (Opt. One)		
		DS-01	
	Inlet Type	Name	Capacity
**	Double "A"	CDI-01	14.50
**	Double "C"	CDI-02	14.50
		Total	29.00
		DS-02	
	Inlet Type	Name	Capacity
**	Double "A"	CDI-03	14.50
**	Double "C"	CDI-04	14.50
*	Single "C"	CDI-05	15.55
		Total	44.55
		DS-03	
	Inlet Type	Name	Capacity
**	Double "A"	CDI-06	14.50
**	Double "C"	CDI-07	14.50
		Total	29.00
	Total Flow Inlet Cap		**102.55**

	Lomas Blvd (Opt. Two)		
		DS-01	
	Inlet Type	Name	Capacity
**	Single "A"	CDI-01	12.00
**	Single "C"	CDI-02	12.00
		Total	24.00
		DS-02	
	Inlet Type	Name	Capacity
**	Single "A"	CDI-03	12.00
**	Single "C"	CDI-04	12.00
*	Single "C"	CDI-05	15.55
		Total	39.55
		DS-03	
	Inlet Type	Name	Capacity
**	Single "A"	CDI-06	12.00
**	Single "C"	CDI-07	12.00
		Total	24.00
	Total Flow Inlet Cap		**87.55**

	Yale Blvd (Opt. One)		
		DS-04	
	Inlet Type	Name	Capacity
**	Single "C"	CDI-08	15.55
**	Single "C"	CDI-09	15.55
		Total	31.10

	Yale Blvd (Opt. Two)		
		DS-04	
	Inlet Type	Name	Capacity
**	Single "C"	CDI-08	15.55
**	Single "C"	CDI-09	15.55
		Total	31.10

```
                                FROM  TO                    PEAK        RUNOFF                TIME TO    CFS
                   HYDROGRAPH   ID    ID        AREA     DISCHARGE     VOLUME      RUNOFF      PEAK     PER
COMMAND          IDENTIFICATION NO.   NO.     (SQ MI)     (CFS)       (AC-FT)    (INCHES)   (HOURS)   ACRE     NOTATION

*S*****************************************************************************
*S*    DIVIDE OUT INLET CAPACITY AT APM28B
*S*
DIVIDE HYD          APM28BSS   42    42       .03515       48.00       3.219      1.71705    1.433    2.134
                    APM28BOL  and    39       .00925       55.33        .847      1.71705    1.533    9.345
*S*****************************************************************************
*S*
*S ADD APM28BSS AND APM28CSS AT APM28B
ADD HYD          ADD.APM28CSS 50&42  41      4.63851     2761.94     406.629      1.64369    2.233     .930
*S*     ID 41 = APM28B
*S*****************************************************************************
*S*
*S* COMPUTE BASIN U-2D
*S*
*S*
*S*
COMPUTE NM HYD           U2D    -    51       .05560      142.83       5.164      1.74161    1.500    4.014 PER IMP=  62.00
*S*
*S*****************************************************************************
*S*
*S ADD APU2D AND BASIN U2D
ADD HYD          ADD.APU2D.U2 52&51  48       .05643      142.83       5.244      1.74239    1.500    3.955
*S*     ID 48 = APU2D
*S*****************************************************************************
*S*    DIVIDE SS AT APU-2D
*S*
DIVIDE HYD          APU2DSS    48    47       .04406       62.00       4.094      1.74239    1.400    2.199
                    APU2DOL   and    45       .01237       80.83       1.149      1.74239    1.500   10.210
*S*****************************************************************************
*S*
*S ADD APU2DSS AND APM28B AT APYALE
ADD HYD          ADD.APU2DSS. 47&41  36      4.68257     2772.53     410.723      1.64462    2.233     .925
*S*     ID 36 = APYALE
*S*****************************************************************************
*S*
*S ADD APM28COL AND APM28BOL
ADD HYD          ADD.APM28COL 55&39  49       .00925       55.33        .847      1.71705    1.533    9.345
*S*     ID 49 = APM28BOL
*S*****************************************************************************
*S*
*S* COMPUTE BASIN M-28A
*S*
*S*
*S*
COMPUTE NM HYD           M28A   -    43       .01360       34.61       1.245      1.71705    1.500    3.976 PER IMP=  60.00
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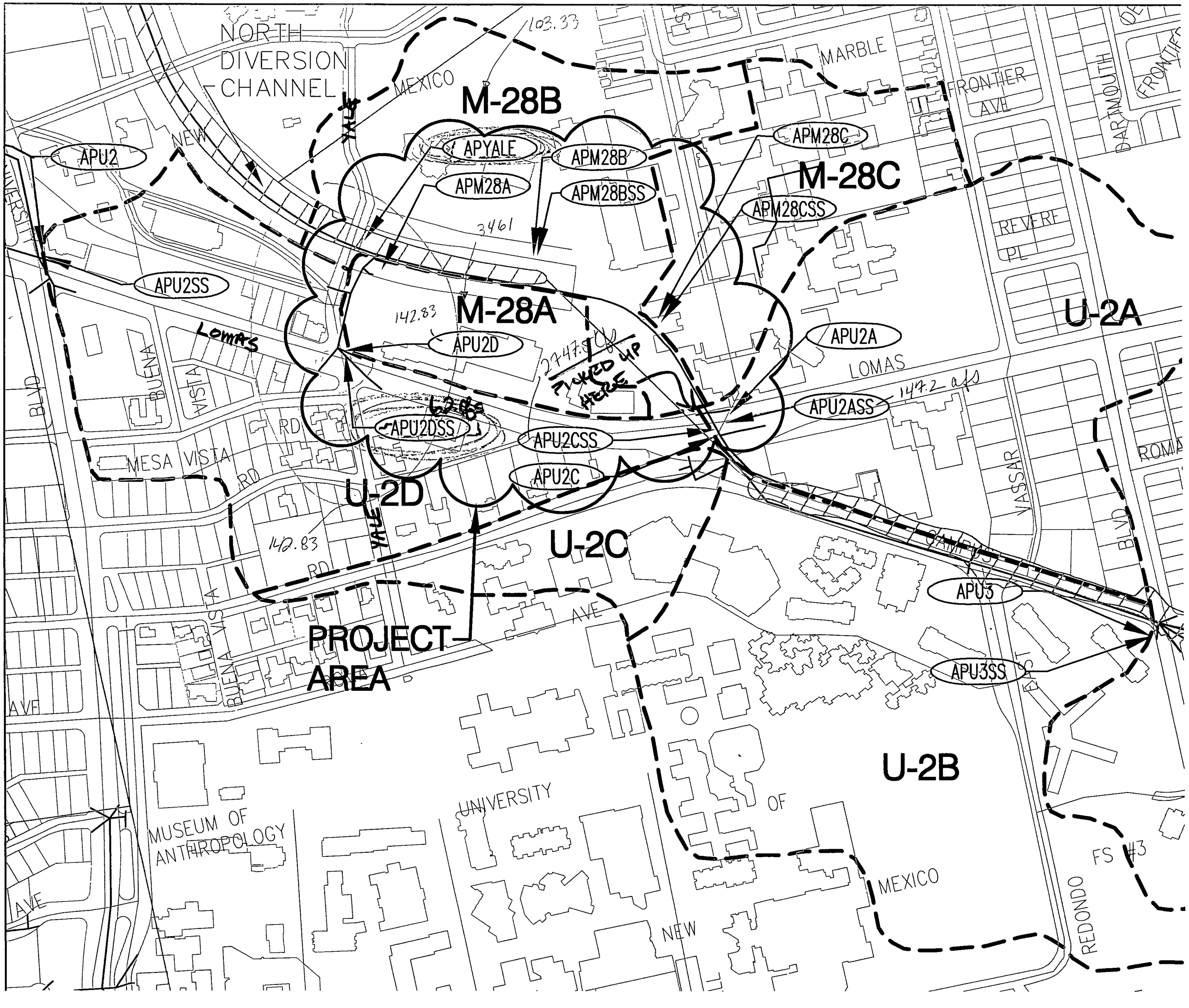
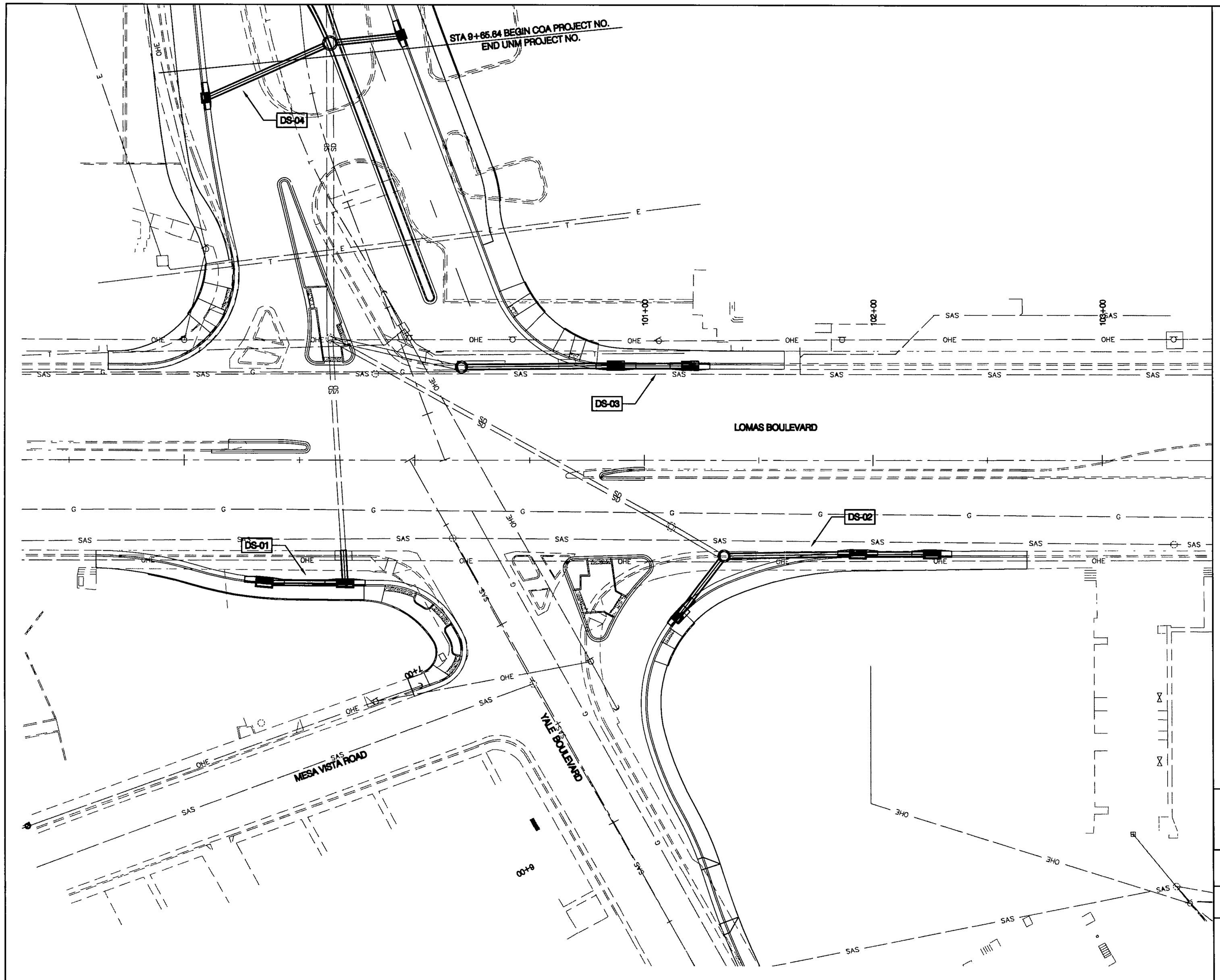


Direct Basin Contribution

U-2A
U-2B
U-2C
U-2D
M-28A
M-28B
M-28C



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