City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 7, 1995

James Topmiller, P.E.
Bohannan Huston, Inc.
7500 Jefferson NE
Albuquerque, N.M. 87109

RE: ENGINEER'S CERTIFICATION FOR WEST LANG AVE - TRACT 1A (D-17/D3V)
RECEIVED NOVEMBER 7, 1995 FOR DRAINAGE REQUIREMENTS
ENGINEER'S STAMP DATED 11/6/95

Dear Mr. Topmiller:

Based on the information included in the submittal referenced above, City Hydrology accepts the Engineer's Certification of the grading with private walls & private drainage. Contact Theresa Lucero for the Financial Guaranty Release for CPN 5092.90.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Theresa Lucero, CPN 5092.90

Lang Avenue Storm Drain Analysis

Sta. 5+65.00 , slope = 1.93 % 40'F-F

Q = 33 + 12 + 5.3 = 50.3 cfs (Tract 1A-2 + 57% Tract 1A-4 + street flow)

depth = .54' < .67' okay ; v = 4.82 ft/sec

$v^2/2g$ + depth = .90' < 1.00' okay → EGL

Sta 4+27.00 - 1 pair of single Type "A" inlets, 20' Lt. & Rt.

Q = 33.0 + 21.2 + 6.0 = 60.2 cfs (Tract Basin 1A-2 + Tract 1A-4 + street flow)

depth = .57' < .67' okay ; v = 5.18 ft/sec, slope = 1.93 %

$v^2/2g$ + depth = .99' < 1.00' → EGL less then ROW height, okay

Q_{grate} = 9.2 × 2 = 18.4 cfs ; Q_{street} = 60.2 - 18.2 = 42.0 cfs passing the inlets

Sta. 4+00.00 - 1 pair of Type "C" double inlets, 20' Lt. & Rt.

Q = 42.5 cfs (42.0 cfs from above and 0.5 cfs from the street)

depth = .52' < .67' okay ; v = 4.53 ft/sec, slope = 1.93 %

$v^2/2g$ + depth = .84' < 1.00' → EGL, okay

Q_{grate} = 10.8 × 2 = 21.6 cfs ; Q_{street} = 20.9 cfs passing the inlets

Sta. 3+44.00 - 1 Type "C" double inlet, 20' Lt./ 1 Type "D" double inlet, 20' Rt.

Q = 20.9 + 1.5 (street) = 22.4 cfs

depth = .43' < .67' okay ; v = 3.71 ft/sec, slope = 1.93 %

$v^2/2g$ + depth = .64' < 1.00' → EGL, okay

Q_{grate} (1 Type "C" double inlet) = 10.8 cfs

$Q_o = .6(4.2)\sqrt{64.4(.8)} = 18.1$ cfs

50% Clogging

$= 3(2+6+2)(.43)^{3/2} = 8.5$ cfs

$(.8)$ $= 21.5$ cfs

Calculation for 1 Type "D" ~~single~~ inlet (Double Used)

for street depth = .43' < .67' use weir equation

$Q = CLH^{3/2}$ $L = 15'$ (4-sided perimeter - $Area_{grate}$)

$2(2+3) = 10$

$Q_{grate} = (3.00)(15')(.43')^{3/2} = 12.7$ cfs

$3(16')(.8)^{3/2} = 34.3$ cfs

$Q_{capacity}$ (2 inlets) = 10.8 + 12.7 = 23.5 cfs > 22.4 cfs (Q_{street}) okay

$Q_o = .6(4.2)\sqrt{64.4(.8)} = 18.1$ cfs

50% Clogging

BOHANNAN-HUSTON INC.

PROJECT NAME Journal Center - Tract 1A SHEET ____ OF ____

PROJECT NO. C9423042 BY DH DATE 1/15/95

SUBJECT Storm Drain Analysis CH'D ____ DATE ____

I. INTRODUCTION

This drainage report is prepared to present a master drainage plan for existing Tracts 1A-1, Journal Center Business Park. This tract of land is proposed for subdivision into several new tracts, Tracts 1A-2, 1A-3, 1A-4 and 1A-5. Additionally, and simultaneously, a new public road right-of-way called Lang Avenue is to be created.

This report supports, and requests, the following approvals:

1. Site Plan for Subdivision (DRB-94-61) for these tracts.
2. Final Plat approval (Bulk land plat)
3. Work Order Approval for Phase 1 construction of this Plan (ie, construction of Lang Avenue and the temporary public drainage swale/ditch.
4. A variance to street flow requirements in Lang Avenue.
5. Revised overall "Journal Center Drainage Management Plan" (the overall Master Plan).

For information, a conceptual report for a new bank site on Tract 1A-3 and a new office site on Tract 1A-5 will be submitted separately in the near future but will conform to this master plan.

II. METHODOLOGY

All calculations provided in this report conform to Development Process Manual, Chapter 22 design criteria. Typically, 100-yr storm events only are calculated since there are no drainage facilities proposed in this plan that must conform to a 10-year storm event criteria.

Most calculation results are shown on the drainage basin/infrastructure sheets (8 1/2" X 11") enclosed, however, the calculations are found in the Appendix.

A "Drainage Management Plan for Journal Center" exists and governs all new development within Journal Center.

III. EXISTING CONDITIONS

Please reference the Existing Conditions Map #1 enclosed(immediately following this text and prior to the Appendix). The roadway right-of-way is shown for reference but has not yet been platted. Additionally, a larger scale topography map is shown in the rear pocket for reference.

Tract 1A-1 is currently a vacant, undeveloped parcel located in Journal Center Business Park. The tract is surrounded by constructed streets (Jefferson, Paseo del Norte, Headline) and existing drainage infrastructure in Jefferson Street.

The site slopes downward in a westerly direction at a slope of approximately 2-4%. There is little vegetation other than native grasses. Soils are moderately draining soils falling in Land Treatment "A" of the DPM design guidelines.

The undeveloped condition flowrate for the tracts is 40.0 cfs. An offsite flow from Headline contributes another 23.5 cfs. All flows discharge to Jefferson Street near Paseo del Norte. There, flows are collected by an existing 48" drainage stubout to the tract from Jefferson Street (see Appendix 6 for an excerpt from the original construction plan). The north reach of Headline Blvd (or Road) discharges its collected flows, 23.5 cfs, to the tract (Tract 1A-2) immediately to the east since the Paseo del Norte project cut off and closed permanently Headline's access to the Paseo R.O.W.

No FEMA floodplains exist on or near the site.

Existing Conditions Map #2 reflects existing hydrology conditions, but shows the roadway and proposed tract lines that will be shown on a future "bulk land" plan.. The bulk land plat request will create the tracts without proposing any construction.

IV. PHASE 1 CONSTRUCTION

where?

Please reference the enclosed sheet entitled "Phase 1 Construction", for graphic presentation. Calculations are in the Appendix. This "phase" represents the initial construction within the project area, to include:

1. Lang Avenue, a 40' F/F street, with inlets and storm drains.
2. Earth channel on Tract 1A-2 from Lang Avenue to the 48" RCP stubout near Paseo del Norte.
3. Drainage inlets at the north end of Headline Blvd (or Road), will be constructed under the work order for Lang Avenue, east of Headline Boulevard (by separate project). See the Drainage Plan submittal for Tracts 2A-2A-1, 2A-2A-2 and 2A-2A-3, Journal Center.

All other areas will remain ungraded until future development.

In summary, the following hydrological design conditions apply:

A. **Tract 1A-2 (assumed undeveloped),** generating 20.9 cfs, drains in a historical street flow manner towards Jefferson where it is collected by a earth diversion channel and directed into the existing 48" RCP stubout.

B. **Tract 1A-3 (developed)** generates 8.7 cfs and discharges the flow to the 24" stubout provided from Lang Avenue (see Lang Avenue P&P's in the Appendix). This tract must collect flows from Tract 1A-5, and will therefore require a drainage easement to be provided with the bulk land plat.

C. **Tract 1A-4,** 21.2 cfs discharges its flow to Lang Avenue in a generally sheet-flow manner. This tract was assumed developed.

D. Lang Avenue discharges its 8.0 cfs to the new inlets to be constructed near Jefferson Street.

E. Tract 1A-5 (assumed developed) discharges approximately 15.6 cfs, to Tract 1A-3.

Since this concept complies with the original Journal Center Drainage Master Plan (JCDMP), no further downstream capacity analysis is performed.

In the above discussions, Tracts 1A-3, 1A-4 and 1A-5 are assumed "developed" since final drainage infrastructure in Lang Avenue must be designed for these flows.

Lang Avenue, will discharge approximately 8.0 cfs to Jefferson Street. Calculations in the Appendix show that Lang Avenue has the required capacity of 62.2 cfs with a flow depth on the curb of only 0.53', but energy calculations show an theoretical energy depth of 0.94'. This 0.94' depth exceeds the R/W ground elevation of 0.87'. We respectfully request the 0.94' energy depth be accepted, ie, a variance granted, for the following reasons:

1. The normal depth of flow (ie, the depth at which water is actually flowing) is only 0.53'.

2. Field inspection of Journal Center shows practically non-existent parking on the streets. Since parking along the curb is probably the leading cause of hydraulic jumps from normal depth to the energy grade line, Journal Center's lack of curbed vehicles will substantially reduce the frequency of these jumps.

3. The 0.07' variance is not an excessive request.

4. Denying the variance would mean extension of additional storm drain pipe easterly in Lang Avenue at the time of its construction.

5. The industrial/business park nature of this street means that there are fewer structures and greater setbacks to these structures than in a residential setting. Accordingly, the occurrence of hydraulic jumps in the street will pose significantly less property impact potential.

6. All of Journal Center's existing street and drainage infrastructure was designed without this new recent requirement to contain the theoretical energy depth.

For the above justifications, we request a variance to permit the 0.53' normal flow depth and a theoretical 0.94' energy grade.

With the construction of Paseo del Norte in 1984ish, Headline Blvd's connection to Paseo right-of-way was terminated abruptly. Storm runoff flows that previously discharged to Paseo were left without an outfall and simply backed up in the Headline R/W until overflowing easterly onto Tract 1A-2. With the future construction of the Phase I temporary retention pond in Basin A (separate project and report, see Drainage Master Plan for Tracts 2A-2A-1, 2A-2A-2 and 2A-2A-3, Journal Center), an outfall for these street flows will become available and these flows will no longer impact Tract 1A-2.

V. ULTIMATE CONDITIONS

Please reference the enclosed Ultimate Conditions Sheet and calculations in the Appendix.

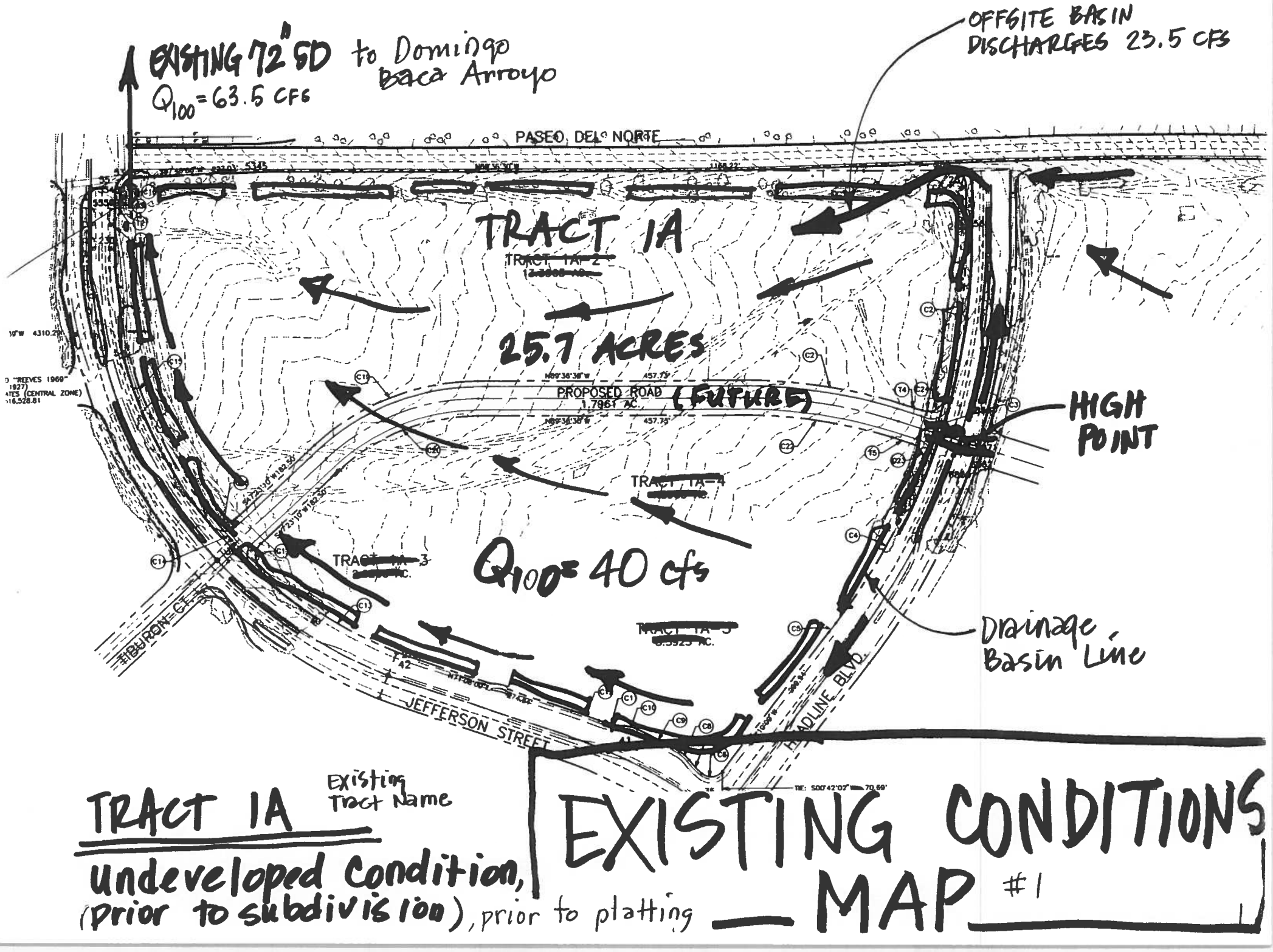
A. Tract 1A-2 (see Phase 1 Construction Sheet) has been divided into **Basins 1 and 2.** Developed Basin 1 discharges approximately 33 cfs to Lang Avenue. Developed Basin 2 will discharge approximately 25.2 cfs to a new future public storm drain system extending north along Jefferson Street (replacing the earth channel). Further design and analysis of this storm drain system can occur in the future with a proposal to develop this tract.

The storm drain's construction from Lang Avenue to Paseo del Norte (48" Rep) can be deferred until actual development of the tract by utilizing a temporary ~~earthen~~ channel.

Lined?

VI. CONCLUSION

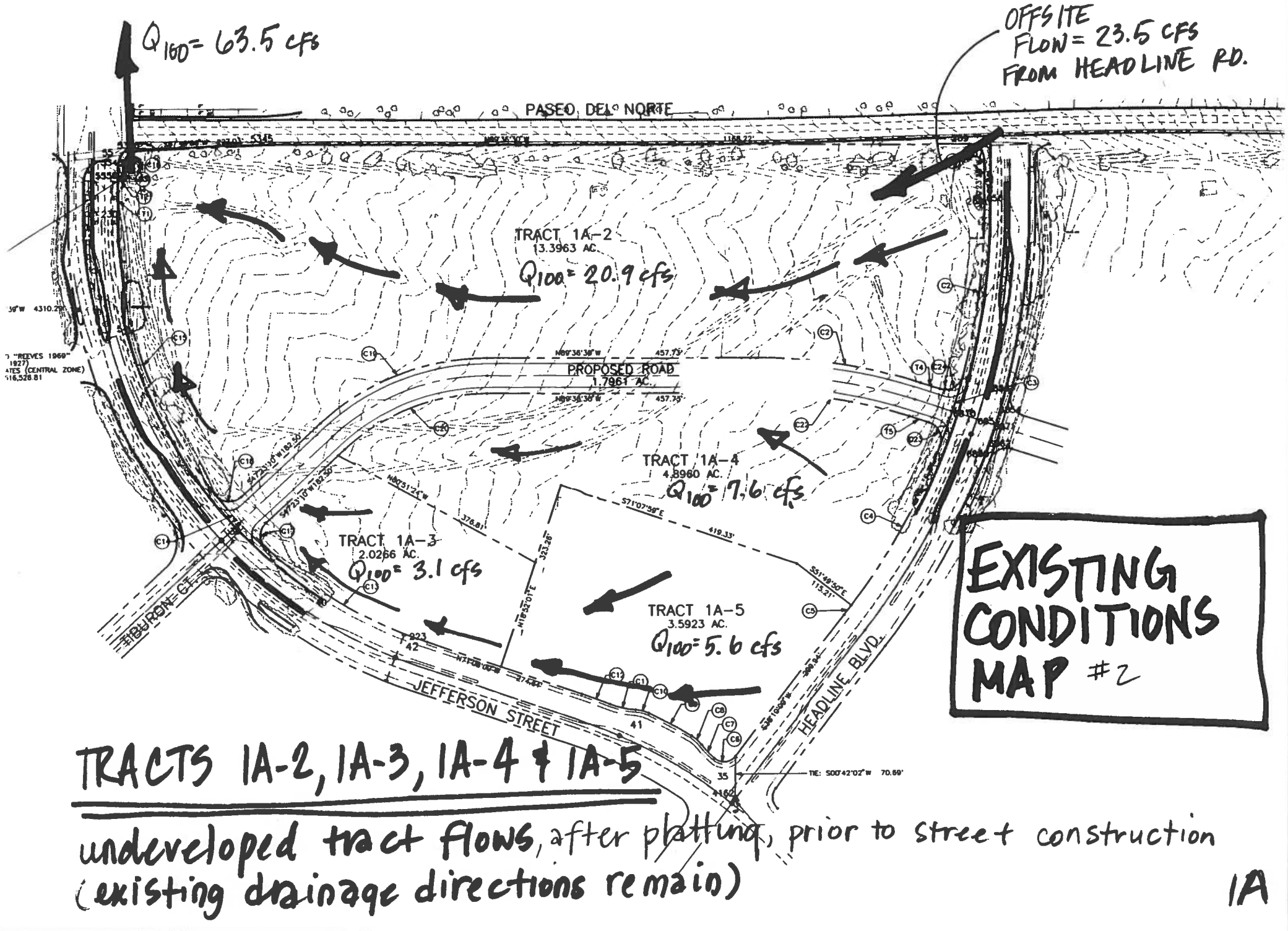
This drainage master plan for Tracts 1A-2, 1A-3, 1A-4 and 1A-5, of Journal Center complies with the overall intent of the JCDMP. With this submittal, we request your approval of this plan and the various other approvals identified in the Introduction.



TRACT 1A (Existing Tract Name)

Undeveloped Condition, (Prior to subdivision), prior to platting

EXISTING CONDITIONS MAP #1



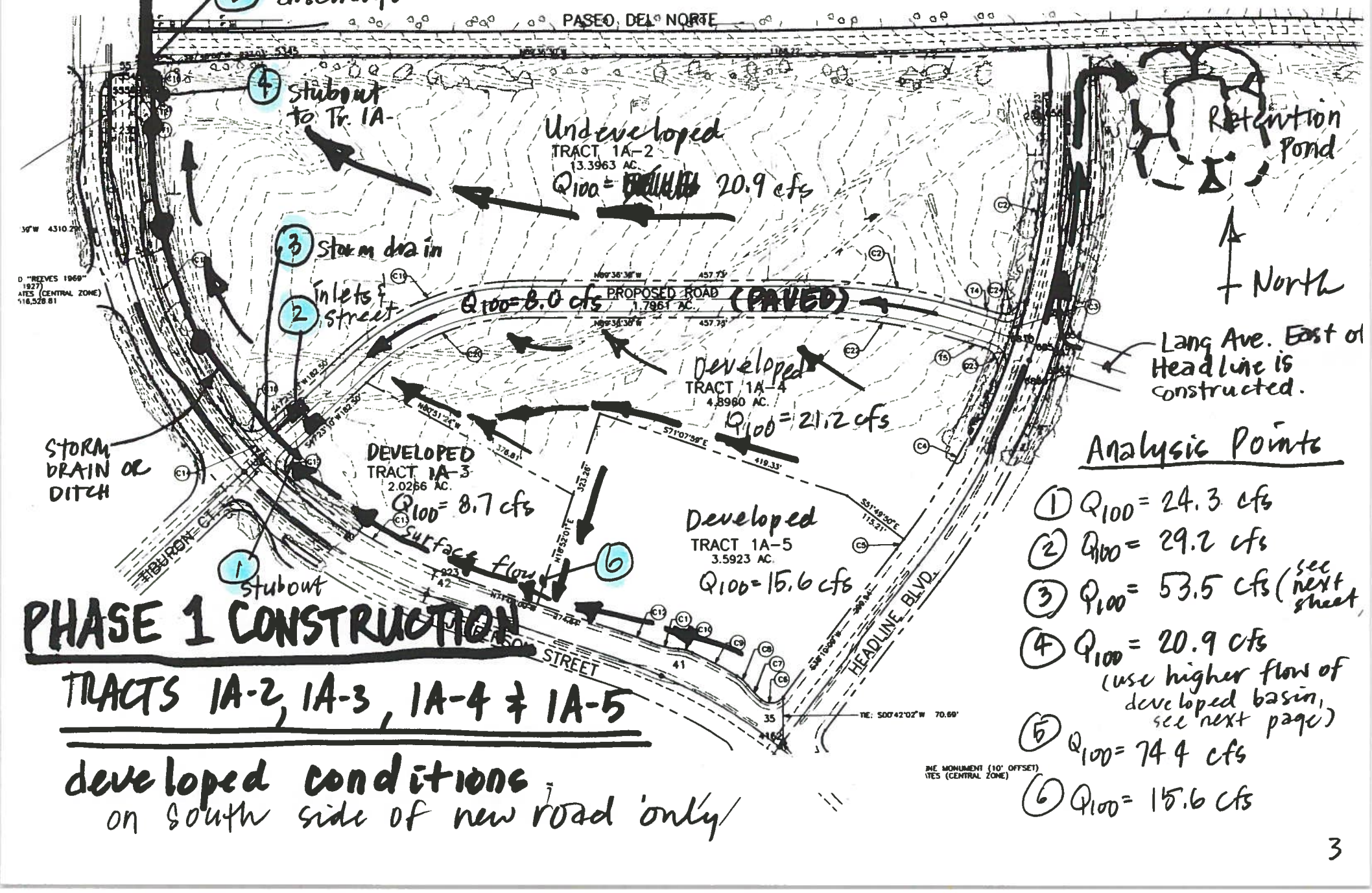
TRACTS 1A-2, 1A-3, 1A-4 & 1A-5

undeveloped tract flows, after platting, prior to street construction (existing drainage directions remain)

1A

EXISTING 48" SD Stubout

Note: This scenario is shown in order to understand partial development scenarios.



Analysis Points

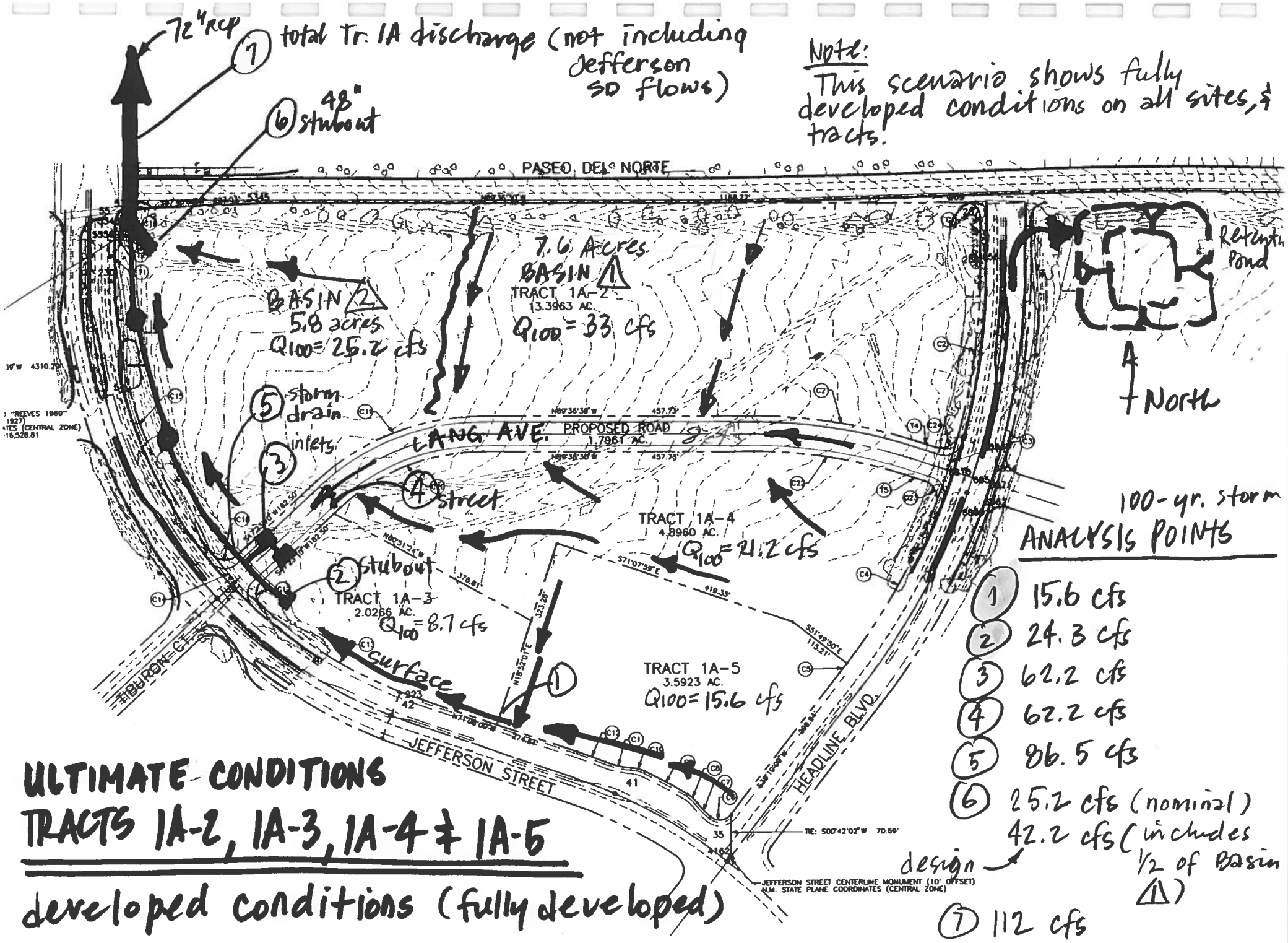
1. Q_{100} = 24.3 cfs
2. Q_{100} = 29.2 cfs
3. Q_{100} = 53.5 cfs (see next sheet)
4. Q_{100} = 20.9 cfs (use higher flow of developed basin, see next page)
5. Q_{100} = 74.4 cfs
6. Q_{100} = 15.6 cfs

PHASE 1 CONSTRUCTION

TRACTS 1A-2, 1A-3, 1A-4 & 1A-5

developed conditions

on south side of new road only



Note:
This scenario shows fully developed conditions on all sites & tracts.

100-yr. storm

ANALYSIS POINTS

1. 15.6 cfs
2. 24.3 cfs
3. 62.2 cfs
4. 62.2 cfs
5. 86.5 cfs
6. 25.2 cfs (nominal)
   42.2 cfs (includes 1/2 of Basin 1) ← design
7. 112 cfs

ULTIMATE CONDITIONS
TRACTS 1A-2, 1A-3, 1A-4 & 1A-5

developed conditions (fully developed)

FLOWRATE CALCULATIONS

UNDEVELOPED AND DEVELOPED
using Table A-9, DPM Hydrology

TRACT 1A (unsubdivided)

zone 2, Treatment A
undeveloped land @ 2%-3% slope

Q_{100} = 25.7 acres (1.56 cfs/ac) = 40 cfs

TRACT 1A-2 13.4 ac.

undeveloped Treatment "A"

Q_{100} = 13.4 ac. (1.56 cfs/ac) = 20.9 cfs

developed 85% treatment "D" assumed
15% treatment "B"

Q_{100} = 0.85 (13.4) 4.7 + 0.15 (13.4) 2.28 = 58.1 cfs

TRACT 1A-3 2.0 ac.
(see above for other assumptions)

undeveloped

Q_{100} = 2.0 (1.56) = 3.1 cfs

Use Table A-9 would expedite review.

BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET 1 OF _____
PROJECT NO. _____ BY JamesT DATE 10/3/94
SUBJECT _____ CH'D _____ DATE _____

developed

$Q_{100} = 0.85(2.0)\,4.7 + 0.15(2.0)\,2.28 = 8.7$ cfs

TRACT 1A-4 4.9 acres

undeveloped

$Q_{100} = 4.9(1.56) = 7.6$ cfs

developed

$Q_{100} = 0.85(4.9)\,4.7 + 0.15(4.9)\,2.28 = 21.2$ cfs

TRACT 1A-5 3.6 ac.

undeveloped

$Q_{100} = 3.6(1.56) = 5.6$ cfs

developed

$Q_{100} = 0.85(3.6)\,4.7 + 0.15(3.6)\,2.28 = 15.6$ cfs

BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET 2 OF _____

PROJECT NO. _____ BY JamesT DATE 10/3/94

SUBJECT _____ CH'D _____ DATE _____

Proposed Road (Lang Ave.) 1.8 acres

undeveloped

$Q_{100} = 1.8(1.56) = 2.8$ cfs

developed

$Q_{100} = 1.8(0.90)4.7 + 0.10(1.8)2.28 = 8.0$ cfs

TRACT 1A-2 Basin (1)
7.6 acres

Developed

$Q_{100} = 0.85(4.7)7.6 + 0.15(7.6)2.28 = 33$ cfs

TRACT 1A-2 Basin (2)
5.8 acres

Developed

$Q_{100} = 0.85(5.8)4.7 + 0.15(5.8)2.28 = 25.2$ cfs

BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET 3 OF _____
PROJECT NO. _____ BY JamesT DATE 10/3/94
SUBJECT _____ CH'D _____ DATE _____

INLET DESIGN

design storm inlets in new road (Long Avenue)

A. Q_{100} = 62.2 cfs (actual Q)

B. since in sump, calculate using ~~orifice and~~ weir equations (weir controls):

HW = 6" before overflowing to Jefferson St.

L = 10.33' (double "C" inlet)

weir equation, $Q = CLH^{3/2}$

$= 3(10.33')\,0.5^{3/2}$

Q = 11 cfs per inlet (double "C") in sump

Type D used has no throat

C. capacity of double "C" on 1% or greater slope.... @ Q = 62.2

from DPM 22.3 D-6

Q = 62.2 cfs

d = ~~0.6'~~ 0.53'

inlet capacity = ~~12~~ 10.5 cfs

85% W/O Type "A" Upstream

D. capacity of double "C" inlet @ 1% slope

Q = 38 cfs

d = 0.5'

inlet capacity = 8 cfs

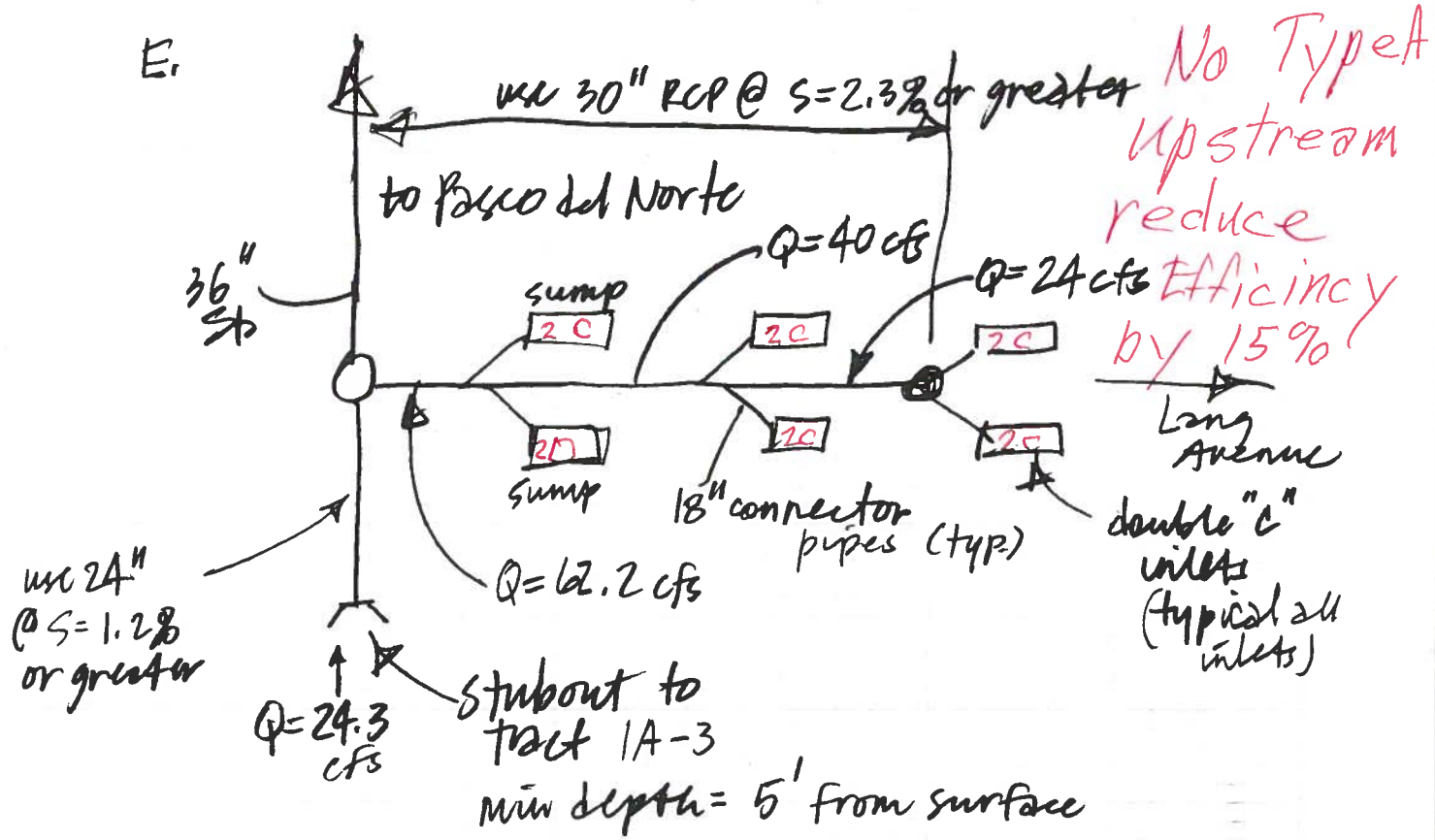
BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET 4 OF _____

PROJECT NO. _____ BY JamesT DATE 10/3/94

SUBJECT _____ CH'D _____ DATE _____

E.



No Type A upstream reduce Efficiency by 15%

from PBAC 22.3 D-9,
min. catch basin depth =
use 4' as min.

BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET 5 OF _____
PROJECT NO. _____ BY James T DATE 10/3/94
SUBJECT _____ CH'D _____ DATE _____

street capacity

MANNING'S N = .0170 SLOPE = .0100

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.87	4	30.00	0.45	7	60.00	0.87
2	10.00	0.67	5	50.00	0.00			
3	10.05	0.00	6	50.05	0.67			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
0.10	0.10	0.4	0.5	9.1	1.2	8.89
0.20	0.20	1.8	3.3	18.2	1.9	17.79
0.30	0.30	4.0	9.7	27.2	2.4	26.68
0.40	0.40	7.1	21.0	36.3	2.9	35.57
0.50	0.50	11.0	40.1	41.0	3.6	40.02
0.60	0.60	15.0	67.0	41.2	4.5	40.04
0.70	0.70	19.1	94.9	44.3	5.0	43.04
0.80	0.80	23.9	120.6	54.3	5.1	53.02
0.87	0.87	27.8	143.6	61.3	5.2	60.00

0.58 62.2

check Energy depth

$E = 0.60 + \frac{4.5^2}{64.4} = 0.89 \approx 0.87$ OK

street capacity

MANNING'S N = .0170 SLOPE = .0150

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.87	4	30.00	0.45	7	60.00	0.87
2	10.00	0.67	5	50.00	0.00			
3	10.05	0.00	6	50.05	0.67			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
0.10	0.10	0.4	0.6	9.1	1.4	8.89
0.20	0.20	1.8	4.0	18.2	2.3	17.79
0.30	0.30	4.0	11.9	27.2	3.0	26.68
0.40	0.40	7.1	25.7	36.3	3.6	35.57
0.50	0.50 0.54	11.0	49.1 62.2	41.0	4.5 4.9	40.02
0.60	0.60	15.0	82.0	41.2	5.5	40.04
0.70	0.70	19.1	116.3	44.3	6.1	43.04
0.80	0.80	23.9	147.7	54.3	6.2	53.02
0.87	0.87	27.8	175.9	61.3	6.3	60.00

$$E = 0.54 + \frac{4.92}{64.4} = 0.91 \approx 0.87, \text{OK}$$

Street capacity

MANNING'S N = .0170 SLOPE = .0050

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.87	4	30.00	0.45	7	60.00	0.87
2	10.00	0.67	5	50.00	0.00			
3	10.05	0.00	6	50.05	0.67			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
0.10	0.10	0.4	0.4	9.1	0.8	8.89
0.20	0.20	1.8	2.3	18.2	1.3	17.79
0.30	0.30	4.0	6.9	27.2	1.7	26.68
0.40	0.40	7.1	14.8	36.3	2.1	35.57
0.50	0.50	11.0	28.3	41.0	2.6	40.02
0.60	0.60	15.0	47.3	41.2	3.2	40.04
0.70	0.70	19.1	67.1	44.3	3.5	43.04
0.80	0.80	23.9	85.3	54.3	3.6	53.02
0.87	0.87	27.8	101.6	61.3	3.7	60.00

0.67

62.2 cfs

3.1

$$E = 0.67 + \frac{3.1^2}{29} = 0.82' < 0.87 \quad \text{OK}$$

lang ave capacity

MANNING'S N = .0170 SLOPE = .0190

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.87	4	30.00	0.45	7	60.00	0.88
2	10.00	0.67	5	50.00	0.00			
3	10.05	0.00	6	50.05	0.67			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
0.10	0.10	0.4	0.7	9.1	1.6	8.89
0.20	0.20	1.8	4.6	18.2	2.6	17.79
0.30	0.30	4.0	13.4	27.2	3.4	26.68
0.40	0.40	7.1	28.9	36.3	4.1	35.57
0.50	0.50	11.0	55.1	41.0	5.0	40.02
0.60	0.60	15.0	92.3	41.2	6.1	40.04
0.70	0.70	19.1	131.0	44.2	6.9	42.97
0.80	0.80	23.8	166.6	54.0	7.0	52.71
0.87	0.87	27.8	198.5	60.8	7.1	59.53

0.53 62.2 cfs 5.2

$$E = 0.53 + \frac{5.2^2}{64.4} = 0.94' > 0.87'$$

No Good
but a variance is requested.
See Text.

street capacity / Long Avenue

MANNING'S N = .0170 SLOPE = .0200

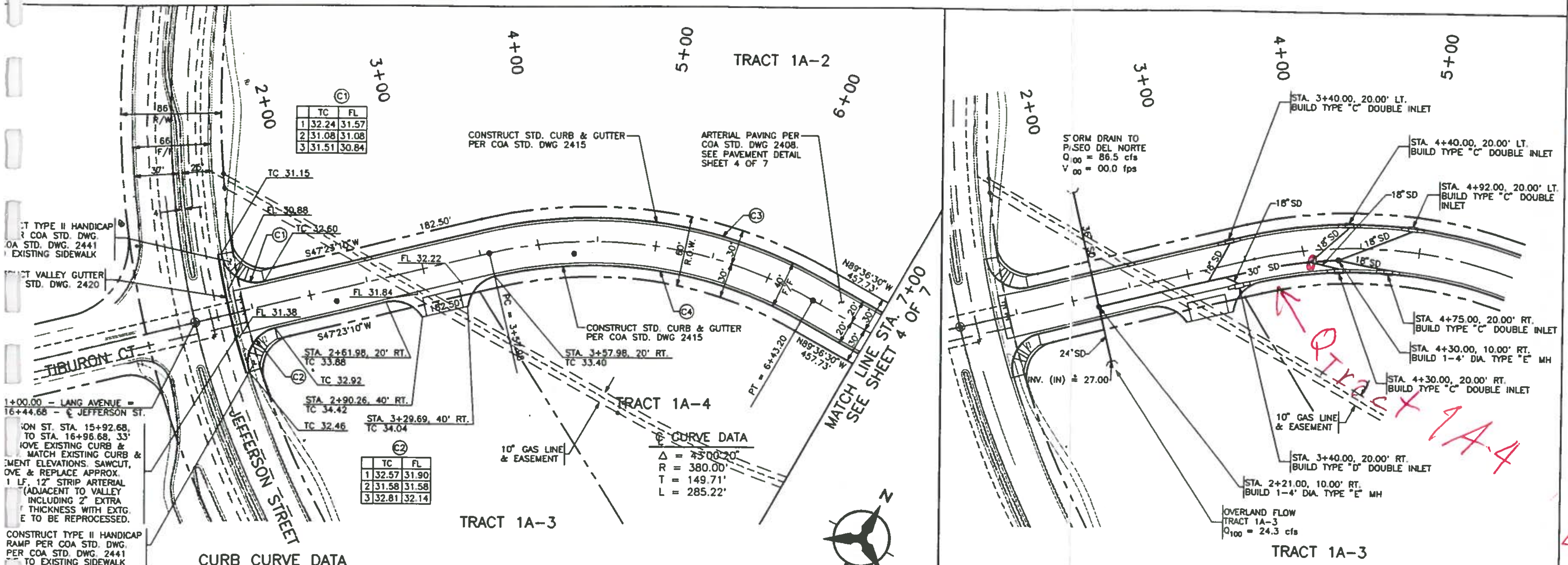
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.87	4	30.00	0.45	7	60.00	0.88
2	10.00	0.67	5	50.00	0.00			
3	10.05	0.00	6	50.05	0.67			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
0.10	0.10	0.4	0.7	9.1	1.7	8.89
0.20	0.20	1.8	4.7	18.2	2.6	17.79
0.30	0.30	4.0	13.8	27.2	3.4	26.68
0.40	0.40	7.1	29.7	36.3	4.2	35.57
0.50	0.50	11.0	56.6	41.0	5.1	40.02
0.60	0.60	15.0	94.7	41.2	6.3	40.04
0.70	0.70	19.1	134.4	44.2	7.1	42.99
0.80	0.80	23.8	170.9	54.0	7.2	52.77
0.87	0.87	27.8	203.5	60.9	7.3	59.62

0.53 62.2 5.3

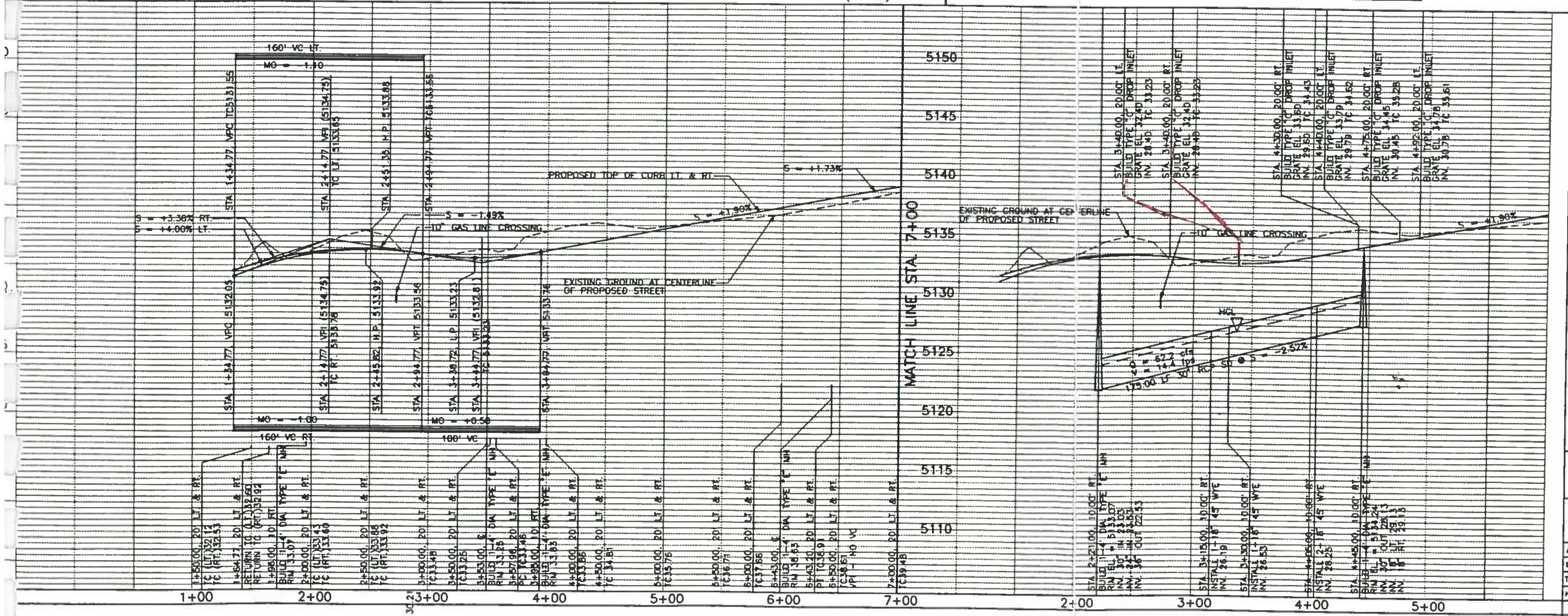
$$E = 0.53 + \frac{5.3^2}{2g} = 0.96' > 0.87' \quad \text{No Good}$$

but this slope exists only at the top of the street (near Headline) where flows are significantly less than the 62.2 cfs shown above.



CURB CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA	DEGREE OF CURVE
C1	30.00'	49.16'	32.11'	43.84'	N56°35'46"W	93°53'24"	190°59'10"
C2	30.00'	49.16'	32.11'	43.84'	S29°30'50"W	93°53'24"	190°59'10"
C3	400.00'	300.24'	157.59'	293.24'	N82°02'18"W	43°00'20"	14°19'26"
C4	360.00'	270.21'	141.83'	263.91'	N82°02'18"W	43°00'20"	15°54'56"



SCALE: 1"=50' (HORIZ.) 1"=5' (VERT.)

How does Tract 1A-4 drain to Lang?

LANDSCAPING NOTE

WHERE EXISTING LANDSCAPING MUST BE DISTURBED, CONTRACTOR SHALL NOTIFY JOURNAL CENTER PRIOR TO ANY CONSTRUCTION IN LANDSCAPED AREAS. REMOVAL AND/OR REPLACEMENT OF LANDSCAPING SHALL NOT BE PERFORMED UNDER THIS CONTRACT. CONTRACTOR SHALL COORDINATE WITH THE JOURNAL CENTER LANDSCAPING CONTRACTOR

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

MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS
CENTERLINE MONUMENT AT INTERSECTION OF JEFFERSON STREET AND HEADLINE BLVD. OFFSET 10'
ELEVATION = 5152.16

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

REVISIONS
DESIGN

DESIGNED BY	J.R.T., D.M.H.	DATE: 11/7/94
DRAWN BY	M.E.S.	DATE: 11/7/94
CHECKED BY	J.R.T.	DATE: 11/7/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: JOURNAL CENTER BUSINESS PARK – TRACT1A
LANG AVENUE
PAVING PLAN AND PROFILE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
DRC CHAIRMAN			WATER		
TRANSPORTATION			WASTE WATER		
HYDROLOGY					

DRAWING NO. | MAP NO. D-17 | SHEET 3 OF 7

street capacity / Long Avenue

MANNING'S N = .0170 SLOPE = .0200

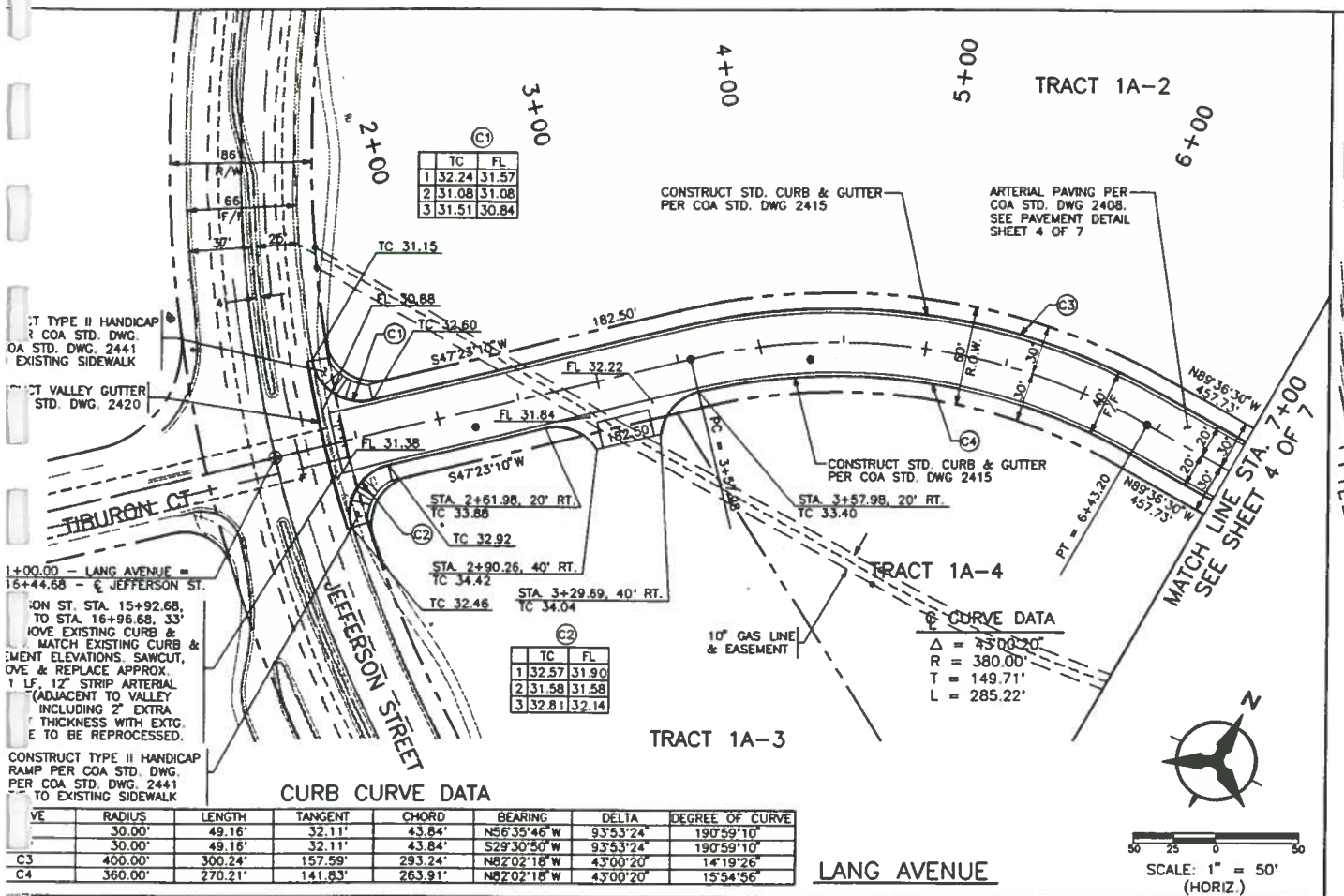
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.87	4	30.00	0.45	7	60.00	0.88
2	10.00	0.67	5	50.00	0.00			
3	10.05	0.00	6	50.05	0.67			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
0.10	0.10	0.4	0.7	9.1	1.7	8.89
0.20	0.20	1.8	4.7	18.2	2.6	17.79
0.30	0.30	4.0	13.8	27.2	3.4	26.68
0.40	0.40	7.1	29.7	36.3	4.2	35.57
0.50	0.50	11.0	56.6	41.0	5.1	40.02
0.60	0.60	15.0	94.7	41.2	6.3	40.04
0.70	0.70	19.1	134.4	44.2	7.1	42.99
0.80	0.80	23.8	170.9	54.0	7.2	52.77
0.87	0.87	27.8	203.5	60.9	7.3	59.62

0.53 62.2 5.3

$$E = 0.53 + \frac{5.3^2}{2g} = 0.96' > 0.87' \quad \text{No Good}$$

but this slope exists only at the top of the street (near Headline) where flows are significantly less than the 62.2 cfs shown above.



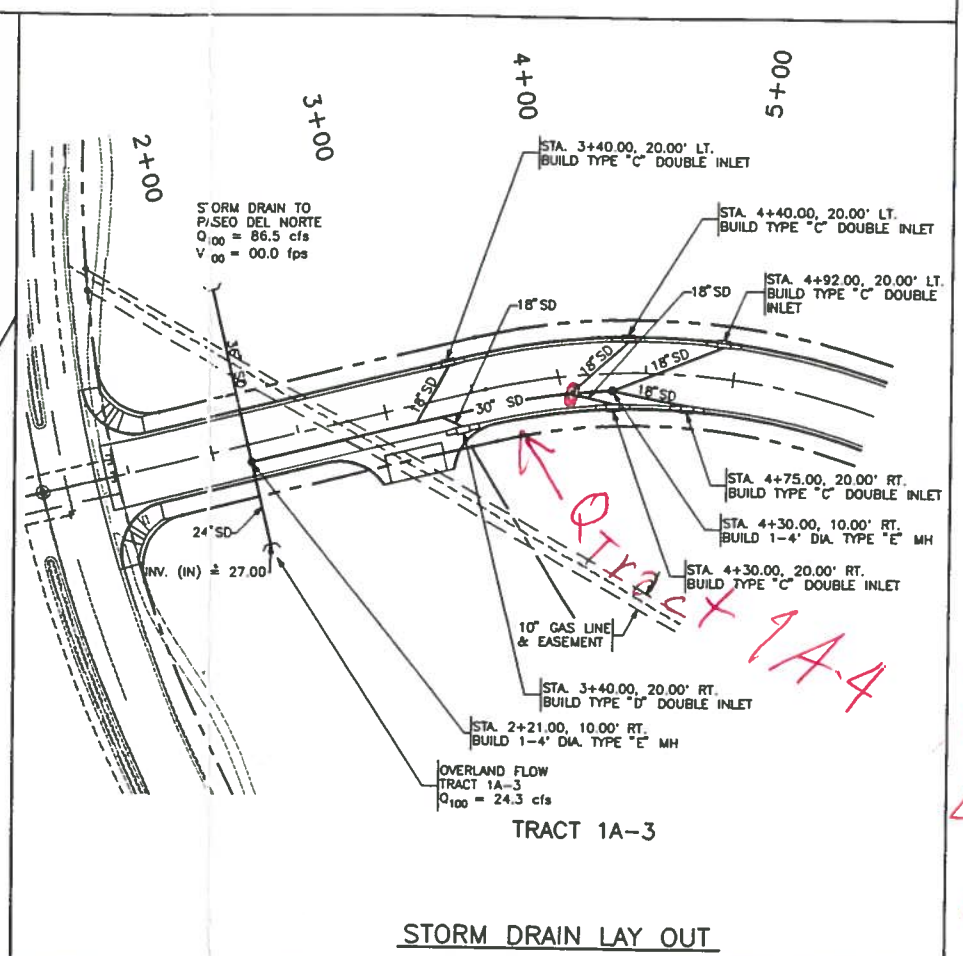
	TC	FL
1	32.24	31.57
2	31.08	31.08
3	31.51	30.84

	TC	FL
1	32.57	31.90
2	31.58	31.58
3	32.81	32.14

CURB CURVE DATA

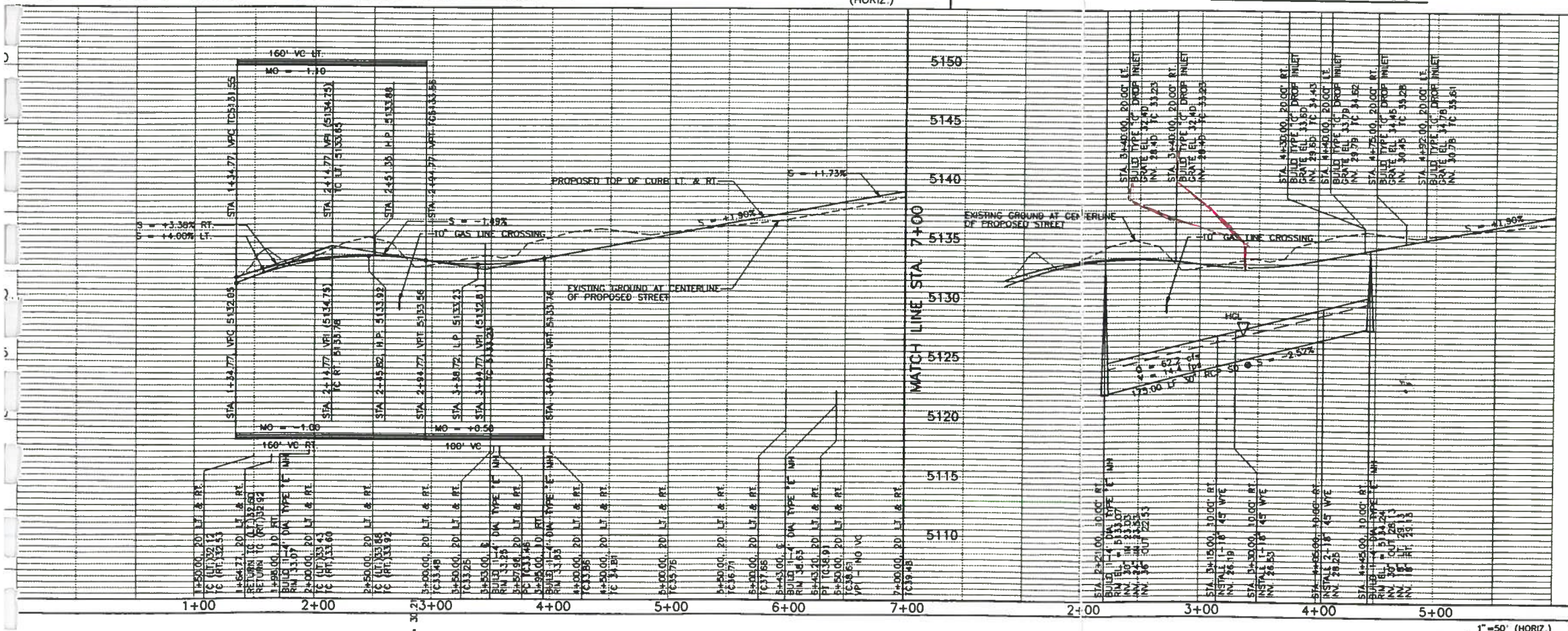
	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA	DEGREE OF CURVE
	30.00'	49.16'	32.11'	43.84'	N56°35'46"W	93°53'24"	190°59'10"
	30.00'	49.16'	32.11'	43.84'	S29°30'50"W	93°53'24"	190°59'10"
C3	400.00'	300.24'	157.59'	293.24'	N82°02'18"W	43°00'20"	14°19'26"
C4	360.00'	270.21'	141.83'	263.91'	N82°02'18"W	43°00'20"	15°54'56"

LANG AVENUE



STORM DRAIN LAY OUT

How does Tract 1A-4 drain to Lang?



SCALE: 1"=50' (HORIZ.) 1"=5' (VERT.)

LANDSCAPING NOTE

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AS BUILT INFORMATION
CONTRACTOR
STAKED BY
INSPECTED BY DATE
ACCEPTANCE BY
VERIFICATION BY DATE
DRAWINGS
COMPILED BY DATE
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS
CENTERLINE MONUMENT AT INTERSECTION OF JEFFERSON STREET AND HEADLINE
BLVD. OFFSET 10'
ELEVATION = 5152.16

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY J.R.T., D.M.H. DATE: 11/7/94
DRAWN BY M.E.S. DATE: 11/7/94
CHECKED BY J.R.T. DATE: 11/7/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: JOURNAL CENTER BUSINESS PARK – TRACT 1A
LANG AVENUE
PAVING PLAN AND PROFILE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
DRC CHAIRMAN			WATER		
TRANSPORTATION			WASTE WATER		
HYDROLOGY					

DRAWING NO.
MAP NO. D-17
SHEET 3 OF 7

CURB CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA	DEGREE OF CURVE
C1	370.00'	272.13'	137.18'	271.02'	S80°38'51"E	17°55'17"	06°35'09"
C2	830.00'	259.62'	130.88'	258.56'	S80°38'51"E	17°55'17"	06°54'11"
C3	30.00'	48.48'	31.39'	43.37'	N62°01'03"E	92°35'28"	190°59'10"
C4	30.00'	48.48'	31.39'	43.37'	S25°23'29"E	92°35'28"	190°59'10"

CURB LINE DATA

LINE	DIRECTION	DISTANCE
L1	N89°36'30"W	400.93'
L2	N89°36'30"W	400.93'
L3	S71°41'13"E	44.71'
L4	S71°41'13"E	44.71'

	TC	FL
1	56.40	55.73
2	56.15	56.15
3	55.79	55.12

	TC	FL
1	55.64	54.97
2	56.00	56.00
3	56.08	55.41

TRACT 1A-2

TRACT 1A-4

TRACT 1A-3

MATCH LINE STA. 7+00
SEE SHEET 3 OF 7

CONSTRUCT STD. CURB & GUTTER PER COA STD. DWG 2415

N89°36'30"W 457.73'

40' F/F

30' 30'

60' R.O.W.

CONSTRUCT STD. CURB & GUTTER PER COA STD. DWG 2415

ARTERIAL PAVING PER COA STD. DWG 2408. SEE PAVEMENT DETAIL THIS SHEET

PC = 11+00.93

Water Blocf Reqd

PT = 13+66.80

TC 56.70
FL 55.95
TC 55.49

TC 55.41
FL 55.80
TC 56.31

CONSTRUCT TYPE II HANDICAP RAMP PER COA STD. DWG. 2441 TIE TO EXISTING SIDEWALK

HEADLINE BLVD. STA. 5+21.00, 33' RT. TO STA. 6+19.00, 33' RT. REMOVE EXISTING CURB & GUTTER. MATCH EXISTING CURB & PAVEMENT ELEVATIONS, SAWCUT, REMOVE & REPLACE APPROX. 102.7 LF, 12" STRIP ARTERIAL ASPHALT (ADJACENT TO VALLEY GUTTER) INCLUDING 2" EXTRA ASPHALT THICKNESS WITH EXISTING SUBBASE TO BE REPROCESSED.

CONSTRUCT VALLEY GUTTER PER COA STD. DWG. 2420

STA. 14+75.54 – LANG AVENUE
STA. 5+70.00 – ℄ HEADLINE BLVD.

CONSTRUCT TYPE II HANDICAP RAMP PER COA STD. DWG. 2441 TIE TO EXISTING SIDEWALK

HEADLINE BLVD.

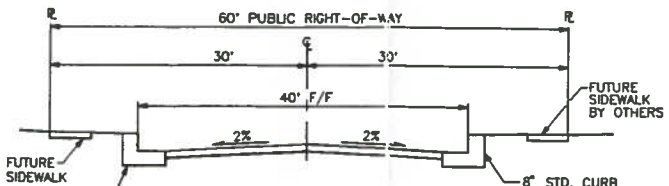
LANG AVENUE

℄ CURVE DATA

Δ = 17°55'17"
R = 850.00'
T = 134.03'
L = 265.87'

1 1/2" ASPHALT CONCRETE, 1800 LB (SFC)
TACK COAT
1 1/2" ASPHALT CONCRETE, 1800 LB (MS)
6" GRAVEL BASE COURSE
12" SUBGRADE PREPARATION,

PAVEMENT SECTION
NO SCALE

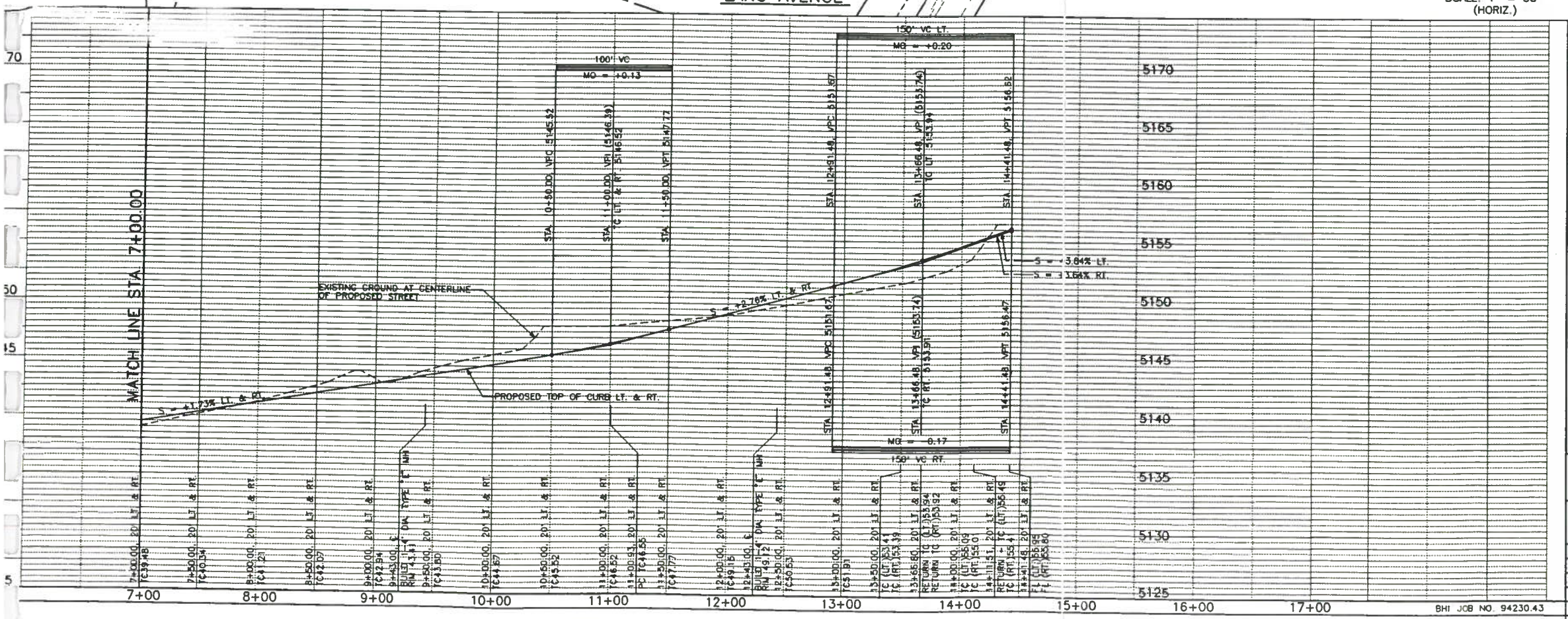


TYPICAL STREET SECTION
NO SCALE

N

50 25 0 50

SCALE: 1" = 50' (HORIZ.)



BHI JOB NO. 94230.43

SCALE: 1"=50' (HORIZ.) 1"=5' (VERT.)

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

AS BUILT INFORMATION

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

MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS

CENTERLINE MONUMENT AT INTERSECTION OF JEFFERSON STREET AND HEADLINE BLVD. OFFSET 10'
ELEVATION = 5152.16

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
		DESIGNED BY J.R.T. D.M.H.	DATE: 11/7/94
		DRAWN BY M.E.S.	DATE: 11/7/94
		CHECKED BY J.R.T.	DATE: 11/7/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: JOURNAL CENTER BUSINESS PARK – TRACT 1A
LANG AVENUE
PAVING PLAN AND PROFILE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
DRC CHAIRMAN			WATER		
TRANSPORTATION			WASTE WATER		
HYDROLOGY					

DRAWING NO.

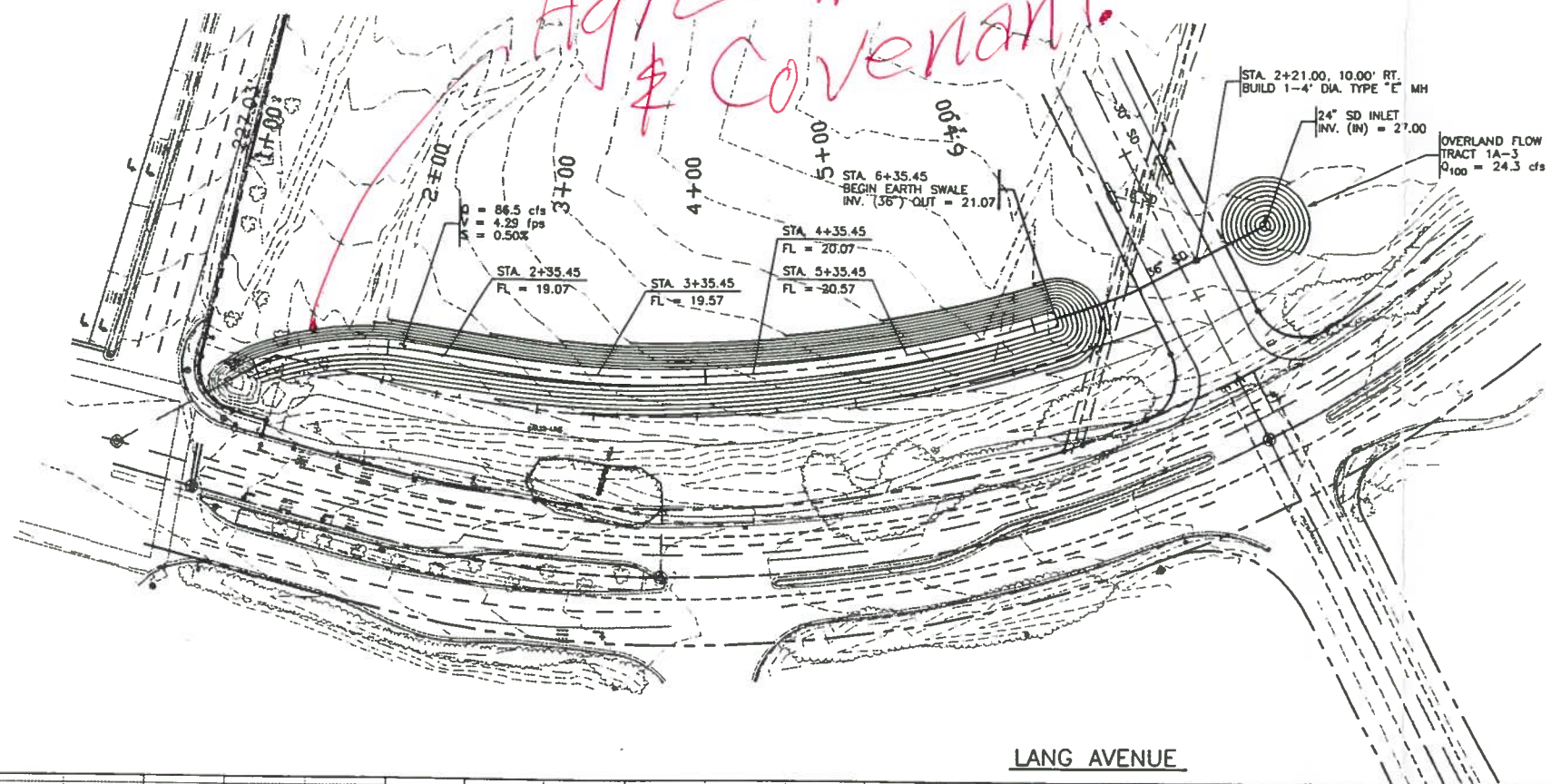
MAP NO. D-17

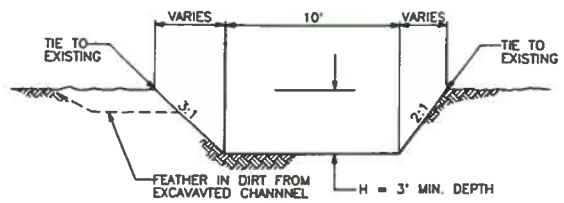
SHEET 4 OF 7

Agreement & Covenant.

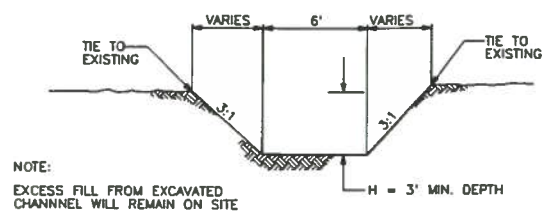
Lined?

Provide Design for sediment Basin. State Criteria Used.



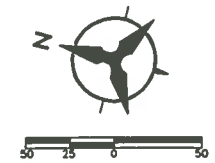


SECTION A-A
NOT TO SCALE

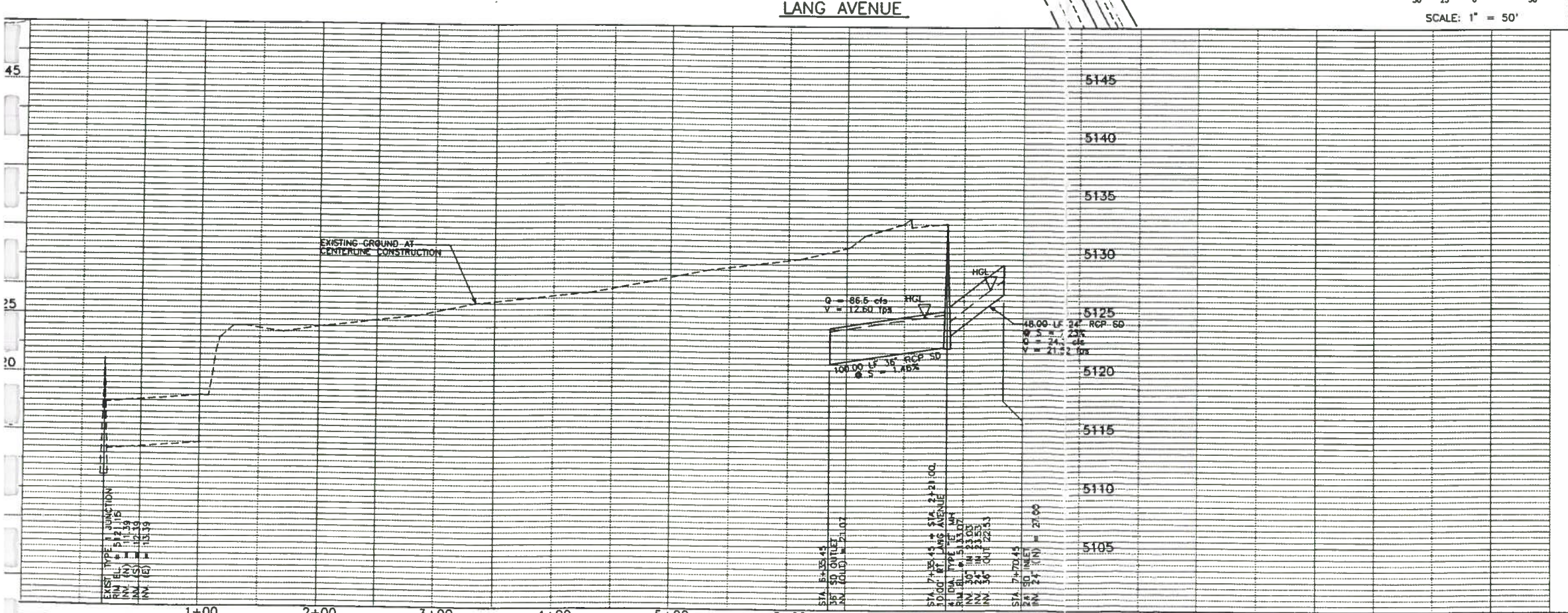


NOTE:
EXCESS FILL FROM EXCAVATED CHANNNEL WILL REMAIN ON SITE

SECTION B-B
NOT TO SCALE



SCALE: 1" = 50'



BHI JOB NO. 94230.43

SCALE: 1"=50' (HORIZ.) 1"=5' (VERT.)

SURVEY INFORMATION			
FIELD NOTES			
NO.	BY	DATE	

BENCH MARKS
CENTERLINE MONUMENT AT INTERSECTION OF JEFFERSON STREET AND HEADLINE BLVD. OFFSET 10'
ELEVATION = 5152.16

AS BUILT INFORMATION
CONTRACTOR
STAKED BY
INSPECTED BY
INSPECTOR'S ACCEPTANCE BY DATE
VERIFICATION BY DATE
DRAWINGS CORRECTED BY DATE
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
		DESIGNED BY	J.R.T., D.M.H. DATE: 11/7/94
		DRAWN BY	M.E.S. DATE: 11/7/94
		CHECKED BY	J.R.T. DATE: 11/7/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

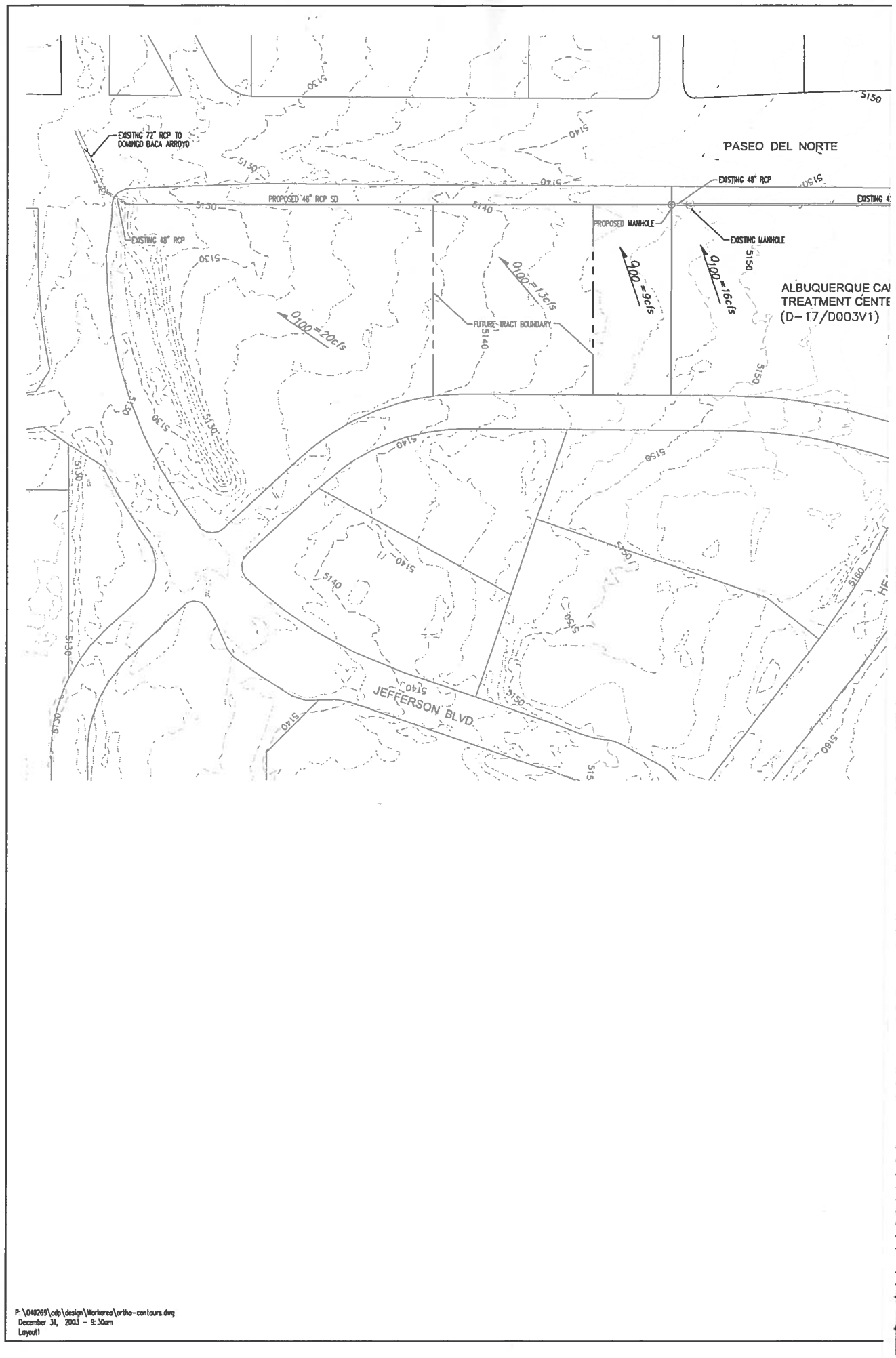
TITLE: JOURNAL CENTER BUSINESS PARK - TRACT1A
LANG AVENUE
STORM DRAIN PLAN AND PROFILE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
DRC CHAIRMAN			WATER		
TRANSPORTATION			WASTE WATER		
HYDROLOGY					

DRAWING NO.

MAP NO. D-17

SHEET 7 OF 7



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December 31, 2003 - 9:30am
Layout1