CITY OF ALBUQUERQUE

Planning Department
Suzanne Lubar, Director

Mayor Richard J. Berry

October 25, 2016

Richard Dourte, P.E.
RHD Engineering, LLC
4305 Purple Sage Ave NW
Albuquerque, NM 87120

RE: **Sunset West-Unit II**
9016 & 9020 Suncrest Rd, 9101 Sunbow Ave. SW
Pad Certification for lots 16, 26 & 27 - Approved
Engineers Stamp Date 8/26/10 (M09D004A)
Certification Dated: 10/20/16

Dear Mr. Dourte,

PO Box 1293

Based on the Certification received 10/20/2016, the above site is ~~acceptable~~ for ~~release of Certificate of Occupancy~~ by Hydrology. APPROVED FOR BLDG. PERMIT

Albuquerque

If you have any questions, you can contact me at 924-3999 or Totten Elliott at 924-3982.

New Mexico 87103

www.cabq.gov

Sincerely,

Shahab Biazar, P.E.
City Engineer, Planning Dept.
Development Review Services

TE/SB
C: E-Mail Cordova, Camille C.; Connor, Miranda, Rachel; Sandoval, Darlene M.; Blocker, Lois

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: Sunset West Unit II Building Permit #: _____ City Drainage #: M9/D004A

DRB#: _____ EPC#: _____ Work Order#: 499182

Legal Description: Lots 16,26 and 27, Sunset West Unit II

City Address: 9016 & 9020 Suncrest RD, 9101 Sunbow Ave SW

Engineering Firm: RHD Engineering, LLC Contact: Richard Dourte

Address: 4305 Purple Sage Ave. NW Alb. NM. 87120

Phone#: 505-288-1621 Fax#: _____ E-mail: rhdengineering@outlook.com

Owner: _____ Contact: _____

Address: _____

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

Architect: _____ Contact: _____

Address: _____

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

Surveyor: Terra Land Surveys, LLC Contact: Christopher Medina

Address: _____

Phone#: 505-792-0513 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

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

TYPE OF SUBMITTAL:

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

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

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

RECEIVED
OCT 20 2016
LAND DEVELOPMENT SECTION

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

DATE SUBMITTED: 10-20-16 By: Richard Dourte

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

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

CITY OF ALBUQUERQUE

September 10, 2010

Dennis A Lorenz, P.E.
Brasher & Lorenz
2201 San Pedro NE
Albuquerque, NM 87110

Re: Sunset West Unit II Lots 16, 26 and 27 Grading and Drainage Plan
Engineer's Stamp date 8-26-10 (M09/D004A)

Dear Mr. Lorenz,

Based upon the information provided in your submittal received 8-30-10, the above referenced plan is approvable for Grading Permit and Work Order. I would prefer to hold off on the approval letter until the 86th Street-Sage Road Improvements Work Order is functionally complete for drainage, but I won't.

Another plan is not required. Send me an e-mail when the 86th Street-Sage Road Improvements" Work Order is functionally complete for drainage.

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

Sincerely,

Curtis A. Cherne

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 04/2009)

M-09/D004A

PROJECT TITLE: LOTS 16, 26 & 27 , BLOCK 5, SUNSET WEST, UNIT 2 ZONE MAP: J-14
DRB#: _____ EPC#: _____ WORK ORDER#: 499182

LEGAL DESCRIPTION: LOTS 16, 26 & 27 , BLOCK 5, SUNSET WEST, UNIT 2
CITY ADDRESS: 9016 & 9020 SUNCREST RD, 9101 SUNBOW AVE SW

ENGINEERING FIRM: BRASHER & LORENZ, INC. CONTACT: DENNIS LORENZ
ADDRESS: 2207 SAN PEDRO NE, BUILDING 1, SUITE 1300 PHONE: 888-6088
CITY, STATE: ALBUQUERQUE, NEW MEXICO ZIP CODE: 87110

OWNER: JUDE BACA CONTACT: JUDE BACA
ADDRESS: 3913 72ND STREET NW PHONE: 379-7877
CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87120

ARCHITECT: NONE CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: BRASHER & LORENZ, INC CONTACT: L. MARTINEZ
ADDRESS: 2207 SAN PEDRO NE, BUILDING 1, SUITE 1300 PHONE: 888-6088
CITY, STATE: ALBUQUERQUE, NEW MEXICO ZIP CODE: 87110

CONTRACTOR: NONE SELECTED TO DATE CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:
_____ DRAINAGE REPORT
_____ DRAINAGE PLAN 1st SUBMITTAL
__X__ DRAINAGE PLAN RESUBMITTAL
_____ CONCEPTUAL G & D PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
_____ ENGINEER'S CERT (HYDROLOGY)
_____ CLOMR/LOMR
_____ TRAFFIC CIRCULATION LAYOUT
_____ ENGINEER'S CERT (TCL)
_____ ENGINEER'S CERT (DRB SITE PLAN)
_____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:
_____ SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
_____ S. DEV. PLAN FOR SUB'D APPROVAL
_____ S. DEV. FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY (PERM)
_____ CERTIFICATE OF OCCUPANCY (TEMP)
__X__ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
__X__ WORK ORDER APPROVAL
_____ GRADING CERTIFICATION
_____ OTHER (SPECIFY) SO-19

RECEIVED
AUG 30 2010
HYDROLOGY SECTION

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

DATE SUBMITTED: 8.30.10 BY: D. LORENZ

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the 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 subdivision containing more than ten (10) lots or constituting five (5) acres or more.

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS
2201 San Pedro NE Bldg 1 Suite 1300 • Albuquerque, NM 87110 • Phone (505) 888-6088 • Fax (505) 888-6188 • www.brasherlorenz.com

August 30, 2010

Curtis Churne, PE
Senior Engineer, Planning Department
Development and Building Services
City of Albuquerque
600 Second Street NW
Albuquerque, NM 87103

SUBJECT: ***SUNSET WEST, UNIT 2***
TEMPORARY RETENTION POND RECLAMATION IMPROVEMENTS
L09/D004A
CPN 499182

Dear Curtis:

Submitted herewith for is one copy of the Revised Grading and Drainage Plan and updated street depth calculations for the subject project. The Plan has been revised to address your comments issued July 29, 2010. Specifically, your comments are addressed as follows:

1. We understand that Work Order will not be issued until completion of the 86th/Sage Storm Drainage Project.
2. We propose to construct an earthen berm and repair the existing asphalt curb along the east side of 90th street to improve street carrying capacity. See attached calculations and details.
3. The Keyed Notes have been revised to identify public-vs-private work items.

The existing Temporary Public Drainage Easement on Lots 16, 26 & 27, Unit 2 will be released upon project closeout, since it was created by separate document.

We would like to obtain Plan approval pending item 1 above. If you have any questions please call.

Sincerely,

BRASHER & LORENZ, INC.

Dennis A. Lorenz, PE
Principal

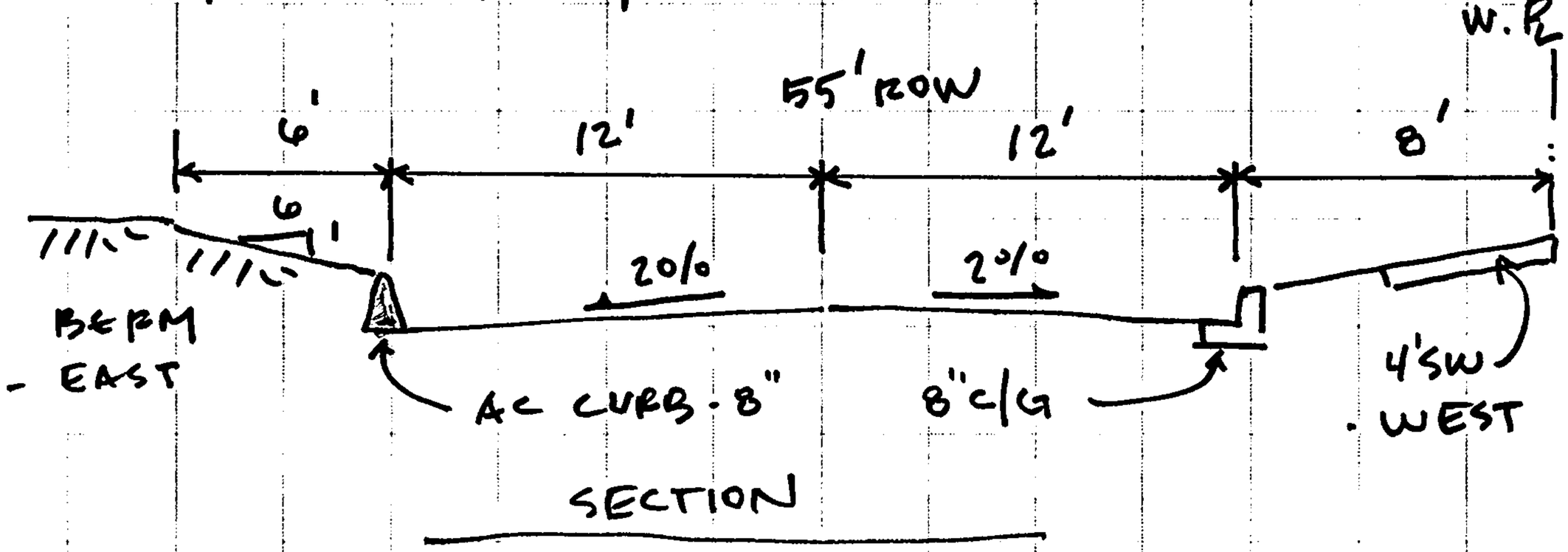
/dl/10513
encl

SUNSET WEST U2

90TH STREET SW

① STREET DEPTH CHECK

Q_{100} = 90 CFS PER DPM



SECTION

BY MANNINGS:

(A) AT TOP OF CURB

$Y = 0.67'$
$S = 0.9\%$
$n = 0.017$

$\Rightarrow Q = 73.5$ CFS
$V = 5.6$ F/S

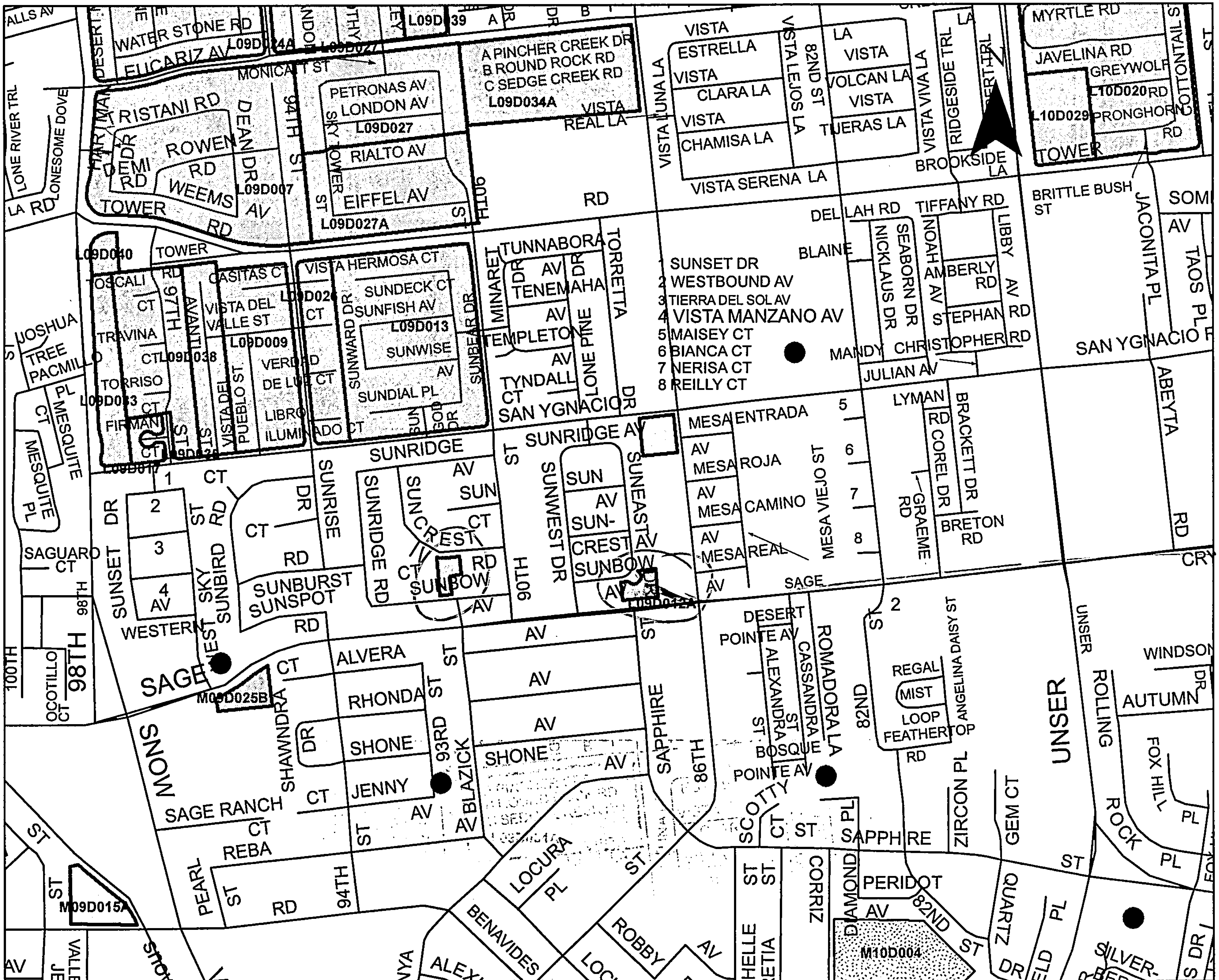
top of curb R/W
$73.5 < 90 < 113.6$

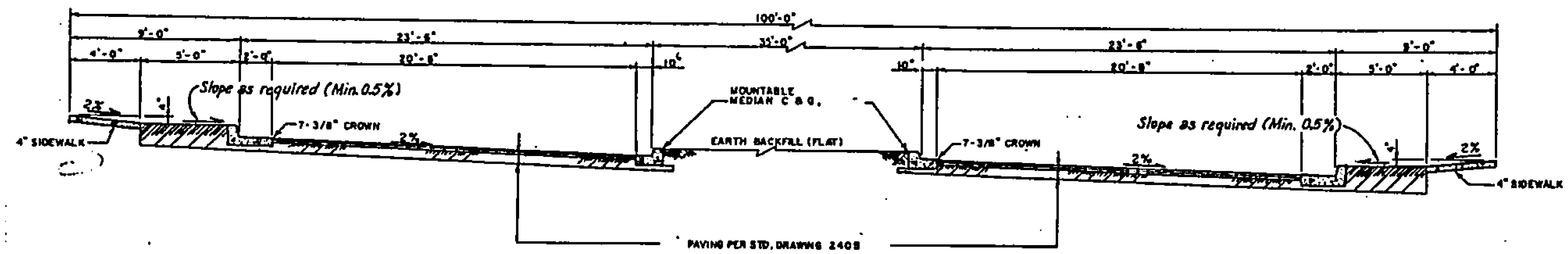
(B) AT R/W (WEST)

$Y = 0.83'$
$S = 0.9\%$
$n = 0.017$

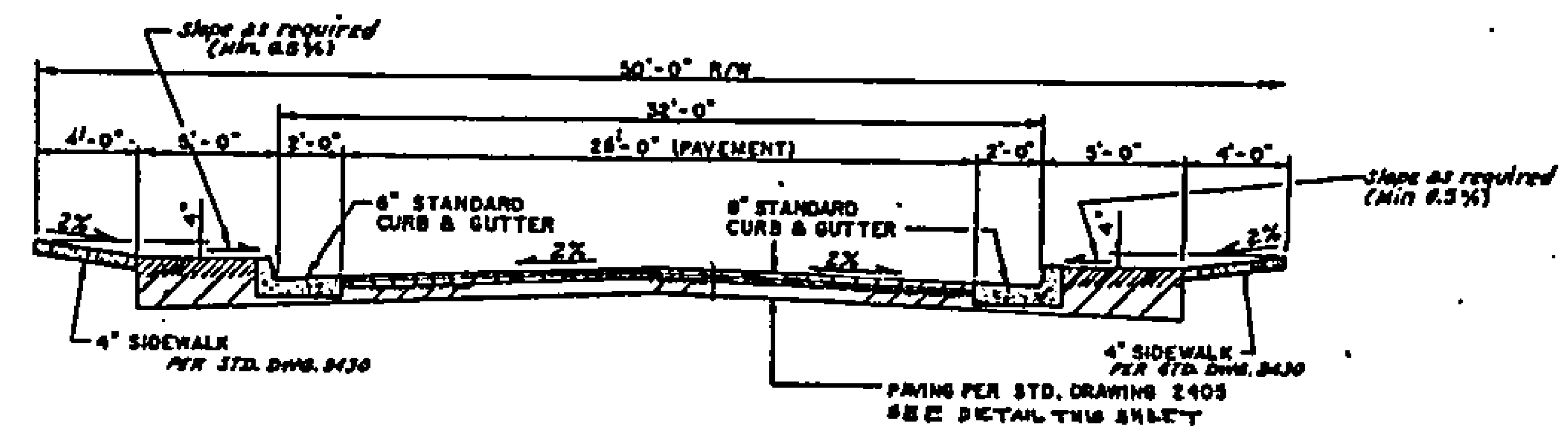
$\Rightarrow Q = 113.6$ CFS
$V = 6.4$ F/S

$\Rightarrow Q_{100} = 90$ CFS - WILL TOP THE CURB BUT STAY WITHIN ROW.

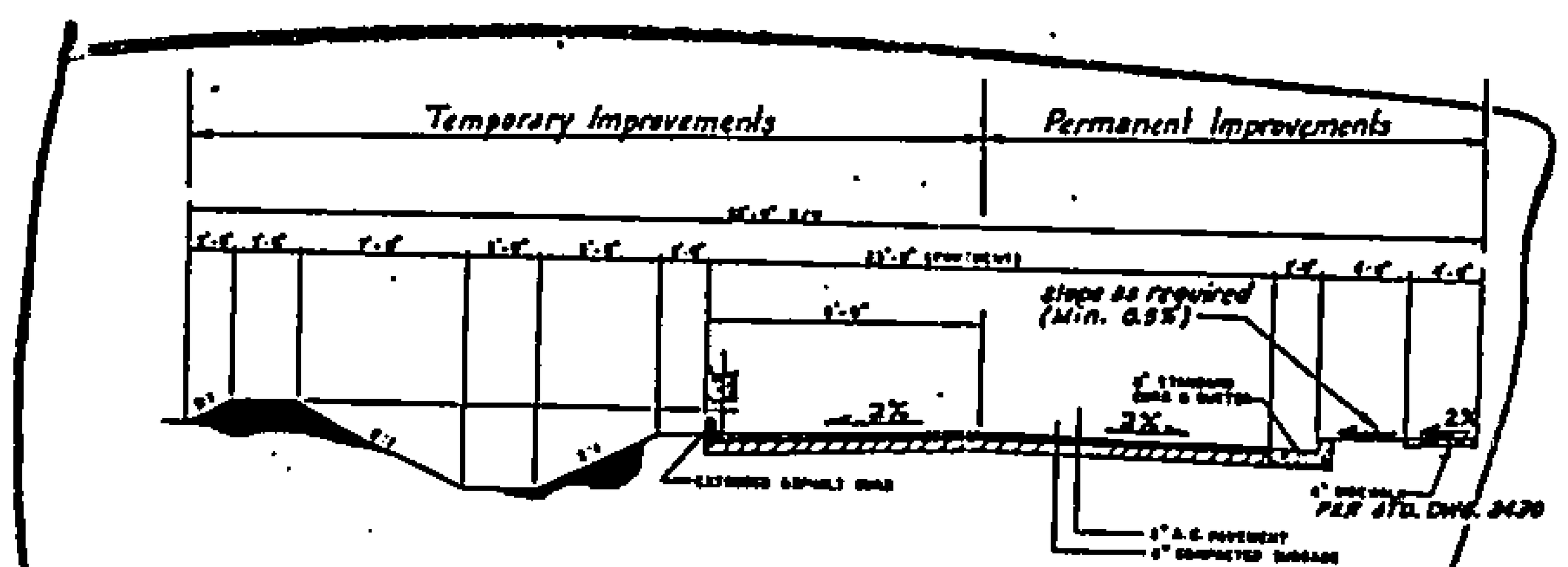

WATER STONE RD
EUCARIZ AV
L09D024A
L09D027
L09D039
MONICA ST
A PINCHER CREEK DR
B ROUND ROCK RD
C SEDGE CREEK RD
L09D034A
VISTA REAL LA
PETRONAS AV
LONDON AV
RIALTO AV
EIFFEL AV
L09D027A
TRISTANI RD
ROWEN RD
DEMI RD
WEEMS
DEAN DR
TOWER RD
L09D007
LONE RIVER TRL
LONESOME DOVE
VISTA ESTRELLA
VISTA CLARA LA
VISTA CHAMISA LA
VISTA SERENA LA
VISTA LUNA LA
VISTA LEJOS LA
82ND ST
LA VISTA
VOLCAN LA
TIJERAS LA
VISTA VIVA LA
RIDGESIDE TRL
BROOKSIDE LA
MYRTLE RD
JAVELINA RD
GREYWOLF
L10D020 RD
L10D029
PRONGHORN
COTTONTAIL
TOWER
BRITTLE BUSH ST
JACONITA PL
TAOS PL
L09D040
TOWER
TOSCALI
CASITAS CT
VISTA HERMOSA CT
SUNDECK CT
SUNFISH AV
L09D013
SUNWISE
SUNDIAL PL
SUNWARD DR
SUNBEAR DR
VISTA DEL VALLE ST
L09D026
L09D009
L09D038
TRAVINA
TORRISO
L09D033
FIRMANI
L09D017
VERDAD
DE LUZ CT
LIBRO
ILUMINADO CT
PUEBLO ST
97TH
AVANTI
JOSHUA TREE
PACMILLO
MESQUITE CT
MESQUITE PL
MINARET DR
TUNNABORA
TENEMAHA
TEMPLETON
TYNDALL CT
LONE PINE
TORRETTA DR
SAN YGNACIO
1 SUNSET DR
2 WESTBOUND AV
3 TIERRA DEL SOL AV
4 VISTA MANZANO AV
5 MAISEY CT
6 BIANCA CT
7 NERISA CT
8 REILLY CT
BLAINE
DELILAH RD
TIFFANY RD
NICKLAUS DR
SEABORN DR
NOAH AV
AMBERLY RD
LIBBY AV
STEPHAN RD
CHRISTOPHER RD
MANDY
JULIAN AV
SAN YGNACIO RD
ABEYTA
SUNRIDGE AV
MESA ENTRADA
MESA ROJA
MESA CAMINO
MESA REAL
MESA VIEJO ST
LYMAN
COREL DR
BRACKETT DR
GRAEME RD
BRETON RD
SUNRIDGE
SUNRISE DR
SUNRIDGE RD
SUN CREST CT
SUNBOW
90TH
SUNWEST DR
SUN-CREST AV
SUNBOW
SUNEAST
L09D012A
SAGE
SUNSET DR
SKY WEST
SUNBIRD RD
SUNBURST RD
SUNSPOT
SAGUARO CT
98TH
100TH
OCOTILLO CT
WESTERN
SAGE
M09D025B
ALVERA
RHONDA
SHONE
JENNY
SHAWNDRA DR
93RD ST
BLAZICK
SAGE RANCH CT
REBA
PEARL ST
94TH
MONS
M09D015A
DESERT POINTE AV
ALEXANDRA ST
CASSANDRA ST
ROMADORA LA
BOSQUE POINTE AV
SAPPHIRE
86TH
82ND
REGAL MIST LOOP
FEATHERTOP RD
ANGELINA DAISY ST
ZIRCON PL
GEM CT
UNSER
ROLLING ROCK PL
FOX HILL PL
AUTUMN
WINDSOR
SCOTTY CT
SAPPHIRE ST
LOCURA PL
BENAVIDES
ROBBY AV
CORRIZ
DIAMOND
PERIDOT AV
82ND ST
QUARTZ DR
M10D004



A–A



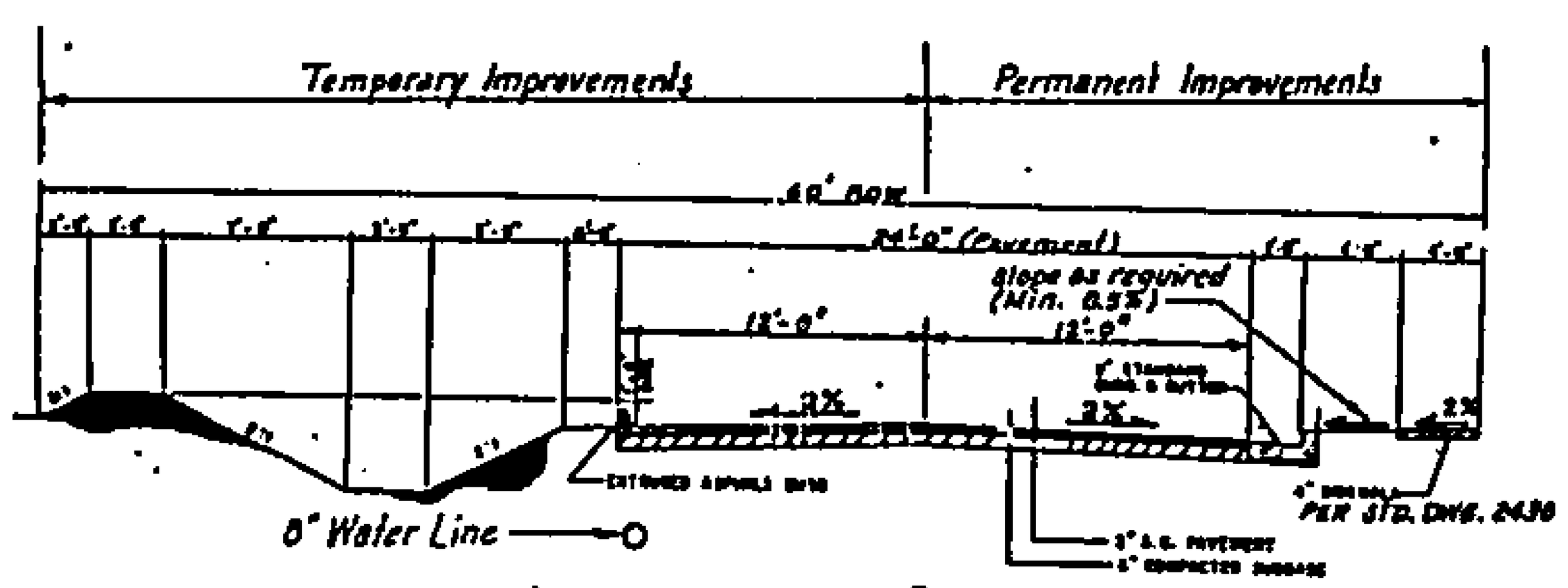
B–B



90TH. STREET-SECTION

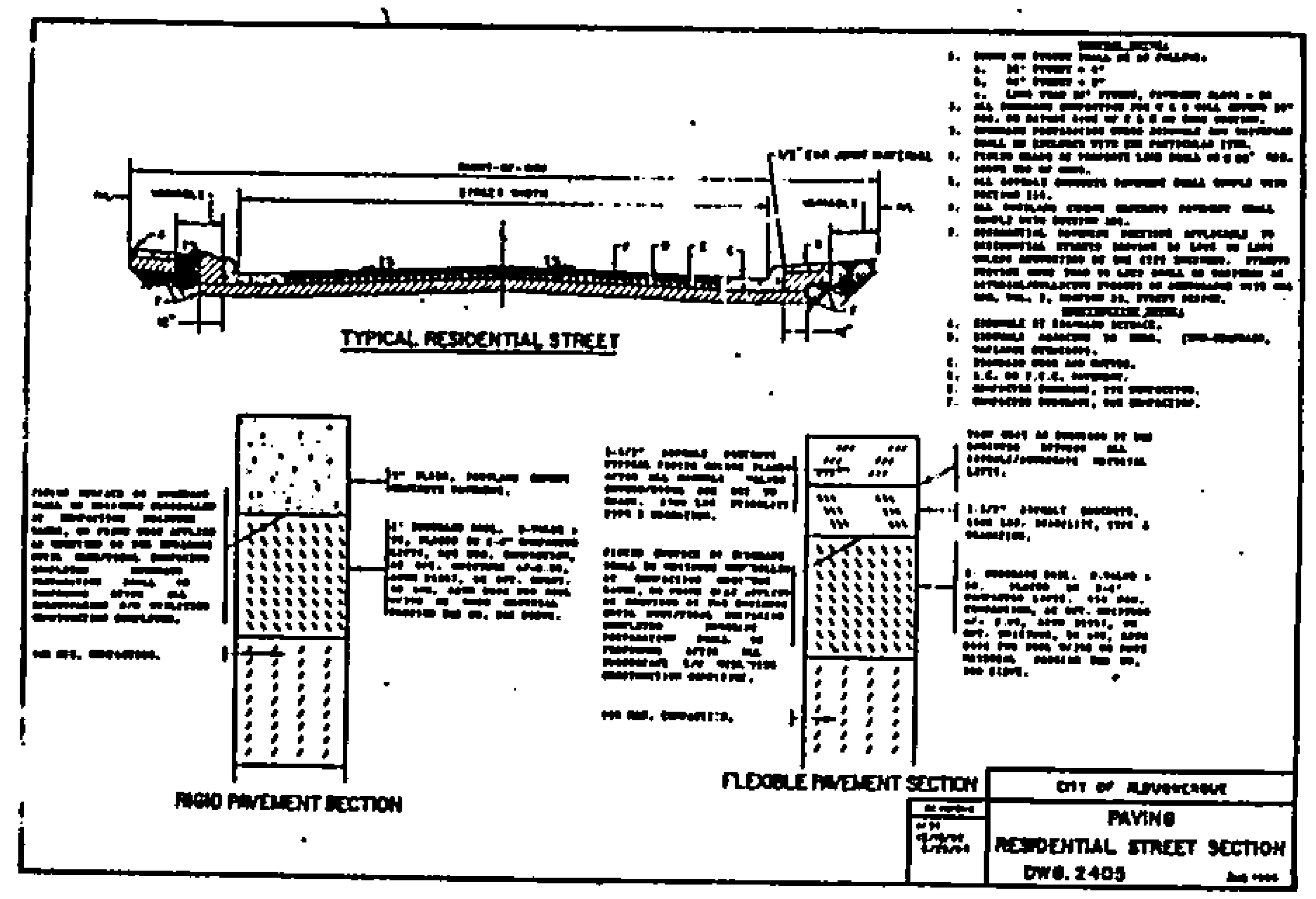
C–C

4' Sidewalk To Be Constructed By Others (Typical)



SAN YGNACIO

D–D



NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 EDITION INCLUDING UPDATES 1–5, SECTIONS 100 THROUGH SECTIONS 2700 EXCEPT AS MODIFIED BY THE SUPPLEMENTAL SPECIFICATIONS.
2. ALL CURB TO CONFORM TO STANDARD DRAWING 2415.
3. ALL SIDEWALK/CURB TO HAVE CASE II WHEEL CHAIR RAMPS PER STANDARD DRAWING 2441.

AS BUILT INFORMATION

BENCH MARKS

A.C.S. BENCHMARKS 4-L9 INDICATED ON EACH SUCCEEDING SHEET AS ELEVATION 5174.67 IS THE ELEVATION USED TO DEVELOP THIS SET OF DRAWINGS. THE ELEVATION OF THIS BENCHMARK WAS CORRECTED ON JULY 6, 1979 TO 5174.158, THEREFORE THE ELEVATIONS INDICATED ON THESE DRAWINGS ARE 0.714 FEET ABOVE CITY DATUM.

SURVEY INFORMATION

FIELD NOTES

ENGINEER'S SEAL

REVISIONS

LEEDSHILL–HERKENHOFF, INC.

DESIGNED BY A.P.K. DATE OCT. 1980

DRAWN BY DS DATE OCT. 1980

CHECKED BY SMA DATE 7/7/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: SUNSET WEST UNIT TWO
STREET DESIGN
ROAD SECTIONS AND DETAILS

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
DRC CHAIRMAN		12/15/94	WATER		
TRANSPORTATION		12-27-94	WASTE WATER		
HYDROLOGY		12-8-94	RECORD DRAWING		

PROJECT NO. 4991.90 | MAP NO. L9,M9 | SHEET 15 OF 15

26-4991.90 1595

SCANNED BY LASON

CITY OF ALBUQUERQUE

July 29, 2010

Dennis A Lorenz, P.E.
Brasher & Lorenz
2201 San Pedro NE
Albuquerque, NM 87110

Re: Sunset West Unit II Lots 16, 26 and 27 Grading and Drainage Plan
Engineer's Stamp date 7-26-10 (M09/D004A)

Dear Mr. Lorenz,

Based upon the information provided in your submittal received 7-27-10, the above referenced plan cannot be approved for Grading Permit or Work Order until the following comments are addressed:

- Provide as-builts for the downstream storm drain.
- It appears that 90th street does not have the capacity if the pond is removed. 90th Street has not changed since the subdivision was built with the pond. The Work Order CPN 4991.90 shows a 25 foot section curb face to edge with a temporary asphalt curb, whereas your submittal specifies 32 ft face to face with standard curb and gutter on both sides.
- It appears that Keyed Note 10 is not required.
- It appears the eastern callout for Keyed Note 6 is extraneous.

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 04/2009)

M-09/D004A

PROJECT TITLE: LOTS 16, 26 & 27 , BLOCK 5, SUNSET WEST, UNIT 2 ZONE MAP: M-09
DRB#: _____ EPC#: _____ WORK ORDER#: 499182

LEGAL DESCRIPTION: LOTS 16, 26 & 27 , BLOCK 5, SUNSET WEST, UNIT 2
CITY ADDRESS: 9016 & 9020 SUNCREST RD, 9101 SUNBOW AVE SW

ENGINEERING FIRM: BRASHER & LORENZ, INC. CONTACT: DENNIS LORENZ
ADDRESS: 2207 SAN PEDRO NE, BUILDING 1, SUITE 1300 PHONE: 888-6088
CITY, STATE: ALBUQUERQUE, NEW MEXICO ZIP CODE: 87110

OWNER: JUDE BACA CONTACT: JUDE BACA
ADDRESS: 3913 72ND STREET NW PHONE: 379-7877
CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87120

ARCHITECT: NONE CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: BRASHER & LORENZ, INC CONTACT: L. MARTINEZ
ADDRESS: 2207 SAN PEDRO NE, BUILDING 1, SUITE 1300 PHONE: 888-6088
CITY, STATE: ALBUQUERQUE, NEW MEXICO ZIP CODE: 87110

CONTRACTOR: NONE SELECTED TO DATE CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

TYPE OF SUBMITTAL:
_____ DRAINAGE REPORT
__X__ DRAINAGE PLAN 1st SUBMITTAL
_____ DRAINAGE PLAN RESUBMITTAL
_____ CONCEPTUAL G & D PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
_____ ENGINEER'S CERT (HYDROLOGY)
_____ CLOMR/LOMR
_____ TRAFFIC CIRCULATION LAYOUT
_____ ENGINEER'S CERT (TCL)
_____ ENGINEER'S CERT (DRB SITE PLAN)
_____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:
_____ SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
_____ S. DEV. PLAN FOR SUB'D APPROVAL
_____ S. DEV. FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY (PERM)
_____ CERTIFICATE OF OCCUPANCY (TEMP)
__X__ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
__X__ WORK ORDER APPROVAL
_____ GRADING CERTIFICATION
_____ OTHER (SPECIFY) SO-19

RECEIVED
JUL 27 2010
HYDROLOGY SECTION

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

DATE SUBMITTED: 7.26.10 BY: D. LORENZ

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

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3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

M-09/D004

DRAINAGE REPORT

FOR

SUNSET WEST UNIT 2
ALBUQUERQUE, NEW MEXICO

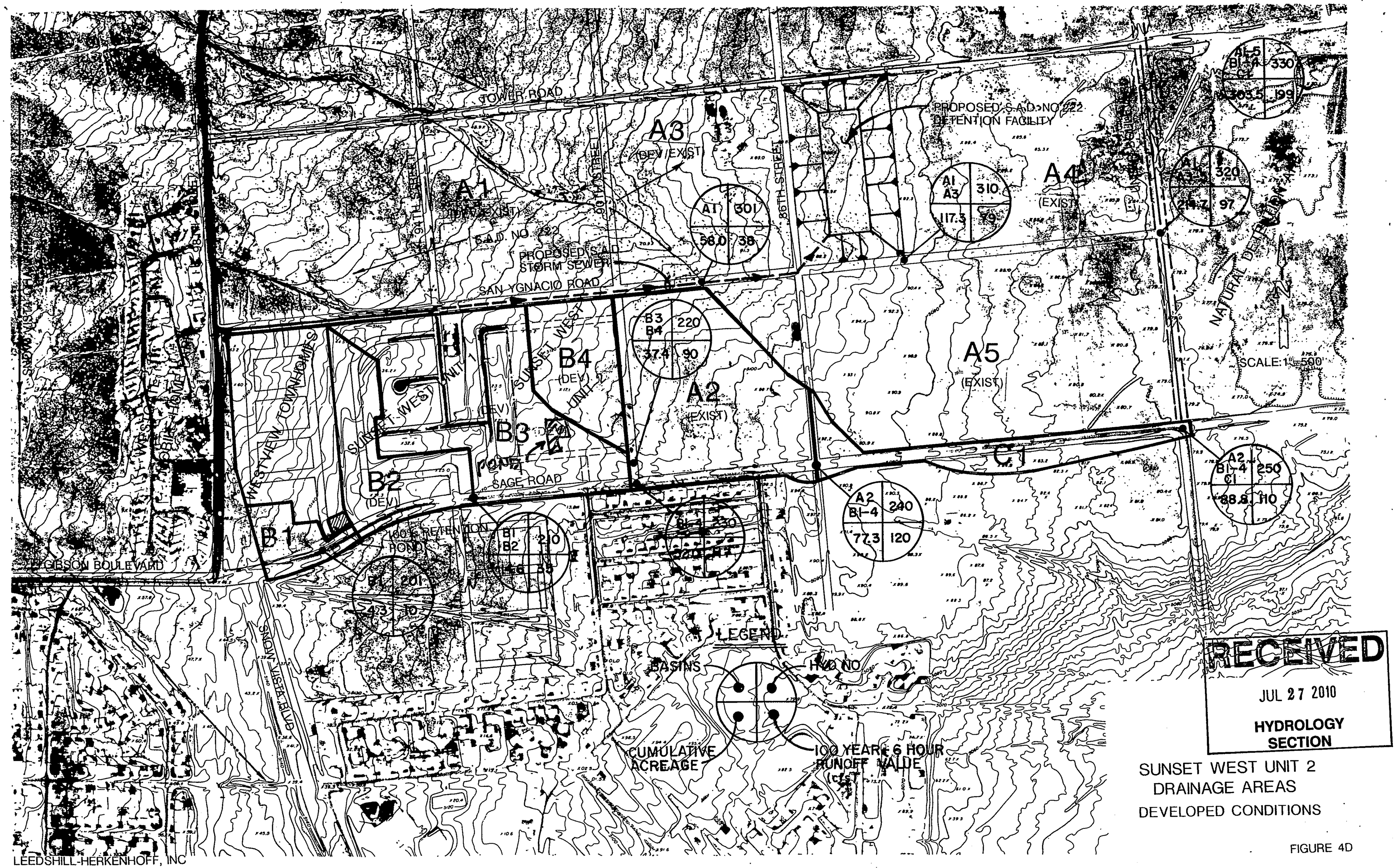
Prepared for

Tom Neilson
Albuquerque, New Mexico

April 1994

LH 94005.11

LEEDSHILL-HERKENHOFF, INC.
Copper Square, 500 Copper Avenue, NW
P.O. Box 1217 - Phone (505) 247-0294
Albuquerque, New Mexico 87103
ENGINEERS ARCHITECTS



SUNSET WEST UNIT 2
DRAINAGE AREAS
DEVELOPED CONDITIONS

FIGURE 4D

TABLE 4
Comparison of Peak Runoff Values for 10-year 6-hour Storm

Location	Existing	Interim I	Interim II	Developed
West Sky at Sage	4	4	4	4
94th and Sage	16	16	16	16
90th, north of Sage	27	45	27	45
90th and Sage	34	56	39	50
86th and Sage	36	52	35	50
Unser and Sage	38	51	38	48
San Ygnacio and Unser	12	12	14	15
Unser playa lake	50	62	51	62
Volume to Unser playa (acre-feet)	4.0	4.6	4.0	4.6

TABLE 5
Comparison of Peak Runoff Values for 100-year 6-hour Storm

Location	Existing	Interim I	Interim II	Developed
West Sky at Sage	10	10	10	10
94th and Sage	35	35	35	35
90th, north of Sage	52	90	68	90
90th and Sage	81	117	95	117
86th and Sage	112	137	99	120
Unser and Sage	106	127	93	110
San Ygnacio and Unser	73	73	97	97
Unser playa lake	179	198	186	198
Volume to Unser playa (acre-feet)	13.8	14.6	13.8	1.6

As indicated in these tables, there is a localized increase in runoff resulting from the development of Sunset West Unit 2. However, there is also a slight reduction of the

III. HYDRAULICS

A. METHODOLOGY

In order to assess the adequacy of the roadways to convey the peak runoff resulting from the 10-year and the 100-year frequency storm events, hydraulic analyses were performed for the following existing street sections:

- 90th Street between San Ygnacio Road and Sage Road - a two lane (32 foot wide) roadway with curb and gutter;

- Sage Road between 86th and 90th Streets - a two-lane (30-foot wide) roadway cross-section with curb and gutter on the south side and a small ditch on the north side; and

- Sage Road between 86th and Unser Boulevard - a two-lane (30-foot wide) roadway with borrow ditches located on both sides of the roadway;

Sketches of these road sections are contained within Appendix B. Manning's formula for open channel flow was utilized to analyze the maximum allowable capacity of these streets under two scenarios:

- 10-year frequency storm with one 12-foot wide lane open to traffic (per DPM criteria);

- 100-year frequency storm with a maximum water level of 0.2 feet above the top of curb or 0.2 feet above the crown of the road where no curb and gutter is present (Sage Road between 86th Street and Unser Boulevard)(also per DPM criteria).

This allowable street capacity was then compared with the peak runoff rates calculated under existing interim and developed conditions in order to assess the adequacy of the streets to convey these flows. The hydraulic calculations for the maximum allowable street capacities are contained in Appendix B.

B. RESULTS

Table 6 provides a comparison of the calculated maximum allowable street capacity versus the peak runoff rates for the 10-year frequency rainfall event under existing, interim and developed watershed conditions. The flow rates for the 10-year storm show an increase on 90th Street between the existing and developed condition. The street

TABLE 6
Comparison of Street Capacity Versus Calculated Peak Runoff Values for 10-year Storm

Location	Street Capacity (cfs)	Peak Runoff (cfs)			
		Existing	Interim I	Interim II	Developed
90th Street between San Ygnacio and Sage	4	27	45	27	45
Sage Road between 86th and 90th	26	34	56	39	50
Sage Road between 86th and 90th	78	36	52	35	50

* capacity is exceeded for all conditions. It may be possible to install an interim channel within the right-of-way of 90th Street to convey this runoff as contained in the original plans for this subdivision.

* Sage Road between 90th Street and 86th Street does not have adequate capacity to convey the 10-year runoff event from existing, interim or developed conditions; however, it may be possible to increase the capacity of the adjacent roadside channel to mitigate this problem. → Ditch only on north side CAG on south

These results are consistent with the previous analyses performed for the Sage Road Improvements, Drainage Report, performed for the City of Albuquerque in 1990, and with the previous Review Comments to DRC from Carlos Montoya of the City of Albuquerque, Public Works Department, Hydrology Division. Both of these previous sources advocate the need for storm improvements to be included with the construction of Sage Road. Due to funding constraints, these improvements were not provided at the time of the original Sage Road construction.

Sage Road between 86th Street and Unser Boulevard, with ditches along both the north and southbound lanes, is capable of handling both existing and future flows during a 10-year frequency.

Table 7 provides a comparison of the calculated maximum allowable street capacity versus the peak runoff rates and velocities for the 100-year frequency rainfall event under both existing and developed watershed conditions. This table indicates that all three roadway sections analyzed are capable of handling both existing and developed peak runoff.

TABLE 7
Comparison of Street Capacity Versus Calculated Peak Runoff Values for 100-year Storm

Location	Street Capacity (cfs)	Peak Runoff (cfs)			
		Existing	Interim I	Interim II	Developed
90th Street between San Ygnacio and Sage	122 *	52	90	58	90
Sage Road between 86th and 90th	233	81	117	95	117
Sage Road between 86th and 90th	207	112	137	99	120

* DETERMINED BY ALLOWING STREET DEPTH TO REACH 0.87'

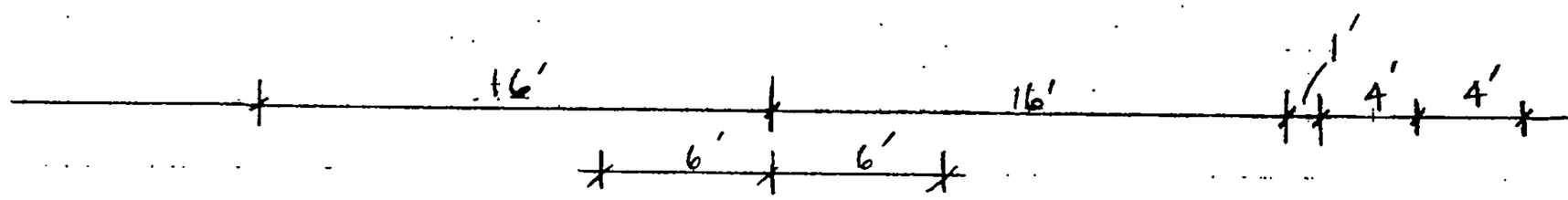
LEEDSHILL · HERKENHOFF, INC. Albuquerque • San Diego • Santa Fe ENGINEERING COMPUTATIONS	NAME OF PROJECT SUNSET WEST UNIT 2			SHEET NUMBER 6 OF
	COMPUTED BY: K REED	CHECKED BY:	JOB NUMBER 94005.11	DATE: 3/23/94

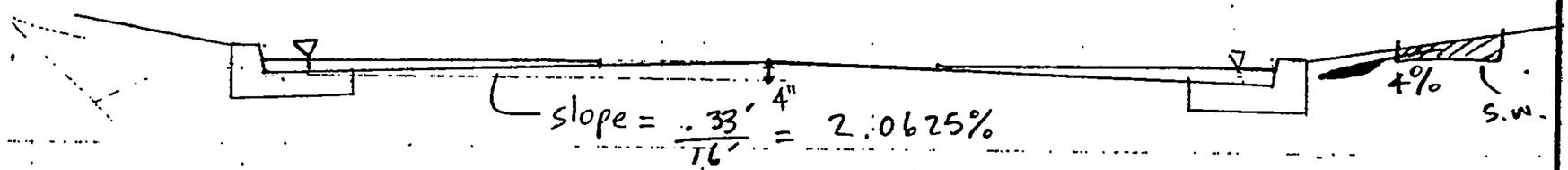
NOW THAT AHYMO RUNS HAVE BEEN COMPLETED, WE NEED TO CALCULATE THE Q FOR A 10-YR, 6-HR STORM FOR:

1. 90TH ST. BETWEEN SAN YGNACIO AND SAGE
2. SAGE BETWEEN 90TH AND 86TH
3. SAGE BETWEEN 86TH AND UNSER.

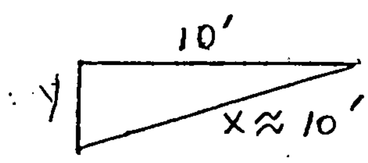
USE MANNING'S EQN. AND ASSUME ONLY 1/2 (OR 12') OF THE ROADWAY IS SUBMERGED.
COMPARE THIS Q WITH AHYMO RESULTS (10-YR, 6 HR. STORM)

1. ROADWAY X-SECTION FOR 90TH BETWEEN SAN YGNACIO AND SAGE





slope = $\frac{.33'}{16'}$ = 2.0625%



$y = 10' * 2.0625\% = .20625' \approx .21'$

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2} \quad \text{(MANNING'S EQN.)}$$

A = X-SECTIONAL AREA = $\frac{1}{2}(.21)(10') = 1.05\ FT^2$

n = MANNING'S NO. = 0.018

R = HYDRAULIC RADIUS = $\frac{A}{P} = \frac{\text{X-SECT. AREA}}{\text{WETTED PERIMETER}} = \frac{1.05\ FT^2}{10' + .21'} = 0.10\ FT$

(★) S = SLOPE = $\frac{16.08 - 6.96}{1016.32} = 0.009$

(★) FROM GRADING PLAN FOR SUNSET WEST UNIT 2 L = 1067.36 − 51.04 = 1016.32'
NORTH END OF 90TH ST. ℄ ELEV. 16.08
SOUTH END " " " ℄ ELEV. 6.96 (CURB RETURN)

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	COMPUTED BY: K REED	CHECKED BY:	JOB NUMBER 94005.11	DATE: 3/23/94

1. 90TH ST. (CONTINUED)

$$Q = \frac{1.486}{0.018}(1.05\ FT^2)(0.10\ FT)^{2/3}(0.009)^{1/2} * 2\ \text{SIDES OF ROAD}$$

$$= \boxed{3.52\ CFS}$$

FROM AHYMO → DEVELOPED - 10-YR, 6-HR STORM

BASIN B4 PEAK DISCHARGE = Q = $\boxed{15.59\ CFS}$

Q ⇒ 15.59 >> 3.52 NO GOOD

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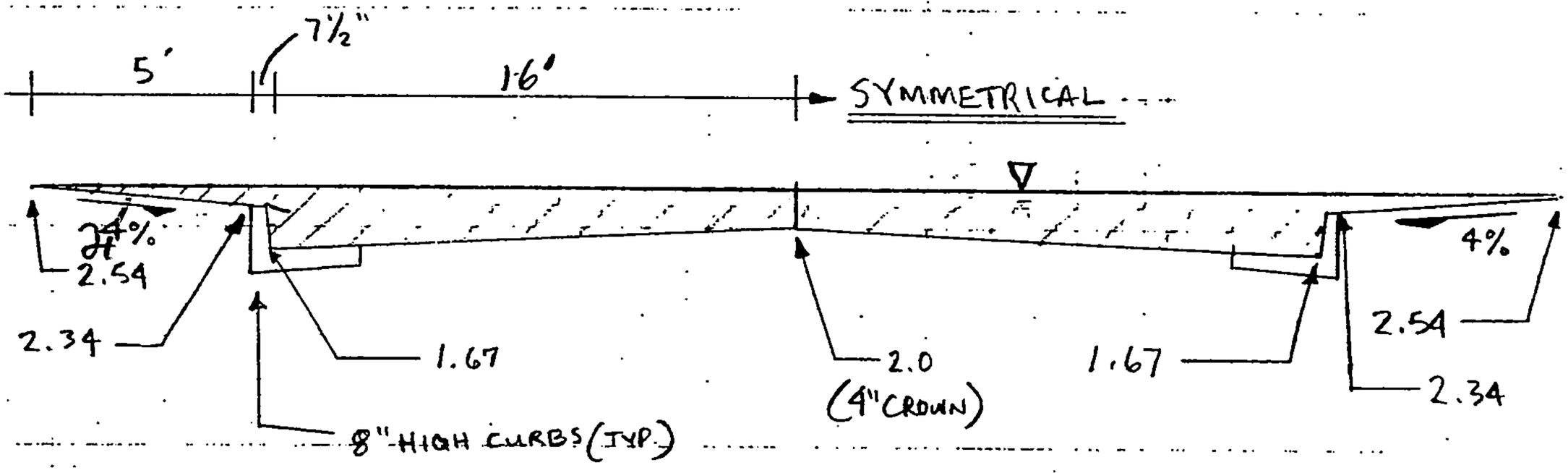
	COMPUTED BY: K REED	CHECKED BY:	JOB NUMBER 94005.11	DATE: 3/24/94

NOW CHECK STREET CAPACITY FOR 100-YR, 6-HR STORM EVENT WITH THE ASSUMPTION THAT THE WATER RUNOFF LEVEL IN THE STREET CAN EXCEED 0.2 FEET ABOVE TOP OF CURB FOR:

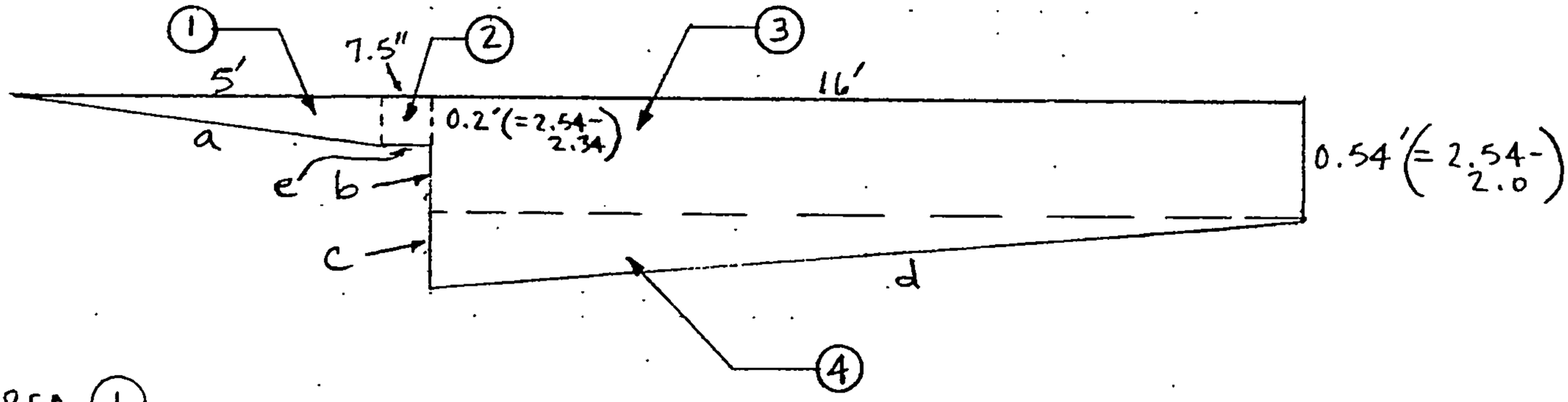
1. 90TH ST. BTWN. SAN YGNACIO & SAGE
2. SAGE RD. BTWN. 90TH & 86TH
3. SAGE RD. BTWN. 86TH & UNSER

THEN COMPARE Q_{STREET} WITH Q_{AHYMO} (PEAK DISCHARGE FOR SAME STORM EVENT)

1. 90TH STREET X-SECTION



AREA CALCULATIONS



AREA (1)

$A_1 = \frac{1}{2}(5)(0.2) = \underline{0.5 \text{ FT}^2}$

$a = \sqrt{5^2 + 0.2^2} \approx \underline{5.00 \text{ FT}}$

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	COMPUTED BY: K REED	CHECKED BY:	JOB NUMBER 94005.11	DATE: 3/24/94

1. 90TH ST. (CONTINUED)

AREA (2)

$$A_2 = \frac{7.5"}{12}(0.2) = \underline{0.125\ FT^2}$$

$$e = 7.5" = \underline{0.625'}$$

AREA (3)

$$A_3 = (0.54)(16') = \underline{8.64\ FT^2}$$

$$b = 0.54 - 0.2 = \underline{0.34\ FT}$$

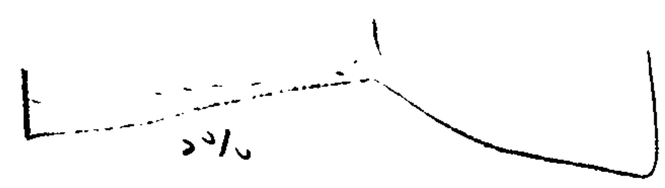
AREA (4)

$$c = \underline{0.33'} \Longrightarrow 4" \text{ CROWN}$$

16 x 0.2 = .32 ft

$$A_4 = 1/2\,(0.33)(16) = \underline{2.64\ FT^2}$$

$$d = \sqrt{.33^2 + 16^2} \approx \underline{16\ FT}$$



CAPACITY CALCULATIONS

$$A_T = \Sigma A_i = \underline{11.91\ FT^2}$$

$$R = \frac{A_T}{P} = \frac{11.91}{a + e + b + c + d} = \underline{0.534\ FT}$$

ASSUMES STREET DEPTH AT 0.87'
SEE NEXT SHEET FOR Y = 0.67'

$S = \underline{0.009}$ (SEE SHEET 6 CALCS)

$n = 0.018$ (")

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2} \quad \text{(MANNING'S EQN.)}$$

Q_{STREET} = 61.27 CFS x 2 (SYMMETRICAL) = 122.54 CFS

Q_{AHYMO} (100YR, 6HR-PEAK) = 31.86 CFS — NO CURB IN CUST SIDE

$Q_{STREET} = 122.5$ CFS > $Q_{AHYMO} = 31.86$

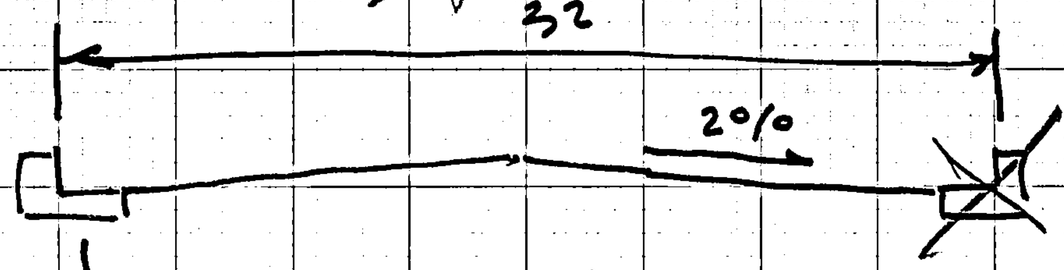
∴ ✓ OK

SUNSET WEST UNIT 2

90TH STREET SW

① STREET DEPTH

Q100 DEV = 90 CFS PER DMP.



BY MANNINGS:

Y = .67' S = 0.9%

n = 0.017

Q = 86.4 CFS

V = 5.3 CFS

F_n = 1.31

⇒ $Q_{100} = 90\ CFS \pm$

Q_{STREET} = 86.4 CFS CLOSE (4%)

STREET CAPACITY IS CLOSE ENOUGH TO JUSTIFY FREE DISCHARGE