OFFICE OF THE
MAYOR
CITY OF SAN LUIS

Resolution

NO. 1071

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE CITY OF SAN LUIS, ARIZONA APPROVING AMENDMENT TO CONTRACT AND LICENSE NO. 9-07-34L1105 BETWEEN THE CITY OF SAN LUIS AND THE BUREAU OF RECLAMATION

Whereas, the City of San Luis desires to enter into an amendment to the contract and license agreement No. 9-07-34L1105 with the Bureau of Reclamation regarding the Archibald Street Storm Drain; and

Whereas, this amendment is needed for the current ADOT construction project regarding the downtown area;

NOW THEREFORE BE IT RESOLVED, by the Mayor and Council of the City of San Luis, State of Arizona, as follows:

Section 1: That the Amendment to the Contract and Agreement No. 9-07-34L1105, as attached hereto as Exhibit "A", is hereby ratified and approved.

Section 2: That the appropriate City officials are hereby authorized and directed to enter into said agreement on behalf of the City and take any all actions as may be necessary to effectuate said agreement.

PASSED AND ADOPTED by the Mayor and Common Council of the City of San Luis, Arizona, this 24th day of September, 2014.

Gerardo Sanchez, Mayor

ATTEST:

Sonia Cornelio, City Clerk

APPROVED AS TO FORM:

Glenn Gimbut
City Attorney

United States Department of the Interior

BUREAU OF RECLAMATION
Lower Colorado Region
Yuma Area Office
7301 Calle Agua Salada
Yuma, AZ 85364

IN REPLY REFER TO:
YAO-7120
LND-6.00

AUG 28 2014

CERTIFIED – RETURN RECEIPT REQUESTED (70122210000130193798)

Mr. Eulogio Vera, P.E.
Public Works Director
City of San Luis
Public Works Department
1090 East Union Street
San Luis, AZ 85349

Subject: City of San Luis (City) – Contract and License No. 9-07-34-L1105, Amendment No. 1 (License) – Authorization to Improve Archibald Street Storm Drain (Storm Drain) Within Bureau of Reclamation's Reserved Rights-of-Way – Yuma Project, Valley Division, and Colorado River Front Work and Levee System, Yuma Division, and Colorado River Basin Salinity Control Project, Protective and Regulatory Pumping Unit, Title I Division, Five Mile Zone, Arizona

Dear Mr. Vera:

On May 25, 1999, Reclamation sent the City a fully executed duplicate original of the subject License (enclosed). The License authorized the City to construct, reconstruct, install, operate, and maintain Archibald Street Storm Drain within Reclamation withdrawn land.

A review of the casefile determined that Reclamation did not receive as-built drawings for the Storm Drain depicting the location as installed. On February 6, 2014, via electronic mail (email), you informed Reclamation that Nicklaus Engineering, Inc. confirmed they do not have the as-built plans for the Storm Drain, however, you requested that the Exhibits of the executed License serve as the as-built drawings depicting the location of the Storm Drain, as installed, which is hereby acknowledged and received/accepted.

Additionally, Reclamation received your email dated February 14, 2014, requesting authorization for the City to conduct Storm Drain improvements (Improvements). According to your request the Improvements are necessary in order to appropriately maintain the Storm Drain in accordance with the original License, Contract No. 9-07-34-L1105. In addition, the Improvements are an essential component in Yuma County Department of Development Services and Arizona Department of Transportation's (ADOT) plans for future roadway improvements in San Luis, Arizona, which were submitted in a separate request by ADOT under Reclamation Reference No. 14-07-34-L1789.

After a thorough land use review of your request, Reclamation has no objections and hereby grants the City authorization to conduct said Improvements to the Storm Drain.

Enclosed for your review and signature are an original and two (2) duplicate originals of the subject License. If the License is satisfactory, please sign the original and the two (2) duplicate originals and return them to Reclamation along with a resolution authorizing the signature provided. Upon signature by all parties, a fully executed duplicate original License will be provided for your records.

Please reference Contract No. 9-07-34-L1105, Amendment No. 1 in all communications regarding this matter. If you have any questions, please contact Ms. Melissa Fairchild, Realty Specialist, at telephone No. 928-343-8238 or via email at mafairchild@usbr.gov.

Sincerely,

Christopher M. Wallis, Chief
Resource Management Office

In Triplicate

Enclosure – 2

cc: Mr. Tom Davis
Manager
Yuma County Water Users' Association
P.O. Box 5775
Yuma, AZ 85366

Mr. John Starkey
Building Safety Director
City of San Luis
Building Safety Division
1090 East Union Street
San Luis, AZ 85349
(w/copy of encls to each)

ORIGINAL

Contract No. 9-07-34-L1105
Amendment No. 1

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
LOWER COLORADO REGION
YUMA AREA OFFICE
YUMA, ARIZONA

YUMA PROJECT, VALLEY DIVISION,
AND
COLORADO RIVER FRONT WORK AND LEVEE SYSTEM, YUMA DIVISION,
AND
COLORADO RIVER BASIN SALINITY CONTROL PROJECT,
PROTECTIVE AND REGULATORY PUMPING UNIT, TITLE I DIVISION,
FIVE MILE ZONE, ARIZONA

AMENDATORY CONTRACT AND LICENSE

1. THIS AMENDATORY CONTRACT AND LICENSE (License), is made this
ation Act of June 17, 1902
Stat. 1187), as amended
plementary thereto; and the
, acting through the Bureau of
by the officer executing this
/ of San Luis, Arizona,
e Yuma County Water Users'
Association, hereinafter referred to as the "Association."

DO NOT DATE CONTRACT. DATE WILL BE INSERTED BY RECLAMATION UPON SIGNATURE.

WITNESSETH:

2. WHEREAS, on May 19, 1999, the Licensee was granted authorization from Reclamation to construct, reconstruct, operate and maintain Archibald Street Storm Drain and associated appurtenances (Storm Drain) within Reclamation withdrawn land; and

3. WHEREAS, on February 14, 2014, the Licensee requested authorization from Reclamation to conduct Storm Drain improvements (Improvements) within and/or across portions of Reclamation's reserved rights-of-way for the Transmission Line (Line), Yuma Valley Main Drain (Drain), East Main Canal Wasteway (Wasteway), 242 Lateral (Lateral) and Yuma Valley Levee (Levee), features of the Yuma Project, Valley Division, the Colorado River Front

Work and Levee System, Yuma Division, and the Colorado River Basin Salinity Control Project, Protective and Regulatory Pumping Unit, Title I Division, Five Mile Zone, all within the City of San Luis, Arizona; and

4. WHEREAS, the Improvements are necessary for the Licensee to appropriately maintain the Storm Drain in accordance with the original License; and

5. WHEREAS, the Improvements are an essential component in Yuma County Department of Development Services and Arizona Department of Transportation's (ADOT) plans for future road improvements in San Luis, Arizona, which are included in a separate request by ADOT under Reclamation Reference No. 14-07-34-L1789; and

6. WHEREAS, the granting of such authorization and right-of-use by Reclamation and the exercise of such right-of-use by the Licensee under the terms and conditions herein provided will be compatible with the purposes for which the lands are administered on behalf of the United States by Reclamation.

7. NOW THEREFORE, by accepting this grant use authorization the Licensee agrees to comply with and be bound by the original stipulations, conditions and provisions listed in Contract No. 9-07-34-L1105. The Licensee also agrees to comply with and be bound by the additional terms and conditions described herein during all construction, reconstruction, installation, ownership, operation, maintenance, use, and termination activities of the Storm Drain, which is located within, on, over and/or across Reclamation's reserved rights-of-way as described and depicted on Exhibits A and B (Design Plans), which are attached hereto and by this reference made a part hereof, and located within the following described lands, hereinafter referred to as the "Premises:"

8. DESCRIPTION OF USE AREA:

Gila and Salt River Meridian, Arizona
NW¼, SW¼, section 12, T. 11 S., R. 25 W.

The Storm Drain is located within portions of the above referenced legal description hereinafter described and depicted by Exhibit A, design plans entitled Arizona Department of Transportation, "International Border to Juan Sanchez Boulevard" (ADOT Project No. 095 YU 000 H8003 01 C) and Exhibit B, design plans entitled Yuma County Department of Development Services, "International Border to Juan Sanchez Boulevard – Volume II" (Project No. 095 YU 000 H8003 01 C), which are attached hereto and by this reference made a part hereof.

9. SCOPE OF AMENDED LANGUAGE: Reclamation is amending the License to include new language, for Articles 10, 11, and 12, as required by Reclamation's Directives and Standards.

10. HOLD HARMLESS: The Licensee hereby agrees to indemnify and hold harmless the United States, its employees, agents, and assigns from any loss or damage and from any liability on account of personal injury, property damage, or claims for personal injury or death arising out of the Licensee's activities under this License. Additionally, except for acts of negligence, the Licensee releases the United States and/or Reclamation, its/their officers, employees, successors and assigns from any and all liability for damage arising from injury to persons or damage to structures, equipment, improvements or works of the Licensee resulting from the construction, operation or maintenance of any of the works of the United States and/or Reclamation. Provided, however, that nothing contained in this clause shall be deemed to modify or limit any liability which may be imposed by the Federal Tort Claims Act, 28 U.S.C. § 2617, et ~cq. (1970).

11. SPECIAL CONDITIONS: In the use of the Premises, the Licensee shall faithfully observe each of the following conditions:

(a) The Licensee must follow Reclamation's requirements for crossings of our facilities which are found in Reclamation's "Engineering and O&M Guidelines for Crossings – Bureau of Reclamation Water Conveyance Facilities (Canals, Pipelines, and Similar Facilities)" as described and depicted by Exhibit C, which is attached hereto and by this reference made a part hereof.

(b) Any construction outside of Reclamation's rights-of-way is not authorized by Reclamation.

(c) The Licensee shall be solely responsible for, and ensure that, the Improvements are installed in accordance with the Design Plans, as described and depicted on Exhibits A and B, and as approved by Reclamation and the Association.

(d) Any changes proposed by the Licensee to the approved details of the Improvements, as described in the Design Plans, will require review and approval in advance by Reclamation and the Association.

(e) The Licensee shall be solely responsible for, and ensure that, the Improvements are installed in conformity with all applicable regulations of Federal, State and local regulatory agencies, including those related to pollution and environmental control.

(f) The Licensee shall be solely responsible for, and ensure that, Reclamation's facilities are protected during construction and installation activities.

(g) The Licensee will be liable for any costs associated with repairs of Reclamation facilities if damaged during construction and installation activities.

(h) The Licensee shall protect all properties owned and/or previously permitted by Reclamation within our reserved rights-of-way.

(i) The Licensee shall be solely responsible for, and ensure that, no material of any kind is discharged into Reclamation's reserved rights-of-way for the Line and/or Levee, or the Drain Wasteway, and/or Lateral.

(j) The Licensee shall notify the Association's Senior Engineering Technician, Lands and Rights-of-Way, Mr. Omar Peñuñuri, at telephone No. 928-627-8824 before any installation activities are performed.

(k) The Licensee will ensure that installation activities do not interfere with the Association's operation and maintenance activities of the Drain or Wasteway.

(l) The Premises and surrounding area will be maintained in a sanitary condition at all times. All trash and debris will be removed upon leaving the construction area each day it is used by Licensee.

(m) The Licensee will restore and repair, if necessary, the Premises and surrounding area to its original condition or improved, and in a manner satisfactory to Reclamation.

(n) The Licensee shall provide a construction schedule and 72 hour notice to Reclamation prior to start of construction. Said 72 hour notice shall be provided to Reclamation's Technical Support Office, Construction Services Group Manager, at telephone No. 928-343-8100 so that a Reclamation Inspector can be on-site during construction activities.

(o) Within 90 days of the completion of the Improvements to the Storm Drain; the Licensee shall furnish Reclamation with as-built drawings in AutoCAD Civil 3D 2013 format, or compatible, and 1 hardcopy set of 11x17 size drawings, depicting the location of said Improvements, as installed.

(p) The Licensee shall be solely responsible for, and ensure that, all stipulations in the original License are adhered to during construction and installation activities for the Storm Drain and Improvements.

(q) All on-site personnel in the construction area shall be personally instructed by the Licensee regarding the conditions outlined in the original License and as outlined herein.

(r) This authorization to use Reclamation's reserved rights-of-way will not be construed as a grant of any permanent right-of-way interest or as abandonment by the United States of any rights, including but not limited to, use and occupancy of the reserved rights-of-way.

(s) Any damage to the Storm Drain and Improvements or its related features caused by Reclamation's and/or the Association's operation and maintenance activities for the Line, Drain, Wasteway, Lateral or Levee shall be the sole responsibility of the Licensee to repair and/or replace, and Reclamation and the Association shall not be financially responsible for any such repairs and/or replacements.

(t) The Licensee shall reimburse Reclamation for any additional costs incurred in the operation and maintenance of the Line, Drain, Wasteway, Lateral or Levee which are attributable to the Storm Drain and its related features.

12. SEVERABILITY: Each provision of this use authorization shall be interpreted in such a manner as to be valid under applicable law, but if any provision of this use authorization shall be deemed or determined by competent authority to be invalid or prohibited hereunder, such provision shall be ineffective and void only to the extent of such invalidity or prohibition, but shall not be deemed ineffective or invalid as to the remainder of such provision or any other remaining provisions, or of the use authorization as a whole.

13. SCOPE OF AMENDMENT: Executed License, Contract No. 9-07-34-L1105, is only amended as specified herein to allow Improvements of the Licensee's Storm Drain and otherwise stands as executed.

IN WITNESS WHEREOF, the parties hereto have signed their names to this AMENDATORY CONTRACT AND LICENSE which shall become effective the day and year first above written, and all terms and conditions of Contract No. 9-07-34-L1105, dated May 19, 1999, shall remain in full force and effect.

THE UNITED STATES OF AMERICA

DO NOT SIGN. CONTRACT WILL BE SIGNED BY RECLAMATION UPON SIGNATURE OF ALL PARTIES.

Date: _____

ACCEPTANCE:

CITY OF SAN LUIS

By: Eduardo Soto

Title: Director of Public Works

Date: Oct 6, 2014

CONCURRENCE:

YUMA COUNTY WATER USERS' ASSOCIATION

By: _____

Title: _____

Date: _____

NOTARIAL ACKNOWLEDGMENT

State of Arizona)

County of Yuma)

On this ____day of _____, 20__, before me, _____, a Notary Public in and for said County and State personally appeared_____, Area Manager, Yuma Area Office, Lower Colorado Region, Bureau of Reclamation, United States Department of the Interior, known to me to be the person described in the foregoing instrument, and acknowledged to me that _____ executed the same on behalf of the United States of America in the capacity therein stated and for the purpose therein contained.

(Notary Seal)

_____
Notary Public

Description of document this notarial certificate is being attached to:	
Type/Title	Amendatory Contract and License, Contract No. 9-07-34-L1105, Amendment No. 1
Date of Document	
Number of Pages	9 and Exhibits A, B and C
Additional Signers (other than those named in the notarial certificate)	City of San Luis Yuma County Water Users' Association

NOTARIAL ACKNOWLEDGMENT

State of Arizona)

County of Yuma)

On this 10th day of October, 2014, before me, Melissa Lopez, a Notary Public in and for said County and State personally appeared Eulogio Vera (Name), Director of Public Works (Title) of City of San Luis (City), known to me to be the person described in the foregoing instrument, and acknowledged to me that he executed the same on behalf of City in the capacity therein stated and for the purpose therein contained.

"OFFICIAL SEAL"
Melissa Lopez
Notary Public - Arizona
Yuma County
My Commission Expires 5/10/2018

(Notary Seal)

Melissa Lopez
Notary Public

Description of document this notarial certificate is being attached to:	
Type/Title	Amendatory Contract and License, Contract No. 9-07-34-L1105, Amendment No. 1
Date of Document	
Number of Pages	9 and Exhibits A, B and C
Additional Signers (other than those named in the notarial certificate)	Bureau of Reclamation Yuma County Water Users' Association

NOTARIAL ACKNOWLEDGMENT

State of Arizona)

County of Yuma)

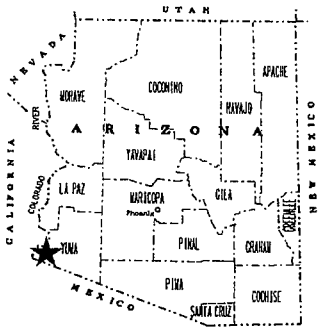
On this ____day of _____, 20__, before me, _____, a Notary Public in and for said County and State personally appeared_____, _____of
Name Title

Yuma County Water Users' Association (Association), known to me to be the person described in the foregoing instrument, and acknowledged to me that _____ executed the same on behalf of Association in the capacity therein stated and for the purpose therein contained.

(Notary Seal)

_____
Notary Public

Description of document this notarial certificate is being attached to:	
Type/Title	Amendatory Contract and License, Contract No. 9-07-34-L1105, Amendment No. 1
Date of Document	
Number of Pages	9 and Exhibits A, B and C
Additional Signers (other than those named in the notarial certificate)	Bureau of Reclamation City of San Luis



STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

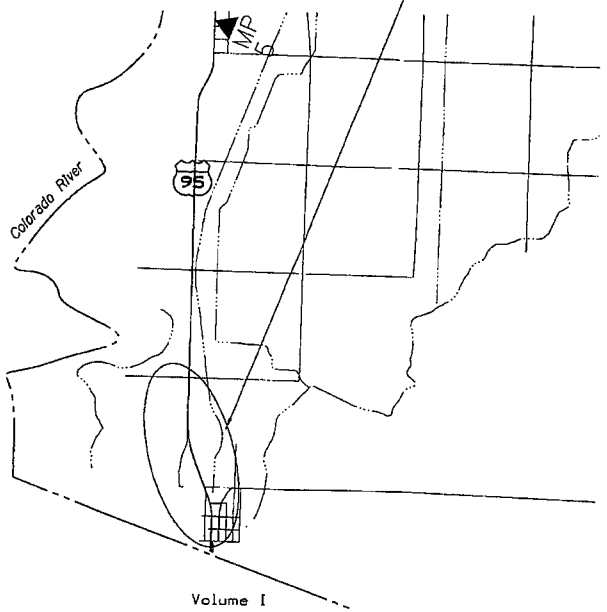
ADOT

PROJECT PLANS

STATE HIGHWAY
SAN LUIS–YUMA–QUARTZSITE HIGHWAY
US 95

RECONSTRUCTION AND PRESERVATION

MP 0.13 - MP 0.67



Constructed by:

Construction Company

Completion Date

Red-Lines by:

Construction Administrator Name & Company

Completion Date

As-Built by:

As-Built Designer Name & Company

Completion Date

Volume I

INTERNATIONAL BORDER TO JUAN SANCHEZ BLVD

PROJECT NO. 095 YU 000 H8003 01 C
FEDERAL AID NO. STP–095–A(204)T

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
JENNIFER TOTH, P.E., STATE ENGINEER

AS BUILT DATA	AS BUILT DATE	____ OF ____

EXHIBIT A

V:/ROADWAY\USERS\MP071\

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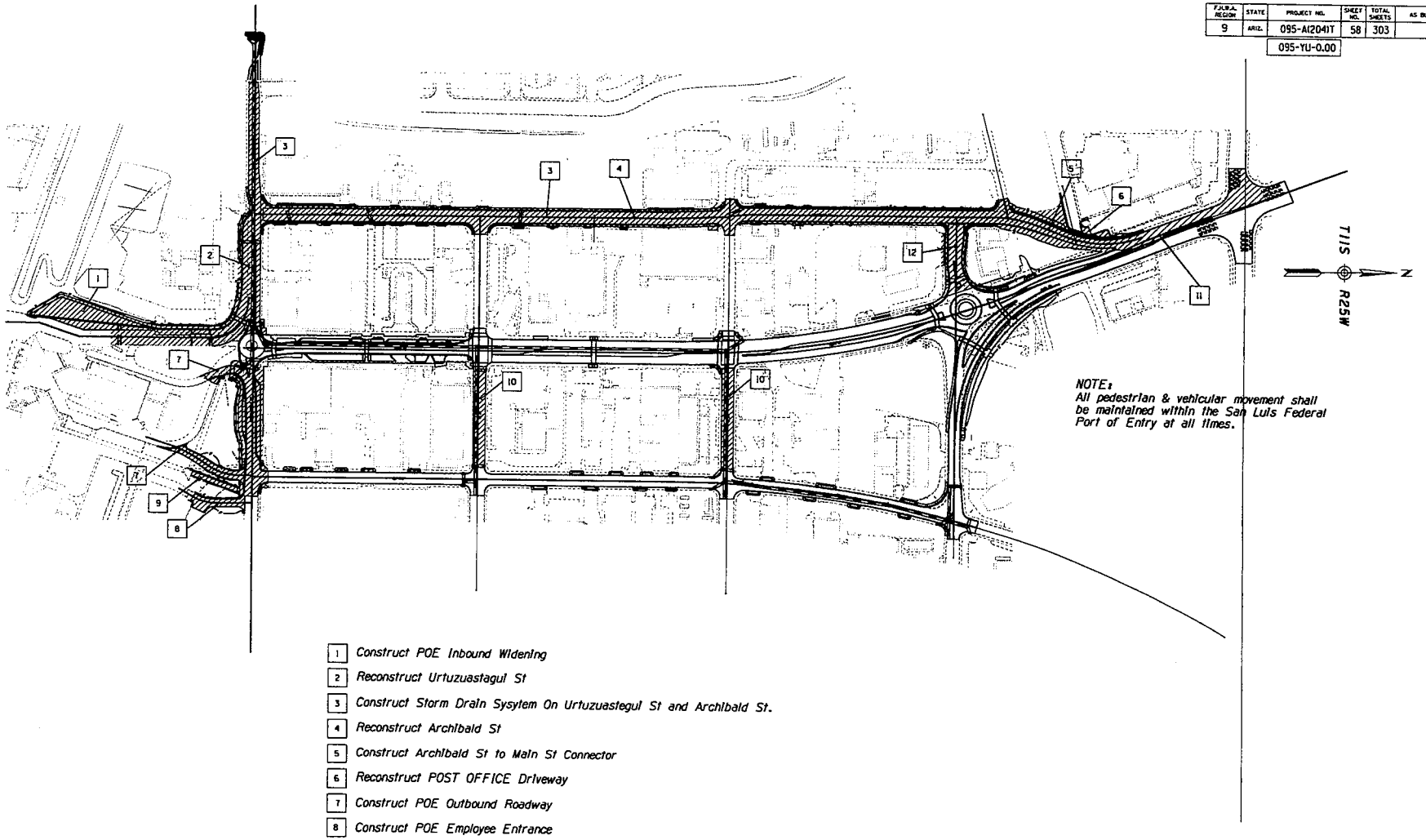
HALF_FS, TBL

FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	095-A(204)T	58	303	
		095-YU-0.00			



1. Construct POE Inbound Widening
2. Reconstruct Urtuzuastagul St
3. Construct Storm Drain Sysytem On Urtuzuastegul St and Archibald St.
4. Reconstruct Archibald St
5. Construct Archibald St to Main St Connector
6. Reconstruct POST OFFICE Driveway
7. Construct POE Outbound Roadway
8. Construct POE Employee Entrance
9. Construct POE Sidewalk
10. Construct B St and Cst Storm Drain
11. Construct Median Curb
12. Reconstruct D St

	NAME	DATE
DESIGN	J. SCHLEICH	01/14
DRAWN	JS/AG/DS	01/14
CHECKED	D. AKERS	01/14

HUITT - ZOLLARS

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
ROADWAY DESIGN SERVICES

CONSTRUCTION PHASING SHEET
PHASE I

ROUTE	LOCATION
US 95	INTERNATIONAL BORDER TO JUAN SANCHEZ BLVD

TRACS NO. H8003 01C | 095-A(204)T | SHEET 1 OF 4 ___ OF ___

PRELIMINARY
STAGE V
Review
NOT FOR CONSTRUCTION OR RECORDING

EXHIBIT A

HALFS, TBL

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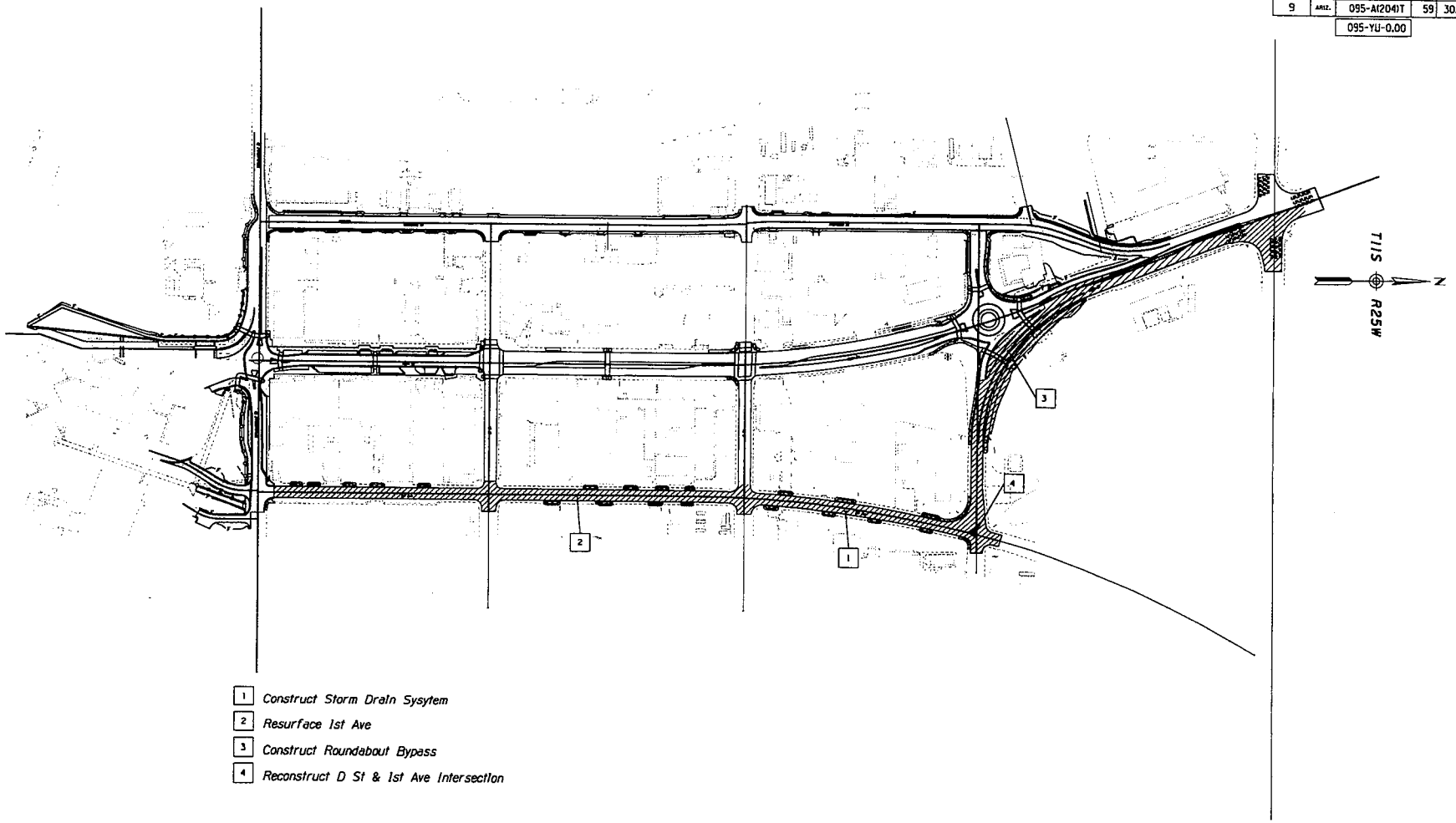
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	095-A(204)T	59	303	
		095-YU-0.00			

EXHIBIT A



1. Construct Storm Drain Sysytem
2. Resurface 1st Ave
3. Construct Roundabout Bypass
4. Reconstruct D St & 1st Ave Intersection

NOTE:
All pedestrian & vehicular movement shall be maintained within the San Luis Federal Port of Entry at all times.

	NAME	DATE
DESIGN	J. SCHLEICH	01/14
DRAWN	JS/AG/DS	01/14
CHECKED	D. AKERS	01/14

HUITT - ZOLLARS

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
ROADWAY DESIGN SERVICES

CONTRUSTION PHASING SHEET
PHASE II

PRELIMINARY
STAGE V
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	SHEET 2 OF 4
US 95	INTERNATIONAL BORDER TO JUAN SANCHEZ BLVD	
TRACS NO. H8003 01C	095-A(204)T	___ OF ___

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HALFS.TBL

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
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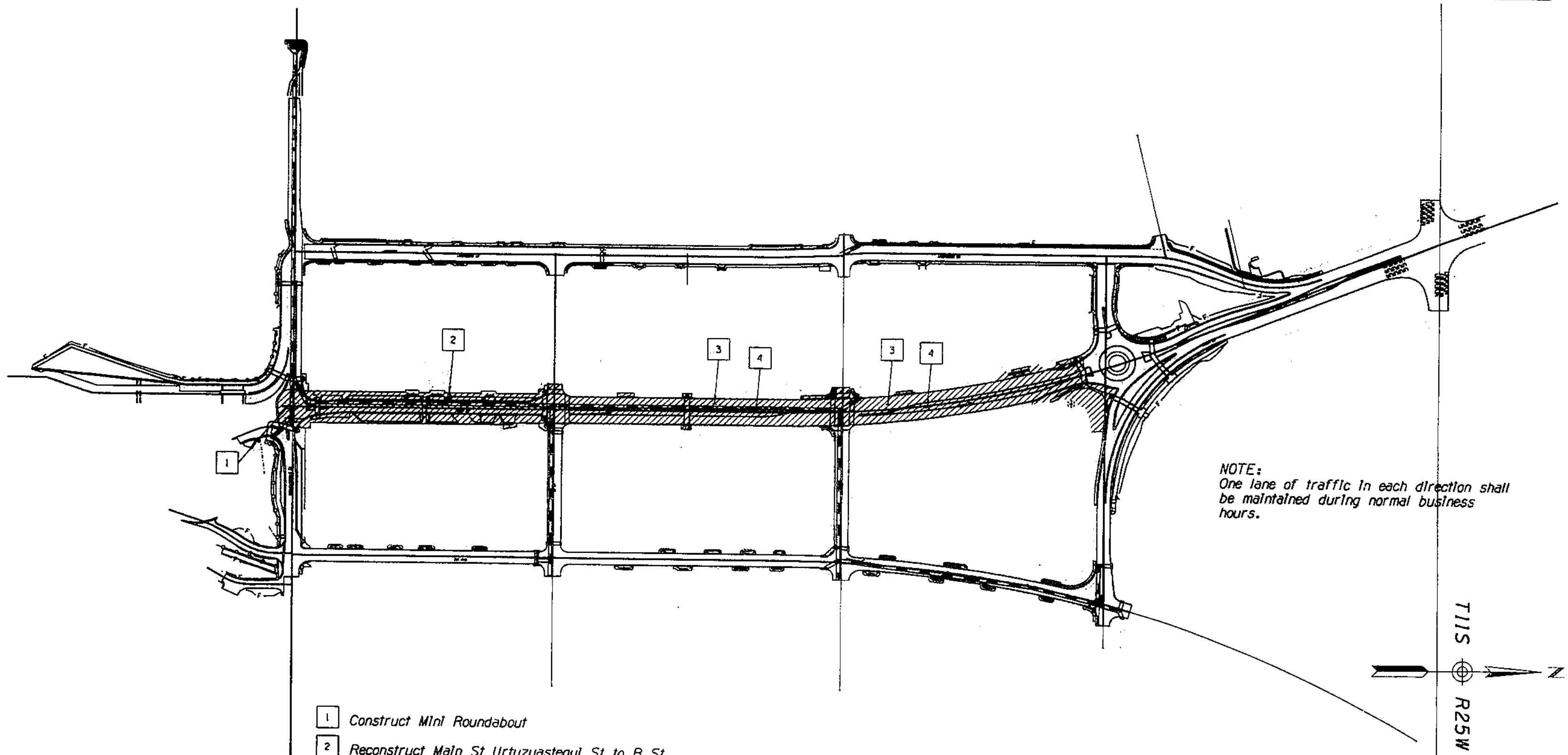
095-YU-0.00



NOTE:
One lane of traffic in each direction shall be maintained during normal business hours.

1 Construct Mini Roundabout
2 Reconstruct Main St Urtuzuastegui St to B St
3 Mill and Replace AC
4 Construct Raised Median

	NAME	DATE
DESIGN	J. SCHLEICH	01/14
DRAWN	JS/AG/DS	01/14
CHECKED	D. AKERS	01/14

HUITT - ZOLLARS

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
ROADWAY DESIGN SERVICES

CONSTRUCTION PHASING SHEET
PHASE III

PRELIMINARY
STAGE V
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE: US 95 | LOCATION: INTERNATIONAL BORDER TO JUAN SANCHEZ BLVD | SHEET 3 OF 4

TRACS NO. H8003 01C | 095-A(204)T | ___ OF ___

HALFS.TBL

SURVEY NO. | FINISHED PLANS- | REVISIONS- | LOCATION- | DATE- | SURVEY NO. | FINISHED PLANS- | REVISIONS- | LOCATION- | DATE-

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EXHIBIT A

EXHIBIT A

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
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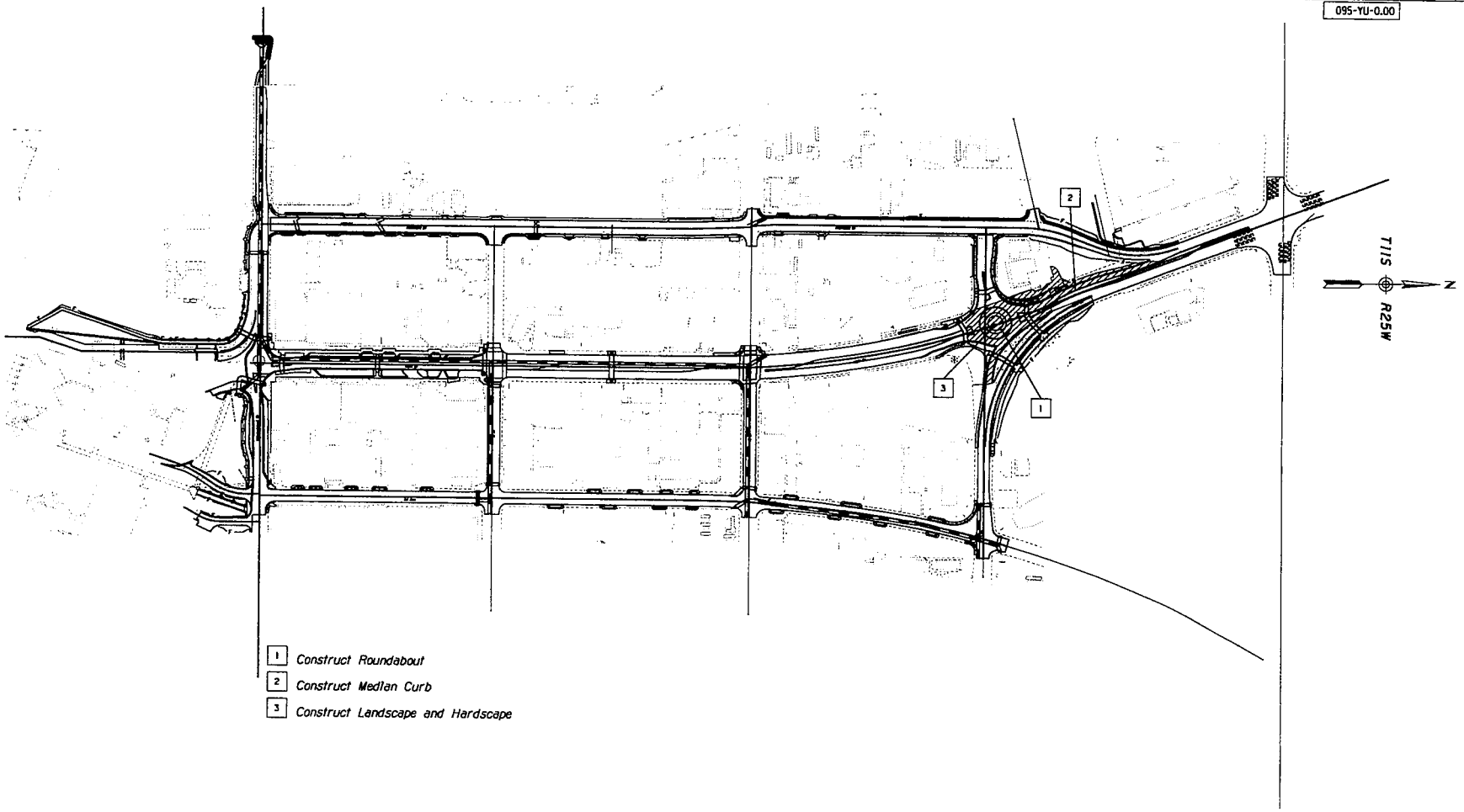
		095-YU-0.00			



1 Construct Roundabout
2 Construct Median Curb
3 Construct Landscape and Hardscape

	NAME	DATE
DESIGN	J. SCHLEICH	01/14
DRAWN	JS/AG/DS	01/14
CHECKED	D. AKERS	01/14

HUITT - ZOLLARS

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
ROADWAY DESIGN SERVICES

CONSTRUCTION PHASING SHEET
PHASE IV

PRELIMINARY
STAGE V
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION		
US 95	INTERNATIONAL BORDER TO JUAN SANCHEZ BLVD		SHEET 4 OF 4
TRACS NO. H8003 01C		095-A(204)T	___ OF ___

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HALFS. TBL

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	265	303	
		095 YU 000			

YUMA COUNTY DEPT. OF DEVELOPMENT SERVICES
YUMA COUNTY FLOOD CONTROL DISTRICT

INTERNATIONAL BORDER TO JUAN SANCHEZ BOULEVARD - VOLUME II
SAN LUIS, YUMA COUNTY, ARIZONA

PROJECT NO. 095 YU 000 H8003 01 C
FEDERAL AID NO. STP-095-A(204)T

BOARD OF DIRECTORS

CHAIRMAN	Gregory S. Ferguson
VICE-CHAIRMAN	Russell McCloud
MEMBER	Lenore Loroña Stuart
MEMBER	Marco A. (Tony) Reyes
MEMBER	Russ Clark

PRELIMINARY
Stage V
100% REVIEW
NOT FOR CONSTRUCTION OR RECORDATION

YUMA COUNTY

COUNTY ADMINISTRATOR	Robert L. Pickels, Jr.
FLOOD CONTROL MANAGER	Roger A. Patterson, P.E.
FLOOD CONTROL SR. CIVIL ENGINEER	Craig L. Sellers, P.E.

EXHIBIT B

F H W A REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	266	303	
		095 YU 000			

GENERAL NOTES

1 PROJECT GEOMETRIC CONTROL IS DESCRIBED ON THE GEOMETRIC CONTROL SHEETS OF VOLUME I OF THE INTERNATIONAL BORDER TO JUAN SANCHEZ BOULEVARD PLANS

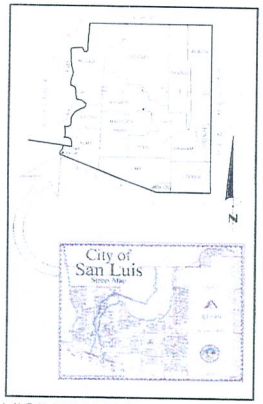
LENGTH OF PROJECT

STA 8+00 TO STA 19+00 = 1100' (URTUZUASTEGUI STREET)
STA 10+00 TO STA 23+00 = 1300' (ARCHIBALD STREET)
STA 53+00 TO STA 58+00 = 500' (B STREET)
STA 32+00 TO STA 38+00 = 600' (1ST AVENUE)
STA 93+00 TO STA 98+00 = 500' (C STREET)
STA 109+00 TO STA 111+00 = 200' (D STREET)
TOTAL= 4200'

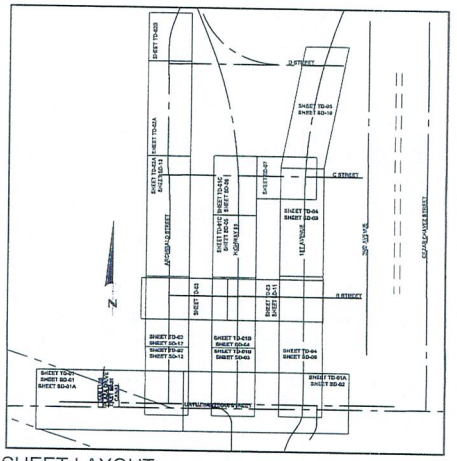
LEGEND

	CENTERLINE
	RIGHT-OF-WAY LINE
	EXISTING WATER LINE
	EXISTING SEWER LINE
	EXISTING STORM DRAIN LINE
	EXISTING OVERHEAD TELEPHONE LINE
	EXISTING UNDERGROUND TELEPHONE LINE
	EXISTING GAS LINE
	EXISTING OVERHEAD ELECTRIC LINE
	EXISTING UNDERGROUND ELECTRIC LINE
	EXISTING POWER POLE
	EXISTING WATER VALVE
	EXISTING MANHOLE
	EXISTING CURB AND GUTTER
	EXISTING EDGE OF PAVEMENT
	EXISTING TRAFFIC SIGN
	EXISTING WATER VALVE
	EXISTING LIGHT POLE
	EXISTING TREE
	EXISTING PALM TREE
	EXISTING BUSH
	NEW STORM DRAIN
	NEW MANHOLE
SMH	SEWER MANHOLE
SDMH	STORM DRAIN MANHOLE
	TYPE 4, SINGLE CATCH BASIN
	TYPE 4, DOUBLE CATCH BASIN
	TYPE 1, TRIPLE CATCH BASIN

INDEX OF DRAWINGS



VICINITY MAP
NTS



SHEET LAYOUT
NTS

PRELIMINARY
Stage V
100% REVIEW
NOT FOR CONSTRUCTION OR RECORDATION

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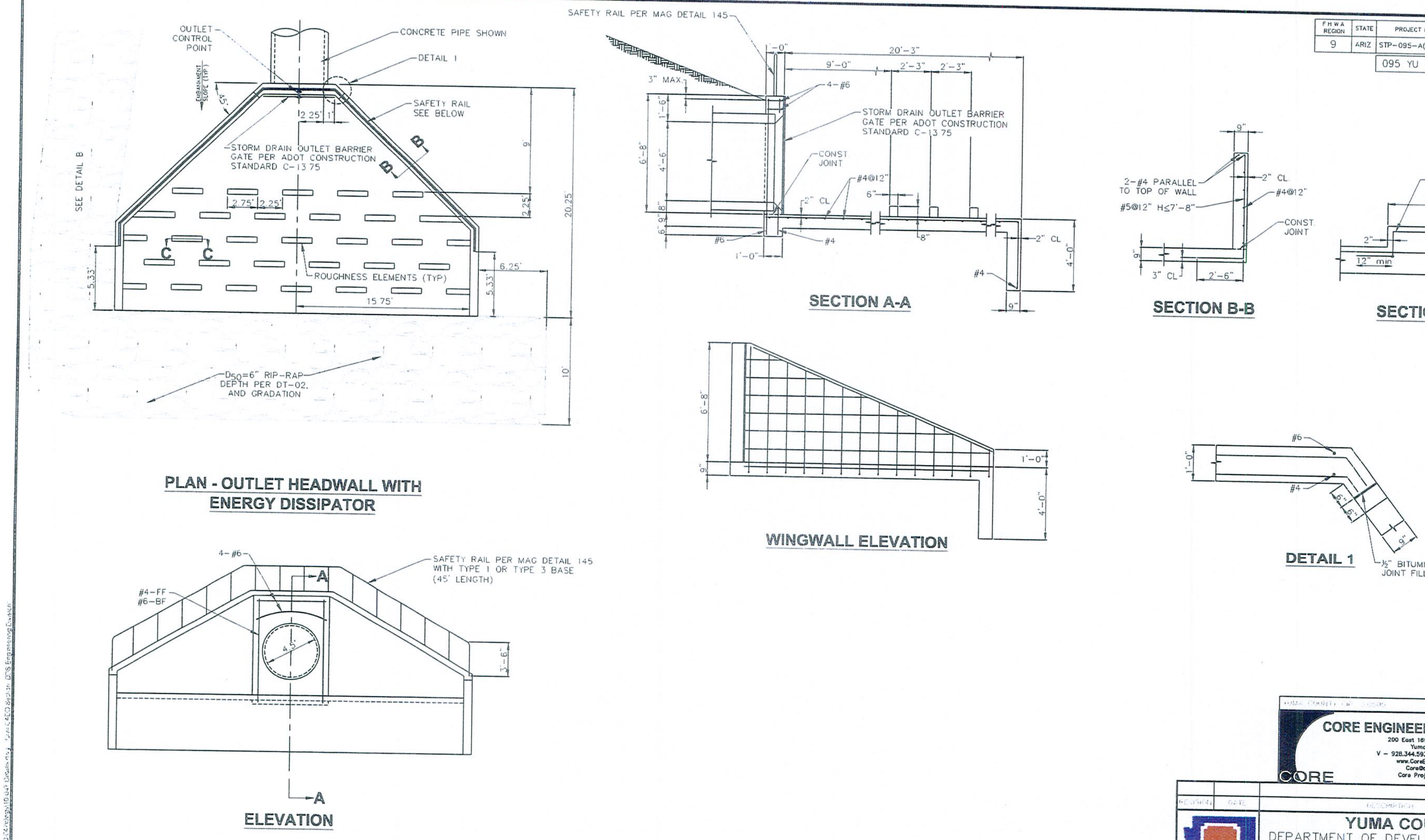
V – 928.344.5931 F – 928.344.5932
www.CoreEngineeringGroup.com
CoreDocs--e--g.com
Core Project No. 10-047

YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA

INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G & S R M

INDEX, LEGEND, AND GENERAL NOTES

EXHIBIT B



FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	267	303	

095 YU 000

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

PRELIMINARY
Stage V
100% REVIEW
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NOTE:
1. FOR GENERAL NOTES SEE ADOT CONSTRUCTION STANDARD SD 6.30 (1 OF 5).
2. ALL CONCRETE SHALL BE CLASS "S", f'c=3000 PSI

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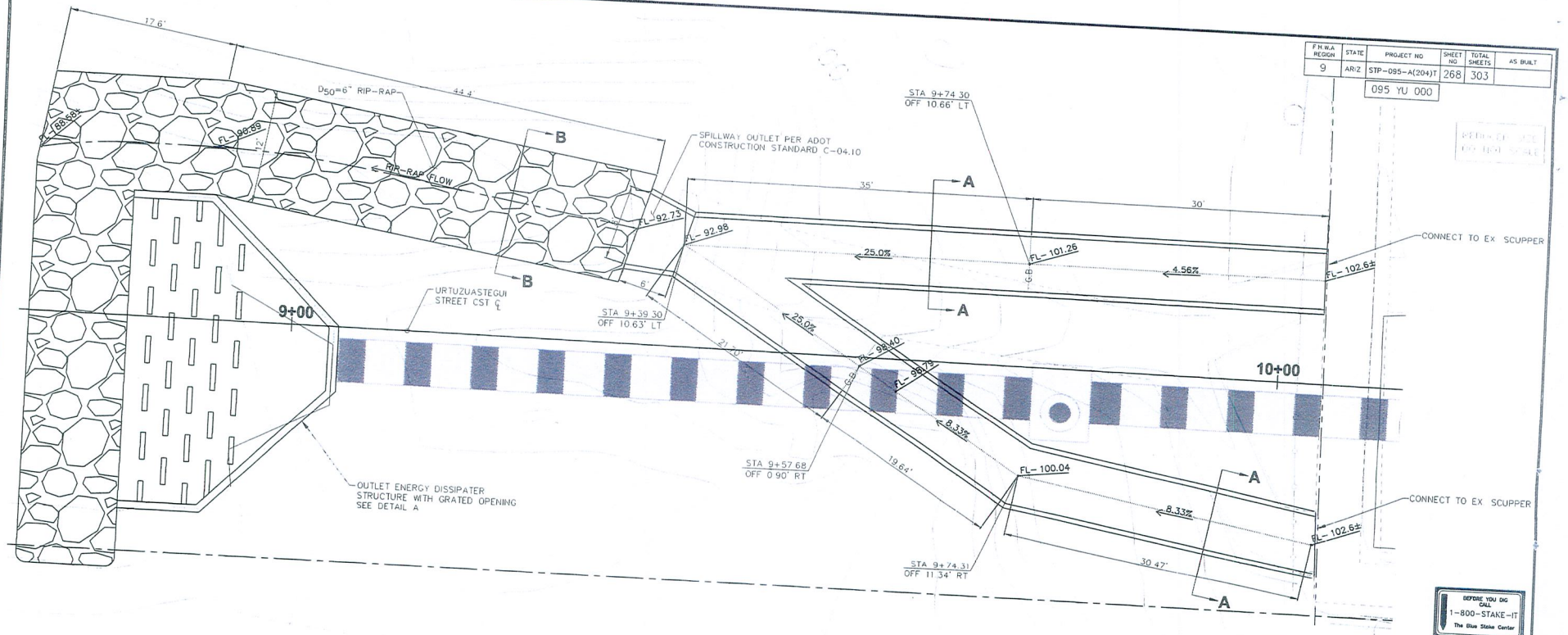
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S, R.25W, G. & S.R.M.

DETAILS
DETAIL A

EXHIBIT B

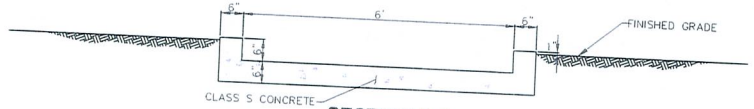


F.H.W.A REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	268	303	
		095 YU 000			

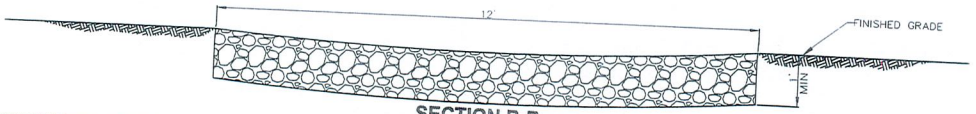
NOTE:
FOR INFORMATION NOT SHOWN, SEE ADOT CONSTRUCTION STANDARD C-04.10

RIPRAP GRADATION TABLE

D_{50}=6"	
% PASSING	SIEVE SIZE
100-90	12 In
85-70	9 In
50-30	6 In
15-5	2 In
0-5	2 In



SECTION A-A



SECTION B-B

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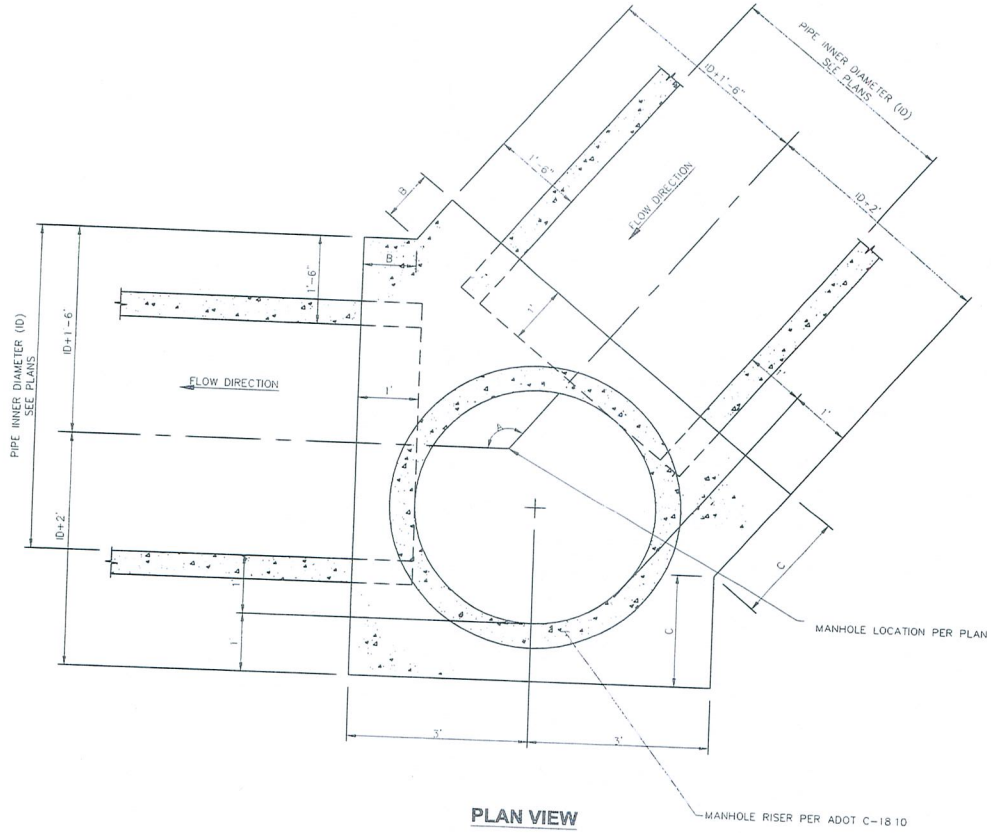
SECTION 12, T.11S., R.25W., G. & S.R.M.

DETAILS
DETAIL B
OUTLET CONDITIONS

EXHIBIT B

F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	269	303	
		095 YU 000			



PLAN VIEW

MH #	ANGLE A	B	C
110	117°54'1"	0'-3½"	2'-3 1/16"
111	152°19'47"	1'-10¾"	1'-2¼"

NOTE:
FOR MANHOLE INFORMATION NOT SHOWN, SEE ADOT CONSTRUCTION STANDARD C-18.10

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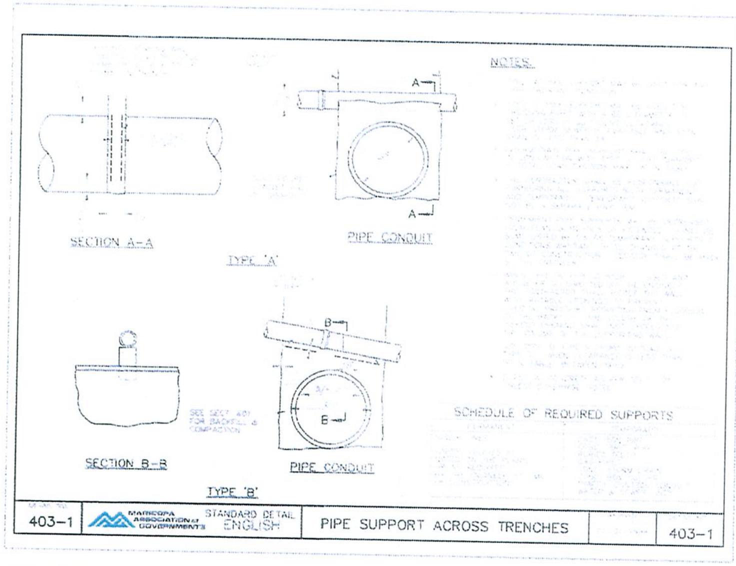
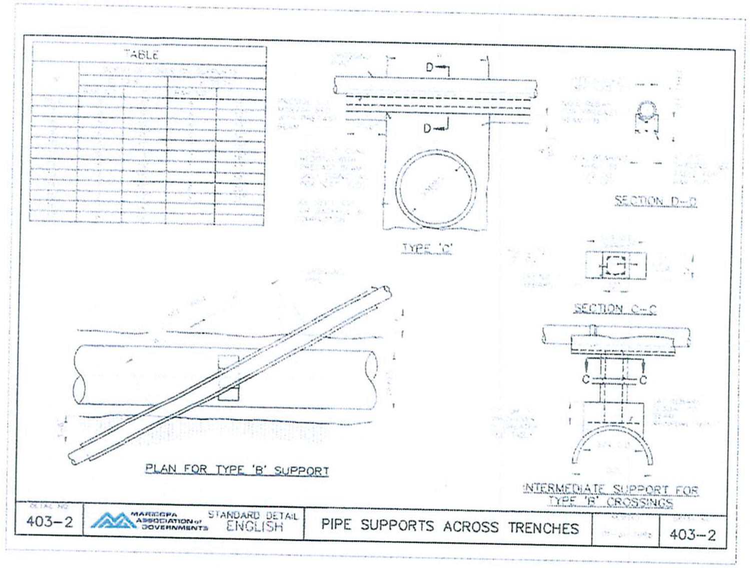
DETAILS
DETAIL C
MANHOLE BASE PLAN DETAIL

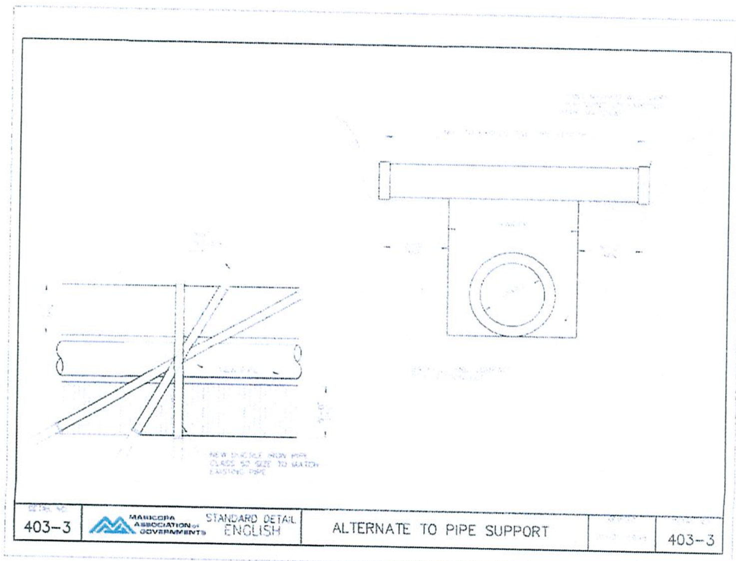
EXHIBIT B

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	270	303	

095 YU 000







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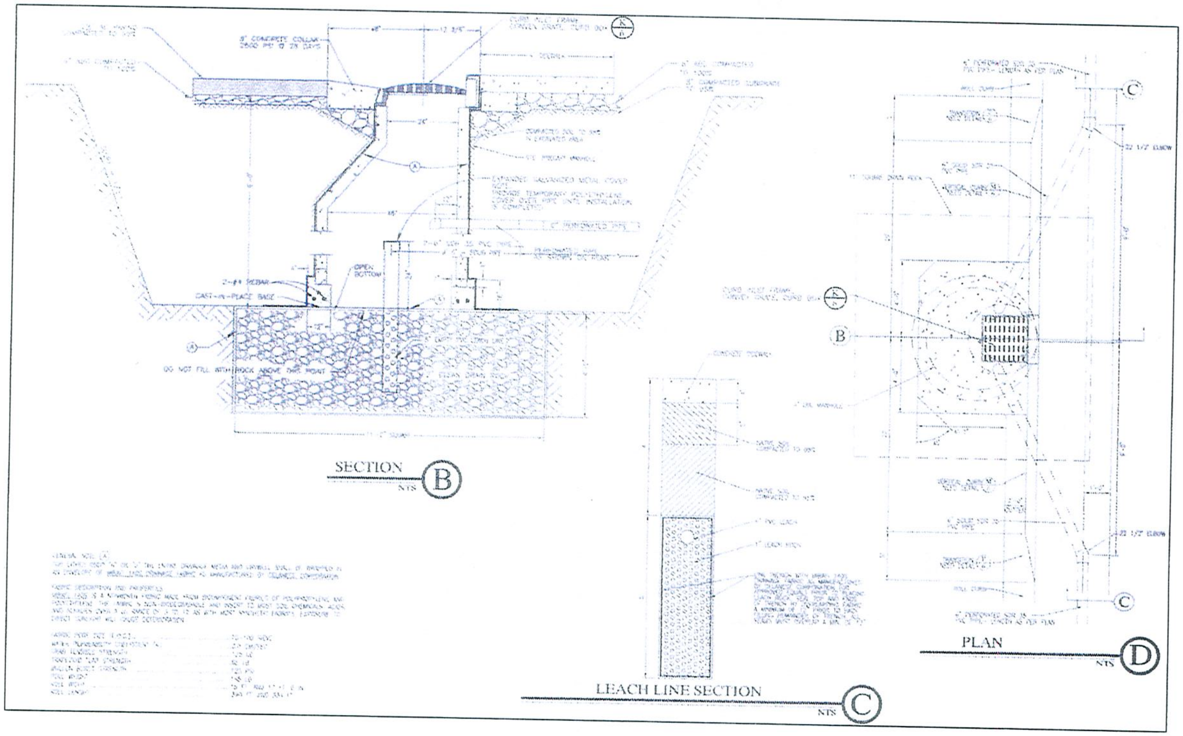
SECTION 12, T.11S., R.25W., G. & S.R.M.

DETAILS
DETAIL D
PIPE SUPPORT ACROSS TRENCHES ASBUILT

EXHIBIT B

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	271	303	

095 YU 000



NOTE:

1. THIS DETAIL IS FOR REFERENCE ONLY FOR EXISTING ENGINEERED BOTTOM DISPOSAL PITS.
2. THIS DETAIL WAS CREATED BY EDAIS ENGINEERING, INC. AS PART OF THE CITY OF SAN LUIS ROAD IMPROVEMENTS, PHASE 1, DATED 12/5/06 AND PHASES 2 THRU 4, DATED 4/16/08.

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PRELIMINARY
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INTERNATIONAL BORDER TO
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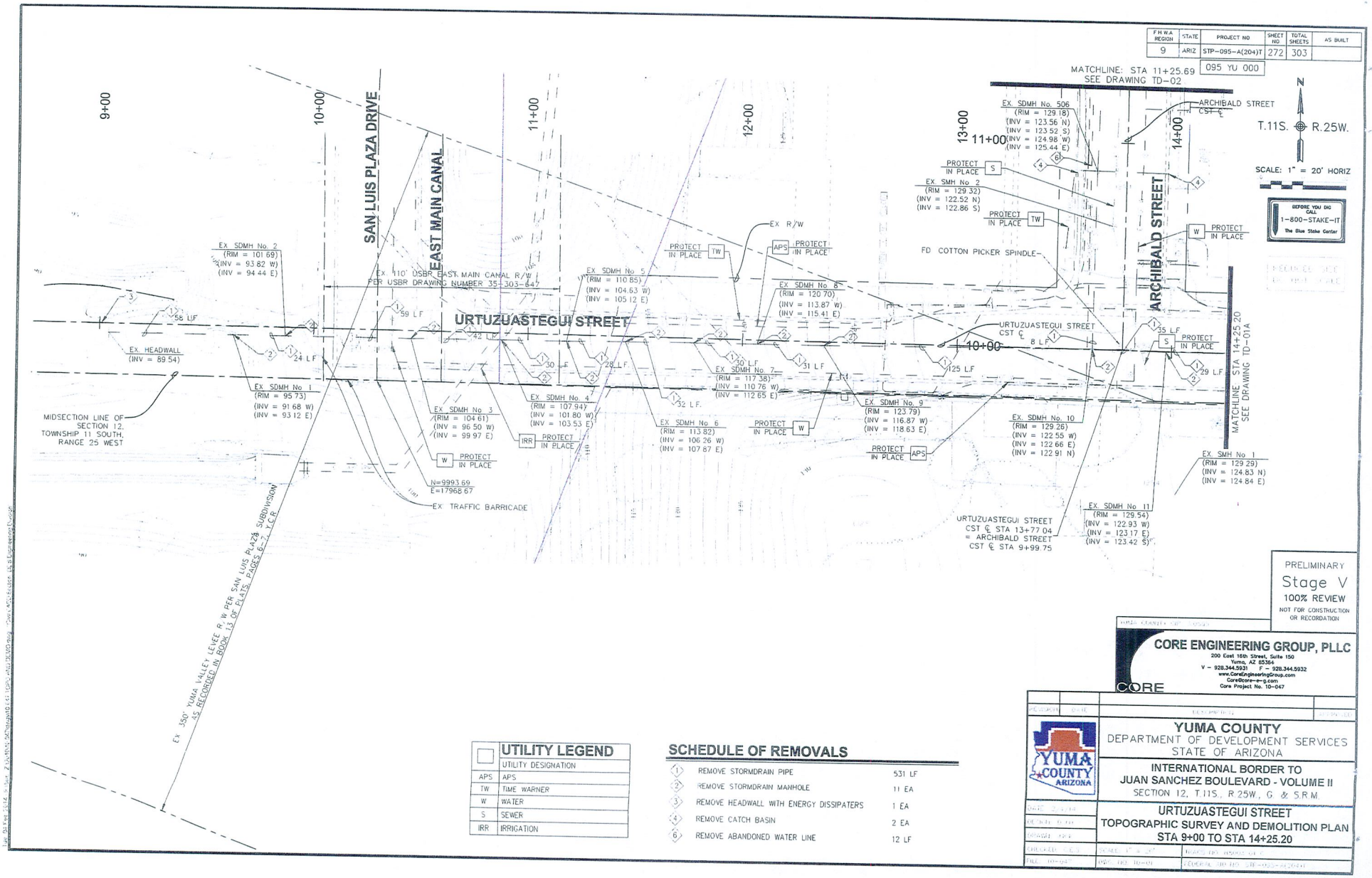
SECTION 12, T.11S., R.25W., G. & S.R.M.

DETAILS
DETAIL E
ENGINEERED BOTTOM DISPOSAL PIT AS-BUILT

EXHIBIT B



FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	272	303	

095 YU 000

UTILITY LEGEND	
	UTILITY DESIGNATION
APS	APS
TW	TIME WARNER
W	WATER
S	SEWER
IRR	IRRIGATION

SCHEDULE OF REMOVALS

1	REMOVE STORMDRAIN PIPE	531 LF
2	REMOVE STORMDRAIN MANHOLE	11 EA
3	REMOVE HEADWALL WITH ENERGY DISSIPATERS	1 EA
4	REMOVE CATCH BASIN	2 EA
6	REMOVE ABANDONED WATER LINE	12 LF

PRELIMINARY
Stage V
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SECTION 12, T.11S., R.25W., G. & S.R.M.

URTUZUASTEGUI STREET
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 9+00 TO STA 14+25.20

EXHIBIT B

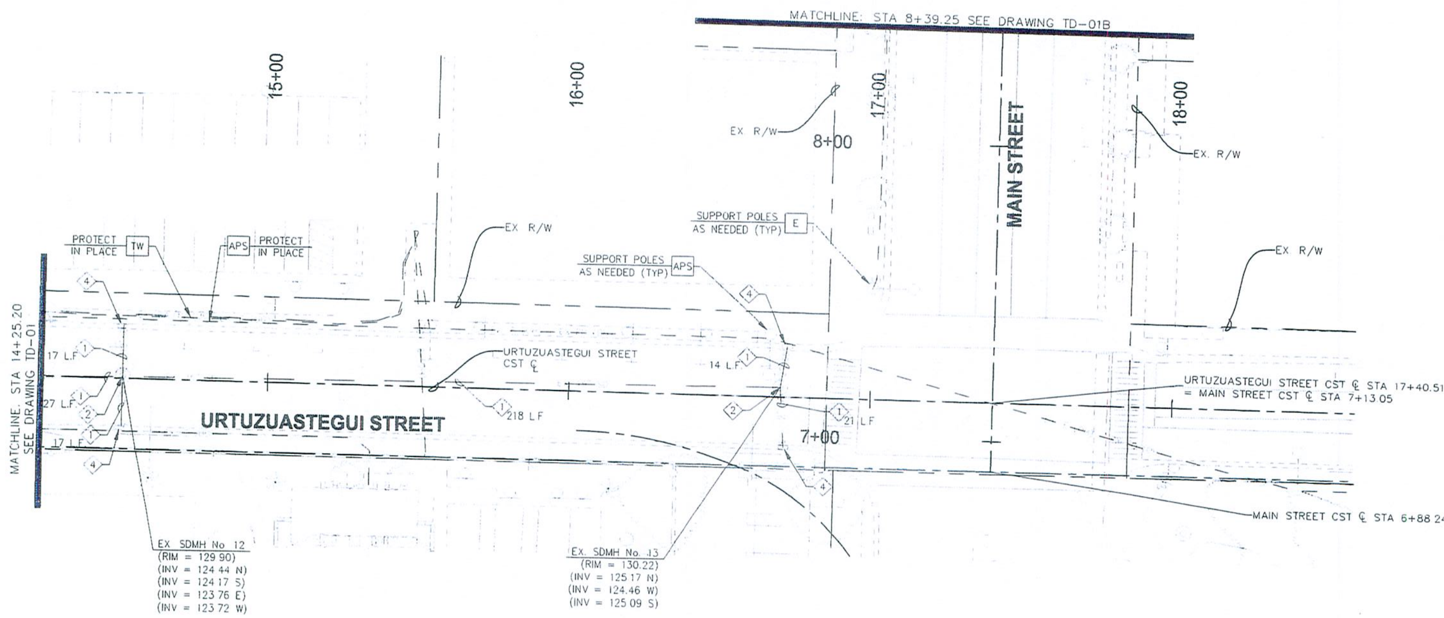
F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	273	303	

095 YU 000

T.11S. R.25W.

SCALE: 1" = 20' HORIZ

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center



UTILITY LEGEND

	UTILITY DESIGNATION
APS	APS
TW	TIME WARNER
E	ADOT ELECTRICAL

SCHEDULE OF REMOVALS

1	REMOVE STORMDRAIN PIPE	314 LF
2	REMOVE STORMDRAIN MANHOLE	2 EA
4	REMOVE CATCH BASIN	4 EA

PRELIMINARY
Stage V
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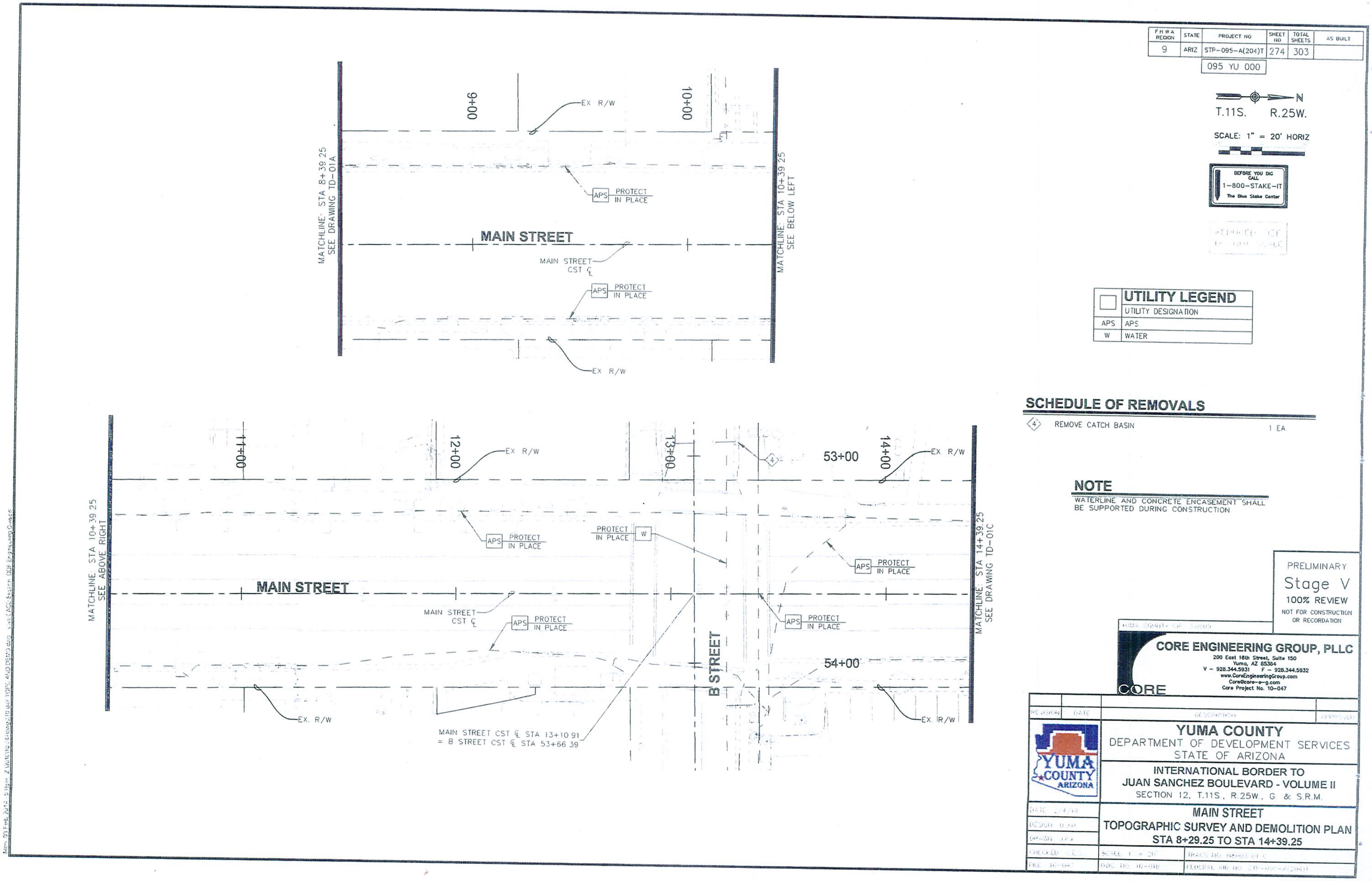
STATE OF ARIZONA

INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.

URTUZUASTEGUI STREET
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 14+25.20 TO STA 19+00

EXHIBIT B


F H W A REGION | STATE | PROJECT NO | SHEET NO | TOTAL SHEETS | AS BUILT
9 | ARIZ | STP-095-A(204)T | 274 | 303
095 YU 000
N
T.11S. R.25W.
SCALE: 1" = 20' HORIZ
BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center
UTILITY LEGEND
UTILITY DESIGNATION
APS APS
W WATER
SCHEDULE OF REMOVALS
4 REMOVE CATCH BASIN 1 EA
NOTE
WATERLINE AND CONCRETE ENCASEMENT SHALL BE SUPPORTED DURING CONSTRUCTION
PRELIMINARY
Stage V
100% REVIEW
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YUMA COUNTY ARIZONA
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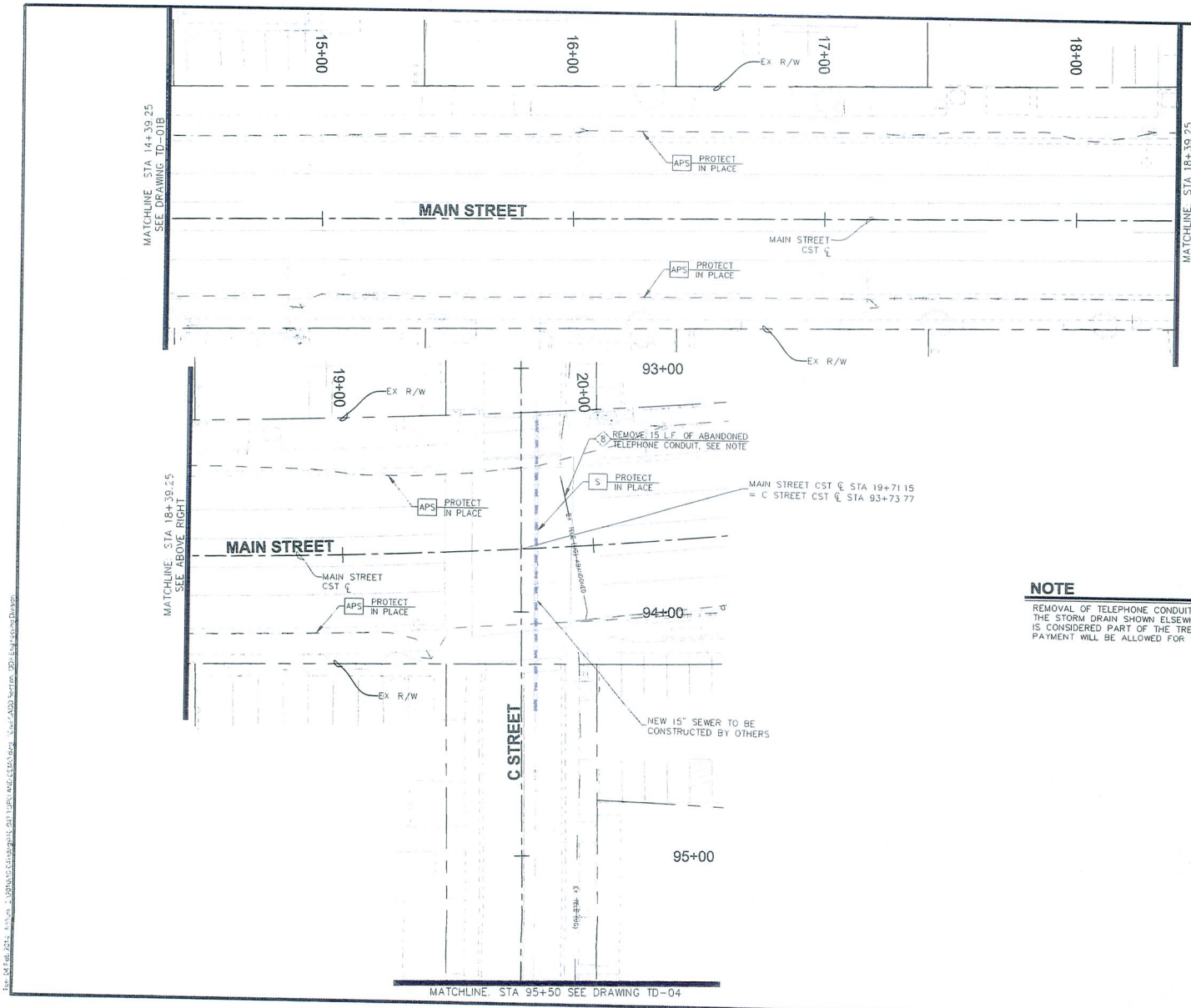
STATE OF ARIZONA
INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.
MAIN STREET
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 8+29.25 TO STA 14+39.25
MATCHLINE: STA 8+39.25
SEE DRAWING TD-01A
MATCHLINE: STA 10+39.25
SEE BELOW LEFT
9+00
10+00
EX R/W
APS PROTECT IN PLACE
MAIN STREET
MAIN STREET CST ℄
MATCHLINE: STA 10+39.25
SEE ABOVE RIGHT
MATCHLINE: STA 14+39.25
SEE DRAWING TD-01C
11+00
12+00
13+00
14+00
53+00
54+00
W PROTECT IN PLACE
B STREET
MAIN STREET CST ℄ STA 13+10.91
= B STREET CST ℄ STA 53+66.39

EXHIBIT B



FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	275	303	
		095 YU 000			

N

T.11S. R.25W.

SCALE: 1" = 20' HORIZ

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

REDUCED SIZE DO NOT SCALE

UTILITY LEGEND	
	UTILITY DESIGNATION
APS	APS
S	SEWER
CL	CENTERLINE

NOTE

REMOVAL OF TELEPHONE CONDUIT SHOWN IS FOR CONSTRUCTION OF THE STORM DRAIN SHOWN ELSEWHERE ON VOLUME II. THIS REMOVAL IS CONSIDERED PART OF THE TRENCH EXCAVATION AND NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR SAID WORK.

PRELIMINARY
Stage V
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Core@core-e-g.com
Core Project No. 10-047

REVISION	DATE	DESCRIPTION	APPROVED

YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA

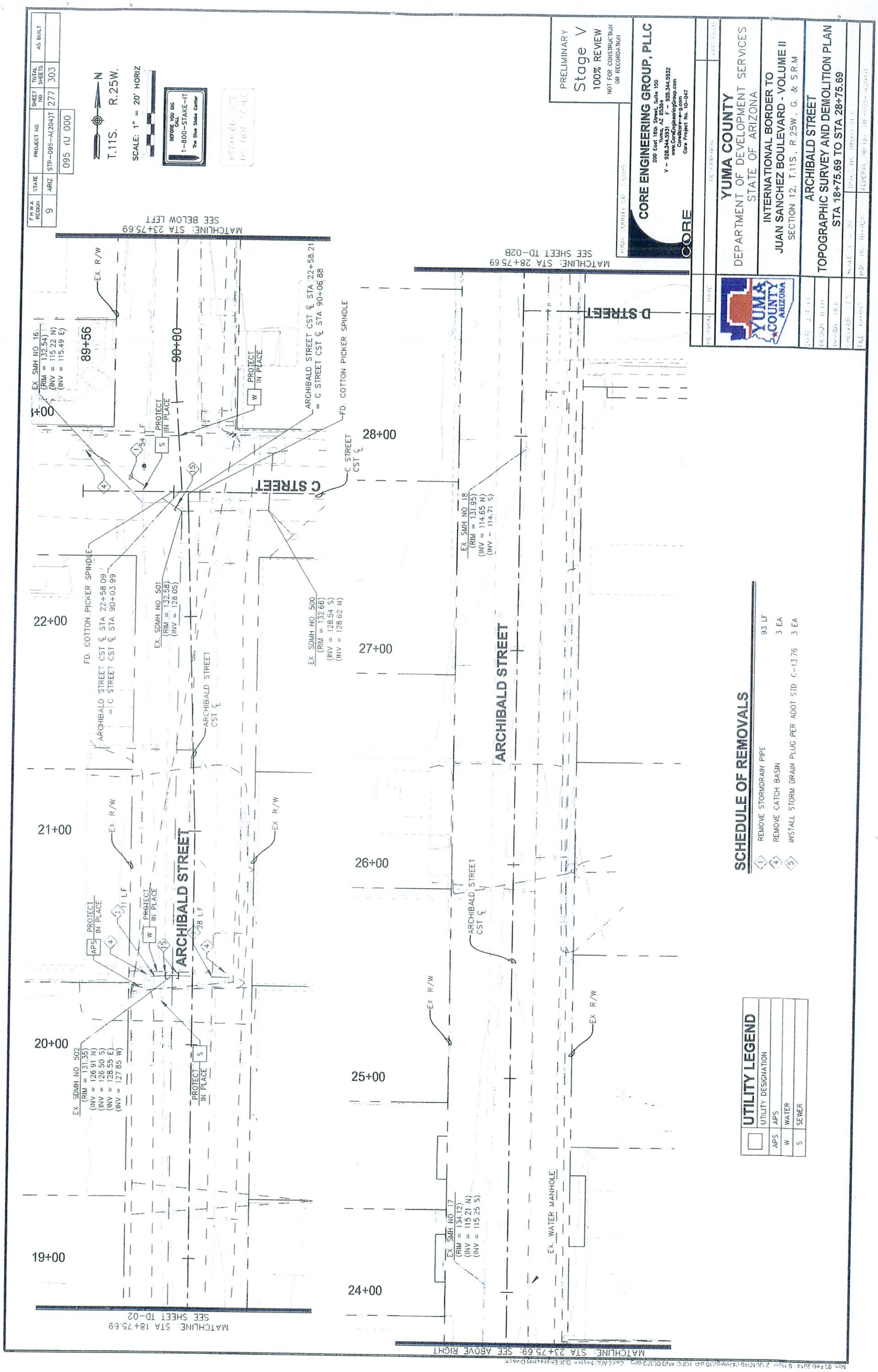
INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.

MAIN STREET
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 14+39.25 TO STA 20+50

DESIGNED	SCALE: 1" = 20'
DRAWN	DWG. NO. TD-01C
CHECKED	
DATE	

SHEET NO. 275 OF 303 SHEETS

EXHIBIT B


PRELIMINARY
Stage V
100% REVIEW
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CORE ENGINEERING GROUP, PLLC
YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA
INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.
ARCHIBALD STREET
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 18+75.69 TO STA 28+75.69
F.H.W.A. REGION 9
STATE ARIZ
PROJECT NO STP-095-A(204)T
SHEET NO 277
TOTAL SHEETS 303
095 YU 000
T.11S. R.25W.
SCALE: 1" = 20' HORIZ
BEFORE YOU DIG CALL 1-800-STAKE-IT
MATCHLINE: STA 23+75.69 SEE BELOW LEFT
MATCHLINE: STA 28+75.69 SEE SHEET TD-02B
MATCHLINE: STA 18+75.69 SEE SHEET TD-02
MATCHLINE: STA 23+75.69 SEE ABOVE RIGHT
ARCHIBALD STREET
C STREET
D STREET
SCHEDULE OF REMOVALS
1 REMOVE STORMDRAIN PIPE 93 LF
4 REMOVE CATCH BASIN 3 EA
15 INSTALL STORM DRAIN PLUG PER ADOT STD C-13.76 3 EA
UTILITY LEGEND
UTILITY DESIGNATION
APS APS
W WATER
S SEWER
19+00
20+00
21+00
22+00
24+00
25+00
26+00
27+00
28+00
89+56
90+00
EX. R/W
PROTECT IN PLACE
EX. WATER MANHOLE
EX. SMH NO 16 (RIM = 132.54) (INV = 115.22 N) (INV = 115.49 E)
EX. SMH NO 17 (RIM = 134.12) (INV = 115.21 N) (INV = 115.25 S)
EX. SMH NO 18 (RIM = 131.95) (INV = 114.65 N) (INV = 114.71 S)
EX. SDMH NO 500 (RIM = 132.66) (INV = 128.54 S) (INV = 128.62 N)
EX. SDMH NO 501 (RIM = 132.58) (INV = 128.05)
EX. SDMH NO 502 (RIM = 131.35) (INV = 126.91 N) (INV = 126.50 S) (INV = 128.55 E) (INV = 127.85 W)
FD. COTTON PICKER SPINDLE
ARCHIBALD STREET CST ℄ STA 22+58.09 = C STREET CST ℄ STA 90+03.99
ARCHIBALD STREET CST ℄ STA 22+58.21 = C STREET CST ℄ STA 90+06.88
ARCHIBALD STREET CST ℄
C STREET CST ℄

EXHIBIT B

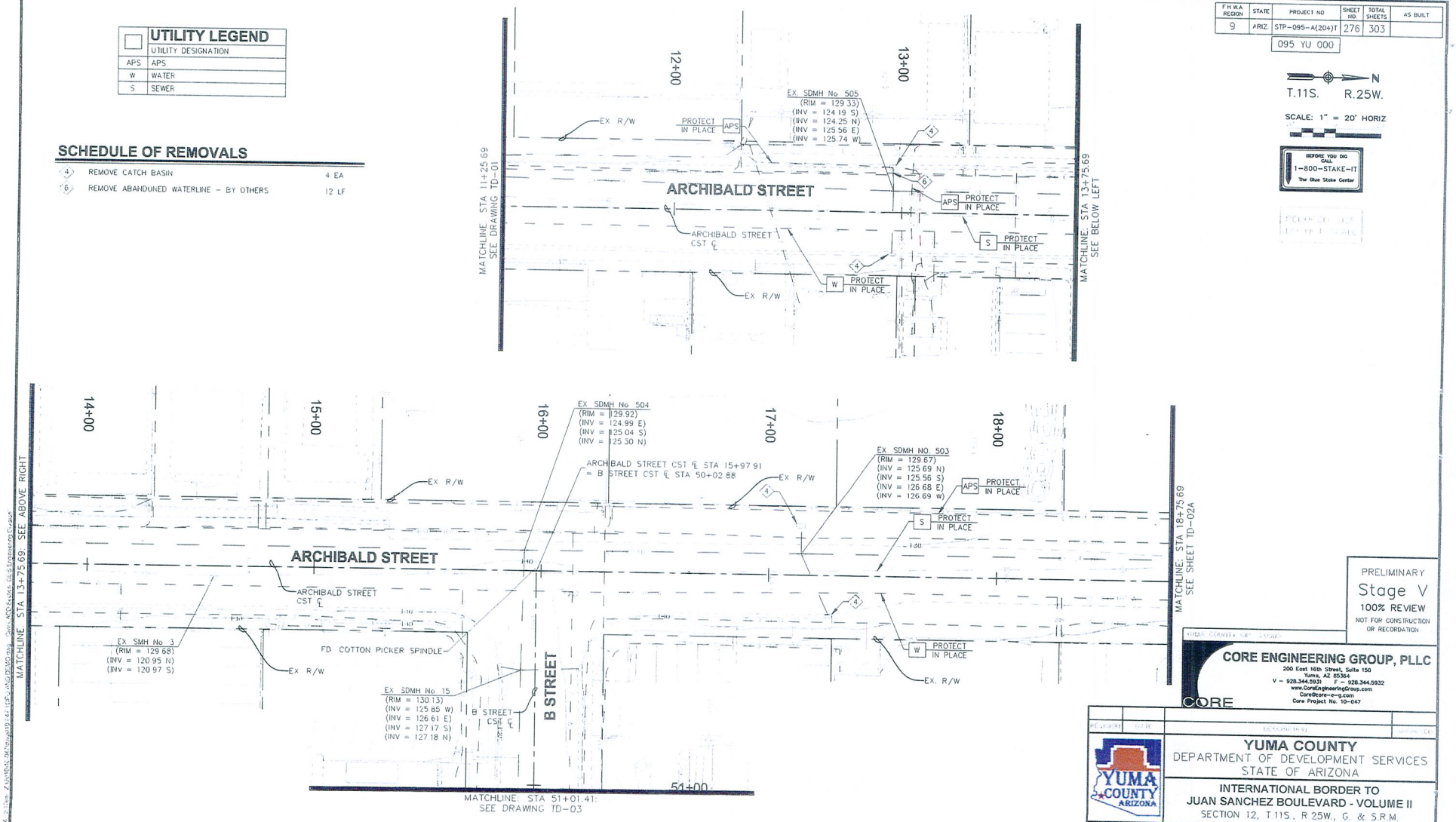
F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	STP-095-A(204)T	276	303	

095 YU 000

UTILITY LEGEND	
	UTILITY DESIGNATION
APS	APS
W	WATER
S	SEWER

SCHEDULE OF REMOVALS

4	REMOVE CATCH BASIN	4 EA
6	REMOVE ABANDONED WATERLINE - BY OTHERS	12 LF



T.11S. R.25W.

SCALE: 1" = 20' HORIZ

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PRELIMINARY
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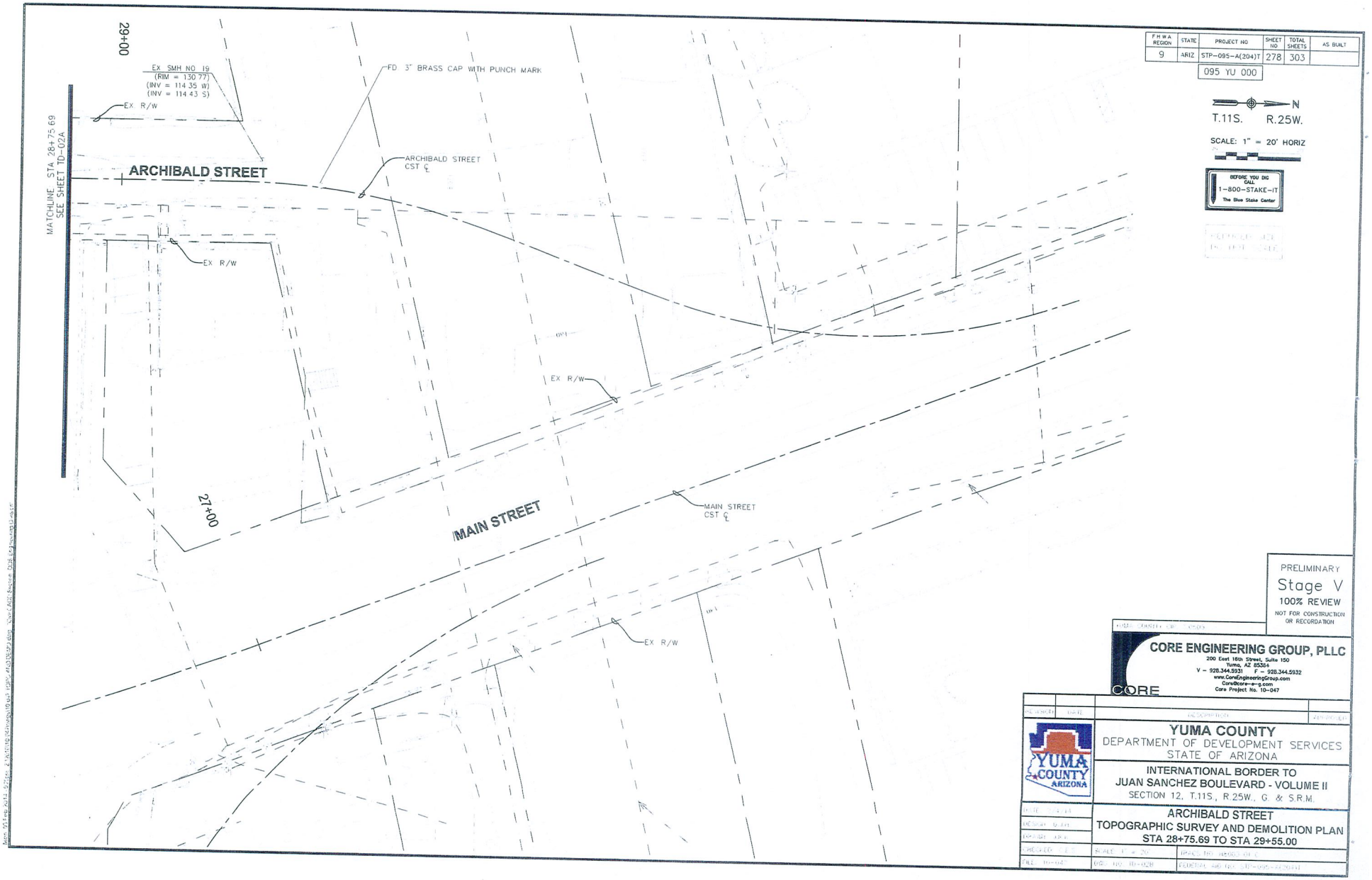
ARCHIBALD STREET
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 11+25.69 TO STA 18+75.69

EXHIBIT B



FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	278	303	
		095 YU 000			

N

T.11S. R.25W.

SCALE: 1" = 20' HORIZ

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ARCHIBALD STREET
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 28+75.69 TO STA 29+55.00

EXHIBIT B

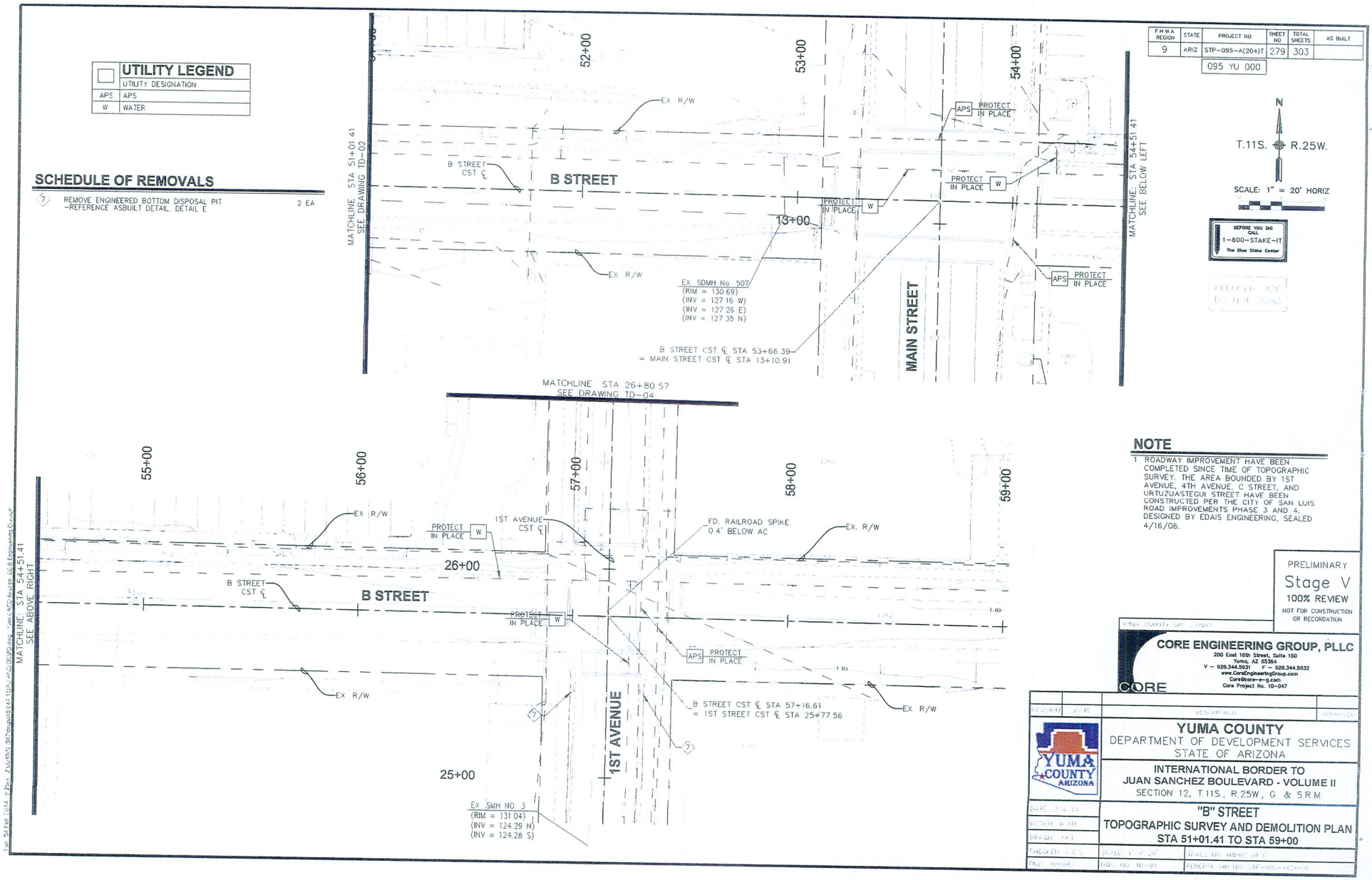
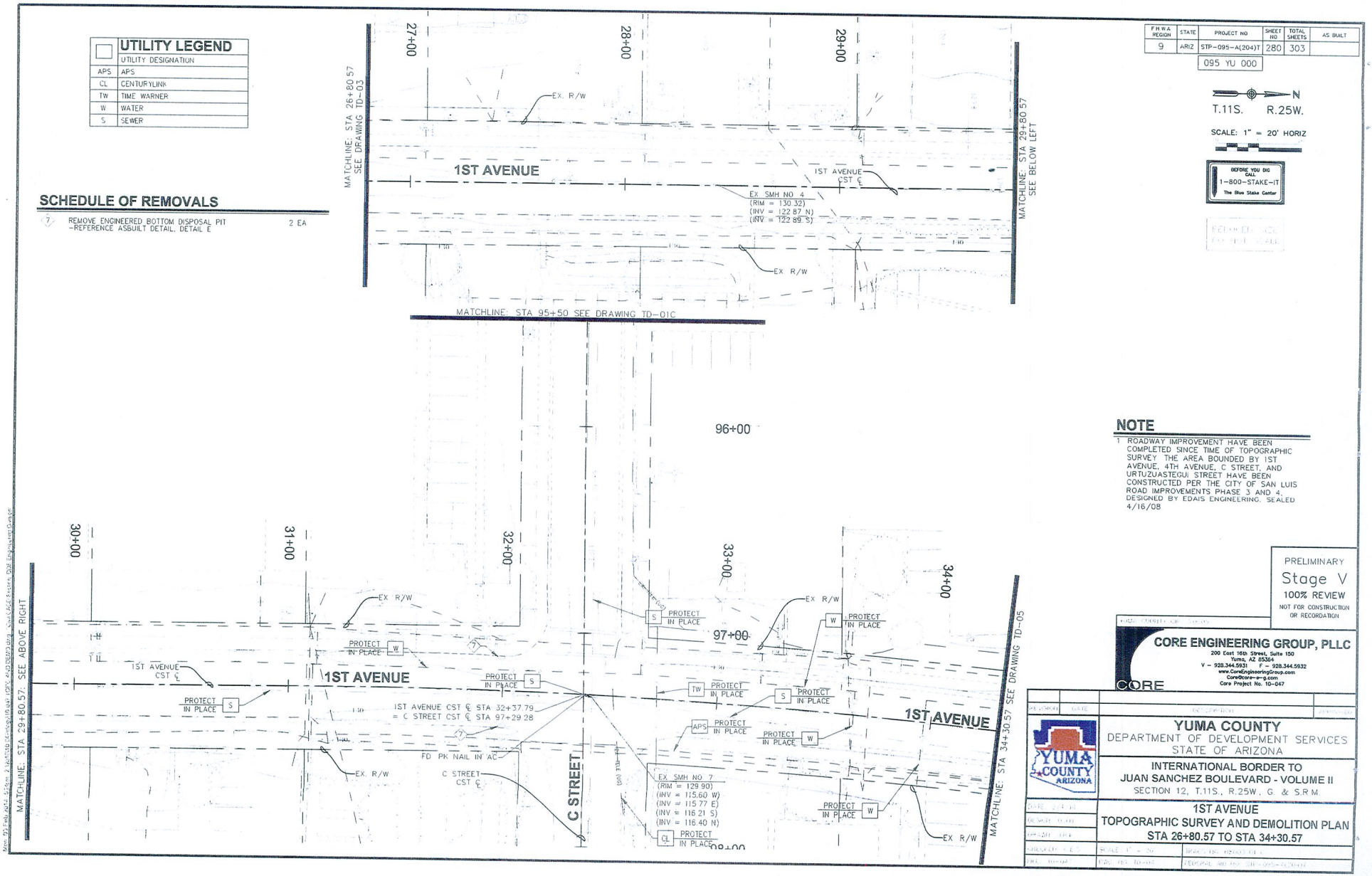

UTILITY LEGEND
UTILITY DESIGNATION
APS APS
W WATER
SCHEDULE OF REMOVALS
5 REMOVE ENGINEERED BOTTOM DISPOSAL PIT -REFERENCE ASBUILT DETAIL, DETAIL E 2 EA
MATCHLINE STA 51+01.41 SEE DRAWING TD-02
52+00
53+00
54+00
EX R/W
B STREET CST ℄
B STREET
APS PROTECT IN PLACE
PROTECT IN PLACE W
13+00
EX SDMH No 507
(RIM = 130.69)
(INV = 127.16 W)
(INV = 127.26 E)
(INV = 127.35 N)
B STREET CST ℄ STA 53+66.39
= MAIN STREET CST ℄ STA 13+10.91
MAIN STREET
MATCHLINE STA 54+51.41 SEE BELOW LEFT
MATCHLINE STA 26+80.57 SEE DRAWING TD-04
55+00
56+00
57+00
58+00
59+00
1ST AVENUE CST ℄
FD. RAILROAD SPIKE 0.4' BELOW AC
26+00
B STREET
1ST AVENUE
B STREET CST ℄ STA 57+16.61
= 1ST STREET CST ℄ STA 25+77.56
25+00
EX SMH NO. 3
(RIM = 131.04)
(INV = 124.29 N)
(INV = 124.28 S)
MATCHLINE STA 54+51.41 SEE ABOVE RIGHT
FHWA REGION 9
STATE ARIZ
PROJECT NO STP-095-A(204)T
SHEET NO 279
TOTAL SHEETS 303
AS BUILT
095 YU 000
N
T.11S. R.25W.
SCALE: 1" = 20' HORIZ
BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center
NOTE
1. ROADWAY IMPROVEMENT HAVE BEEN COMPLETED SINCE TIME OF TOPOGRAPHIC SURVEY. THE AREA BOUNDED BY 1ST AVENUE, 4TH AVENUE, C STREET, AND URTUZUASTEGUI STREET HAVE BEEN CONSTRUCTED PER THE CITY OF SAN LUIS ROAD IMPROVEMENTS PHASE 3 AND 4, DESIGNED BY EDAIS ENGINEERING, SEALED 4/16/08.
PRELIMINARY
Stage V
100% REVIEW
NOT FOR CONSTRUCTION OR RECORDATION
CORE ENGINEERING GROUP, PLLC
200 East 16th Street, Suite 150
Yuma, AZ 85364
V – 928.344.5931 F – 928.344.5932
www.CoreEngineeringGroup.com
Core@core-e-g.com
Core Project No. 10-047
CORE
YUMA COUNTY ARIZONA
YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA
INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G & S.R.M.
"B" STREET
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 51+01.41 TO STA 59+00

EXHIBIT B


UTILITY LEGEND
UTILITY DESIGNATION
APS APS
CL CENTURYLINK
TW TIME WARNER
W WATER
S SEWER
SCHEDULE OF REMOVALS
7 REMOVE ENGINEERED BOTTOM DISPOSAL PIT -REFERENCE ASBUILT DETAIL, DETAIL E 2 EA
MATCHLINE: STA 26+80.57 SEE DRAWING TD-03
27+00
28+00
29+00
1ST AVENUE
1ST AVENUE CST ℄
EX. R/W
EX SMH NO 4
(RIM = 130.32)
(INV = 122.87 N)
(INV = 122.89 S)
MATCHLINE: STA 29+80.57 SEE BELOW LEFT
MATCHLINE: STA 95+50 SEE DRAWING TD-01C
96+00
30+00
31+00
32+00
33+00
34+00
97+00
PROTECT IN PLACE
1ST AVENUE CST ℄ STA 32+37.79
= C STREET CST ℄ STA 97+29.28
FD PK NAIL IN AC
C STREET CST ℄
C STREET
EX SMH NO 7
(RIM = 129.90)
(INV = 115.60 W)
(INV = 115.77 E)
(INV = 116.21 S)
(INV = 116.40 N)
MATCHLINE: STA 34+30.57 SEE DRAWING TD-05
MATCHLINE: STA 29+80.57 SEE ABOVE RIGHT
FHWA REGION 9
STATE ARIZ
PROJECT NO STP-095-A(204)T
SHEET NO 280
TOTAL SHEETS 303
AS BUILT
095 YU 000
T.11S. R.25W.
SCALE: 1" = 20' HORIZ
BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center
NOTE
1 ROADWAY IMPROVEMENT HAVE BEEN COMPLETED SINCE TIME OF TOPOGRAPHIC SURVEY. THE AREA BOUNDED BY 1ST AVENUE, 4TH AVENUE, C STREET, AND URTUZUASTEGUI STREET HAVE BEEN CONSTRUCTED PER THE CITY OF SAN LUIS ROAD IMPROVEMENTS PHASE 3 AND 4, DESIGNED BY EDAIS ENGINEERING, SEALED 4/16/08
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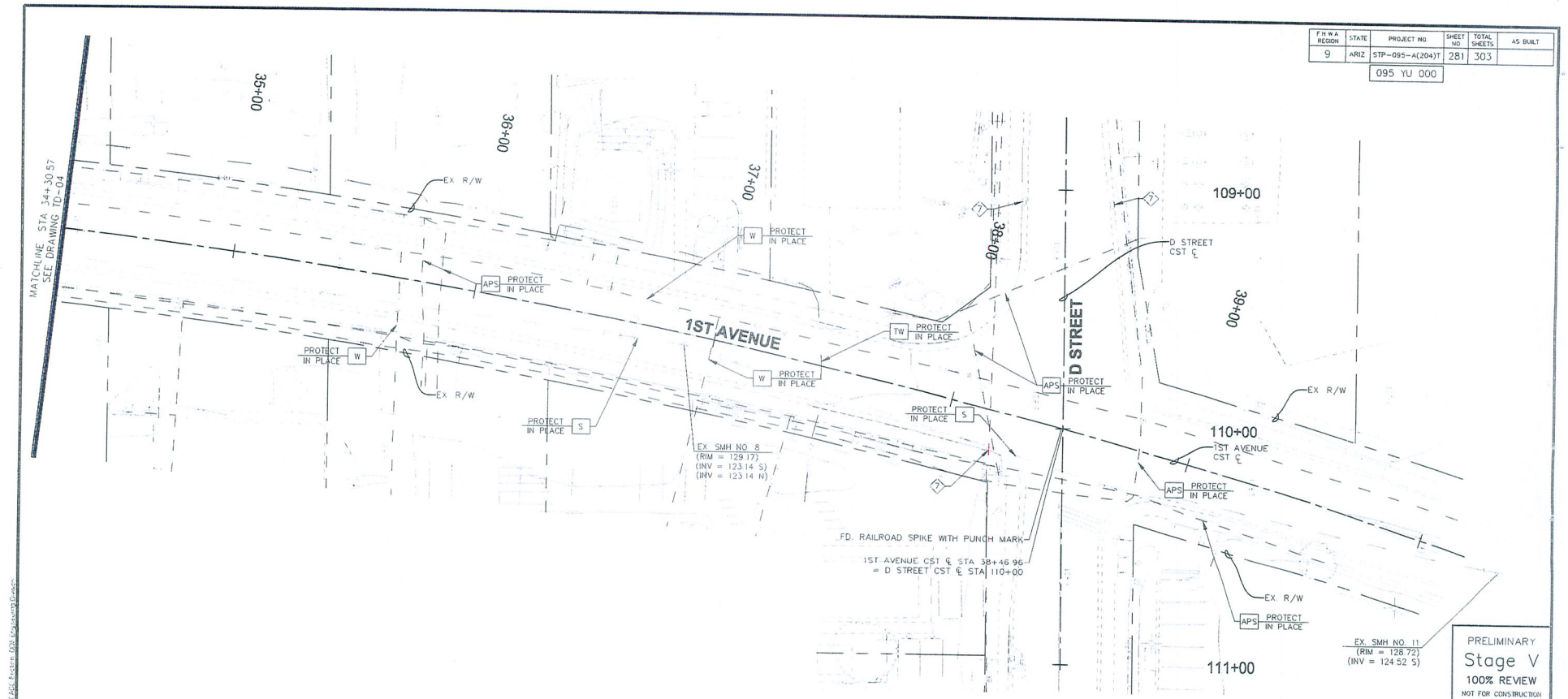
STATE OF ARIZONA
INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.
1ST AVENUE
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 26+80.57 TO STA 34+30.57

EXHIBIT B



FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	281	303	

095 YU 000

PRELIMINARY
Stage V
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N
T.11S. R.25W.

SCALE: 1" = 20' HORIZ

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

UTILITY LEGEND	
	UTILITY DESIGNATION
APS	APS
TW	TIME WARNER
W	WATER
S	SEWER

SCHEDULE OF REMOVALS

7	REMOVE ENGINEERED BOTTOM DISPOSAL PIT -REFERENCE ASBUILT DETAIL, DETAIL E	3 EA

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YUMA COUNTY
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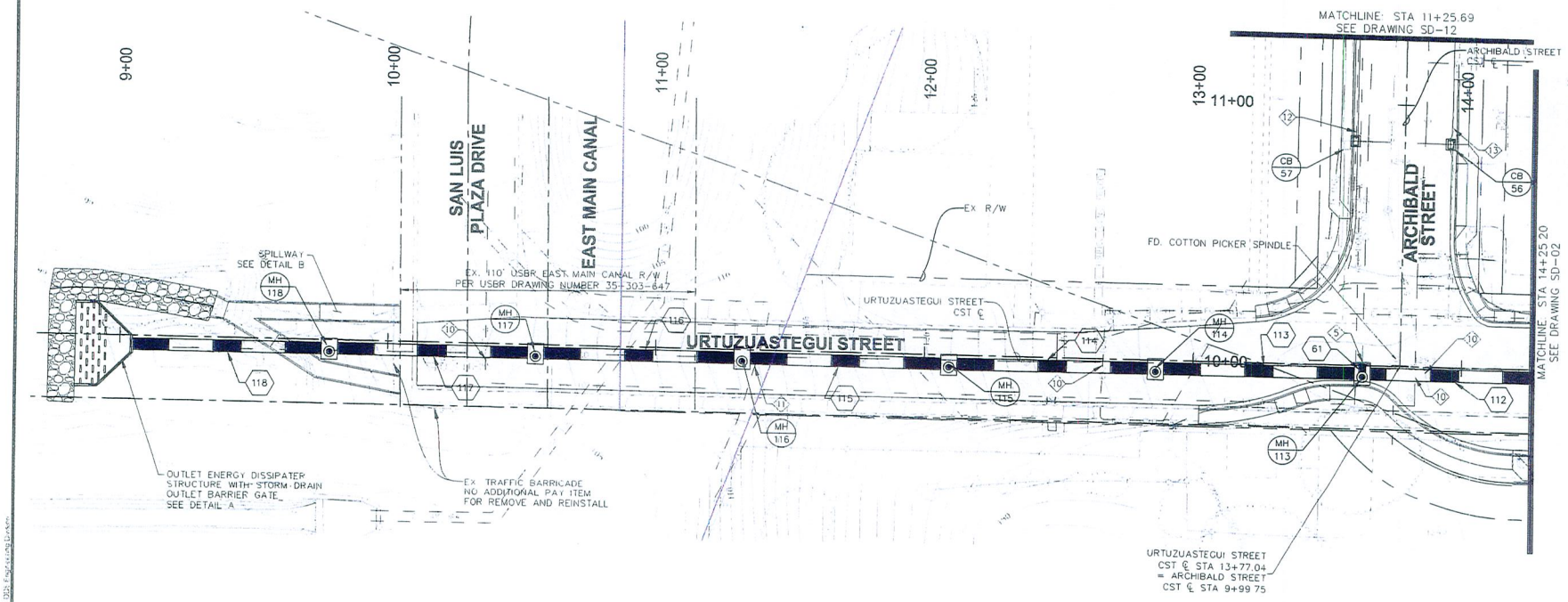
INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.

1ST AVENUE
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
STA 34+30.57 TO STA 40+00.00

EXHIBIT B

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	282	303	
		095 YU 000			



N

T.11S. R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

SCHEDULE OF WORK

5	CONCRETE PIPE COLLAR PER ADOT STD C-13.80	1 EA
10	SUPPORT UTILITY ACROSS TRENCH PER DETAIL D	4 EA
11	ELECTRICAL LINE TO BE RELOCATED BY OTHERS	
12	TELEPHONE TO BE RELOCATED BY OTHERS	
13	RELOCATE WATERLINE - BY OTHERS	13 LF

PLAN VIEW
SEE DRAWING SD-01A
FOR PROFILE

NOTE

1. SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES

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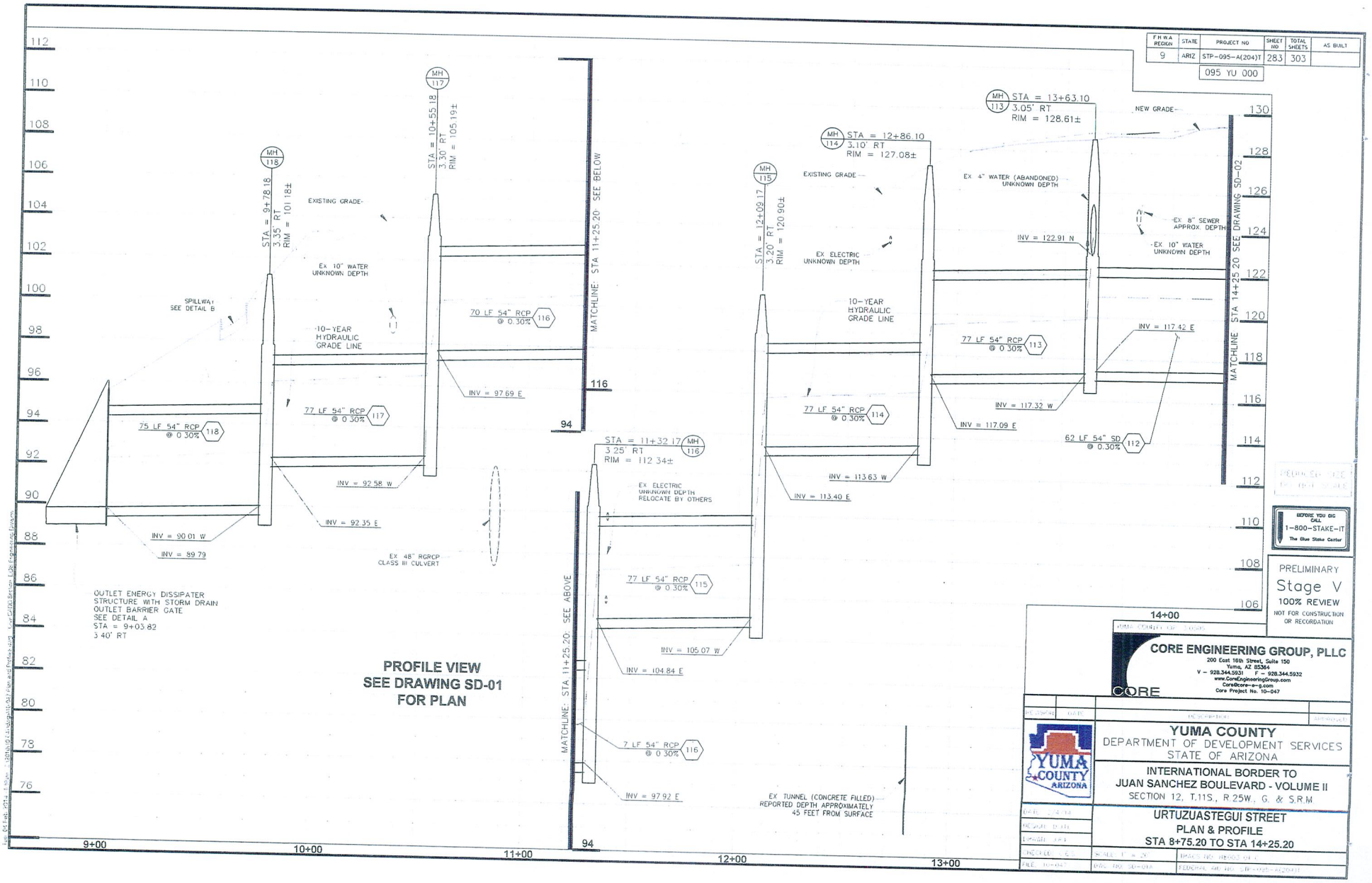
SECTION 12, T.11S., R.25W., G. & S.R.M.

URTUZUASTEGUI STREET
PLAN & PROFILE
STA 8+75.20 TO STA 14+25.20

EXHIBIT B



F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	283	303	
		095 YU 000			

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INTERNATIONAL BORDER TO
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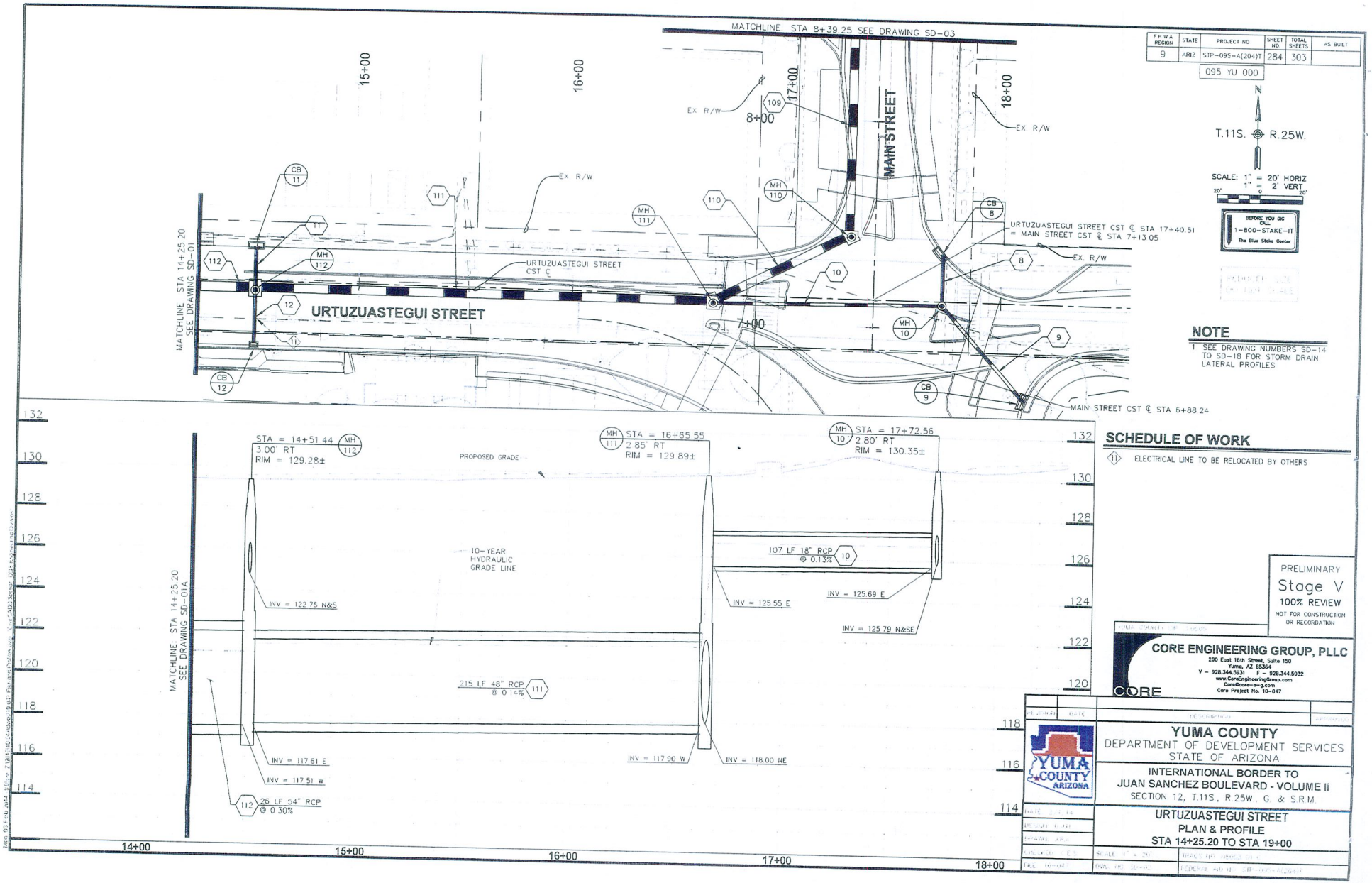
SECTION 12, T.11S., R.25W., G. & S.R.M.

URTUZUASTEGUI STREET
PLAN & PROFILE
STA 8+75.20 TO STA 14+25.20

EXHIBIT B

EXHIBIT B



F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	284	303	

095 YU 000

N

T.11S. R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT.

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

NOTE

1 SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES

SCHEDULE OF WORK

(11) ELECTRICAL LINE TO BE RELOCATED BY OTHERS

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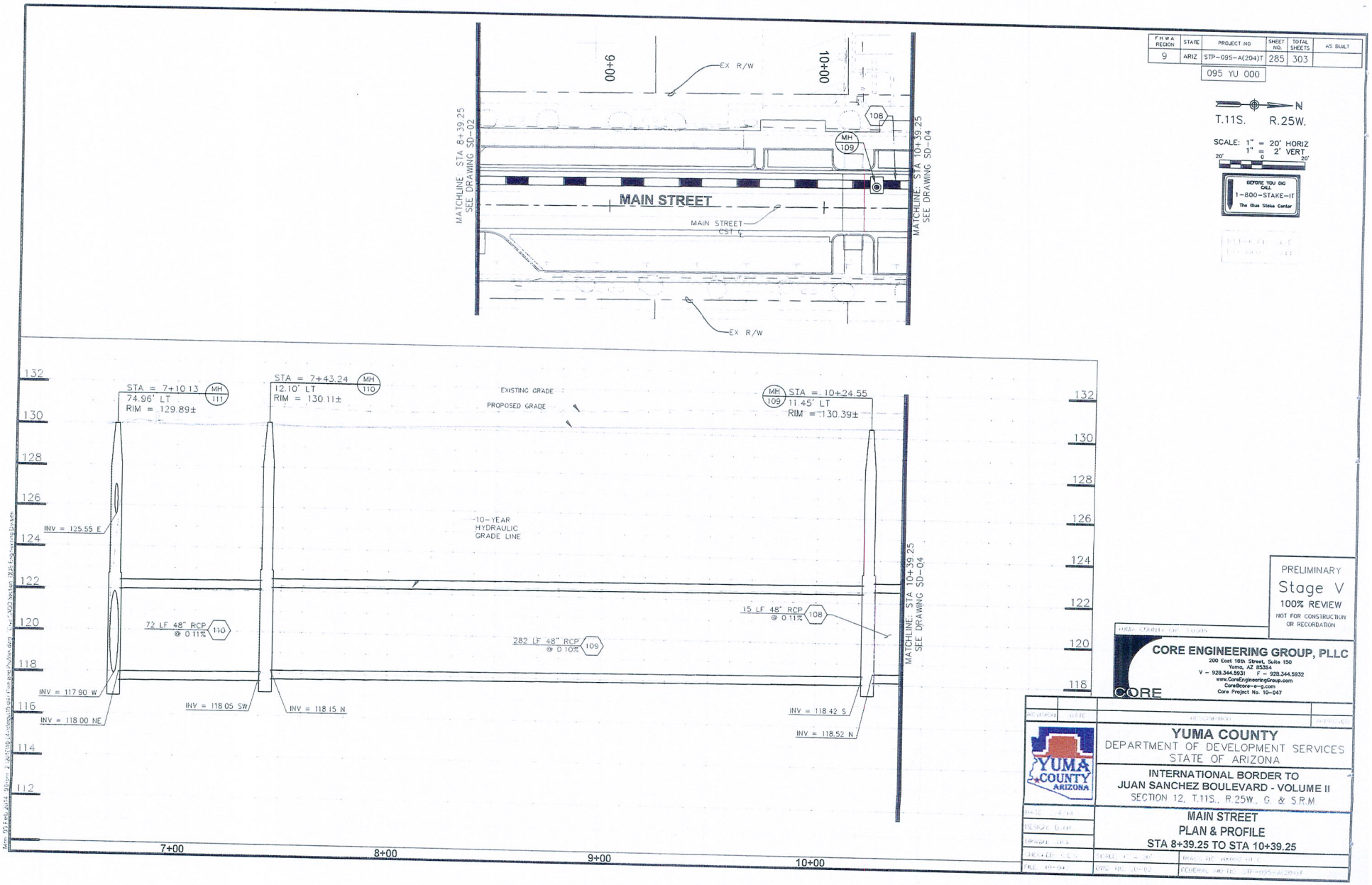
STATE OF ARIZONA

INTERNATIONAL BORDER TO JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.

URTUZUASTEGUI STREET
PLAN & PROFILE
STA 14+25.20 TO STA 19+00



FHWA REGION	STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	285	303	
		095 YU 000			

N

T.11S. R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT
20' 0 20'

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STATE OF ARIZONA

INTERNATIONAL BORDER TO
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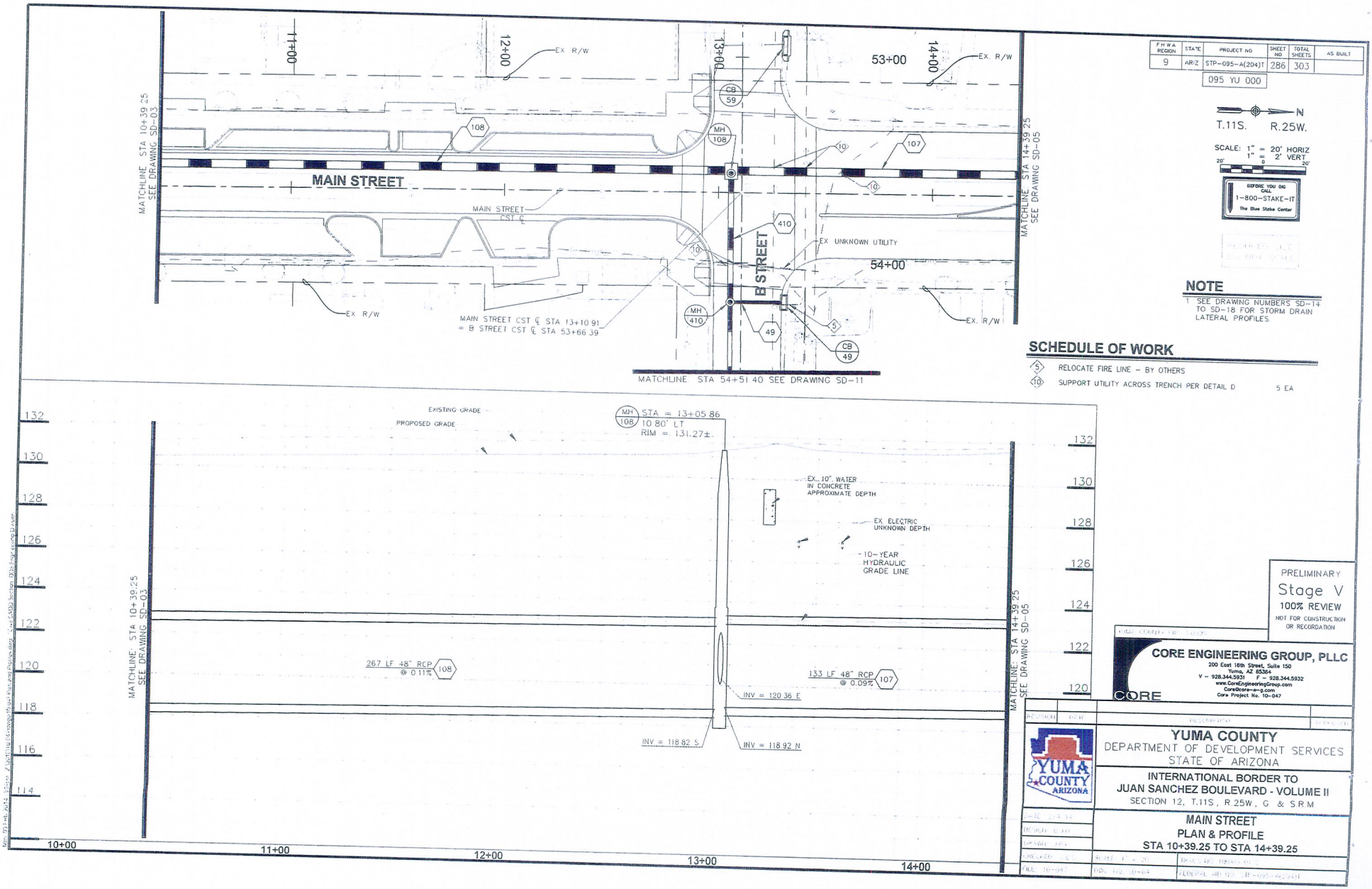
SECTION 12, T.11S., R.25W., G & S.R.M.

MAIN STREET
PLAN & PROFILE
STA 8+39.25 TO STA 10+39.25

EXHIBIT B



FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	286	303	
		095 YU 000			

N

T.11S. R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT
20' 0 20'

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

NOTE

1 SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES

SCHEDULE OF WORK

5	RELOCATE FIRE LINE – BY OTHERS	
10	SUPPORT UTILITY ACROSS TRENCH PER DETAIL D	5 EA

PRELIMINARY
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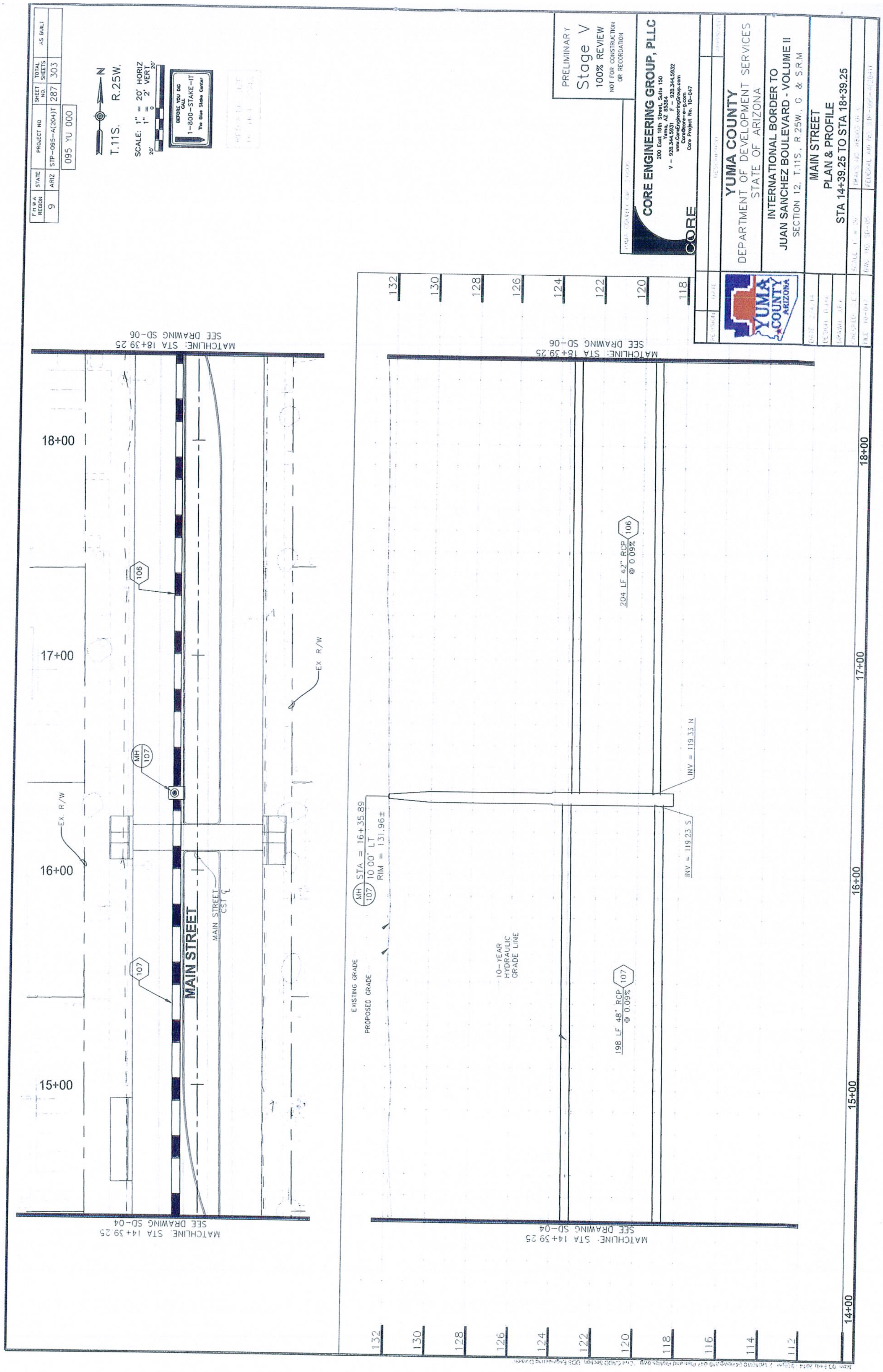
STATE OF ARIZONA

INTERNATIONAL BORDER TO JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G & S.R.M.

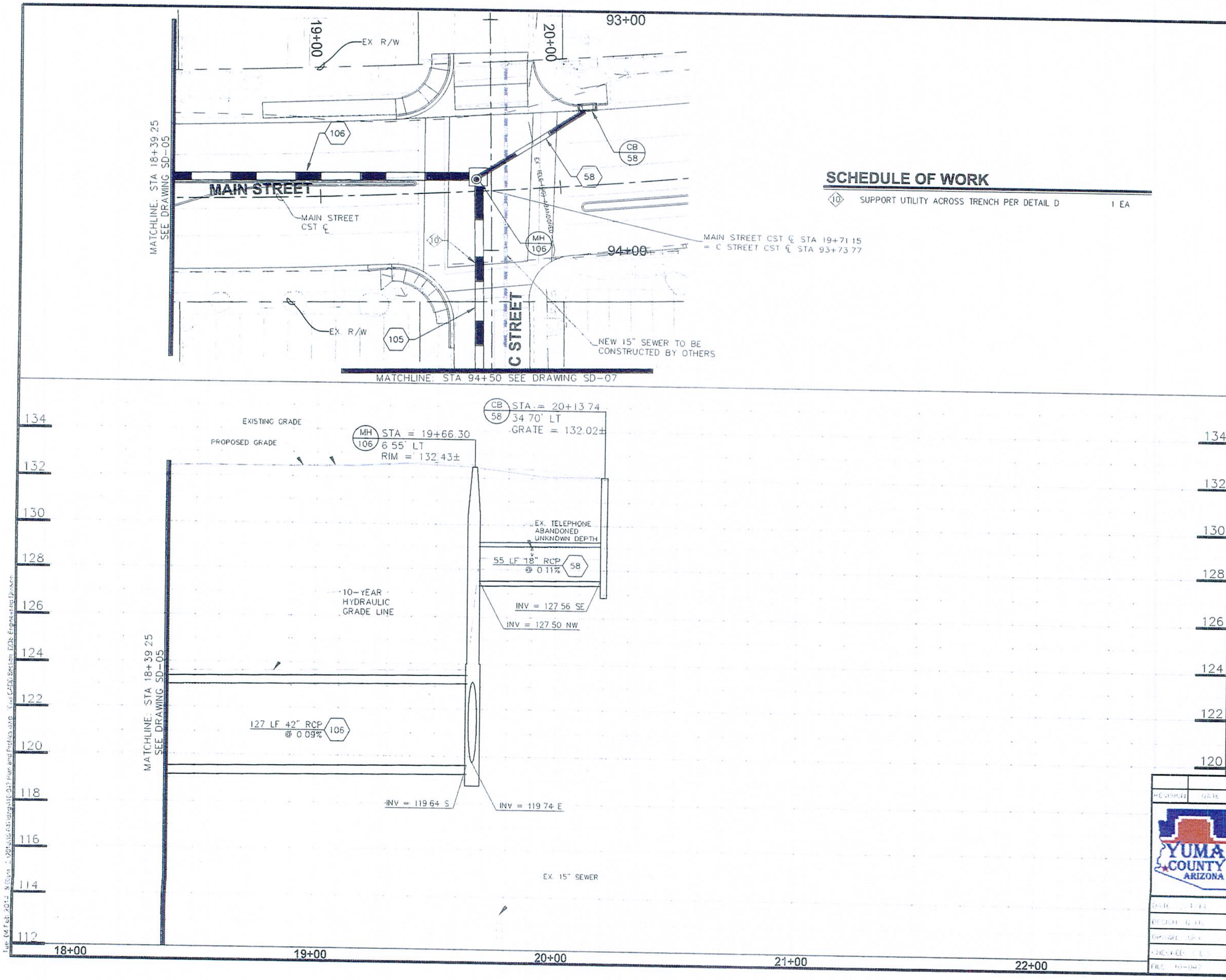
MAIN STREET
PLAN & PROFILE
STA 10+39.25 TO STA 14+39.25

EXHIBIT B



YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA
INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.
MAIN STREET
PLAN & PROFILE
STA 14+39.25 TO STA 18+39.25
CORE ENGINEERING GROUP, PLLC
PRELIMINARY
Stage V
100% REVIEW
NOT FOR CONSTRUCTION OR RECORDATION
STP-095-A(204)T
095 YU 000
287
303
T.11S.
R.25W.
SCALE: 1" = 20' HORIZ
1" = 2' VERT
1-800-STAKE-IT
MAIN STREET
MATCHLINE: STA 18+39.25
SEE DRAWING SD-06
MATCHLINE: STA 14+39.25
SEE DRAWING SD-04
EX. R/W
MH 107 STA = 16+35.89
10.00' LT
RIM = 131.96±
204 LF 42" RCP @ 0.09%
198 LF 48" RCP @ 0.09%
10-YEAR HYDRAULIC GRADE LINE
EXISTING GRADE
PROPOSED GRADE
INV = 119.33 N
INV = 119.23 S
14+00
15+00
16+00
17+00
18+00

EXHIBIT B



SCHEDULE OF WORK

10	SUPPORT UTILITY ACROSS TRENCH PER DETAIL D	1 EA

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	288	303	

095 YU 000

N
T.11S. R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT

BEFORE YOU DIG CALL
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The Blue Stake Center

PRELIMINARY
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www.CoreEngineeringGroup.com
Core@core-e-g.com
Core Project No. 10-047

YUMA COUNTY
ARIZONA

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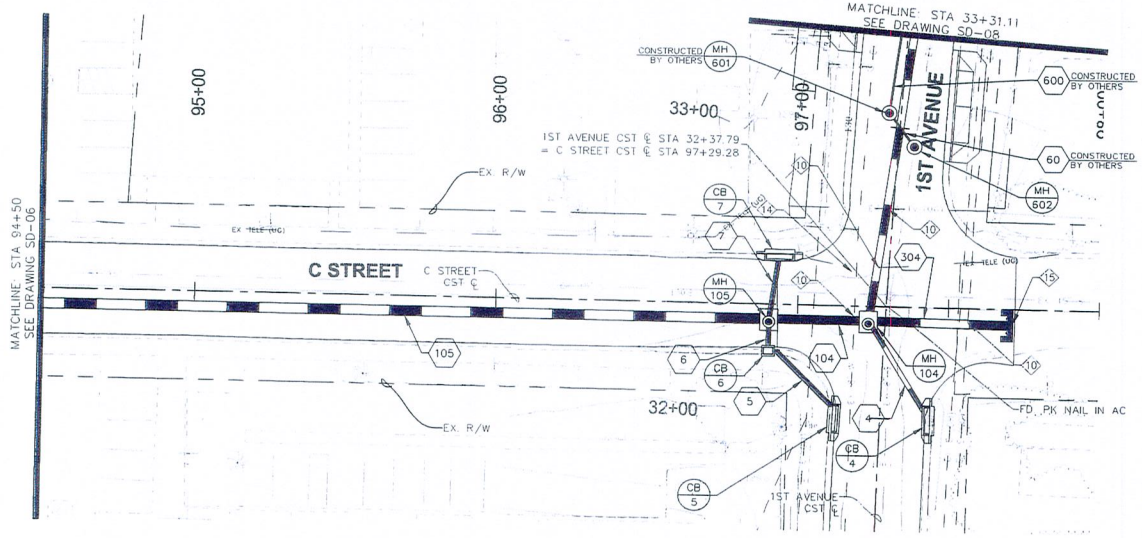
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA

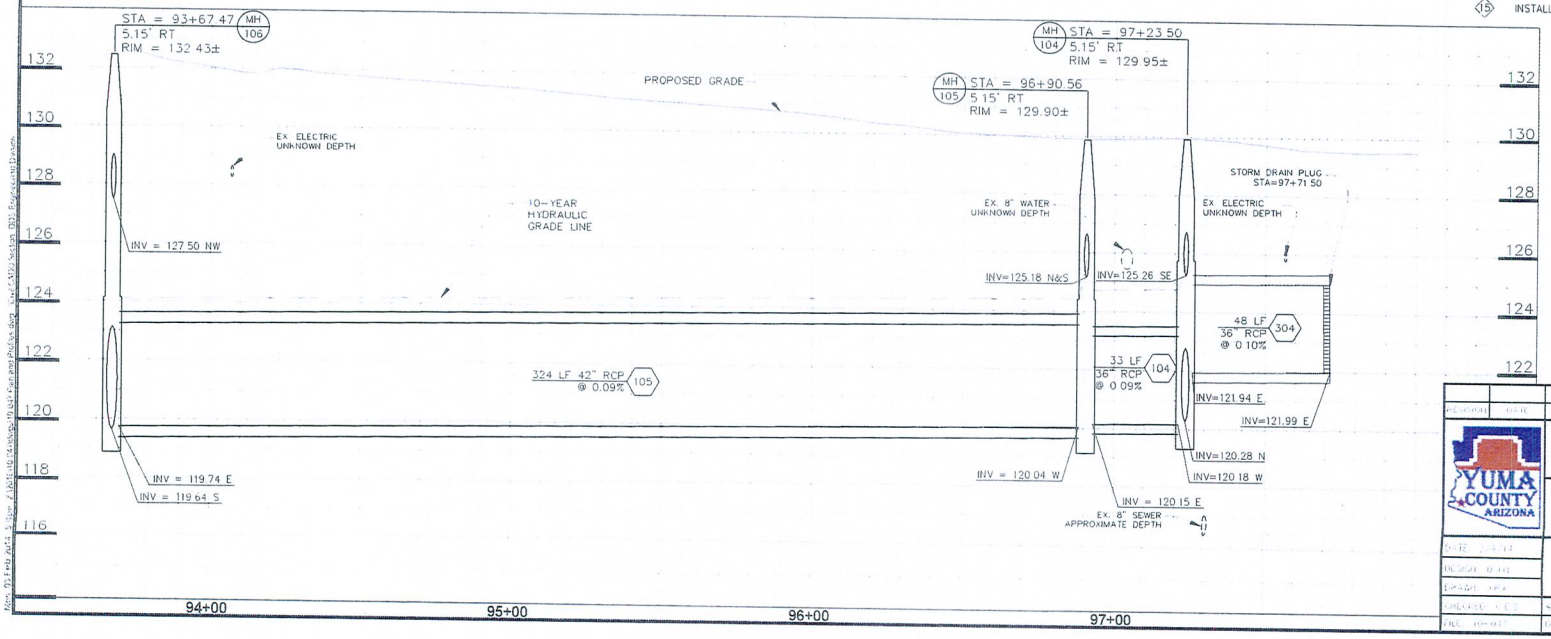
INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.

MAIN STREET
PLAN & PROFILE
STA 18+39.25 TO STA 20+50

EXHIBIT B

EXHIBIT B





FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	289	303	
		095 YU 000			

N

T.11S. R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT
20' 0 20'

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

NOTE

1. SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES.

SCHEDULE OF WORK

10	SUPPORT UTILITY ACROSS TRENCH PER DETAIL D	4 EA
14	CONNECT TO EXISTING MANHOLE	
15	INSTALL STORM DRAIN PLUG PER ADOT STD C-13.76	1 EA

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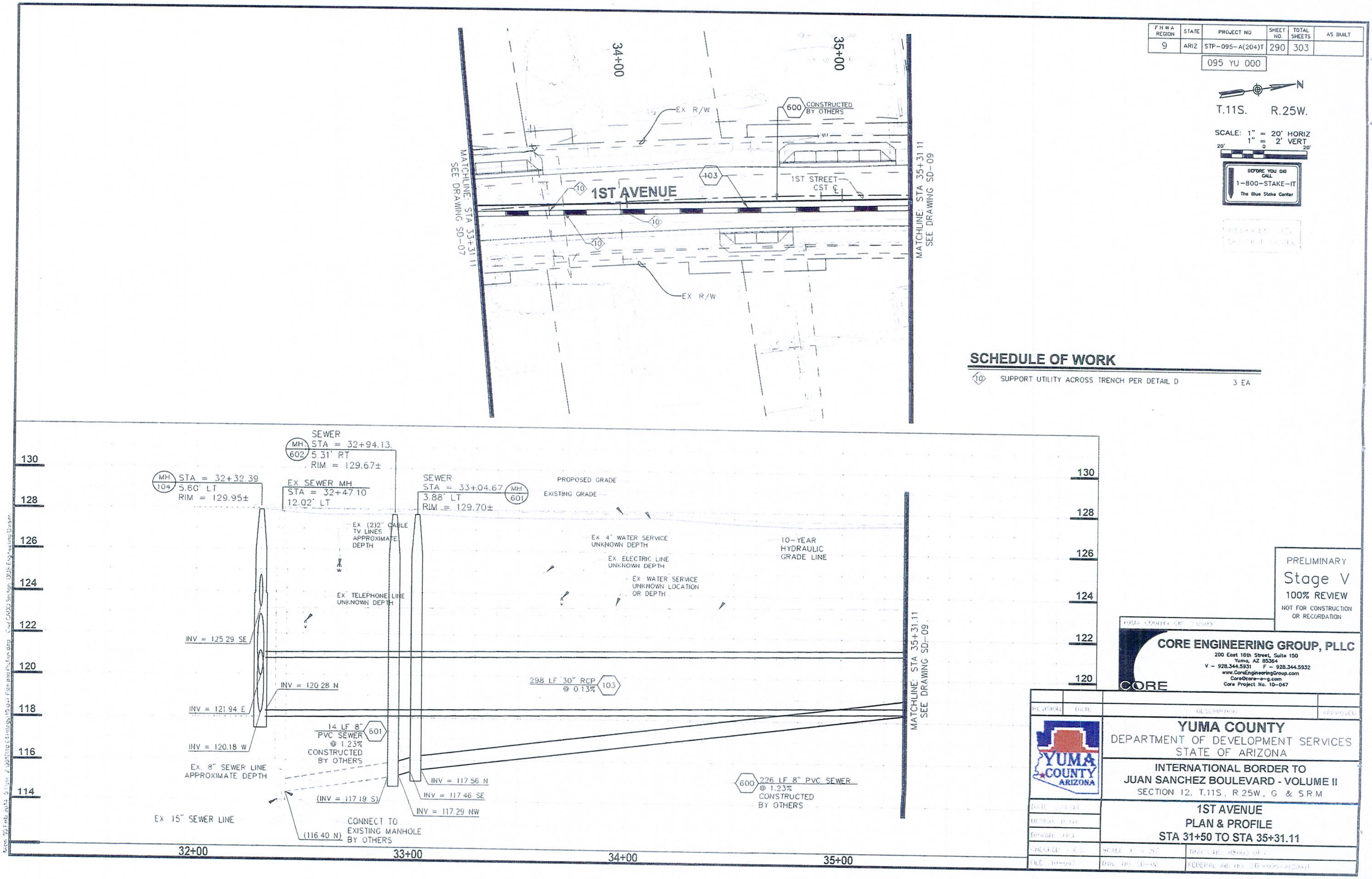
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA

INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.

"C" STREET
PLAN & PLOT
STA 94+50 TO STA 97+80



FHWA REGION 9 | STATE ARIZ | PROJECT NO STP-095-A(204)T | SHEET NO 290 | TOTAL SHEETS 303 | AS BUILT
095 YU 000
T.11S. R.25W.
SCALE: 1" = 20' HORIZ 1" = 2' VERT
BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center
1ST AVENUE
1ST STREET CST ℄
CONSTRUCTED BY OTHERS
EX R/W
MATCHLINE: STA 33+31.11 SEE DRAWING SD-07
MATCHLINE: STA 35+31.11 SEE DRAWING SD-09
34+00
35+00
SCHEDULE OF WORK
10 SUPPORT UTILITY ACROSS TRENCH PER DETAIL D 3 EA
MH 104 STA = 32+32.39 5.60' LT RIM = 129.95±
SEWER MH 602 STA = 32+94.13 5.31' RT RIM = 129.67±
EX SEWER MH STA = 32+47.10 12.02' LT
SEWER STA = 33+04.67 3.88' LT RIM = 129.70± MH 601
PROPOSED GRADE
EXISTING GRADE
EX (2)2" CABLE TV LINES APPROXIMATE DEPTH
EX TELEPHONE LINE UNKNOWN DEPTH
EX 4" WATER SERVICE UNKNOWN DEPTH
EX ELECTRIC LINE UNKNOWN DEPTH
EX WATER SERVICE UNKNOWN LOCATION OR DEPTH
10-YEAR HYDRAULIC GRADE LINE
INV = 125.29 SE
INV = 121.94 E
INV = 120.18 W
INV = 120.28 N
298 LF 30" RCP @ 0.13% 103
14 LF 8" PVC SEWER @ 1.23% CONSTRUCTED BY OTHERS 601
EX. 8" SEWER LINE APPROXIMATE DEPTH
EX 15" SEWER LINE
(INV = 117.19 S)
(116.40 N) CONNECT TO EXISTING MANHOLE BY OTHERS
INV = 117.56 N
INV = 117.46 SE
INV = 117.29 NW
600 226 LF 8" PVC SEWER @ 1.23% CONSTRUCTED BY OTHERS
130
128
126
124
122
120
118
116
114
32+00
33+00
34+00
35+00
PRELIMINARY
Stage V
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YUMA COUNTY
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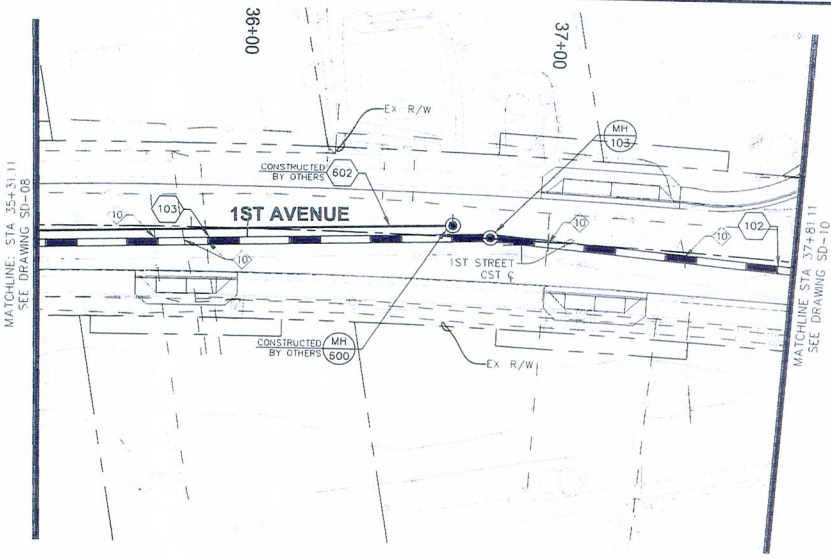
STATE OF ARIZONA
INTERNATIONAL BORDER TO JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G & S.R.M.
1ST AVENUE
PLAN & PROFILE
STA 31+50 TO STA 35+31.11

EXHIBIT B



F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	291	303	
		095 YU 000			

N

T.11S. R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT

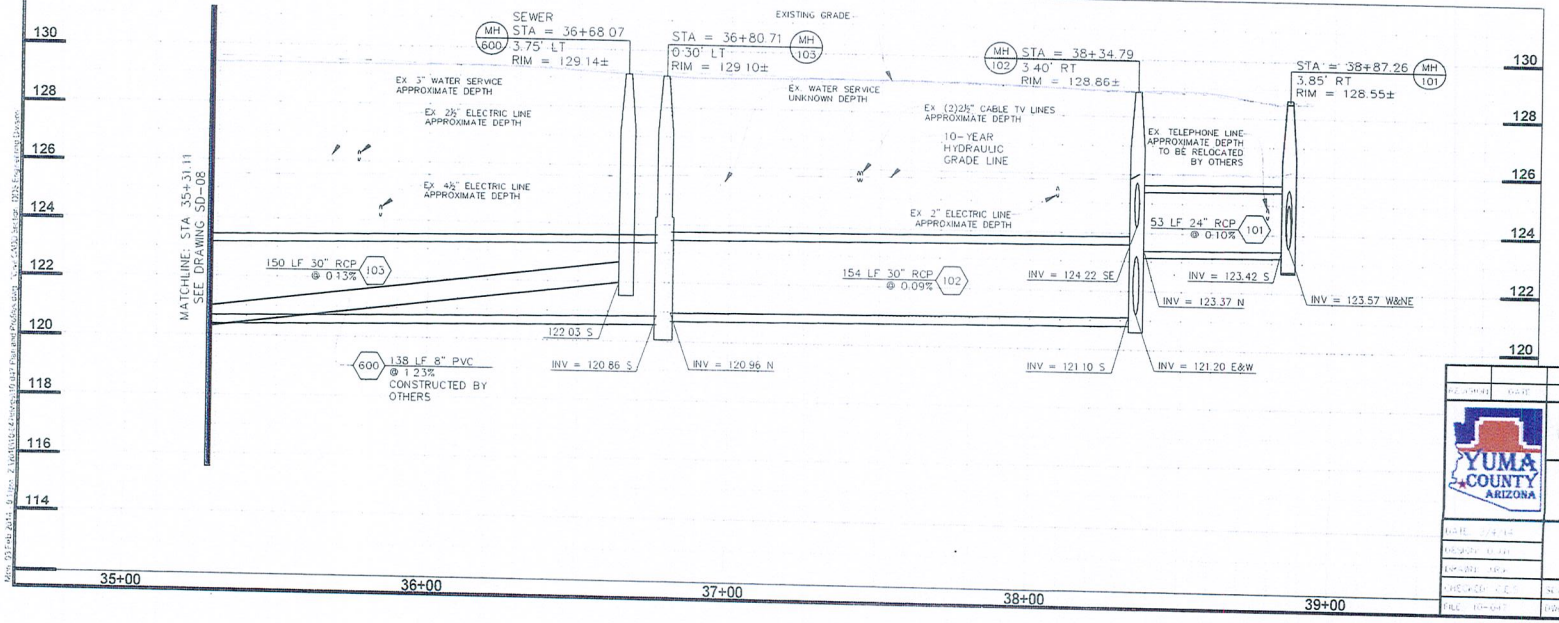
BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

NOTE

1. SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES

SCHEDULE OF WORK

10	SUPPORT UTILITY ACROSS TRENCH PER DETAIL D	5 EA



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STATE OF ARIZONA

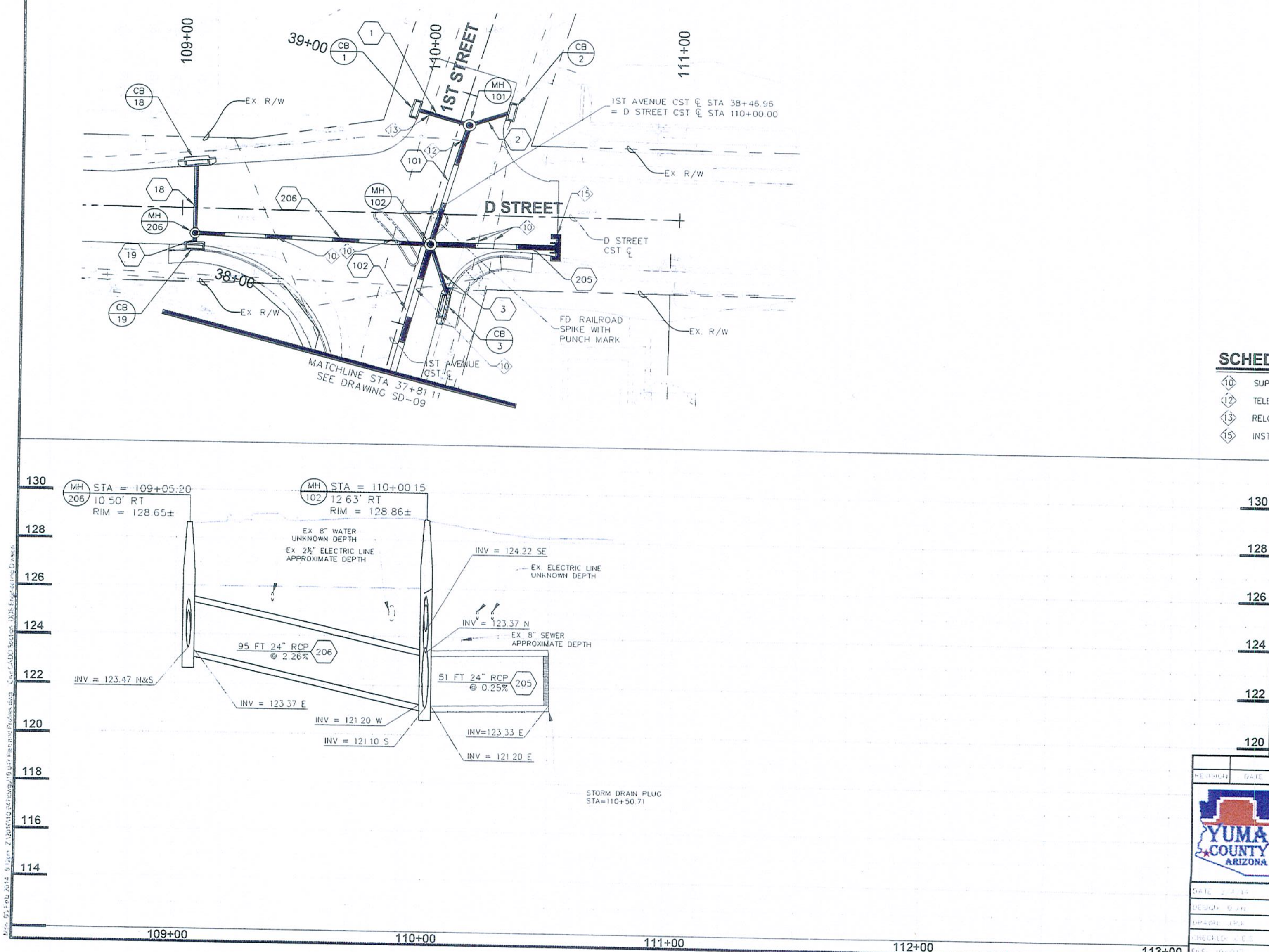
INTERNATIONAL BORDER TO JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G. & S.R.M.

1ST AVENUE
PLAN & PROFILE
STA 35+31.11 TO STA 39+00

EXHIBIT B

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	292	303	

095 YU 000



T.11S. R.25W.

N

SCALE: 1" = 20' HORIZ
1" = 2' VERT

BEFORE YOU DIG CALL
1-800-STAKE-IT
The Blue Stake Center

NOTE

1. SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES

SCHEDULE OF WORK

10	SUPPORT UTILITY ACROSS TRENCH PER DETAIL D	6 EA
12	TELEPHONE TO BE RELOCATED BY OTHERS	
13	RELOCATE WATERLINE - BY OTHERS	8 LF
15	INSTALL STORM DRAIN PLUG PER ADOT STD. C-13.76	1 EA

PRELIMINARY
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www.CoreEngineeringGroup.com
Core@core-e-g.com
Core Project No. 10-047

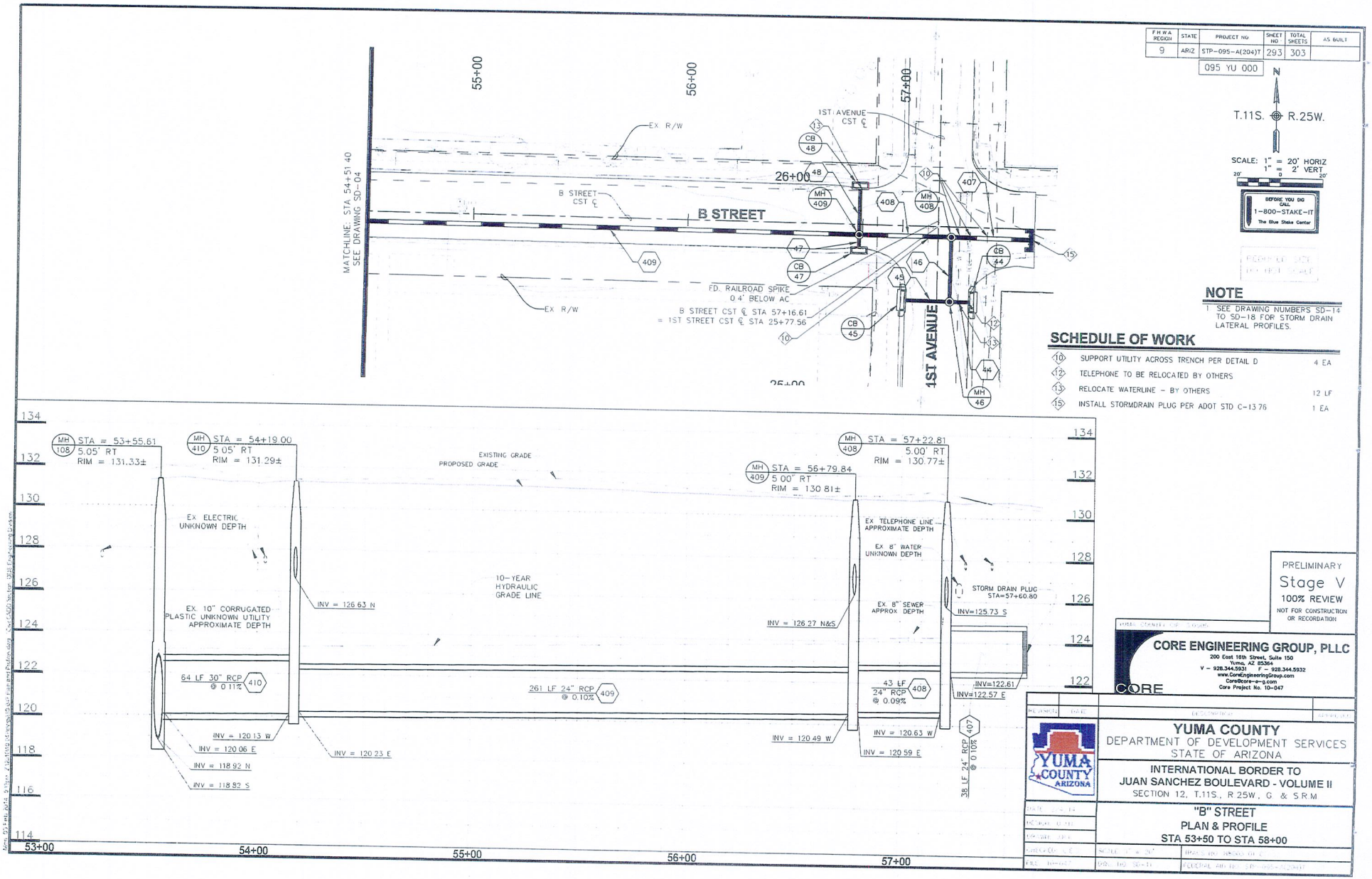
YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA

INTERNATIONAL BORDER TO
JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S., R.25W., G & S.R.M.

"D" STREET
PLAN & PROFILE
STA 109+00 TO STA 113+00

EXHIBIT B

EXHIBIT B



FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	293	303	
		095 YU 000			

N

T.11S. ⊕ R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT

20' 0 20'

BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center

NOTE

1. SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES.

SCHEDULE OF WORK

10	SUPPORT UTILITY ACROSS TRENCH PER DETAIL D	4 EA
12	TELEPHONE TO BE RELOCATED BY OTHERS	
13	RELOCATE WATERLINE - BY OTHERS	12 LF
15	INSTALL STORMDRAIN PLUG PER ADOT STD C-13.76	1 EA

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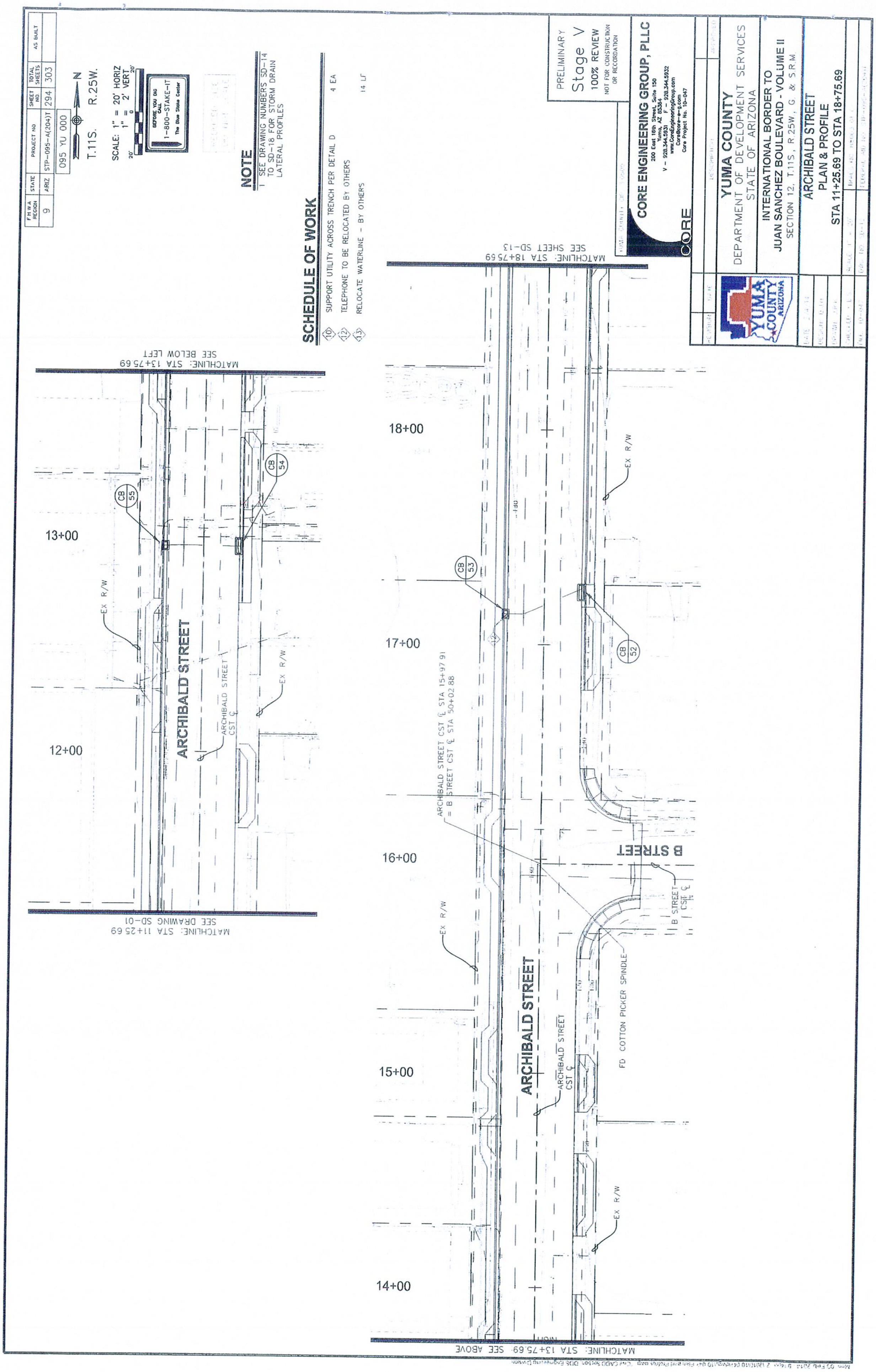
"B" STREET
PLAN & PROFILE
STA 53+50 TO STA 58+00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JUAN SANCHEZ BOULEVARD - VOLUME II
SECTION 12, T.11S, R.25W, G & S R M
ARCHIBALD STREET
PLAN & PROFILE
STA 11+25.69 TO STA 18+75.69
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FHWA REGION 9
STATE ARIZ
PROJECT NO STP-095-A(204)T
SHEET NO 294
TOTAL SHEETS 303
095 YU 000
T.11S. R.25W.
SCALE: 1" = 20' HORIZ
1" = 2' VERT
1-800-STAKE-IT
NOTE
1 SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES
SCHEDULE OF WORK
10 SUPPORT UTILITY ACROSS TRENCH PER DETAIL D 4 EA
12 TELEPHONE TO BE RELOCATED BY OTHERS
13 RELOCATE WATERLINE - BY OTHERS 14 LF
MATCHLINE: STA 13+75.69 SEE BELOW LEFT
MATCHLINE: STA 11+25.69 SEE DRAWING SD-01
MATCHLINE: STA 18+75.69 SEE SHEET SD-13
MATCHLINE: STA 13+75.69 SEE ABOVE
ARCHIBALD STREET
ARCHIBALD STREET CST ℄
EX R/W
CB 55
CB 54
CB 53
CB 52
12+00
13+00
14+00
15+00
16+00
17+00
18+00
B STREET
B STREET CST ℄
ARCHIBALD STREET CST ℄ STA 15+97.91 = B STREET CST ℄ STA 50+02.88
FD COTTON PICKER SPINDLE

EXHIBIT B

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	295	303	

095 YU 000

N
T.11S. R.25W.

SCALE: 1" = 20' HORIZ
1" = 2' VERT

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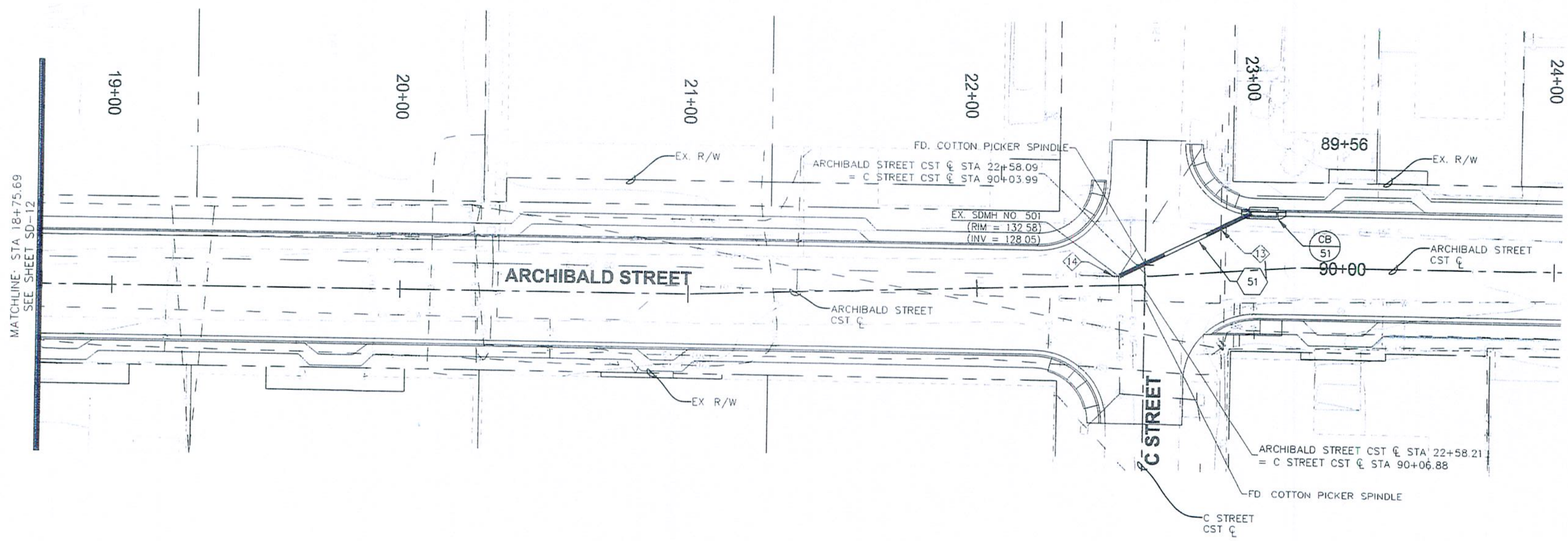

SCHEDULE OF WORK

(13) RELOCATE WATERLINE - BY OTHERS	9 LF
(14) CONNECT TO EXISTING MANHOLE	1 EA

NOTE

1 SEE DRAWING NUMBERS SD-14 TO SD-18 FOR STORM DRAIN LATERAL PROFILES

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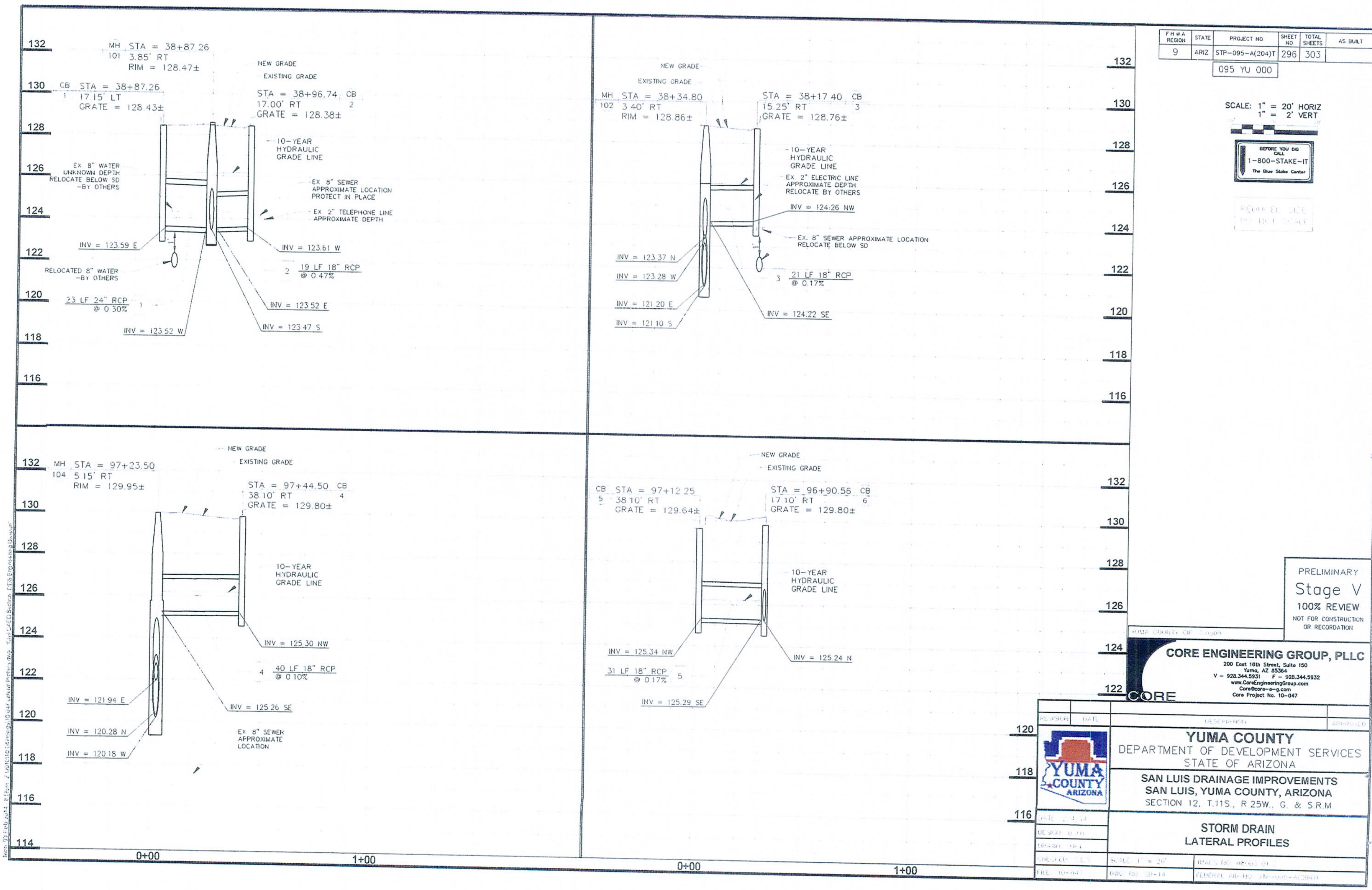
SECTION 12, T.11S., R.25W., G. & S.R.M.

ARCHIBALD STREET
PLAN & PROFILE
STA 18+75.69 TO STA 23+25

EXHIBIT B


F H W A REGION | STATE | PROJECT NO | SHEET NO | TOTAL SHEETS | AS BUILT
9 | ARIZ | STP-095-A(204)T | 296 | 303
095 YU 000
SCALE: 1" = 20' HORIZ
1" = 2' VERT
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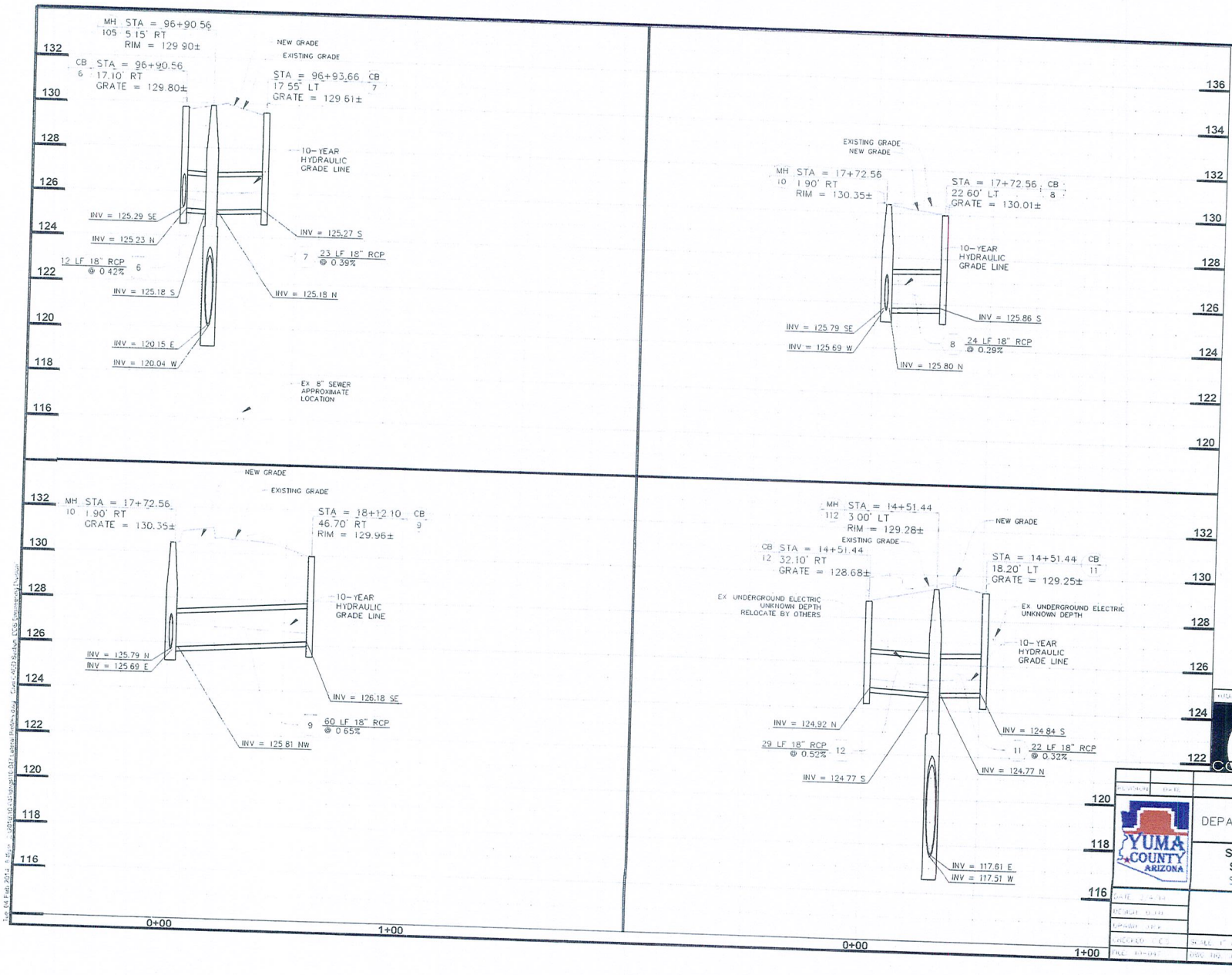
SAN LUIS, YUMA COUNTY, ARIZONA
SECTION 12, T.11S., R.25W., G. & S.R.M.
STORM DRAIN
LATERAL PROFILES
YUMA COUNTY ARIZONA
MH 101 STA = 38+87.26 3.85' RT RIM = 128.47±
CB 1 STA = 38+87.26 17.15' LT GRATE = 128.43±
NEW GRADE
EXISTING GRADE
STA = 38+96.74 CB 2 17.00' RT GRATE = 128.38±
10-YEAR HYDRAULIC GRADE LINE
EX 8" WATER UNKNOWN DEPTH RELOCATE BELOW SD -BY OTHERS
EX 8" SEWER APPROXIMATE LOCATION PROTECT IN PLACE
EX 2" TELEPHONE LINE APPROXIMATE DEPTH
INV = 123.59 E
INV = 123.61 W
RELOCATED 8" WATER -BY OTHERS
2 19 LF 18" RCP @ 0.47%
23 LF 24" RCP @ 0.30% 1
INV = 123.52 E
INV = 123.52 W
INV = 123.47 S
MH 102 STA = 38+34.80 3.40' RT RIM = 128.86±
STA = 38+17.40 CB 3 15.25' RT GRATE = 128.76±
EX 2" ELECTRIC LINE APPROXIMATE DEPTH RELOCATE BY OTHERS
INV = 124.26 NW
EX. 8" SEWER APPROXIMATE LOCATION RELOCATE BELOW SD
INV = 123.37 N
INV = 123.28 W
3 21 LF 18" RCP @ 0.17%
INV = 121.20 E
INV = 121.10 S
INV = 124.22 SE
MH 104 STA = 97+23.50 5.15' RT RIM = 129.95±
STA = 97+44.50 CB 4 38.10' RT GRATE = 129.80±
INV = 125.30 NW
4 40 LF 18" RCP @ 0.10%
INV = 121.94 E
INV = 125.26 SE
INV = 120.28 N
INV = 120.18 W
EX 8" SEWER APPROXIMATE LOCATION
CB 5 STA = 97+12.25 38.10' RT GRATE = 129.64±
STA = 96+90.56 CB 6 17.10' RT GRATE = 129.80±
INV = 125.34 NW
31 LF 18" RCP @ 0.17% 5
INV = 125.24 N
INV = 125.29 SE
0+00
1+00

EXHIBIT B



FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	297	303	
		095 YU 000			

SCALE: 1" = 20' HORIZ
1" = 2' VERT

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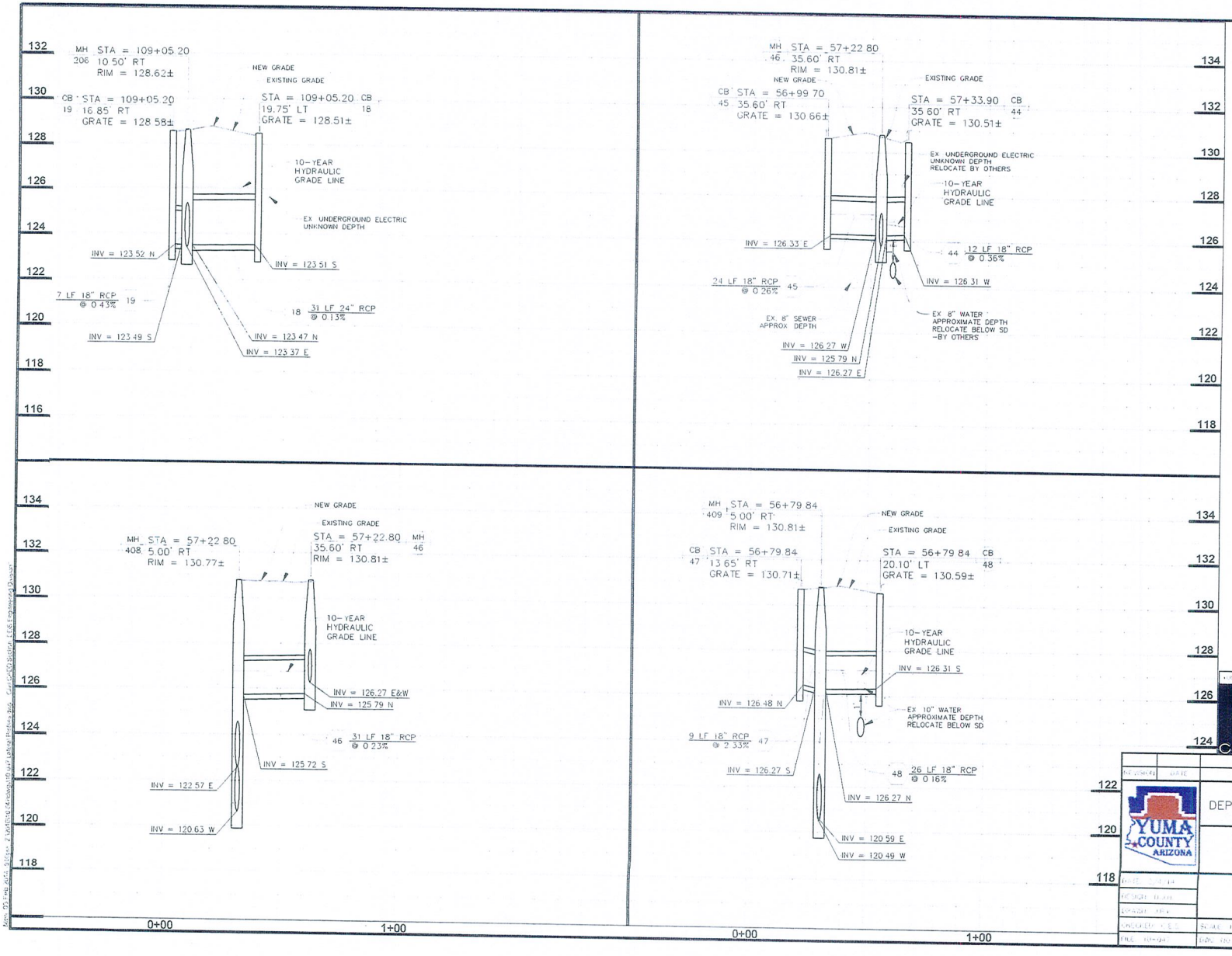
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA

SAN LUIS DRAINAGE IMPROVEMENTS
SAN LUIS, YUMA COUNTY, ARIZONA
SECTION 12, T.11S., R.25W., G. & S.R.M.

STORM DRAIN
LATERAL PROFILES

EXHIBIT B



F H W A REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	298	303	

095 YU 000

SCALE: 1" = 20' HORIZ
1" = 2' VERT

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STATE OF ARIZONA

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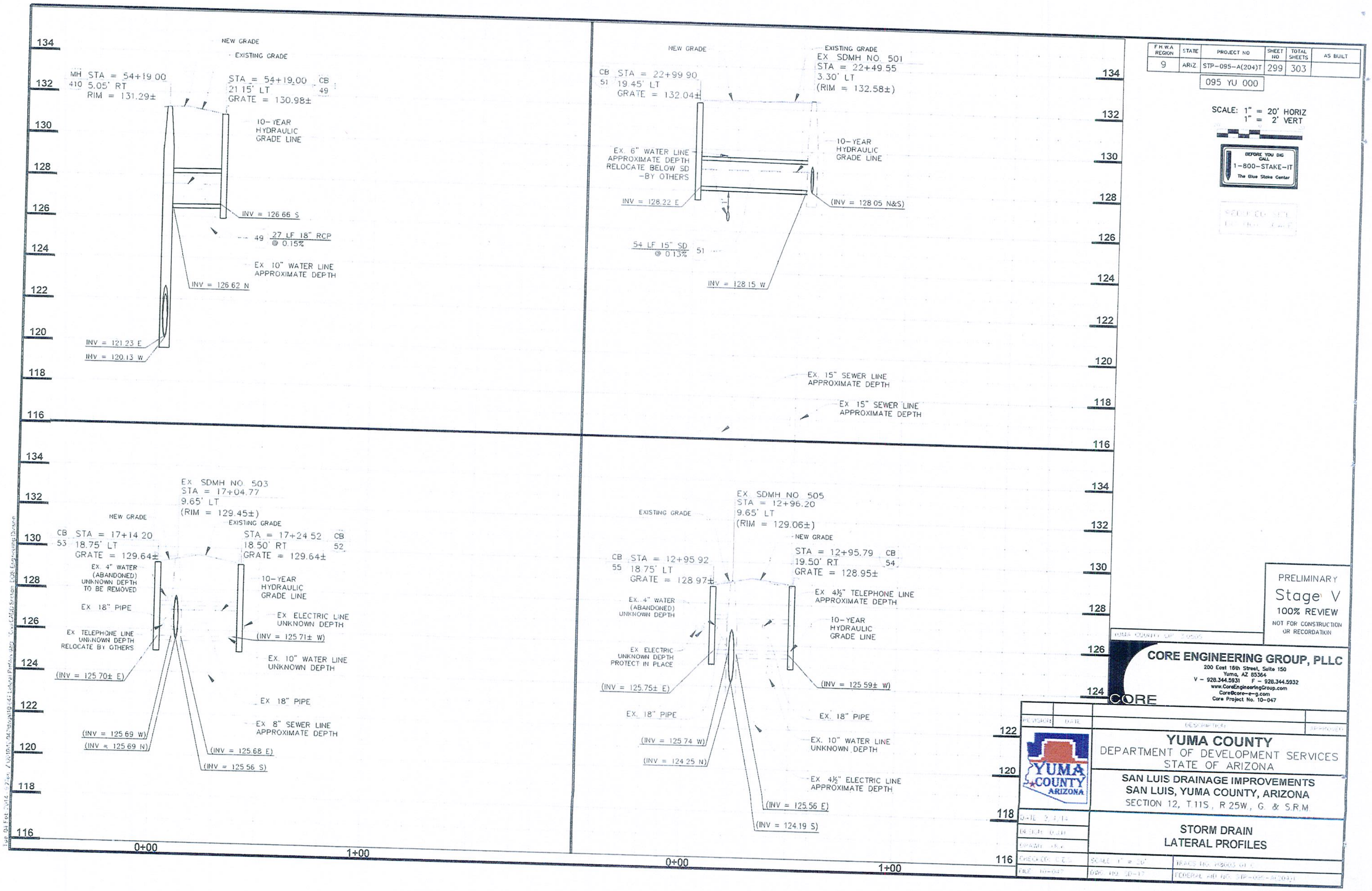
SECTION 12, T.11S., R.25W., G. & S.R.M.

STORM DRAIN
LATERAL PROFILES

EXHIBIT B


F.H.W.A. REGION 9
STATE ARIZ
PROJECT NO STP-095-A(204)T
SHEET NO 299
TOTAL SHEETS 303
AS BUILT
095 YU 000
SCALE: 1" = 20' HORIZ 1" = 2' VERT
BEFORE YOU DIG CALL 1-800-STAKE-IT The Blue Stake Center
NEW GRADE
EXISTING GRADE
MH 410 STA = 54+19.00 5.05' RT RIM = 131.29±
STA = 54+19.00 21.15' LT GRATE = 130.98± CB 49
10-YEAR HYDRAULIC GRADE LINE
INV = 126.66 S
49 27 LF 18" RCP @ 0.15%
EX 10" WATER LINE APPROXIMATE DEPTH
INV = 126.62 N
INV = 121.23 E
INV = 120.13 W
CB 51 STA = 22+99.90 19.45' LT GRATE = 132.04±
EX SDMH NO. 501 STA = 22+49.55 3.30' LT (RIM = 132.58±)
EX. 6" WATER LINE APPROXIMATE DEPTH RELOCATE BELOW SD -BY OTHERS
INV = 128.22 E
(INV = 128.05 N&S)
54 LF 15" SD @ 0.13% 51
INV = 128.15 W
EX. 15" SEWER LINE APPROXIMATE DEPTH
EX 15" SEWER LINE APPROXIMATE DEPTH
EX SDMH NO 503 STA = 17+04.77 9.65' LT (RIM = 129.45±)
CB 53 STA = 17+14.20 18.75' LT GRATE = 129.64±
STA = 17+24.52 18.50' RT GRATE = 129.64± CB 52
EX 4" WATER (ABANDONED) UNKNOWN DEPTH TO BE REMOVED
EX 18" PIPE
EX TELEPHONE LINE UNKNOWN DEPTH RELOCATE BY OTHERS
(INV = 125.70± E)
EX ELECTRIC LINE UNKNOWN DEPTH
(INV = 125.71± W)
EX. 10" WATER LINE UNKNOWN DEPTH
EX 18" PIPE
EX 8" SEWER LINE APPROXIMATE DEPTH
(INV = 125.69 W)
(INV = 125.69 N)
(INV = 125.68 E)
(INV = 125.56 S)
EX SDMH NO 505 STA = 12+96.20 9.65' LT (RIM = 129.06±)
CB 55 STA = 12+95.92 18.75' LT GRATE = 128.97±
STA = 12+95.79 19.50' RT GRATE = 128.95± CB 54
EX 4" WATER (ABANDONED) UNKNOWN DEPTH
EX 4½" TELEPHONE LINE APPROXIMATE DEPTH
EX ELECTRIC UNKNOWN DEPTH PROTECT IN PLACE
(INV = 125.75± E)
(INV = 125.59± W)
EX. 18" PIPE
EX. 18" PIPE
EX. 10" WATER LINE UNKNOWN DEPTH
(INV = 125.74 W)
(INV = 124.25 N)
EX 4½" ELECTRIC LINE APPROXIMATE DEPTH
(INV = 125.56 E)
(INV = 124.19 S)
134
132
130
128
126
124
122
120
118
116
0+00
1+00
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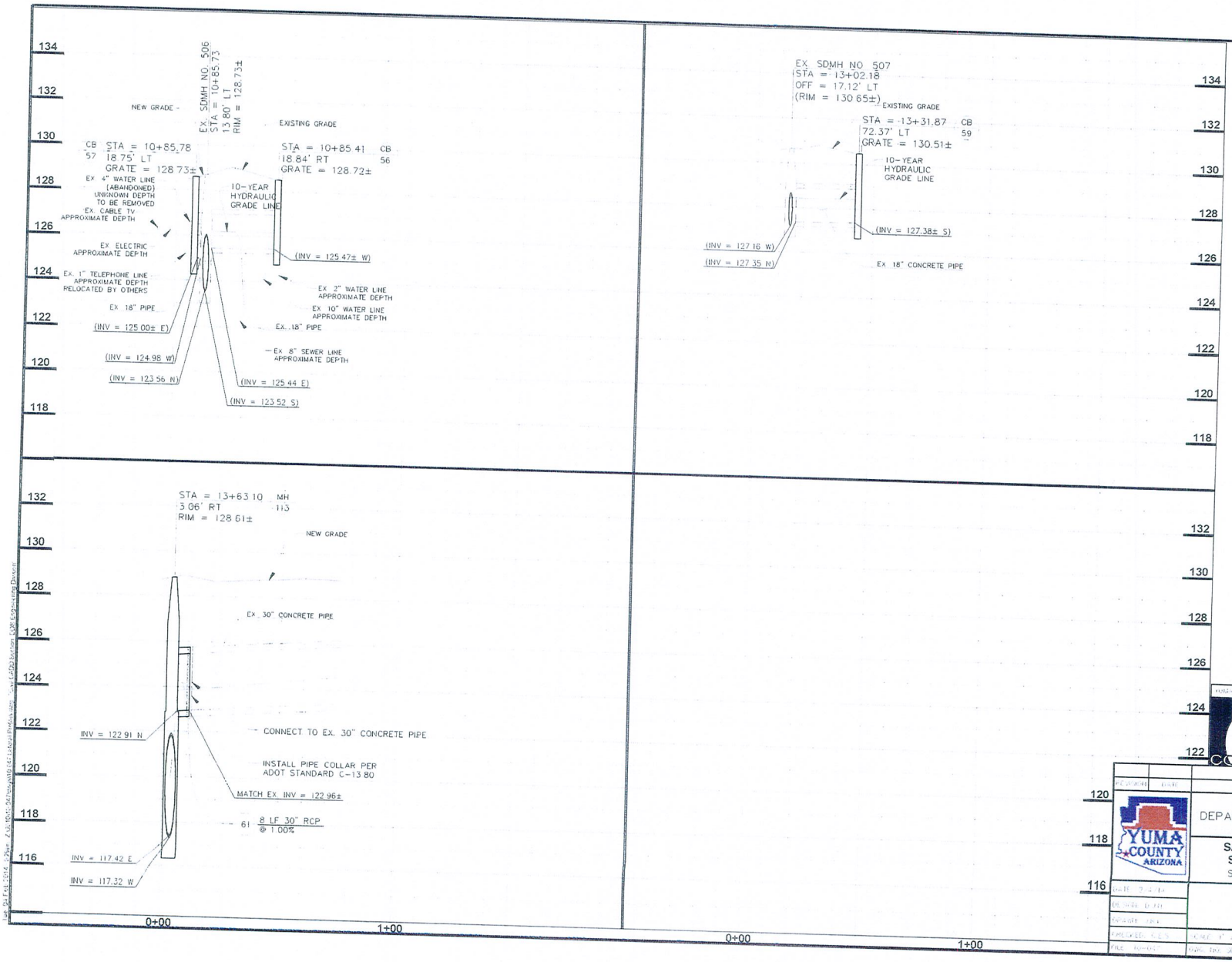
STORM DRAIN
LATERAL PROFILES

EXHIBIT B



FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	300	303	
		095 YU 000			

SCALE: 1" = 20' HORIZ
1" = 2' VERT

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STATE OF ARIZONA

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SECTION 12, T.11S., R.25W., G & S.R.M.

STORM DRAIN
LATERAL PROFILES

EXHIBIT B

Offset, Station	Pipe Ref No.	Controlling Fill Height Range	Size (Inches)	Length (LF)	RGRCP, CLASS-TRENCH	PVC, SDR-35	Structure Plan Ref No	CB Type 4, Single (ADOT C-15.10)	CB Type 4, Double (ADOT C-15.10)	CB Type 1, Triple (ADOT C-15.30)	Manhole (ADOT C-18.10)	Manhole (Detail C)	Comments	RESPONSIBLE PARTY FOR PIPE	RESPONSIBLE PARTY FOR STRUCTURE
3.85' RT 1st Ave STA 38+87.26 TO	101	2	24	53	II		MH101					X	MH101 TO	Y.C	Y.C
3.40' RT 1st Ave STA 38+34.79													MH102		
3.40' RT 1st Ave STA 38+34.79 TO	102	4	30	154	III		MH102					X	MH102 TO	Y.C	Y.C
0.30' LT 1st Ave STA 36+80.71													MH103		
0.30' LT 1st Ave STA 36+80.71 TO	103	4	30	448	III		MH103					X	MH103 TO	Y.C	Y.C
5.60' LT 1st Ave STA 32+32.39													MH104		
5.15' RT C St STA 97+23.50 TO	104	4	36	33	III		MH104					X	MH104 TO	Y.C	Y.C
5.15' RT C St STA 96+90.56													MH105		
5.15' RT C St STA 96+90.56 TO	105	5	42	324	IV		MH105					X	MH105 TO	Y.C.	Y.C.
5.15' RT C St STA 93+67.47													MH106		
6.55' LT Main St STA 19+66.30 TO	106	5	42	331	IV		MH106					X	MH106 TO	Y.C	Y.C
10.00' LT Main St STA 16+35.89													MH107		
10.00' LT Main St STA 16+35.89 TO	107	5	48	331	IV		MH107					X	MH107 TO	Y.C	Y.C
10.80' LT Main St STA 13+05.86													MH108		
10.80' LT Main St STA 13+05.86 TO	108	5	48	282	IV		MH108					X	MH108 TO	Y.C	Y.C
11.45' LT Main St STA 10+24.55													MH109		
11.45' LT Main St STA 10+24.55 TO	109	5	48	282	IV		MH109					X	MH109 TO	Y.C	Y.C
12.10' LT Main St STA 7+43.24													MH110		
12.10' LT Main St STA 7+43.24 TO	110	5	48	72	IV		MH110					X	MH110 TO	Y.C	Y.C
74.96' LT Main St STA 7+10.13													MH111		

*ALL ROAD SURFACING BY ADOT

Offset, Station	Pipe Ref No.	Controlling Fill Height Range	Size (Inches)	Length (LF)	RGRCP, CLASS-TRENCH	PVC, SDR-35	Structure Plan Ref No	CB Type 4, Single (ADOT C-15.10)	CB Type 4, Double (ADOT C-15.10)	CB Type 1, Triple (ADOT C-15.30)	Manhole (ADOT C-18.10)	Manhole (Detail C)	Comments	RESPONSIBLE PARTY FOR PIPE	RESPONSIBLE PARTY FOR STRUCTURE
2.85' RT Urtuzuastegui St STA 16+65.55 TO	111	5	48	215	IV		MH111					X	MH111 TO	Y.C.	Y.C
3.00' RT Urtuzuastegui St STA 14+51.44													MH112		
3.00' RT Urtuzuastegui St STA 14+51.44 TO	112	5	54	88	IV		MH112					X	MH112 TO	Y.C.	Y.C
3.05' RT Urtuzuastegui St STA 13+63.10													MH113		
3.05' RT Urtuzuastegui St STA 13+63.10 TO	113	5	54	77	IV		MH113					X	MH113 TO	Y.C.	Y.C
3.10' RT Urtuzuastegui St STA 12+86.10													MH114		
3.10' RT Urtuzuastegui St STA 12+86.10 TO	114	5	54	77	IV		MH114					X	MH114 TO	Y.C.	Y.C
3.20' RT Urtuzuastegui St STA 12+09.17													MH115		
3.20' RT Urtuzuastegui St STA 12+09.17 TO	115	6	54	77	IV		MH115					X	MH115 TO	Y.C.	Y.C
3.25' RT Urtuzuastegui St STA 11+32.17													MH116		
3.25' RT Urtuzuastegui St STA 11+32.17 TO	116	5	54	77	IV		MH116					X	MH116 TO	Y.C	Y.C
3.30' RT Urtuzuastegui St STA 10+55.18													MH117		
3.30' RT Urtuzuastegui St STA 10+55.18 TO	117	5	54	77	IV		MH117					X	MH117 TO	Y.C.	Y.C
3.35' RT Urtuzuastegui St STA 9+78.18													MH118		
3.35' RT Urtuzuastegui St STA 9+78.18 TO	118	5	54	75	IV		MH118					X	MH118 TO	Y.C.	Y.C
3.40' RT Urtuzuastegui St STA 9+03.82							OUTLET						OUTLET		Y.C
12.75' RT D St STA 110+50.15 TO	205	3	24	51	II								PLUG TO	Y.C	Y.C
12.65' RT D St STA 110+00.15													MH102		

FILL HEIGHT RANGE TABLE (Ft.)												
RANGE NO.		1	2	3	4	5	6	7	8	9	10	11	12
FILL	>	1	3	5	8	11	15	20	25	30	40	55	70
HEIGHT (Ft.)	≤	3	5	8	11	15	20	25	30	40	55	70	90

● SHOULD FIELD CONDITIONS VARY FROM THE RANGE INDICATED, CONTACT DESIGN FOR RE-EVALUATION OF PIPE DESIGN REQUIREMENTS.

NOTE
PIPE OPTIONS SELECTED ARE THOSE REQUIRED TO MEET MINIMUM SERVICE LIFE
SHADED PIPE OPTION FIELDS ARE NOT ALLOWABLE ALTERNATES

RGRCP– RUBBER GASKETED REINFORCED CONCRETE PIPE
ADOT– ARIZONA DEPARTMENT OF TRANSPORTATION
Y.C.– YUMA COUNTY
PVC– POLYVINYL CHLORIDE (PVC) PIPE CONFORMING TO ASTM F679

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	301	303	

095 YU 000

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STATE OF ARIZONA

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SAN LUIS, YUMA COUNTY, ARIZONA
SECTION 12, T.11S., R.25W., G. & S.R.M.

PIPE SUMMARY

EXHIBIT B

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	302	303	

095 YU 000

Offset, Station	Pipe Ref No (XXX)	Controlling Fill Height Range	Drainage Pipes: Size (inches)	Length (LF)	RGRCP: CLASS-TRENCH	PVC: SDR-35	Drainage Structures: Structure Plan Ref No (XX/XXX)	CB Type 4,Single(ADOT C=15.10)	CB Type 4,Double(ADOT C=15.10)	CB Type 1,Triple(ADOT C=15.30)	Manhole(ADOT C=18.10)	Manhole (Detail C)	Comments	RESPONSIBLE PARTY FOR PIPE	RESPONSIBLE PARTY FOR STRUCTURE
10.50' RT D St STA 109+05.20 TO	206	3	24	95	II		MH206				X		MH206 TO	Y.C.	Y.C.
12.65' RT D St STA 110+00.15													MH102		
5.60' RT C St STA 97+71.50 TO	304	4	36	48	III								PLUG TO	Y.C.	Y.C.
5.00' RT C St STA 97+23.50													MH104		
5.35' RT B St STA 57+60.80 TO	407	3	24	38	II						X		PLUG TO	Y.C.	Y.C.
5.00' RT B St STA 57+22.81													MH408		
5.00' RT B St STA 57+22.81 TO	408	4	24	43	III		MH408				X		MH408 TO	Y.C.	Y.C.
5.00' RT B St STA 56+79.84													MH409		
5.00' RT B St STA 56+79.84 TO	409	4	24	261	III		MH409				X		MH409 TO	Y.C.	Y.C.
5.05' RT B St STA 54+19.00													MH410		
5.05' RT B St STA 54+19.00 TO	410	5	30	64	IV		MH410				X		MH410 TO	Y.C.	Y.C.
5.05' RT B St STA 53+55.61													MH108		
17.15' LT 1st St STA 38+87.26 TO	1	3	24	23	II		CB1		X				CB1 TO	Y.C.	Y.C.
3.85' RT 1st St STA 38+87.26													MH101		
17.00' RT 1st St STA 38+96.74 TO	2	3	18	19	II		CB2		X				CB2 TO	Y.C.	Y.C.
3.85' RT 1st St STA 38+87.26													MH101		
15.25' RT 1st St STA 38+17.40 TO	3	2	18	21	II		CB3			X			CB3 TO	Y.C.	Y.C.
3.40' RT 1st St STA 38+34.80													MH102		
38.10' RT C St STA 97+44.50 TO	4	2	18	40	II		CB4			X			CB4 TO	Y.C.	Y.C.
5.15' RT C St STA 97+23.50													MH104		

Offset, Station	Pipe Ref No. (XXX)	Controlling Fill Height Range	Drainage Pipes: Size (inches)	Length (LF)	RGRCP: CLASS-TRENCH	PVC: SDR-35	Drainage Structures: Structure Plan Ref No (XX/XXX)	CB Type 4,Single(ADOT C=15.10)	CB Type 4,Double(ADOT C=15.10)	CB Type 1,Triple(ADOT C=15.30)	Manhole(ADOT C=18.10)	Manhole (Detail C)	Comments	RESPONSIBLE PARTY FOR PIPE	RESPONSIBLE PARTY FOR STRUCTURE
38.10' RT C St STA 97+12.25 TO	5	2	18	31	II		CB5			X			CB5 TO	Y.C.	Y.C.
17.10' RT C St STA 96+90.56													CB6		
17.10' RT C St STA 96+90.56 TO	6	2	18	12	II		CB6	X					CB6 TO	Y.C.	Y.C.
5.15' RT C St STA 96+90.56													MH105		
17.55' LT C St STA 96+93.66 TO	7	2	18	23	II		CB7			X			CB7 TO	Y.C.	Y.C.
5.15' RT C St STA 96+90.56													MH105		
22.60' LT Urtuzuastegui St STA 17+72.56 TO	8	2	18	24	II		CB8			X			CB8 TO	ADOT	ADOT
1.90' RT Urtuzuastegui St STA 17+72.56													MH10		
46.70' RT Urtuzuastegui St STA 18+12.10 TO	9	2	18	60	II		CB9			X			CB9 TO	ADOT	ADOT
1.90' RT Urtuzuastegui St STA 17+72.56													MH10		
1.90' RT Urtuzuastegui St STA 17+72.56 TO	10	2	18	107	II		MH10					X	MH10 TO	ADOT	ADOT
2.85' RT Urtuzuastegui St STA 16+65.55													MH111		
18.20' LT Urtuzuastegui St STA 14+51.44 TO	11	3	18	22	II		CB11			X			CB11 TO	Y.C.	Y.C.
3.00' LT Urtuzuastegui St STA 14+51.44													MH112		
32.10' RT Urtuzuastegui St STA 14+51.44 TO	12	3	18	29	II		CB12	X					CB12 TO	Y.C.	Y.C.
3.00' LT Urtuzuastegui St STA 14+51.44													MH112		
19.75' LT D St STA 109+05.20 TO	18	3	24	31	II		CB18			X			CB18 TO	Y.C.	Y.C.
10.50' RT D St STA 109+05.20													MH206		

FILL HEIGHT RANGE TABLE (Ft.)												
RANGE NO.		1	2	3	4	5	6	7	8	9	10	11	12
FILL	>	1	3	5	8	11	15	20	25	30	40	55	70
HEIGHT (Ft.)	≤	3	5	8	11	15	20	25	30	40	55	70	90

◒ SHOULD FIELD CONDITIONS VARY FROM THE RANGE INDICATED, CONTACT DESIGN FOR RE-EVALUATION OF PIPE DESIGN REQUIREMENTS

NOTE
PIPE OPTIONS SELECTED ARE THOSE REQUIRED TO MEET MINIMUM SERVICE LIFE
SHADED PIPE OPTION FIELDS ARE NOT ALLOWABLE ALTERNATES

RGRCP– RUBBER GASKETED REINFORCED CONCRETE PIPE
ADOT– ARIZONA DEPARTMENT OF TRANSPORTATION
Y.C.– YUMA COUNTY
PVC– POLYVINYL CHLORIDE (PVC) PIPE CONFORMING TO ASTM F679

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www.CoreEngineeringGroup.com
Core@core-e-g.com
Core Project No. 10-047

YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES
STATE OF ARIZONA

SAN LUIS DRAINAGE IMPROVEMENTS
SAN LUIS, YUMA COUNTY, ARIZONA
SECTION 12, T.11S., R.25W., G. & S.R.M.

PIPE SUMMARY

EXHIBIT B

F H W A REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	STP-095-A(204)T	303	303	

095 YU 000

Offset, Station	Drainage Pipes: Pipe Ref No (XXX)	Controlling Fill Height Range ◒	Size (Inches)	Length (LF)	RGRCP, CLASS-TRENCH	PVC, SDR-35	Drainage Structures: Structure Plan Ref No. (XX/XXX)	End Conditions: CB Type 4,Single(ADOT C-15.10)	CB Type 4,Double(ADOT C-15.10)	CB Type 1,Triple(ADOT C-15.30)	Manhole(ADOT C-18.10)	Manhole (Detail C)	Comments	RESPONSIBLE PARTY FOR PIPE	RESPONSIBLE PARTY FOR STRUCTURE
16.85' RT D St STA 109+05.20 TO	19	3	18	7	II		CB19		X				CB19 TO	Y.C.	Y.C.
10.50' RT D St STA 109+05.20													MH206		
35.60' RT B St STA 57+33.90 TO	44	2	18	12	II		CB44			X			CB44 TO	Y.C.	Y.C.
35.60' RT B St STA 57+22.80													MH46		
35.60' RT B St STA 56+99.70 TO	45	2	18	24	II		CB45			X			CB45 TO	Y.C.	Y.C.
35.60' RT B St STA 57+22.80													MH46		
35.60' RT B St STA 57+22.80	46	3	18	31	II		MH46				X		MH46 TO	Y.C.	Y.C.
5.00' RT B St STA 57+22.80													MH408		
13.65' RT B St STA 56+79.84 TO	47	2	18	9	II		CB47		X				CB47 TO	Y.C.	Y.C.
5.00' RT B St STA 56+79.84													MH409		
20.10' LT B St STA 56+79.84 TO	48	2	18	26	II		CB48		X				CB48 TO	Y.C.	Y.C.
5.00' RT B St STA 56+79.84													MH409		
21.15' LT B St STA 54+19.00 TO	49	2	18	27	II		CB49		X				CB49 TO	Y.C.	Y.C.
5.05' RT B St STA 54+19.00													MH410		
19.45' LT ARCHIBALD St STA 22+99.90 TO	51	2	15	54	II	X	CB51			X			CB51 TO	ADOT	ADOT
3.30' LT ARCHIBALD St STA 22+49.55													EX. MH		
18.44' RT ARCHIBALD St STA 17+24.52							CB52		X				CB52 TO	N/A	ADOT
													EX. PIPE		
18.75' LT ARCHIBALD St STA 17+14.20							CB53	X					CB53 TO	N/A	ADOT
													EX. PIPE		

Offset, Station	Drainage Pipes: Pipe Ref No (XXX)	Controlling Fill Height Range ◒	Size (Inches)	Length (LF)	RGRCP, CLASS-TRENCH	PVC, SDR-35	Drainage Structures: Structure Plan Ref No. (XX/XXX)	End Conditions: CB Type 4,Single(ADOT C-15.10)	CB Type 4,Double(ADOT C-15.10)	CB Type 1,Triple(ADOT C-15.30)	Manhole(ADOT C-18.10)	Manhole (Detail C)	Comments	RESPONSIBLE PARTY FOR PIPE	RESPONSIBLE PARTY FOR STRUCTURE
19.48' RT ARCHIBALD St STA 12+95.80							CB54		X				CB54 TO	N/A	ADOT
													EX. PIPE		
18.75' LT ARCHIBALD St STA 12+95.92							CB55	X					CB55 TO	N/A	ADOT
													EX. PIPE		
18.84' RT ARCHIBALD St STA 10+85.41							CB56	X					CB56 TO	N/A	ADOT
													EX. PIPE		
18.75' LT ARCHIBALD St STA 10+85.78							CB57	X					CB57 TO	N/A	ADOT
													EX. PIPE		
34.70' LT MAIN St STA 20+13.74 TO	58	2	18	55	II		CB58		X				CB58 TO	ADOT	ADOT
6.55' RT MAIN St STA 19+66.30													MH106		
21.00' LT B St STA 52+94.00							CB59			X			CB59 TO	N/A	Y.C.
													EX. PIPE		
5.06' RT URTUZUASTEGUI St STA 13+63.10 TO	61	3	30	8	II								EX. PIPE	Y.C.	N/A
5.06' LT URTUZUASTEGUI St STA 13+63.10													TO MH113		

FILL HEIGHT RANGE TABLE (Ft.)													
RANGE NO.		1	2	3	4	5	6	7	8	9	10	11	12
FILL	>	1	3	5	8	11	15	20	25	30	40	55	70
HEIGHT (Ft.)	≤	3	5	8	11	15	20	25	30	40	55	70	90

◒ SHOULD FIELD CONDITIONS VARY FROM THE RANGE INDICATED, CONTACT DESIGN FOR RE-EVALUATION OF PIPE DESIGN REQUIREMENTS.

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SAN LUIS DRAINAGE IMPROVEMENTS
SAN LUIS, YUMA COUNTY, ARIZONA
SECTION 12, T.11S., R.25W., G. & S.R.M.

PIPE SUMMARY

EXHIBIT B

RECLAMATION

Managing Water in the West

Engineering and O&M Guidelines for Crossings

Bureau of Reclamation Water Conveyance Facilities (Canals, Pipelines, and Similar Facilities)

U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
Denver, Colorado

April 2008

EXHIBIT C

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

EXHIBIT C

Engineering and O&M Guidelines for Crossings

Bureau of Reclamation Water Conveyance Facilities
(Canals, Pipelines, and Similar Facilities)

EXHIBIT C

EXHIBIT C

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Official
AOE	authorized operating entity
AWWA	American Water Works Association
CFR	Code of Federal Regulations
CPS	cathodic protection system
DOT	Department of Transportation
HDD	horizontal directional drilling
kV	kilovolt(s)
MERL	Materials Engineering and Research Laboratory
O&M	operations and maintenance
Reclamation	Bureau of Reclamation
ROW	right-of-way
WB-67	67-foot wheelbase

EXHIBIT C

EXHIBIT C

Contents

EXHIBIT C

EXHIBIT C

1.0 PURPOSE

These are general guidelines for Bureau of Reclamation (Reclamation) offices to follow when reviewing the engineering and operations and maintenance (O&M) factors in outside entity requests for authorization to cross (encroach upon) Reclamation lands that contain project features such as levees, canals, pipelines, or other water conveyance facilities owned or administered by Reclamation. These guidelines include a general overview of the permitting process administered by Reclamation Lands Groups for allowing a particular use on lands where Reclamation holds a fee or an easement right-of-way interest. These engineering and construction recommendations are minimum guidelines for engineers to use in reviewing and evaluating these portions of the applications.

2.0 GENERAL PERMIT INFORMATION

Applicants requesting to cross any Reclamation land, facility, or water body must obtain a written land use authorization from Reclamation. Requirements for obtaining a use authorization to cross Reclamation project land and water surfaces are in the Code of Federal Regulations (CFR) at 43 CFR 429 and Reclamation Manual LND 08-01. The applicant must complete the *Standard Form (SF) 299*, "**Application for Transportation and Utility Systems and Facilities on Federal Lands**," or similar forms in use at the local Reclamation office. The form can be obtained by contacting the involved Reclamation office, or it can be accessed electronically at Reclamation's Web site at: <http://www.usbr.gov/pmts/lands>.

Applicants can contact their local Reclamation office to discuss their proposed use before filing an application for a use authorization.

3.0 ENGINEERING AND O&M REVIEW CONSIDERATIONS

3.1 Introduction

Technical review of the crossing evaluates impacts on any existing Reclamation facility and **does not determine the adequacy of the crossing design for the applicant's intended purpose**.

The use authorization or consent document specifies criteria which, if followed, would not be deemed unreasonable interference. These review guidelines are strictly limited to those criteria which:

EXHIBIT C

- Protect Reclamation's facility and/or appurtenant facility from damage
- Ensure unrestricted flow and quality of water in Reclamation's facility
- Do not diminish the ability to perform O&M of Reclamation's facility, including access
- Prevent any burden of liability

These guidelines are provided as recommendations that apply to most Reclamation facilities. Each Reclamation office and/or authorized operating entity (AOE) should apply these guidelines using **sound engineering judgment** that best applies to their facilities and existing conditions. Additional Reclamation guidelines for specific locations (e.g., Central Arizona Project Reach 11 Basin Guidelines) may also apply and may be provided to applicants when necessary. These guidelines are minimums, and local conditions may be more stringent depending on the direct impacts to facilities and lands. AOEs may have additional requirements.

Uses that may be deemed reasonable within Reclamation pipeline easements include greenbelts, asphalt roadways, flexible pavement parking lots, transverse curbs and gutters, and sidewalks. Canals and pipelines may have overhead power and telephone lines (but not their supporting poles), transverse fences with gated openings (no walls), and similar surface and overhead structures.

3.2 General

The following individual items should be addressed by the applicant and evaluated by Reclamation and/or AOE as they may affect the Reclamation facility's engineering and O&M aspects. If unusual conditions are proposed for the encroaching structure or unusual field conditions within a Reclamation facility right-of-way (ROW) are encountered, Reclamation reserves the right to impose more stringent criteria than prescribed in these guidelines.

1. Structures that should not be constructed on Reclamation pipeline or canal ROW (whether fee owned or easement) include foundations, buildings, garages, carports, trailers, street light standards, supports for large signs, walls, longitudinal fences (except security/safety fences), power or telephone poles, and similar surface structures.

2. Prior to construction, a joint inspection should be conducted and the condition of existing facilities documented. Reclamation's ROW should be restored to pre-existing conditions following completion of work.

3. When applications are requesting public use of trails and maintenance roads adjacent to or crossing Reclamation canals, these facilities should be fenced for safety to separate them from open canal water, except when Reclamation's ROW is used as a greenbelt and the applicant accepts legal hazard responsibility. Trails and maintenance roads should be fenced on an as-needed basis whenever such fencing is warranted for public safety, restricted access, security, etc. If a fence is allowed within Reclamation's ROW, Reclamation should approve the fence materials. Any gates allowed within Reclamation's ROW should be at least 16 feet wide. Reclamation will be provided with full access through any fences or gates.

4. Prior to construction of any structure that encroaches within a Reclamation pipeline or canal ROW, a "pothole excavation" should be made to determine the locations of any existing Reclamation and non-Reclamation facilities and their appurtenant features that may be affected. Potholing is the practice of digging test holes to expose underground utilities to determine the horizontal and vertical location of the utility.

   All work within 18 inches of the facility should be done using hand-held tools only. The excavation should be made by or in the presence of Reclamation and/or AOE personnel. The presence of a Reclamation and/or AOE inspector may be required throughout the excavation process, but this presence in no way relieves the applicant or their contractor of responsibility.

   The resultant elevation information should be delineated on the profile view and labeled as:

   POTHOLED ELEVATION XX.X
   Surface Elevation XX.X

   The pothole excavation should be filled in, or a safety fence installed, prior to departing the site each day.

5. If Reclamation facilities need to be modified to avoid adverse impacts from the applicant's crossing facility, the applicant should be responsible for the cost of such modifications.

EXHIBIT C

6. A temporary permit may be required for visual inspections, ground and aerial surveys,[1] or potholing that requires physical entrance onto a Reclamation facility. **A use authorization or consent document issued by Reclamation and/or AOE should be obtained prior to entering or crossing Reclamation's ROW for any activity**.

7. Applications should include a project description, calculations, specifications, and detailed construction plans showing plan views, profiles and sections, and grading plans of proposed work within or adjacent to Reclamation's ROW. Plans should show an easily recognizable boundary (tied to a known corner) and Reclamation's ROW and Reclamation stationing or mile post designation.

   All Reclamation facilities should be shown and labeled (e.g., "Centerline of xx-inch Reclamation Pipeline," "Reclamation Communication and Control Cable," etc.) The type and weight of the construction equipment crossing Reclamation pipelines, roads, and bridges as well as the crossing locations should be included. Additional information, as identified in following individual specific feature sections of these guidelines, should also be included with the application for review.

   Any engineering or land survey drawing should contain the appropriate registered engineer's or land surveyor's stamp and signature. A construction schedule outlining the anticipated duration of the construction should be submitted. A minimum of two[2] copies of the application (including calculations, specifications, and plans) should be submitted to Reclamation and/or AOE for review and approval.

8. For crossings of all Reclamation facilities, Reclamation and/or AOE personnel familiar with the facilities (including cathodic protection systems) will obtain and provide copies of existing files showing information about existing buried facilities (center of pipeline, depth of cover, size of pipe, class of pipe, etc.) to the applicant.

9. Existing Reclamation facilities (e.g., canal lining, canal check structure, turnout structure, etc.) and appurtenances (e.g., existing blow-offs, air valves, vents, manholes, and/or cathodic protection test stations) and existing non-Reclamation facilities on Reclamation's ROW (e.g., petroleum pipelines, natural gas pipelines, communications lines, powerlines, water lines, sewer lines, storm drain lines, etc.) **should be protected** in place prior to and during construction.

[1] Aerial surveys require placing on-the-ground survey control markers.
[2] Revise per local Reclamation office and/or AOE practice.

The applicant and/or their contractor may be liable for all damages to Reclamation facilities and appurtenances as a result of construction and for any other damages or losses suffered by Reclamation or its water contractors, including power, irrigation, municipal and industrial water supply, and communication losses.

10. Trench excavation should comply with the most current Occupational Safety and Health Administration standards or Reclamation Health and Safety Standards, whichever are more stringent. Trench backfill should be placed in 4- to 6-inch lifts if hand compacted or no more than 8-inch lifts if power compacted. Trench backfill within Reclamation's ROW should be compacted to 95 percent relative compaction (ASTM D 698, Standard Proctor) (or 90 percent of ASTM D 1557). Mechanical compaction using heavy equipment (greater than 2,000 pounds) should not be used within 18 inches of the Reclamation pipeline. Flowable fill (or controlled low strength material) should be substituted for compacted pipe embedment under canals and may be used when crossing pipelines.

11. Erosion control measures, including re-vegetation, should be implemented after completing construction.

12. If existing drainage features are to be modified during construction, detailed drawings showing the proposed drainage replacement/ restoration should be submitted with the application for review and approval. The applicant is responsible for the care and handling of storm water runoff both during and after construction.

13. The applicant should not divert surface runoff[3] toward Reclamation canal or canal embankments. The 100-year storm[4] surface runoff should use detention basins outside of Reclamation's ROW. Lined drainage channels should be designed to transfer flow from the detention basins to the existing cross drainage facilities that drained the original area. Also refer to "4.4 Storm Water Cross Drainage."

14. Proposed temporary or permanent modifications to the existing cover over Reclamation pipelines should be subject to review and approval by Reclamation and/or AOE. Design parameters for roadway, parking lot, and driveway crossings over the pipe should also be subject to review and approval by Reclamation and/or AOE.

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[3] Subdivision or commercial development on the uphill side of canals that pave large areas and have large roof areas will greatly increase peak storm runoff—most city development requires retention basins. Applicants should provide the same retention basins that are required for similar development projects.

[4] Revise per Reclamation field office for specific canal if a higher storm frequency is required.

15. When a Reclamation pipeline system being crossed has pipe with an "A" cover pipe designation (less than 5 feet of earth), the applicant is to analyze the crossing to show "A" pipe load carrying capability exists to meet their carrying requirements or replace the "A" pipe with pipe of sufficient load carrying capability.

16. Reclamation's ongoing O&M activities should not be disrupted during construction. The primary or secondary operating road should be kept available for Reclamation and/or AOE use at all times.

17. Detectable warning tape may be required over below-ground utilities. Refer to "3.3 Detectable Warning Tape."

18. The points where the proposed utilities enter and exit Reclamation's ROW should be plainly and permanently marked by sign posts extending 5 feet above grade. Applicants should provide sign posts directly above their utilities and at all angle points within Reclamation's ROW. The distance between adjacent sign posts should not exceed 500 feet. Sign posts should contain the name of owner/operator, contents of the pipeline, utility identification, and emergency contact telephone number. Sign posts for angle points that lie within roads or canals should be offset and have a reference noted. The locations of the sign posts should be shown on the plans.

19. Following completion of work, applicants should provide as-built drawings of their facilities on Reclamation's ROW. Reclamation as-built drawings are to be updated by the appropriate Reclamation office and/or AOE to reflect the crossing. As-built drawings may be maintained by the AOE, but should remain accessible to Reclamation upon request.

3.3 Detectable Warning Tape

Detectable warning tape may be required over below-ground utilities situated within Reclamation's ROW and should be a minimum of 18 inches above the utility and between 18 and 30 inches below the ground surface. Warning tapes should conform to the following specifications:

a. For potable water lines, the warning tape should be a 3-inch-wide blue detectable tape imprinted with "**CAUTION BURIED POTABLE WATER LINE.**"

b. For nonpotable water lines, the warning tape should be a 3-inch-wide purple detectable tape imprinted with "**CAUTION BURIED NONPOTABLE WATER LINE.**"

c. For sewer and storm drain lines, the warning tape should be a 3-inch-wide green detectable tape imprinted with "**CAUTION BURIED (type) LINE.**"

d. For gas, oil, and steam chemical lines, the warning tape should be a 3-inch-wide yellow detectable tape imprinted with "**CAUTION BURIED (type) LINE.**"

e. For telecommunications, telephone, and television conduit(s), the warning tape should be a 3-inch-wide orange detectable tape imprinted with "**CAUTION BURIED (type) CONDUIT.**"

f. For electrical, street lighting, and traffic signal conduit(s), the warning tape should be a 3-inch-wide red detectable tape imprinted with "**CAUTION BURIED (type) CONDUIT.**"

4.0 Specific Feature Review Guidelines

4.1 Bridges

1. New bridge crossings (vehicular, pedestrian, and utility) should be perpendicular (between 70 and 90 degrees) to the centerline of the water conveyance facility and at locations approved by Reclamation and/or the AOE. Exceptions to the policy may be considered on an individual basis.

2. Public use bridges in urban areas should be spaced no closer together than 1/3 mile (about 4 blocks or 1,700 feet) apart. This is to ensure O&M operations are not overly restricted.

3. Bridge crossings should be of free span design. Consideration of any anticipated (known or ongoing) canal subsidence issues, anticipated raising of the canal lining, or anticipated increases in the canal's high water level should be made. The minimum vertical clearance between the bottom of the superstructure and the top of the canal lining should be 3 feet. For unlined canals, the vertical clearance may be measured to the high water level. If this minimum clearance is reduced by subsidence or by future Reclamation modifications to the canal lining, the minimum clearance should be re-established at the applicant's expense. The minimum horizontal clearance from the face of the abutment to the top of the canal lining should be 5 feet. For unlined canals, the horizontal clearance may be measured to the high water level.

These clearances are suggested to minimize impact on the canal section during construction and future inspections and O&M. Applicants may request to re-construct a canal section if Reclamation's operations are impacted by close construction during periods when the canal is normally unwatered. If so, vertical clearances may be reduced to 1 foot and horizontal clearance to 3 feet.

4. Canal O&M roads should intersect public roads at bridges at right angles for proper visibility. This may require the applicant to acquire additional ROW for use if the existing canal ROW is not sufficient. American Association of State Highway and Transportation Official (AASHTO) criteria for sight distances at the intersection of O&M roads and roadways at new bridges should be met to allow O&M vehicles to cross them safely.

5. Driving piles at concrete-lined canals should not be permitted. Any abutment foundation support piles, at concrete-lined canals, should be drilled and cast-in-place.

   At a minimum, the applicant's drilling and piling plan should include:

   - Drilling methods and equipment
   - Methods for preserving existing foundation material
   - Methods and equipment to determine the presence of quick soil conditions or scouring and caving
   - The proposed method for casing installation and removal if casings are used
   - Methods and equipment for accurately determining the depth of concrete and actual or theoretical volume placed

   At a minimum, the applicant's contingency plan should include:

   - Means to repair in a certain time
   - Minimum flows after event
   - Review of geotechnical conditions surrounding the pile locations
   - Assessment of how the proposed mitigations will address geotechnical conditions
   - Methods for restoring foundation material

- A list of material, equipment, and personnel with qualifications to be used during mitigation work

- A seal from a Professional Engineer on all relevant plans and drawings

6. The submitted plan drawings for the bridge should contain the following information:

   a. Superstructure, abutments, railings, embankments, and drainage, including details and sections

   b. Type of materials (concrete, steel, timber, etc.) used for different members

   c. Details of cast-in-place foundation piles, if any, on both sides of the canal

   d. The elevation of the bottom of the superstructure and the clearance between the top of the canal lining (or high water level if unlined canal) to the superstructure or bottom of deck slab, whichever is lowest

   e. Design loadings

   f. Design standards on which the bridge is based (AASHTO, etc.)

7. The calculations and specifications for the bridge should be submitted to Reclamation and/or AOE for review.

8. The right lane turn radius from the new road onto a Reclamation operating road should comply with the provisions of a 67-foot wheelbase[5] (WB-67) truck turning template in the AASHTO manual on Geometric Design of Highway and Streets.

9. Details of any proposed utilities to be attached to an existing bridge include:

   a. Anchor bolt locations should not intercept the critical reinforcing steel of the bridge.

[5] The field office should adjust these provisions according to anticipated needs.

b. Utilities should be placed and anchored under bridge decks and through utility openings, if they are present. The utility should be placed off center in the utility opening, if possible, to allow for future utility additions.

c. If an expansion joint is used in the pipeline, the joint should be placed near the bridge deck expansion joint.

d. Holes through bridge concrete or abutment and retaining walls for passage of utilities should be allowed by core drilling. The annular space between the utility and core hole surface should be completely filled with an elastomeric sealant to prevent loss of material or water piping from behind the wingwalls and abutments.

e. Submit calculations showing the effects of the weights of the proposed utilities on the load carrying capacity of the bridge for Reclamation review.

f. Intermediate supports for the utility should withstand the same seismic load considerations as the bridge.

g. Load limit signs should be placed adjacent to the bridge, as required under AASHTO criteria.

h. Beam guardrails should be installed at bridges and bridge approaches, as required under AASHTO criteria.

10. The applicant will be responsible for changes to Reclamation existing ROW; bridge O&M approach roads; existing fencing, gates, and signs; and the addition of new fencing, O&M gates, cattle guards, signs, etc.

4.2 Landscaping

1. No landscaping or other changes in ground surfaces within Reclamation pipeline and canal/lateral ROW should be made without advance written permission of Reclamation through the application process. Landscaping changes may (1) limit, prevent, or hamper O&M access; (2) increase the costs of operations and maintenance of the facility; (3) impact facility reliability; or (4) create a public nuisance or liability issue.

2. Open space with natural hiking trails and walkways may be permitted if vehicle access to Reclamation pipeline and appurtenant facilities for patrol and maintenance is provided.

3. The following may apply within Reclamation's ROW:

    a. The easement may be used as a greenbelt upon Reclamation approval.

    b. Ground cover and shrubs are permitted upon Reclamation approval.

    c. Trees and vines should not be allowed. See Appendix B of *Review of Operation and Maintenance Program Field Examination Guidelines* (reproduced as appendix B at the end of these guidelines).

4. All temporary or permanent changes in ground surfaces within Reclamation pipeline and canal ROW are considered encroaching structures and are handled as such. Earthfills and cuts on adjacent property should not encroach onto Reclamation pipeline and canal ROW. Excavations of adjacent property (even property not within Reclamation's purview) within the projection of the Reclamation embankment line may impact embankment stability and should be evaluated.

5. Permanent landscaping structures should not be allowed within the exterior limits of a Reclamation linear facility ROW (fee owned or easement).

6. Pressurized lawn and park sprinkler irrigation lines (3-inch maximum size) and isolation valves within Reclamation easements that run parallel to a Reclamation pipeline should be installed at least 15 feet from the edge of the Reclamation pipeline.

    Irrigating lawns and flower beds along canal embankments should not overwater the area or threaten the embankment stability.

4.3 Roadway Crossing

Note: This type of encroachment also includes parking areas and recreational trails.

1. The applicant should submit a grading plan as part of the application.

2. If the roadway crosses a Reclamation pipeline system that has a cover pipe designation of "A," refer to "3.2 General."

3. If the applicant intends to modify existing drainage features during construction, detailed drawings showing the proposed drainage replacement/restoration should be submitted with the application for review and approval. (Refer to "3.2 General.")

4. If the proposed roadway includes a bridge crossing over a Reclamation canal or pipeline, Reclamation and/or AOE should review and approve the vertical clearance and location of the abutments. (Refer to "4.1 Bridges.")

5. Streets, roads, or parking areas crossing Reclamation pipeline easements are permissible. All streets, roads, and parking surfaces are to be asphalt or other flexible pavement. Depressed curbs or driveways should be provided for Reclamation vehicular access when new roads cross Reclamation pipelines or canals.

6. Roadway ditch drainage should not be allowed to flow into the canal. Drainage should be retained and released in a controlled way to maintain peak discharges that are less than any peak historical runoff rate before these modifications. Applicants should direct drainage to an original sub-basin cross drainage culvert or overchute. (Refer to "3.2 General" and "4.4 Storm Water Cross Drainage.")

7. If existing roadway embankments are to be widened, the work should be conducted in accordance with the provisions of construction in the applicable State Department of Transportation (DOT) Standard Specifications.

4.4 Storm Water Cross Drainage

1. Upslope development impacts historic natural drainage volumes and peak flow rates. Development re-grades and revises drainage sub-basins. Revised ground cover from constructing roads, parking areas, and buildings may result in the need to change the cross drainage features (culverts and/or overchutes) along Reclamation canals.

2. A hydrologic study should accompany all plans that modify the existing drainage across and/or along Reclamation facilities. The study or report should show the proposed flows of the canal and the associated crossings. The drainage study or report should show that the downstream system can accept the flows without creating any flooding to properties adjacent to or downstream of the canal.

3. All drainage crossings, whether existing or proposed, should carry the peak runoff of a 100-year event while preventing any storm water from entering the canal and/or ponding against the canal embankment.

4. Urban runoff should not be allowed to enter into, or drain onto, Reclamation's land. All flows generated outside Reclamation's ROW should enter the storm drain system prior to entering Reclamation's ROW. Piped connections are preferred, but concrete-lined channels may be acceptable upon Reclamation's review.

5. The new crossing under a canal should be designed with 3 feet vertical clearance from the top of the cross drainage structure to the bottom of the canal (or liner). The structure should extend completely across Reclamation's ROW.

6. New overcrossings of the canal should have 2 feet of vertical clearance from the top of the liner and 2 feet of horizontal clearance from the support abutments to the outside edge of the canal lining. The O&M road crossing of the cross drainage structure should be structurally capable of withstanding highway-legal vehicle loadings and provide at least 1 foot of cover in the roadway.

7. Pipe crossing barriers should be installed on all pipe overcrossings.

8. All drainage flow should be discharged to a downstream storm drainage system owned, operated, and maintained by a public agency (such as a city or county) or into areas such as channels, roadways, parks, wetland basins, or other non-private lands that can accept the concentrated flows from the drainage crossing.

9. All drainage from upland property should be collected by the applicant's installed system of curbs and inlets within their property and discharged into a non-Reclamation public agency's drainage system.

10. New drainage system designs will not use ponding against the existing canal embankment for temporary detention of storm runoff that will not immediately pass through existing or new crossings.

    Proposed permanent detention facilities adjacent to Reclamation's property should include engineered fill beyond the canal ROW to provide, at a minimum, a fill-width maintenance access roadway between the canal property and the basin. The applicant shall submit a geotechnical report verifying that the canal embankments can perform as detention basin embankments. The design should provide for sufficient freeboard to contain the 100-year event within the proposed basin adjacent to Reclamation's property and shall have adequate protection from seepage and erosion.

    The ownership and related O&M of the embankments shall be the responsibility of the applicant requesting the crossing.

11. When grading operations upstream of existing canal drainage crossings are scheduled to take longer than a normal construction season to complete, temporary basins shall be installed. These temporary basins should be designed to detain the 100-year event, capture silt from the disturbed area, and meter the flows across the existing drain crossings without spilling flows into the canal.

12. Unless Reclamation specifies otherwise, the applicant should remove or plug and abandon existing drainage crossings that are not used by the development unless they are shown to provide an additional measure of safety for the canal by reducing the likelihood of spill into the canal caused by extreme runoff flows. Otherwise, these crossings should remain in place for Reclamation's benefit and will not require ownership transfer to a public agency.

    These crossings must discharge into the non-Reclamation public agency's storm drainage systems or into areas such as channels, roadways, parks, wetland basins, or other nonprivate lands that can accept the concentrated flows from the drainage crossing in the case of an extreme runoff event.

    Grading in Reclamation property should be preserved or revised to direct extreme runoff flows into these unused drainage crossings without allowing said flows to enter into the canal until the crossings reach their capacity.

4.5 Subdivision

Urban developments are reaching Reclamation's lands and ROWs. These are general guidelines for accommodating development in subdivisions (refer to "3.2 General" and "4.4 Storm Water Cross Drainage").

1. Permanent structures should not be permitted within Reclamation fee-owned linear ROWs.

2. Open space with natural hiking trails and vegetation may be allowable.

3. Where subdivision development is adjacent to a canal, fencing should include these characteristics:

    a. Temporary chain link fences must be installed prior to removing any portion of existing fences.

b. Upon completion of grading for drainage and other work, fencing should be installed along the subdivision's boundary length of the adjacent ROW plus 150 feet beyond the development's property boundary. The fence should be per project standards and at the applicant's expense.

c. The new fence should be located 1 foot outside of Reclamation's ROW. The fence location should be shown on the improvement plans.

4. Use of Reclamation pipeline easements as part of residential subdivision lots should not be allowed. Pipeline easements may be included within the subdivision greenbelt or similar use areas.

5. Drawings should include all proposed improvements (i.e., streets, utilities, landscaping, etc.) within, and adjacent to, Reclamation's ROW.

6. Trees or vines should not be allowed within a Reclamation pipeline or canal ROW. See Appendix B of *Review and Operation and Maintenance Program Field Examination Guidelines* (reproduced as appendix B at the end of these guidelines).

7. Streets, roads, or parking areas using Reclamation easements may be permissible. All streets, roads, and parking surfaces should be asphalt or other flexible pavement. Depressed curbs or driveways should be provided for Reclamation vehicular access when new roads cross Reclamation pipelines or canals.

8. Where fencing is proposed within Reclamation easements, a minimum 16-foot-wide gate should be provided for Reclamation access.

9. Pipelines containing sewage, oil, gasoline, natural gas, or hazardous materials should only cross perpendicular (between 70 and 90 degrees) to the Reclamation pipeline or canal and be installed with the necessary safety measures and separation clearance as required in "4.6 Utility Crossing."

10. Electroliers, posts, etc., should be installed at the maximum distance possible from the edge of the pipeline or canal.

11. If crossing a Reclamation pipeline system that has "A" cover pipe designation, refer to recommendations in "3.2 General."

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4.6 Utility Crossing

Note: All pipelines, electrical, and communication lines and conduits are referred to as "utilities" in these guidelines.

4.6.1 Casings

The Reclamation Materials Engineering and Research Laboratory's (MERL) position is to avoid using casing pipes around metallic carrier pipelines (steel, ductile iron, cast iron, reinforced concrete, pretensioned concrete cylinder, etc.) whenever possible. The experience of the corrosion community in general is that these casings often cause corrosion-control problems. Furthermore, dielectric (plastic, fiberglass, etc.) casings, or even dielectrically coated casings, should not be used. They can shield the carrier pipe from receiving cathodic protection current.

Cathodic protection to a buried metallic pipeline is more trouble free and more certain without a casing pipe. MERL recommends relying on effective corrosion control measures on the carrier pipeline rather than relying on a casing pipe (which may shield cathodic protection current) to direct a leak away from Reclamation property.

4.6.2 Overhead Line Crossing

1. Overhead wires across Reclamation pipeline and canal ROWs should be at least 32 feet above all ground levels in the Reclamation ROW. For electrical powerlines of 69 kilovolts (kV) or higher voltage, the minimum clearance should be 40 feet plus 0.25 inch per kV of line-to-line voltage above 450 kV. In any case, the minimum clearance is to be that determined to be needed with an ambient temperature of 120 degrees Fahrenheit.

2. Reclamation has the following requirements for overhead crossings:

    a. Poles or towers should not be allowed within Reclamation's ROW.

    b. Overhead electrical and communication lines should cross perpendicular (between 70 and 90 degrees) to the centerline of the Reclamation facility.

    c. If necessary, fence grounding is to be provided for existing fence lines, especially under power transmission lines.

3. A marker warning sign should be provided that shows the clearance and electrical line voltage. The warning sign should face oncoming traffic and state, "**DANGER, HIGH VOLTAGE OVERHEAD**."

4.6.3 Utility Crossing Reclamation's Canal

Utility crossings include open ditch laterals, subsurface and surface drains, levees, and similar facilities.

General Requirements:

1. Utilities crossing Reclamation canals should be designed to cross perpendicular (between 70 and 90 degrees).

2. Pier construction in the canal for new utility crossing(s) should not be allowed. New utility crossings should be free span design.

3. Open cut crossings of Reclamation canals and ditches, when allowed, should require replacing linings to re-establish the original construction style and materials (i.e., disturbed concrete lining panels should be removed in their entirety and replaced, membrane lining and earth or concrete protective cover should be re-constructed, gravel and canal under-drainage systems should be re-established to full working order, etc.) Proposals should be submitted for approval with the crossing permit application.

4. For trench excavation and backfill requirements, refer to "3.2 General."

5. Boring and jacking of a utility through canal embankments or protective levees should not be permitted. Boring and jacking of a utility should be constructed through the embankment foundation materials. Applicants should make special design and construction considerations with bored crossings under canals containing water during construction. Among these should be using proper bentonite slurry to seal the annulus space between the utility conduit and the boring cavity from canal seepage. Refer to appendix A for more details to be considered.

   The applicant's drilling plan should cover:

   a. Drilling methods and equipment

   b. Methods for preserving existing foundation material

   c. Methods and equipment to determine the presence of quick soil conditions or scouring and caving

d. Proposed method for casing installation and removal if casings are used

e. Methods and equipment for accurately determining the depth of concrete and actual or theoretical volume placed

The applicant's contingency plan should cover:

a. Means to repair in a certain time

b. Minimum flows after event

c. Review of geotechnical conditions surrounding the pile locations

d. Assessment of how the proposed mitigations will address geotechnical conditions

e. Methods for restoring foundation material

f. List of material, equipment, and personnel with qualifications to be used during mitigation work

g. A seal from a Professional Engineer on all relevant plans and drawings

6. When horizontal directional drilling (HDD) or other trenchless methods are used, canal seepage conditions may be aggravated by the collapse of the canal foundation material into the annular void between the bore and pipe. Penetration through the top stratum of fine-grained materials may concentrate seepage at those locations. Pipe installed with trenchless methods should proceed only after completion of a comprehensive evaluation of the following:

(a) Comprehensive understanding of the subsurface soil and groundwater conditions to a minimum depth of 20 feet below the lowest pipe elevation

(b) Locations of the HDD pipe penetration entry and exit

(c) Construction procedure

(d) Allowable uplift pressures

(e) Onsite quality control and quality assurance monitoring during construction operation

(f) Grouting of the pipe annulus

(g) Backfilling of any excavated areas

(h) Repair and reinstatement of the construction staging areas

A geotechnical report should be submitted with the application for review prior to approval of the proposed utility crossing.

Directional drilling under a canal may be considered if a minimum clearance of 25 feet to the bottom of the canal lining is maintained for utilities with less than a 24-inch outside diameter. Larger utility crossings should be considered on an individual basis and may require additional clearance from the bottom of the canal lining.

7. Cut and cover constructed utilities under Reclamation canals should have a minimum cover of 36 inches when within Reclamation's ROWs. Bored construction utilities should have a minimum of 3 diameters cover.

8. Reclamation's ongoing O&M activities should not be disrupted during crossing construction. The primary or secondary operating road should be kept available for Reclamation use at all times.

9. Canal embankments should be re-built or repaired with materials and standards equal to or better than the existing embankments.

10. Drawings should be stamped and signed by a Professional Engineer and contain the following information:

a. Canal milepost or station at each proposed crossing, utility size and location, and type of utility or material transported

b. Maximum utility operating pressure, type of pipe, joints, wall thickness, maximum test pressure, and description of test procedures

c. Type of sleeve/casing (when allowed) including diameter, joints, and wall thickness

d. For utilities attached to a bridge or an overchute, details showing the structure name, superstructure, abutments, embankments, protective dikes, method of attachment, spacing of utility supports on the structure, location of other attached utilities, and structural calculations

e. Protective coatings and corrosion control measures

f. Method of handling pipeline expansion and contraction

g. Location of nearest shutoff valve on each side of the crossing

h. Location and details of thrust restraint

i. Design code(s) used for the utility crossing

j. Location, including depth, of the buried pipeline communication and control cables

k. Other existing utility easements in the immediate vicinity

Hazardous Material Carrier Requirements:

1. Pipelines carrying hazardous material or pollutants (e.g., oils, gasoline, sewage, contaminated waters, and nonpotable waters) should be designed for a reduced risk of failure in the portion within Reclamation's ROW. The design should require either:

   a. Designing the crossing pipeline with an additional 50 percent working pressure factor

   or

   b. Using secondary containment (casing pipe) for all hazardous material pipelines

2. To minimize the amount of any hazardous material entering the canal, Reclamation may require the installation of a block (gate) valve and or a check valve on each side of the canal between the ROW boundary and the embankment. When selecting the type of the valves, take into the account the flow direction and the terrain.

3. A final hazardous material spill contingency plan and an emergency response plan should be approved by Reclamation prior to start of construction.

4. A monitoring program and/or Supervisory Control and Data Acquisition System alarm may be required depending on the hazardous material transported. This applies to all "overcrossings" and "undercrossings" when the hydraulic grade line is within 60 inches of the canal liner or when local geology would promote this requirement.

Attaching Utilities to Bridges and Overchutes:

Note: Reclamation does not guarantee the long-term availability of bridges or overchutes as support devices for utility crossings because they may require structural modifications or alterations to accommodate widening, repairs, subsidence offsets, etc., to such an extent that service may be interrupted or stopped. Reclamation may determine the bridge is no longer required and may remove it. In that event, the owner/operator of each utility attached to a bridge or an overchute may be required to re-locate or permanently remove their utility at their own expense.

Specific details for attaching utilities to bridges are:

a. Utilities should not be placed on the bridge deck.

b. Anchor bolt locations should not intercept the critical reinforcing steel of the bridge.

c. Utilities should be placed and anchored under bridge decks between girders and through utility openings, if they are present. The utility should be placed off center in the utility opening, if possible, to allow for future utility additions.

d. If an expansion joint is used in the pipeline, it should be placed near the bridge deck expansion joint.

e. Holes through bridge concrete or abutment and retaining walls for passage of utilities may be allowed and should be core drilled. The annular space between the utility and core hole surface should be completely filled with an elastomeric sealant to prevent loss of material or water piping from behind the wingwalls and abutments.

f. Calculations showing the effects of the weights of the proposed utilities on the load carrying capacity of the bridge should be submitted for Reclamation review.

g. Intermediate supports for the utility should withstand the seismic conditions of the bridge.

4.6.4 Utility Crossing Reclamation's Underground Pipelines

1. The applicant should submit the procedures, excavation plans, schedules, as well as type and weight of the construction equipment to be used for crossing the Reclamation pipeline.

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2. High voltage, direct current powerlines should not be permitted to encroach on the Reclamation pipeline ROW, except in unusual circumstances and with proper cathodic protection considerations.

3. For proposed metallic pipelines, refer to "5.0 Cathodic Protection Requirements."

4. For utilities crossing above or under the Reclamation pipeline, the vertical clearance between the utility and Reclamation pipeline should be a minimum of 12 inches.

5. The location of the Reclamation pipeline and the communication and control cables throughout the area of the proposed construction should be shown on the plans. Prior to Reclamation and/or AOE issuing a use authorization or consent document, the pipeline and the cable(s) should be located and exposed by potholing. The pothole locations should be shown on the drawings. The pothole elevations should be referenced to Reclamation stationing or milepost. (Refer to "3.2 General.")

6. Drawings should contain the following information:

    a. Reclamation milepost or station at each proposed crossing, pipeline size and location, and type of utility or material transported.

    b. Maximum utility operating pressure, type of pipe and joints, maximum test pressure and description of test procedures, wall thickness, and utility pipe classification.

    c. Type of sleeve/casing pipe (when allowed) including diameter, joints, and wall thickness.

    d. Protective coatings and corrosion control measures.

    e. Location of nearest shutoff valve on each side of the crossing.

    f. Location and details of thrust restraint.

    g. Design code(s) used for utility crossing.

    h. Location, including depth of the Reclamation pipeline and the communication and control cables.

    i. Other existing utility easements in the immediate vicinity.

7. Detectable warning tape may be required over trenched utilities. (Refer to "3.3 Detectable Warning Tape.")

8. For trench excavation and backfill requirements, refer to "3.2 General."

9. Embankments should not be permitted within Reclamation's ROW where underground pipeline exists.

4.6.5 Utility Crossing Under Reclamation's Roadways

1. The applicant should supply typical cross sections that show existing ground surface elevations, utility trench invert elevations, and utility details.

2. For trench excavation and backfill requirements, refer to "3.2 General."

3. Conduits with diameters up to 24 inches should be bored and jacked underneath pavements. Larger conduits may be considered on an individual basis. Pavement or road surfaces should not be cut unless an acceptable detour, if required, is approved. The cover over the conduit(s) when within Reclamation's ROWs should be a minimum of 36 inches. (Refer to "3.2 General.")

4. Unless otherwise approved, the applicant should replace existing Reclamation roads and parking surfaces that are removed or damaged by the applicant's construction activities in accordance with provisions in the latest edition of the applicable State DOT Standard Specifications.

5. If existing road embankments are to be widened, the work should be conducted in accordance with the provisions of embankment construction in the applicable State DOT Standard Specifications.

6. Detectable warning tape may be required over buried utilities. (Refer to "3.3 Detectable Warning Tape.")

5.0 CATHODIC PROTECTION REQUIREMENTS

5.1 Cathodically Protected Metallic Pipelines

Unless approved in writing by Reclamation, metallic pipelines or those containing metallic reinforcement (e.g., reinforced concrete) installed within Reclamation's ROW should have a suitable bonded dielectric coating (see "5.2 Protective Coatings for Corrosion Control") and be cathodically protected. Impressed current cathodic protection rectifiers and deep-well anode systems should not be

permitted within Reclamation facilities without prior approval from MERL's Corrosion Technology Group. All submittals should include details of the cathodic protection system (CPS) and its appurtenances.

1. All existing Reclamation cathodic protection test stations, cables running to these stations, rectifiers, anode beds, and any other appurtenances should be located prior to any grading or excavation. The test stations should be staked and flagged. The test stations, cables running to these stations, any anode beds, etc., should be suitably enclosed or protected during construction to prevent damage. No re-location or modification of the test stations, cables, anode beds, etc., is allowed without prior approval from MERL's Corrosion Technology Group.

2. Generally, the CPS to the proposed pipeline should be the sacrificial anode type unless the proposed installation continues an existing pipeline that uses impressed current type of cathodic protection.

3. A means of monitoring the effectiveness of the CPS on the proposed pipeline should be provided within Reclamation's ROWs. The number of anodes and test stations will differ with each project. Test stations should be located at every anode bed connection and should not be more than 1,000 feet apart. A test station should also be located where any metallic pipeline crosses over or under a metallic Reclamation pipeline, metallic fence, other metallic structure embedded in the ground, or comes within 20 feet of a Reclamation structure on or embedded in the ground. Both the proposed cathodically protected pipeline and the Reclamation pipeline should be monitored regularly using these test stations. Monitoring results should be reported to MERL's Corrosion Technology Group. In addition, the owner of the proposed crossing pipeline should investigate and mitigate any adverse potential shift caused by the proposed pipeline on the Reclamation pipeline. Owners of proposed crossing pipelines should return Reclamation pipelines to their original electrochemical potentials or to more benign potentials. Mitigation measures should be approved by MERL's Corrosion Technology Group. The effectiveness of mitigation measures should be confirmed in the presence of a Reclamation representative following installation.

   For those pipelines under DOT regulation, the application and monitoring of the CPS should conform to Title 49 CFR, Part 195, any special provisions of this guideline, and the provisions of NACE International RP 0169, in that order. For other pipelines, any special provisions of this guideline should take precedence, followed by the provisions of NACE RP 0169.

5.2 Protective Coatings for Corrosion Control

1. *Atmospheric Exposed Pipe*

   The coating should be a high build modified aluminum epoxy mastic primer and top coated with a high build aliphatic urethane. The type of coating should be listed in the submitted plans and specifications. Information should include the surface preparation and the thickness of the coating to be applied.

2. *Buried Pipe*

   The type of coating may vary from project to project due to geology and soil corrosivity and should be considered on an individual basis. The type of coating should be listed in the submitted plans and specifications. Information should include the surface preparation and the thickness of the coating to be applied.

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REFERENCES

Application for Transportation and Utility Systems and Facilities on Federal Lands, <http://www.ntia.doc.gov/FROWsite/SF-299_2006.pdf>.

Application for Use of Reclamation Project Land and Water Surfaces, <http://www.usbr.gov/pmts/lands/>.

Bureau of Reclamation Right-of-Use Application, <http://www.usbr.gov/pmts/lands/FINAL7-2540-5-06ExpDate03312009.pdf>.

California Department of Water Resources - Encroachment Permit Guidelines.

Central Arizona Project, Reach 11 Guidelines.

GP Region Billings MT – Standard Crossing & Clearance Requirements, Utility Lines and Cables, drawing 40-600-51. The office also uses a Preliminary Project Description Form and a Special Use Permit.

NACE, International RP 0169, "Standard Recommended Practice – Control of External Corrosion on Underground or Submerged Metallic Piping Systems."

PN Region Burley ID – Overhead and underground crossing clearances.

Policy on Geometric Design of Highway and Streets, American Association of State Highway and Transportation Officials (AASHTO), Fifth Edition, 2004.

Reclamation, 2005. Preliminary drawing 103-D-1700 that provides general requirements for installation of crossings, June 2005.

Reclamation Manual, Directive and Standards LND 08-01, Land Use Authorizations, <http://www.usbr.gov/recman/lnd/lnd08-01.pdf>.

Title 29 CFR, Part 195.

U.S. Army Corps of Engineers – Engineering and Design, Design and Construction of Levees EM 1110-2-1913, 30 Apr 2000, CECW-EG Washington, DC 20314-1000.

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GLOSSARY

Bored and jacked – This terminology is a general way of referring to a family of trenchless methods.

Bridge, class A – Vehicular bridge used by the public. May or may not be owned by the Bureau of Reclamation.

Consent Document Permit – Permit required across fee-owned lands.

Detention basin – An artificial flow control structure used to contain flood water for a limited period of a time, thereby providing protection for areas downstream. Detention basins provide a way to reduce storm peak flows, while retention basins hold water for an extended period of time. These basins are generally a part of a larger engineered flood water management system.

Electroliers – A branching frame, often of ornamental design, used to support electric illuminating lamps.

Pothole excavation – See potholing.

Potholing – The practice of digging test holes to expose underground utilities (e.g., cables) to determine the horizontal and vertical location of these utilities.

Trenchless methods – Procedures for installing pipe without using traditional trench cut and cover methods. These trenchless methods may be referred to as bore and jack, tunneling, horizontal directional drilling, and microtunneling, among others.

Water conveyance facility – Canal, ditch, pipeline, drain, levee, open or closed laterals, and similar facilities and their associated appurtenant features.

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Appendix A

General Requirements for Installing Bored and Jacked Pipe Undercrossings

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Bored and Jacked Under the Canal – This terminology is a general way of referring to a family of trenchless technologies. Similar guidance to the requirements listed below should be followed no matter what method is used for installation.

1. Installing a lone carrier pipe (without casing) is encouraged. Refer to "4.6 Utility Crossing," and "4.6.1 Casings" for information on cautions of using casings around metallic carrier pipe.

2. Plans must show carrier/casing pipe type, diameter, and thickness. Casing pipes should be steel pipe (American Water Works Association [AWWA] C-200) and have 1/4-inch minimum wall thickness. Applicants should provide the type of carrier pipe and appropriate bell dimensions for said carrier pipe to verify annular clearances.

3. When installing pipe while the canal is unwatered, a minimum of 3 pipe diameters or 60 inches of clearance (whichever is greater) between the top of the pipe and the bottom of the canal must be maintained. However, 72 inches or more clearance is recommended.

4. Provide a minimum of 3 inches of clearance between the carrier and casing pipes at all points (including bells).

5. A bulkhead or effective sealing device should be provided at both ends of each casing pipe to seal the annular space between the two pipes. Vent pipe should be included to allow ventilation and reduce the risk of condensation buildup and flooding.

6. As a result of the installation process, an annular void is usually created around the outside of the casing pipe. Provisions should be made to pressure grout or effectively seal (e.g., bentonite slurry) this void space.

7. Requirements below are provided to establish minimums for determination of the length of pipe to be installed. It is strongly recommended that pipes be installed perpendicular (between 70 and 90 degrees) to the canal alignment. Regardless, the pipe must extend completely through the Bureau of Reclamation's (Reclamation) right-of-way (ROW). Theses minimums do not relieve the applicant's engineer from performing an onsite investigation or other work to determine local conditions that may require additional pipe length.

   Jacking pit configuration, location, and length of pipe to be installed should be based on the following parameters:

   a. One operating road shall remain open to vehicular traffic at all times.

b. The minimum operating road embankment top width to be maintained during construction should be either 14 feet wide, the width of the existing embankment, or as required by Reclamation.

c. As a minimum, jacking pit excavations should not be within:

(1) A line drawn from the outside edge of the operating road embankment extended downward and away from the canal at a slope of 3/4 horizontal to 1 vertical.

(2) A line drawn from the outside edge of the top of the concrete lining extended downward and away from the canal at a slope of 1 horizontal to 1 vertical.

d. To contain the slurry during installation, jacking pits should be constructed so that natural ground or a compacted dike is entirely around the pit to an elevation at least 1 foot above the top of the canal lining.

e. All excavations should be in compliance with Occupation Safety and Health Administration regulations and Reclamation's Health and Safety Standards.

f. If the contractor elects to install shoring in the jacking pits, all shoring designs should be prepared by a Professional Engineer knowledgeable in said type of work. A copy of the shoring designs should be submitted to Reclamation.

8. Jacking pits should be backfilled with native material and mechanically compacted to 95 percent of the maximum dry density per ASTM D-698.

9. The contractors should be responsible for any damage to the canal section during the construction of a crossing, and the contractor shall repair the damage at their own expense.

10. If an emergency situation develops during construction, the contractor should immediately notify appropriate contacts with Reclamation. Reclamation must approve further work at that point.

11. The minimum distance between two jacked pipes should be 10 feet.

12. Any pressure lines installed within Reclamation's ROW must have adequate thrust restraint at bends and valves. Specified design pressures and thrust restraint calculations shall be provided to Reclamation to confirm the design configuration.

Appendix B

Guidelines – Removal of Trees and Other Vegetative Growth from Earth Dams, Dikes, and Conveyance Features

Excerpted from: Review of Operation and Maintenance Program Field Examination Guidelines

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APPENDIX B

GUIDELINES
REMOVAL OF TREES AND OTHER VEGETATIVE GROWTH FROM EARTH DAMS, DIKES, AND CONVEYANCE FEATURES*

Growth of trees and other significant vegetation on or adjacent to earth dams, dikes, and conveyance features, should be prevented from becoming established for the following reasons:

1. To allow proper surveillance and inspection of the structures and adjacent areas for seepage, cracking, sinkholes, settlement, deflection, and other signs of distress.
2. To allow adequate access for normal and emergency Operation and Maintenance (O&M) activities.
3. To prevent damage to the structures due to root growth, such as shortened seepage paths through embankments; voids in embankments from decayed roots or toppled trees; expansion of cracks or joints of concrete walls, canal lining, or pipes; and plugging of perforated or open-jointed drainage pipes.
4. To discourage animal/rodent activity (by eliminating their food source and habitat), thereby preventing voids within embankments and possible shortened seepage paths.
5. To allow adequate flow-carrying capability of water conveyance channels (e.g., spillway inlet and outlet channels; open canals, laterals, and drains).

The growth of trees and potentially detrimental vegetation should be prevented during its early stages as part of the operating office or entity's normal O&M program. Early control is generally the most cost effective means of avoiding potential adverse effects on these structures from their continued growth. Control efforts may consist of applying herbicides, spraying, cutting, and/or removing the trees or undesirable vegetation.

Suggested clearance zones (areas of control) adjacent to these structures are provided within these guidelines. Concerted efforts should be made to maintain these clearance zones. However, site-specific conditions, such as landscaping, accessibility, erosion susceptibility of material in the area, type of abutment material, original construction clearance zone, right-of-way easement, etc., may influence the necessity or success of these control efforts.

Should trees and/or other significant vegetation become established, proper O&M of earth embankment dams, dikes, and conveyance features, may require their discriminate removal. During the Review of Operation and Maintenance examination for the facility or system, the examiners should use these guidelines, along with their experience and professional judgment, to evaluate the need for removal of such established growth.

If trees and other significant growth are identified by the examination team in locations delineated by these guidelines, a determination should be made regarding their need for removal. If the identified vegetation is deemed to be in location such that its existence is not considered to be detrimental and therefore does not require removal, sufficient justification should be provided during the examination and included within the associated report to support that determination.

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* Enclosure to memorandum dated April 26, 1989, from Manager, Project Operation Services Staff, to all Regional Directors, Subject: Revised Guidelines — *Removal of Trees and Other Vegetative Growth From Earth Dams, Dikes, and Conveyance Features.*

When, in the opinion of an Review of Operation and Maintenance examination team, such established growth requires removal, specific followup procedures should be addressed as part of the examination. Such procedures may include the need for right-of-way easement determination; the need for an assessment for potential environmental impacts (any impact assessments should be coordinated with designated regional or project office environmental staff); whether removal of the root system is necessary and to what extent; the method of removal and recompaction of material within the void created; and the need for any erosion stabilization measures.

National Environmental Policy Act compliance is required relative to such tree and vegetation removal. Additionally, the application of herbicides should comply with applicable provisions of the Endangered Species Act. The determination of appropriate procedures to be followed in assessing potential environmental impacts and mitigation (including those to wildlife and its habitat) will be the responsibility of each regional and/or project office. This will include the preparation of an appropriate National Environmental Policy Act document and an assessment of the need for mitigation prior to the onset of removal activities. Appropriate National Environmental Policy Act compliance may include a Categorical Exclusion Checklist, an environmental assessment followed by a Finding of No Significant Impact, or an Environmental Impact Statement.

The following guidelines and associated clearance zones should be used for all Reclamation earth dams, dikes, and conveyance features. They are not considered "policy;" rather, they are guides which should be used with reasonable judgment and practicality.

1. Trees and detrimental vegetative growth should be prevented from becoming established on the surface of all earth dam, dike, and conveyance feature embankments. A small amount of shallow-rooted vegetation may be acceptable to aid in erosion protection and slope stabilization. Mowing of grass and other small vegetation is desirable and may be necessary to allow proper surveillance of the surfaces and observation of animal/rodent activity.

2. A clearance zone of 25 feet beyond each contact (groins and toe) of earth dam embankments and dikes should be maintained of all trees and detrimental vegetation. Similarly, a clearance zone of 15 feet should be maintained beyond the outside toe of all fill sections/embankments for open canals and laterals. These clearance zones may need to be extended for seepage areas or other conditions where proper surveillance or access may be warranted.

3. Earth dam, dike, and conveyance feature (open canal and lateral) embankments have large tree growth or stumps from previously cut trees on or near them should be evaluated, usually in conjunction with an Review of Operation and Maintenance examination, for any necessary future action, (i.e., monitor, excavation and backfill, rebuild, etc.). Generally, sizable old root systems of large trees should be grubbed out and the embankment replaced and compacted to prevent the development of piping action or erosion. Likewise, any sizable voids resulting from animal/rodent burrowing activity should be filled and compacted. Seeding may be necessary for protection from surface erosion.

4. Spillway inlet and outlet channels, outlet works discharge channels, and other open conveyance channels (open canals, laterals, and drains) should be free of vegetative growth that could significantly impede water flow or reduce design capacity.

5. A clearance zone of 25 feet adjacent to all concrete structures associated with such facilities should be maintained of all trees and detrimental vegetative growth to prevent damage from root growth, to allow proper surveillance, and to allow adequate O&M access.

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6. Associated cut slopes adjacent to open canals and laterals should be kept clear of vegetation which, if toppled and/or uprooted, could affect operations or O&M access.

7. For pipe conveyance systems (such as siphons, aqueducts, discharge lines, perforated or open-jointed drains, etc.), to provide O&M access and to prevent root encroachment, a clearance zone should be maintained 15 feet from each side of the pipeline. However, in some cases, farming of annual crops over pipelines may be permissible.

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