PHOENIX-CORDES JCT HWY

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ADVERTISEMENT FOR BIDS

BID OPENING: WEDNESDAY, APRIL 15, 1987 AT 11:00 AM

PROJECT AND LOCATION:
I-17-3-912 PHOENIX-CORDES JCT HWY (Arizona Canal Diversion Channel)

ROUTE NO.	MILEPOST	DISTRICT	ITEM NO.	FUND CODE
I-17	208.2	1	294	82511

The location and description of the proposed work and the representative items and approximate quantities are as follows:

The proposed work is located in Maricopa County in the City of Phoenix on Interstate 17 at Milepost 208.2 approximately a fourth of a mile north of Dunlap Avenue Traffic Interchange.

The work consists of constructing, in six phases, a new single span prestressed post tensioned concrete box girder bridge, over the Diversion Channel and an adjacent single barrel concrete box culvert maintenance underpass, including traffic controls the construction and removal of a temporary bridge and four detours, the removal and reconstruction of existing landscape, irrigation, lighting and other incidental work.

Roadway Excavation	L.Sum	1
Aggregate Base, Class 2	Ton	6,000
Asphaltic Concrete (Miscellaneous Structural)	Ton	6,600
Temporary Concrete Barrier	L.Ft.	14,400
Drilled Shaft Foundation (20", 30", 48")	L.Ft.	4,704
Structural Concrete	Cu.Yd	4,189
Prestressing Cast-in-Place Concrete	L.Sum	1
Reinforcing Steel	Lb.	683,200
Underpass Lighting	L.Sum	1
Reconstruct Landscape Irrigation System	L.Sum	1
Reconstruct Landscape	-----	----
Concrete Curb and Gutter	L.Ft.	2,420
Shotcrete	Sq.Yd.	1,164
Construction Surveying and Layout	L.Sum	1

The contract completion time for this project is a fixed calendar date. This date is May 1st 1988.

Project plans, specifications, and proposal pamphlets may be obtained from Contracts and Specifications Services (602) 255-8251. The cost is $32.00 . No refund will be made for plans and specifications returned.

No contracting firm will be issued a proposal pamphlet until it has become prequalified. The Contractor's Statement of Experience and Financial Condition shall be filed not later than 15 days prior to the date specified for the opening of bids. A copy of the statement may be obtained from Contracts and Specifications Services.

The Arizona Department of Transportation hereby notifies all bidders that pursuant to this advertisement for bids, Disadvantaged Business Enterprises and Woman-Owned Business Enterprises will be afforded full opportunity to submit bids in response to this solicitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

A proposal guaranty in the form of either a certified or a cashier's check made payable to the State Treasurer of Arizona for not less than five percent of the amount of the bid or in the form of a surety (bid) bond for five percent of the amount of the bid shall accompany the proposal.

Surety (bid) bonds will be accepted only on the form provided by the Department and only from corporate sureties authorized to do business in Arizona.

Proposal pamphlets shall be returned only in the envelope provided by the Department to:

Contracts and Specifications Services, Room 121-F
Highway Division
Arizona Department of Transportation
1651 West Jackson Street
Phoenix, Arizona 85007-3276

Sealed bids will be received until the hour indicated and then publicly opened and read. No bids will be received after the time specified.

Engineering Specialist: Elvio Scaramella (602) 255-8268
Construction Supervisor: Steve Jimenez (602) 255-8892

DALLIS B. SAXTON, Engineer-Manager
Contracts & Specifications Services

I-17-3-912
03/13/87
05/88
EV:dmo

Registered Professional Engineer (Civil)
CERTIFICATE NO.
13129
WILLIAM JAMES
LYONS
Date Signed 03/18/87
ARIZONA, U.S.A.

SPECIAL PROVISIONS

ARIZONA PROJECT I-17-3-912

PHOENIX - CORDES JUNCTION HIGHWAY
(Arizona Canal Diversion Channel Phase II)

BRIDGE AND UNDERPASS

PROPOSED WORK:

The proposed work is located in Maricopa County in the City of Phoenix on Interstate 17 at Milepost 208.2 approximately a fourth of a mile north of Dunlap Avenue Traffic Interchange.

The work consists of constructing, in six phases, a new single span prestressed post-tensioned concrete box girder bridge, over the Diversion Channel and an adjacent single barrel concrete box culvert maintenance underpass, including traffic controls the construction and removal of a temporary bridge and four detours, the removal and reconstruction of existing landscape, irrigation, lighting and other incidental work.

(SPC85, 6, 12/30/86)

SPECIFICATIONS:

The work embraced herein shall be performed in accordance with the requirements of the following separate documents:

Arizona Department of Transportation, Highways Division, Standard Specifications for Road and Bridge Construction, Edition of 1982,

Arizona Department of Transportation, Highways Division, Supplemental Specifications to Standard Specifications for Road and Bridge Construction, October 1985.

Arizona Department of Transportation, Highways Division, Standard Drawings, listed in the Supplemental Specifications and hereinafter,

Arizona Department of Transportation, Traffic Control Manual for Highway Construction and Maintenance, August, 1981,

Manual on Uniform Traffic Control Devices for Streets and Highways, 1978, and Amendments,

Requirements for the Utilization of the Schedule of Equipment Rental Rates for Equipment Used on Force Account Work, August 16, 1982, and

The Proposal Pamphlet which includes the following documents:

These Special Provisions,

Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246), July 1, 1978, Revised November 3, 1980 and Revised April 15, 1981,

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246), July 1, 1978, Revised November 3, 1980 and Revised April 15, 1981,

Executive Order 75-5, April 28, 1975, Revised November 25, 1980,

Compliance Reports, Non-Federal Aid Projects, July 1, 1975, Revised May 20, 1981,

Design Guidelines and Specifications for Bridge Crossing of Salt River Project Canals, April, 1985, Rev. 1,

Salt River Valley Water Users' Association Specifications for Precast Concrete Pipe, Revised October, 1977,

Proposal,

Bidding Schedule,

Surety (Bid) Bond, 12-1303,

Certification With Regard to the Performance of Previous Contracts or Subcontracts, Subject to the Equal Opportunity Clause of Executive Order No. 75-5 and the Filing of Required Reports, Non-Federal Aid Projects, July 1, 1975,

Certification With Respect to the Receipt of Addendums, and

Affidavit by contractor certifying that there was no collusion in bidding for contract.

BID SUBMISSION:

In the submission of a bid, the contractor shall completely execute the following documents:

Proposal,

Bidding Schedule,

Surety (Bid) Bond, 12-1303,

Certification With Regard to the Performance of Previous Contracts or Subcontractors, Subject to the Equal Opportunity Clause of Executive Order No. 75-5 and the Filing of Required Reports, Non-Federal Aid Projects, July 1, 1975,

Certification With Respect to the Receipt of Addendums, and

Affidavit by contractor certifying that there was no collusion in bidding for contract.

PROPOSAL GUARANTY:

Each bidder is advised to satisfy himself as to the character and the amount of the proposal guaranty required in the Advertisement for Bids.

CONTRACT DOCUMENTS:

The bidder to whom an award is made will be required to execute a Performance Bond and a Payment Bond, each in 100 percent of the amount of his bid, an Insurance Certificate and the Contract Agreement.

A copy of these documents is not included in the Proposal Pamphlet which is furnished to prospective bidders; however, each bidder shall satisfy himself as to the requirements of each document.

The documents, approved by the Department of Transportation, Highways Division, are identified as follows:

Statutory Performance Bond, 12-1301, December, 1975
Statutory Payment Bond, 12-1302, December, 1975
Contract Agreement, 12-0912, January, 1986
Certificate of Insurance, 12-0100, June, 1985

A copy of each document may be obtained by making a request to Contracts and Specifications Services.

COPIES OF PROJECT DOCUMENTS:

Distribution of a limited number of plans and Special Provisions will be made to the successful low bidder, at no charge, following confirmation of bid prices and DBE/WBE submittal, if applicable. The distribution will be made on the following basis:

CONTRACT SIZE (DOLLARS)	FULL SIZE PLANS	1/2 SIZE PLANS	BOUND BID BOOKS	UNBOUND BID BOOKS
$0 - $10,000,000	2	25	5	25
over $10,000,000	5	50	5	50

These plans and special provisions will be set aside and designated for use by the low bidder along with an equal number held in reserve for the responsible District Office. In the event that excess documents remain following bid opening, the additional documents will be evenly split between the low bidder and the A.D.O.T. District Office.

Any additional plans or special provisions that the low bidder may require beyond the above distribution will be available at the invoice cost of printing by ordering thru the Engineer.

(NOGOAL, 6, 10/21/85)

DISADVANTAGED BUSINESS ENTERPRISES:

Policy:

It is the policy of the Arizona Department of Transportation (Department) that Socially and Economically Disadvantaged Business Enterprises (DBE's) and Women-Owned Business Enterprises (WBE's) shall have maximum opportunity to participate as contractors, subcontractors, suppliers, or vendors in the performance of contracts.

GENERAL REQUIREMENTS:

Prior to the pre-construction conference, the contractor shall request a construction license, at the Flood Control District, Maricopa County, 3335 W. Durango, to work within their right-of-way for the removal, stockpile and reuse the earthwork material.

No surplus bituminous material nor miscellaneous concrete rubble or similar materials will be allowed to remain in the specified permitted F.C.D.M.C. right-of-way at the end of the earthwork phase. The contractor shall haul and dispose said materials off the project limits in a manner approved by the Engineer.

By July 1987, the Corps of Engineers will have a contractor starting the earthwork for the construction of the Diversion Channel. At that time, wherever the bridge construction progress is at, the two contractors shall schedule and coordinate their work in a manner to avoid any possible conflict.

ADDITIONS AND REVISIONS TO THE STANDARD AND SUPPLEMENTAL SPECIFICATIONS:

(ERATA100, 6, 12/30/86)

SUPPLEMENTAL SPECIFICATIONS ERRATA:

The following changes shall be made to cover errors in the text of the Supplemental Specifications:

Page 15: The first sentence of the fifth paragraph under Subsection 105.06 shall read:

Compensation for idle time of labor will be determined in accordance with the provisions of Subsection 109.04 (B)(1) - Labor, . . .

The sixth paragraph under Subsection 105.06 shall read:

Compensation for idle time of equipment will be determined in accordance with the provisions of Subsection 109.04(B)(3) - Equipment, . . .

Page 47: The last sentence of the first paragraph under Subsection 203-5.03 (B) (1) shall read:

Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

Page 73: The first sentence of the first paragraph following Table 305-2 shall read:

*Material represented by cores deficient by more than 0.75 inches in thickness and/or represented by lots attaining seven day compressive strengths with the mean value . . .

Page 146: The last sentence of the last paragraph under Subsection 604-3.05 shall read:

The weight of the coating . . .

Page 159: The first paragraph under Subsection 701-3.06 shall read:

Pavement marking obliteration shall be accomplished by the contractor as indicated on the plans or as directed by the Engineer.

Page 161: The first line following the fourth paragraph shall read:

701-5.02 Maintenance and Protection of Traffic: is modified to add:

Page 323: The third sentence of the fifth paragraph under Subsection 925-5 shall read:

Should such extra work require the contractor to pay mobilization or travel costs for the party or parties, . . .

Page 343: The second sentence of the first paragraph under Subsection 1013 (D) shall read:

The certification shall be supported by Certificates of Compliance . . .

(PLANS101, 6, 10/01/86)

SECTION 101 - DEFINITIONS AND TERMS:

101.31 Plans: of the Supplemental Specifications is revised to read:

The standard drawings approved by the Arizona Department of Transportation are bound together in four separate sets:

The construction ("C") Standard drawings are bound together with a light blue cover dated 1986.

The structure (bridge) standard drawings are bound together with a light green cover dated 1983.

The signing and marking standard drawings are bound together with a gray cover dated 1986.

The traffic signals and lighting standard drawings are bound together with a light blue cover dated 1985.

All standard drawings approved by the Arizona Department of Transportation contained in the four bound sets plus subsequent revisions and additions are listed on the project plans along with the latest (current) revision dates.

Prospective bidders, contractors, subcontractors, material suppliers, and others are hereby advised to see that they have copies of and are familiar with the standard drawings appropriate to their particular operations.

Standard Drawings are available from:

Records Administration Section
Engineering Records
Arizona Department of Transportation
1655 West Jackson, Room 112F
Phoenix, Arizona 85007 (602) 255-7498

The cost of each set of Standard Drawings is $4.50. Single copies of each drawing are also available at $0.15 each. The above costs include postage. The minimum mail order is $1.00.

(NOCLU102, 6, 08/12/86)

SECTION 102 - BIDDING REQUIREMENTS AND CONDITIONS:

102.06 Interpretation of Quantities in Bidding Schedule: the second paragraph of the Supplemental Specifications is revised to read:

In the event the contractor has reason to question the accuracy of the bid schedule quantities for Drainage Excavation or Borrow, he shall submit evidence to the Engineer in the form of a construction survey or photogrametric survey, in writing and request verification of the quantities in question. The Engineer will then make such calculations as deemed necessary to verify or correct the quantities and the results obtained will be considered to be the final quantities for payment for these items of work and shall be binding.

The lump sum Roadway Excavation quantity is a final quantity. No adjustment of the lump sum unit price bid for Roadway Excavation will be made.

102.09 Noncollusion Affidavit: of the Standard Specifications is revised to read:

Each bidder shall file a sworn statement executed by, or on behalf of the person, firm, association, or corporation submitting the bid, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive bidding in connection with the submitted bid. This sworn statement shall be in the form of an affidavit executed and sworn to by the bidder before a person who is authorized by the laws of the State to administer oaths. The required form for the affidavit is included in the proposal pamphlet.

Failure to submit the sworn statement as part of the bid proposal package will make the bid nonresponsive and not eligible for award consideration.

(XQKST103, 16, 07/28/86)

SECTION 103 - AWARD AND EXECUTION OF CONTRACT:

103.06 Execution of Contract: of the Standard Specifications is revised to read:

The contract shall be signed by the successful bidder and returned, together with a satisfactory bond, within five calendar days after the date of notice of award.

The Department will execute the contract within ten calendar days after the date of notice of award. No contract shall be considered as effective until it has been fully executed by all the parties thereto.

103.07 Failure to Execute Contract: of the Standard Specifications is revised to read:

Failure to return a signed contract to the Department and file a satisfactory contract bond, as provided herein, within five calendar days after the date of notice of award, shall be just cause for the cancellation of the award and the forfeiture of the proposal guaranty which shall become the property of the Department, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next responsible bidder or the work may be readvertised as the Department may decide.

SECTION 104 - SCOPE OF WORK:

104.04 Maintenance of Traffic: of the Standard Specifications is modified to add:

The contractor shall provide a traffic control specialist who will remain on the project site at all times during working hours and whose primary responsibility will be traffic control. The specialist shall have the authority to act on behalf of the contractor and to make field decisions pertaining to the maintenance and protection of traffic.

The contractor's traffic control specialist and the Department's traffic control officer shall work together on all traffic control matters. However, in the event of any disagreements the Engineer will be the final authority.

The traffic control specialist shall be fully experienced and knowledgeable of traffic control procedures, regulations, and the requirements of the Arizona Department of Transportation, Traffic Control Manual.

At the preconstruction conference, the contractor shall submit the name of his designated traffic control specialist along with all pertinent information necessary for approval by the Engineer.

The contractor shall obtain the Engineer's approval of the traffic control specialist prior to commencing work.

104.04(A) Special Detours: of the Standard Specifications is modified to add:

The detours shall be constructed at the location designated on the plans.

Payment for the construction of detours will be made under the respective contract items.

Maintenance of the detours shall be at the contractor's expense, except that any substantial quantity of material required to effect satisfactory maintenance, as determined by the Engineer, will be measured and paid under the respective contract item.

Removal of the temporary bridge will be measured and paid for on a lump sum basis under ITEM 2020003.

The cost of the removal of detour roadways will be considered as included in the price bid for Item 2020001.

SECTION 105 - CONTROL OF WORK:

105.02 Plans and Working Drawings: of the Supplemental Specifications is modified to add:

The Engineer shall have an equal amount of time to review any resubmittal that was originally rejected because of errors and omissions. The contractor assumes all responsibility and costs associated with delays to his operation due to incomplete submittals.

105.06 Cooperation with Utility Companies: of the Standard and Supplemental Specifications is modified to add:

Salt River Project (SRP):

Removal and installation of the Salt River Project irrigation facilities within the project limits are shown in the project plans. This work shall be performed by the contractor and will be paid for under the respective contract item.

(INS107, 6, 09/09/86)

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

107.17 Insurance: of the Supplemental Specifications is revised to read:

Prior to the execution of the contract, the contractor shall file with the Department a certificate or certificates of insurance executed by an insurance company doing business in the State of Arizona and acceptable to the Department. The certificate of insurance shall be on the form provided by the Department and shall state that with respect to the contract awarded the contractor, the contractor carries insurance in accordance with the requirements of this Subsection.

Without limiting any liabilities or any other obligations of the contractor, the contractor shall provide and maintain, and cause its subcontractors to provide and maintain, the minimum insurance coverage listed below until all obligations under this contract are satisfied:

1. General Liability insurance with a minimum combined single limit of $1,000,000.00 each occurrence applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, independent contractors, products and completed operations. Further, the policy shall include coverage for the hazards commonly referred to as XCU (explosion, collapse and underground). The products and completed operations coverage shall extend for one year past acceptance, cancellation or termination of the work. The policy shall contain a severability of interests provision.

2. Comprehensive Automobile Liability insurance with a combined single limit for bodily injury and property damage of not less than $1,000,000.00 each occurrence with respect to contractor's owned, hired, or non-owned vehicles, assigned to or used in performance of the work.

3. Workers' Compensation insurance to cover obligations imposed by Federal and State statutes having jurisdiction of its employees engaged in the performance of the work, and Employers' Liability insurance with a minimum limit of $100,000.00. Evidence of qualified self-insured status will suffice for this section.

The policies required by 1 and 2 above shall be endorsed to include the Department, its agents, officials, employees and the State of Arizona as additional insureds and shall stipulate that the insurance afforded the contractor shall be primary insurance and that any insurance carried by the Department, its agents, officials, employees or the State of Arizona shall be excess and not contributory insurance to that provided by the contractor as provided by A.R.S. 41-621C.

All insurance policies or certificates shall include a requirement providing for 30 days prior written notice to the Department of any cancellation or reduction of coverage. The contractor shall cease operations on the occurrence of any such cancellation or reduction and shall not resume operations until the required insurance is in force and new certificates of insurance have been filed with the Department.

The certificate(s) of insurance shall be issued to the Department by the contractor's insurer as evidence that policies providing the required coverages, conditions and limits are in full force and effect. Certificates of insurance should be addressed as follows:

Arizona Department of Transportation
Contracts and Specifications Services
1651 West Jackson Street, Room 121F
Phoenix, Arizona 85007

Failure on the part of the contractor to produce or maintain required insurance shall constitute a material breach of contract upon which the Department may immediately terminate the contract or, at its discretion, produce or renew such insurance and pay any and all premiums in connection therewith, and all monies so paid by the Department shall be repaid by the contractor to the Department upon demand, or the Department may offset the cost of the premiums against any monies due to the contractor from the State.

Costs for coverage maintained by the contractor in excess of those required shall not be charged to the Department without prior approval of the Department.

The Department reserves the right to request and receive certified copies of any or all of the above policies and/or endorsements.

The contractor and its insurers providing the required coverages shall waive all rights of recovery against the Department and its agents officials and employees.

(UTIL107, 6, 06/12/86)

107.19 Contractor's Responsibility for Utility Property and Services: of the Standard Specifications is modified to add:

The contractor's attention is directed to the requirements of A.R.S. 40-360.21 through .29 requiring all parties excavating in public streets, alleys or utility easements to first secure the location of all underground facilities in the vicinity of the excavation.

At least 48 hours prior to commencing excavation, the contractor shall call Blue Stake Center, at 263-1100 between the hours of 7:00 A.M. and 4:30 P.M., Monday through Friday for information relative to the location of buried utilities.

Irrigation Facilities:

Work under this contract consists of removing and replacing Salt River Valley User's Association (SRVWUA) irrigation pipe. Materials and construction shall be in accordance with SRVWUA plans and specifications. SRVWUA has issued a license for construction of the irrigation pipe. The contractor shall obtain a copy of the license from the Engineer and comply with all the requirements.

Utility Adjustments as yet Uncompleted:

The following private utilities have not been relocated and/or removed by their owners, nor has their relocation and/or removal been included in the project plans as work to be performed under contract items. Times for construction of these utilities will be established by the owners, as approved by the Engineer, and closely coordinated with the contractor. The contractor shall coordinate his schedule with the utilities in order to accommodate their work and avoid conflicts.

Arizona Public Service Company (APS):

APS will install a concrete encased duct bank across I-17 at Station 583+06± in accordance with the APS details inclosed in the project plans as "For Reference Only", and the requirements shown in the Department issued Permit Number 45883.

APS will provide service for roadway lighting as shown on the project plans and in accordance with the Department-APS Utility Agreement Number 1286-86-I. The contractor shall notify APS -Al Field at 371-6951 two weeks before APS is required to commence installation of the proposed duct bank and shall allow APS an appropriate period of time to facilitate their installation in accordance with his schedule and as approved by the Engineer.

Mountain Bell Telephone Company (MBT):

MBT will install a concrete encased duct bank, jointuse trench with APS, crossing I-17 at Station 583+06± in accordance with the MBT details included in the project plans as "For Reference Only" and the requirements shown in the Department issued Permit Number 45988.

The contractor shall notify MBT - Andrew Andrade at 842-7746 two weeks before MBT is required to commence installation of the proposed duct bank and shall allow MBT an appropriate period of time to facilitate their installation in accordance with his schedule and as approved by the Engineer.

Salt River Project - Power District (SRPD):

The SRPD maintains energized aerial electrical power lines in the vicinity of this project. The contractor shall contact SRPD - Chuck Hughes at 236-2090 for their requirements when working near these facilities.

(RCRDS107, 6, 09/05/86)

107.24 Contractor and Subcontractor Records: is hereby added to the Supplemental Specifications:

The contractor, subcontractors and all material suppliers shall keep and maintain all books, papers, records, files, accounts, reports, bid documents with backup data, and all other material relating to the contract and project for five years following completion and acceptance of the work.

All of the above material shall be made available to the Department for auditing, inspection and copying and shall be produced, upon request, at the Department offices located at 206 South 17th Avenue, Room 172A

The contractor shall insert the above requirement in each subcontract, purchase order and lease agreement and shall also include in all subcontracts a clause requiring subcontractors to include the above requirement in any lower-tier subcontract, purchase order or lease agreement.

(SPIT108, 6, 10/21/85)

SECTION 108 - PROSECUTION AND PROGRESS:

108.01 Subletting of Contract: of the Standard Specifications is modified to add:

The following items are hereby designated as Specialty Items:

4040111, 4040116, 6020001A, 6070001, through 6080005, 6090024, 6090030, 6090048, 7040003, 7040004, 7060001, 7060002, 7320050, through 7360310, 8010011 through 8070700, 9120006 and 9250001 through 9250004.

108.02 Start of Work: of the Supplemental Specifications is revised to read:

Work shall not be started until the contract has been signed and executed by both the contractor and the Department.

The contractor shall begin work within ten calendar days after the date of notice of award of contract.

The contract time is on a calendar day basis contract time will be charged commencing on the date ten calendar days after the date of notice of award of contract.

108.03 Preconstruction Conference:
of the Standard Specifications is modified to add:

The contractor shall be responsible for planning, scheduling and reporting the progress of the work as to ensure timely completion of the work called for in the contract.

The contractor shall submit a schedule in two (2) parts in accordance with the following:

Part I shall be a preliminary schedule and shall be submitted for the Engineer's approval at the preconstruction conference. It shall be a schematic (arrow) diagram showing the work stages and operations for all activities required by the contract. The diagram shall be in sufficient detail to allow day-to-day monitoring of the contractor's operations. Along with the preliminary schedule, the contractor shall include his calendar for the contract period which shall show work days, calendar days, and dates.

Part II shall be submitted for the Engineer's approval within fifteen (15) calendar days after Part I has been approved by the Engineer. This schedule shall cover the contractor's anticipated time schedule. The schedule shall include a detailed network diagram acceptable to the Engineer with the following features:

1) It shall be time-scaled in calendar days. All activities shall be plotted on their early start and finish dates. Activities shall not exceed 30 calendar days in length of time when detailed in each schedule.

2) It shall shown the order and interdependence of activities and the sequence of work as reflected in the schedule report specified in 7) below. The critical activities shall be prominently distinguished.

3) IT SHALL INCLUDE, IN ADDITION TO ALL CONSTRUCTION ACTIVITIES, SUCH TASKS AS MOBILIZATION, DEMOBILIZATION, SUBMITTAL AND APPROVAL OF SAMPLES OF MATERIALS AND SHOP DRAWINGS, PROCUREMENT OF SIGNIFICANT MATERIALS AND EQUIPMENT, AND FABRICATION OF SPECIAL ITEMS, AS WELL AS INSTALLATION AND TESTING.

4) The activities shall be sufficiently detailed so that a reviewer can follow the sequence. For example, the activities might show forming, reinforcing, and placement of concrete on the calendar days they are scheduled to be performed.

5) The diagram shall show, for each activity, the preceding and following event numbers and the description and duration of the activity in calendar days.

6) The activities shall be organized and described so as to conform to the contract bid items.

7) The diagram shall be accompanied by a Schedule report of the network with a tabulation of the following data for each activity:

a) Preceding and following event numbers
b) Activity description
c) Activity duration
d) Earliest start date
e) Earliest finish date
f) Latest start date
g) Latest finish date
h) Total float times
i) Responsibility for activity - e.g., contractor, subcontractor, supplier, etc.
j) Resource summary for each activity listing personnel and equipment utilized for that activity.

The contractor shall make updated schedules and reports under the following circumstances or as requested:

1) The contractor shall submit a report of actual construction progress on the first working day of each calendar month by updating his schedule report

to reflect all preceding work on the project. If in the opinion of the Engineer, the detailed network diagram requires revision in whole or in part, he shall so direct the contractor and the contractor shall submit such revision within ten (10) calendar days.

2) The monthly report also shall show the activities or portion of activities completed during the one (1) month reporting period and the portion completed on the project to date.

3) The monthly report shall state the percentage of revenue actually earned as of the report date.

4) The monthly report shall be accomplished by a narrative description of job progress, problem areas, current and anticipated delaying factors and their anticipated effect, and any corrective actions proposed or taken. This report shall identify departures from earlier schedules or changes in logical sequence of logic ties.

5) Summary of all activities scheduled to begin in next 60 days that have negative float and those activities whose float has changed and those activities with less than 30 day float. The activities shall be sequenced by the total float from least to greatest float.

Float time is not for the exclusive use or benefit of either the Department or the contractor. Extension of time for performance may be granted to the extent that equitable time adjustment for the activity affected exceeds the total float, or, where otherwise justified, impact on the contract completion can be shown.

Each schedule and report submitted, as above required, shall be furnished in three (3) copies plus one (1) reproducible copy.

The maximum width of the reproduction shall be thirty-six (36) inches.

No measurement or direct payment will be made for all contractor cost relating to preparation and submission of schedules and reports and revisions thereto.

Approval of the contractor's schedules by the Engineer is not to be construed as relieveing the contractor of his obligation to complete the contract work within the contract time, or as granting, rejecting, or in any other way acting on the contractor's request for adjustments to date for completing contract work, or claims for additional compensation. Such requests shall be processed in strict compliance with other relevant provisions of the contract.

Failure of the contractor to comply with the requirements of this special provision, will be grounds for the Engineer to withhold an additional 10 percent of the monthly progress payments until the contractor is in compliance. Additional money withheld will be paid upon compliance to the contractor in the next scheduled monthly estimate.

108.08 Determination and Extension of Contract Time: of the Standard Specifications is revised to read:

The contract completion time for this project is a fixed calendar date. This date is April 30, 1988.

Notwithstanding any other provision of this contract, this contract completion date will not be changed for any reason, with the exception of a most extraordinary reason as determined by the Engineer.

108.09 (A) Failure to Complete the Work on Time: of the Standard Specifications is revised to read:

For each calendar day that any work remains uncompleted after April 30, 1988 the sum of $3,000.00 will be deducted from any monies due the contractor, not as a penalty, but as liquidated damages. This will include all calendar days whether or not conditions would permit work.

Permitting the contractor to continue and finish the work or any part of it after the time fixed for its completion will in no way operate as a waiver on the part of the Department of any rights under the contract.

The Department may waive such portions of the liquidated damages, as may accure after the work is substantially completed and the bridge is in a condition for safe underchannel excavation by the Corp-of-engineer's contractor and for safe and convientent use by the traveling public.

(FORCE109, 6, 02/20/87)

SECTION 109 - MEASUREMENT AND PAYMENT:

109.04 (B)(1) Labor: of the Standard Specifications is modified to add:

(e) A percentage of the actual amount of wages, determined by the Department to be necessary to cover the contractor's costs incurred for Public Liability and Property Damage Insurance and Umbrella coverage insurance.

109.04 (B)(3) Equipment: of the Standard Specifications is revised to read:

Equipment which the Engineer considers necessary for the performance of work will be eligible for payment at the established rates only during the hours that it is operated except as otherwise allowed elsewhere in these specifications. Equipment hours will be recorded to the nearest one-half hour. The equipment rental rates established herein include allowance for overhead and profit except where otherwise specified. For the use of equipment approved by the Engineer, the contractor will be paid the rental rates, as modified herein, set forth in the Rental Rate Blue Book for Construction Equipment which is published by the Equipment Guide-Book Company, a division of Nielson-Dataquest, 1290 Ridder Park Drive, San Jose, California 95131, Phone (800) 227-8444. All rate determinations will be based on the Blue Book rental rate chapter revisions that are applicable at the time the equipment is being used.

a) Rental Rates (Without Operators):

The rental rate for each item of equipment will be the sum of the base machine rate, attachment rate and operating rate(s). All rates will be rounded to the nearest five cents.

The base rate for the machine and attachments represents the major cost of equipment ownership, such as depreciation, interest, taxes, insurance, storage and major repairs.

The hourly operating rate represents the major costs of equipment operation, such as fuel and oil, lubrication, field repairs, tires, expendable parts and supplies.

For all equipment utilized on Force Account Work, the hourly rate for each piece of equipment and attachments will be paid at the Blue Book monthly rate for the make and model multiplied by the appropriate rate adjustment factor, divided by one hundred and seventy-six, plus the hourly operating costs. Rate adjustment factors will be furnished in the special provisions.

The rate adjustment factor assigned to any attachment will be the yearly factor as determined for the base equipment.

The contractor will furnish to the Engineer, serial numbers and year of manufacture for all pieces of equipment used on force account work.

When multiple attachments are included with the rental equipment, only the attachment having the higher rental rate will be eligible for payment, provided the attachment has been approved by the Engineer as being necessary to the force account work.

The Blue Book regional adjustment factors will not apply in determining the rental rates.

Rental charges will not be allowed for small tools that show a daily rate less than five dollars or for unlisted equipment that has a value of less than four hundred dollars.

The above provisions apply to approved equipment of modern design and in good working condition. The equipment shall be handled and used to provide normal output or production. Equipment that is not in good working condition or is not of proper size for efficient performance of the work may be rejected by the Engineer. Equipment ordered for force account work will be paid for until such time as the Engineer directs that the use of such equipment be discontinued or until completion of the work.

For any equipment not listed in the Blue Book, rental rates shall be agreed to in writing prior to the use of such equipment on force account work or paid for by invoices in the case of outside rented equipment.

b) Stand-By Time:

Equipment that is in operational condition and is standing by with the Engineer's approval for participation in force account work will be paid for at fifty percent of the appropriate hourly rate as determined by the provisions set forth in Subsection 109.04 (B) (3) (a) less operating costs. Payment for such "stand-by" will be limited to not more than eight hours in a twenty-four hour day or forty hours in a normal work week.

No compensation will be allowed for equipment that is inoperable due to breakdown.

No payment will be allowed for equipment that is not operating because the work has been suspended in accordance with the specifications or because the work has been suspended by the contractor for his own reasons.

c) Outside Rented Equipment:

In cases where a piece of equipment to be used is rented or leased by the contractor from a third party exclusively for force account work, the actual invoiced amount will be paid when such rates are reasonably in line with established rental rates for the equipment in question and approved by the Engineer. A ten percent markup will be allowed for overhead and profit for all rented equipment paid for by invoices. To this amount, the hourly operating cost will be added.

In no case will equipment be considered for rental which exceeds the hourly rate for the first eight hours and the daily rate divided by eight for all additional hours as compared with similar equipment listed in the Blue Book.

d) Owner-Operated Equipment:

Payment for rental of equipment owned and operated by persons other than the prime contractor's or subcontractor's will be based on the actual paid invoice. An amount equal to ten percent of the total rental of the equipment, including the owner-operator, will be added for overhead, profit and all other costs incidental to furnishing and operating the equipment. The Engineer shall approve the rental rates prior to commencement of the work.

e) Moving of Equipment:

Rental time will also be allowed for the time required to move needed equipment to the location of the force account work and to return it to its original location. Loading and transportation costs will be allowed in lieu of moving times when equipment is moved by means other than its own power. Moving time back to the original location or loading and transportation costs will not be allowed if the equipment is used at the site of the force account work on contract items or related work.

For use of equipment moved on the work exclusively for force account work, the actual cost of transferring the equipment to the site of the work and returning it to the original location will be allowed as specified herein as an additional item of expense.

The original location of the equipment to be hauled to the site of the work shall be agreed to by the Engineer in advance.

Where the move of the equipment is made by common carrier, the allowance will be the invoiced amount paid for the freight plus fifteen percent. If the contractor hauls the equipment with his own forces, rental will be allowed for the hauling unit plus the driver's wages and the cost of loading and unloading the equipment.

The maximum rental period for the day that the equipment is moved on the work and the day that the use of the equipment is discontinued shall be the actual time that the equipment is in operation on force account work. When the contract includes line items of force account work, no payment will be allowed for loading, unloading and transportation costs of such equipment since the contractor is deemed to know what the work consists of and the type of equipment that is required to adequately perform the work.

RATE ADJUSTMENT FACTOR TABLE

Year of Manufacture	Factor
1986 and later	.907
1985	.903
1984	.896
1983	.892
1982	.885
1981	.865
1980	.835
1979	.816
1978	.787
1977 or earlier	.770

109.10 Lump Sum Payment for Structures: of the Supplemental Specifications is modified to add:

The Department will compensate the contractor for construction of each of the following structures or groups of structures on the basis of a lump sum amount:

(A) - Northbound & Southbound I-17 Mainline and Frontage roads (Prestressed, Post-Tensioned C.I.P. Concrete Box Girder Bridge) (Including Approach and Anchor Slabs)
(B) - Maintenance Underpass Concrete Box Culvert
(C) - Single Span Temporary Bridge Structure

Measurement and payment for the work will be made in accordance with the requirements of LUMP SUM PAYMENT FOR STRUCTURES under SECTION 109 - MEASUREMENT AND PAYMENT.

SECTION 202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS:

202-3.01 General: of the Standard Specifications is modified to add:

All materials designated to be "removed and salvaged", including fence, guardrail, roadway, lights, pull boxes, signs, irrigation valves, gate valves, median glare screen, catch basin grates, and manhole frames and covers, shall be loaded and hauled from the project site to the Department's Maintenance Yard at Durango Street and 22nd Avenue. The materials shall be carefully stockpiled as directed by the Engineer.

202-3.03 (B) Bituminous Pavement: of the Standard and Supplemental Specifications is modified to add:

All bituminous pavement designated on the project plans to be removed shall become the property of the contractor and shall be loaded and hauled from the project site.

Granular base materials removed shall become the property of the contractor. The materials shall be removed from the project site or may be incorporated into the work as approved by the Engineer.

202-3.05 Removal of Bridge: of the Standard Specifications is modified to add:

During the removal of the northbound frontage road detour, the temporary bridge shall be removed. The eight (8) precast prestressed concrete box girders and precast double barrier, after being separated, and restored to original condition, shall be transported to a site on the S.W. corner of 35th Avenue and Pinnacle Road and stacked in a manner approved by the FCDMC. The contractor shall contact the flood Control District Maricopa County, 3335 W. Durango two days prior to transporting the girders and barriers at said location. Any damage caused by the contractor during transport shall be the contractor's responsibility.

The temporary poured-in-place concrete abutment caps, wingwalls and backwalls shall be demolished and removed entirely from the site.

The drilled shafts, of the temporay structure shall be removed to a minimum of two (2) feet below existing grades and the canal banks reshaped and canal lining restored with 4" thick nonreinforced shotcrete (Wet process, 3000 PSI minimum).

202-4 Method of Measurement: of the Standard Specifications is modified to add:

Removal of the temporary northbound frontage road detour bridge structure will be measured on a lump sum basis.

Removal of concrete crub and/or curb and gutter will be measured by the linear foot of curb along the flow line. Lengths occupied by catch basins will be excluded from the measurement.

Removal of existing concrete barrier will be measured by the linear foot along the centerline of its top surface.

Removal of Portland Cement Concrete Pavement will be measured by the square yard. Measurement will be limited to the PCCP between Station 581+45 and Station 583+00 designated for removal during Phase IV.

Removal and salvage of guardrail will be measured by the linear foot along the face of rail element from center to center of end posts or connections.

Removal, and removal and salvage, of fence will be measured by the linear foot along the top of fence from center to center of end posts.

The removal of all other structures and obstructions that are shown on the project plans, specified herein, and/or that can be determined by an inspection of the project site will be measured on a lump sum basis and paid for under ITEM 2020001.

202-5 Basis of Payment: of the Standard Specifications is modified to add:

The lump sum measurement and payment for ITEM 2020001 will also include the following work where shown on the project plans:

Remove bike path and detours pavements and restore to original conditions in Phase VI.

Restore canal lining.

Install temporary plug 3/4" thick plywood with wood bracing at bell end of pipe. Plug removed as part of Phase IV.

Protect during construction, telephone box, irrigation valves, catch basins, cover to support detour traffic and pavement, uncover catch basin and restore to service, etc.

Sawcut, and match existing pavement.

SECTION 203 - EARTHWORK:

203-3.01 Description: of the Standard Specifications is modified to add:

Roadway excavation consists of excavating materials encountered in grading the detours and material excavated from the adjacent Right-of-Way of the F.C.D.M.C. Diversion Channel and the placement in the roadway in accordance with the details shown on the Project Plans and Subsection 203-3 of the Specifications.

203-3.03 Construction Requirements: of the Standard Specifications is modified to add:

All material excavated for the construction of the detours during Phases I, II, and III shall be removed again in Phases V and VI and returned to where it was originally excavated, doubling the volume of the earthwork quantities to be moved.

203-3 (E) Surplus Material: of the Standard Specifications is modified to add:

All excess material, excluding concrete rubble, asphaltic concrete or other deleterious materials, may be stockpiled in the F.C.D.M.C. Right-of-Way as long as the contractor does not create drainage problems.

The earthwork quantities shown on the Project Plans are for information purposes only. The contractor is advised to acquaint himself with the amount of work involved and with the quantities for the purpose of determining his bid.

203-3.04 Method of Measurement: of the Standard Specifications is revised to read:

Roadway excavation will be measured for payment by the lump sum as a single complete unit of work.

203-3.05 Basis of Payment: of the Standard Specifications is revised to read:

The accepted quantities of roadway excavation measured as provided above will be paid for at the contract lump sum price, which shall be fill compensation for the work as described and specified herein and on the Project Plans, complete in place.

203-5.01 Description: the second paragraph of the Supplemental Specifications is revised to read:

Structure backfill shall consist of furnishing, placing and compacting backfill material around structures to the lines designated on the plans, specified in the special provisions, directed by the Engineer and as specified herein.

203-5.03 (B)(2) Use of Slurry: of the Supplemental Specifications is revised to read:

As an alternate to the material requirements of Structure Backfill, the Engineer may allow material conforming to the following requirements to be used in a slurry mixture in situations where the slurry will be confined by free-draining soils:

Sieve Size	Percent Passing
1 1/2 inch	100
1 inch	90-100
No. 8	35- 80
No. 200	0- 8

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90.

(SRV206, 6, 10/21/85)

SECTION 206 - FURNISH WATER SUPPLY:

206-1 Description: of the Standard Specifications is modified to add:

Water may be obtained from canals under the jurisdiction of the Salt River Valley Water Users' Association and pumped into mobile tank trucks. The water shall be used within the boundaries of the Salt River Project.

If the contractor expects to obtain water from any one of the canals, he shall enter into an agreement with the Association by executing the Permit for Operation of Mobile Tank Trucks. No water shall be obtained from canals until the contractor has furnished the Engineer with a completely executed copy of the permit.

SECTION 303 - AGGREGATE SUBBASES AND AGGREGATE BASES:

303-2 Materials: of the Standard Specifications is modified to add:

Aggregate Base (A.B.C.) shall conform to the requirements specified for Class 2.

(BITR404, 6, 06/20/86)

SECTION 404 - BITUMINOUS TREATMENTS:

404-3.02(A) Distributor Truck: of the Standard Specifications is modified to add:

Equipment which fails to provide a satisfactory application of bituminous material shall be removed from the project.

404-3.05 Application of Bituminous Material: the third paragraph of the Standard Specifications is modified to add:

The variation from the specified rate of application shall not exceed ten percent.

404-3.12 Tack Coat: of the Supplemental Specifications is revised to read:

The type, grade or designation, and the rate of application for the specific usage will be specified by the Engineer. The following table shows the various types of material and the approximate application rates from which the Engineer may select the tack coat:

Type, Grade or Designation	Approximate Application Rates, Gal. per Sq.Yd. Prior to Placing ACFC	All Other Tack Coats	Payment Factor
Emulsified Asphalt (Special Type)		0.12	0.6
Emulsified Asphalt (Other than Spec. Type)		0.08	1.0
Asphalt Cement (Grade Spec. by Engr.)	0.06 to 0.08	0.06	1.2

404-4 Method of Measurement: the sixth paragraph of the Supplemental Specifications is revised to read:

The time which is required to apply tack coat will be measured to the nearest hour for the actual number of hours required in any one work shift; however, when the time required is less than four hours in any workday, the time will be measured as four hours.

(ACMST406, 6, 03/05/86)

SECTION 406 - ASPHALTIC CONCRETE: of the Supplemental Specifications is revised to read:

Asphaltic Concrete (Miscellaneous Structural):

Description:

Asphaltic concrete shall consist of furnishing all materials, mixing, hauling, and placing a mixture of aggregates, mineral admixture, and bituminous material to form a pavement course or to be used for other specified purposes, in accordance with the details shown on the project plans and as directed by the Engineer.

Asphaltic concrete shall be produced from commercial sources or from any source approved by the Engineer.

Materials:

Aggregate for asphaltic concrete shall have a loss on abrasion of not more than nine percent at 100 revolutions when tested in accordance with AASHTO T 96. The aggregate shall be crushed and processed to the following grading limits such that the sand equivalent is at least 55 when tested in accordance with the requirements of AASHTO T 176. The gradation will be determined in accordance with the requirements of Arizona Test Method 201.

Sieve Size	Percent Passing
3/4 inch	100
3/8 inch	70- 85
No. 8	42- 57
No. 200	0- 6.5*

*Includes 2.0 percent (by weight of the aggregate) of mineral admixture.

Bituminous material shall conform to the requirements of Section 1005 for AC-20, AC-30 or AC-40 asphalt cement. The exact grade to be used will be specified by the Engineer prior to use.

Mineral admixture shall be either portland cement or lime conforming to the following:

Material	Specification Requirement
Portland cement, Type I or II	AASHTO M 85
Blended hydraulic cement, Type IP	AASHTO M 240
Lime, Type N or S	ASTM C 207

Proportions:

The asphalt cement content will be specified by the Engineer and will be appropriate with the characteristics of the aggregates furnished from which the asphaltic concrete is to be produced.

The mineral admixture content shall be 2.0 percent, by weight, of the mineral aggregate.

Sampling and Testing:

Sampling and testing the materials or mixture for quality control purposes shall be the contractor's responsibility. The Engineer reserves the right to sample and test the materials and mixture as he deems necessary to determine that the materials and mixture reasonably conform to the requirements specified herein.

Construction Requirements:

The paved surface upon which asphaltic concrete is to be placed shall be cleaned of all objectionable material and tacked with a light coat of bituminous material conforming to the requirements of Subsection 404-3.12. The cleaning of the surface, the tacking of the surface, and the type and amount of bituminous material used shall be as directed by and acceptable to the Engineer.

Just prior to being placed, the asphaltic concrete shall be in a thoroughly mixed condition, free of lumps and crusts and at such a temperature as to be in a free flowing, workable condition.

The asphaltic concrete shall be placed, using approved equipment and methods, to the lines and grades shown on the project plans or as directed by the Engineer.

The asphaltic concrete shall be compacted to the satisfaction of the Engineer using equipment acceptable to him.

Acceptance:

Asphaltic concrete will be accepted complete in place, if, in the judgement of the Engineer, the asphaltic concrete reasonably conforms to the requirements specified herein. Asphaltic concrete that is not acceptable and is rejected shall be replaced to the satisfaction of the Engineer and at no expense to the Department.

Method of Measurement:

Asphaltic concrete will be measured by the ton for the mixture actually used, which will include the weight of aggregate, bituminous material, mineral admixture and any necessary blending material. Measurement will include any weight used in construction of intersections, turnouts, curbs, spillways and spillway inlets, ditches, catch basin entrances, median strip, sidewalks or other miscellaneous items or surfaces.

Basis of Payment:

The accepted quantities of asphaltic concrete, measured as provided above, will be paid for at the contract unit price per ton for the bituminous mixture complete in place.

No direct payment will be made for either the bituminous material or the mineral admixture, the price being considered as included in the price paid for asphaltic concrete.

Asphaltic concrete may be measured, by volume, upon the execution of a supplemental agreement which will specify the manner in which the volume is determined. The volume will include the volume of aggregate, bituminous material, mineral admixture and any necessary blending material.

(BEDNG501, 6, 12/26/85)

SECTION 501 - PIPE:

501-3.02 (A) Bedding Material: of the Supplemental Specifications is revised to read:

Bedding material shall conform to the following gradation:

Sieve Size	Percent Passing
1 1/2 inch	100
1 inch	90- 100
No. 8	35- 80
No. 200	0- 8

Bedding material shall have a value of resistivity not less than 2000 ohm-cm or the value shown on the project plans, whichever is less. When resistivity is not shown on the plans, the bedding material shall have a value of resistivity not less than that of the existing in-place material or 2000 ohm-cm, whichever is less. Bedding material shall have a pH value between 5.0 and 9.0, inclusive, for all installations except where galvanized pipe is used. Bedding material for galvanized pipe shall have a pH value between 6.0 and 9.0, inclusive. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90.

(PRCST601, 6, 06/20/86)

SECTION 601 - CONCRETE STRUCTURES:

601-1 Description: of the Standard Specifications is modified to add:

The following have been approved as alternates to cast-in-place minor structures:

Utility Vault Company Drawing HD-101A, dated 4-05-78, revised 5-07-80, has been approved as an alternate to Standard Drawing C-11.10 for H-20 Loading. The use of this unit shall be limited to a roadway locations with maximum longitudinal grades of six percent.

Utility Vault Company Drawing HD-101B, dated 4-24-78, revised 5-07-80, has been approved as an alternate to Standard Drawing C-11.10 for H-10 Loading. The use of this unit shall be limited to a roadway locations with maximum longitudinal grades of six percent.

Highway Products Company Drawing HPC No. 1, dated 02-02-81 has been approved as an alternate to Standard Drawing C- 11.10.

Pre-Cast Mfg. Co. Drawing CGF C-11.01 Cattle Guard Foundation, as revised 1-27-84 has been approved as an alternate to Standard Drawing C-11.10.

Utility Vault Company Drawing HD-102, revised 5-12-78, has been approved as an alternate to Standard Drawing C-15.90.

Utility Vault Company Drawing HD-103, revised 5-12-78, has been approved as an alternate to Standard Drawing C-15.80.

O'Malley Pipe Company Drawing dated 8/15/79 has been approved as an alternate to Standard Drawing C-15.80.

Utility Vault Company Drawing HD-121, revised 5-12-78, has been approved as an alternate to Standard Drawing C-15.10 or C-15.30.

Pre-Cast Mfg. Co. Drawing SMH-4, revised 07-02-82, has been approved as an alternate to Standard Drawing C-18.10.

Cattle guard grilles, conforming to W.M. Harter Mfg., Inc., Drawing 82-100, revised July 15, 1982, have been approved as alternates to the grilles specified on Standard Drawing C-11.11.

Pre-Cast Mfg. Co. Drawing CB-103, dated September 19, 1980, Revised 5/27/86, has been approved as an alternate to Standard Drawing C-15.90.

The "H" dimension for catch basins shall be determined in the field prior to casting.

The contractor is advised to acquaint himself with conditions peculiar to the project which might limit the use of precast items.

To obtain approval of drawings for precast minor structures, the drawings must be submitted to the Engineer at least six weeks in advance of their need. Eight sets of clear, legible drawings, not exceeding 36 inches by 22 inches in size, must be submitted by the manufacturer. If corrections are required, one set of drawings will be returned with the required revisions noted thereon. After corrections have been made, two sets of corrected drawings must be re-submitted. Upon approval, the manufacturer will be notified in writing and the precast item will be listed as an approved alternate.

Drawings of proposed precast minor structures should be submitted to:

Arizona Department of Transportation
Assistant State Engineer, Construction
206 South 17th Avenue, Room 172A
Phoenix, Arizona 85007

ITEM 6010091C - PRECAST PRESTRESSED CONCRETE BRIDGE MEMBERS (F.C.D.M.C. Furnished):

The work under this item consists of picking-up transporting and placing 8 precast prestressed concrete box girders and the precast double barrier furnished by the Flood Control District Maricopa County. The girders and barrier are located on the north side of the Arizona Canal at 25th Avenue. Any damages caused by contractor's negligence shall be repaired at his own expense.

Measurement for this work will be made on a lump sum basis.

Payment for this work will be made as specified under Subsection 109.10, which payment shall be full compensation for the work, complete, as directed and as specified herein and on the project plans.

(XCAIS609, 20, 06/29/84)

SECTION 609 - DRILLED SHAFT FOUNDATIONS:

Superseding the Requirements of Section 609:

Description:

The work under this section consists of furnishing all materials and equipment necessary to construct reinforced concrete columns formed within a drilled excavation in reasonably close conformity with the details, dimensions, and locations shown on the project plans and the requirements of these special provisions.

When the terms "caisson" and "shaft" are used hereinafter or on the project plans, they shall be construed to mean drilled shaft foundation and drilled excavation, respectively.

General Requirements:

Prior to constructing any caissons, including any test caissons, the contractor shall submit to the Engineer a list of all major equipment, with respective capacities, that will be used to construct the caissons and the proposed construction procedure. The submission shall indicate, in detail, the techniques to be used in drilling the shaft and inspecting the completed excavation and reinforcing and concreting the caissons.

The Engineer will review the submission. If at any time during the construction of caissons or test caissons, the Engineer determines that the equipment, materials or procedures, either singly or in combination, are such that defects in the work may occur, the Engineer may stop the work until appropriate changes are made by the contractor. In no case shall the contractor be relieved of his responsibility for constructing acceptable caissons.

After constructing one or more caissons or test caissons, the contractor may make minor modifications to the equipment, materials or procedures, either singly or in combination, and shall advise the Engineer of the changes in writing. The Engineer will review the proposal and may require the contractor to construct another test caisson in order to test the proposed changes prior to constructing any additional bridge foundation caissons.

An acceptable test caisson (if a test caisson is required) or an acceptable bridge foundation caisson shall be constructed prior to the construction of any other caissons for the bridge foundation.

The decision of the Engineer as to the acceptability of completed caissons is final.

Materials:

Concrete:

Concrete shall be Class S conforming to the requirements of Section 1006 for the strength of portland cement concrete shown on the project plans. Where concrete is placed in shafts containing bentonite slurry or water, the cement content of the concrete shall be between 658 and 752 pounds per cubic yard and the size of the coarse aggregate shall not exceed one inch. Water reducing and air entraining agents may be used.

Reinforcing Steel:

Reinforcing steel shall conform to the requirements of Section 1003.

Metal Casing:

Casing shall be of unit or sectional construction and shall prevent seepage of water. Casing shall be of sufficient strength to withstand handling stresses, the pressure of concrete and of the surrounding earth.

Construction Requirements:

Excavation:

The contractor shall perform all excavation required for the shafts, rock sockets or belled footings, through whatever substances encountered, to the dimensions and elevations shown on the project plans or required by the site conditions. The maximum deviation from plumb, the maximum variation of the center axis of any shaft at the top, and the maximum divation in diameter shall be as specified on the project plans.

The anticipated subsurface conditions and depths where satisfactory bearing material may be encountered are indicated on the project plans; however, no warranty of the subsurface conditions and depths where satisfactory bearing material may be encountered shall be inferred.

The bottom elevation of any caisson may be raised or lowered from that shown on the project plans as ordered by the Engineer. No reinforcing steel or concrete shall be placed in a shaft until the final elevation has been determined.

Excavation of adjacent shafts at any pier or abutment will not be permitted until 48 hours after the adjacent shaft has been concreted.

The contractor shall protect the shaft from caving in at the surface either by constructing a concrete slab or by placing a temporary casing or by other methods as approved by the Engineer. The contractor shall either drill or form a circular opening at the center of the slab. The slab shall be broken up and removed at the completion of the caisson construction. If a casing is used, it shall be removed after the concreting of the shaft is completed and while the concrete is still fluid. Casing shall not be left in place except as indicated on the project plans or as approved by the Engineer.

Casing specified on the project plans or approved by the Engineer to remain in place shall be installed in such a manner that there will be no voids between the earth and the casing.

When caving conditions are encountered, drilling shall cease until modifications to the equipment, materials or procedures are made that will prevent such caving. If a steel casing is used, it shall be clean and shall extend to the top of the shaft. The inside diameter of the casing shall not be less than the specified size of the caisson.

Material excavated from shafts and bells and not used elsewhere on the project shall be disposed of as approved by the Engineer.

When the project plans indicate that shafts are to be drilled within embankments, the embankments shall be constructed as shown on the project plans and thoroughly compacted in accordance with the requirements of Section 203 prior to drilling, except as otherwise approved by the Engineer.

Open excavations that are deemed to be potentially hazardous by the Engineer shall be covered at the end of each shaft in a manner approved by the Engineer.

Drilling Slurry:

When slurry is used to maintain an excavation, the contractor shall provide a specialist, experienced in slurry drilling, to design and monitor the slurry. The slurry shall consist of a stable suspension of commercial bentonite in potable water. The density of the slurry shall be the minimum required to maintain the excavation. The contractor shall submit slurry design criteria, including density, viscosity, shear strength, Ph, and suspended sand content, for drilling and concrete placement operations to the Engineer for review prior to commencement of any slurry drilling. During the drilling operations, the specialist shall monitor the properties of the slurry to assure conformance to the submitted design criteria.

Just prior to the placement of the reinforcing steel cage, samples of the slurry, including samples from the bottom of the shaft, shall be taken by the contractor. The slurry shall be tested by the contractor for conformance with the submitted design criteria.

Unless otherwise specified on the project plans, at the time of concrete placement the density of the slurry shall not exceed 75 pounds per cubic foot and the viscosity of the slurry shall not exceed 90 seconds per quart as measured by the Marsh Funnel Method. The consistency of the slurry shall be adjusted as required to maintain the excavation; however, the slurry shall be of the thinnest consistency possible so as to provide a suitable environment for placing concrete.

The bentonite and water shall be thoroughly mixed in an approved mixer before being placed into the excavation. The practice of placing dry bentonite into the shaft to be mixed with water by the action of the drilling auger will not be permitted.

Slurry shall be fed into the shaft as drilling progresses, keeping the excavation filled to within three feet of the surface of the concrete pad or maintained within the casing unless otherwise approved by the Engineer.

Slurry may be reused from one shaft to the next provided that it is desanded. Slurry to be discarded shall be disposed of in a manner approved by the Engineer.

Reinforcing Steel:

The reinforcing steel cage shall consist of the longitudinal bar and spiral hoop reinforcement. The cage shall be completely assembled and placed into the shaft as a unit.

Unless otherwise indicated on the project plans, or approved by the Engineer, splicing of reinforcing steel will not be permitted. Lap splices in spiral hoop reinforcement shall be in accordance with the details shown on the project plans or as approved by the Engineer and only at locations approved by the Engineer.

The reinforcing steel cage shall not be placed until immediately before concreting operations are to be started and shall be placed in accordance with the details shown on the project plans.

The cage shall be adequately supported and anchored from the top to prevent movement during the concrete placement and for at least four hours thereafter. The exact length of time will be determined by the Engineer. The support shall be concentric and shall support at least one-half of the vertical bars. Spacers shall be at sufficient intervals along the shaft to insure minimum concrete cover for the entire length of the caisson. The type of spacer used shall be approved by the Engineer.

If the shaft is deepened and the project plans indicate full depth reinforcement, the bars in the lower portion of the caisson shall be extended accordingly, as directed by the Engineer, to the bottom of the shaft. These bars shall be lap spliced, spliced by butt welding or by other connecting procedures approved by the Engineer to the proper length in accordance with the requirements of Section 605. If the project plans indicate spiral or tie reinforcement for the full depth of the caisson, the spiral or the reinforcement shall also be extended to the bottom of the shaft as directed by the Engineer.

Concrete:

General:

Concrete shall be placed as soon as possible after completion of the shaft and the placement of the reinforcing steel cage. Any sloughage or other loose material shall be machine cleaned from the shaft prior to placing reinforcing steel and concrete. An accumulation of loose soils, muck, etc., at the bottom of the shaft will not be allowed at the time of placing steel or concrete. A flight auger shall not be used for cleaning purposes.

Concrete placement shall be continuous in the shaft to the top elevations or to construction joint shown on the project plans and shall be in accordance with the requirements of Section 601 and as specified herein. Concrete shall be of such workability that vibration will not be required, except that the top ten feet shall be vibrated.

Prior to the placing of concrete, the contractor shall have made all the necessary arrangements to assure the uninterrupted delivery of concrete so that each caisson will be constructed without cold joints.

The contractor shall exercise care so that no damage to a completed caisson will occur. The contractor shall not begin construction of the footings, formed columns or cap beams or remove the concrete pad until at least 48 hours after the concreting of the shaft is completed for the respective pier or abutment caisson.

Placement Under Slurry or Water:

The concrete shall be placed by pumping in accordance with the requirements of Subsection 601-3.03(C). The pumping equipment shall have a rated capacity of at least 100 cubic yards/hour and the contractor shall supply at least one standby unit so that concrete placement may continue in case of equipment failure. In order to prevent contamination of the concrete placed initially, the lower end of the pump pipe shall be provided with a valve or plug. The discharge end of the pump pipe shall always remain between one and three diameters of the caisson below the surface of fluid concrete. The contractor shall provide a positive means of determining the relative positions of the end of the delivery pipe and surface of fluid concrete.

If drilling slurry is to be used either with or without a casing, the concrete shall be placed in a continuous manner without any mixing of concrete and drilling slurry.

All the fluid and suspended solids below the top of the caisson shall be removed during concrete placement. The concrete shall not be vibrated until all contaminated concrete and traces of slurry have been removed from below the caisson's top elevation.

Placement in Dry Excavations:

Concrete shall be placed through a suitable tube or tremie to prevent segregation of materials.

Concrete may be placed by the free-fall method provided that water is not standing in the bottom of the shaft and that the fall does not exceed eight feet. The delivery chute shall be positioned so that the concrete does not strike the sides of the shaft or the reinforcing steel.

Casing Removal:

During removal of any casing, a sufficient head of not less than five feet of fluid concrete shall be maintained above the bottom of the casing except at the top of the shaft. All contaminated concrete below the top of the caisson shall be removed.

If the removal of the casing causes an upward movement of the concrete and/or reinforcing steel cage of one inch or less, the casing may continue to be pulled provided no further movement occurs and if the concrete is vibrated or rodded to reconsolidate the concrete. Vibration or rodding of the concrete shall not be used to attempt to break the casing loose for extraction.

If the upward movement is greater than one inch, the casing shall be left in place as a permanent sleeve at the contractor's expense. A load test may be required by the Engineer to determine the adequacy and acceptability of the caisson.

Test Caisson:

Unless otherwise directed by the Engineer, a test caisson is not required.

Inspection and Tests:

After completion of a shaft and prior to placement of the reinforcing steel cage and concrete, the shaft will be inspected by the Engineer. The contractor shall provide suitable equipment for the Engineer to inspect the completed excavation.

Each completed caisson will be inspected by means of a gamma ray logging device. The contractor shall furnish and install two inch inside diameter polyvinyl chloride pipe (Schedule 40) as shown on the project plans. The pipe shall be joined with glued couplers to provide a clean, dry and unobstructed two inch diameter clear opening from the top of the caisson to the tip. The pipe shall be capped top and bottom and shall be securely tied to the reinforcing steel in a straight line in order to prevent displacement during handling and concrete placement and permit the gamma ray logging device to pass top to bottom. The Engineer will provide the testing equipment and make the actual inspection.

If the inspection indicates the presence of voids or zones of unconsolidated concrete in the caisson, the concrete shall be core drilled or otherwise exposed as directed by the Engineer.

After all inspection has been completed, all holes and conduit in all bridge foundation caissons shall be filled with an approved sand-cement grout.

Caisson Repair:

If after inspection the Engineer determines that the integrity of the bridge foundation has been compromised, the Engineer will order the contractor to make such repairs as are deemed necessary by the Engineer.

Method of Measurement:

Caissons will be measured by the linear foot. Measurement will be made from the top of the accepted caisson to the bottom, as indicated on the project plans or as directed by the Engineer. Rock sockets will be considered as being part of the shaft for measurement purposes.

Basis of Payment:

The accepted quantities of caissons, including test caissons, if required, measured as provided above, will be paid for at the contract unit price per linear foot for the diameter designated in the bidding schedule, complete in place, including excavation, drilling slurry, metal casing, steel reinforcing, portland cement concrete, concrete slabs, and any needed forming, curing and finishing. No additional payment will be made for metal casing that is to remain in place.

The contract unit price shall also include the cost of exposing, by excavation, the upper length of the test caissons, the drilling and/or backfilling of any additional shafts and the construction of any additional test caissons. Payment will be made only for one accepted test caisson and will be based on the full depth test caisson length required by the Engineer.

The contract unit price shall also include the cost of the core drilling or exposing of concrete and the subsequent repair of caissons as hereinbefore specified under "Caisson Repairs" for caissons which are deemed to be unacceptable.

The contract unit price shall also include the cost of furnishing all materials, equipment and labor necessary for the splicing of reinforcing steel and for the radiographic testing of welds and the testing of butt splices and threaded splices.

The contract unit price shall also include the cost of furnishing and placing conduit and the subsequent filling with a sand-cement grout.

If the contractor is ordered by the Engineer to core drill or otherwise expose the caisson for inspection and no voids, unconsolidated concrete or other condition that will compromise the integrity of the bridge foundation is determined by the Engineer to exist, the cost of such work and the cost of the subsequent repairs will be paid for in accordance with the requirements of Subsection 109.04.

No measurement or direct payment will be made for the reinforcing steel extending from the top of the drilled shaft foundation into the cap, the price being considered as included in the cost of the respective drilled shaft foundation.

When load tests are required by the Engineer to determine the adequacy and acceptability of drilled shafts, payment for load tests for drilled shafts determined to be adequate and acceptable will be made in accordance with the provisions of Subsection 109.04.

Load tests for drilled shafts determined to be inadequate and unacceptable will be at the contractor's expense.

(PAINT610, 6, 08/04/86)

SECTION 610 - PAINTING: of the Supplemental Specifications is revised to read:

610-1 Description:

The work under this section shall consist of furnishing paint and other materials and painting metal structures or other surfaces where shown on the plans in accordance with the requirements of these specifications. The work shall include preparation of the surfaces to be painted, the protection and drying of the paint coatings and the protection of pedestrian, vehicular or other traffic near or under the work from paint spatter and disfigurement.

610-2 Materials:

Paint shall conform to the requirements of Section 1002, unless otherwise specified.

610-3 Construction Requirements:

610-3.01 Weather Conditions:

Paint shall be applied only on thoroughly dry surfaces and only when the atmospheric temperature is at or above 40 degrees F. at the site of the work. Paint shall not be applied when the air is misty or when weather conditions exist which might damage the work. If fresh paint is damaged by the elements, it shall be replaced or repaired by the contractor at his expense.

The contractor may provide suitable enclosures to permit painting during inclement weather. Provisions shall be made by the contractor to artificially control atmospheric conditions inside the enclosures within limits suitable for painting throughout the painting operation.

610-3.02 Surface Cleaning:

(A) General:

All surfaces of structural steel or other metals, except galvanized surfaces, shall be cleaned prior to painting.

All surfaces of new structural steel or other metals which are to be painted shall be blast cleaned, unless otherwise specified or approved in writing by the Engineer.

When repainting existing steel structures, the method of cleaning will be specified in the special provisions. Areas not designated for repainting which are damaged as a result of the contractor's operations shall be repaired by the contractor, at his expense, and as approved by the Engineer.

(B) Blast Cleaning:

Abrasives used for blast cleaning shall be clean dry sand, mineral grit, steel shot, or steel grit and shall be graded to produce satisfactory results. The use of other abrasives will not be permitted unless approved in writing by the Engineer.

All dirt, rust, old paint, mill scale and other foreign material shall be removed from steel or other metal surfaces with an approved blast cleaning apparatus. Blast cleaning shall be sufficient to give the surface the appearance of unpolished sandcast aluminum and shall leave all surfaces with a dense, uniform anchor pattern of not less than one mil, as measured with an approved surface profile comparator.

When blast cleaning is being performed near machinery, all journals, bearings, motors and moving parts shall be sealed against entry of abrasive dust.

Blast cleaned surfaces shall be primed or treated the same day blast cleaning is done, unless otherwise authorized by the Engineer. If cleaned surfaces rust or are contaminated with foreign material before painting is accomplished, they shall be recleaned by the contractor at his expense.

(C) Steam Cleaning:

All dirt, grease, loose chalky paint or other foreign material which has accumulated on previously painted surfaces shall be removed with a steam cleaning apparatus prior to all other phases of cleaning. It is not intended that sound paint be removed by this process. After steam cleaning, any paint which has become loose, curled, lifted or loses its bond to the preceding coat or coats shall be removed to sound paint or metal surface by the contractor at his expense.

A detergent shall be added to the feed water of the steam generator or applied to the surface to be cleaned. The detergent shall be of such composition and shall be added in such quantity that the specified cleaning is accomplished.

Any residue, detergent or other foreign material which may accumulate on cleaned surfaces shall be removed by flushing with fresh water.

Steam cleaning shall not be performed more than two weeks prior to starting painting operations or other phases of cleaning.

Subsequent painting shall not be performed until the cleaned surfaces are thoroughly dry and in no case in less than 24 hours after cleaning.

(D) Hand Cleaning:

Manual or powered wire brushes, hand scraping tools, power grinders or sandpaper shall be used to remove all dirt, loose rust, mill scale, or paint which is not firmly bonded to the surfaces.

610-3.03 Application:

The contractor shall notify the Engineer, in writing, at least one week prior to beginning cleaning and painting operations including shop painting.

Painting shall be accomplished in a neat and workmanlike manner. Paint shall be applied with hand brushes, by spray, or roller or by a combination thereof except that Paint No. 3, Aluminum, shall be applied by spraying.

Each application of paint shall be smoothly and uniformly spread so that no excess paint will collect at any point. Any skips, holidays, thin areas or other deficiencies shall be corrected before the succeeding paint application. The surface of the paint being covered shall be free of moisture, dust, grease or any other deleterious materials which would prevent the bond of the succeeding applications.

When paint brushes are used, they shall have a sufficient body and length of bristle to spread the paint in a uniform film.

Surfaces which are inaccessible shall be painted with daubers or by other means approved by the Engineer.

When rollers are used, they shall be of a type which will not leave a stippled texture in the paint film.

When sprayers are used, a water trap, approved by the Engineer, shall be furnished and installed at each spray pot.

Prior to application, paint shall be mixed with mechanical mixers for a sufficient length of time to thoroughly mix the pigment and the vehicle together and it shall be kept thoroughly agitated during its application.

The handling and the application of paints shall be done in accordance with all applicable occupational, safety and health standards, rules and regulations.

610-3.04 Protection Against Damage:

The contractor shall provide protective devices as necessary to prevent damage to the work and to other property or persons from all cleaning and painting operations.

Paint or paint stains which result in an unsightly appearance on surfaces not designated to be painted shall be removed or obliterated as approved by the Engineer.

All painted surfaces that are marred or damaged as a result of the contractor's operations shall be repaired with materials and to a condition equal to that of the paint coating specified herein.

Upon completion of all painting operations and of any other work that would cause dust, grease or other foreign materials to be deposited upon the painted surfaces, the painted surfaces shall be thoroughly cleaned.

610-3.05 Painting Structural Steel:

(A) Paint Coats:

(1) General:

All surfaces of new structural steel and other metals shall be painted with one shop coat (prime coat) and two field coats (first field coat and finish coat), unless otherwise specified.

The dry film thickness of the paint will be measured in place with a calibrated magnetic film thickness gauge.

If the minimum dry film thickness is exceeded, it shall be limited to that which will result in uniform drying throughout the paint film.

(2) Pre-Treatment:

When specified in the special provisions, a wash primer conforming to the requirements of Subsection 1002-3.05 shall be applied to freshly blast cleaned steel surfaces prior to the application of the first undercoat of paint. All blast cleaned surfaces shall be coated with pre-treatment wash within 4 hours of cleaning. Treatment shall be applied sooner if, in the opinion of the Engineer, atmospheric conditions are such that corrosive products form on freshly blast cleaned surfaces in less than 4 hours.

Pre-treatment washes shall be applied by spraying to produce a uniform wet film on the surface.

During the application of the pre-treatment wash no blast cleaning will be permitted adjacent to the areas being treated.

No paint shall be applied until after the treated surfaces have thoroughly dried.

The first coat of paint shall be applied to the treated surfaces the same day that cleaning and pre-treatment have been done.

(3) Prime Coat:

The prime coat shall conform to the requirements of Subsection 1002-3 and when applied the dry film thickness of the paint shall be not less than 2 mils.

(4) First Field Coat:

The first field coat shall be appropriately tinted to contrast with the prime coat and shall conform to the requirements of Subsection 1002-3. When applied, the dry film thickness shall be not less than 1.5 mils.

(5) Finish Coat:

The finish coat shall be an aluminum pigmented paint unless specified otherwise on the plans or in the special provision. This paint shall conform to the requirements of Subsection 1002-3. When applied, the dry film thickness shall be not less than 1.0 mil.

(B) Shop Painting:

After structural steel has been fabricated, blast cleaned and accepted by the Engineer, all surfaces, except metal surfaces which are to be embedded in concrete, shall be painted with a prime coat.

Structural steel which is to be welded shall not be painted before welding is complete. If it is to be welded only in the fabricating shop and subsequently erected by bolting, it shall receive one prime coat after the shop welding is completed. Areas of structural steel to be field welded shall be masked and the remainder of the steel shall be given one prime coat.

As soon as practicable after being accepted by the Engineer and prior to removal from the shop, machine-finished surfaces shall be prime coated with a rust inhibitor which can easily be removed.

Erection marks for field identification of steel members and weight marks shall be painted upon surface areas previously painted with the shop coat.

Surfaces of milled or finished iron and steel castings shall be given one shop coat of paint.

(C) Field Painting:

After erection of steel structures has been completed, including all riveting, welding, bolting and any straightening of bent metal, all adhering rust, scale, dirt, grease and other foreign material shall be removed as specified under Subsection 610-3.02. All areas where the prime coat is damaged or deteriorated shall be thoroughly cleaned and spot painted with the same type of paint used for the shop coat and to the specified dry film thickness.

When the spot painting coat is thoroughly dry, the first field coat and the finish coat shall be applied. In no case shall a succeeding coat be applied until the previous coat has dried throughout the full thickness of the paint film.

All small cracks and cavities which have not become sealed in a watertight manner by the first field coat shall be filled before the finish coat is applied.

At the option of the contractor, the two field coats may be applied in the shop. When finished coats are applied in the shop, the contractor shall repaint all damaged or deteriorated areas in the field as directed by the Engineer.

610-3.06 Painting Damaged Galvanized Coating:

Areas of galvanized coating damaged due to welding after fabrication or due to handling, shall be roughened by sanding or acid and the roughened areas shall be painted with at least one full coat of Paint Number 4 - Zinc, conforming to the requirements of Subsection 1002-3.

610-3.07 Painting Sign Structures:

All structural steel surfaces, except the interior of tapered tubes, shall be blast cleaned in accordance with the requirements of Subsection 610-3.02(B) and painted at the fabrication shop or plant. Unless otherwise specified, the type of paint and dry film thickness shall be in accordance with the requirements of Subsection 610-3.05.

The interior of tapered tubes shall be painted at the sign structure fabrication shop with one coat of Paint No. 1, conforming to the requirements of Subsection 1002-3.

610-3.08 Painting of Miscellaneous Steel Items:

All miscellaneous steel items that are not elements of bridges, cantilever sign supports, or bridge truss sign structures, may be hand cleaned and have the required field paint coats applied in the shop.

610-4 Blank

610-5 Basis of Payment:

No measurement or direct payment will be made for painting as described and specified herein and on the plans, the cost being considered as included in the prices paid for the various contract items of work involving painting.

ITEM 6110201A- METAL HANDRAIL:

The work under this item consists of furnishing all materials and constructing handrail at the location and in accordance with the details shown on the project plans.

Method of Measurement:

Metal handrail will be measured by the linear foot. Measurement will be made along the top of the completed handrail from center to center of end posts.

Basis of Payment:

Payment for this work will be made as specified under Subsection 109.10, which payment shall be full compensation for the work, complete, as directed and as specified herein and on the project plans.

SECTION 701 - MAINTENANCE AND PROTECTION OF TRAFFIC:

701-1 Description: of the Standard Specifications is modified to add:

The contractor's traffic control specialist shall be furnished vehicles by the contractor that are equipped with a push block acceptable to the Engineer to assist DPS officers in clearing away disabled vehicles from within the restricted traffic area. If directed by the Engineer, the contractor shall also equip other construction vehicles in the same manner to assist if needed. No measurement or direct payment will be made for this work.

In the event that conditions warrant, the Engineer will direct the contractor to furnish, operate and maintain a tow truck. The tow truck shall be of the type and size specified by the Engineer and will be either purchased, rented or leased as directed by the Engineer. Payment for a tow truck, if required, will be in accordance with the provisions of Subsection 109.04.

Temporary concrete barriers (approximate 1100) are presently installed on the approaches of the Arizona Canal Bridge. These barriers are the property of the Department. The barriers are to be used by the contractor and shall remain the property of the Department. Where these barriers are located as required by the Traffic Control Plan, payment for Temporary Concrete Barrier will be made as specified in Section 701-5.01(A) of the Standard Specifications. When final acceptance has been duly made by the Engineer in accordance with the requirements of Subsection 105.16(B), the existing portable concrete barriers shall remain the property of the Department and shall be used as temporary barriers as per the "Permanent Signing and Striping Plan". The remainder of the existing portable (temporary) concrete barriers shall be removed by the contractor and stored at the District I office area. All new

temporary concrete barriers shall remain the property of the contractor.

No payment will ne made for the lateral movement of temporary concrete barrier when the distance is 12' or less, the cost being considered as included in the contract lump sum price for Item 7010001.

701-2.05(B) Pavement Marking Paint: of the Standard Specifications is revised to read:

Paint for striping shall be white or yellow as called for in the project plans. The requirements for the paint shall be described in Section 708 - PERMANENT PAVEMENT MARKING hereinafter specified.

701-2.05 Performed Pavement Markings: of the Supplemental Specifications is modified to add:

All pavement marking tape shall conform to the requirements described in Section 705-2.02, Preformed Pavement Markings - Type II (REMOVABLE).

701-5.02(D) Pilot Trucks and Flagging Services: of the Supplemental Specifications is modifed to add:

Construction vehicle access to and from the site during Phase IV activities (ACDC construction in center portion of project area) shall be "in" from the south and "out" from the north, only. A flagman shall assist construction traffic exiting the site to gain safe access to the NB freeway lanes without stopping freeway traffic. The hours of access by heavy trucks to and from the construction site during the Phase IV activity may be limited as directed by the Engineer and determined at the beginning of the Phase IV activities.

(MTSIN701, 6, 04/10/86)

ITEM 7010021 MAINTAIN DEPARTMENT-FURNISHED SIGN:

1. Description:

The work under this item consists of maintaining a Department-furnished, portable, trailer mounted, lamp matrix, changeable message sign and transporting the sign to, from and within the work site as directed by the Engineer.

2. BLANK

3. Construction Requirements:

The contractor shall provide routine maintenance of the changeable message sign. Such maintenance shall include but not be limited to furnishing and installing oil, fuel, filters, and light bulbs and keeping the sign clean and in good operating condition. The engine oil and oil filter shall be changed after each 50 hours of running time.

The contractor shall furnish a vehicle and driver to tow the message sign to and from the project site and to move the sign within the project site as directed by the Engineer.

The contractor shall provide safe storage for the sign when it is not being used during construction.

Upon completion of the work, the sign shall be cleaned and returned to the Department in good working condition.

The contractor will not be responsible for any damage to the sign which may occur as a result of incidents beyond the control of the contractor while the sign is in use during construction operations.

4. Method of Measurement:

The work under this item will be measured by the day for each day that the changeable message sign is maintained by the contractor.

5. Basis of Payment:

Payment for maintaining a Department-furnished message sign, measured as provided above, will be made at the contract unit price per day, which price shall be full compensation for furnishing all materials, facilities and services and performing all work as specified herein.

Due to the large amount of highway construction work in District I, a shortage of these signs has developed; subsequently, and depending on availability, this item may be reduced or eliminated.

(ATNU701, 6, 01/16/86)

ITEM 7010031 - TRUCK MOUNTED ATTENUATOR:

The work under this item shall consist of furnishing trucks and truck mounted attenuators at the locations shown on the project plans and as specified herein.

The contractor shall provide highway maintenance service trucks weighing between 10,000 and 24,000 lbs. to be used as protection vehicles for the safety of work crews and traveling public. These trucks shall be equipped with truck-mounted impact attenuators. The attenuators shall consist of three basic components:

A back-up support structure for attaching the back-up to the truck.

A back-up.

A crushable cartridge containing an energy absorbing material.

The dimensions of the attenuator shall be approximately 7 ft. long, 2 ft. high and 8 ft. wide and the total weight of the attenuator shall be approximately 1,000 pounds.

Attenuators shall have rear-mounted black and yellow chevron stripes and a standard trailer lighting system, including brake lights, turn signals, and ICC bar lights. When in position, roadway clearance shall be between 10 and 12 inches. The attenuator shall be designed to provide for quick and simple connection to the truck.

When impacted head-on at 45 mph, the truck-mounted attenuator shall perform as follows:

For vehicles weighing up to 4,500 lbs. the average over-all longitudinal deceleration shall be less than 9 g's; the 2 ft. flail space velocity shall be less than 40 ft./sec; the roll-ahead distance of the truck, with wheels locked and parking brake set on clean, dry pavement, shall be less than 15 feet.

For vehicles weighing 1,800 lbs., the average over-all longitudinal deceleration shall be less than 12 g's; the 2 ft. flail space velocity shall be less than 40 ft./sec; the roll-ahead distance of the truck, with wheels locked and parking brake set, on clean, dry pavement, shall be less than 10 feet.

It shall be the contractor's responsibility to keep the attenuator bright and clean for maximum visibility.

Method of Measurement:

Truck mounted attenuators will be measured by the hour for each hour that a truck mounted attenuator is used to protect the work site.

Basis of Payment:

The accepted quantities of truck mounted attenuators, measured as provided above, will be paid for at the contract unit price, which price shall include all equipment, material and labor necessary to furnish, maintain, transport, locate and relocate truck-mounted attenuators, as specified herein and as shown on the plans.

It shall be the contractor's responsibility to replace any damaged or destroyed parts of the attenuator at no additional expense to the Department.

(SNDBL702, 6, 10/21/85)

SECTION 702 - ATTENUATION DEVICES:

702-2 Materials: of the Standard Specifications is modified to add:

A list of approved manufacturers and distributors of components for sand barrel crash cushions is given below:

(1) Manufacturer:

Energy Absorption Systems, Inc.
One IBM Plaza
Chicago, Illinois 60611

Distributor:

Energy Absorption Systems, Inc.
860 South River Road
West Sacramento, California 95691

(2) Manufacturer:

Fibco Inc.
One Boston Plaza
Boston, Massachusetts 02108

Distributor:

Gades Sales Co.
1278 Civic Drive
Walnut Creek, California 94596

Components supplied by manufacturers other than those listed above shall be approved by the Department prior to use.

ITEM 7030042 - CHANNELIZER TRAFFIC BARREL:

Description:

The work under this item consists of furnishing and installing channelizer traffic barrels at the locations shown on the project plans and in accordance with the requirements of these Special Provisions. The barrels shall be a one - or twopiece breakaway design. The upper portion of the barrel shall deform and break away from the base. The base and ballast shall remain in position and allow the vehicle to pass over. One side of the barrel shall have a flat side to prevent rolling back and forth after being hit.

Materials:

The barrel shall be of one or two piece contruction consisting of a base and upper portion fabricated from high impact, low density linear polyethylene and shall be orange in color.

Barrels shall be approximately 36" in height and a minimum of 18" in diameter. The markings on barrels shall be horizontal, circumferential, orange and white reflective sheeting strips 4 to 8" wide. There shall be a minimum of two orange and two white strips on each barrel. During hours of darkness a flashing warning light shall be placed on barrels used singularly and steady burn warning lights should be placed on barrels used in a series.

Method of Measurement:

Channellizer Traffic Barrel will be measured by the unit for each barrel installed.

Basis of Payment:

Payment for this work will be made at the contact unit price per each for ITEM 7030042 - CHANNELIZER TRAFFIC BARREL, which price shall be full compensation for the work, complete in place, as described and specified herein and on the Project Plans.

(PPM708, 6, 12/30/86)

SECTION 708 - PERMANENT PAVEMENT MARKINGS:

708-1 Description:

The work under this section shall consist of cleaning and preparing the pavement surface, furnishing all materials and applying white or yellow chlorinated rubber traffic paint and reflective glass beads at the locations and in accordance with the details shown on the plans, MUTCD, the requirements of these specifications, or as directed by the Engineer.

708-2 Materials:

.01 Pavement Marking Paint:

(A) General:

All material used in the formulation of the pavement marking paint shall meet the requirements herein specified. Any materials not specifically covered shall meet the approval of the Engineer.

(B) Composition Requirements:

The permanent pavement marking paint shall consist of the following components with all percentages specified being by weight:

(1) Pigment Composition: percent by weight of total pigment	White	Yellow
Titanium Dioxide, Rutile (ASTM D 476, Type II 92% min.)	24.0-26.0	7.0-9.0
Medium Chrome Yellow (ASTM D 211, Type III 87% min.)		15.0-17.0
Zinc Oxide (ASTM D 79 American Process Type)	7.5-9.5	7.0-9.0
Magnesium Silicate (ASTM D 605)	6.0-38.0	35.0-37.0
Calcium Carbonate (ASTM D 1199, Type GC, Grade I or II)	28.0-30.0	31.0-33.0
Antisettling Agency (Bentone 34 or Claytone 40) See Note 1		

2. Vehicle Composition:

percent by weight	White and Yellow
Alkyd Resin Solution - See Note 2	21.3 min.
Chlorinated Rubber (Parlon S20 or Alloprene X20)	16.4 min.
Chlorinated Paraffin (Fed. Spec. Mil-C 429C, Type I)	11.3 - 13.3
Lead Drier 24% (ASTM D 600 Class B)	0.2 - 0.4
Cobalt Drier 6% (ASTM D 600 Class B)	0.05 - 0.25
Antiskinning Agent (Exkin or Equivalent) See Note 3	0.45 - 0.55
Stabilizer (Propylene Oxide) See Note 4	
Toluene (ASTM D 362)	26.1 max.
Heptane (Technical Grade)	6.5 - 8.5
Methyl Ethyl Ketone (ASTM D 740)	14.7 min.
Methanol (ASTM D 1152)	0.2 - 0.4

Note 1. Sufficient dispersing and suspending agent shall be added to prevent excessive settling.

Note 2. Alkyd Resin Solution: The medium oil soya-modified alkyd resin shall be supplied as 59 to 61 percent non-volatile solids in VM & P Naphtha (TT-N-95b, Type I). The resin solids shall contain an oil acid content of 48 to 55 percent, a phthalic anhydride content of 33 to 37 percent and an acid number of 8 maximum. The alkyd resin solution shall have a maximum of 9 (Gardner). The alkyd resin solution, reduced to 45 percent solids with VM & P Naphtha, shall have a viscosity of D to G (Gardner-Hold). No resin will be permitted. The oil fatty acids shall be of vegetable origin, either alkali refined soya bean oil or the fatty acids of soya bean oil having a minimum iodine number of 115. No recovered oil marine or soya food fatty acid derivatives shall be used. The alkyd resin solution must tolerate a 500 percent by weight dilution with VM & P Naphtha. A solution containing alkyd resin solution, chlorinated rubber, methyl ethyl ketone, toluene and heptane in the proportions given in the vehicle composition shall be clear, transparent and show no separation after storage of 24 hours in a three-quarter full test tube at 26.7 degrees+ 2.8 degrees C (80 degrees+ 5 degrees F).

Note 3. Sufficient antiskinning agent shall be used to prevent skinning. Material shall be added at the proper time during the manufacturing of the paint so as to minimize losses due to volatilization and maximize retension in the packaged product.

Note 4. Other approved Stabilizers: Styrene Oxide - 3 pounds per 100 gallons of paint; Thermolite 813 - 0.5 pounds per 100 gallons of paint.

(C) Manufacturing Formulations:

The typical formula which may serve as a guide for the paint manufacture is as follows: (Yield is approximately 100 gallons).

	POUNDS	
	White	Yellow
Titanium Dioxide	150	50
Medium Chrome Yellow		100
Zinc Oxide	50	50
Magnesium Silicate	224	224
Calcium Carbonate	175	200
Antisetting Agent (Claytone)	5	5
Methanol	2	2
Alkyd Resin Solution (60% non-volatile)	130	130
Chlorinated Rubber (93% non-volatile)	100	100
Chlorinated Paraffin	75	75
24% Lead Drier	2	2
6% Cobalt Drier	1	1
Antiskinning Agent (Exkin)	3	3
Stabilizer (Propylene Oxide)	3	3
Toluene	160	160
Heptane	45	45
Methyl Ethyl ketone	90	90
	1215	1240

(D) Quantitative Requirements of Mixed Paint:

	White	Yellow
Pigment: percent by weight-See Note 5	48.9-50.6	49.9-51.6
Total Solids: percent by weight	69.4 min.	70.0 min.
Non-volatile Vehicle: percent by weight vehicle	38.9 min.	38.9 min.
Viscosity: K.U. at 77 F	76 ± 8	76 ± 8
Weight per Gallon: pounds	12.2 ± 0.2	12.5 ± 0.2
Fineness of Grind: Hegman gauge, North Standard Scale	3 min.	3 min.
Drying Time: minutes	1 - 4	1 - 4
Directional Reflectance:	80 min.	50 min.
Uncombined Water: percent by weight of paint	1.0 max.	1.0 max.
Coarse Particles and Skins: retained on a No. 325 mesh sieve, percent by weight of pigment.	1.0 max.	1.0 max.

Note 5. The extracted pigment upon analysis shall conform to the quantitative compositional requirements.

(E) Qualitative Requirements:

(1) Color of Yellow paint:

The color of the yellow paint shall visually match color chip No. 33538 of Fed. Std. 595 (Note 6). In case of dispute, the color shall be within the green and red tolerance limits when compared with the standard color chips of "Highway Yellow Color Tolerance Chart" U.S. Department of Commerce, Bureau of Public Roads PR Color No. 1, June 1965.

(2) Condition in Container:

The paint shall not show excessive settling in freshly-opened full can and shall be easily redispersed with a paddle to a smooth homogeneous state. The paint shall show no curdling, livering, caking, gelling or thixotropic properties, lumps, skins or color separation.

(3) Skinning:

The paint shall not skin within 48 hours in a three-quarter filled, tightly closed container.

(4) Storage Stability:

The paint shall show a viscosity increase of not more than five (5) Krebs units above the original viscosity and the degree of settling shall have a rating of six (6) or better (Note 7). When stored for twelve (12) months the paint must be usable, the drying time shall be as specified and the consistency range shall be 70 to 85 Krebs units.

(5) Flexibility and Adhesion:

The paint shall show no cracking, flaking or loss of adhesion when tested as specified. Apply a wet film thickness of 0.005 inches with a film applicator to a 3 by 5 inch tin panel weighing 0.39 to 0.51 lbs. per sq.ft., previously cleaned with benzene and lightly buffed with steel wool. Dry the paint film at 70 degrees to 80 degrees F in a horizontal position for 18 hours, then bake in an oven at 122 degrees + 4 degrees F (47.8 degrees C to 52.2 degrees C) for two hours, cool to room temperature for at least 1/2 hour and bend over a 1/2 inch diameter rod and examine, without magnification.

(6) Water Resistance:

The paint shall show no softening, blistering, loss of adhesion or other evidence of deterioration other than a slight loss in gloss when tested as specified. Apply a wet film thickness of 0.015 inches with a film applicator to a clean glass plate. Let dry in a horizontal position at room temperature (70 degrees to 80 degrees F) for 72 hours. Immerse one-half the painted plate in distilled water at room temperature for 18 hours as specified in method 6011 of Fed. Test Method Std. No. 141, allow to dry for two hours and examine.

(7) Dilution Stability:

The thinned paint shall be uniform and show no separation, curdling or precipitation after reduction in the properties of eight parts by volume of the package material with not more than one part by volume of the appropriate thinner for each type of paint.

(8) Spraying Properties:

The paint as received or diluted no more than specified above shall have satisfactory spraying properties when applied (and held in a horizontal position) to tinplate or aluminum surfaces at a wet film thickness or approximately 0.015 inch. The sprayed film shall dry to a smooth uniform finish, free from roughness, grit, unevenness and other surface imperfections. The paint shall show no streaking or separation when placed on clean glass.

(9) Bleeding

The bleeding characteristics shall be determined in accordance with ASTM D 969. The test panels shall be evaluated according to ASTM D 868, and the degree of resistance to bleeding shall have a numerical rating of six (6).

Note 6. Apply a wet film of 0.015 inches to a tin panel; let dry for 24 hours and compare color.

Note 7. Storage stability shall be determined in accordance with ASTM D 1309 Settling Properties of Traffic Paints During Storage; ASTM D 869 Evaluating Degree of Settling; and Consistency, Krebs-Standard Method 4281 of Federal Test Method Std. No. 141.

(F) Manufacturing Requirements:

(1) Inspection:

The manufacture shall advise the Engineer when paint is to be manufactured and shall furnish the Engineer free access to all parts of the plant and shall furnish every reasonable facility for sampling both the paint and the raw materials during the process of manufacturing.

All materials used in formulation shall meet the requirements herein specified. Any materials not specifically covered shall meet the approval of the Engineer.

(2) Testing:

All tests will be conducted in accordance with the latest test methods of the American Society for Testing and Materials, Federal Test Method Standard No. 141, and methods in use by Materials Services, Highways Division, and the Arizona Department of Transportation. Where both an ASTM and Federal Test Method is available for new materials or the finished product, the ASTM test method will prevail.

Evidence of adulteration or improper formulation shall be cause for rejection.

(3) Packaging:

The finished paint shall be homogeneous, free of dirt, water and other foreign matter. The paints shall be strained immediately prior to canning.

All shipping containers must comply with Federal Interstate shipping standards of the Department of Transportation, and be stamped 17-H in accordance with the standards. The containers must be lined so as to prevent attack by the paint. The lining must not come off the container as skins.

All containers of paint shall be labeled with weatherproof markings, showing the color, manufacturer's name, date of manufacture, tare weight, net weight, gross weight and manufacturer's batch number on the side of drum and also on the lid.

.02 Reflective Glass Beads:

(A) General:

The beads shall be manufactured from glass of a composition designated to be highly resistant to traffic wear and to the effects of weathering.

The glass beads shall be moisture-proof, contain less than 1/4 of one percent moisture by weight, and be free of trash, dirt, or other deleterious materials.

Beads shall be essentially free of sharp angular particles showing milkiness or surface scoring or scratching. Beads shall be water white in color.

(B) Physical Requirements:

(1) Gradation:

When tested by the method provided in AASHTO M-247 (by use of US Standard Sieves) the grade sizes of the beads shall be as follows:

Size of Sieve	Percent Passing
No. 20	100
No. 30	75 - 95
No. 50	15 - 35
No. 100	0 - 5

(2) Roundness:

When tested by the method provided in ASTM D-1155-53 (Procedure B except paragraphs (F) and (G) are deleted) beads retained on any screen specified in the gradation requirements shall contain a minimum of 70% true spheres.

(3) Index of Refraction:

When tested by a liquid immersion method at a temperature of 25 degrees C, the beads shall have an index of refraction of 1.50 to 1.57.

(4) Specific Gravity:

The specific gravity of the beads shall be in the range 2.40-2.60 when tested in accordance with the following procedures:

Place 100 grams in an oven at 110 C for 1 hour

Remove beads and place in a desiccator until the sample is cool

Remove approximately 60 grams of beads from the desiccator and weigh the sample accurately.

Pour the beads slowly in a clean 100 ml graduated cylinder containing 50 ml of isopropyl alcohol. Make certain that air is not entrapped among the beads.

The total volume, minus 50, will give the volume of the beads.

Calculate the specific gravity as follows:

$$\text{Specific Gravity} = \frac{\text{Weight of sample}}{\text{Volume of the sample}}$$

(5) Chemical Stability:

Beads which show any tendency toward decomposition, including surface etching, when exposed to atmospheric conditions, moisture, dilute acids, or alkalies or paint film constituents, may be required to demonstrate satisfactory reflectance behavior, prior to acceptance, under such tests as may be prescribed.

(C) Moisture Proofing:

All glass beads shall have a moisture-proof overlay consisting of water repellent material applied during the process of bead manufacture. The beads so treated shall not absorb moisture in storage and shall remain free of clusters and lumps and shall flow freely from dispensing and testing equipment.

The beads shall pass the test for water repellency and free flow using the following equipment.

(1) Test bag:

The bag used is approximately 10 1/2" x 17 1/2" after sewing. The material used in the construction of the bag is unbleached cotton sheeting with a thread count of 48 x 48. The material before sewing is approximately 18" x 22". The cloth is folded in half lengthwise and stitched in the shape of an "L" with the short side left open at the top. The material can be obtained from selected manufacturers of cloth and paper packaging. The finished bag may also be obtained from the manufacturer of the glass beads.

Newly fabricated bags must be thoroughly washed with hot water and detergent and rinsed before use to remove the sizing which may be present in the cloth. Subsequent to the initial washing, the bags need only be rinsed clean of beads from previous tests and dried thoroughly before use.

(2) Funnel:

The funnel used is a standard laboratory funnel with a top opening diameter of 125 mm. and 150 mm. stem length. The inside diameter of the stem is between 9 and 10 mm. This funnel is available from most laboratory glassware supply houses. Corning No. 6100 or equal.

(3) Ring Stand and Clamp.

(4) Balance accurate to 0.1 grams.

(5) Distilled water.

MOISTURE TESTING PROCEDURE:

Glass beads shall be tested for compliance to specification requirements. Testing shall be conducted at standard conditions of temperature (25 ± 1 degrees C) and humidity (50 ± 5 percent R.H.) and shall consist of the following procedure or an approved alternate:

Weigh 900.0 grams of glass beads into a clean, dry, flat-bottomed pan.

Dry beads at 150 degrees C for two hours.

Cool beads to room temperature (25 + 1 degrees) in a desiccator.

Using the clean, pre-washed bag described under apparatus section, turn the bag inside-out so that the sewn seam and seam-allowance are on the outside.

Quantitatively transfer the beads into the inverted cotton bag.

Grasp the gathered top of the bag with one hand and lower the bag into a container of distilled water until the beads are approximately one inch below the water level. The container shall be of such dimensions that the bag does not contact the bottom or sides during immersion. Each bag shall be immersed individually. Do not allow one bag to contact another if multiple tests are run.

Remove the bag after 30 seconds of immersion time.

Cradle the bottom of the bag uniformly in the palm of one hand and twist the top neck of the bag until the twisted bag is compressed firmly against the beads. Twist until excess water no longer drips from the bag.

After the excess water has been squeezed from the bag, allow the bag to unwind.

Gather the top of the bag and clamp. Suspending the bag on a ring stand or other support such that the bottom or sides of bag do not contact the support.

After a standing time of 2 hours at room temperature 25 degrees ± 1 degrees C, remove bag from support. Mix sample thoroughly by holding the bottom seam allowance in one hand and gathered neck of the bag in the other, invert bag and shake up and down 5 times.

Transfer the sample into a clean, dry funnel of the type described under apparatus. if consecutive tests are run, be sure the funnel is clean, dry and free of beads from prior tests.

The entire sample shall flow through the funnel without stoppage.

At the start of the test only, it is permissible to lightly tap the stem of the funnel to initiate flow.

Small quantities of beads which have adhered to the side of the funnel or stem shall not be cause for failure.

708-3 Construction Requirements:

.01 Equipment:

The traffic paint and beads shall be placed on the pavement by a spray-type, self-propelled pavement marking machine except that temporary striping during construction may be placed with other equipment designed for application of paint and beads.

The application equipment to be used on roadway installation shall have, as a minimum, the following characteristic and/or apparatus:

The machine shall be capable of applying a clear-cut 4-inch line or lines.

The machines shall be equipped with a mechanical device capable of placing a broken reflectorized line with a 10-foot painted segment and a 30-foot gap.

The machine shall be equipped with an air-operated glass bead drop-in dispenser controlled by the spray gun mechanism.

A glass bead dispenser which is capable of placing the glass beads into the paint line as the paint is applied to the pavement shall be utilized. This dispenser shall provide satisfactory marking and delineation.

.02 Application:

Pavement markings shall be applied when the pavement surface is dry and the weather is not foggy, rainy, or otherwise adverse to the application of markings. The surface shall be free from excess asphalt or other deleterious substances before traffic paint, beads or primer are applied. The contractor shall remove dirt, debris, grease, oil, rocks or chips from the pavement surface before applying markings. The placing of traffic markings shall be done only by personnel who are experienced in this work.

The volume of paint in place shall be determined by measuring the paint tank with a calibrated rod. At the option of the Engineer, if the striping machine is equipped with air-atomized spray units (not airless) and paint gauges, the volume of paint may be determined by utilizing said gauges.

The quantity of glass reflectorizing beads in place shall be determined by measuring the glass reflectorizing bead tank with a calibrated rod.

The contractor shall provide the necessary personnel and equipment to divert traffic from the installation area where the work is in progress and during drying time when, in the opinion of the Engineer, such diversion of traffic is necessary.

Tolerances for Placing Paint, Beads, and Primer:

The length of painted segment and gap shall not vary more than 6 inches in a 40-foot cycle.

The finished line shall be smooth, aesthetically acceptable and free from undue waviness.

Painted lines shall be 4, 8, or 12 inches wide as shown on the plans with a tolerance of plus or minus 1/8 inch and shall be placed at a minimum rate of 16 gallons per mile for a solid 4-inch line and 4 gallons per mile for a broken 4-inch line, based on a 10-foot stripe and a 30-foot gap (40-foot cycle aggregate).

Glass reflectorizing beads shall be applied on the wet paint at a minimum rate of 6 pounds to each gallon of paint.

Wet mil thickness shall not be less than 15 mils.

708-4 Method of Measurement:

Pavement marking paint will be measured by the linear foot along the centerline of the pavement stripe. Skips in dashed lines will not be included in the measurement. Length of pavement markings will be based on four inch wide stripe. Measurement for striping with a plan width greater or less than the basic four inches as shown on the plans or directed by the Engineer will be made by the following method:

$$\frac{\text{Plan Width of Striping (inches)} \times \text{Linear Feet}}{4 \text{ (inches)}}$$

Symbols and legends will be measured by each unit applied. Each legend, regardless of the number of letters, will be considered as a single unit.

708-5 Basis of Payment:

Pavement striping of the type specified, measured as provided above, will be paid for at the contract price per linear foot for the total length of painted line applied to the nearest foot, which price shall be full compensation for the work complete, as described and specified herein and on the project plans.

Pavement symbols and legends measured as provided above, will be paid for at the contract price for each painted symbol or legend, which price shall be full compensation for the work complete, as described and specified herein and on the project plans.

ITEM 7300921B - UNDERPASS LIGHTING:

The work covered under this item shall consist of supplying and installing an electrical system for the Maintenance Underpass Lighting and shall include the submersible pumps, pump controls, discharge piping, valves and fittings as shown and detailed on the project plans, as specified herein or as directed by the Engineer.

Payment for this work will be made as specified under Subsection 109.10, which payment shall be full compensation for the work, complete, as directed and as specified herein and on the project plans.

ITEM 7360310 - RECONSTRUCT ROADWAY LIGHTING:

The work covered under this item shall consist of reconstructing the existing roadway lighting and making it complete and functional, as shown and detailed on the project plans, as specified herein or as directed by the Engineer. The work shall include but not be limited to the following.

1. Remove and store lighting poles and all associated equipment as required by the plans.

2. Cover and protect all junction and pull boxes within the project limits as required by the plans.

3. Protect the existing pole bases scheduled to remain by encasing entire top of base with low strength concrete grout. Prior to placing grout, the bolts, conduits, etc., shall be coated with bond breaker to facilitate the removal of the grout to reinstalling the poles. Should the base be damaged as a result or contractor negligence, it shall be completly, removed and replaced at the contractors expense.

4. Reinstall removed lighting poles and all associated equipment after the removal of the detours.

5. Repaint all reinstalled lighting poles, and mast arms with one coat of No. 3 aluminum paint per section 1002 of the Standard Specifications after the reinstallation. Prior to painting all surfaces shall be thoroughly cleaned with a detergent subject to the approval of the Engineer.

6. Wash and re-lamp all reinstalled luminaires.

7. Remove and salvage the existing pole mounted existing electrical service, and associated equipment.

8. Adjust boxes to grade.

Any damage to the salvaged materials resulting from the contractors negligence shall be replaced or repaired at no cost to the Department.

The contractor shall maintain full nighttime operation of all remaining lighting during construction.

Payment for this work will be made at the contract lump sum price for RECONSTRUCT ROADWAY LIGHTING, which price shall be full compensation for the work complete, as specified and described herein and on the project plans.

ITEM 8010011 - LANDSCAPE EXCAVATION (Planting Pits and Planting Trenches):

Description of Work:

The work under this item consists of excavating planting pits and planting trenches at the locations and in accordance with the details shown on the plans and the applicable requirements of Section 801. Also included shall be the disposing of all material excavated from the pits and trenches.

It is important that none of the excavated material be placed back in the planting trenches or holes.

Method of Measurement:

Excavation of planting pits and planting trenches will be measured by the cubic yard, and the quantity allowed for payment will be the calculated volume within the limits designated on the plans as pay limits.

Basis of Payment:

Payment for this work will be made at the contract unit price per cubic yard for ITEM 8010011 - LANDSCAPE EXCAVATION (Planting Pits and Planting Trenches), which price shall be full compensation for the work as described herein and on the plans.

SECTION 802 - LANDSCAPE GRADING:

802-1 Description: of the Standard Specifications is revised to read:

The work under this section shall consist of grading, contouring, smoothing or otherwise shaping areas within and outside of planting beds and lawns at the locations designated on the project plans.

ITEM 8030101 - DECOMPOSED GRANITE:

Description:

The work under this item shall consist of excavating and grading areas to receive DECOMPOSED GRANITE and the furnishing and placement of the DECOMPOSED GRANITE at the locations indicated on the plans in accordance with these special provisions and the details as shown on the the plans.

Materials:

Decomposed granite shall be free from lumps or balls of clay and shall not contain calcareous coatings, caliche, organic matter or foreign substances. The grading requirements shall be as follows:

Passing Sieve	Percent Passing
1 inch	100
3/4 inch	85 -100
No. 40	5 - 20

The material shall be a reasonably uniform color of tan.

Construction Details:

The areas on which the decomposed granite is to be placed shall be graded according to the plans prior to the placement of any granite. The ground shall be reasonably smooth and firm, all deleterious material and rocks larger than one inch in diameter shall be removed and disposed of at the contractor's expense.

After placing and grading the decomposed granite, the contractor shall water settle the granite with light spray to remove fine material from the surface and settle the granite to an extent satisfactory to the Engineer. Any regrading that is necessary after the water settling of the granite shall be at the contractor's expense. Care shall be taken in the placement of the decomposed granite not to disturb or damage any plant material. Also, the watering basins and trenches shall not be disturbed or altered by the placement of the granite.

Method of Measurement:

Decomposed granite will be measured by the cubic yard of material actually placed.

Basis of Payment:

Payment for this work will be made at the contract price per cubic yard for ITEM 8030101 - DECOMPOSED GRANITE, which price shall be full compensation for the work complete in place as described and specified herein and on the plans.

ITEM 8040011 - PREPARED TOPSOIL:

Description of Work:

The work under this item consists of furnishing and placing prepared topsoil and plastic liners for all planting pits and trenches in accordance with the details shown on the plans.

Materials:

The prepared topsoil shall consist of 30 percent soil conditioner and 70 percent topsoil.

Topsoil shall conform to the requirements of Section 804 of the Standard Specifications, 1982 edition. Soluble salts and pH of the topsoil shall be determined in accordance with the requirements of Arizona Test Method 237. Soil conditioner shall consist of composted, ground or shredded fir, redwood or ponderosa bark or shavings. The pH of the condition shall not exceed 7.5; at least 85 percent of the conditioner shall pass a 1/4" screen and it shall be hygroscopic or contain a wetting agent. It shall be Nitrogen stabilized with a minimum of 0.5 percent Nitrogen.

The plastic liners to be placed in all planting trenches and pits shall be black polyethylene plastic, at least six millimeters in thickness. The width shall be as required to install the plastic in one continuous width, with no splices, as specified herein and detailed on the plans. The length shall be a minimum of 100 feet per roll to limit the number of overlaps necessary.

Construction Details:

Components of prepared topsoil shall be thoroughly blended into a homogeneous mixture. Prepared topsoil shall be mixed before it is placed in planting pits or trenches. The Engineer shall be notified prior to placing prepared topsoil.

All irrigation system components to be installed under the plastic liners and planting trenches must be installed complete and tested as specified prior to backfilling with prepared topsoil. It is the contractor's responsibility to exercise proper care in the installation of the plastic liner and backfilling with prepared topsoil.

The black plastic liner shall be installed according to the details shown on the plans. There shall be a minimum of one foot overlap where the ends of each roll meets. The contractor shall insure that there are adequate plastic liners in the trenches and pits prior to backfilling to insure that the minimum specified overlap is possible at all edges after backfilling. The liner for pits and trenches shall be in one continuous piece, no overlapping is acceptable except at roll ends in the planting trenches. The contractor shall use extreme care to insure that there is no tearing of the plastic liners during installation. In the event that a tear

does occur, it shall be patched by overlapping with a piece of like plastic at least 18" wide from the point of the tear in all directions. The patch will be manually held in place until the backfill will adequately hold it securely in place. A drainage hole shall be cut in the plastic liner at the bottom of the trench equal distance between every plant and in the center of the bottom of every pit. The cuts shall be made with a sharp knife so as not to tear the plastic. The shape of the cut shall be an "X", with each cut being approximately 6" long.

The prepared topsoil shall be placed in the trenches only after all the aforementioned items have been satisfactory completed. The contractor shall water settle the prepared topsoil placed in all pit and trenches to insure that there is no further settling during any subsequent items of work.

Method of Measurement:

Prepared topsoil will be measured by the cubic yard in the transporting vehicle in accordance with the requirements of Subsection 804-4.

Basis of Payment:

Payment for this work will be made at the contract unit price per cubic yard for ITEM 8040011 - PREPARED TOPSOIL, which price shall be full compensation for the work, complete in place, including the black plastic liner as described and specified herein and on the project plans.

SECTION 807 - LANDSCAPE ESTABLISHMENT:

807-3.01 General: of the Standard Specifications is modified to add:

The number of calendar days for landscape establishment is 90 days.

ITEM 8080700 - RECONSTRUCT LANDSCAPE IRRIGATION SYSTEM:

The work under this item consists of furnishing all materials and installing the various items, components and/or materials including excavating and backfilling, to reconstruct the irrigation system at the location and in accordance with the details shown on the project plans and these special provisions.

General Requirements:

Prior to performing any replacement or restoration work on the irrigation system the contractor shall submit to the Engineer seven copies of a list of the materials and equipment he proposes to use. The contractor shall indicate the manufacturer's name, model number, size, capacity and complete specifications of each component to determine whether or not the component is acceptable and to assure that all such materials and equipment, when incorporated into the work, will be in accordance with the requirements of the project plans and these special provisions. Contractor's failure to comply with these material submittal instructions will not consitute time extensions.

The contractor shall not begin work until the material and equipment has been approved, in writing, by the Engineer.

Irrigation plans are, in general, diagrammatic. The exact location of valves, irrigation emitter heads and other units of the irrigation system will be specified by the Engineer.

For purpose of definition, pressure mains shall be defined as those pipes under constant pressure from source to remote control valve. Submain lines are defined as those lines on the discharge side of control valve and before pressure regulator riser and not under constant pressure. Emitter lateral lines are defined as those lines on discharge side of pressure regulator riser and not under pressure.

The number of emitters per riser circuit, as shown on the project plans, is approximate. The contractor shall add no more than 5 additional single outlet emitters or one multi-outlet emitter per circuit, as detailed. Any additional emitters required and exceeding the above indicated amount must be approved by Roadside Development Services. The opening of additional ports on emitters shall not be done during Phase I or Phase II of the project without written approval form Roadside Development Services.

All enclosures shall remain closed and locked and all valve box covers shall be in place throughout the construction and landscaping establishment periods except when actual work is in progress on the respective unit.

The contractor shall furnish sufficient number of pressure gauges with "tire chucks", which shall be utilized in the testing and necessary adjustment of the emitter system during construction and landscaping establishment.

The pressure gauges shall be suitable for use with water, have a 2" diameter case, with hermetically sealed neoprene cover, molded-in diaphragm and shatterproof crystal. Pressure gauges shall have a range of 0-60 p.s.i. for emitter system testing.

At the completion of the landscaping establishment period, the contractor shall deliver one pressure gauge and one tire chuck to the Engineer for subsequent delivery to the Maintenance Supervisor.

No additional payment will be made for pressure gauges or appurtenances.

Plastic pipe shall be delivered to the site in unbroken bundles or packages and shall be so wrapped that pipe ends shall be adequately protected. If the pipe is delivered from a local warehouse, the pipe need not be bundled or wrapped.

Upon delivery to the site, the contractor shall inspect all pipe for possible shipping damage. Shipping straps shall be removed to prevent damage due to expansion in hot weather.

Prior to beginning trench excavation, the contractor shall lay out the irrigation system for approval of the Engineer by providing approved indicators at the locations of control valves, pressure mains, sub-mains, lateral lines and irrigation heads.

All irrigation equipment shall be installed in accordance with printed instruction of the manufacturer, the project plans and these special provisions. The contractor shall provide to the Engineer 3 copies (unless otherwise specified) of each manufacturers installation instruction.

The contractor shall assume full responsibility for the correct installation of the emitter system, as herein specified, and unless he can show past experience of installing this type of system, he shall arrange with the manufacturer for the services of qualified manufacturer's representative to be on hand at the start of the installation ansd as necessary during the installation and testing of the system.

Plastic pipe and fittings shall be installed in accordance with the requirements specified herein and the manufacturer's recommendations.

Where threaded plastic to metal or plastic to plastic connections are required, the metal connections shall be worked first. A non-hardening manufacturer recommended sealant compatible with plastic fittings shall be used and the joint shall be handtightened with final tightening not to exceed one turn with a strap wrench. Pipe wrenches or other tightening device will be unacceptable.

Threaded PVC Schedule 80 nipples, thread-one-end (T.O.E.) and PVC Schedule 80 couplings, solvent weld, shall be used

where threaded plastic connectors are required. Threaded PVC male or female adapters are not acceptable.

Trenches shall be excavated to a uniform grade and shall be no wider than is necessary for the proper installation of the pipe, fittings and control wiring. The bottom of the trench shall be firm and free from large or sharp rocks.

Where pavement or other impervious material is encountered in the excavation of trenches, such material shall be removed and disposed of in a satisfactory manner, as approved by the Engineer. No separate payment will be made for removal and disposal.

All piping and 24 volt wire shall be installed as detailed on the project plans and shall have a minimum cover as shown.

Bedding and cover material for PVC piping, flexible emitter hose and 24 volt wiring shall be sand conforming to the gradation requirements of Section 1006-2.03 (B) with the following exceptions:

AASHTO T 71 and 176 testing requirements shall be waived.

Sand Bedding Sieve Size	Percent Passing
No. 4	100
No. 16	30- 80
No. 50	0- 30
No. 100	0- 25
No. 200	0- 20

Gravel sumps, as detailed on the project plans, shall be aggregate conforming to the following gradation:

100 Percent Passing 3/4" sieve.
0- 10 Percent Passing 1/2" sieve.,

Plastic pipe shall be uniformaly bedded and covered to a depth as indicated on the project plans. Bedding and backfill material shall be compacted by approved water settlement methods and the elevation of the adjacent ground. The contractor shall select a 100 foot section of mainline which has been installed and backfilled as a test portion to be water settled for the Engineer's approval of water settlement method. The test shall be completed and approved prior to proceeding with the remainder of the project.

Requirements for slack or "snaking" of PVC pipe shall be in accordance with the pipe manufacturer's recommendation. All PVC pipe and fittings shall be clean prior to installation and shall be maintained in the condition during installation.

Where two or more piping systems are indicated on the project plans as adjacent, they shall be placed within common trench and at the depths indicated.

Following completion of installation of mains, control valves, gate valves and other components, and after all solvent-welded joints have cured for 24 hours, the irrigation system shall be tested in accordance with the requirements herein specified.

The contractor shall flush and bleed all lines prior to testing. Metal or plastic caps shall be used to facilitate flushing and testing. Backfilling material placed on the lines shall be limited to the quantity required to stabilize the lines under pressure and to serve as insulation during testing procedures. During testing, all fittings and couplings shall be visible for inspection. Any failures evident during the test shall be repaired and the system retested before backfilling. The contractor shall furnish the necessary equipment required to perform the piping test. No additional payment will be made for materials required to perform tests.

The emitter laterals shall be throughly flushed following assembly and backfilling of trench. All laterals shall receive an additional flushing prior to installation of emitters.

Additional flushing of the irrigation system in addition to those herein specified may be required by the Engineer to assure proper function of the system including emitters.

After installation of emitter laterals and supply tubing, but before installation of emitters, the emitter laterals and supply tube shall be subjected to 1 hour of testing at 50 p.s.i.g., during which time components shall be inspected for leakage.

All piping with excetion of emitter laterals shall be subjected to 100 pounds per square inch static water pressure for period specified.

Under no circumstances will air pressure be acceptable for testing.

The pressure mains and emitter sub-mains shall be subjected to the specified pressure for a minimum period of two hours. During this time all solvent-welded and threaded connections and component parts shall be inspected to determine that no leaks exist.

Any mechanical failures or leaks which may develop during testing shall be repaired or defective material shall be removed and replaced. After replacements or repairs have been made, the entire testing procedures shall be repeated until it is determined that there are no leaks or failures in the irrigation system.

In addition to the aforementioned testing, the contractor shall perform the various testing procedures listed under the various individual bid items. These tests shall be performed in the presence of the Engineer. The results of the tests shall be documented and provided to the Engineer at the completion of the testing procedure. Test document forms shal be provided by and/or approved by the Engineer.

When tests have been completed and any necessary repairs have been accomplished, trenches shall be backfilled. Pipe lines shall be normalized by water cooling the system just prior to beginning backfilling operations.

Any mechanical failure or leak that occurs during establishment period shall be removed and/or replaced as directed by the Engineer. The system shall be retested as herein specified.

Any use of municipal potable water by the contractor shall be through approved backflow prevention devices. All backflow prevention devises shall be in place, tested and approved for use by the Engineer prior to the contractor using any water from the municipal water system.

Any temporary irrigation piping or components required to maintain existing or new plant material shall be the contractor's responsibility and shall in no way adversely effect the operation of any irrigation system(s) that are to remain in operation.

No separate payment will be made for temporary connections, piping, including sleeves under roadways, or materials.

System components noted for abandonment shall not be reused on this or any other Department project.

Materials:

The pressure mainlines and sub-mainlines shall be polvinyl chloride, hereinafter PVC, conforming to the following requirements.

All plastic pipe and fittings used shall comply with the requirements of and bear the stamp of the National Sanitation Foundation.

Materials used in the manufacture of pipe and fittings shall conform to the requirements of ASTM D 1784, Class 12454-B.

PVC pipe shall conform to the requirements of ASTM D 2241 for SDR-PR pipe and ASTM D 1785 for Schedule 40 and 80 pipe.

The pipe classification and the pressure rating will be specified either on the project plans or in the special provisions.

All pipe shall be plain-end, solvent weld or bell-end solvent weld PVC pipe. Bell-end solvent weld pipe shall conform to the requirements of ASTM D 2672.

PVC piping shall be assembled, as specified, by use of solvent weld, socket type fittings.

All PVC fittings shall conform to one or more of the following requirements:

1. ASTM D 2466 for Schedule 40 socket type fittings.
2. ASTM D 2467 for Schedule 80 socket type fittings.

All PVC pipe and fittings shall be stored as recommended by the manufacturer and as directed by the Engineer. All PVC pipe shall be covered to prevent exposure to sunlight. Sufficient air space shall be provided between the opaque covering material and the pipe to prevent undo heat build-up and retention.

PVC pipe which has been discolored by exposure to sunlight or has been scratched, scored or otherwise damaged in handling will not be acceptable.

The emitter laterals shall be flexible polyethylene hose manufactured from 100 percentUnion Carbide G-Resin 7510 Natural 7 virgin resin with minimum 2 percent carbon block content and shall have the following physical characteristics:

	ASTM	Values
O.D.	-----	.694" (min.)-.704" (max.)
I.D.	-----	.580" minimum
Wall Thickness	-----	.050" minimum
Carbon Black	D1248	2.0%-2.5%
Density	D1248 & D1505	.910-.920
Melt Index	D1238	.4-1.3
Environmental Stress Crack Resistance	D1693	500 Hrs. minimum

Fittings for use with flexible emitter hose shall be of the compression, internal barb type, constructed of glass-filled polypropylene materials and installed as detailed on the project plans.

The contractor shall use the proper emitter installation tools, as recommended by the emitter manufacturer, to facilitate installation of the emitters and distribution tubing. Line plugs shall be used for improperly placed holes in flexible hose.

The emitter lateral end cap assembly shall be installed at the locations indicated on the project plans and in accordance with the requirements of the special provisions.

The compression end plug unit with unscrewing cap shall be of the compression, interal barb typed, constructed of glass-filled polypropylene.

The emitters shall be of the non-compensating, continuous flashing type, based on the pressure cascade principal using a series of flexible orifices.

The emitter shall be capable of continuous, clog free operation with 30 mesh (minimum) filtration. The emitter shall be capable of being installed in any position and maintain its given flow

characteristics. The emitter shall be non-adjustable and the flow regime shall ne maintained by a flexible orifice silicone diaphragm.

The emitter shall function with a system pressure range of 15 p.s.i. minimum to 35 p.s.i. maximum. The emitter flow variation shall not exceed 1.06 at 120 degrees F. or 1.07 at 150 degrees F. Emitter manufacturing variability shall not exceed .05.

The emitter case shall be made of durable black, heat resistant acetal plastic material. It shall be resistant to temperature variation, ultraviolet radiation, smog, (ozone), common liquid fertilizer and weed spray. The case shall completely encompass the silicone diaphragm, protecting it from potentially harmful environmental factors.

The single outlet emitter assembly, as detailed on the project plans shall consist of the emitter unit, polyethylene supply tubing, and appropriate polypropylene adapter required to connect emitter assembly to flexible P.E. emitter lateral as detailed.

The ,1.0 gph single-outlet emitter shall be capable of delivering the following quantities:

G.P.H.	at	P.S.I.
1.00		20
1.14		25
1.30		30

The six-outlet emitter shall be of the type and construction as previously specified with the exception that the emitter shall be capable of delivering the following quantities from each of the six (6) outlets of the emitter regardless of the number of outlets open:

G.P.H.	at	P.S.I.
1.00		20
1.14		25
1.34		30

Each multi-outlet emitter shall contain a manufacturer installed sealing "O" ring in the threaded inlet base.

The multi-outlet emitter assembly, as detailed, shall consist of the emitter unit, polyethlene supply tubing and appropriate adapters required to connect emitter to supply tubing and emitter assembly to polyethylene emitter lateral as detailed.

The requirement for two (2) outlet emitter shall be met by installing a six-outlet emitter as detailed with only two (2) outlets opened.

The flexible polyethylene supply tubing shall be for pressure application, manufactured from 100 percent Union Carbide G-Resin 7510 Natural 7 virgin resin with minimum 2 percent carbon black content and with the following physical characteristics:

I.D.	.250 inches
O.D.	.350 inches
Wall Thickness	.050 inches

The pressure regulator shall be of the non-adjustable pre-set type consisting of a two-piece, sonic welded body moled from sturdy long lasting Acrylonitrile Butadiene-Styrene and containing a flexible, flow regulating orifice of DuPont Hytrel material. The internal spring shall be of stainless steel. All internal seals shall be silicone "O" rings.

Each regulator shall have a flow range from 1/3 GPM to 6 GPM with a regulated nominal outlet pressure of 20 psi with an inlet pressure range of 20 to 100 psi.

The pressure regulators shall have 3/4" FPT inlet and 3/4" MHT outlet for installation as detailed on the project plans.

Each pressure regulator riser shall be provided with a 1/8" MPT Schrader type pressure-check valve which shall be used in conjunction with the specified pressure gauge/tire chuck to verify system performenace.

The valve box shall be round in configuration, plastic, measuring approximately 10" dia. by 110" deep. Box extensions, as necessary, shall be of the 10" dia. PVC pipe. The pressure regulator, swivel tee and shifter valve shall be completely exposed and accessible within the valve box. Valve box lids shall be imprinted "Irrigation Control Valve."

Valve box physical properties shall conform to ASTM test methods D-638, D-790, D-256 and D-648.

Gravel sump shall be as indicated on project plans and as herein specified.

The 24 volt control and ground wire for operation of remote control valves shall be AWG 14, UL approved, 600 volt, type UF single conductor wire with 60 mil PVC insulation. All control ("hot") wire shall be of a contrasting color to white common or ground wire. Black wire will not be acceptable for use on any 24 volt control circuit. Wire colors shall be as approved by the Engineer. Individual control wires shall be installed to each remote control valve.

Wire connections at remote control valves and at field splices shall be made with epoxy resin filled type wire connectors installed as recommended by the manufacturer. Necessary splices shall be made at remote control valve boxes, or separate splice boxes. Valve or junction boxes shall be of type specified in above.

Control and ground wire through out the project shall be neatly bundled and taped with plastic electrical tape at 10' intervals between splices or connections and as directed by the Engineer.

Control and ground wire placed through pipe sleeves shall be encased 1" (minimum) PVC electrical conduit for full length of the sleeve plus 1' each end of sleeve. Conduit shall be increased in size as amy be necessary for additional wires.

The remote control valve shall be normally closed 24 volt A.C., 60 cycle solenoid actuated globe pattern diaphragm type capable of regulating water flow for specified system operation, pressure loss not to exceed 5.0 psi. Valve pressure rating shall not be less than 200 psi.

The valve body and bonnet shall be constructed of heavy cast brass, diaphragm shall be of nylon reinforced Buna-N. Solenoid coil shall be encapsulated in molded epoxy.

The valve shall be actuated by a low power, 2.0 watt 24 volt A.C. solenoid. The solenoid plunger shall have a grit filter to insure positive valve operation.

Control water pressure for the solenoid actuator shall be delivered from the inlet of the valve to the acuator by means of an external tube connected to a self flushing nylon screen located in the inlet water passage of the 2" valve. The 1" valve shall receive the control water pressure through an internal passageway.

Each valve shall have a flow control stem and cross handle for regulating or shutting off the flow of water and a bleed screw for manual operation without electrically energizing the solenoid coil.

All remote control valves and automatic controllers shall be compatible and fully functional in all modes.

The valve construction shall be such as to provide for all internal parts to be removable from the top of the valve without disturbing the valve installation.

The valve box, cover and necessary extensions shall be as shown on the project plans and shall be manufactured of molded, virgin plastic materials conforming to the following ASTM and having following physical characteristics:

	ASTM	Value
Tensile Strength	D-638	3400 p.s.i. (minimum)
Deflection Temp @ 66 P.S.I. Stress	D-648	170 degrees Fahrenheit

The valve box shall be rectangular in configuration, measuring approximately 14" x 19" X 12". Box extensions shall be of the top extension type with intergral locking clips and when installed shall provide minimum 6" height extension. Valve box lids shall be imprinted "Irrigation Control Valve."

Gravel sump and box supports shall be as indicated on the project plans.

The control valve shall be completely exposed and accessible within the valve box. Box extensions shall be installed as necessary to expose valves and appurtenances as required.

Method of Measurement:

Reconstruct landscape irrigation system will be measured for payment by the lump sum as a single complete unit of work.

Basis of payment:

The accepted quantities of Reconstruct landscape Irrigation system measured as provided above will be paid for at the contract lump sum price, which shall be full compensation for the work as described and specified herein and on the project plans, complete in place.

ITEM 9022001 - MEDIAN GLARE SCREEN:

The work under this item consists of removing and salvaging the existing glare screen, designated on the project plans to be removed, store them and replace them on the new median barier in accordance with the Standard Drawing C-10.96 for new glare screen.

If any salvaged materials are deemed by the Engineer, to be unsuitable for reuse or if the quantities of salvaged materials are insufficient to complete the work, the contractor shall furnish new materials in sufficient quantities to complete the work and the cost of furnishing such materials will be paid for in accordance with the provisions of Subsection 109.04 - Extra and Force Account Work.

Painting of salvage glare screen will not be required, however at the time designated by the Engineer the glare screen shall be cleaned to eliminate oil, grease, or other objectionable material in a manner approved by the Engineer.

Measurement will be made by the linear foot of glare screen removed and replaced, measured from end post to end post to the nearest foot.

Payment for this work will be made at the contract price a linear foot for ITEM 9022001, which price shall be full compensation for the work complete, including cleaning, as described and specified herein and on the project plans.

(GRTRQ905, 6, 08/04/86)

SECTION 905 - GUARD RAIL:

905-3.01 General: the eighth paragraph of the Supplemental Specifications is revised to read:

Unless otherwise shown on the plans, bolts shall be torqued as follows:

Diameter of Bolt, Inches	Torque, Foot-pounds
5/8	45 - 50
3/4	70 - 75
7/8 and larger	120 - 125

SECTION 912 - SHOTCRETE

912-5 Basis of Payment: of the Standard Specifications is revised to read:

Payment for shotcrete will be made at the contract unit price per square yard, complete in place, including excavating, backfilling, fine grading, reinforcement and furnishing and installing the 6" french drain all as described and specified herein and on the project plans.

ITEM 9190001 - CONCRETE GORE PAVEMENT:

The quantity shown in the bidding schedule for this work includes the 36 sq.yd. of concrete bike path to be restored on Phase VI.

ITEM 9240014B - FORCE ACCOUNT WORK (Soil Consultant):

The contractor shall hire a soils consultant who shall be a currently registered Civil Engineer in the State of Arizona. The soils consultant shall investigate and design a sub-lateral soils support system to assure stability and safety of traveled roadway adjacent to construction under this contract. The soils consultant shall inspect the site during each phase of construction to assure that sub-lateral support is provided in accordance with his design and the Standard and Supplemental Specifications.

The soil consultants design shall provide for adequate sub-lateral support for excavation on either side of those elements which separate adjacent phases of construction. Steel or concrete support elements may be left in place as cold joints in adjacent sections of the maintenance underpass box culvert provided that reinforcement is continuous per the design drawings. Timber shall not be embedded in permanent concrete.

The contractor shall submit the soil consultant design(s) to the Engineer for approval. No fabrication, erection or installation shall commence until design is approved by the Engineer, but such approval shall not relieve the contractor of any responsibility for adequate sub-lateral support of adjacent roadways.

ITEM 9240101B MISCELLANEOUS WORK: (temporary Timber Lagging):

The work under this item consists of furnishing all materials and installing temporary timber lagging at both ends of the underpass structure to threaded couples, in accordance with the details shown on the project plans and the Specifications.

Payment for this work will be made as specified under Subsection 109.10, which payment shall be full compensation for the work, complete, as directed and as specified herein and on the project plans.

(PANT1002, 6, 02/02/87)

SECTION 1002 - PAINT: of the Standard and Supplemental Specifications are revised to read:

1002-1 General Requirements:

All paints furnished shall be ready mixed at the manufacturer's plant, except for Paint No. 3 and Paint No. 4, which shall be mixed at the project site just prior to application.

Ready-mixed paint shall be homogeneous, free of contaminants, and shall be well ground to a consistency suitable for the use for which it is specified. The pigment shall be finely ground and properly dispersed in the vehicle, according to the requirements for the type of paint, and this dispersion shall be such that the pigment does not settle appreciably, does not cake or thicken in the paint container, and does not become granular, jelled or curdled. Any settlement of pigment in the paint shall be easily dispersed with a paddle so as to produce a smooth uniform paint of the proper consistency. The manufacturer shall include in the paints the necessary additives for control of sagging, pigment settling, leveling, drying, drier absorption and skinning.

Paint shall be furnished in new, unopened air-tight containers, clearly labeled with the exact title of the paint, Federal Specification number when applicable, name and address of manufacturer, date of paint manufacture and the lot or batch number. The containers shall meet U.S. Department of Transportation Hazardous Material Shipping Regulations.

Precautions concerning the handling and the application of the paint shall be shown on the label of paint containers.

The vendor shall submit to the Department, three copies of a Certificate of Compliance and Certificate of Analysis, in accordance with Subsection 106.05, prior to the use of any materials for which these specifications or the special provisions require that such a certificate be furnished. Submissions shall be made in accordance with the requirements of the Materials Testing Manual.

The certificates shall have the original signature of a person having legal authority to bind the manufacturer or supplier of the material. A reproduction is not acceptable. The signature shall be notarized.

1002-2 Sampling and Testing:

Paint will be tested in accordance with the requirements of the latest applicable test methods of Federal Test Method Standard Number 141, the American Society for Testing and Materials, and current methods used by the Department.

Paint which is approved by the Department will be identified with a green sticker affixed to it showing project number, lot number and batch number.

Paint will be tested on a lot basis.

At least one sample, not less than one quart in size, will be taken and tested. Random samples may be taken at the discretion of the Department.

All paint vehicles and varnishes, shall conform to the requirements of ASTM D 2621.

1002-3 Paints:

Raw materials used in paint formulas shall conform to the specifications designated by ASTM or by Federal or Military serial number or paint material code number under the various paint classifications hereinafter specified. Subsequent amendments to the specifications quoted shall apply to all raw materials and finished products. No "or equal" substitutions for any specified material shall be made without written consent of the Engineer.

The volatile portion of the vehicle shall conform to the following requirements by volume:

(a) Solvents with an olefinic or cyclo-olefinic type of unsaturation shall not exceed 5 percent,

(b) The total of aromatic compounds with eight or more carbon atoms in the molecule, except ethylbenzene, methyl benzoate, and phenyl acetate, shall not exceed 8 percent,

(c) The total of ethylbenzene, toluene, and branched-chain ketones shall not exceed 20 percent,

(d) A solvent which may be classified into more than one of the above groups shall be considered a member of the group having the lowest allowable concentration,

(e) The total of (a), (b), and (c) shall not exceed 20 percent,

(f) The volatile solvents shall contain no benzene or halogenated compounds,

(g) All paints shall be completely miscible with mineral spirits conforming to Grade II of Federal Specification TT-T-291,

(h) Mineral spirits, conforming to Grade II, of Federal Specification TT-T-291 shall be the preferred thinner for all paints specified in this Subsection. If necessary, other paint thinners conforming to the requirements of (a) through (f) above may be used,

(i) Only alkyd-modified phenolic varnishes that require mineral spirits as the sole solvent shall be used. Unmodified para-phenolic varnishes that require aromatic and polar solvents shall not be used.

Alkyd-phenolic spar varnish shall conform to the following requirements:

Type	- Oleoresinous Alkyd
Solids by Weight (%)	- 49 to 51
Viscosity (G-H)	- D to F
Weight per Gallon (Lbs)	- 7.34 - 7.55
Color (G)	- 12 Maximum
Kauri Reduction	- Passes 120%
Complete, with driers.	
Type of Oil	- Tung, Soya.
Type of Resin	- Phthalic Alkyd-Phenolic
Type of Solvent	- Mineral Spirits
Mineral Spirits Tolerance	- Over 1000%
Solids by Volume	- 42%
Air Drying Time @77 degrees F.	
Set to Touch	- 1 to 1 1/2 Hours
Dry Hard	- 5 to 6 Hours

Lead and lead compounds shall not be used as raw materials in the paint formulas specified under this Section. Lead and lead compounds shall not be added to any paint formulas specified under this Section.

1002-3.01 Paint Number 1 - Primer Coating, Zinc Chromate, Low-moisture-sensitivity:

This paint shall be a zinc chromate primer conforming to the requirements of Federal Specification TT-P-1757 modified to comply with requirements (a) through (i) of Subsection 1002-3. The color shall be a visual match to Federal Standard 595A, tint No. 34151, and shall conform to the following requirements:

Zinc Chromate	27.5-28%
Silica	15%
Barytes	7-7.5%
Varnish	30-31%
Mineral Spirits	19-20%

All percentages are by total weight of primer.
Weight/Gallon: 11.10 to 11.60 Pounds
Viscosity: 70-75 K.U. @ 77 degrees F.
Set to Touch: 1/2 hour minimum
Recoat: 8 hours maximum

1002-3.02 Paint Number 2 - Primer Coating, Zinc Chromate, Low-moisture-sensitivity, Color Modified:

This paint shall conform to the requirements of Subsection 1002-3.01, except that when it is applied over Paint Number 1 it shall be tinted to contrast with Paint Number 1. Tinting shall conform to the requirements of Subsection 1002-3.06.

1002-3.03 Paint Number 3-Aluminum:

This paint shall conform to the requirements of AASHTO M 69, for Type I Aluminum Paint.

The quantity of this paint mixed during any one day shall be limited to the quantity to be used during that day.

1002-3.04 Paint Number 4-Zinc:

This paint shall be a zinc-dust, zinc-oxide primer conforming to the requirements of Federal Specification TT-P-641G and shall be one of the following types:

Type I - Zinc-dust, zinc-oxide linseed oil primer.
Type II - Zinc-dust, zinc-oxide phthalic alkyd resin primer.
Type III - Zinc-dust, zinc-oxide phenolic resin primer modified to conform to requirements (a) through (i) of Subsection 1002-3.

1002-3.05 SSPC Paint No. 27, Basic Zinc Chromate - Vinyl Butyral Wash Primer:

This paint shall be as described in "Systems and Specifications, Steel Structures Painting Manual, Volume 2", Steel Structures Painting Council.

1002-3.06 Tinting:

(a) Paint Number 4 - Zinc

If modified colors are required, non-lead containing pigments shall be used in amounts not exceeding 10 percent of the total pigment weight and replacing an equal weight of zinc oxide.

(b) Paint Number 2 - Primer Coating, Zinc Chromate, Low-moisture-sensitivity, Color Modified:

If modified colors are required, non-lead containing pigments shall be used in amounts not exceeding 10 percent of the total pigment weight and replacing an equal weight of silica.

1002-4 Enamels:

The following enamels shall conform to the requirements of Federal Specification TT-E-489-G (Enamel, Alkyd, Gloss). The color of enamel specified shall be a visual match to the standard color chip in Federal Standard No. 595A, Colors. The color match shall be made with non-lead containing materials. The class and composition of the enamels shall be Class A-Air Drying and Composition G-General Use.

.01	Dull Black Enamel	(Color Chip No. 37038).
.02	Gloss Black Enamel	(Color Chip No. 17038).
.03	White Enamel	(Color Chip No. 17875).
.04	Yellow Enamel	(Color Chip No. 13538).
.05	Dark Olive Green Enamel	(Color Chip No. 14087).
.06	Light Gray Enamel	(Color Chip No. 16187).
.07	Buff Enamel	(Color Chip No. 30257).
.08	Green Enamel	(Color Chip No. 34108).
.09	Tan Enamel	(Color Chip No. 20318).
.10	Dark Gray Enamel	(Color Chip No. 26081).

(PCC1006, 6, 04/17/86)

SECTION 1006 - PORTLAND CEMENT CONCRETE:

1006-2.04 (D) Fly Ash: of the Standard Specifications is revised to read:

Fly ash shall conform to the requirements of ASTM C 618 for Class C or F mineral admixture, except that the loss on ignition shall not exceed 3.0 percent.

Fly ash, when used as a replacement for portland cement, shall have an R factor less than 2.5. The R factor is defined as (C-5%)/F, where C is the calcium oxide content expressed as a percentage and F is the ferric oxide content expressed as a percentage. Calcium and ferric oxide content shall be determined in accordance with the requirements of ASTM C 311.

1006-4.03(B) Mixing in a Stationary Mixer: the last paragraph of the Standard Specifications is revised to read:

Discharge from nonagitating trucks shall be completed within 45 minutes from the time concrete is batched. Concrete hauled in open-top vehicles shall be protected against access of rain, or exposure to the sun for more than 30 minutes when the ambient temperature exceeds 85 degrees F.

1006-7.02 Sampling and Testing for Compressive Strength (Cast-in-Place Concrete): of the Supplemental Specifications is modified to add:

Samples of concrete for test specimens will be taken in accordance with requirements of AASHTO T 141. All test cylinders will be fabricated in accordance with the requirements of AASHTO T 23. Testing for compressive strength will be in accordance with the requirements of AASHTO T 22.

A strength test will consist of the average strength of two cylinders or 95 percent of the higher strength cylinder, whichever is greater.

1006-7.03 Sampling and Testing for Compressive Strength (Precast Concrete): the third paragraph of the Standard Specifications is revised to read:

Samples of concrete for test specimens will be taken in accordance with requirements of AASHTO T 141. All test cylinders will be fabricated in accordance with the requirements of AASHTO T 23. Testing for compressive strength will be in accordance with the requirements of AASHTO T 22.

A strength test will consist of the average strength of two cylinders or 95 percent of the higher strength cylinder, whichever is greater.

(B) Class S and Class B Concrete:

Concrete represented by a strength test of at least 95 percent of the required 28-day compressive strength will be acceptable for cast-in-place and precast concrete. All concrete failing to meet this requirement will be rejected in accordance with the provisions of Subsection 106.11 unless the contractor, at his own expense, can submit evidence that will indicate to the Engineer that the strength and quality of the concrete is such that the concrete should be considered acceptable. If such evidence consists of concrete cores, the contractor shall obtain three cores from the concrete represented by the failing strength test and deliver them to the Engineer in time to allow complete testing of such cores within 42 days after the placement of the concrete. All cores shall be obtained and tested in accordance with the requirements of AASHTO T 24. All cores will be tested in the wet condition unless, based on the service conditions of the structure, the Engineer decides that they should be tested in other than the wet condition. The concrete represented by the cores will be considered acceptable if the numerical average of the compressive strength of the three cores is at least the required 28-day compressive strength. If the average compressive strength does not meet this requirement, all concrete so represented shall be removed at the contractor's expense unless permitted to remain in place by the Engineer. No payment will be made for concrete permitted to remain in place when the average compressive strength of the three cores fails to meet the required 28-day compressive strength.

(BRNG1013, 6, 06/02/86)

SECTION 1013 - BEARING PADS:

1013 (D) Certification and Testing: of the Supplemental Specifications is revised to read:

The contractor shall furnish, to the Engineer, certification by the manufacturer that the bearings to be furnished conform to all hereinbefore specified requirements. The certification shall be supported by Certificates of Analysis conforming to the requirements of Subsection 106.05.

A minimum of two sample pads from every 100 pads furnished, or portion thereof, will be selected at random, by the Engineer at the project site for testing. A minimum of one sample pad will be selected from each lot. A lot shall consist of a single type of bearing of the same design, material, plan dimensions, and thickness, delivered to the project site at the same time. Samples shall consist of complete pads as detailed on the project plans and as specified herein. The contractor shall furnish additional complete pads to replace those taken for testing. Pads shall be available for testing at least three weeks in advance of intended use.

Preformed Fabric Pad samples will be tested by the Department.

The contractor shall, at his expense, have the sample elastomeric bearing pads tested by a testing laboratory. The testing laboratory shall be as approved by the Engineer, shall be independent of the bearing pad manufacturer, and shall be under the supervision of a registered professional engineer. The contractor shall furnish, to the Engineer, certification by the approved testing laboratory that the bearings tested conform to the specified requirements for dimensional tolerances and for the following tests:

Peel Strength of bond between individual laminated pads,
Peel Strength of bond between elastomer and fabric,
Tensile Strength (exclusive of accelerated aging),
Elongation at Break (exclusive of accelerated aging),
Hardness (exclusive of accelerated aging),
Compression Set,
Tear Strength, and
Ozone Resistance.

The certification by the approved testing laboratory shall be a Certificate of Analysis conforming to the requirements of Subsection 106.05.

ARIZONA DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

CONTRACTS AND SPECIFICATIONS SERVICES

BIDDING SCHEDULE

DATE: 03/13/87

Project No.	Termini	Location	Fund Code	Item
I-17-3-912	PHOENIX-CORDES JCT. HWY.	(Arizona Canal Diversion Channel Phase II)	82511	294

County	Gross Length	Net Length	Prepared By
MARICOPA	0.05 Mile	0.05 Miles	RGA/ES/dmo

PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	2010001	Clearing and Grubbing	L.Sum	1		
2	2020001	Removal of Structures and Obstructions	L.Sum	1		
3	2020003	Remove Temporary Bridge	L.Sum	1		
4	2020021	Removal of Concrete Curb and Gutter	L.Ft.	2,850		
5	2020023	Remove Existing Concrete Median Barrier	L.Ft.	250		
6	2020031	Removal of Portland Cement				
7		Concrete Pavement	Sq.Yd.	3,360		
8	2020072	Remove and Salvage Guard Rail	L.Ft.	240		
9	2020101	Remove Fence	L.Ft.	1,280		
10	2020102	Remove and Salvage Fence				
11		(Chain Link)	L.Ft.	770		
12	2030300	Roadway Excavation	L.Sum	1		
13	2030401	Drainage Excavation	Cu.Yd.	490		
14	2060001	Furnish Water Supply	L.Sum	1		
15	2070001	Dust Palliative	M.Gal.	4,500	6.00	27,000.00
16	3030002	Aggregate Base, Class 2	Ton	6,000		
17						

PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	4040111	Bituminous Tack Coat	Ton	5		
2	4040116	Apply Bituminous Tack Coat	Hour	40		
3	4060011	Asphaltic Concrete				
4		(Miscellaneous Structural)	Ton	6,600		
5	5010004	Pipe, Corrugated Metal, 12" (Sleeve)	L.Ft.	46		
6	5011415	Pipe, Reinforced Concrete 15") (SRVWUA)	L.Ft.	474		
7	5012518	Storm Drain Pipe 18"	L.Ft.	160		
8	5012536	Storm Drain Pipe 36"	L.Ft.	181		
9	5014036	Flared End Section, 36" (C-13.20)	Each	1		
10	5030141	Concrete Catch Basin (Median)	Each	2		
11	5050021	Manhole (C-18.10) (No. 2)				
12		(For Pipes 6" to 36")	Each	2		
13	6070001	Breakaway Sign Post S3x5.7	L.Ft.	40		
14						
15						
16						
17						

PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	6070021	Foundation for Breakaway Sign Post S3x5.7	Each	4		
2	6070022	Foundation for Breakaway Sign Post S4x7.7	Each	2		
3	6070041	Sign Post (P-1) (Perforated) (Single)	L.Ft.	10		
4	6070046	Foundation for Sign Post (P-1) (Perforated)	Each	1		
5	6080005	Sign Panel (E Series)				
6		(High Reflectivity Sheeting)	Sq.Ft.	36		
7	6090024	Drilled Shaft Foundation (24")	L.Ft.	264		
8	6090030	Drilled Shaft Foundation (30")	L.Ft.	4,140		
9	6090048	Drilled Shaft Foundation (48")	L.Ft.	300		
10	7010001	Maintenance and Protection of Traffic	L.Sum	1		
11	7010010	Temporary Concrete Barrier	L.Ft.	14,400		
12	7010011	Temporary Concrete Barrier (A.D.O.T.)	L.Ft.	620		
13	7010013	Flashing Arrow Panel	Hour	4,800	5.00	24,000.00
14	7010015	Flagging Services (Force Account)	L.Sum	1	64,000.000	64,000.00
15	7010021	Maintain Department Furnished Sign	Day	250		
16	7010031	Truck Mounted Attenuator	Hour	750		
17						

PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	7010201	Temporary Pavement Marking (Taped Line)	L.Ft.	18,810		
2	7010211	Pavement Line (Painted Line) (White)	L.Ft.	1,370		
3	7010212	Pavement Line (Painted Line) (Yellow)	L.Ft.	1,000		
4	7010251	Obliterate Pavement Marking	L.Ft.	11,600		
5	7010301	Temporay Pavement Marking				
6		(Raised Marker)	Each	282		
7	7020011	Impact Attenuation Device (Sand Barrel				
8		Crash Cushion) (Type A)	Each	4		
9	7030042	Channelizer Traffic Barrel	Each	30		
10	7040003	Pavement Marking (White				
11		Hot-Sprayed Thermoplastic) (0.060")	L.Ft.	9,350		
12	7040004	Pavement Marking (Yellow				
13		Hot-Sprayed Thermoplastic) (0.060")	L.Ft.	3,200		
14						
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PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	7060001	Pavement Marker, Raised (Reflective)	Each	160		
2	7060002	Pavement Marker, Raised (Non-Reflective)	Each	800		
3	7320050	Electrical Conduit (2") (PVC)	L.Ft.	300		
4	7320530	Conductor (No. 6)	L.Ft.	300		
5	7320540	Conductor (No. 4)	L.Ft.	100		
6	7320600	Conductor (No. 0)	L.Ft.	600		
7	7360221	Load Center Cabinet (Type II)				
8		(240/480 Volt)	Each	1		
9	7360310	Reconstruct Roadway Lighting	L.Sum	1		
10	8010011	Landscape Excavation	Cu.Yd.	520		
11	8020011	Landscape Grading	L.Sum	1		
12	8030101	Decomposed Granite	Cu.Yd.	555		
13						
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PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	3040011	Prepared Topsoil	Cu.Yd.	350		
2	3060001	Planting Trees, Shrubs and Plants	L.Sum	1		
3	3070001	Landscaping Establishment	L.Sum	1		
4	3070700	Reconstruct Landscape Irrigation System	L.Sum	1		
5	9010001	Mobilization	L.Sum	1		
6	9020151	Construct Chain Link Fence From Salvage	L.Ft.	1,702		
7	9022001	Median Glare Screen	L.Ft.	255		
8	9050001	Guard Rail, W-Beam, Single Face	L.Ft.	63		
9	9050031	Guard Rail Breakaway Cable Terminal	Each	1		
10	9050100	Construct Guard Rail From Salvage	L.Ft.	238		
11	9050206	Guard Rail Anchorage Bolted	Each	8		
12	9080051	Concrete Curb and Gutter (C-05.10) (Type A)	L.Ft.	2,420		
13						
14						
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PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	9100008	Concrete Barrier (Median)	L.Ft.	77		
2	9120006	Shotcrete	Sq.Yd.	1,164		
3	9190001	Concrete Gore Paving	Sq.Yd.	421		
4	9250001	Construction Surveying and Layout				
5		(Predetermined Earthwork Quantities)	L.Sum	1		
6	9250102	Two-Person Survey Party	Hour	100		
7	9250103	Three-Person Survey Party	Hour	100		
8	9250104	Four-Person Survey Party	Hour	100		
9				~~Roadway Total:~~		
10						
11						
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PROJECT NO.

I-17-3-912

DATE 03/13/87

BIDDING SCHEDULE

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1		NEW SINGLE SPAN PRESTRESSED POST	TENSIONED	C.I.P.		
2		CONCRETE BOX GIRDER	BRIDGE			
3	2030501A	Structural Excavation	Cu.Yd.	8,046		
4	2030506A	Structure Backfill	Cu.Yd.	1,512		
5	6010002A	Structural Concrete (Class S) (f'c = 3,000)	Cu.Yd.	1,292		
6	6010005A	Structural Concrete (Class S) (f'c = 4,500)	Cu.Yd.	2,385		
7	6020001A	Prestressing Cast-in-Place Concrete (MED. @				
8		Sta. 582+27.30 D.C. Sta. 552+23.50)	L.Sum	1		
9	6050002A	Reinforcing Steel	Lb.	599,700		
10	6050101A	Place Dowels	Each	184		
11	6110201A	Metal Handrail	L.Ft.	230		
12	9999903A	*Construct Bridge Structure	L.Sum	1		
13	*The lump sum amount for this item shall equal the sum of the amounts of the preceding					
14	Structure A Items.					
15						
16						
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PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1		NEW MAINTENANCE UNDERPASS	STRUCTURE			
2	2030501B	Structural Excavation	Cu.Yd.	2,250		
3	2030506B	Structure Backfill	Cu.Yd.	300		
4	6010002B	Structural Concrete (Class S) (f'c = 3,000)	Cu.Yd.	480		
5	6050002B	Reinforcing Steel	Lb.	80,000		
6	7300921B	Underpass Lighting	L.Sum	1		
7	9240014B	Force Account Work (Soil Consultant)	L.Sum	1	10,000.00	10,000.00
8	9240101B	Miscellaneous Work				
9		(Temporary Timber Lagging)	L.Sum	1		
10	9999903B	*Construct Maintenance Underpass Structure	L.Sum	1		
11	*The lump sum amount for this item shall equal the sum of the amounts					
12	of the preceding Structure B Items.					
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PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1		SINGLE SPAN TEMPORARY BRIDGE STRUCTURE				
2	2030501C	Structural Excavation	Cu.Yd.	30		
3	6010002C	Structural Concrete (Class S) (f'c = 3,000)	Cu.Yd.	32		
4	6010091C	Precast, Prestressed Concrete Bridge				
5		Member (M.C.F.C.D. furnished)	Each	8		
6	6050002C	Reinforcing Steel	Lb.	3,500		
7	9999903C	*Construct Temporary Bridge Structure	L.Sum	1		
8						
9		*The lump sum amount for this item shall equal the sum of the amounts				
10		of the preceding Temporary Structure C Items.				
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PROJECT NO.

I-17-3-912

BIDDING SCHEDULE

DATE 03/13/87

	ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1		PROJECT SUMMARY				
2						
3		Roadway				
4		Diversion Channel Bridge Structure A				
5		Maintenance Underpass Structure B				
6		Temporary Bridge Structure C				
7				TOTAL:		
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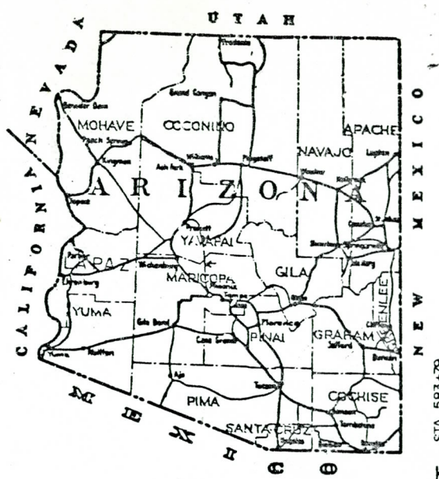
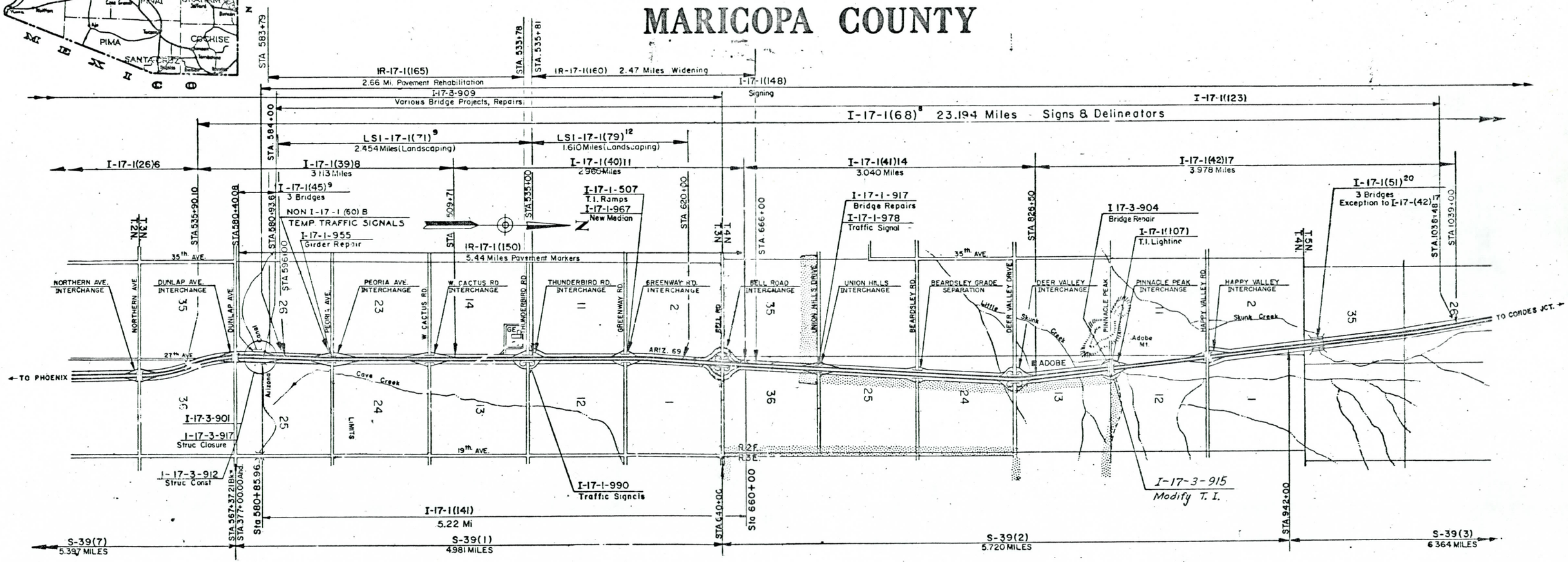
STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLAN AND PROFILE OF PROPOSED

STATE HIGHWAY
PHOENIX - CORDES JUNCTION
MARICOPA COUNTY





ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
APPROVED: WALTER O. FORD
ASSISTANT DIRECTOR
STATE ENGINEER

APPROVED DATE
CHIEF DEPUTY STATE ENGINEER

APPROVED DATE
DEPUTY STATE ENGINEER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED DATE
DIVISION ADMINISTRATOR

SCALE: 2" = 1 MILE

RECEIVED
SEP 30 1986
HIGHWAY PLANS
SERVICES

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	2	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR — DRAWN: FM, JS — CHECKED: JDB, DAS

GENERAL NOTES

1. THIS PROJECT HAS BEEN DESIGNED USING THE STATE OF ARIZONA 1983 STANDARD DRAWINGS CONSTRUCTION DETAILS AND CURRENT REVISIONS TO SAME AS SHOWN IN THE SPECIAL PROVISIONS.
2. THIS PROJECT HAS BEEN DESIGNED USING THE STATE OF ARIZONA 1982 STANDARD SPECIFICATIONS AND 1985 SUPPLEMENT OF SPECIFICATION FOR ROAD & BRIDGE CONSTRUCTION.
3. THE PROJECT ROADWAYS SHALL BE STRIPED IN ACCORDANCE WITH THE CURRENT EDITION OF THE PAVEMENT WORKING STANDARDS BY CONTRACTOR.
4. IN THE EVENT THAT CONSTRUCTION ACTIVITIES IMPEDE THE NORMAL OPERATIONS OF THE S.R.V.W.U.A. AND PRIVATELY-OWNED FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING NORMAL FLOW THROUGH THE PROJECT DURING CONSTRUCTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE IRRIGATION TAILWATER REMOVAL AND HEADWATER DISTRIBUTION OPERATIONS AS DIRECTED BY THE ENGINEER AND S.R.V.W.U.A.
6. REFER TO THE FOLLOWING AS-BUILT PROJECTS FOR EXISTING INFORMATION NOT SHOWN ON PLANS:

TITLE	PROJECT NO.	AS-BUILT
PHOENIX-ROCK SPRINGS HIGHWAY (NB FRONTAGE ROAD)	S-39 (1)	1948
PHOENIX INTERSTATE FREEWAY (NB & SB MAIN ROADWAY & SB FRONTAGE ROAD)	S-17-I(45)9	1962
PHOENIX INTERSTATE FREEWAY (ARIZ. CANAL BRIDGE WIDENING)	I-17-I(39)	1965
PHOENIX INTERSTATE FREEWAY (BUCKEYE ROAD TO ARIZONA CANAL MEDIAN BARRIER)	I-17-1(63)	1966
PHOENIX-CORDES JCT. HIGHWAY (NORTHERN AVENUE TO NEW RIVER SECTION)	I-17-1(68)	1971
PHOENIX INTERSTATE FREEWAY (BUCKEYE ROAD-ARIZONA CANAL)	I-17-1(114)	1976
PHOENIX INTERSTATE FREEWAY (GRANT STREET T.I. - PEORIA AVE. T.I.)	I-17-1(80)	1983
INTERSTATE 17 (PHOENIX-CORDES JUNCTION)	I-17-3-917	-

LENGTH OF PROJECT

NORTHBOUND MAINLINE DETOUR
STA. 32+00.00 TO STA. 49+81.25 = 1781' = 0.337 MI.

SOUTHBOUND MAINLINE DETOUR
STA. 50+30.00 TO STA. 62+60 = 1230' = 0.233 MI.

NORTHBOUND FRONTAGE ROAD DETOUR
STA. 30+00 TO STA. 41+14.17 = 1114' = 0.210 MI.

SOUTHBOUND FRONTAGE ROAD DETOUR
STA. 10+85 TO STA. 23+80.01 = 1295' = 0.245 MI.

DESIGN DATA

MAINLINE 1986 ADT 110,000

NORTHBOUND FRONTAGE ROAD 1986 ADT 8000

SOUTHBOUND FRONTAGE ROAD 1986 ADT 7000

MIN. DESIGN SPEED

NB & SB MAINLINE DETOURS	50 MPH
FRONTAGE ROAD DETOURS	40 MPH

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
	ROADWAY PLANS
1	FACE SHEET
2	PROJECT DATA
3	CONSTRUCTION SEQUENCE AND MAINTENANCE OF TRAFFIC
4	TYPICAL ROADWAY SECTIONS
5	TYPICAL ROADWAY SECTIONS
6	DETAIL
7	NEW PIPE SUMMARY
8	BARRIER SUMMARY SHEET
9	UNUSED
10	PHASE I SOUTHBOUND FRONTAGE ROAD DETOUR PLAN
11	PHASE I SOUTHBOUND FRONTAGE ROAD DETOUR PLAN
12	PHASE II NORTHBOUND FRONTAGE ROAD DETOUR PLAN AND ACDC BRIDGE (WEST)
13	PHASE II NORTHBOUND FRONTAGE ROAD DETOUR PLAN
14	NB AND SB FRONTAGE ROAD DETOUR PROFILES
15	PHASE III MAINLINE DETOUR PLAN
16	PHASE III MAINLINE DETOUR PLAN
17	SB I-17 MAINLINE DETOUR PROFILE & STORM DRAIN PROFILE
18	NB I-17 MAINLINE DETOUR PROFILE
19	PHASE IV ACDC BRIDGE (CENTER)
20	PHASE V ACDC BRIDGE (EAST)
21	PHASE V ACDC BRIDGE (EAST)
22	PHASE VI RECONSTRUCTION
23	PHASE VI RECONSTRUCTION
24	SALT RIVER PROJECT PIPE RECONSTRUCTION (GENERAL NOTES)
25	SALT RIVER PROJECT PIPE RECONSTRUCTION (PLAN PROFILE)
26	LANDSCAPE PLAN
27	LANDSCAPE PLAN
28	LANDSCAPE DETAILS
29	IRRIGATION SYSTEM
30	IRRIGATION SYSTEM
31	IRRIGATION DETAILS
	TRAFFIC CONTROL PLANS
32	TRAFFIC CONTROL NOTES
33-34	TRAFFIC CONTROL PLAN FOR FRONTAGE ROAD PARTIAL CLOSURE
35-36	TRAFFIC CONTROL PLAN FOR FREEWAY PARTIAL CLOSURE
37	TRAFFIC CONTROL PLAN FOR FRONTAGE ROAD FULL CLOSURE
38-40	TRAFFIC CONTROL PLAN FOR FREEWAY FULL CLOSURE
41-42	TRAFFIC CONTROL PLAN-PHASE II-CONSTRUCT WEST SECTION OF ACDC
43-45	TRAFFIC CONTROL PLAN-PHASE IV-CONSTRUCT EAST SECTION OF ACDC
46-48	TRAFFIC CONTROL PLAN-PHASE V-CONSTRUCT EAST SECTION OF ACDC
49	PERMANENT STRIPING AND SIGNING PLANS
50	SUMMARY SHEET GUIDE SIGNS
	ELECTRICAL
51-52	ROADWAY LIGHTING
	BRIDGE PLANS
53	LOCATION PLAN AND GENERAL NOTES
54	LONGITUDINAL X-SECTION AND QUANTITIES
55	SOIL BORING LOGS
56	FOUNDATION PLAN
57	WEST BRIDGE ABUTMENT PLANS AND ELEVATIONS
58	CENTER BRIDGE ABUTMENT PLANS
59	CENTER BRIDGE ABUTMENT ELEVATION
60	EAST BRIDGE ABUTMENT PLANS
61	ABUTMENT AND WINGWALL DETAILS
62	WEST AND EAST BRIDGE DECK PLANS
63	CENTER BRIDGE DECK PLAN
64	BRIDGE DECK SECTION
65	WEST BRIDGE PRESTRESSSING DETAIL
66	CENTER BRIDGE PRESTRESSING DETAILS
67	EAST BRIDGE PRESTRESSING DETAILS
68	APPROACH SLAB ANCHOR SLAB SECTION AND HANDRAIL DETAILS
69	HANDRAIL AND BARRIER DETAILS
70	MISCELLANEOUS DETAILS
71	TEMPORARY BRIDGE
72	DRILLED SHAFTS AND CHANNEL LINING DETAILS
73	EQUESTRIAN UNDERPASS
73A-73B	APS CROSSING (FOR INFORMATION ONLY)

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

PROJECT DATA

BPLANNING 40-107

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	3	73	

DATE — FOR THE CONSULTING ENGINEER

DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.

jhk & associates, Consulting Engineers

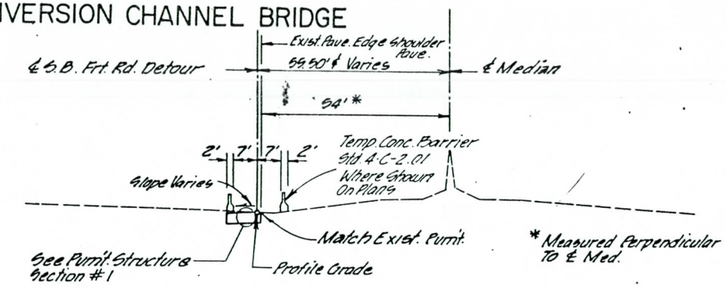
CONSTRUCTION SEQUENCE AND MAINTENANCE OF TRAFFIC

CONSTRUCTION	TRAFFIC FLOW AND CONTROL	REMARKS
PHASE I o REMOVE MISC. ITEMS IN PHASE I CONSTRUCTION o CONSTRUCT SB FRONTAGE ROAD DETOUR o REMOVE AND SALVAGE ONE ROADWAY LIGHT STANDARD o CONSTRUCT SRP LATERAL ALONG NB FRONTAGE ROAD	TRAFFIC FLOW SAME AS EXISTING EXCEPT FOR TEMPORARY LANE RESTRICTIONS ON SB FRONTAGE ROAD AND SB FREEWAY RESULTING WITH CONSTRUCTION ACTIVITY. FOR CONSTRUCTION CLOSURES AND TRAFFIC CONTROL SETUP, UTILIZE TRAFFIC CONTROL PLAN FOR OFF-RAMP CLOSURE (SB OFF-RAMP @ DUNLAP AVENUE), FREEWAY LANE(S) PARTIAL CLOSURE--RIGHT SIDE (SB FREEWAY), FRONTAGE ROAD PARTIAL CLOSURE (SINGLE RIGHT LANE FRONTAGE ROAD CLOSURE--SB FRONTAGE ROAD), AND FRONTAGE ROAD FULL CLOSURE (SB FRONTAGE ROAD) AS REQUIRED FOR EACH SPECIFIC ACTIVITY.	SB OFF-RAMP @ DUNLAP AVENUE TO BE CLOSED DURING ENTIRE PHASE. FREEWAY LANE CLOSURES AND FRONTAGE ROAD FULL CLOSURE WILL BE ALLOWED PER THE TIME RESTRICTIONS PROVIDED. COMPLETION OF CONSTRUCTION ON NORTH & SOUTH ENDS OF DETOUR ROUTE TO BE COORDINATED WITH FRONTAGE ROAD FULL CLOSURE.
PHASE II o REMOVE MISC. ITEMS IN PHASE II CONSTRUCTION o REMOVE AND SALVAGE ONE ROADWAY LIGHT STANDARD o RELOCATE SERVICE DROP POLE o CONSTRUCT WEST SECTION OF ACDC BRIDGE AND ADJACENT PORTION OF EQUESTRIAN UNDERPASS o CONSTRUCT WEST PORTION OF STORM DRAIN SYSTEM o CONSTRUCT NB FRONTAGE ROAD (INCL. TEMPORARY BRIDGE) DETOUR ROUTE	SB FRONTAGE ROAD TRAFFIC RELOCATED TO SB FRONTAGE ROAD DETOUR ROUTE (CONSTRUCTED IN PHASE I). FREEWAY AND NB FRONTAGE ROAD TRAFFIC SAME AS EXISTING. UTILIZE TRAFFIC CONTROL PLAN--CONSTRUCT WEST SECTION OF ACDC. TRAFFIC FLOW SAME AS EXISTING EXCEPT FOR TEMPORARY LANE RESTRICTIONS ON NB FRONTAGE ROAD RESULTING FROM CONSTRUCTION ACTIVITY. FOR CONSTRUCTION CLOSURES AND TRAFFIC CONTROL SETUP, UTILIZE TRAFFIC CONTROL PLAN FOR FRONTAGE ROAD PARTIAL CLOSURE AND FOR FRONTAGE ROAD FULL CLOSURE (NB FRONTAGE ROAD) AS REQUIRED FOR EACH SPECIFIC ACTIVITY.	SB OFF-RAMP @ DUNLAP AVENUE TO BE CLOSED DURING ENTIRE PHASE. EQUESTRIAN UNDERPASS CONSTRUCTION TO BE COORDINATED WITH OTHER CONSTRUCTION TO MAINTAIN CONSTRUCTION VEHICLE ACCESS IN AREA. NB ON-RAMP @ DUNLAP AVENUE TO BE OPEN EXCEPT DURING NB FRONTAGE ROAD FULL CLOSURE. FRONTAGE ROAD FULL CLOSURE WILL BE ALLOWED PER THE TIME RESTRICTIONS PROVIDED. COMPLETION OF CONSTRUCTION ON NORTH AND SOUTH ENDS OF DETOUR ROUTE TO BE COORDINATED WITH FRONTAGE ROAD FULL CLOSURE.
PHASE III o REMOVE MISC. ITEMS IN PHASE III CONSTRUCTION o REMOVE SB FRONTAGE ROAD DETOUR o REMOVE AND SALVAGE ONE ROADWAY LIGHT STANDARD o CONSTRUCT NB AND SB FREEWAY DETOURS	SB FRONTAGE ROAD TRAFFIC RELOCATED TO SB FRONTAGE ROAD. FOR REMOVAL CLOSURES AND TRAFFIC CONTROL SETUP, UTILIZE TRAFFIC CONTROL PLAN FOR FRONTAGE ROAD FULL CLOSURE (SB FRONTAGE ROAD), OFF-RAMP CLOSURE (SB OFF-RAMP @ DUNLAP AVENUE) AND FREEWAY LANE(S) PARTIAL CLOSURE-RIGHT SIDE (SB FREEWAY) AS REQUIRED FOR EACH SPECIFIC ACTIVITY. NB FRONTAGE ROAD TRAFFIC RELOCATED TO NB FRONTAGE ROAD DETOUR ROUTE (CONSTRUCTED IN PHASE II). FREEWAY TRAFFIC FLOW SAME AS EXISTING EXCEPT FOR TEMPORARY LANE RESTRICTIONS RESULTING FROM CONSTRUCTION ACTIVITY. FOR CONSTRUCTION CLOSURES AND TRAFFIC CONTROL SETUP, UTILIZE TRAFFIC CONTROL PLAN FOR FREEWAY SHOULDER CLOSURE, FREEWAY LANE(S) PARTIAL CLOSURE-RIGHT SIDE (NB & SB FREEWAY), FREEWAY FULL CLOSURE, OFF-RAMP CLOSURE (SB OFF-RAMP @ DUNLAP AVENUE), FRONTAGE ROAD PARTIAL CLOSURE, AND FRONTAGE ROAD FULL CLOSURE (SB FRONTAGE ROAD) AS REQUIRED FOR EACH SPECIFIC ACTIVITY.	SB OFF-RAMP @ DUNLAP AVENUE TO BE CLOSED DURING ENTIRE PHASE. FREEWAY LANE CLOSURES AND FRONTAGE ROAD FULL CLOSURE WILL BE ALLOWED PER TIME RESTRICTIONS PROVIDED. NB ON-RAMP @ DUNLAP AVENUE TO BE CLOSED DURING ENTIRE PHASE. COMPLETION OF CONSTRUCTION ON NORTH & SOUTH END OF FREEWAY DETOUR ROUTES TO BE COORDINATED WITH FREEWAY FULL CLOSURE.
PHASE IV o REMOVE MISC. ITEMS IN PHASE IV CONSTRUCTION o CONSTRUCT CENTER SECTION OF ACDC BRIDGE AND ADJACENT PORTION OF EQUESTRIAN UNDERPASS o CONSTRUCT EAST SECTION OF STORM DRAIN SYSTEM AND REROUTE STORM FLOW	FREEWAY TRAFFIC RELOCATED TO FREEWAY DETOUR ROUTES (CONSTRUCTED IN PHASE III). NB AND SB FRONTAGE ROAD TRAFFIC SAME AS IN PHASE III. UTILIZE TRAFFIC CONTROL PLAN -CONSTRUCT CENTER SECTION OF ACDC.	SB OFF-RAMP AND NB ON-RAMP @ DUNLAP AVENUE TO BE CLOSED DURING ENTIRE PHASE.
PHASE V o REMOVE MISC. ITEMS IN PHASE V CONSTRUCTION o REMOVE NB AND SB FREEWAY DETOURS o CONSTRUCT EAST SECTION OF ACDC BRIDGE AND ADJACENT PORTION OF EQUESTRIAN UNDERPASS	FREEWAY TRAFFIC RELOCATED TO FREEWAY. FOR REMOVAL CLOSURES AND TRAFFIC CONTROL SETUP, UTILIZE TRAFFIC CONTROL PLAN FOR FREEWAY FULL CLOSURE, FREEWAY SHOULDER CLOSURE, OFF-RAMP CLOSURE (SB OFF-RAMP @ DUNLAP AVENUE), FRONTAGE ROAD FULL CLOSURE (SB FRONTAGE ROAD), AND FRONTAGE ROAD PARTIAL CLOSURE LEFT SIDE (SB FRONTAGE ROAD) AS REQUIRED FOR EACH SPECIFIC ACTIVITY. NB FRONTAGE ROAD TRAFFIC MAINTAINED AS IN PHASE IV. NB FRONTAGE ROAD TRAFFIC TO BE MAINTAINED ON NB FRONTAGE ROAD DETOUR ROUTE. UTILIZE TRAFFIC CONTROL PLAN--CONSTRUCT EAST SECTION OF ACDC.	SB OFF-RAMP AND NB ON-RAMP @ DUNLAP AVENUE TO BE CLOSED DURING REMOVAL OF FREEWAY DETOURS. FREEWAY LANE CLOSURES AND FRONTAGE ROAD FULL CLOSURE WILL BE ALLOWED PER TIME RESTRICTIONS PROVIDED. EQUESTRIAN UNDERPASS CONSTRUCTION TO BE COORDINATED WITH OTHER CONSTRUCTION TO MAINTAIN CONSTRUCTION VEHICLE ACCESS IN AREA. NB ON-RAMP @ DUNLAP AVENUE TO BE CLOSED DURING THIS PORTION OF PHASE.
PHASE VI o REMOVE NB FRONTAGE ROAD DETOUR o REMOVE NB DETOUR TEMPORARY BRIDGE o CONSTRUCT FINAL PORTION OF EQUESTRIAN UNDERPASS o RECONSTRUCT ROADWAY LIGHTING SYSTEM o RESTORE CURBS, FENCES, ETC. REMOVED IN PREVIOUS PHASES o RESTORE LANDSCAPING AND IRRIGATION SYSTEM o CONSTRUCT PERMANENT TRAFFIC CONTROL SYSTEM	NB FRONTAGE ROAD TRAFFIC RELOCATED TO NB FRONTAGE ROAD. FOR REMOVAL CLOSURES AND TRAFFIC CONTROL SETUP, UTILIZE TRAFFIC CONTROL PLAN FOR FRONTAGE ROAD FULL CLOSURE (NB FRONTAGE ROAD) AND FRONTAGE ROAD PARTIAL CLOSURE RIGHT SIDE AS REQUIRED FOR EACH SPECIFIC ACTIVITY (INCLUDING CONSTRUCTION OF FINAL PORTION OF EQUESTRIAN UNDERPASS).	REMOVAL FOR NORTH AND SOUTH ENDS OF DETOUR ROUTE TO BE COORDINATED WITH FRONTAGE ROAD FULL CLOSURE (NB FRONTAGE ROAD). CONSTRUCTION VEHICLE ACCESS DURING CONSTRUCTION OF EQUESTRIAN UNDERPASS TO OCCUR FROM NB FRONTAGE ROAD OR 25TH AVENUE (VIA SRP ACCESS ROADWAY). CONSTRUCTION TRAFFIC EXITING EQUESTRIAN UNDERPASS AREA SHOULD CONTINUE ALONG NB FRONTAGE ROAD TO PEORIA AVENUE.

CONSTRUCTION SEQUENCE AND MAINTENANCE OF TRAFFIC

PHOENIX – CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

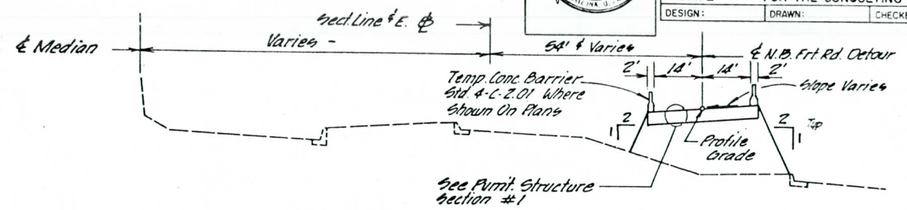
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	4	73	
RGA ENGINEERING CORPORATION					
DATE	FOR THE CONSULTING ENGINEER				
DESIGN:		DRAWN:		CHECKED:	



S.B. FRONTAGE RD. DETOUR

Sta. 14+05 to Sta. 20+57

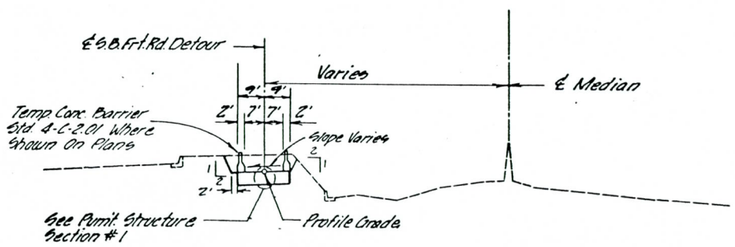
PHASE I



N.B. FRONTAGE RD. DETOUR

Sta. 32+60 to Sta. 34+74.08
Sta. 35+54.08 to Sta. 39+23

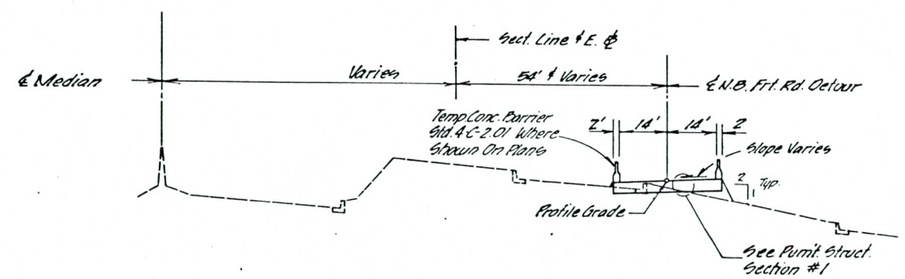
PHASE II



S.B. FRONTAGE RD. DETOUR

Sta. 12+52 to Sta. 14+05
Sta. 20+57 to Sta. 22+20

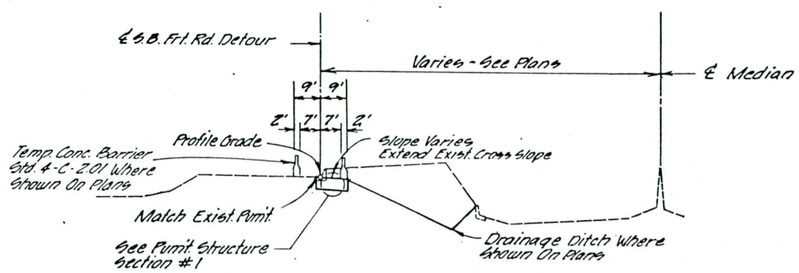
PHASE I



N.B. FRONTAGE RD. DETOUR

Sta. 31+43.49 to Sta. 37+60

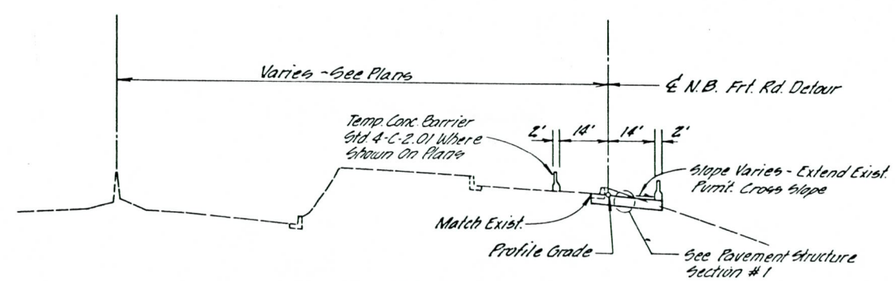
PHASE II



S.B. FRONTAGE RD. DETOUR

Sta. 10+85 to Sta. 12+52
Sta. 20+20 to Sta. 23+79.01

PHASE I



N.B. FRONTAGE RD. DETOUR

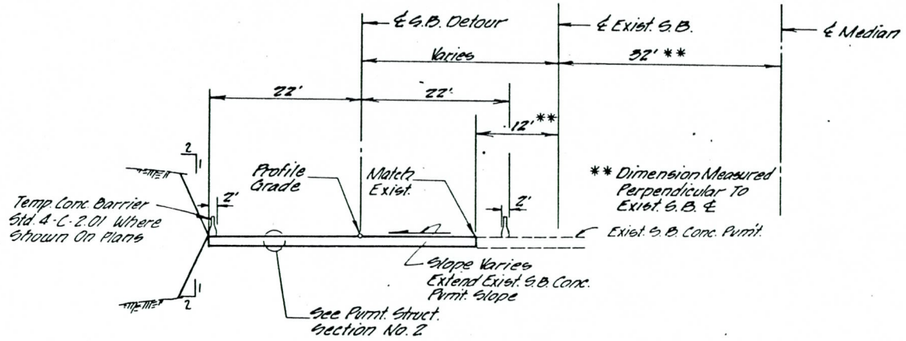
Sta. 29+45 to Sta. 31+43.49
Sta. 39+23 to Sta. 41+14.17

PHASE II

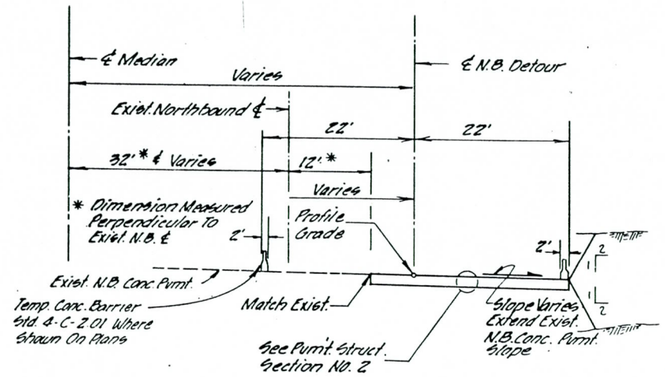
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
TYPICAL SECTIONS

PHOENIX – CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

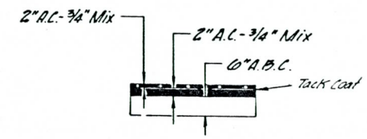
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	5	73	
RGA ENGINEERING CORPORATION					
DATE	FOR THE CONSULTING ENGINEER				
DESIGN:		DRAWN:		CHECKED:	



SOUTHBOUND DETOUR
Sta. 50+30 to Sta. 52+51.31
PHASE III

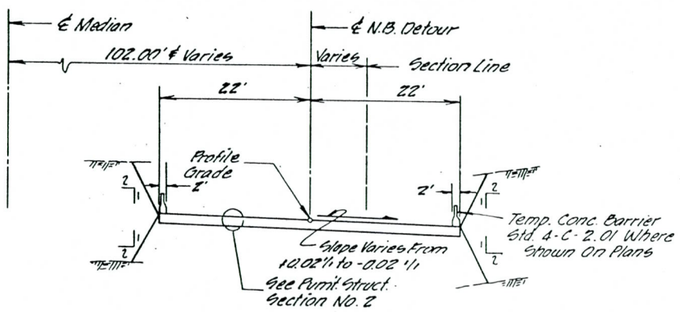


NORTHBOUND DETOUR
Sta. 32+00 to Sta. 35+06.75
Sta. 46+83 to Sta. 49+81.25
PHASE III

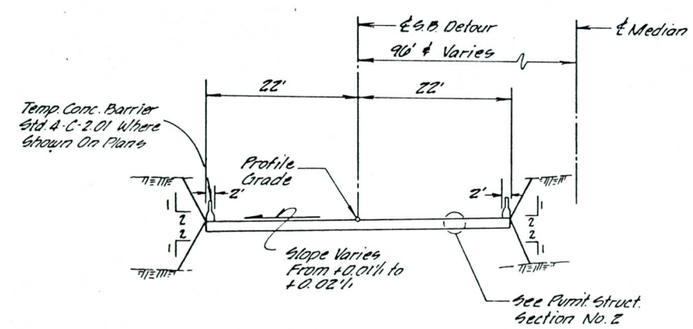


TOTAL THICKNESS = 10"

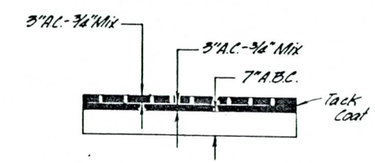
PAVEMENT STRUCTURAL SECTION No. 1
FRONTAGE ROAD DETOURS
Not To Scale



NORTHBOUND DETOUR
Sta. 35+05.75 to Sta. 46+83.00
PHASE III



SOUTHBOUND DETOUR
Sta. 52+51.31 to Sta. 62+60
PHASE III



TOTAL THICKNESS = 13"

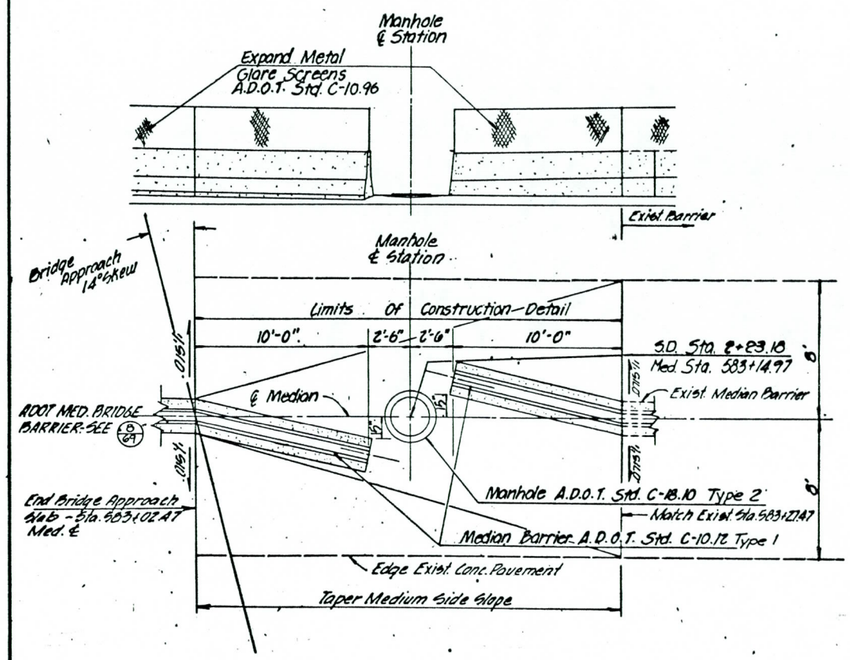
PAVEMENT STRUCTURAL SECTION No. 2
SOUTHBOUND & NORTHBOUND DETOURS
Not To Scale

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
TYPICAL SECTIONS

PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	6	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR — DRAWN: FM, JS — CHECKED: JPB, PAS



MEDIAN BARRIER AT MANHOLE

Not to Scale

Median Sta. 583+02.47 to Sta. 583+27.47
S.O. Sta. 2+23.18

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
DETAILS

I-17-3-912 PE

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

NEW PIPE SUMMARY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	7	73	

DESCRIPTION							● CSP					● CAP					RCP			NR CP / NR CIP CP	END TREATMENT										QUANTITIES *				REMARKS
										Alternate Coating							Non Trench / ● Trench				Catch Basins									Hdwl					
Station	Plan Ref No.	Design Type	Size, (In.) Corrugated	Size, (In.) Smooth	Length (Ft)	Skew (Degree)	Corrugation	Wall Thickness (In.)	Zinc	Aluminum	Bituminous	Corrugation	Wall Thickness (In.)	Uncoated	Bit Coated	Class	■ Min D-Load	Class	■ Min D-Load	Class	Min Wall Thickness (In.)	▲ Manhole No. 3	Standard	H (Ft-In.)	Slotted Drn. Length (Ft)	Type	Grate Elev	Gutter Depression D (In.)	Gutter Depression L (Ft)	Apron	Standard	Str Ex (CY)	Str Bkfl (CY)	Drn Ex (CY)	
SBZ+42 to SBZ+77	1	2	36"	36"	35'		2 2/3 x 1/2	0.064			X	2 2/3 x 1/2	0.064		X				585	1	3 1/2										C-13.20				
SBZ+77 to SBZ+97.11	2	4	36"	36"	81'		2 2/3 x 1/2	0.064			X	2 2/3 x 1/2	0.064		X				1100	3	3 1/2	1													
SBZ+96.17 to SB3+14.97	3	3	36"	36"	65'		2 2/3 x 1/2	0.064			X	2 2/3 x 1/2	0.064		X				845	2	3 1/2														
SB3+14.97 to SB3+32.19	4	2	18"	18"	68'		2 2/3 x 1/2	0.064			X	2 2/3 x 1/2	0.064		X				680	1	2 1/2	1	C-15.80												Use Salvaged Frame & Cover from Med. Sta. SBZ+51.66
SBZ+90.17 to SB3+11.50	5	2	18"	18"	15'		2 2/3 x 1/2	0.064			X	2 2/3 x 1/2	0.064		X				680	1	2 1/2		C-15.80												

URBAN

Revised 10-4-82 WS Revised 7-20-83 NK Revised 3-2-83 FGB Rev. 9-9-83 MH

MASTER

CSP - Corrugated Steel Pipe
CAP - Corrugated Aluminum Pipe
RCP - Reinforced Concrete Pipe
NRCP - Non-Reinforced Concrete Pipe
NRCIPCP - Non-Reinforced Cast-In-Place Concrete Pipe

● When Bituminous Coating Is Specified For Either Structural Plate Pipe Or Corrugated Metal Pipe, It Shall Be Applied In Accordance With AASHTO M 243 Or AASHTO M 190, Type A, Respectively, And Coated On Both The Inside And Outside Of The Pipe Unless Otherwise Specified In These Drawings.

▲ Include FRAME & COVER STD. C-18.10 & C-18.20

■ The Minimum D-LOAD Needed To Produce A 0.01 Inch Crack.

● TRENCH CONDITION Shown Only When Different From NON-TRENCH CONDITION

* STRUCTURAL EXCAVATION & STRUCTURAL BACKFILL Will Not Be Measured For Payment.

NOTE: FOR PIPE CULVERT PLACEMENT SEE STANDARD DRAWING C-13.15

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	8	73	

BARRIER SUMMARY SHEET

LOCATION	Plan Reference No.	TYPE INSTALLATION: "A" C-10.01, "B" C-10.02 New Guard Rail (Linear Feet)	Reconstruct Guard Rail (Linear Feet)	Construct Guard Rail from Salvage (Linear Feet)	Remove and Salvage Guard Rail (Linear Feet)	Remove Guard Rail (Linear Feet)	Reconstruct BCT	Construct BCT from Salvage	Remove & Salvage BCT	BARRIER TYPE: Guard Rail: Timber C-10.04	Steel C-10.05	Full C-10.12,13+14 / Half C-10.09,10+11	Linear Feet	Concrete Barrier: Steel C-10.21	Timber C-10.22	Each	END TREATMENT: Anchor: C-10.17 STEEL / C-10.18 TIMBER END POSTS	BCT Assembly: Timber C-10.15	Steel C-10.16+17	Each	MISCELLANEOUS: Bolted Anchor: Timber C-10.23	Steel C-10.24	Each	Buried Anchor: Timber C-10.23	Steel C-10.24	Linear Feet	TRANSITION: W-Beam or Thrie-Beam: Standard or Detail	Each	Rub Rail (Each): New	Reconstruct	Standard or Detail	Half Barrier: Linear Feet	Standard or Detail	Each	ATTEN-UATOR: Standard or Detail	GLARE SCREEN: Linear Feet	Remarks
Sta. 584+20 Med ℄	1																																				4-C-1.01		
Sta. 578+48 To Sta. 579+11, E B	2					60																																	
Sta. 578+48 To Sta. 581+40, E B	3		62		230												X	1		X	1	X	8																
Sta. 582+97 To Sta. 584+00, Med ℄	4											X*	103																										
Sta. 582+97 To Sta. 584+00, Med ℄	5											X*	103																										
Sta. 584+00 To Sta. 584+20, Med ℄	6											X*	20																					See 1					
Sta. 584+00 To Sta. 584+20, Med ℄	7											X*	20																					See 1					
Sta. 583+02.47 to Sta. 583+27.47, Med. ℄	8										X		20																							C-10.96	20		
Sta. 577+70 To Sta. 580+70, E B	9											X*	300																										
Sta. 579+11 To Sta. 580+81, E B	10					170																																	
Total																																							

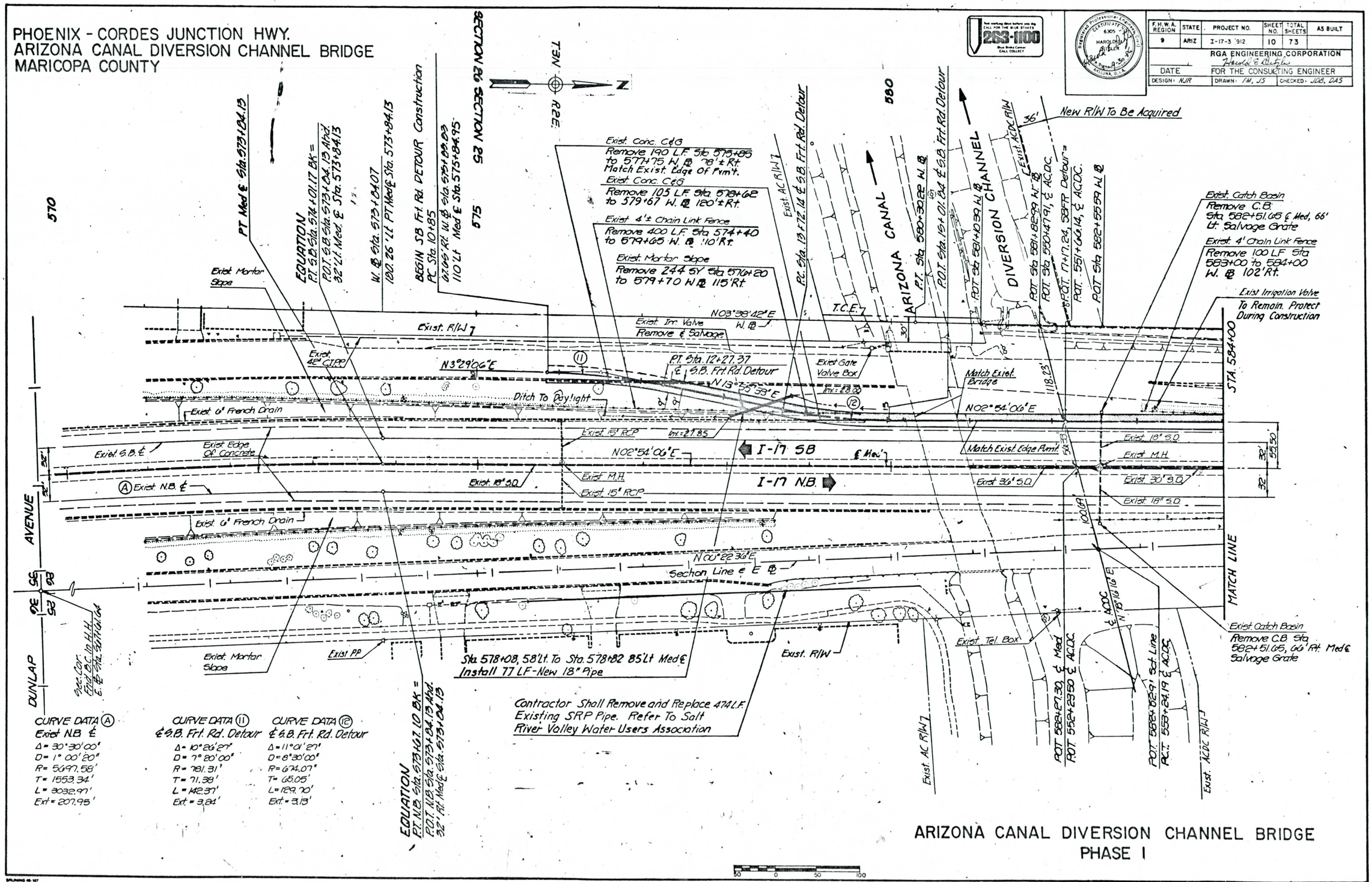
44 Reference numbers correspond to numbers in diamonds on PLAN SHEETS

* Indicates Temporary Concrete Barrier Per ADOT Std. 4-C-2.01 Which Is To Remain In Place After Const Is Complete

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3 912	10	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR — DRAWN: FM, JS — CHECKED: JDB, DAS



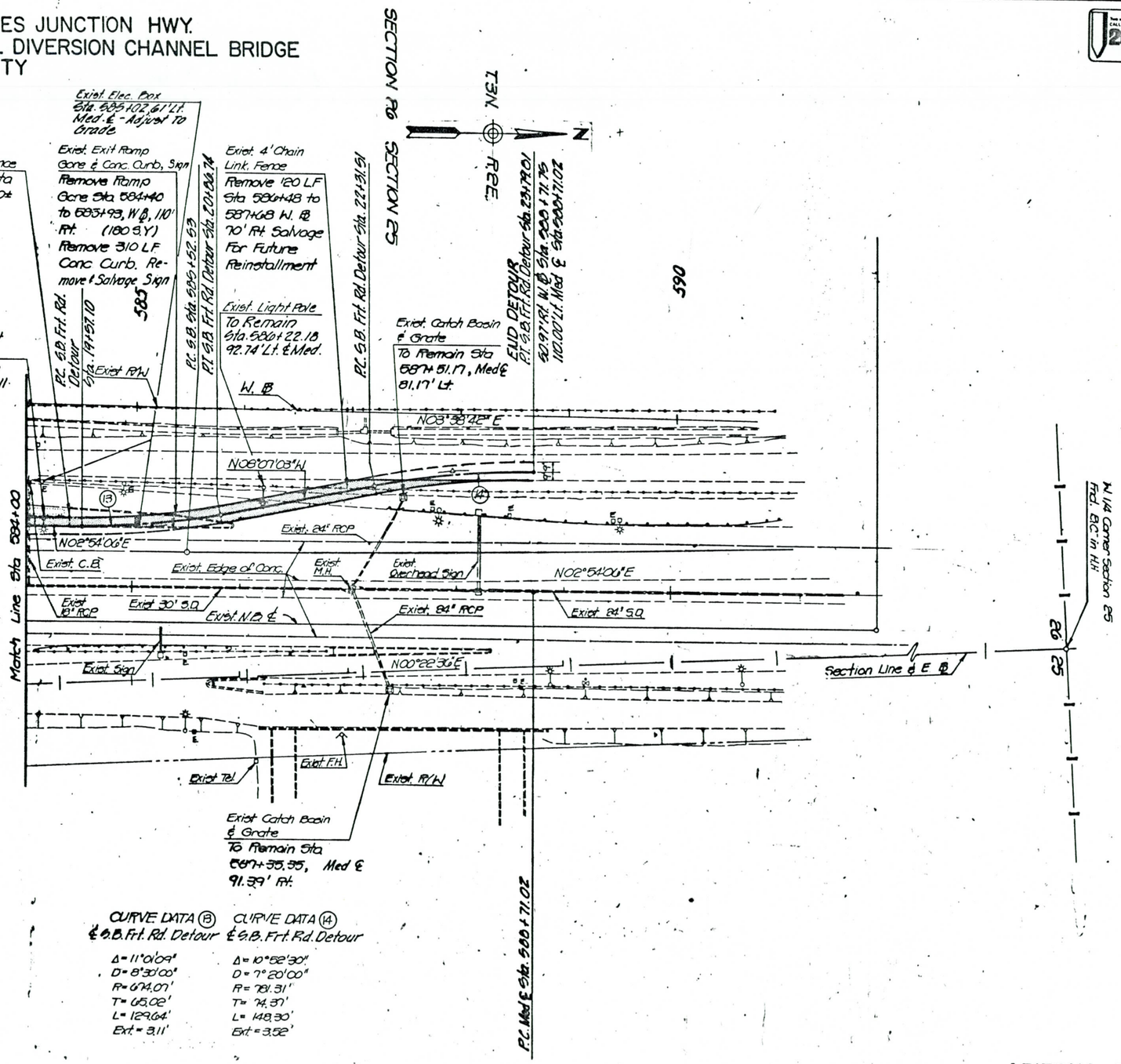
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE I

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3 912	11	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR — DRAWN: FM, JS — CHECKED: JDB, DAS



CURVE DATA (B) — ℄ S.B. Frt. Rd. Detour

Δ = 11°01'09"	
D = 8°30'00"	
R = 674.07'	
T = 65.02'	
L = 129.64'	
Ext = 3.11'	

CURVE DATA (14) — ℄ S.B. Frt. Rd. Detour

Δ = 10°52'30"	
D = 7°20'00"	
R = 781.31'	
T = 74.37'	
L = 148.30'	
Ext = 3.52'	

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE I

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

I-17-3 912

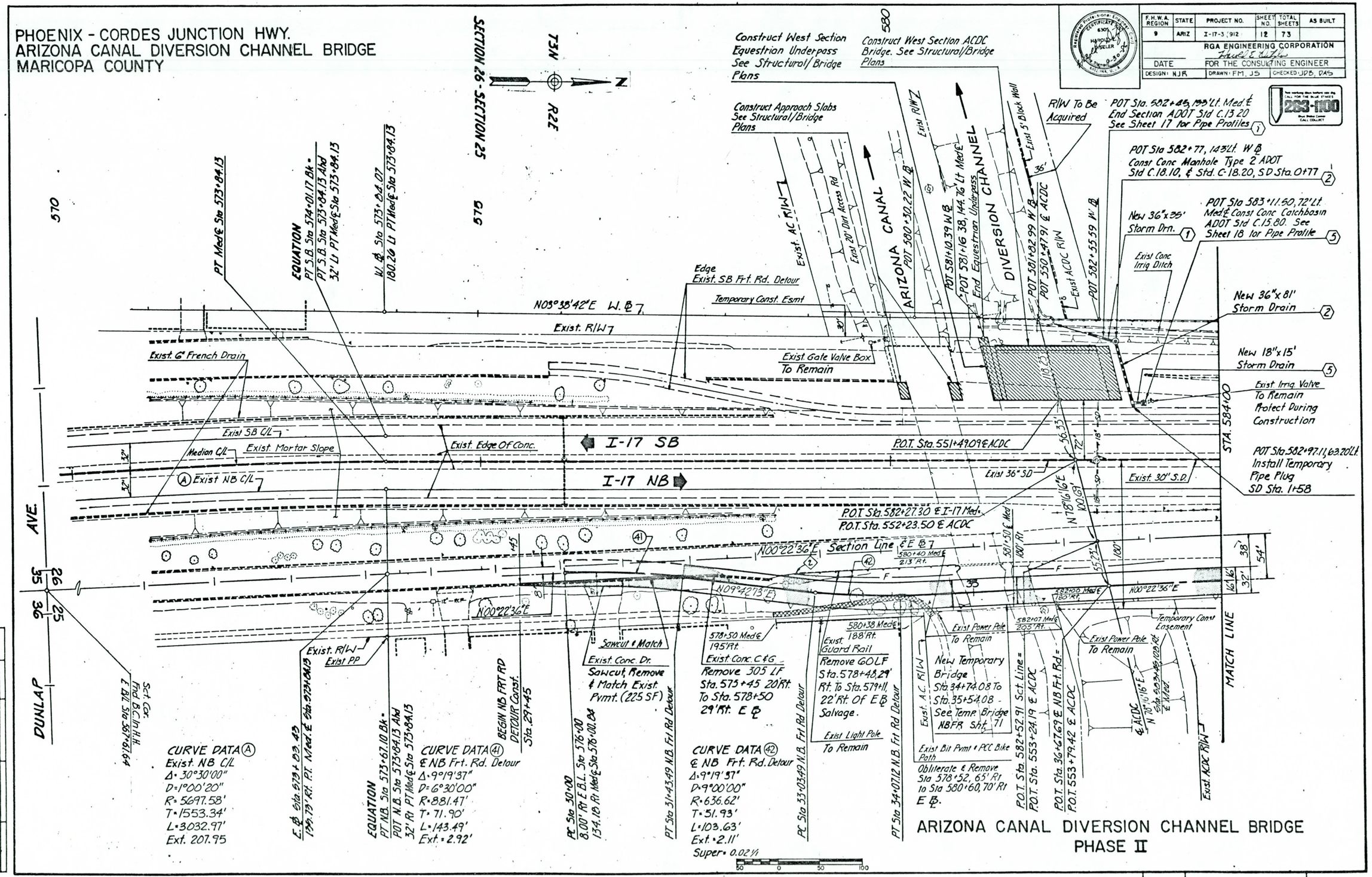
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3 (912)	12	73	

RGA ENGINEERING CORPORATION

DATE — FOR THE CONSULTING ENGINEER

DESIGN: NJR — DRAWN: FM, JS — CHECKED: JDB, DAS

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE II

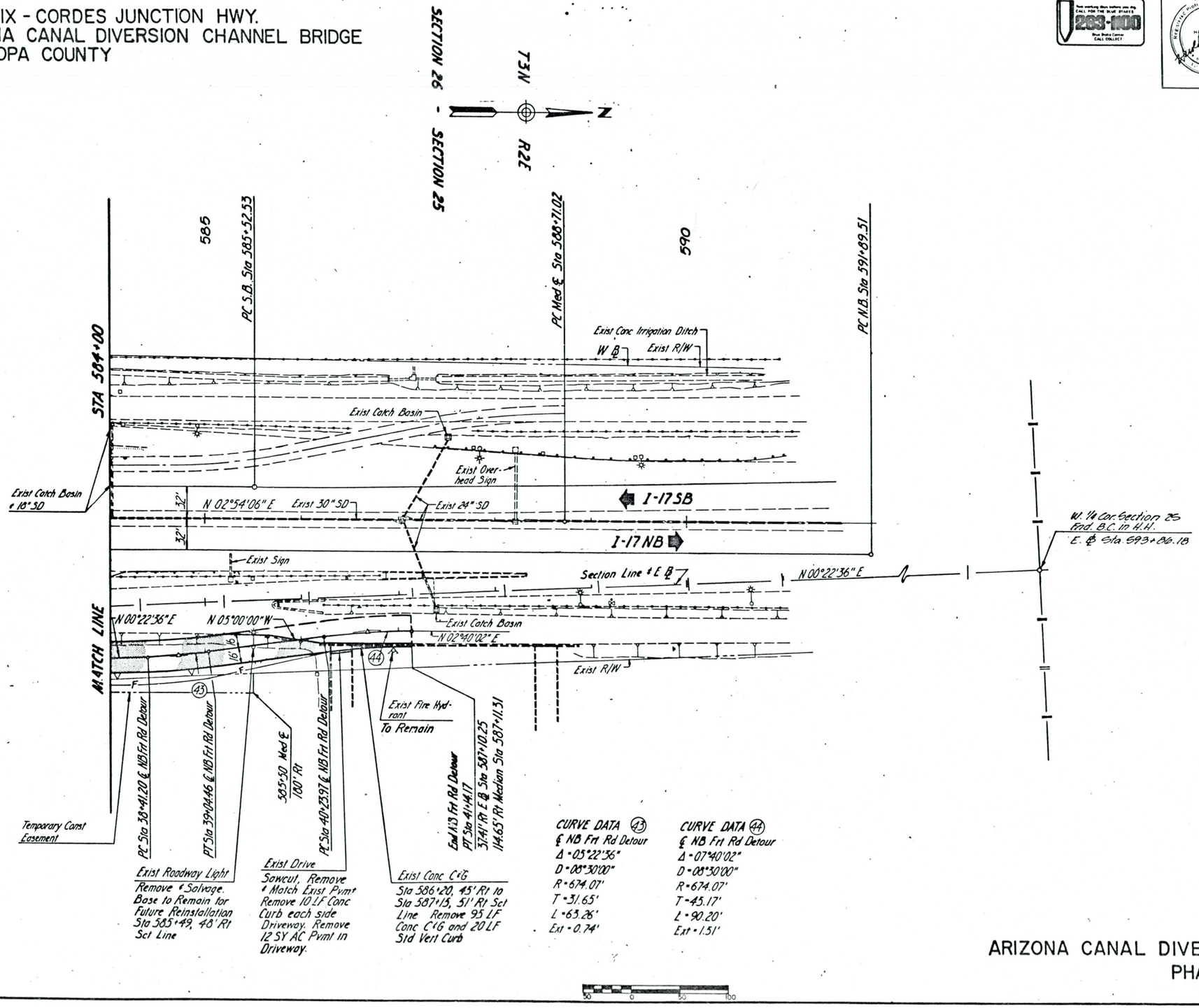
SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

I-17-3 912

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	13	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR | DRAWN: FM, JS | CHECKED: JPB, PAS



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE II

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

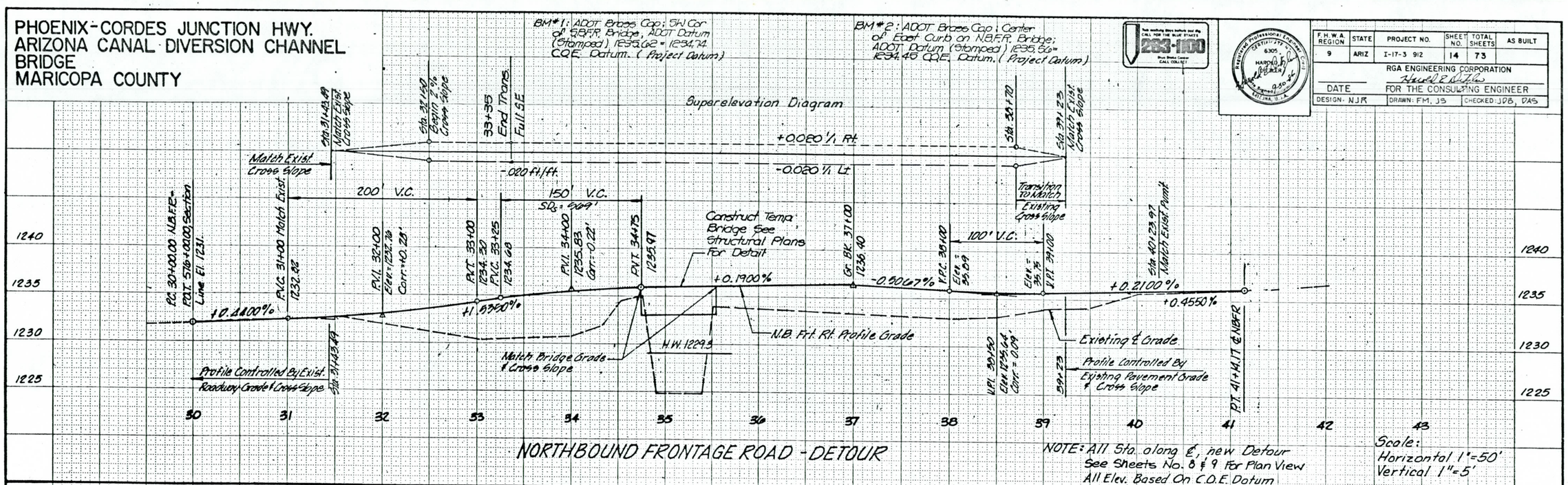
BRUNING 46-107

I-17-3-912

PHOENIX-CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL
BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3 912	14	73	

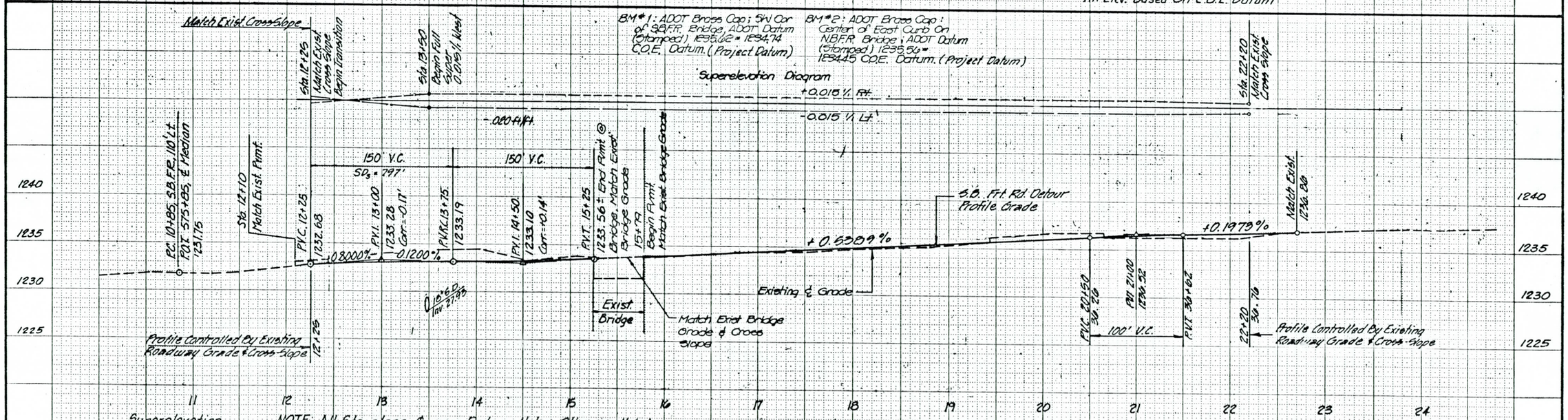
RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR — DRAWN: FM, JB — CHECKED: JDB, DAS



NORTHBOUND FRONTAGE ROAD - DETOUR

NOTE: All Sta. along ℄, new Detour
See Sheets No. 8 & 9 For Plan View
All Elev. Based On C.O.E. Datum

Scale:
Horizontal 1" = 50'
Vertical 1" = 5'



Superelevation Diagram Symbols
Left
℄
Right

NOTE: All Sta. along ℄, new Detour Unless Otherwise Noted
See Sheets No. 10 to 13 for Plan View
All Elev. Based On C.O.E. Datum.

Scale:
Horizontal 1" = 50'
Vertical 1" = 5'

SOUTHBOUND FRONTAGE ROAD - DETOUR

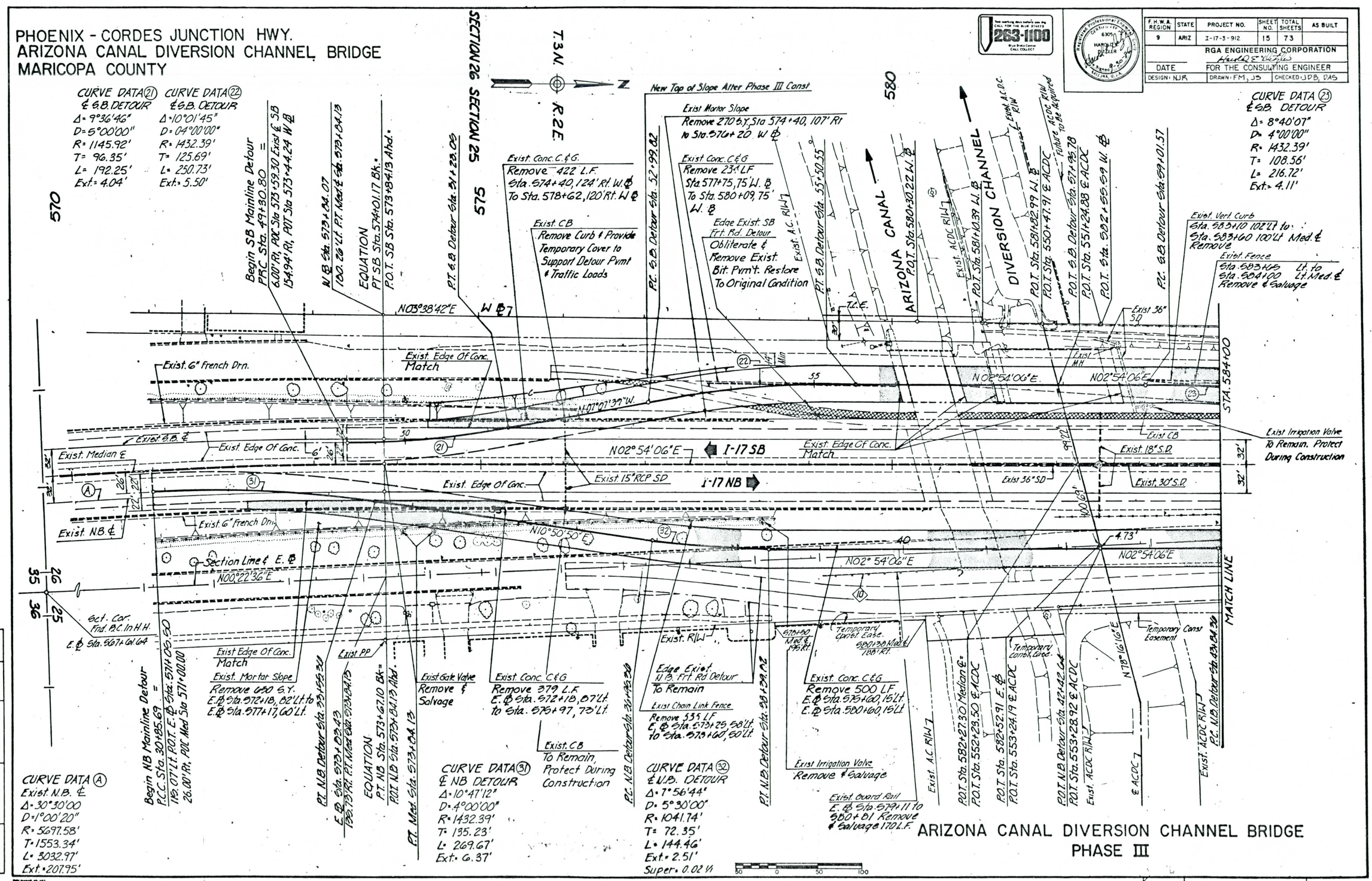
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
FRONTAGE ROAD DETOUR

SURVEY NOS. | FINISHED PLANS | REVISIONS | LOCATION | DATE

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	15	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR | DRAWN: FM, JS | CHECKED: JDB, DAS

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE III

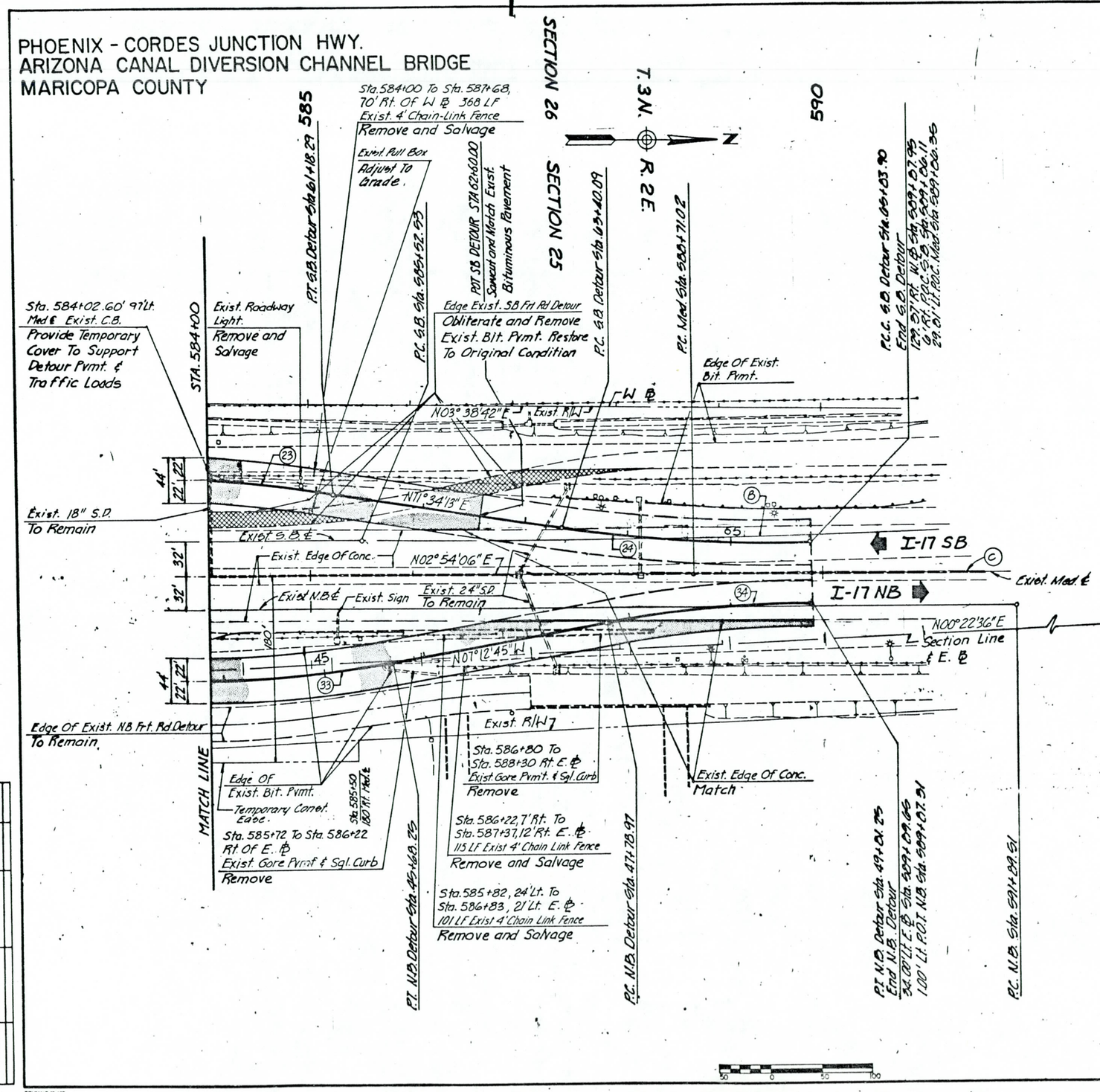
SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

I-17-3 912

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	16	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR — DRAWN: FM, JS — CHECKED: JPB, DAS

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



CURVE DATA (23)
& S.B. DETOUR
Δ = 8°40'07"
D = 4°00'00"
R = 1432.39'
T = 108.56'
L = 216.72'
Ext. 4.11'

CURVE DATA (24)
& SB DETOUR
Δ = 9°45'09"
D = 4°00'00"
R = 1432.39'
T = 122.20'
L = 243.81'
Ext = 5.20'

CURVE DATA (B)
Exist. G.B. &
Δ = 2°31'30" Lt.
D = 0°15'00"
R = 22918.32'
T = 505.08'
L = 1010.00'
Ext. = 5.56'

CURVE DATA (33)
& N.B. DETOUR
Δ = 10°06'51"
D = 5°30'00"
R = 1041.74'
T = 92.19'
L = 183.89'
Ext. = 4.07'
Super = 0.02 11/11

CURVE DATA (34)
& N.B. DETOUR
Δ = 10°06'51"
D = 5°00'00"
R = 1145.92'
T = 101.40'
L = 202.28'
Ext. = 4.48'

CURVE DATA (C)
MED ℄
Δ = 2°31'30"
D = 0°15'00"
R = 22,918.32'
T = 505.08'
L = 1010.00'
Ext. = 5.56

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE III

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

BRI.RAING 49-187

I-17-3-912

PHOENIX-CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

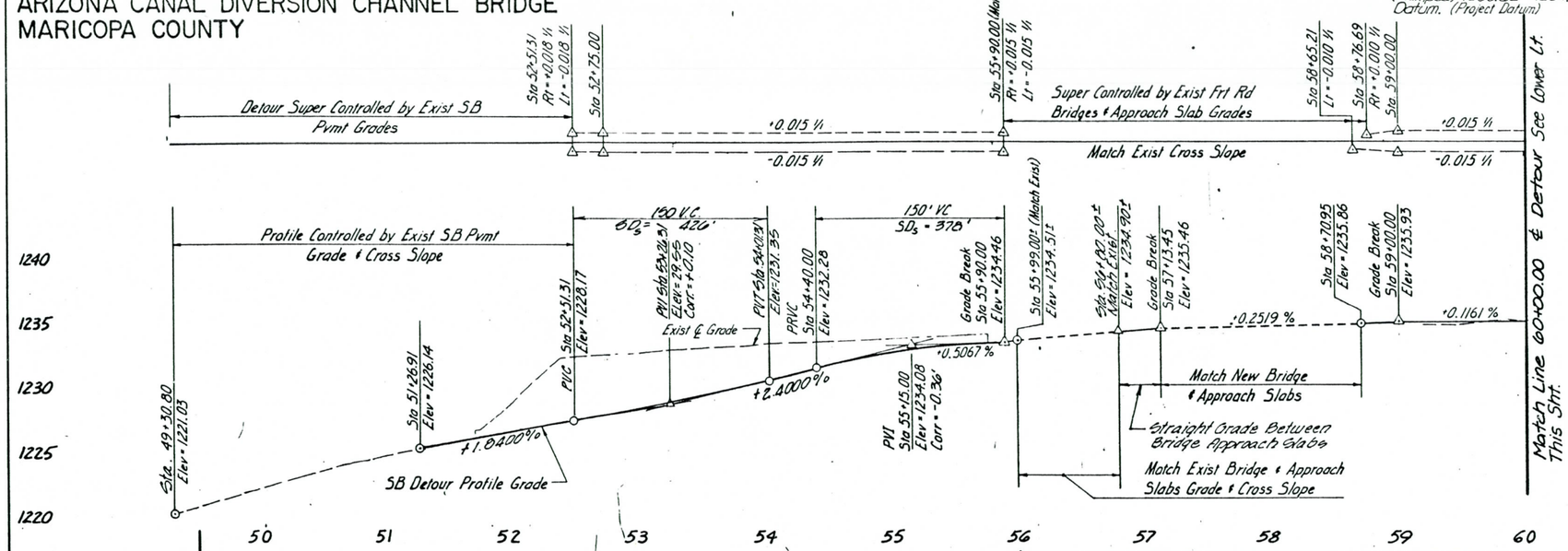
F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3 912	17	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR — DRAWN: FM, JS — CHECKED: JDB, DAS

BM#1: ADOT Brass Cap; SW Cor. of SBFR Bridge, ADOT Datum (Stamped) 1236.62 = 1234.74 C.O.E. Datum. (Project Datum)

BM#2: ADOT Brass Cap; Center of East Curb on NBFR Bridge; ADOT Datum (Stamped) 1239.56 = 1234.45 C.O.E. Datum. (Project Datum)

263-1100

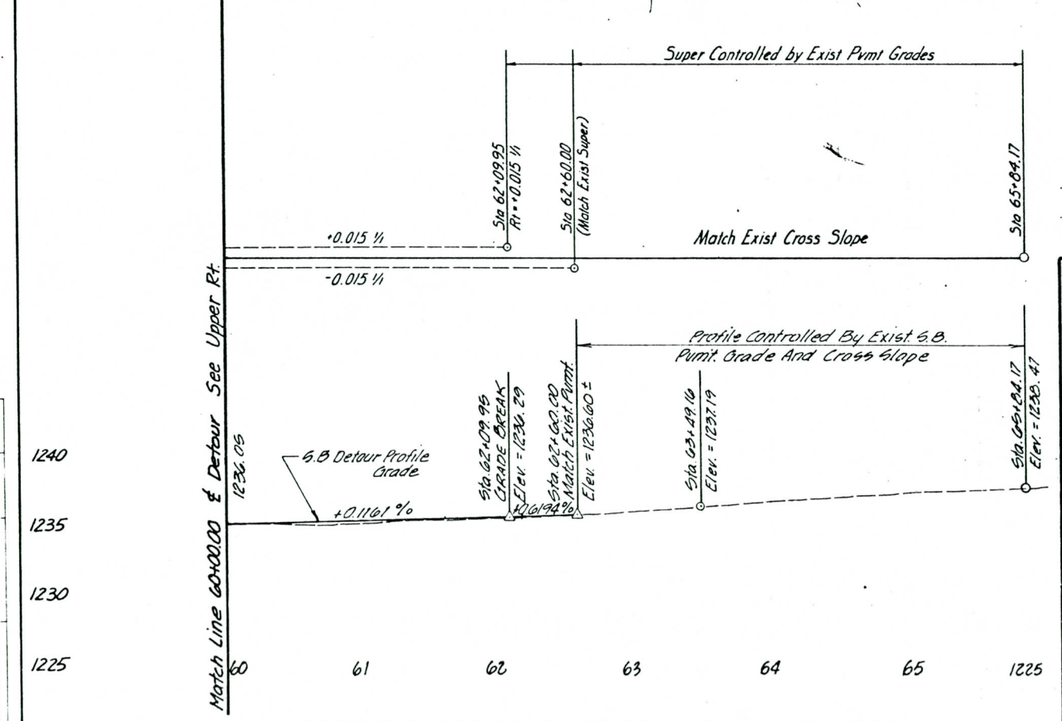


Superelevations Diagram Symbols

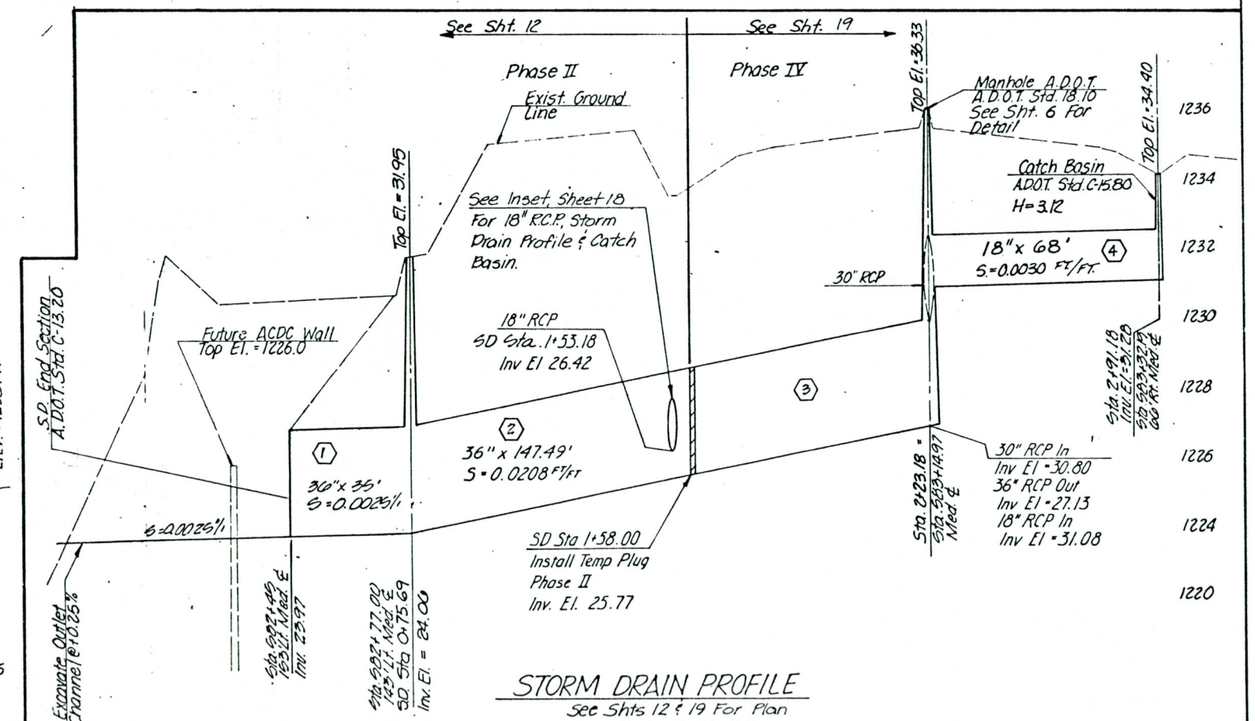
- Left Edge
- Const. & Axis Of Rotation
- Right Edge

All Stationing Refers to CST ℄ South Bound Detour Stationing Unless Otherwise Noted

Scale:
Horizontal 1" = 50'
Vertical 1" = 5'



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
SOUTHBOUND I-17 MAINLINE DETOUR



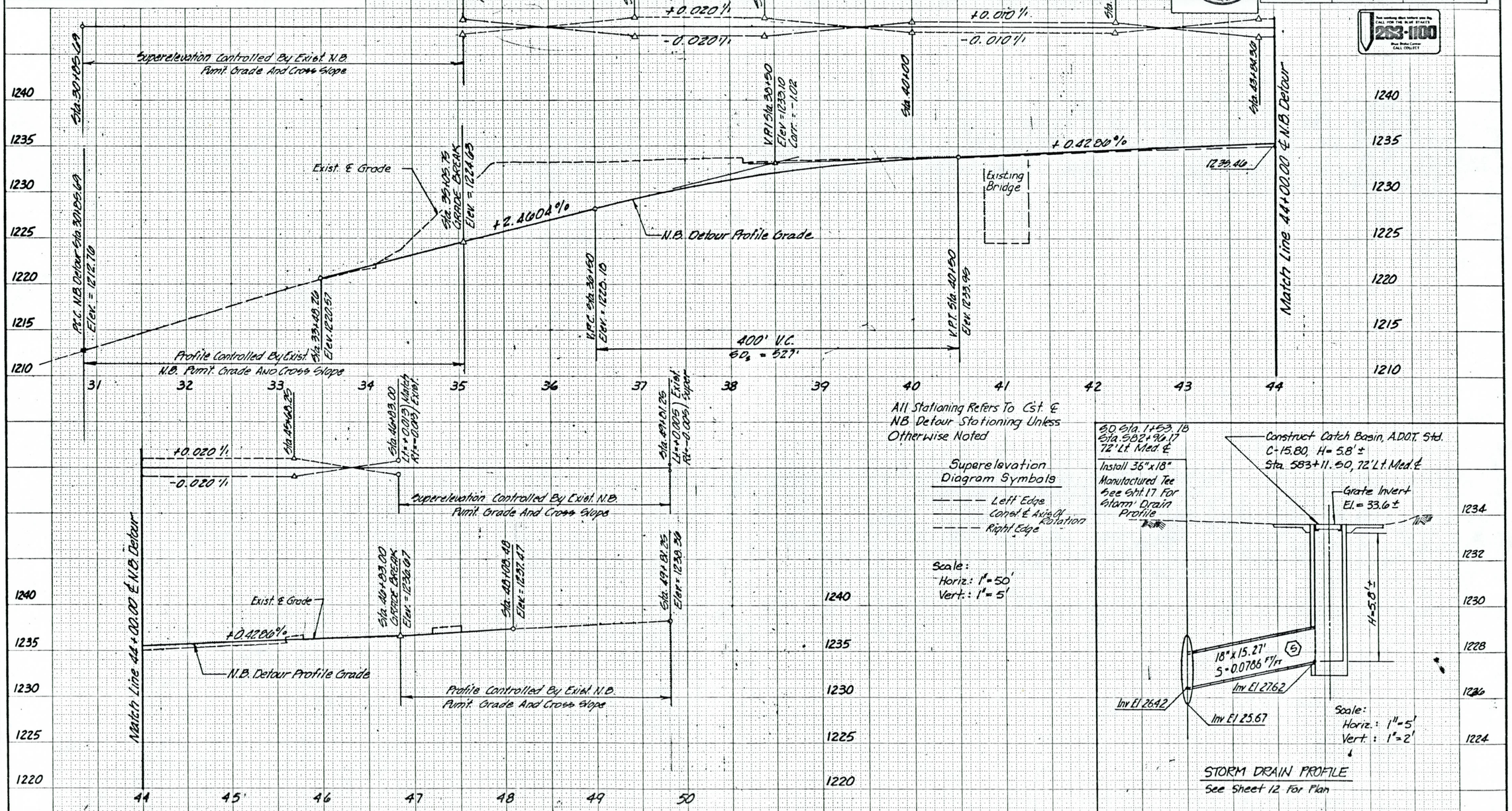
STORM DRAIN PROFILE
See Shts 12 & 19 For Plan
Scale: H. 1" = 20'
V. 1" = 2'

SURVEY NOS	FINISHED PLANS	REVISIONS	LOCATION	DATE

PHOENIX-CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL
BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3 912	18	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN: NJR DRAWN: FM, JS CHECKED: JDB, DAS



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
NORTHBOUND I-17 MAINLINE DETOUR

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

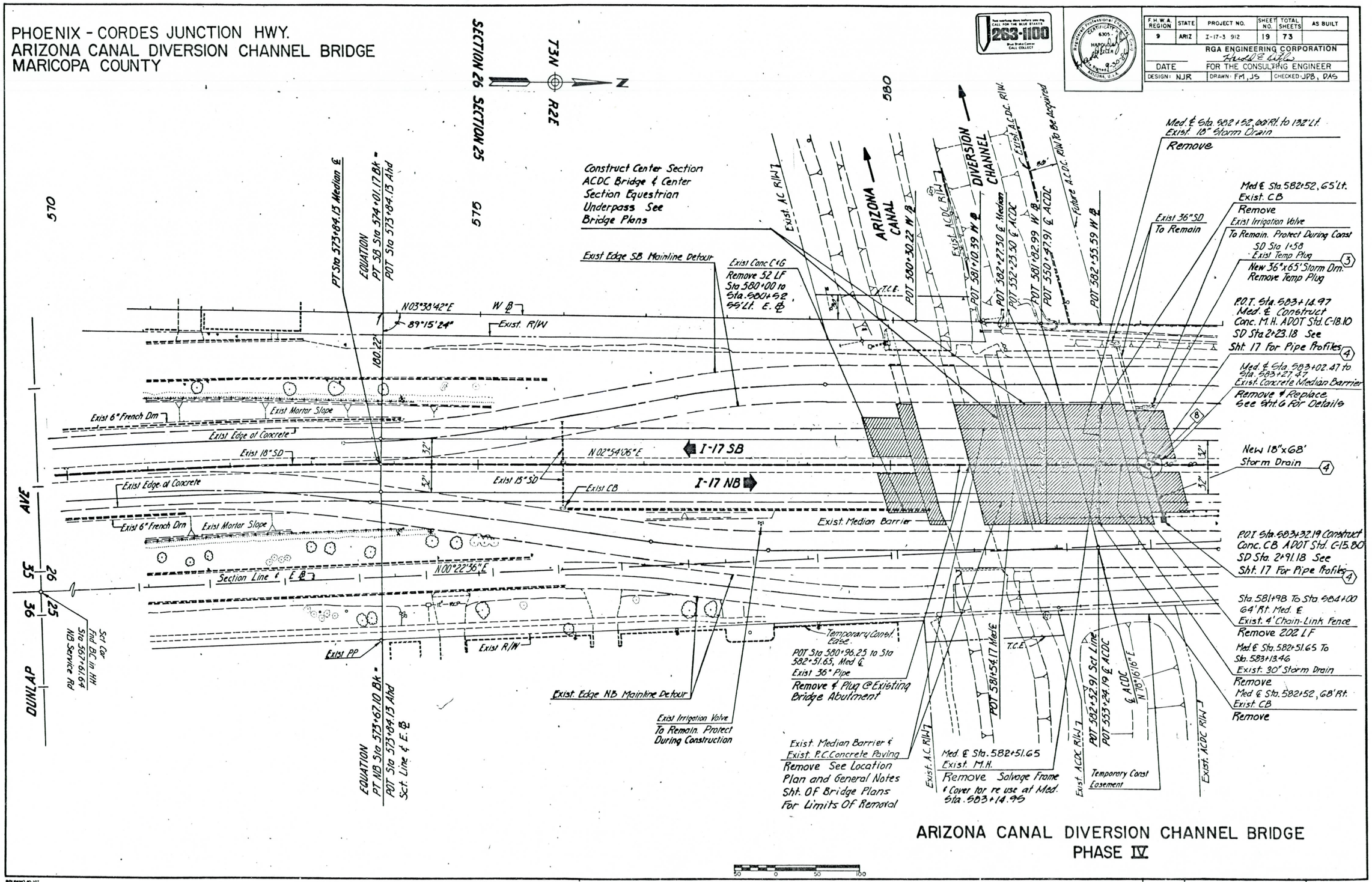
BRUNING 40-107

I-17-3 912

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3 912	19	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR — DRAWN: FM, JS — CHECKED: JPB, DAG



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE IV

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

BRUNING 40-107

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	20	73	

RGA ENGINEERING CORPORATION
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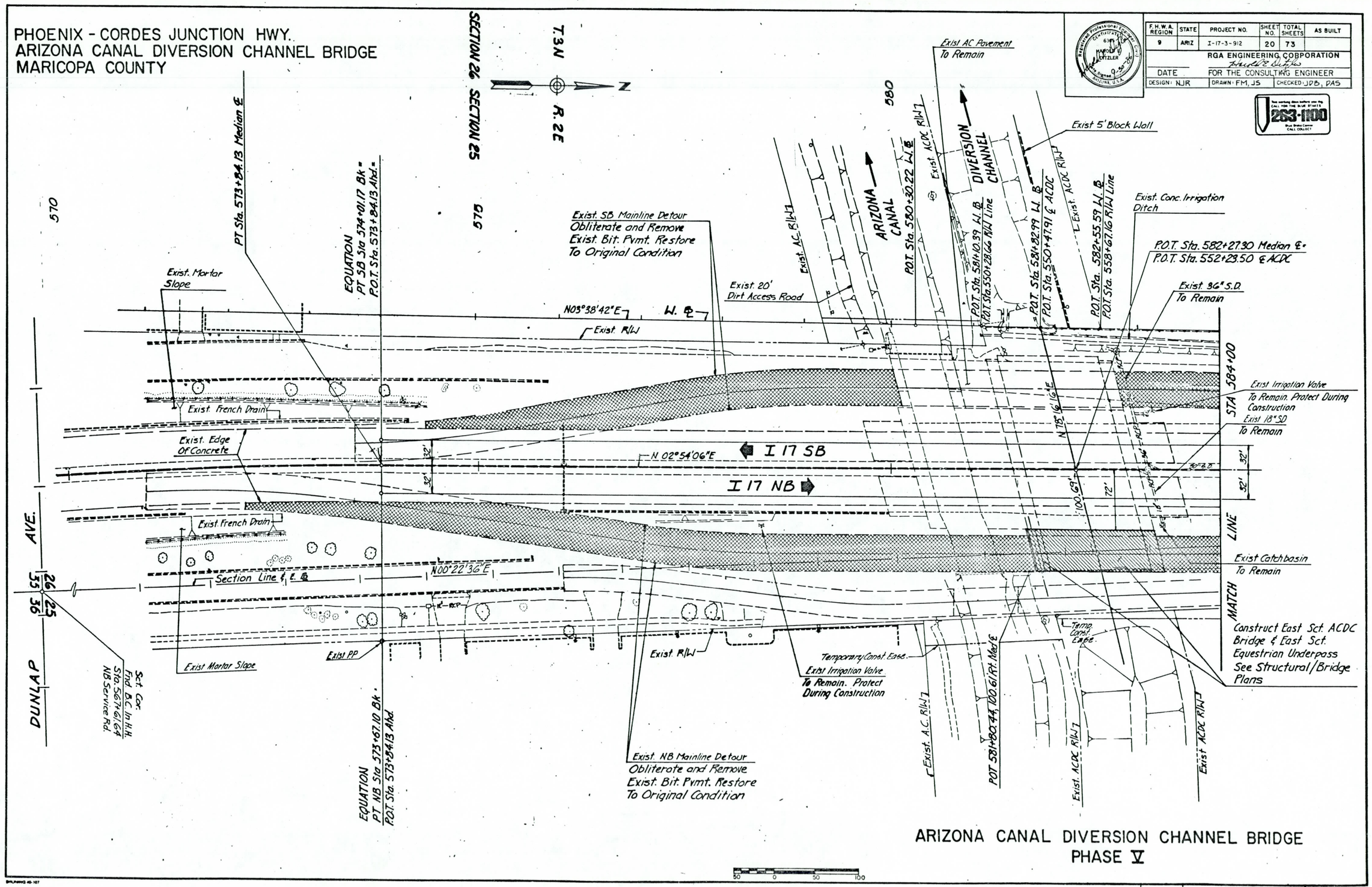

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

BRUNNING 40-107

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	21	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
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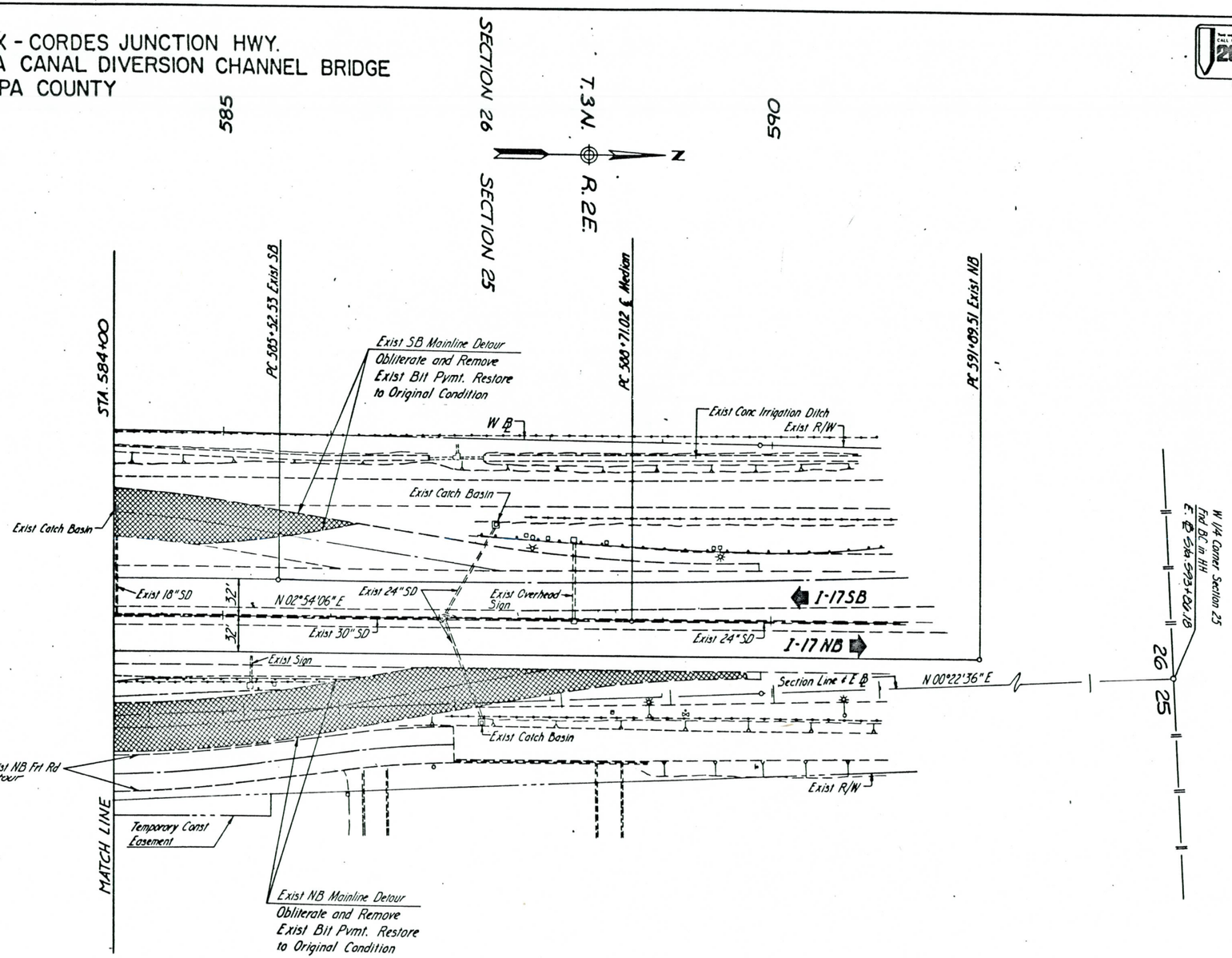


SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

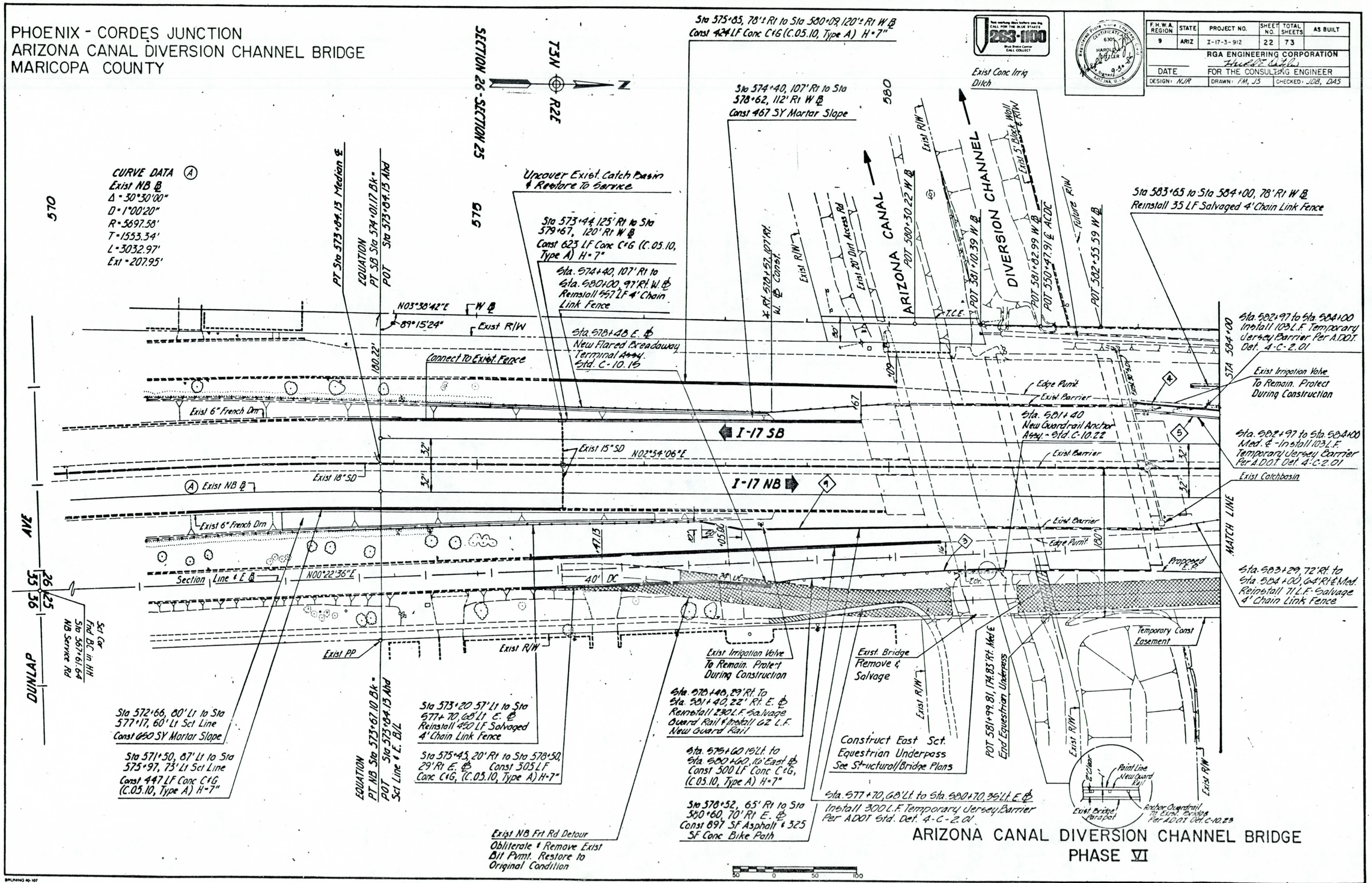
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE V

BRUNING 40-522

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	22	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN: NJR DRAWN: FM, JS CHECKED: JDB, DAS

PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE VI

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

BRUNING 40-107

I-17-3-912

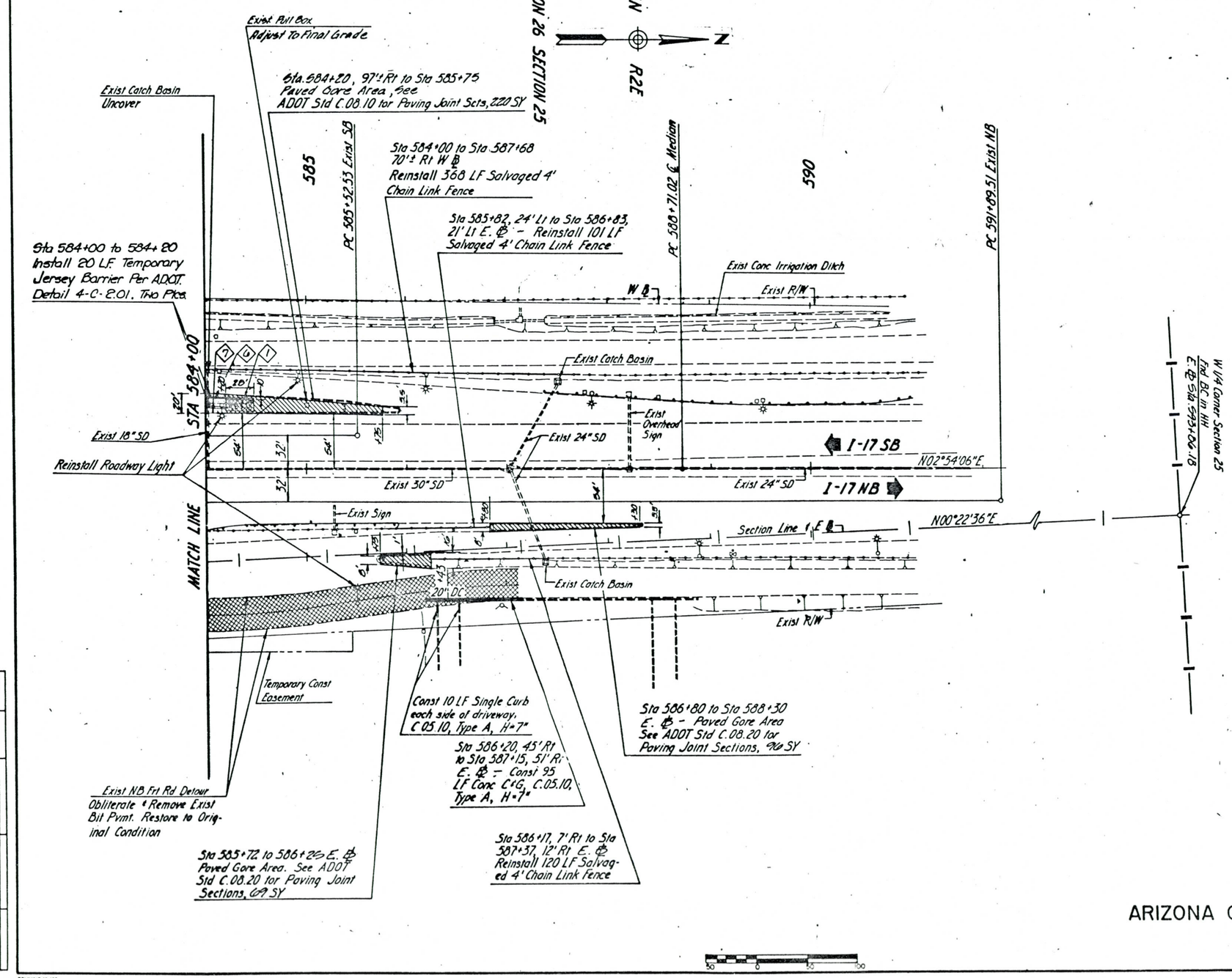
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	23	73	

RGA ENGINEERING CORPORATION

DATE — FOR THE CONSULTING ENGINEER

DESIGN: NJR | DRAWN: FM, JS | CHECKED: JDB, DAS

PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
PHASE VI

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

BRUNING 40-107

I-17-3-912

DF NO.					
REV	DATE	DFTR	CHKR	DFTG APP	ENGR APP
0	12-84	EED	EED		

PHOENIX-CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL
BRIDGE
MARICOPA COUNTY

SALT RIVER PROJECT
IRRIGATION IMPROVEMENTS

ARIZONA DEPT. OF TRANS.

TEL. 255-7541 TEL. 253-6100

ENGINEERING FILE NO. RD-51068

DESIGNER: MIKE SMITH TEL. 236-2976

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	24	73	

LEGEND

PLAN SYMBOLS

- BENCHMARK
- SECTION CORNER
- SURVEY POINT (CALL OUT)
- SECTION LINE
- CONSTRUCTION BASE LINE
- PROPERTY OR R/W LINE
- EASEMENT LINE
- EXIST DITCH
- EXIST IRRIG PIPE (SIZE & TYPE)
- EXIST IRRIG HDWL OR HDWL/TRRK
- EXIST FIRE HYDRANT
- EXIST WATER VALVE
- EXIST METER (WATER-W / GAS-G)
- EXIST WATER LINE
- EXIST SEWER LINE
- EXIST GAS LINE
- EXIST TELEPHONE (DUCT OR CABLE)
- EXIST U.G. ELEC. (DUCT OR CABLE)
- EXIST MANHOLE (NON WUA)
- EXIST STORM DRAIN
- EXIST CATCH BASIN
- EXIST UTILITY POLE
- EXIST DOWN GUY
- EXIST FENCE (WOOD)
- EXIST FENCE (WIRE/NOT SPECIFIED)
- EXIST FENCE (MASONRY)
- EXIST TREE (GIVE TYPE)
- EXIST STUMP
- EXIST MAIL BOX
- PROPOSED FACILITIES
- EXISTING FACILITIES

PROFILE SYMBOLS

- CENTERLINE OF ROAD
- LOW BANK
- BED
- AVG GROUND LEFT
- AVG GROUND RIGHT
- AVG GROUND (ONE GIVEN)
- HIGH WATER
- BED - PRIVATE DELIVERY
- HIGH GROUND
- LOW GROUND
- BED - DRAIN DITCH
- CATCH BASIN

GENERAL NOTES

THE S.R.P. DOES NOT GUARANTEE THE LOCATION OR ELEV. OF UTILITIES AND WILL NOT BE RESPONSIBLE FOR THEIR RELOCATION.

ALL PRECAST CONCRETE PIPE SHALL BE IN ACCORDANCE WITH ASTM C-76 CLASS III OR ASTM C-14 UNLESS OTHERWISE NOTED AND MEET S.R.P. SPECIFICATIONS FOR PRECAST PIPE.

ALL CAST-IN-PLACE PIPE SHALL BE INSTALLED AND BACKFILLED IN ACCORDANCE WITH S.R.P. SPECIFICATIONS FOR CIPP.

PIPE BEDDING SHALL BE CLASS 'C' OR BETTER AND BACKFILL SHALL BE TYPE I PER S.R.P. SPECIFICATIONS FOR PRECAST PIPE, UNLESS NOTED OTHERWISE.

SAFETY NOTE: ALL TRENCHING BY S.R.P. SHALL BE DONE IN ACCORDANCE WITH XB-411-118.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT BLUESTAKE (263-1100) TO LOCATE AND FLAG ALL EXISTING UNDERGROUND UTILITIES.

FACILITIES WHICH ARE NOT SPECIFICALLY LOCATED WITH ACTUAL HORIZONTAL AND VERTICAL CONTROLS ARE LOCATED ONLY APPROXIMATELY AND TO THE BEST AVAILABLE KNOWLEDGE.

VERTICAL CONTROLS ARE BASED ON SEA-LEVEL DATUM AS DEFINED BY THE BENCHMARK ON EACH PLAN-PROFILE. VERTICAL CONTROLS MAY DIFFER BETWEEN PLAN-PROFILES. CHECK PLANS FOR ELEVATION EQUATIONS.

STATIONS SHOWN ON THE PLAN-PROFILE ARE ALONG THE SECTION LINE UNLESS OTHERWISE NOTED.

DIMENSIONS LOCATING IRRIGATION MANHOLES AND DELIVERY STRUCTURES ARE FROM THE SECTION LINE TO THE CENTERLINE OF THE MANHOLE AND TO THE FACE OF THE DELIVERY STRUCTURE RESPECTIVELY, UNLESS OTHERWISE NOTED.

ELEVATIONS SHOWN FOR IRRIGATION MANHOLES ARE AT THE TOP OF THE PROPOSED SIDEWALK OR FINISHED ROADWAY GRADE AT THE CENTERLINE OF THE MANHOLE, UNLESS OTHERWISE NOTED. THE TOP OF THE MANHOLE TO BE STAKED BY THE CUSTOMER'S ENGINEER. ALL OTHER STAKING BY S.R.P. FORCES UNLESS NOTED OTHERWISE.

ALL DELIVERY STRUCTURES WILL BE INSTALLED BY S.R.P. FORCES. ALLOW A MINIMUM OF 30 DAYS BETWEEN THE ISSUANCE OF S.R.P. LICENSE AND THE INSTALLATION OF THE STRUCTURE.

ALL EXISTING IRRIGATION FACILITIES DISTURBED BY NEW CONSTRUCTION SHALL BE RECONSTRUCTED TO CURRENT S.R.P. STANDARDS.

ALL WORK AND MATERIALS THAT DO NOT CONFORM TO THESE PLANS, SPECIFICATIONS AND APPLICABLE S.R.P. LICENSES ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

THE CUSTOMER'S CONTRACTOR IS REQUIRED TO CALL S.R.P. FOR A CONSTRUCTION CLEARANCE AND SURVEY STAKING IN ACCORDANCE WITH THE S.R.P. LICENSE PRIOR TO STARTING CONSTRUCTION.

ALL STAKING CONTROLS SHALL BE LEFT UNDISTURBED. THE CONTRACTOR SHALL CALL THE S.R.P. ENGINEER TO REFERENCE AND RESET ANY CONTROL POINTS THAT HAVE TO BE DISTURBED. THE CONTRACTOR WILL BE CHARGED FOR RESTAKING IF ANY STAKES ARE DESTROYED.

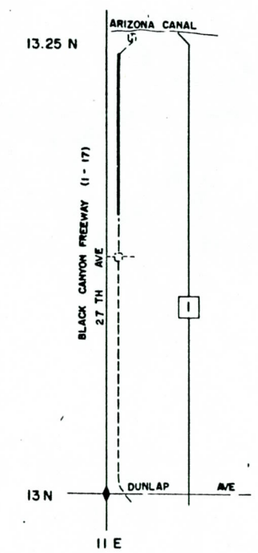
ANY QUESTIONS RELATIVE TO THE ACCURACY OF IMPROVEMENT INSTALLATION SHALL NOT BE RAISED SUBSEQUENT TO COMPLETION OF THE WORK UNLESS ALL SURVEY STAKES ARE MAINTAINED INTACT. SHOULD SUCH STAKES NOT BE PRESENT AND VERIFIED AS TO THEIR ORIGIN, NO CLAIM FOR ADDITIONAL COMPENSATION FOR CORRECTION SHALL BE PRESENTED TO ANY PARTY AND SUCH WORK SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE.

ALL CONSTRUCTION WATER AND POWER SHALL BE OBTAINED AND HANDLED BY THE CONTRACTOR AT HIS OWN EXPENSE. THE CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS TO PROCURE AND TRANSPORT WATER TO THE CONSTRUCTION SITE. ALL TEMPORARY FACILITIES SHALL BE REMOVED PRIOR TO FINAL ACCEPTANCE BY S.R.P..

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL QUANTITIES AND ANY OTHER ITEMS AFFECTING HIS BID TO COMPLETE THE WORK SHOWN ON THE PLANS AND TO BASE HIS BID SOLELY UPON HIS OWN VERIFIED QUANTITIES, IRRESPECTIVE OF THE INFORMATION FURNISHED AS NOTED ABOVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE S.R.P. ENGINEER PRIOR TO CONSTRUCTION OF ANY MAJOR DISCREPANCIES BETWEEN HIS ESTIMATED QUANTITIES AND THOSE SHOWN ON THE PLANS.

THE CUSTOMER/CONTRACTOR IS RESPONSIBLE TO ASSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL SAFETY REGULATIONS.

KEY PLAN



N

PLAN INDEX

PLAN/PROFILES SHT 1 ~~THRU~~

~~T/O STRUCTURES & DET. SHT~~ ~~THRU~~

~~HEADWALL/HEADWALL TRRK DET. SHT~~

~~MANHOLE DET. SHT~~

DWG FILE: GS3:[200,203]CVRPAGE.DGN

ENGR FILE NO. RD-51068

PHOENIX-CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL
BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	25	73	

SCALE: 1"=100'

NOTE: FOR CONTINUATION TO S. SEE DWG. # A-101-244

CONT SOUTH A-101-507.1

STA 0+19± 38' OFFSET

STA -(0+25±) LAT. HD. TO STR. DWG. B-135-241 ℄ B4.5' OFFSET

STA 0+26± TIE 15" RGRCP TO EXISTING 12" RGRCP

(76'±) 12" RGRCP

STA 0-131 NEW CANAL T.O. STR. DWG. # B-405-19

35

15" RGRCP

REMOVE 15" HWCP

STA. 5+96 TO 6+08 (12) 15" R.C.P.

STA. 6+28 TO 6+37 (12) 15" R.C.P.

STA. 6+18± NEW T.O. STR. DWG. # B-424-107

STA. 12+44 START 46'± 18" RCP, TIE INTO 4'x1'37 84" CP WITH 4'-15" R.C.P.

ABANDON IN PLACE

STA 5+00 TIE 15" RGRCP TO EXISTING 15" HWCP

E. LINE SEC. 26, T.3N., R.2E.

E. LINE SEC. 35, T.3N., R.2E.

N. 0°16'28" E. 1224'

N. 0°16'18" E.

ARIZONA CANAL

STA. 0+131 NEW CANAL T.O. STR. DWG. # B-405-20

STA. 0+62 NEW M.H. STR. DWG. # B-405-21

42" CIPP

8'-42" RCP

N. 3°24'39" E. 1590.21'

W. LINE OF BLACK CANYON HWY. R/W

STA. 7+86± NEW T.O. STR. DWG. # B-424-108

30" CIPP

STA. 12+54 START 80'± OF 30" R.G.R.C.P.

NEW HEADWALL DWG. # 2672-1

PK STYN

30" CIPP

N. 11°23'28" W. 448.47'

W. LINE OF BLACK CANYON HWY. R/W

N. 11°08'28" W. 367.27'

W. LINE OF BLACK CANYON HWY. R/W.

STA. 22+14 START (102'±) 30" R.C.P.

18"± L.F. PIT. TO BE DETERMINED BY ARIZ. N.W.T. DEPT.

STA. 23+76 REMOVE NEW MANHOLE & CONST. NEW MANHOLE. DWG. # C-85-47

TOP NEW CANAL T.O. STR. & NEW M.H. EL. 1235.8

TOP LT. HD. TO. STR. EL. 1236.94

STA 0+26± MATCH EXIST. INV. EL.

STA (0+25.5) EL. 1226.54

S=0.00252

STA 5+00 MATCH EXIST. EL.

S=0.00279

S=0.00489

S=0.00335

TOP NEW MANHOLE

NOTE: FOR CONTINUATION TO S. SEE DWG. # A-101-244

NOTE: LAST REVISION NOT CONSTRUCTED SEE C/M DFTG "DESIGN HOLD"

THIS PLAN PROFILE PLOTTED FROM INFORMATION OF ARIZ. STATE HWY. PROJECT # I-17-1(13 8) SHEETS 13,17

PEORIA AVE. — DUNLAP AVE. — NORTHERN AVE. — 27TH AVE. — 35TH AVE. — 19TH AVE. — T.3N. — R.2E.

B.M.
STA - (0 + 25) TOP T.O. STR. EL 1236.94 FROM FIELD CHECK 1-6-86

STA 6 + 13 TOP T.O. STR. EL. 1229.7 FROM FIELD CHECK 1-8-86

REVISED	BY	CHK'D	APPROVED	REV.
1-8-86	M.C.S.	A.K.	JEL	AS-CONSTRUCTED
12-10-85	M.C.S.	A.K.		REVISED TO AS-BUILT
10-3-85	M.C.S.	A.K.		REVISED TO AS-BUILT
9-10-62	D.E.B.			REDESIGN
8/5/61	W.F.B.	NCR		DESIGN

SALT RIVER VALLEY WATER USERS' ASS'N.
PHOENIX, ARIZONA

PLAN PROFILE
OF LAT. 14 OF 13.9 ARIZ. CAN
SEC.S 25, 26 & 35 T.3N., R.2E.
FROM 14+71 CONT. SEC. 26 + 14 OF 16.18 CONT. SEC. 35

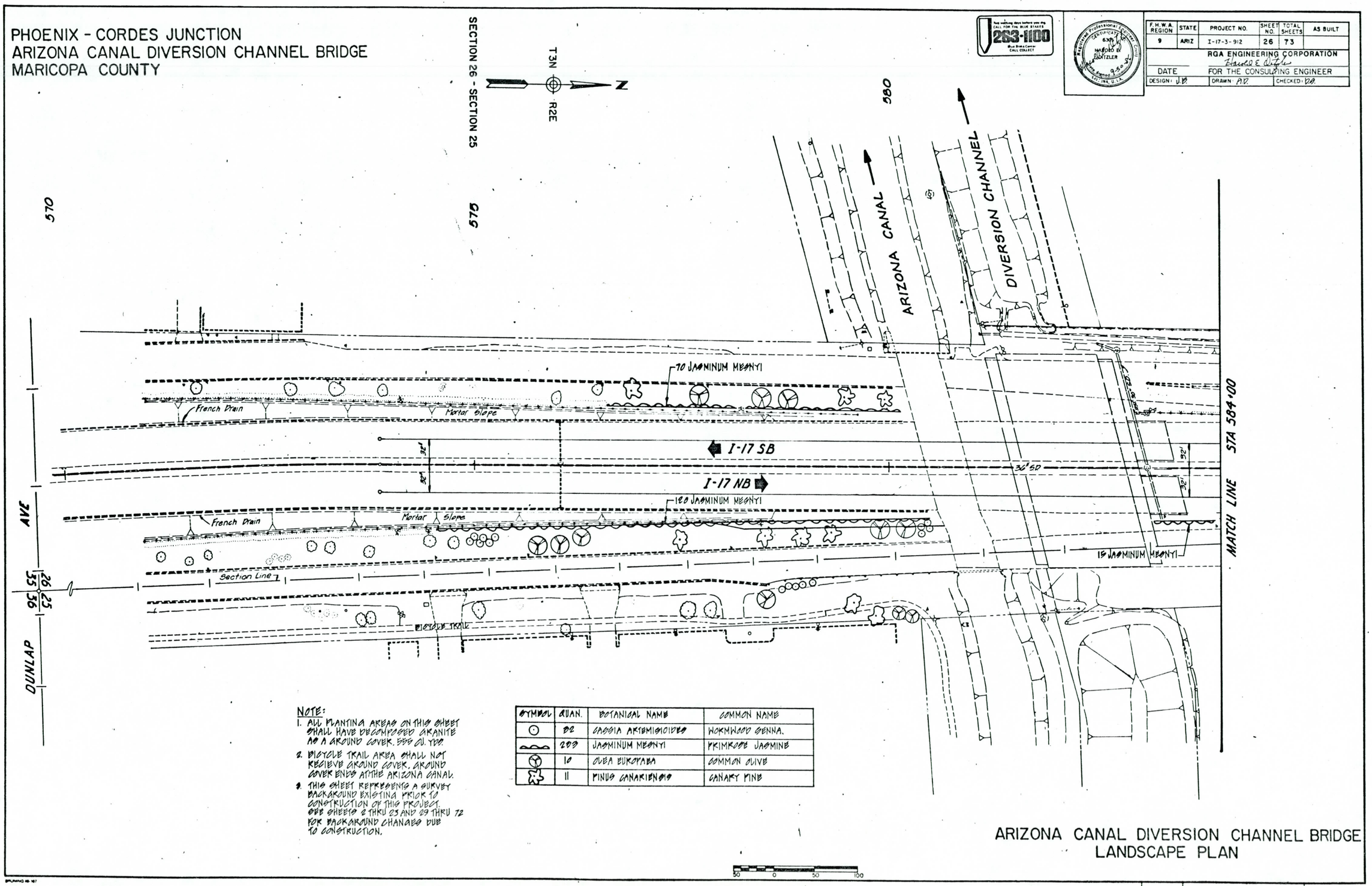
DESIGNED E.C.A.
DRAWN
TRACED
SCALE
CHECKED
RECOMMENDED
APPROVED

2672 | 7-12-61 | A-101-256

PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	26	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: J.B. DRAWN: A.D. CHECKED: D.B.



NOTE:
1. ALL PLANTING AREAS ON THIS SHEET SHALL HAVE DECOMPOSED GRANITE AS A GROUND COVER. SEE GL. TOO.
2. BICYCLE TRAIL AREA SHALL NOT RECIEVE GROUND COVER. GROUND COVER ENDS AT THE ARIZONA CANAL.
3. THIS SHEET REFRESENTS A SURVEY BACKGROUND EXISTING PRIOR TO CONSTRUCTION OF THIS PROJECT. SEE SHEETS 2 THRU 23 AND 29 THRU 72 FOR BACKGROUND CHANGES DUE TO CONSTRUCTION.

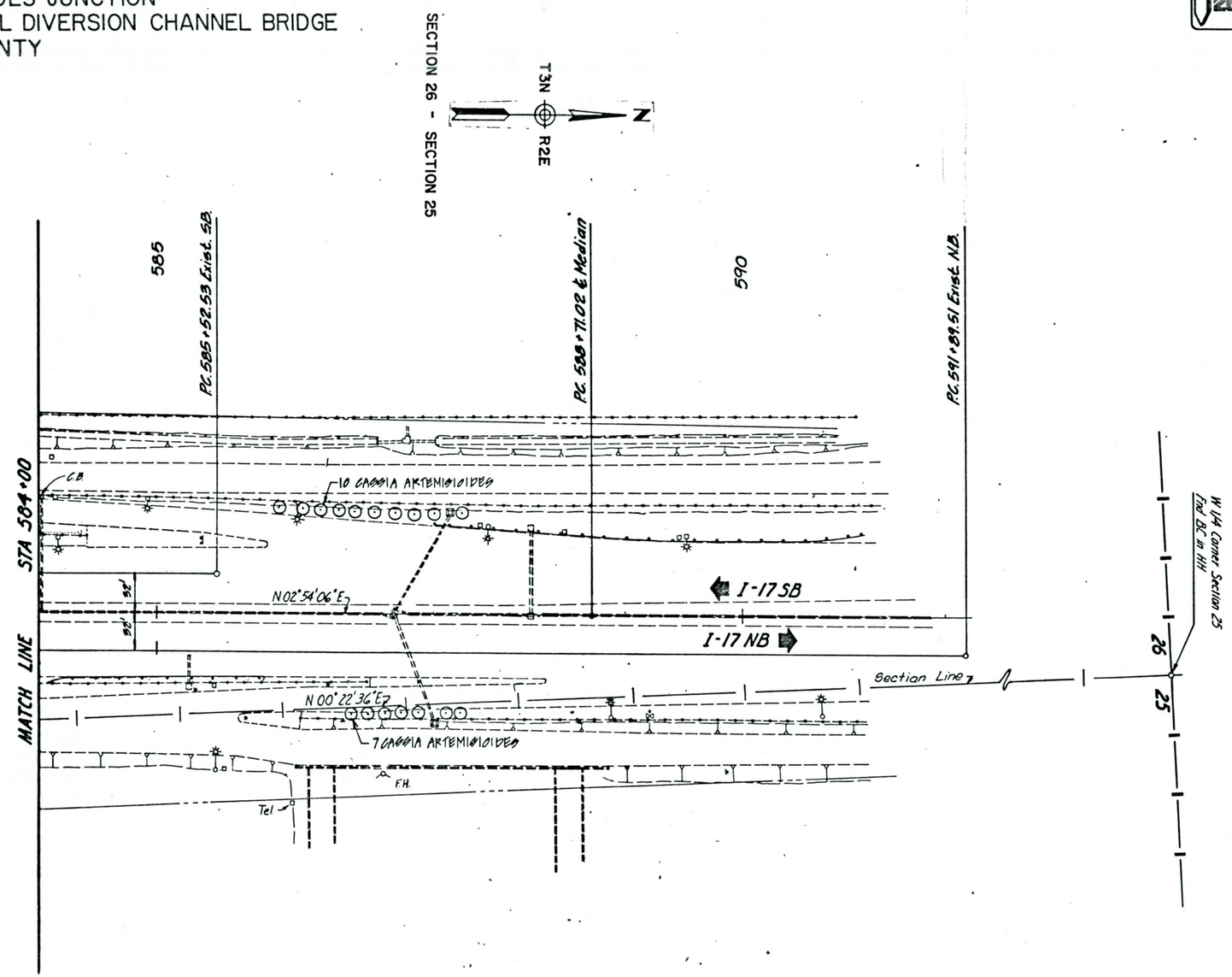
SYMBOL	QUAN.	BOTANICAL NAME	COMMON NAME
	92	CASSIA ARTEMISIOIDES	WORMWOOD SENNA.
	203	JASMINUM MEONYI	PRIMROSE JASMINE
	10	OLEA EUROPAEA	COMMON OLIVE
	11	PINUS CANARIENSIS	CANARY PINE

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
LANDSCAPE PLAN

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

I-17-3-912

PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



ARIZONA CANAL DIVERSION CHANNEL BRIDGE
LANDSCAPE PLAN

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	27	73	

RGA ENGINEERING CORPORATION
FOR THE CONSULTING ENGINEER
DATE
DESIGN: JB DRAWN: AD CHECKED: DB

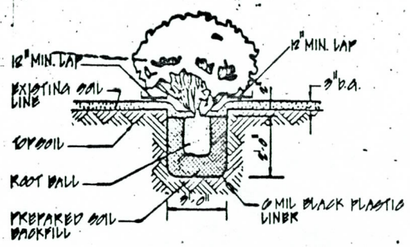
SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

I-17-3-912

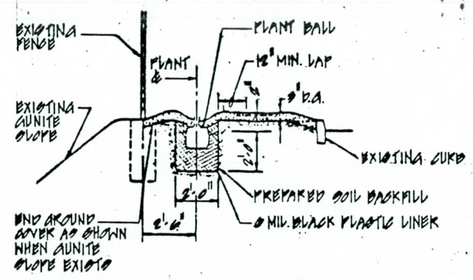
PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	28	73	

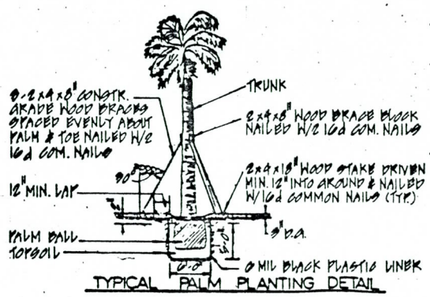
RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN: J.D. DRAWN: A.D. CHECKED: D.D.



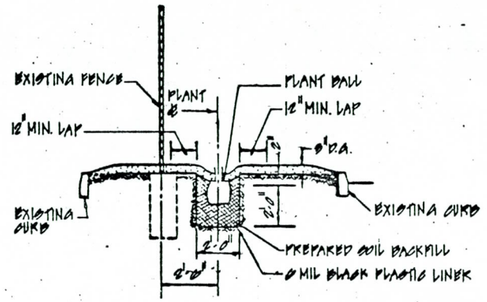
TYPICAL SHRUB PLANTING DETAIL



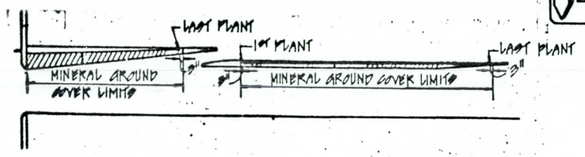
TYPICAL PLANTING DETAIL IN FENCE AREAS

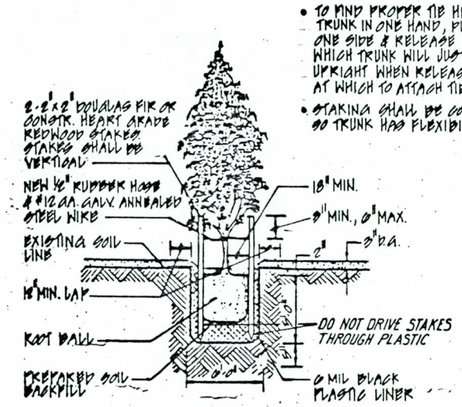


TYPICAL PALM PLANTING DETAIL

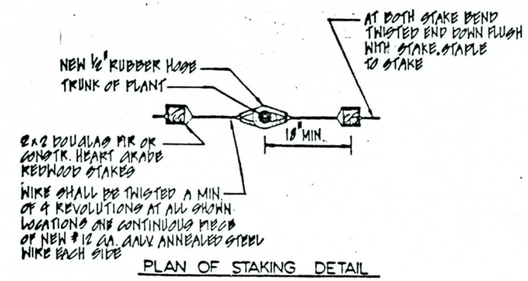


TYPICAL PLANTING DETAIL IN FENCE AREA





TYPICAL TREE STAKING DETAIL



PLAN OF STAKING DETAIL

LANDSCAPE SUMMARY

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS	QUAN.
	CASSIA ARTEMISIOIDES	WORMWOOD SENNA	5 GAL.	AS PER PLAN	*	92 EA.
	JASMINUM MESNYI	PRIMROSE JASMINE	1 GAL.	5' O.C.	**	200 EA.
	MYRUS CONAKIENSIS	CONAKY MYRTLE	15 GAL.	AS PER PLAN	STAKE	11 EA.
	OLEA EUROPAEA	COMMON OLIVE	15 GAL.	AS PER PLAN	STAKE	10 EA.
	DECOMPOSED GRANITE				3" IN DEPTH	1550 CU. YDS
	EXCAVATED SOIL					5200 CU. YDS
	PREPARED SOIL					350 CU. YDS

NOTE: PLANT MATERIAL WILL BE PLANTED IN PITS UNLESS OTHERWISE NOTED ON SUMMARY UNDER REMARKS.
PLANTING AREAS ARE DEFINED AS THOSE AREAS WHICH SHALL RECEIVE DECOMPOSED GRANITE AS A GROUND COVER. THE LIMITS OF THESE AREAS ARE AS DETAILED ABOVE. AT CROSSROADS PLANTING AREAS SHALL EXTEND FROM THE SIDEWALK TO 5FT. BEYOND THE LAST PLANT AT THE FREEWAY ENTRANCE OR EXIT. PLANTING AREAS BETWEEN THE FREEWAY AND THE FRONTAGE ROAD SHALL EXTEND 5FT. BEYOND THE FIRST AND LAST PLANT IN SAID PLANTING AREA. GROUND COVER ENDS AT THE ARIZONA CANAL D.A. IS NOT APPLIED NORTH OF ARIZONA CANAL.

* SPACING 10' O.C. AT STA. 505+45, 516+50
** PLANT IN TRENCH

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
LANDSCAPE DETAILS

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

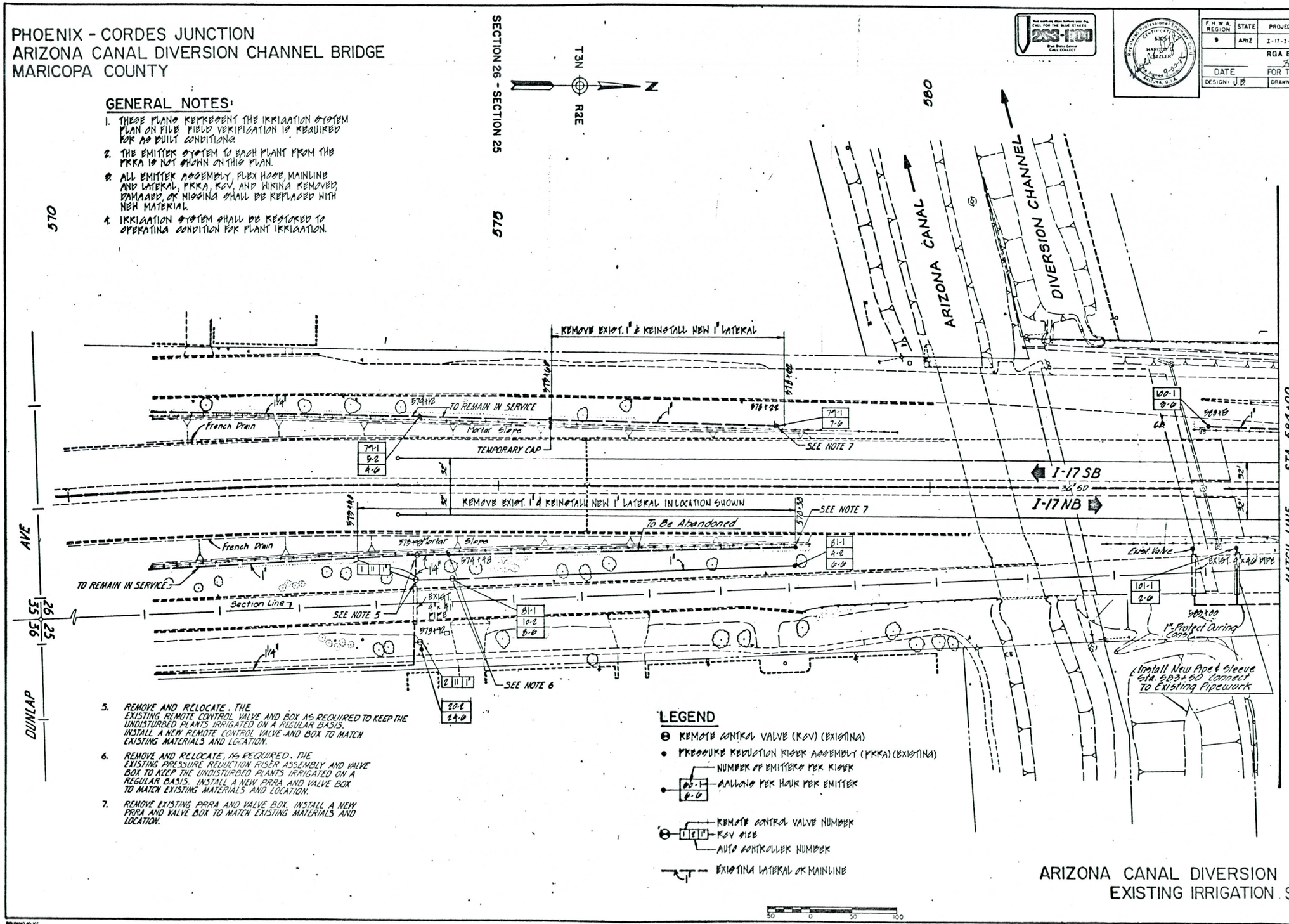
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	29	73	

RGA ENGINEERING CORPORATION
FOR THE CONSULTING ENGINEER
DATE
DESIGN: J.B. DRAWN: A.D. CHECKED: D.D.

PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

GENERAL NOTES:

1. THESE PLANS REPRESENT THE IRRIGATION SYSTEM PLAN ON FILE. FIELD VERIFICATION IS REQUIRED FOR AS BUILT CONDITIONS.
2. THE EMITTER SYSTEM TO EACH PLANT FROM THE PRRA IS NOT SHOWN ON THIS PLAN.
3. ALL EMITTER ASSEMBLY, FLEX HOSE, MAINLINE AND LATERAL, PRRA, RCV, AND WIRING REMOVED, DAMAGED, OR MISSING SHALL BE REPLACED WITH NEW MATERIAL.
4. IRRIGATION SYSTEM SHALL BE RESTORED TO OPERATING CONDITION FOR PLANT IRRIGATION.



5. REMOVE AND RELOCATE. THE EXISTING REMOTE CONTROL VALVE AND BOX AS REQUIRED TO KEEP THE UNDISTURBED PLANTS IRRIGATED ON A REGULAR BASIS. INSTALL A NEW REMOTE CONTROL VALVE AND BOX TO MATCH EXISTING MATERIALS AND LOCATION.
6. REMOVE AND RELOCATE, AS REQUIRED. THE EXISTING PRESSURE REDUCTION RISER ASSEMBLY AND VALVE BOX TO KEEP THE UNDISTURBED PLANTS IRRIGATED ON A REGULAR BASIS. INSTALL A NEW PRRA AND VALVE BOX TO MATCH EXISTING MATERIALS AND LOCATION.
7. REMOVE EXISTING PRRA AND VALVE BOX. INSTALL A NEW PRRA AND VALVE BOX TO MATCH EXISTING MATERIALS AND LOCATION.

LEGEND

- REMOTE CONTROL VALVE (RCV) (EXISTING)
- PRESSURE REDUCTION RISER ASSEMBLY (PRRA) (EXISTING)
  - NUMBER OF EMITTERS PER RISER
  - GALLONS PER HOUR PER EMITTER
- REMOTE CONTROL VALVE NUMBER
  - RCV SIZE
  - AUTO CONTROLLER NUMBER
- EXISTING LATERAL OR MAINLINE

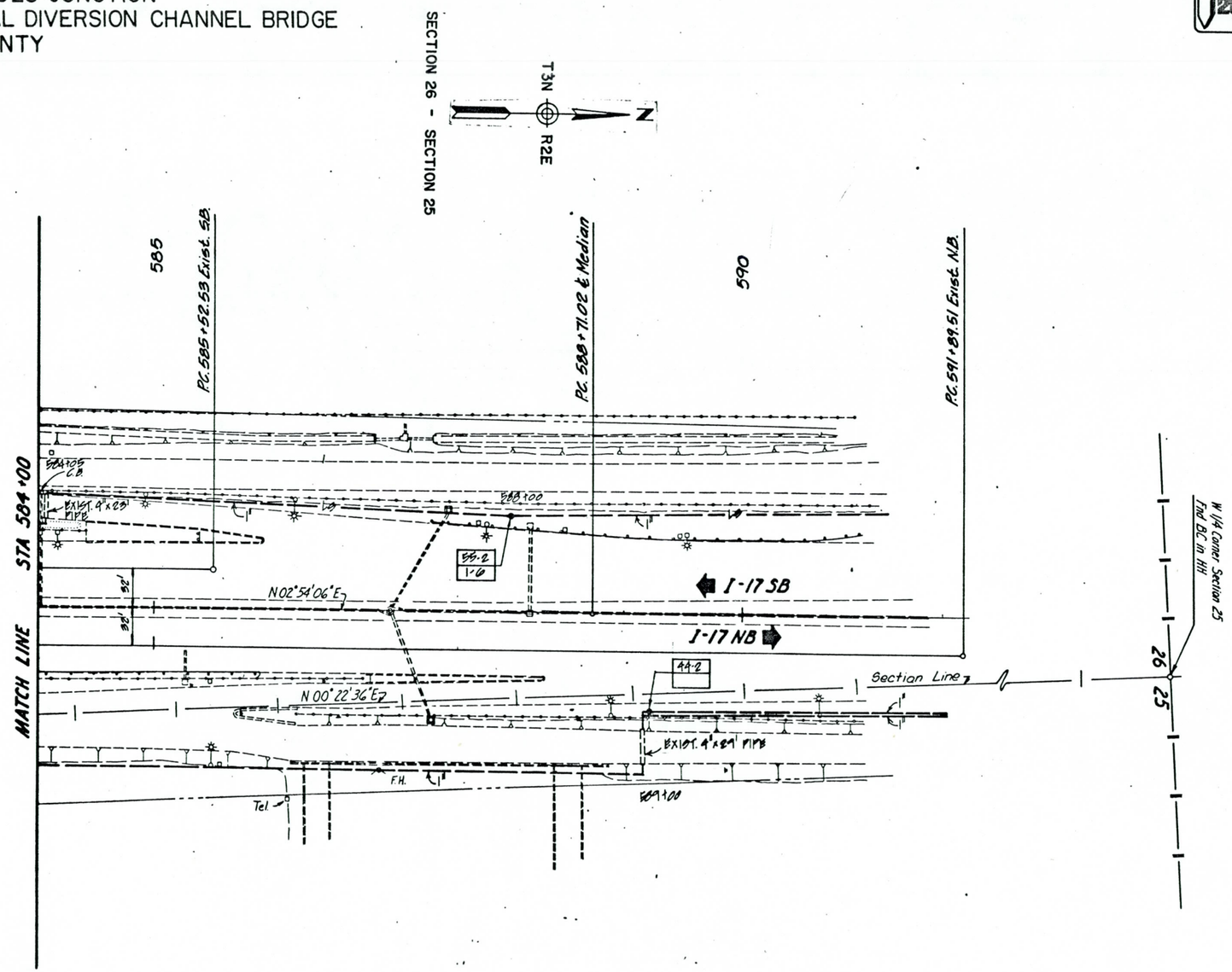
50 0 50 100

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
EXISTING IRRIGATION SYSTEM

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

I-17-3-912

PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	30	73	

RGA ENGINEERING CORPORATION
FOR THE CONSULTING ENGINEER
DATE
DESIGN: J.B. DRAWN: A.D. CHECKED: D.D.

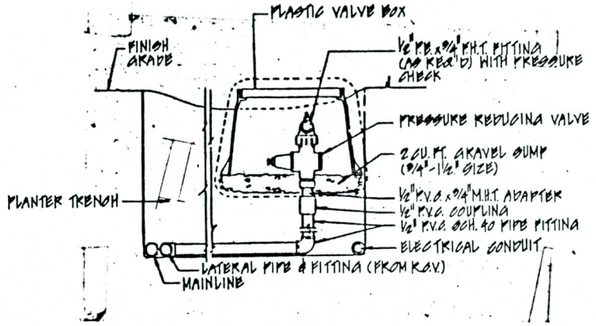
SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
EXISTING IRRIGATION SYSTEM

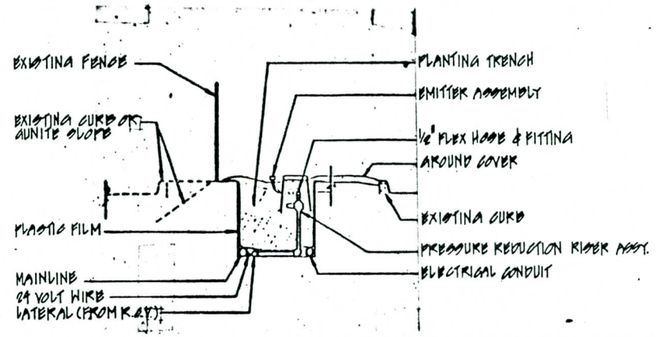
PHOENIX - CORDES JUNCTION
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	31	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN JB — DRAWN AD — CHECKED DB



EXISTING PRESSURE REDUCTION RISER DETAIL
NO SCALE



TYPICAL INSTALLATION DETAIL
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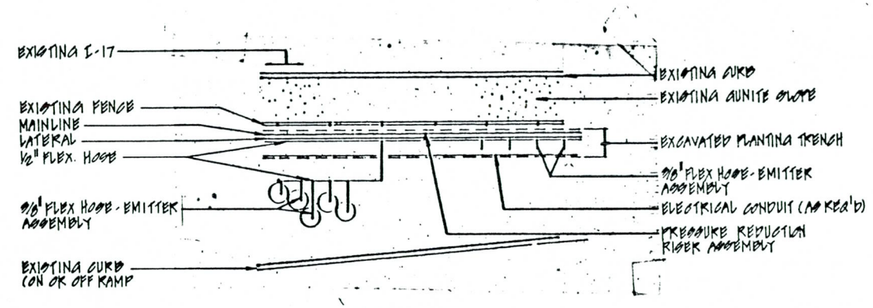
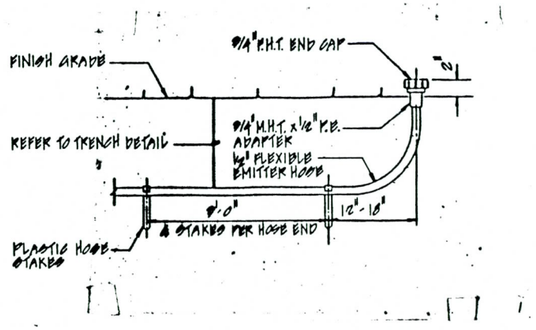
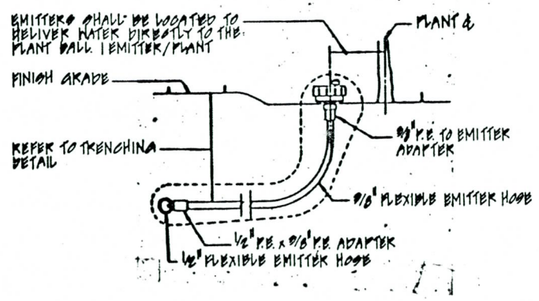


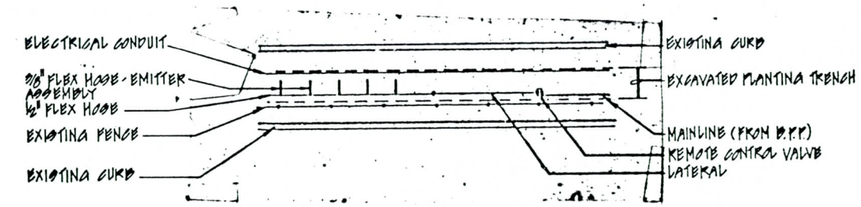
PLAN VIEW
NO SCALE



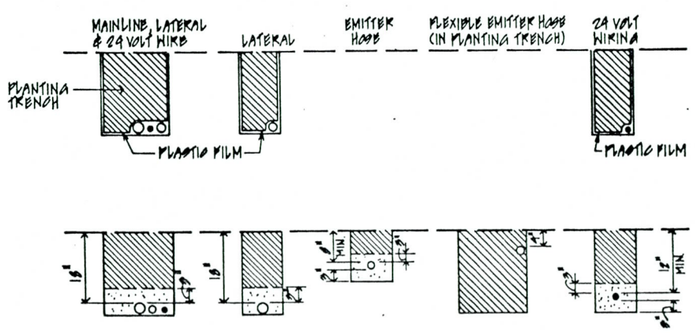
HOSE END & STAKE DETAIL
NO SCALE



EMITTER ASSEMBLY
NO SCALE



PLAN VIEW
NO SCALE



TYPICAL TRENCH DETAILS
NO SCALE

LEGEND

- BEDDING & COVER MATERIAL
- PREPARED SOIL

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

ARIZONA CANAL DIVERSION CHANNEL BRIDGE
IRRIGATION DETAILS

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	32	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.
jhk & associates, Consulting Engineers

TRAFFIC CONTROL NOTES

GENERAL NOTES FOR CONSTRUCTION SEQUENCE:

1. PORTIONS OF CONSTRUCTION SEQUENCE CAN BE UNDERTAKEN SIMULTANEOUSLY WITH THE APPROVAL OF THE ADOT PROJECT ENGINEER.
2. CONSTRUCTION SEQUENCE MAY BE ALTERED BY THE ADOT PROJECT ENGINEER TO MEET CONSTRUCTION SCHEDULING.
3. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE ADOT PROJECT ENGINEER FOR APPROVAL PRIOR TO BEGINNING OF WORK.
4. ADDITIONAL CONSTRUCTION SIGNING MAY BE REQUIRED BY THE ADOT PROJECT ENGINEER.

GENERAL NOTES FOR TRAFFIC CONTROL PLANS:

1. STEADY BURNING YELLOW LIGHT (TYPE C) SHALL BE MOUNTED ON EVERY OTHER BARRICADE UNLESS OTHERWISE NOTED ON PLANS. BARRICADE SPACING: FREEWAY - 80' TANGENT; 40' TAPER; FRONTAGE ROAD - 30'.
2. ARROW PANEL MAY BE TRAILER MOUNTED OR TRUCK MOUNTED OF CHEVRON DESIGN ONLY.
3. ALL CONSTRUCTION SIGNING SHALL BE BLACK ON ORANGE UNLESS OTHERWISE NOTED ON PLANS.
4. ALL ORANGE CONSTRUCTION SIGNS SHALL USE HIGH REFLECTIVITY REFLECTIVE SHEETING. ALL OTHER SIGNS MAY USE STANDARD REFLECTIVITY REFLECTIVE SHEETING.
5. ALL EXISTING SPEED LIMIT SIGNS THAT ARE IN CONFLICT WITH THE CONSTRUCTION SPEED LIMIT SHALL BE COVERED WITH PLYWOOD, OR REMOVED.
6. SIGN LOCATIONS MAY BE ADJUSTED TO FIT CONDITIONS AS DIRECTED BY THE ADOT PROJECT ENGINEER.
7. WHEN DETOUR IS NOT IN EFFECT, SIGNS LARGER THAN 48" x 48" SHALL BE REMOVED, COVERED WITH PLYWOOD, FOLDED OR TURNED 90° AWAY FROM TRAFFIC. ANY SIGNS ON THE SHOULDER MUST BE MOVED OFF THE SHOULDER. SIGNS 48" x 48" OR SMALLER SHALL BE REMOVED.
8. SIGN MOUNTING HEIGHT SHALL BE MIN. 5 FEET FROM THE BOTTOM OF THE SIGN TO THE NEAR EDGE OF THE PAVEMENT.
9. FLASHING WARNING LIGHTS (TYPE 'B'--HIGH-INTENSITY FOR INTERSTATE USES: TYPE 'A' FOR FRONTAGE ROAD USES) SHALL BE USED TO CALL ATTENTION TO THE WARNING SIGNS. TWO FLAGS SHALL BE MOUNTED ON EACH SIGN.
10. ALL PORTABLE CONCRETE BARRIERS NOT PART OF THE ONGOING TRAFFIC CONTROL PLAN SHALL BE LOCATED OFF THE FRONTAGE ROAD SHOULDER AWAY FROM ONCOMING TRAFFIC.
11. ALL ON-RAMPS IN A TRANSITION AREA SHALL BE CLOSED, UNLESS OTHERWISE NOTED.
12. THE CHANGEABLE MESSAGE SIGN SHALL BE LOCATED AS DIRECTED BY THE ADOT PROJECT ENGINEER.
13. ADOT WILL FURNISH THE CHANGEABLE MESSAGE SIGNS AND THE CONTRACTOR SHALL MAINTAIN THEM IN GOOD WORKING ORDER AT ALL TIMES.
14. FOR TEMPORARY CONCRETE BARRIER DETAILS, SEE STANDARD DRAWINGS NO. 4-C-2.01, 2.02, and 2.03.
15. TEMPORARY STRIPES SHALL BE REFLECTORIZED PLASTIC PAVEMENT MARKING TAPE (TYPE II) AND TYPE G RAISED PAVEMENT MARKERS AS SHOWN ON PLANS. TYPE G RAISED PAVEMENT MARKERS SHALL HAVE AN ABRASIVE RESISTANT FINISH AND CONFORM TO STANDARD DRAWING 4-M-2.02. RAISED PAVEMENT MARKERS USED IN TRAFFIC CONTROL PLAN SHALL BE INSTALLED UTILIZING A BITUMINOUS ADHESIVE.
16. BARRIER MARKERS BM-1 AND BM-2 SHALL BE INSTALLED AT 25-FOOT SPACINGS PER STANDARD DRAWING 4-M-10.01 AND 4-M-10.02. THE INSTALLED PRICE FOR THE MARKERS SHALL BE CONSIDERED AS PART OF THE BARRIER COST.
17. TRUCK-MOUNTED ATTENUATORS WITH MOUNTED ARROW PANELS SHALL BE UTILIZED AS SHADOW VEHICLES IN SETTING UP TRAFFIC CONTROL ON THE FREEWAY.

TIME RESTRICTION SUMMARY FOR FREEWAY LANE CLOSURES

LOW TRAFFIC VOLUME PERIODS WHEN LANE CLOSURES WILL BE ALLOWED, SUBJECT TO THE ADOT PROJECT ENGINEER'S APPROVAL, SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

ONE LANE CLOSURE

NORTH BOUND	SOUTH BOUND
8:30 PM - 6:00 AM MON PM THRU FRI AM	7:30 PM - 5:00 AM MON PM THRU FRI AM
9:30 PM FRIDAY TO 9:30 AM SATURDAY	3:00 PM FRIDAY TO 7:30 AM SATURDAY
8:00 PM SATURDAY TO 12 NOON SUNDAY	3:00 PM SATURDAY TO 10:00 AM SUNDAY
7:30 PM SUNDAY TO 6:00 AM MONDAY	3:00 PM SUNDAY TO 5:00 AM MONDAY

TWO LANE CLOSURE

NORTH BOUND	SOUTH BOUND
11:30 PM - 5:00 AM MON PM THRU FRI AM	10:30 PM - 5:00 AM SUN PM THRU FRI AM
1:30 AM SATURDAY TO 7:00 AM SATURDAY	11:30 PM FRIDAY TO 5:30 AM SATURDAY
1:00 AM SUNDAY TO 8:30 AM SUNDAY	MIDNIGHT SATURDAY TO 7:30 AM SUNDAY
11:00 PM SUNDAY TO 5:30 AM MONDAY	

NOTE:

1. NO CLOSURES SHALL TAKE PLACE DURING A NATIONALLY RECOGNIZED HOLIDAY OR HOLIDAY WEEKEND. SPECIAL EVENTS WITHIN THE PHOENIX METROPOLITAN AREA MAY SUPERCEDE ALL OF THE ABOVE AND WILL REQUIRE RESOLUTION BY THE ADOT PROJECT ENGINEER. THE TIME PERIODS DENOTED ABOVE REFER TO THE TIME THAT THE TRAFFIC CONTROL CLOSURE INSTALLATION BEGINS AND ENDS.
2. NO LANE CLOSURES MAY OCCUR DURING OPEN STORE HOURS OF METRO CENTER BETWEEN THANKSGIVING HOLIDAY AND CHRISTMAS HOLIDAY.
3. FRONTAGE ROAD FULL CLOSURES SHALL BE PERMITTED ONLY DURING SIMILAR TIMES AS PERMITTED FOR TWO-LANE FREEWAY CLOSURES.
4. HOLIDAY PERIODS FOR PURPOSES OF TRAFFIC CONTROL SHALL EXTEND FROM 6:00 P.M. OF THE PREVIOUS DAY (OR FRIDAY) TO 6:00 A.M. OF THE DAY FOLLOWING THE HOLIDAY (OR MONDAY).

**SPECIAL NOTE:

FULL DIRECTIONAL FREEWAY CLOSURE MAY BE UTILIZED, SUBJECT TO THE ADOT PROJECT ENGINEER'S APPROVAL, IN LIEU OF PARTIAL CLOSURES. THE TIME RESTRICTIONS FOR FULL DIRECTIONAL FREEWAY CLOSURE SHALL CORRESPOND WITH TIMES FOR TWO LANE CLOSURE.

QUANTITIES ON PLAN SHEET

	PHASE I	PHASE II	PHASE III	PHASE IV	PHASE V	PHASE VI	TOTAL
TEMPORARY CONCRETE BARRIER	--	2,800 L.F.	--	10,250 L.F.	1,350 L.F.	--	14,400 L.F.
TEMPORARY PAVEMENT MARKING (TAPED LINE)	--	3,200 L.F.	--	15,610 L.F.	--	--	18,810 L.F.
PAVEMENT MARKING (PAINTED LINE) (WHITE)	--	--	--	--	790 L.F.	580 L.F.	1,370 L.F.
PAVEMENT MARKING (PAINTED LINE) (YELLOW)	--	--	--	--	400 L.F.	600 L.F.	1,000 L.F.
OBLITERATE PAVEMENT MARKING							
EXISTING	--	240 L.F.	--	6,600 L.F.	--	--	6,840 L.F.
TEMPORARY	--	--	--	--	3,000 L.F.	1,760 L.F.	4,760 L.F.
TEMPORARY PAVEMENT MARKING (RAISED MARKER)							
TYPE "G"	--	--	--	220 Ea.	--	--	220 Ea.
TYPE "H"	--	--	--	62 Ea.	--	--	62 Ea.
IMPACT ATTENUATION DEVICE	--	1 Ea.	--	1 Ea.	2 Ea.	--	4 Ea.
CHANNELIZER TRAFFIC BARREL	--	--	--	30 Ea.	--	--	30 Ea.
PAVEMENT MARKING (WHITE-HOT SPRAYED THERMOPLASTIC)	--	--	--	--	9,000 L.F.	345 L.F.	9,345 L.F.
PAVEMENT MARKING YELLOW-HOT SPRAYED THERMOPLASTIC)	--	--	--	--	3,200 L.F.	--	3,200 L.F.
RAISED PAVEMENT MARKERS							
REFLECTIVE	--	--	--	--	160 Ea.	--	160 Ea.
NON-REFLECTIVE	--	--	--	--	300 Ea.	--	300 Ea.

TRAFFIC CONTROL NOTES

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

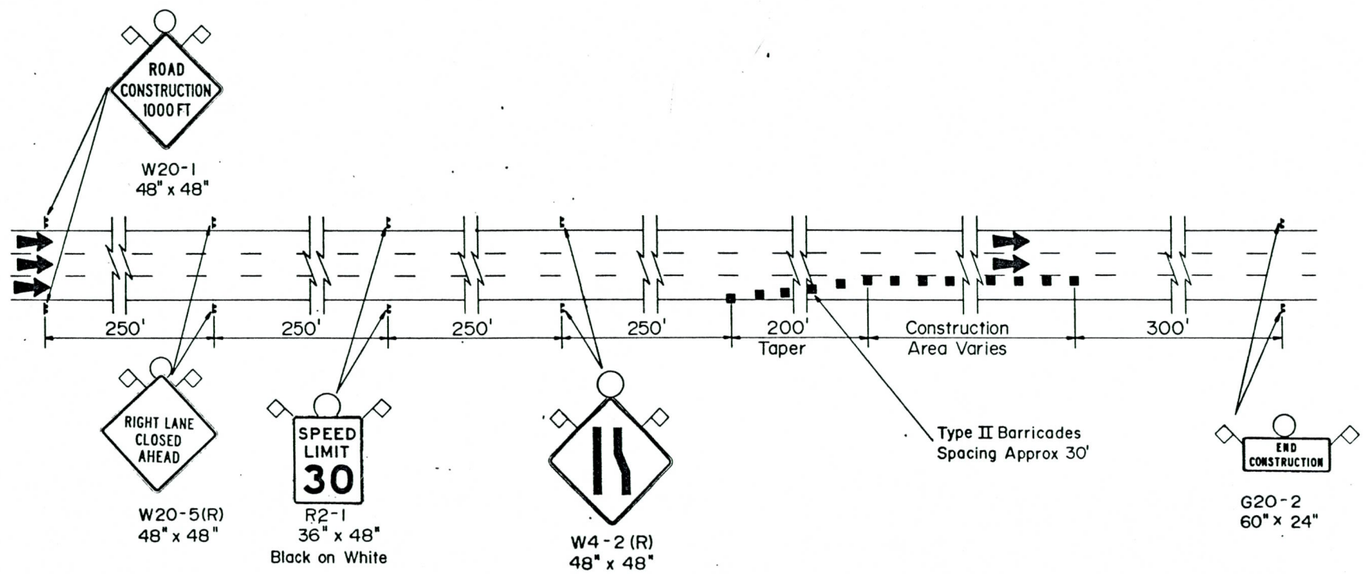
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	33	73	

RGA ENGINEERING CORPORATION

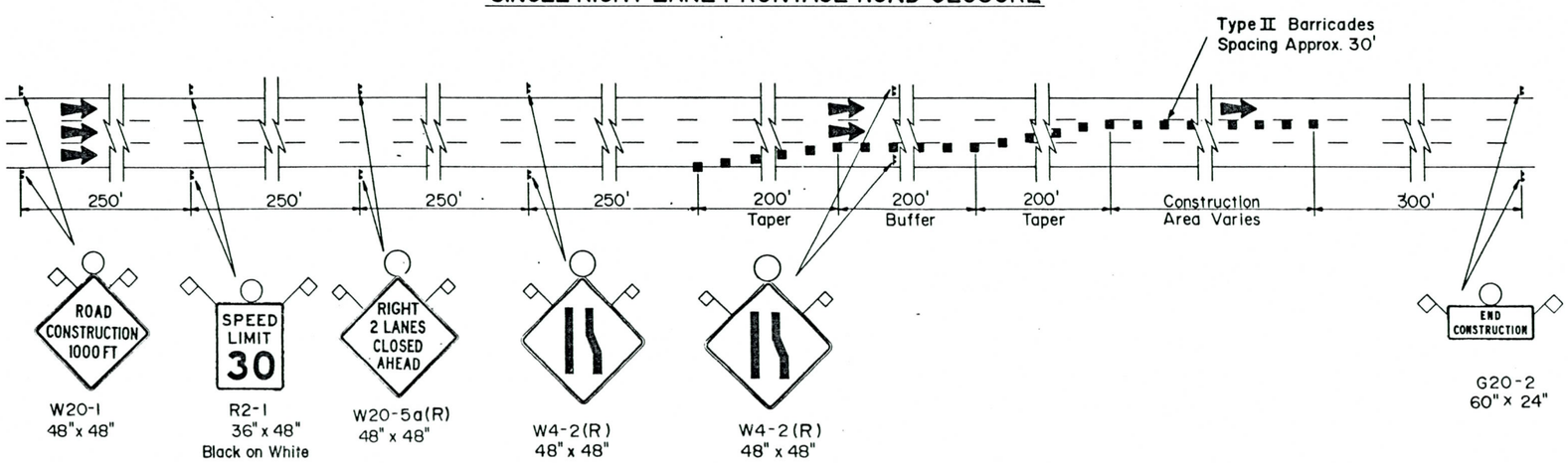
DATE — FOR THE CONSULTING ENGINEER

DESIGN: M.A.F. DRAWN: R.K. CHECKED: S.L.B.

jhk & associates, Consulting Engineers



SINGLE RIGHT LANE FRONTAGE ROAD CLOSURE



DOUBLE RIGHT LANE FRONTAGE ROAD CLOSURE (N.B. FRONTAGE RD.)

NOTES:

1. TRAFFIC CONTROL PLAN FOR "SINGLE RIGHT-LANE FRONTAGE ROAD CLOSURE" MAY BE APPLIED TO EITHER TWO- OR THREE-LANE ROADWAY SECTIONS.
2. WITH CONSTRUCTION OF FRONTAGE ROAD DETOURS AT BOTH ENDS OF A DETOUR ROUTE, CONSIDERATION TO CONNECTION OF THE CONSTRUCTION AREAS TO PROVIDE A SINGLE CONSTRUCTION AREA SHOULD BE GIVEN. THIS ACTION SHALL BE AS DIRECTED BY THE ADOT PROJECT ENGINEER IN THE FIELD.
3. THE DRIVEWAY (ENTRANCE) TO LUKE'S FEDERAL CREDIT UNION (ALONG THE NB FRONTAGE ROAD NORTH OF ACDC) SHALL REMAIN OPEN TO TRAFFIC THROUGHOUT THE CONSTRUCTION PERIOD.
4. FOR THE SECTION OF THE NB FRONTAGE ROAD THAT NARROWS FROM THREE LANES TO TWO LANES (AT DUNLAP AVENUE ON-RAMP), AT LEAST ONE FRONTAGE ROAD LANE SHOULD REMAIN OPEN AT ALL TIMES EXCEPT DURING "FRONTAGE ROAD FULL CLOSURE" PERIODS.
5. SIGN SPACING MAY BE ADJUSTED AS DIRECTED BY THE ADOT PROJECT ENGINEER IN THE FIELD TO ACCOUNT FOR VARYING LENGTHS OF THE CONSTRUCTION AREAS DURING THE PROJECT.
6. WHERE DETOUR CONSTRUCTION ACTIVITY OCCURS, PORTABLE CONCRETE BARRIER SHALL BE USED TO PROTECT THE WORK ZONE (CONSTRUCTION AREA). THE BARRIER SHALL EXTEND (AT A MINIMUM) THE LENGTH OF THE CONSTRUCTION AREA (TWO-FOOT OFFSET FROM THE TRAVELLED WAY) PLUS A 75-FOOT APPROACH TAPER (10-FOOT OFFSET FROM FACE OF BARRIER) AND A 50-FOOT DOWNSTREAM TAPER (10-FOOT OFFSET FROM FACE OF BARRIER).

LEGEND

	ARROW PANEL
	TYPE III BARRICADE
●	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
■	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE A.D.O.T. STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS
	SIGN

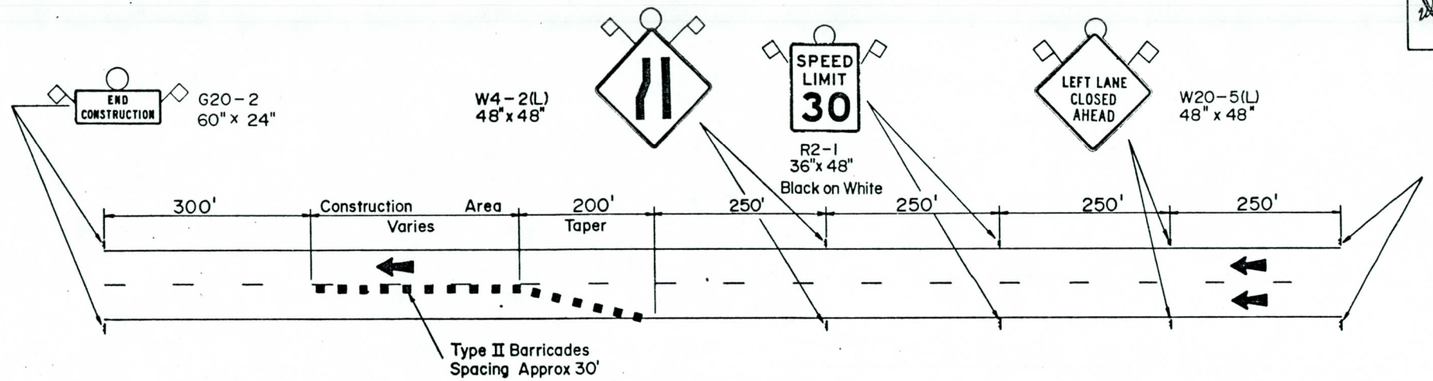
TRAFFIC CONTROL PLAN FOR FRONTAGE ROAD PARTIAL CLOSURE

NOT TO SCALE

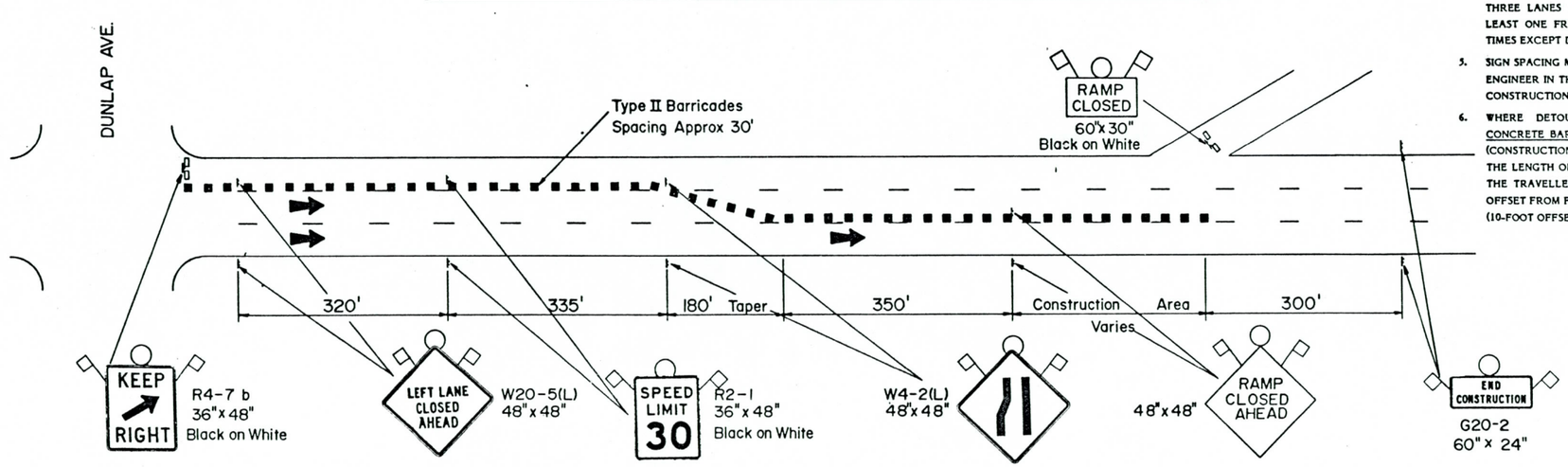
PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	34	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN: M.A.F. DRAWN: Vertiso CHECKED: SLB
jhk & associates, Consulting Engineers



SINGLE LEFT LANE FRONTAGE ROAD CLOSURE (S.B. FRONTAGE RD.)



DOUBLE LEFT LANE FRONTAGE ROAD CLOSURE (N.B. FRONTAGE RD.)

NOTES:

1. TRAFFIC CONTROL PLANS FOR "SINGLE LEFT-LANE FRONTAGE ROAD CLOSURE" MAY BE APPLIED TO EITHER TWO- OR THREE-LANE ROADWAY SECTIONS.
2. WITH CONSTRUCTION OF FRONTAGE ROAD DETOURS AT BOTH ENDS OF A DETOUR ROUTE, CONSIDERATION TO CONNECTION OF THE CONSTRUCTION AREAS TO PROVIDE A SINGLE CONSTRUCTION AREA SHOULD BE GIVEN. THIS ACTION SHALL BE AS DIRECTED BY THE ADOT PROJECT ENGINEER IN THE FIELD.
3. WHERE THE LENGTH OF THE CONSTRUCTION AREA INTERFERES WITH VEHICLE MOVEMENT ONTO THE EXISTING INTERSTATE 17 NB ON-RAMP (AT DUNLAP AVENUE), THE ON-RAMP MAY BE CLOSED AS DIRECTED BY THE ADOT PROJECT ENGINEER IN THE FIELD.
4. FOR THE SECTION OF THE NB FRONTAGE ROAD THAT NARROWS FROM THREE LANES TO TWO LANES (AT DUNLAP AVENUE ON-RAMP), AT LEAST ONE FRONTAGE ROAD LANE SHOULD REMAIN OPEN AT ALL TIMES EXCEPT DURING "FRONTAGE ROAD FULL CLOSURE" PERIODS.
5. SIGN SPACING MAY BE ADJUSTED AS DIRECTED BY THE ADOT PROJECT ENGINEER IN THE FIELD TO ACCOUNT FOR VARYING LENGTHS OF THE CONSTRUCTION AREAS DURING THE PROJECT.
6. WHERE DETOUR CONSTRUCTION ACTIVITY OCCURS, PORTABLE CONCRETE BARRIER SHALL BE USED TO PROTECT THE WORK ZONE (CONSTRUCTION AREA). THE BARRIER SHALL EXTEND (AT A MINIMUM) THE LENGTH OF THE CONSTRUCTION AREA (TWO-FOOT OFFSET FROM THE TRAVELLED WAY) PLUS A 75-FOOT APPROACH TAPER (10-FOOT OFFSET FROM FACE OF BARRIER) AND A 50-FOOT DOWNSTREAM TAPER (10-FOOT OFFSET FROM FACE OF BARRIER).

LEGEND

	ARROW PANEL
	TYPE III BARRICADE
	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE ADOT STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
	SIGN

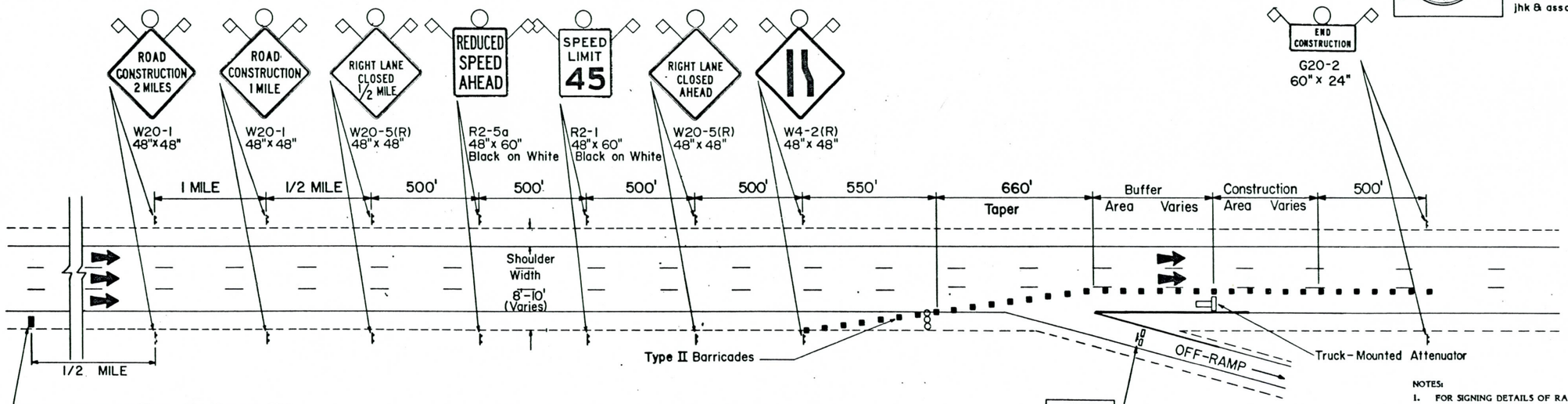
TRAFFIC CONTROL PLAN
FOR FRONTAGE ROAD
PARTIAL CLOSURE

NOT TO SCALE

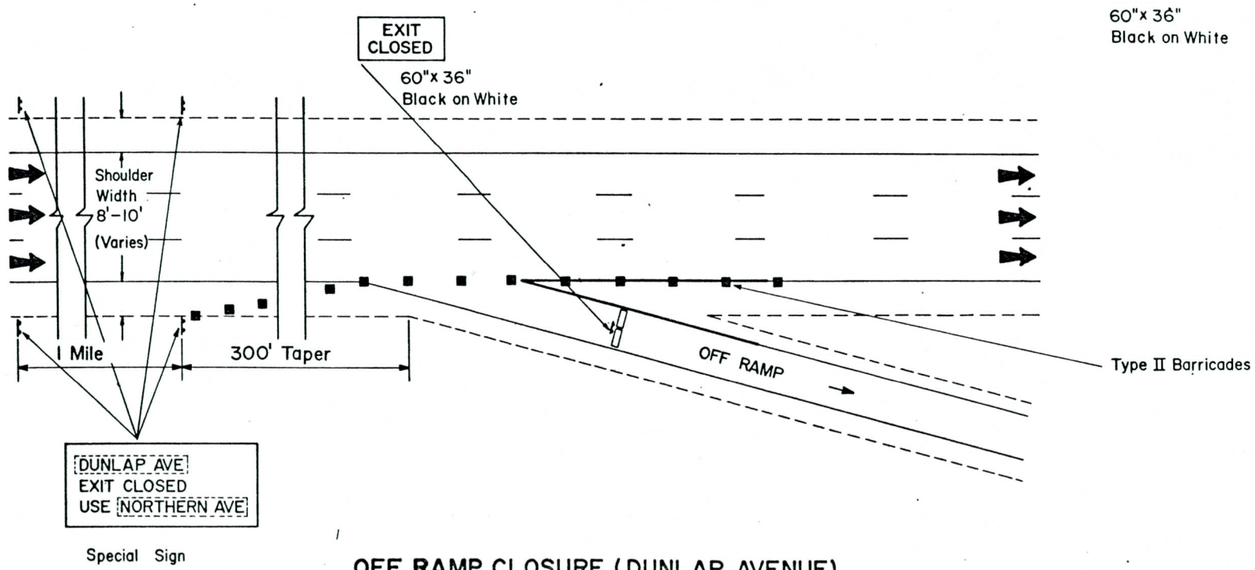
PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	35	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN: M.A.F. DRAWN: R.K. CHECKED: SLB
jhk & associates, Consulting Engineers



SINGLE RIGHT LANE FREEWAY CLOSURE



OFF RAMP CLOSURE (DUNLAP AVENUE)

NOTES:

1. FOR SIGNING DETAILS OF RAMP CLOSURE, SEE PLAN FOR "OFF-RAMP CLOSURE."
2. WHERE DETOUR CONSTRUCTION ACTIVITY OCCURS, PORTABLE CONCRETE BARRIER SHALL BE USED TO PROTECT THE WORK ZONE (CONSTRUCTION AREA). THE BARRIER SHALL EXTEND (AT A MINIMUM) THE LENGTH OF THE CONSTRUCTION AREA (TWO-FOOT OFFSET FROM THE TRAVELLED WAY) PLUS A 200-FOOT APPROACH TAPER (20-FOOT OFFSET FROM FACE OF BARRIER) AND A 50-FOOT DOWNSTREAM TAPER (10-FOOT OFFSET FROM FACE OF BARRIER).
3. SIZE OF "SPECIAL SIGN" TO BE APPROVED BY THE ADOT PROJECT ENGINEER.

LEGEND

ooo	ARROW PANEL
▭	TYPE III BARRICADE
●	BARREL
▦	CRASH ATTENUATOR
- - →	CONSTRUCTION VEHICLE TRAFFIC ACCESS.
⊤→	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
→	DIRECTION OF TRAFFIC
■	TYPE II BARRICADE
▭▭▭	TEMPORARY CONCRETE BARRIER SEE A.D.O.T. STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
⊤	SIGN

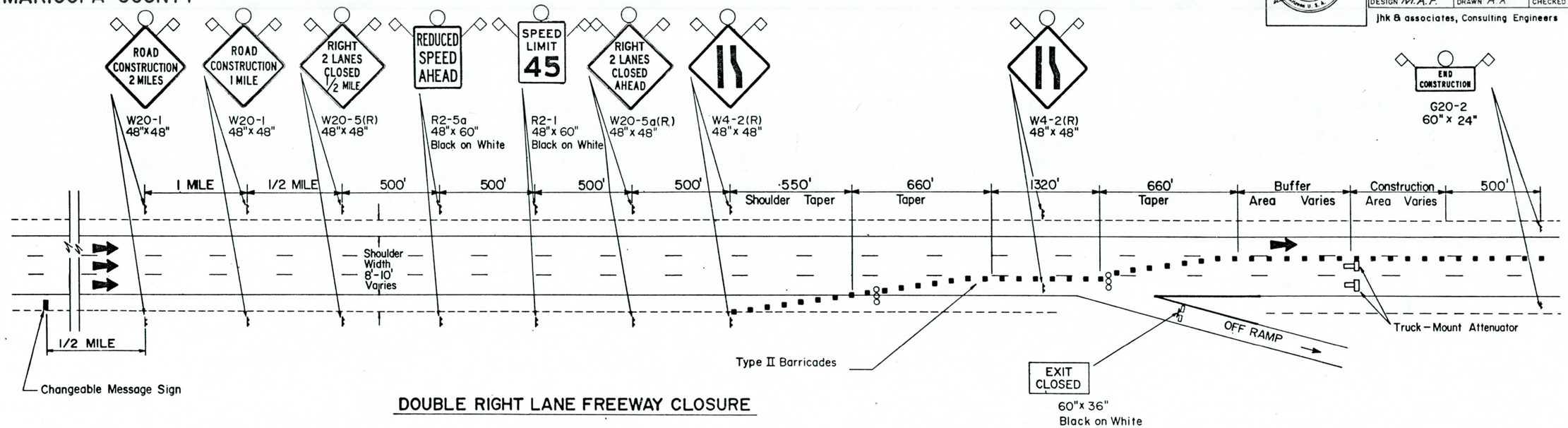
TRAFFIC CONTROL PLAN FOR FREEWAY PARTIAL CLOSURE

NOT TO SCALE

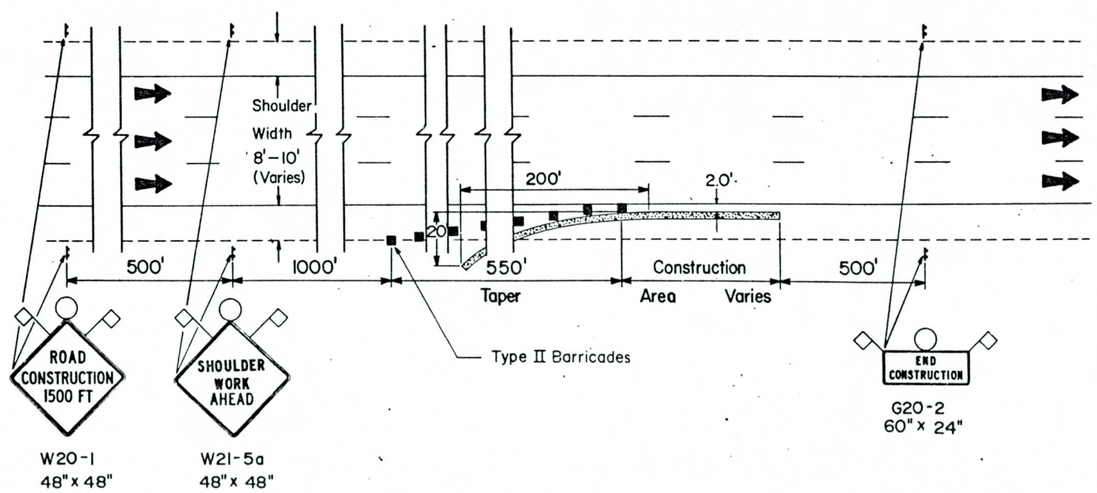
PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	36	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED SLB
Jhk & associates, Consulting Engineers



DOUBLE RIGHT LANE FREEWAY CLOSURE



FREEWAY SHOULDER CLOSURE

NOTES:

1. FOR SIGNING DETAILS OF RAMP CLOSURE, SEE PLAN FOR "OFF-RAMP CLOSURE."
2. WHERE DETOUR CONSTRUCTION ACTIVITY OCCURS, PORTABLE CONCRETE BARRIER SHALL BE USED TO PROTECT THE WORK ZONE (CONSTRUCTION AREA): THE BARRIER SHALL EXTEND (AT A MINIMUM) THE LENGTH OF THE CONSTRUCTION AREA (TWO-FOOT OFFSET FROM THE TRAVELLED WAY) PLUS A 200-FOOT APPROACH TAPER (20-FOOT OFFSET FROM FACE OF BARRIER) AND A 50-FOOT DOWNSTREAM TAPER (10-FOOT OFFSET FROM FACE OF BARRIER).

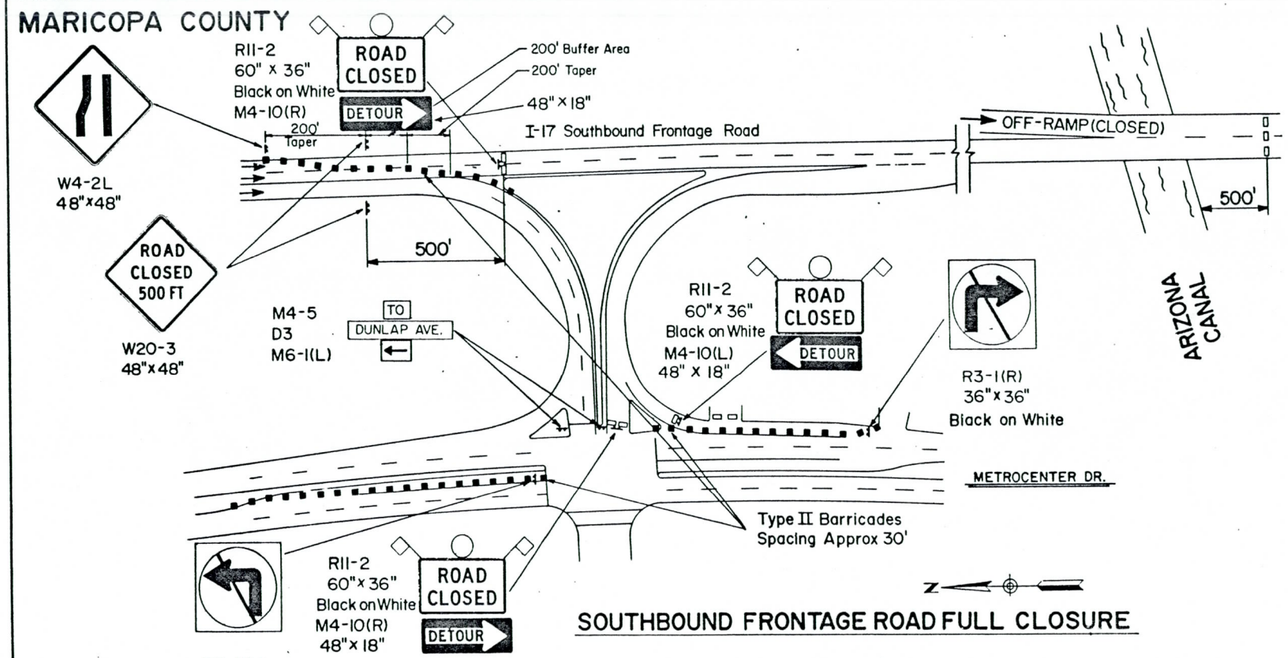
LEGEND

	ARROW PANEL
	TYPE III BARRICADE
	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE A.D.O.T. STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
	SIGN

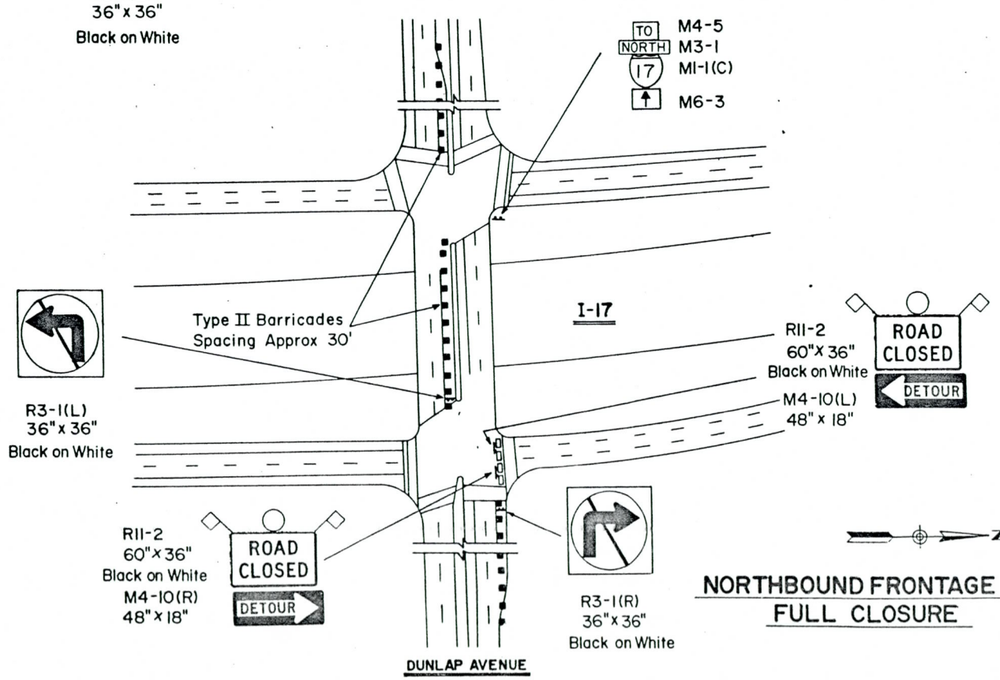
TRAFFIC CONTROL PLAN FOR FREEWAY PARTIAL CLOSURE

NOT TO SCALE

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



SOUTHBOUND FRONTAGE ROAD FULL CLOSURE



NORTHBOUND FRONTAGE ROAD FULL CLOSURE

LEGEND

	ARROW PANEL
	TYPE III BARRICADE
	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE A.D.O.T. STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
	SIGN

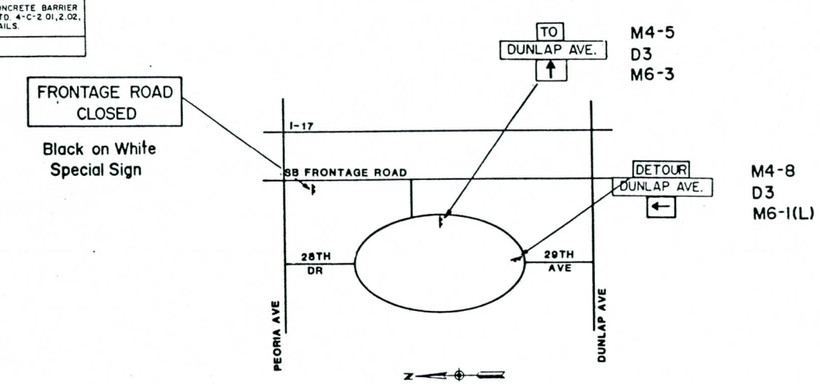
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	37	73	

RGA ENGINEERING CORPORATION

DATE — FOR THE CONSULTING ENGINEER

DESIGN: M.A.F. DRAWN: R.K. CHECKED: SLB

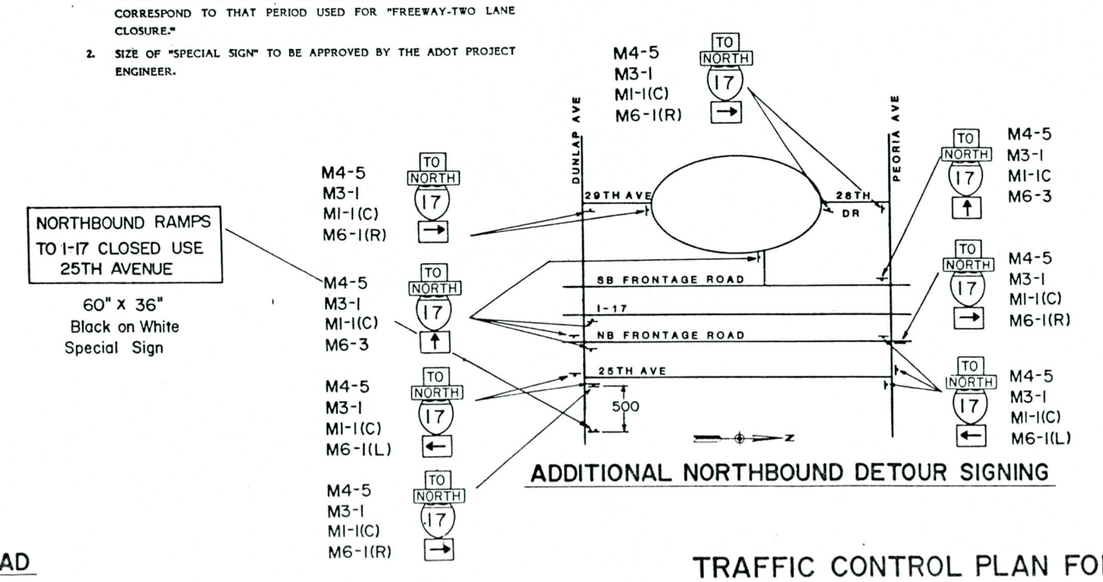
jhk & associates, Consulting Engineers



ADDITIONAL SOUTHBOUND DETOUR SIGNING

NOTES:

1. TIME PERIOD ALLOWED FOR FULL FRONTAGE ROAD CLOSURE SHALL CORRESPOND TO THAT PERIOD USED FOR "FREEWAY-TWO LANE CLOSURE."
2. SIZE OF "SPECIAL SIGN" TO BE APPROVED BY THE ADOT PROJECT ENGINEER.



ADDITIONAL NORTHBOUND DETOUR SIGNING

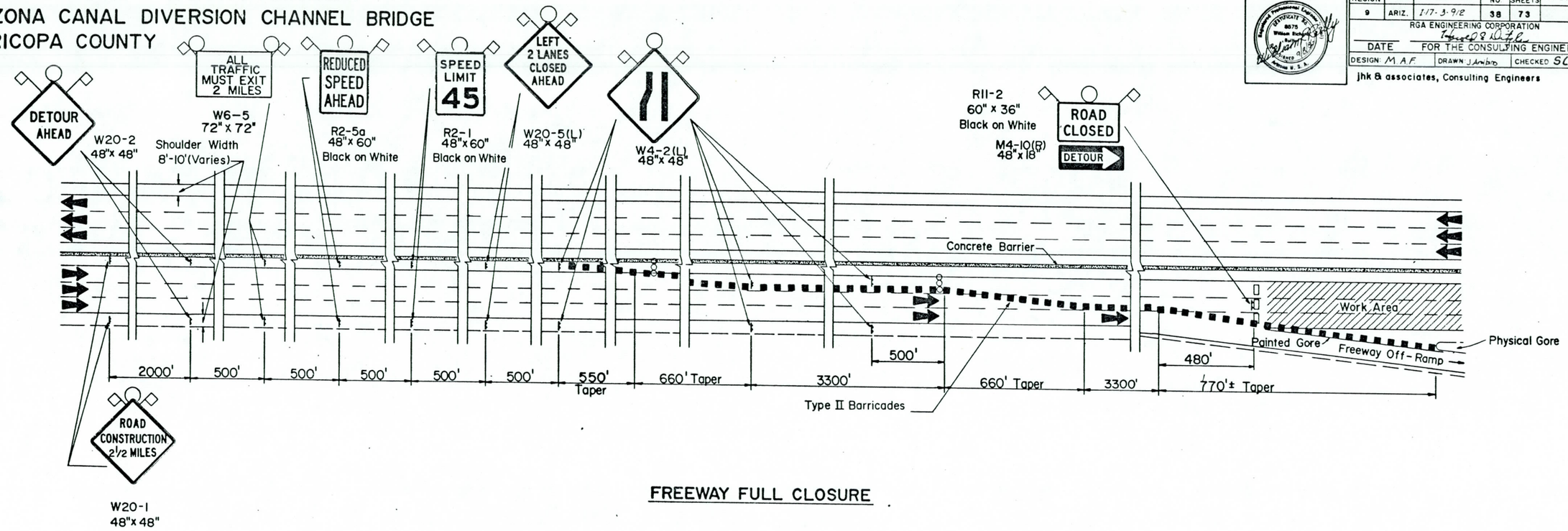
TRAFFIC CONTROL PLAN FOR FRONTAGE ROAD FULL CLOSURE

NOT TO SCALE

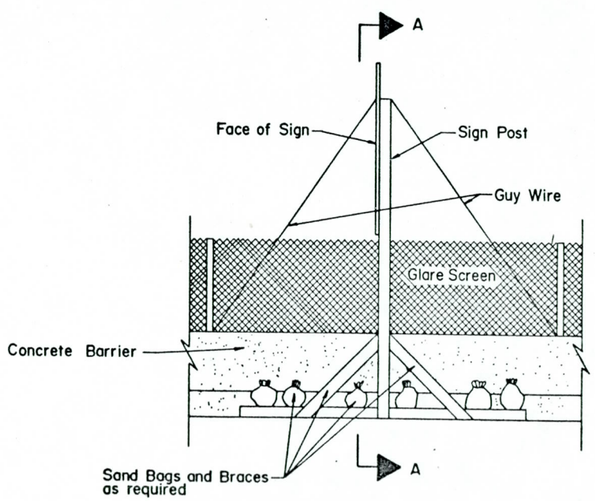
PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

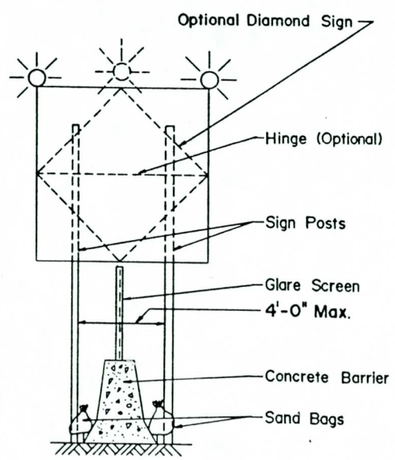
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	38	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN: M.A.F. DRAWN: J. Ambro CHECKED: SCB
jhk & associates, Consulting Engineers



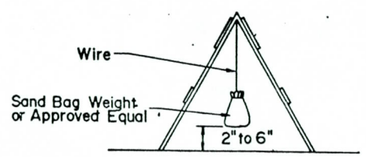
FREEWAY FULL CLOSURE





SECTION A-A

SUGGESTED MEDIAN SIGN INSTALLATION



TYPE II BARRICADE DETAIL

LEGEND

	ARROW PANEL
	TYPE III BARRICADE
	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS.
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE A.D.O.T. STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
	SIGN

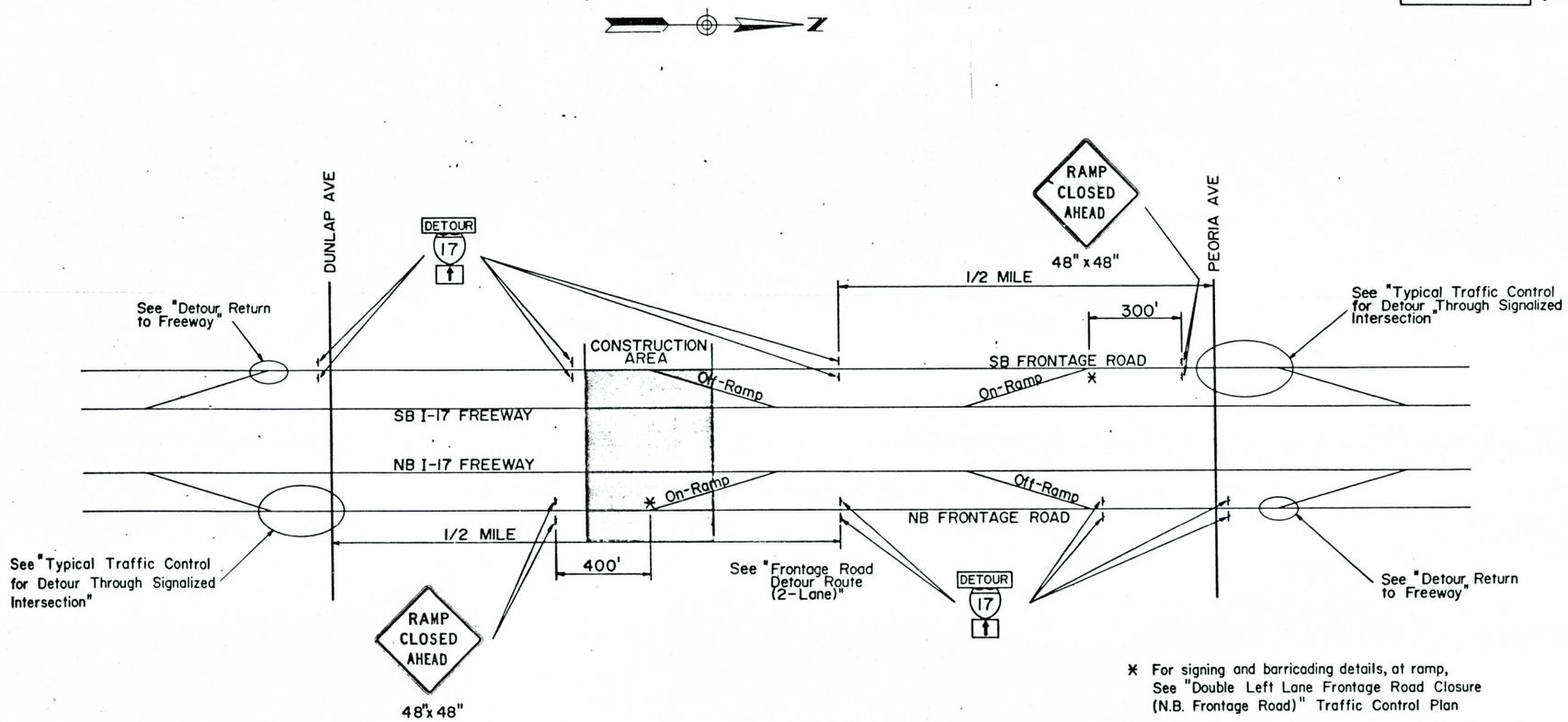
TRAFFIC CONTROL PLAN
FOR FREEWAY FULL CLOSURE

NOT TO SCALE

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	39	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN: MAF DRAWN: JAN/DD CHECKED: SLB
jhk & associates, Consulting Engineers



FREEWAY FULL CLOSURE DETOUR SIGNING

* For signing and barricading details, at ramp, See "Double Left Lane Frontage Road Closure (N.B. Frontage Road)" Traffic Control Plan

NOTES:
1. SB FRONTAGE ROAD NORTH OF OFF-RAMP TO BE ONE LANE (AS EXISTING) THROUGH CONSTRUCTION AREA. NB FRONTAGE ROAD TO OPERATE UNDER TWO LANES.

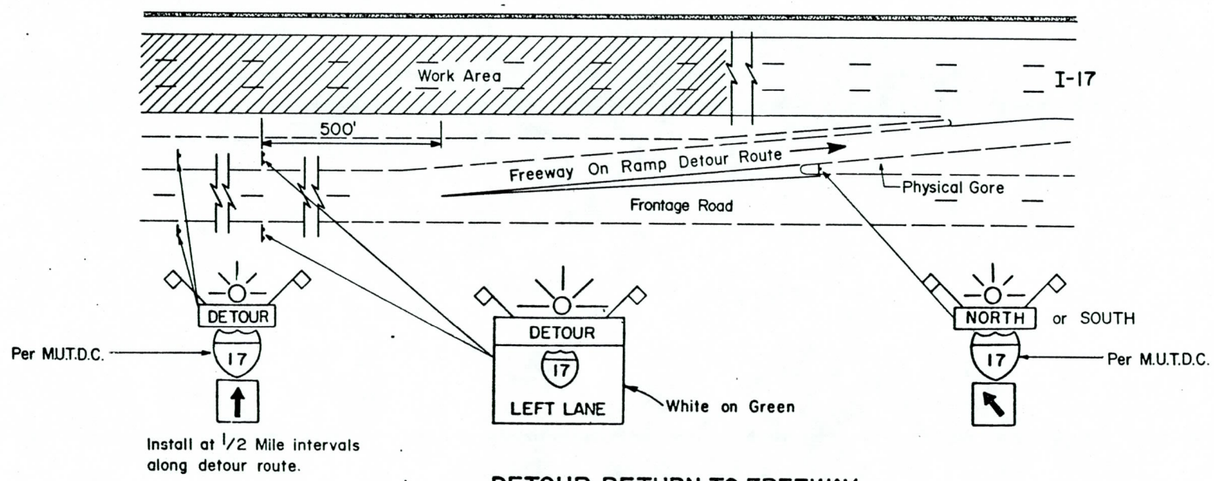
TRAFFIC CONTROL PLAN FOR FREEWAY FULL CLOSURE

NOT TO SCALE

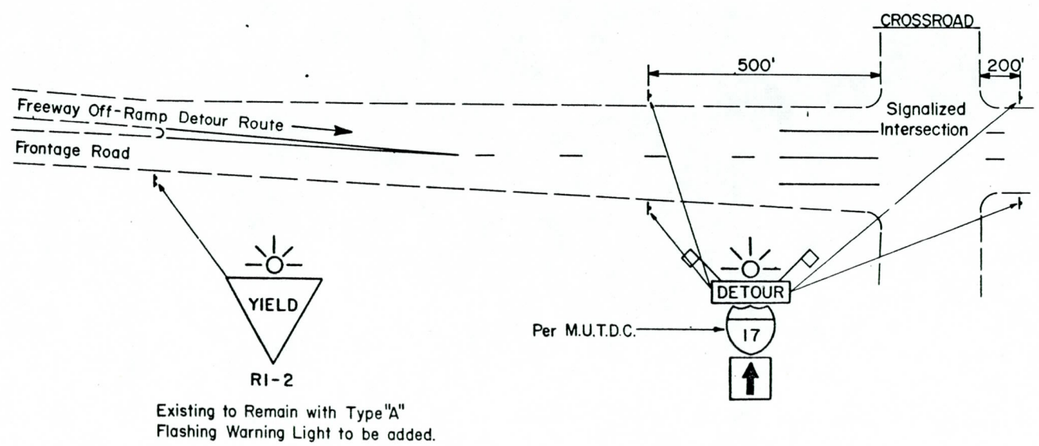
PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	40	73	
RGA ENGINEERING CORPORATION					
DATE	FOR THE CONSULTING ENGINEER				
DESIGN: MAF	DRAWN: RR		CHECKED: SLB		

jhk & associates, Consulting Engineers



DETOUR RETURN TO FREEWAY



TYPICAL TRAFFIC CONTROL FOR DETOUR THROUGH SIGNALIZED INTERSECTION

LEGEND

	ARROW PANEL
	TYPE III BARRICADE
	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS.
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE A.D.O.T. STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
	SIGN

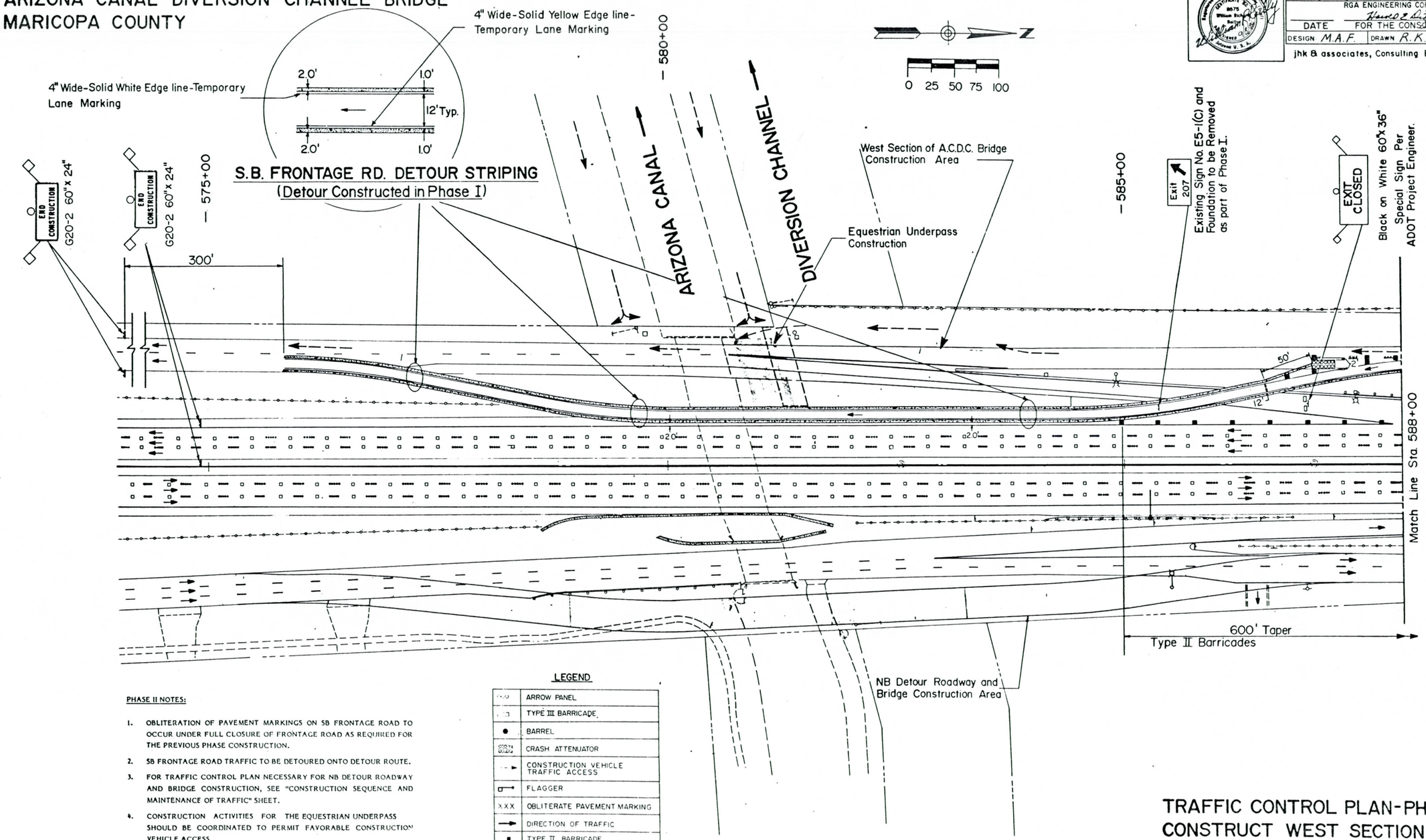
TRAFFIC CONTROL PLAN FOR FREEWAY FULL CLOSURE

NOT TO SCALE

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	41	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.
jhk & associates, Consulting Engineers



PHASE II NOTES:

1. OBLITERATION OF PAVEMENT MARKINGS ON SB FRONTAGE ROAD TO OCCUR UNDER FULL CLOSURE OF FRONTAGE ROAD AS REQUIRED FOR THE PREVIOUS PHASE CONSTRUCTION.
2. SB FRONTAGE ROAD TRAFFIC TO BE DETOURED ONTO DETOUR ROUTE.
3. FOR TRAFFIC CONTROL PLAN NECESSARY FOR NB DETOUR ROADWAY AND BRIDGE CONSTRUCTION, SEE "CONSTRUCTION SEQUENCE AND MAINTENANCE OF TRAFFIC" SHEET.
4. CONSTRUCTION ACTIVITIES FOR THE EQUESTRIAN UNDERPASS SHOULD BE COORDINATED TO PERMIT FAVORABLE CONSTRUCTION VEHICLE ACCESS.

LEGEND

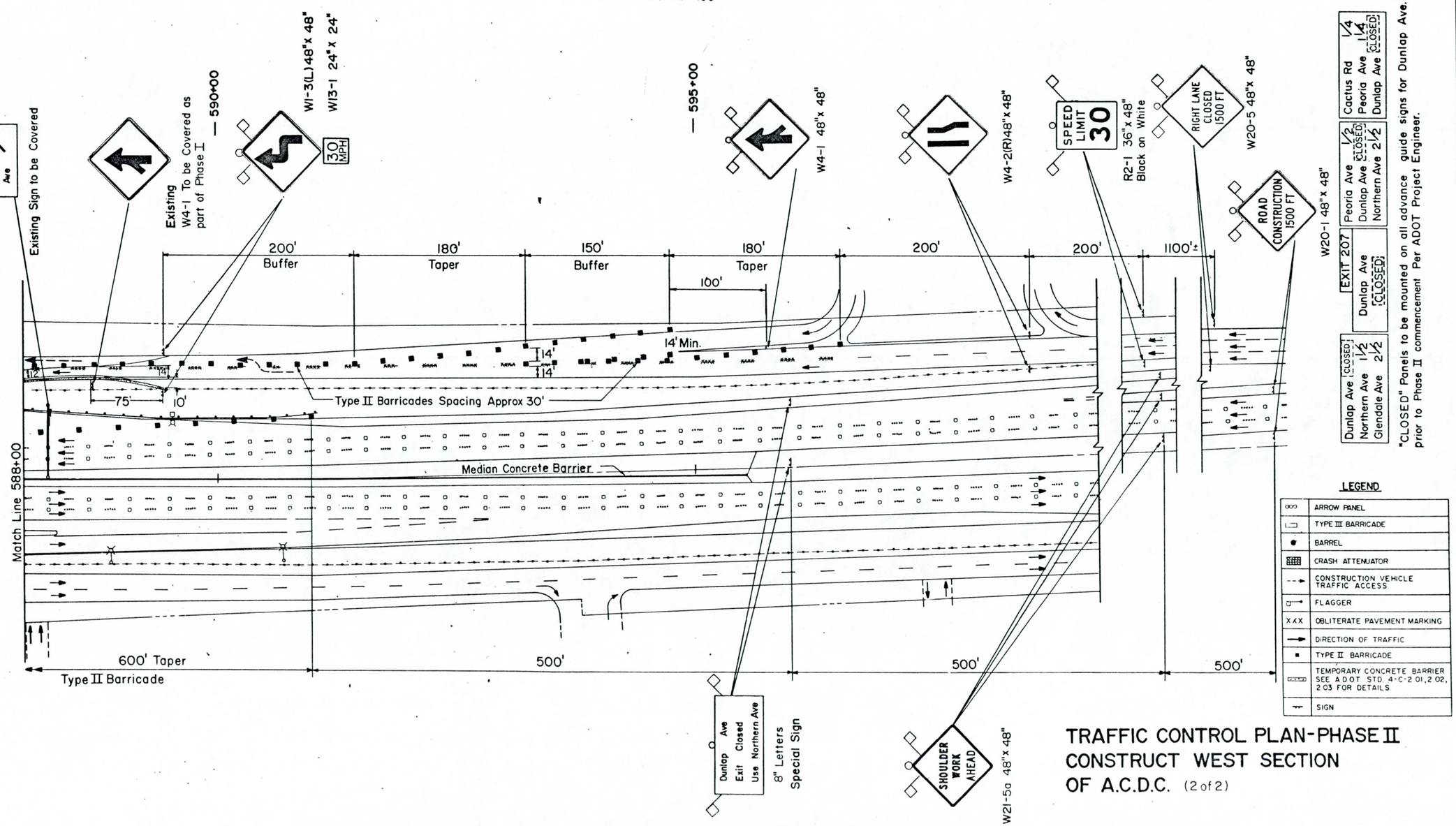
	ARROW PANEL
	TYPE III BARRICADE
●	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
■	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE A.D.O.T. STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
	SIGN

TRAFFIC CONTROL PLAN-PHASE II
CONSTRUCT WEST SECTION OF A.C.D.C. (1 of 2)

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	42	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.
jhk & associates, Consulting Engineers



TRAFFIC CONTROL PLAN-PHASE II
CONSTRUCT WEST SECTION
OF A.C.D.C. (2 of 2)

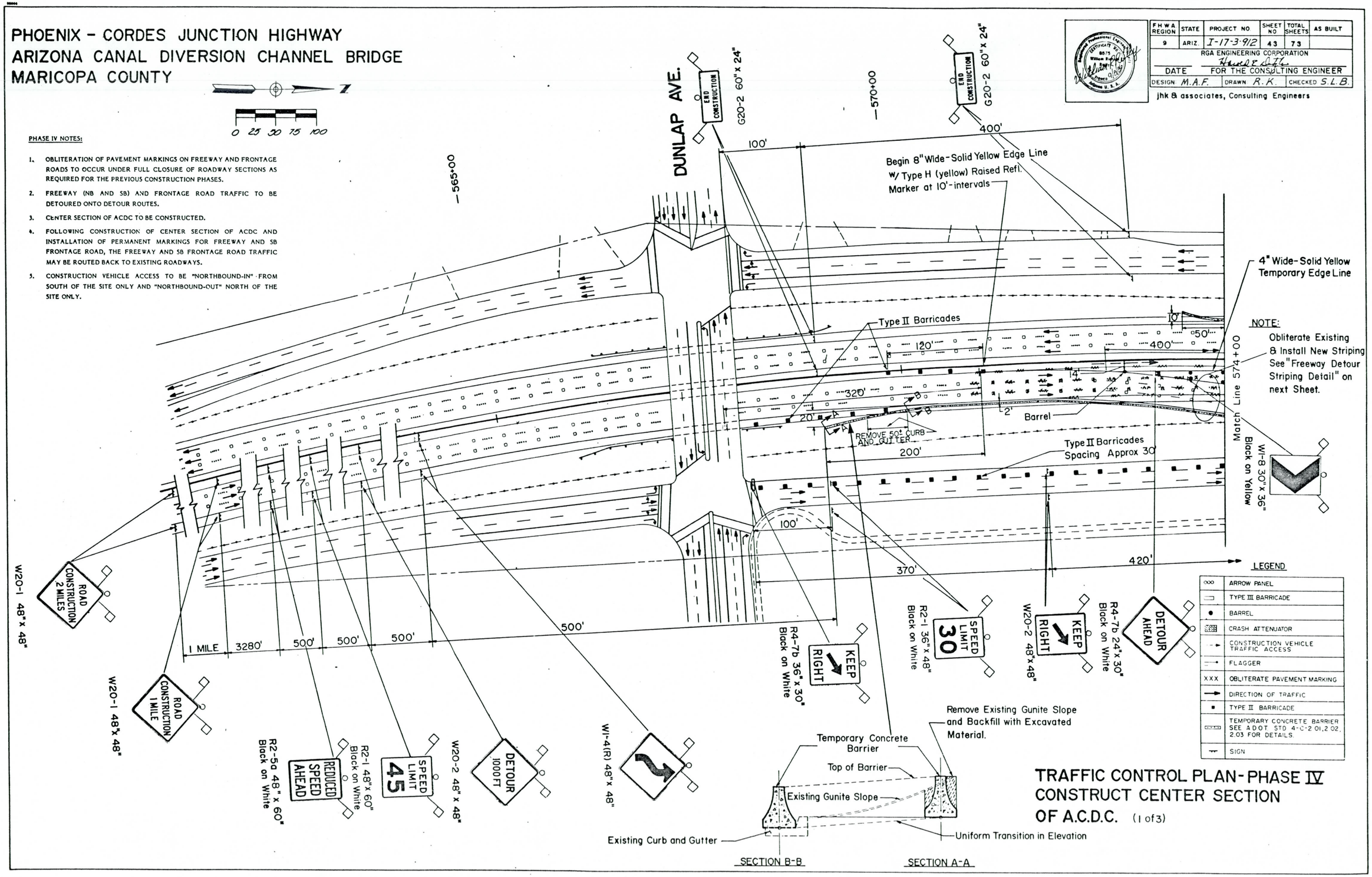
PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	43	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.
jhk & associates, Consulting Engineers

PHASE IV NOTES:

1. OBLITERATION OF PAVEMENT MARKINGS ON FREEWAY AND FRONTAGE ROADS TO OCCUR UNDER FULL CLOSURE OF ROADWAY SECTIONS AS REQUIRED FOR THE PREVIOUS CONSTRUCTION PHASES.
2. FREEWAY (NB AND SB) AND FRONTAGE ROAD TRAFFIC TO BE DETOURED ONTO DETOUR ROUTES.
3. CENTER SECTION OF ACDC TO BE CONSTRUCTED.
4. FOLLOWING CONSTRUCTION OF CENTER SECTION OF ACDC AND INSTALLATION OF PERMANENT MARKINGS FOR FREEWAY AND SB FRONTAGE ROAD, THE FREEWAY AND SB FRONTAGE ROAD TRAFFIC MAY BE ROUTED BACK TO EXISTING ROADWAYS.
5. CONSTRUCTION VEHICLE ACCESS TO BE "NORTHBOUND-IN" FROM SOUTH OF THE SITE ONLY AND "NORTHBOUND-OUT" NORTH OF THE SITE ONLY.

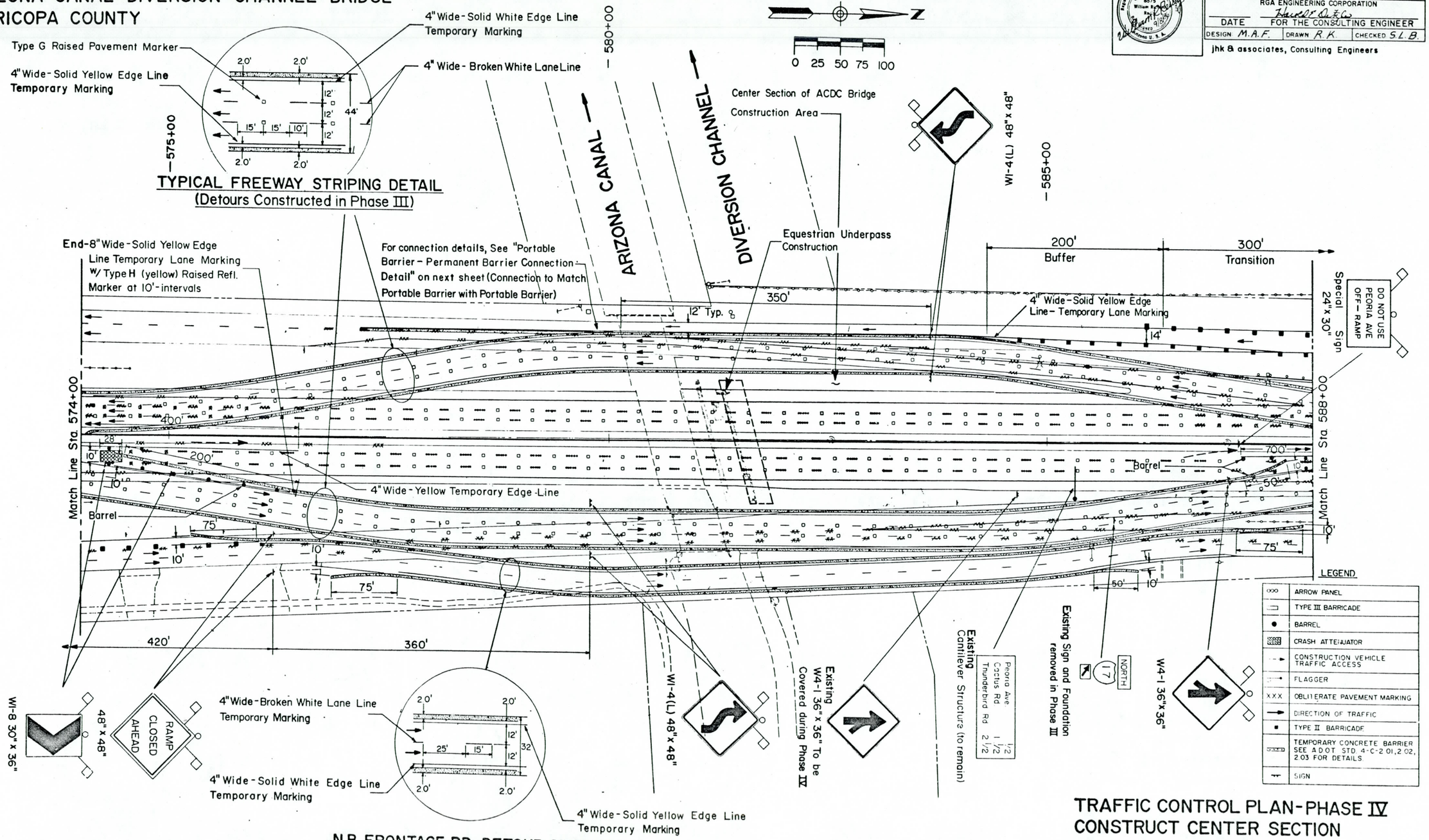


TRAFFIC CONTROL PLAN-PHASE IV
CONSTRUCT CENTER SECTION OF A.C.D.C. (1 of 3)

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	44	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.
jhk & associates, Consulting Engineers



TYPICAL FREEWAY STRIPING DETAIL
(Detours Constructed in Phase III)

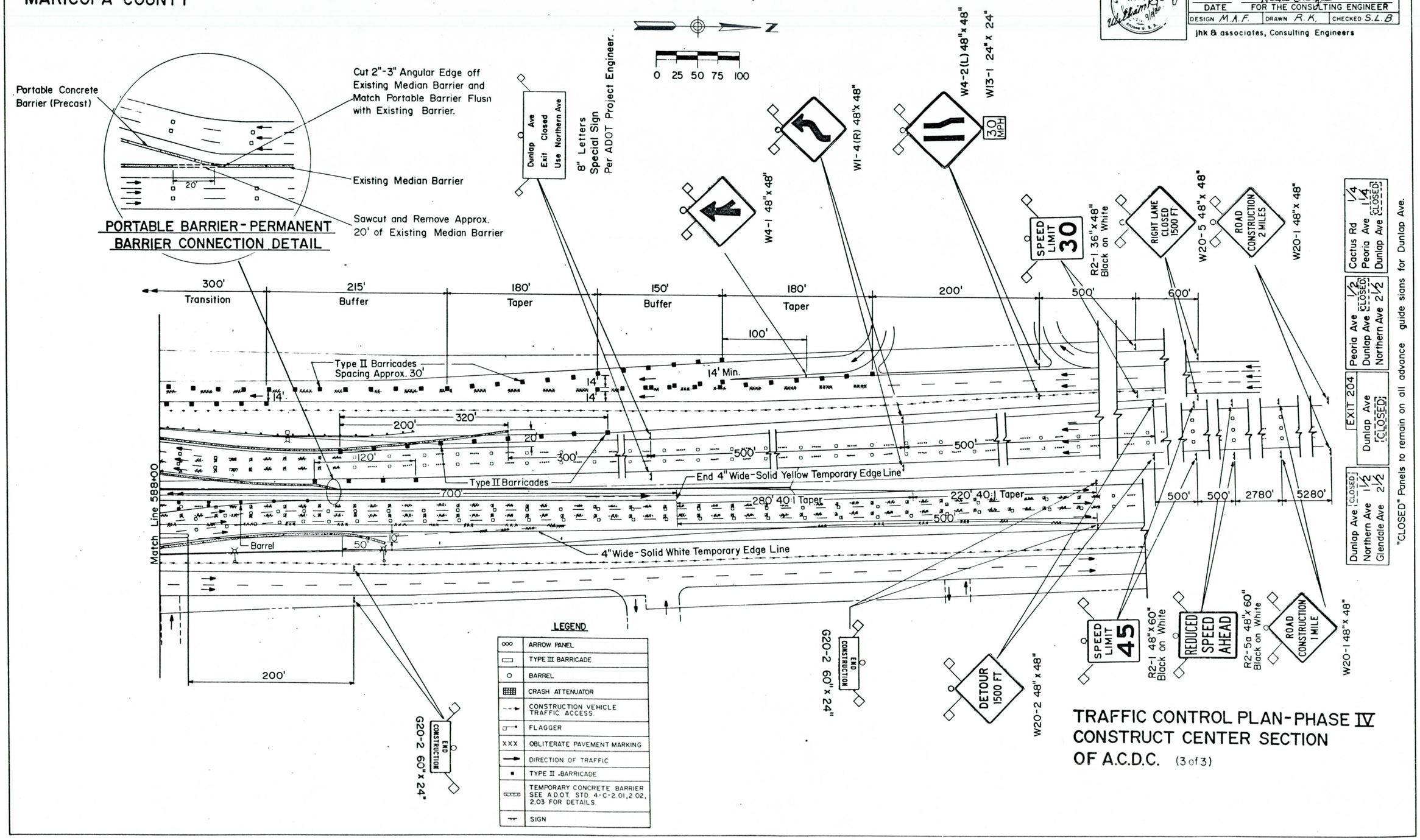
N.B. FRONTAGE RD. DETOUR STRIPING
(Detour Constructed in Phase II)

TRAFFIC CONTROL PLAN-PHASE IV
CONSTRUCT CENTER SECTION OF A.C.D.C. (2 of 3)

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	45	73	

RGA ENGINEERING CORPORATION
DATE FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.
jhk & associates, Consulting Engineers



TRAFFIC CONTROL PLAN-PHASE IV
CONSTRUCT CENTER SECTION OF A.C.D.C. (3 of 3)

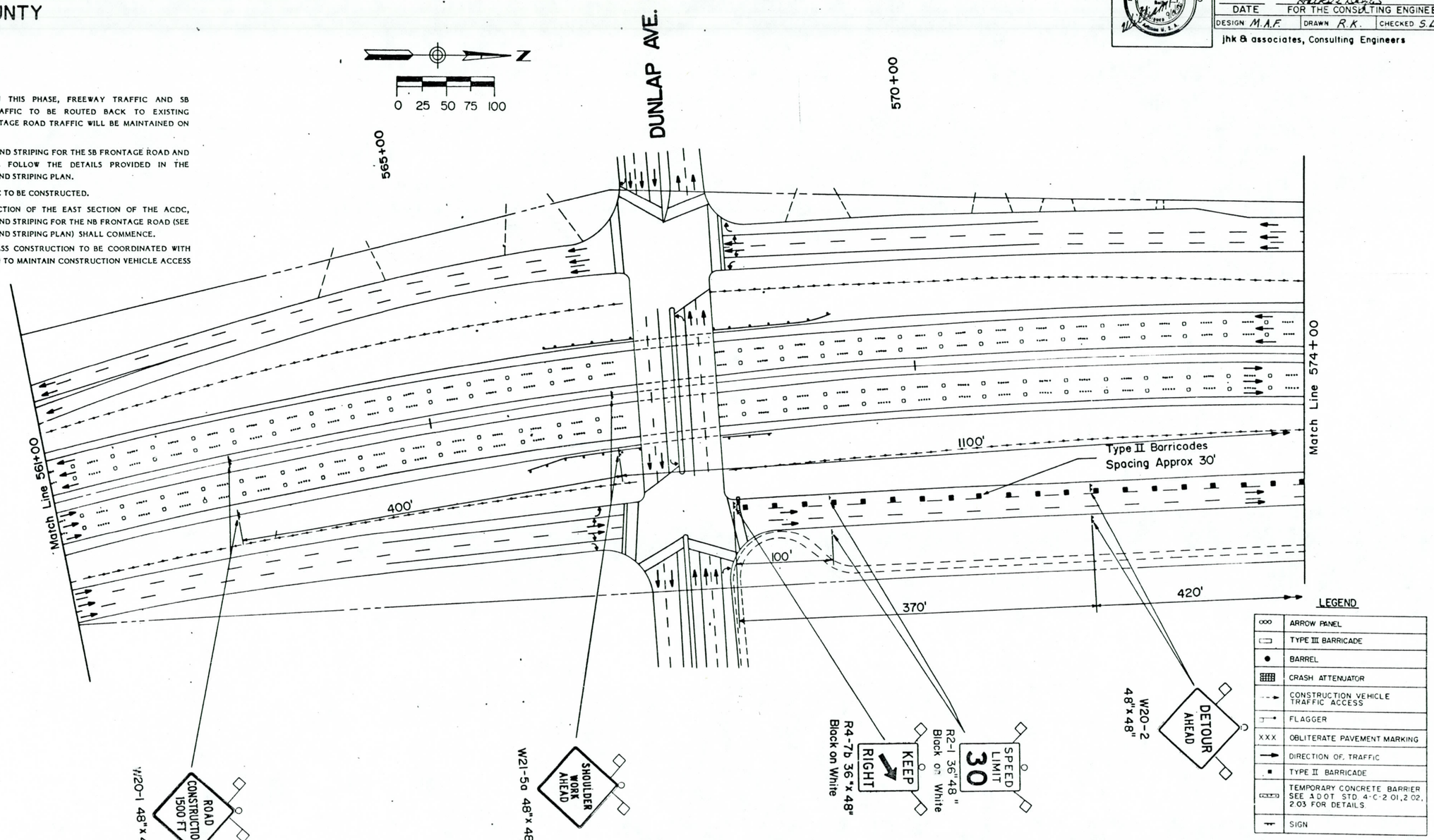
PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	46	73	
RGA ENGINEERING CORPORATION					
DATE	FOR THE CONSULTING ENGINEER				
DESIGN M.A.F.	DRAWN R.K.		CHECKED S.L.B.		

jhk & associates, Consulting Engineers

PHASE V NOTES:

1. PRIOR TO WORK ON THIS PHASE, FREEWAY TRAFFIC AND SB FRONTAGE ROAD TRAFFIC TO BE ROUTED BACK TO EXISTING ROADWAYS. NB FRONTAGE ROAD TRAFFIC WILL BE MAINTAINED ON DETOUR ROUTE.
2. PERMANENT SIGNING AND STRIPING FOR THE SB FRONTAGE ROAD AND THE FREEWAY SHALL FOLLOW THE DETAILS PROVIDED IN THE PERMANENT SIGNING AND STRIPING PLAN.
3. EAST SECTION OF ACDC TO BE CONSTRUCTED.
4. FOLLOWING CONSTRUCTION OF THE EAST SECTION OF THE ACDC, PERMANENT SIGNING AND STRIPING FOR THE NB FRONTAGE ROAD (SEE PERMANENT SIGNING AND STRIPING PLAN) SHALL COMMENCE.
5. EQUESTRIAN UNDERPASS CONSTRUCTION TO BE COORDINATED WITH OTHER CONSTRUCTION TO MAINTAIN CONSTRUCTION VEHICLE ACCESS IN AREA.

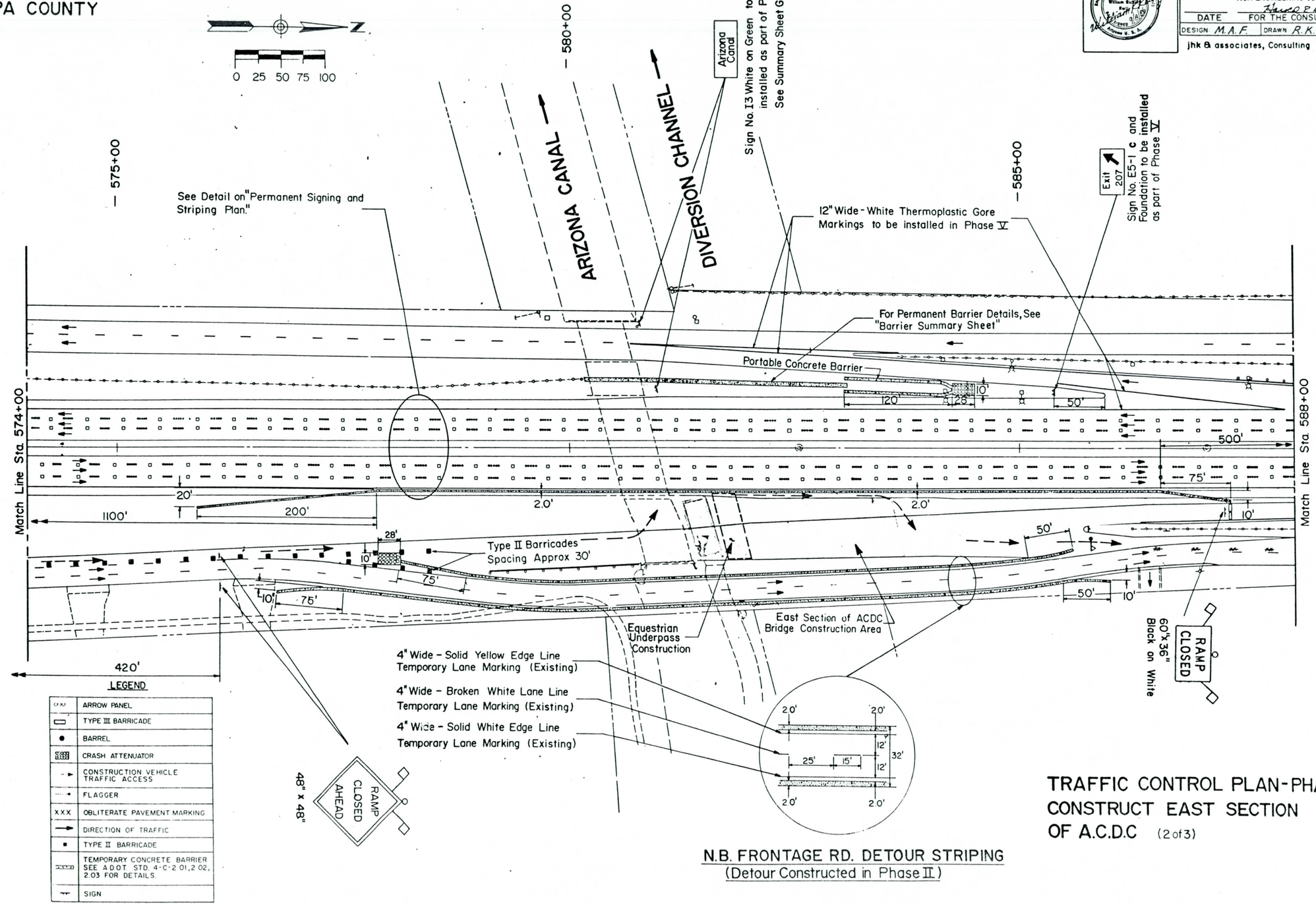


TRAFFIC CONTROL PLAN-PHASE V
CONSTRUCT EAST SECTION OF A.C.D.C (1 of 3)

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	47	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.
jhk & associates, Consulting Engineers



LEGEND

	ARROW PANEL
	TYPE III BARRICADE
	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE ADOT STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
	SIGN

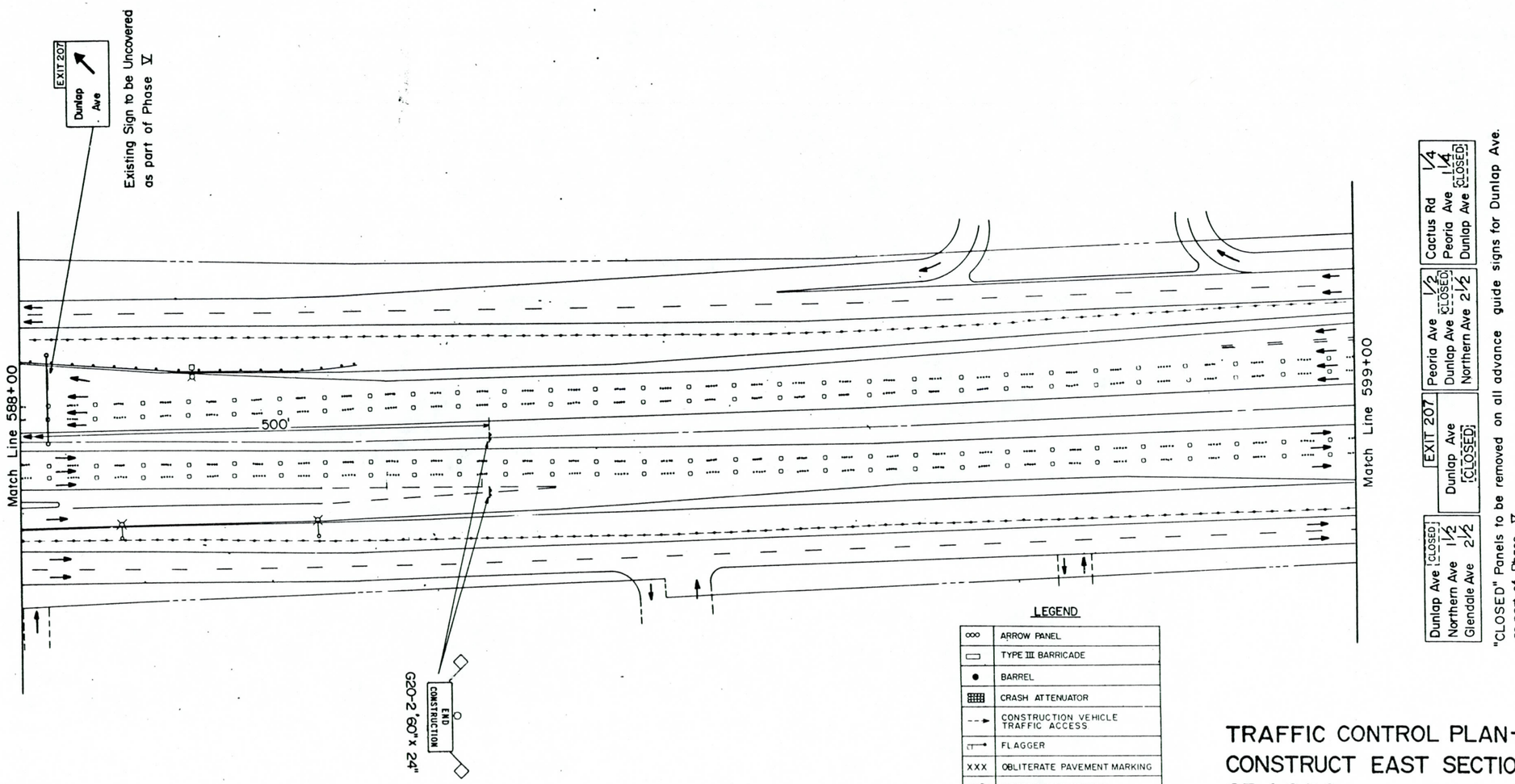
N.B. FRONTAGE RD. DETOUR STRIPING
(Detour Constructed in Phase II.)

TRAFFIC CONTROL PLAN-PHASE V
CONSTRUCT EAST SECTION OF A.C.D.C (2 of 3)

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	48	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN R.K. CHECKED S.L.B.
jhk & associates, Consulting Engineers



LEGEND

	ARROW PANEL
	TYPE III BARRICADE
	BARREL
	CRASH ATTENUATOR
	CONSTRUCTION VEHICLE TRAFFIC ACCESS
	FLAGGER
XXX	OBLITERATE PAVEMENT MARKING
	DIRECTION OF TRAFFIC
	TYPE II BARRICADE
	TEMPORARY CONCRETE BARRIER SEE A.D.O.T. STD. 4-C-2.01, 2.02, 2.03 FOR DETAILS.
	SIGN

TRAFFIC CONTROL PLAN-PHASE V
CONSTRUCT EAST SECTION
OF A.C.D.C (3 of 3)

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

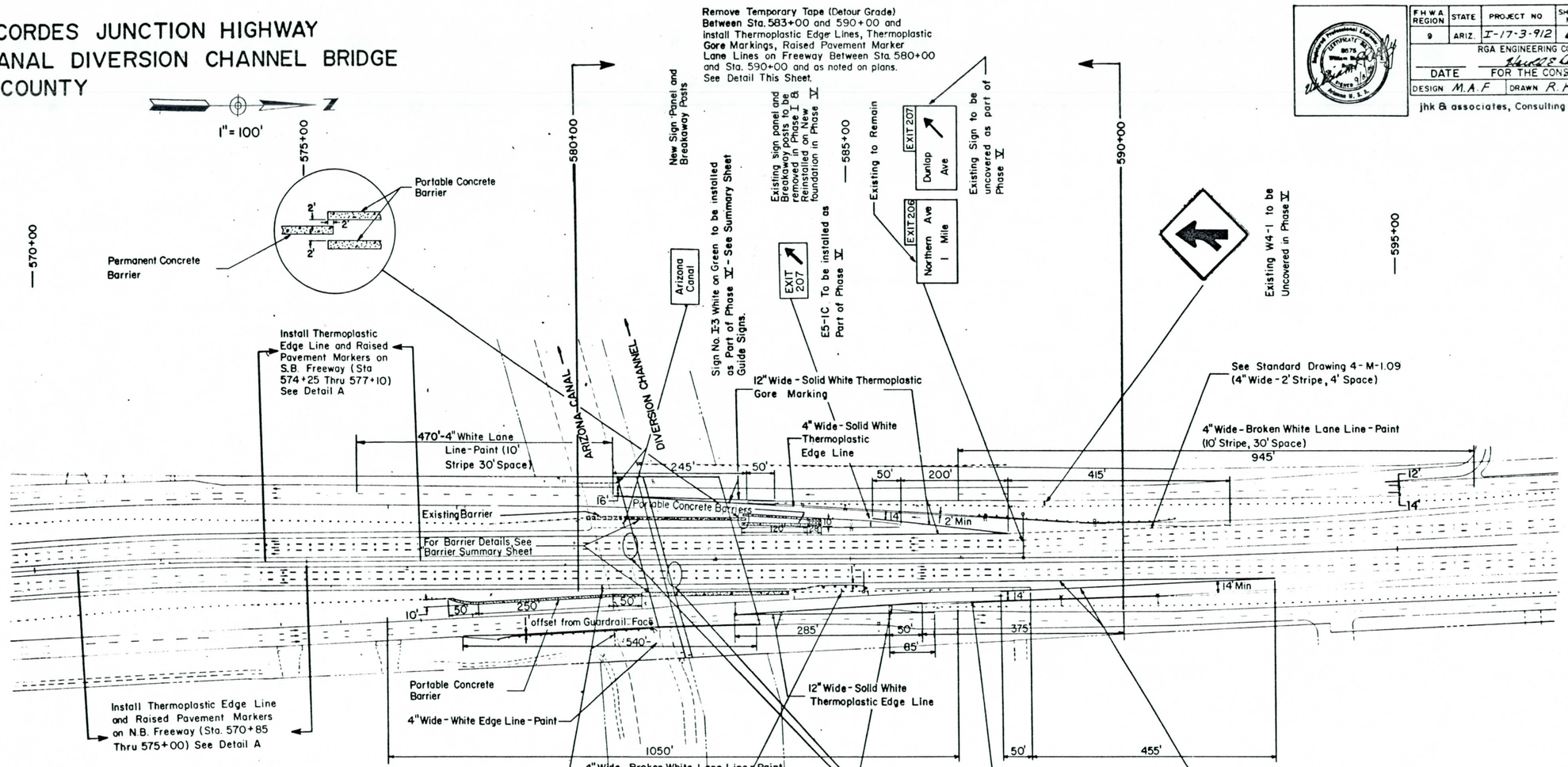
F.H.W.A. REGION	STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	49	73	

RGA ENGINEERING CORPORATION

DATE — FOR THE CONSULTING ENGINEER

DESIGN M.A.F. — DRAWN R.K. — CHECKED S.L.B.

jhk & associates, Consulting Engineers



Cactus Rd 1/4
Peoria Ave 1/4
Dunlap Ave [CLOSED]

Peoria Ave 1/2
Dunlap Ave [CLOSED] 1/2
Northern Ave 2 1/2

EXIT 207
Dunlap Ave [CLOSED]

Dunlap Ave [CLOSED]
Northern Ave 1 1/2
Glendale Ave 2 1/2

"CLOSED" Panels to be Removed on all advance Guide Signs for Dunlap Ave as part of Phase V

Notes:

1. CONTRACTOR SHALL CLEAN ROADWAY SURFACE PRIOR TO PLACEMENT OF RAISED PAVEMENT MARKERS OR THERMOPLASTIC STRIPING AS DIRECTED BY THE ADOT PROJECT ENGINEER.
2. ALL RAISED PAVEMENT MARKERS SHALL CONFORM TO THE DETAILS OF ADOT STANDARD DRAWING 4-M-2.02. THE REFLECTIVE MARKERS SHALL HAVE AN ABRASIVE RESISTANT FINISH.
3. RAISED PAVEMENT MARKERS SHALL BE INSTALLED WITH EPOXY ADHESIVE.
4. REFLECTIVE MARKERS SHALL BE INSTALLED SO THAT THE REFLECTIVE FACE OF MARKER IS FACING TRAFFIC AND PERPENDICULAR TO THE DIRECTION OF TRAFFIC.
5. ALL PERMANENT EDGE LINES, LANE LINES, AND GORE STRIPING SHALL BE 60 MIL. (0.06" THICKNESS) THERMOPLASTIC HOT SPRAYED STRIPING (except as noted).
6. TYPICAL STRIPING FOR ON-RAMPS AND OFF-RAMPS ARE SHOWN AS SCHEMATIC DETAILS, SEE ADOT STANDARD DRAWING 4-M-1.09 FOR MORE DETAILS.
7. PAVEMENT MARKERS SHALL BE INSTALLED 2" FROM THE JOINT ON THE PAVEMENT SURFACE.
8. PERMANENT STRIPING AND SIGNING FOR S.B. FRONTAGE ROAD AND THE FREEWAY (incl. gore areas) ARE TO BE INSTALLED IN PHASE V.
9. PERMANENT STRIPING AND SIGNING FOR N.B. FRONTAGE ROAD ARE TO BE INSTALLED IN PHASE VI.

PERMANENT SIGNING AND STRIPING PLAN

RAISED PAVEMENT MARKER PLACEMENT DETAIL

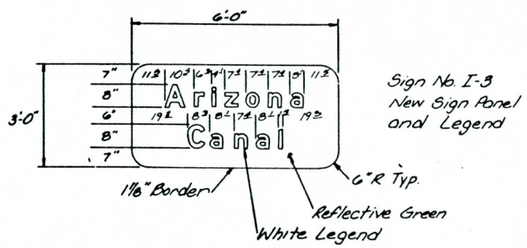
PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

GUIDE SIGN SUMMARY SHEET

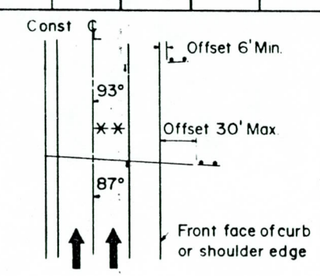
FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	50	73	

RGA ENGINEERING CORPORATION
DATE — FOR THE CONSULTING ENGINEER
DESIGN M.A.F. DRAWN J.A. CHECKED SLB
jhk & associates, Consulting Engineers

SIGN NO.	STATION ±	DIRECTION	OFFSET	SHOULDER CLEARANCE (E) MIN.	FOUNDATION CLEARANCE (F) MIN.	SIGN SIZE H	SIGN SIZE h	SIGN SIZE W	SIGN SIZE w	SIGN AREA	SIGN POST LOCATION A	SIGN POST LOCATION B	SIGN POST LOCATION D	SIGN POST LOCATION C	POST LENGTHS (SEE NOTE) LEFT	POST LENGTHS (SEE NOTE) MIDDLE	POST LENGTHS (SEE NOTE) RIGHT	SAW CUT LENGTH	POST SIZE	APPROXIMATE TOTAL POST LENGTH	NUMBER OF POSTS	ELEVATIONS (SEE NOTE) L	ELEVATIONS (SEE NOTE) M	ELEVATIONS (SEE NOTE) R	FOUNDATION DIA.	FOUNDATION DEPTH	STUB LENGTH	STUB PROJ.	CONC. (CU. YDS)*	REINF. BAR (LBS)*
I-3	580±	NB	CENTERED BETWEEN FRONTAGE ROAD & N.B. FREEWAY	7'	7'	3'-0"		6'-0"		18 □'	1'-0"	4'-0"		1'-0"				3'-2⅞"	S3×5.7	20'	2				1'-0"	3'-6"	3'-3½"	3½"	0.21	
I-3	580±	SB	CENTERED BETWEEN FRONTAGE ROAD & S.B. FREEWAY	7'	7'	3'-0"		6'-0"		18 □'	1'-0"	4'-0"		1'-0"				3'-2⅞"	S3×5.7	20'	2				1'-0"	3'-6"	3'-3½"	3½"	0.21	
E5-1C	585±	SB	3'-0"	7'	7'	5'-0" EXISTING SIGN PANEL		8'-0"			1'-6"	5'-0"		1'-6"				Existing Posts			2				1'-6"	4'-6"	4'-3½"	3½"	0.59	
IM-1E	585±	NB	2'-0" L.T. 2'-0" R.T.	7'	7'	EXISTING SIGN PANEL														10' SEE STANDARD DRAWING 4-S-4.16	1				0.8"	3'-0"	New P.J. Foundation See Standard 4-S-4.16 Drawing			

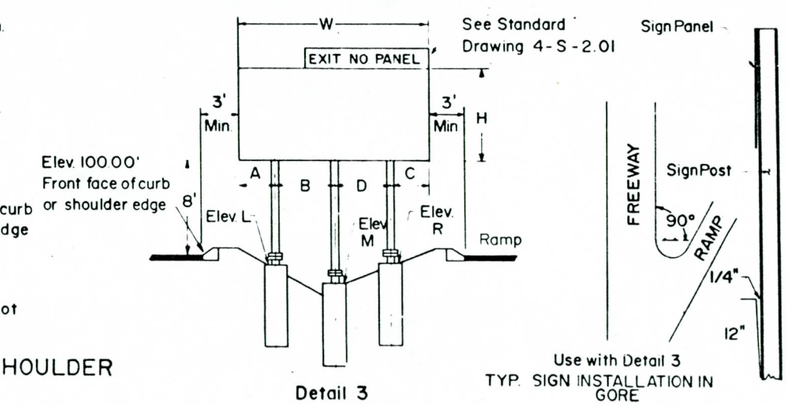


Sign No. I-3
New Sign Panel and Legend



Use with Details 1 and 2
** Offset △ decreases 0°-15' per foot for offsets in excess of 6'

TYPICAL SIGN INSTALLATION ON SHOULDER



Detail 3

Use with Detail 3
TYP. SIGN INSTALLATION IN GORE

BREAKAWAY GROUND MOUNTED SIGN INSTALLED IN GORE

NOTE Post lengths and elevations are to be supplied by the Project Engineer and verified by Traffic Design Services

* Approximate quantities, for contractor information only

∓ Plywood panels only

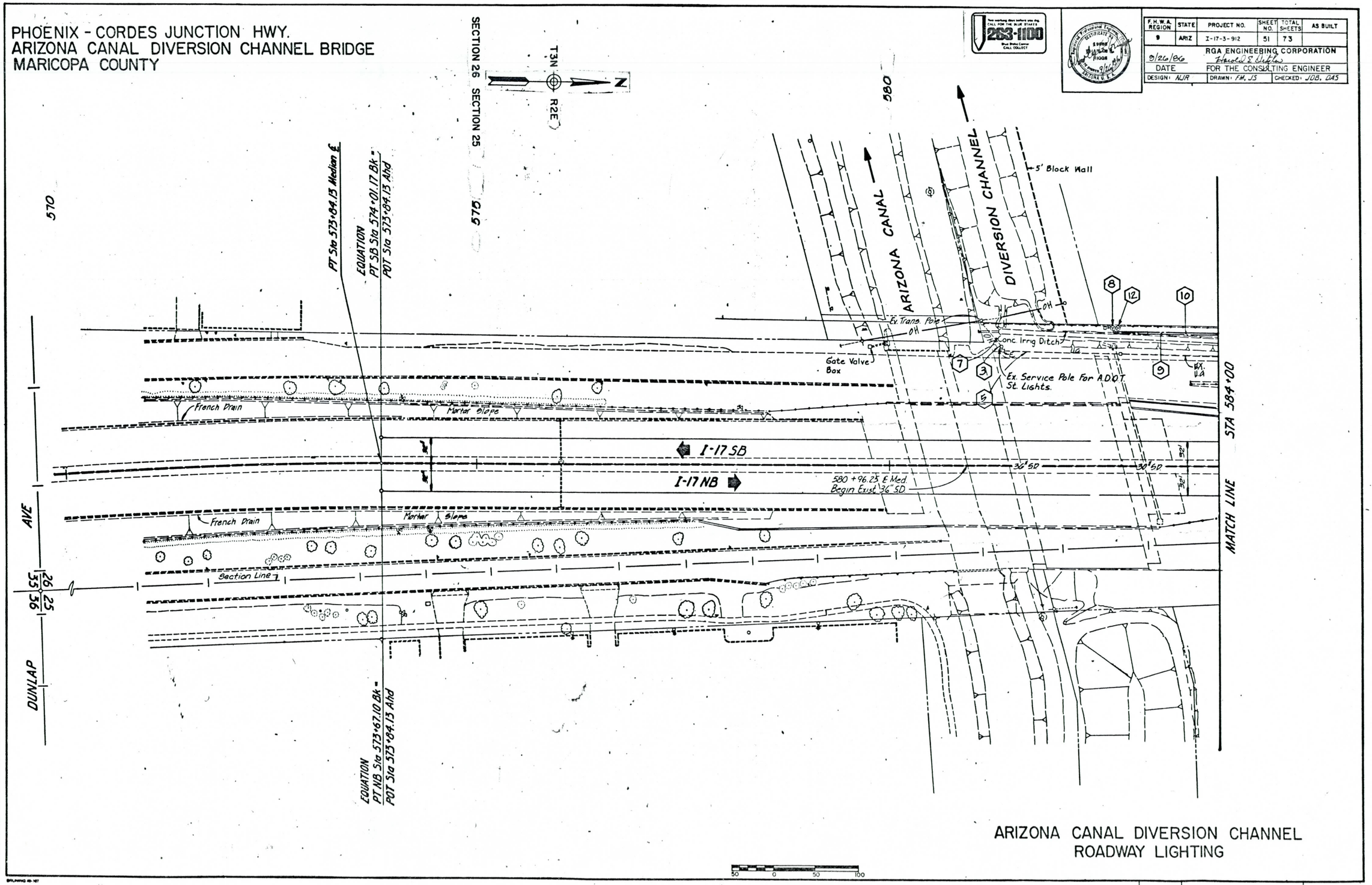
‡ Exit numbering panel included in total sign area

SEE STANDARD DRAWINGS
4-S-2.01 through 4-S-2.08
4-S-3.01, 4-S-3.03, 4-S-3.04
4-S-4.01 through 4-S-4.05 for Sign Panel and Post details

SUMMARY SHEET
GUIDE SIGNS

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	51	73	
8/26/86 DATE	RGA ENGINEERING CORPORATION FOR THE CONSULTING ENGINEER				
DESIGN: NJR	DRAWN: FM, JS		CHECKED: JDB, DAS		



ARIZONA CANAL DIVERSION CHANNEL
ROADWAY LIGHTING

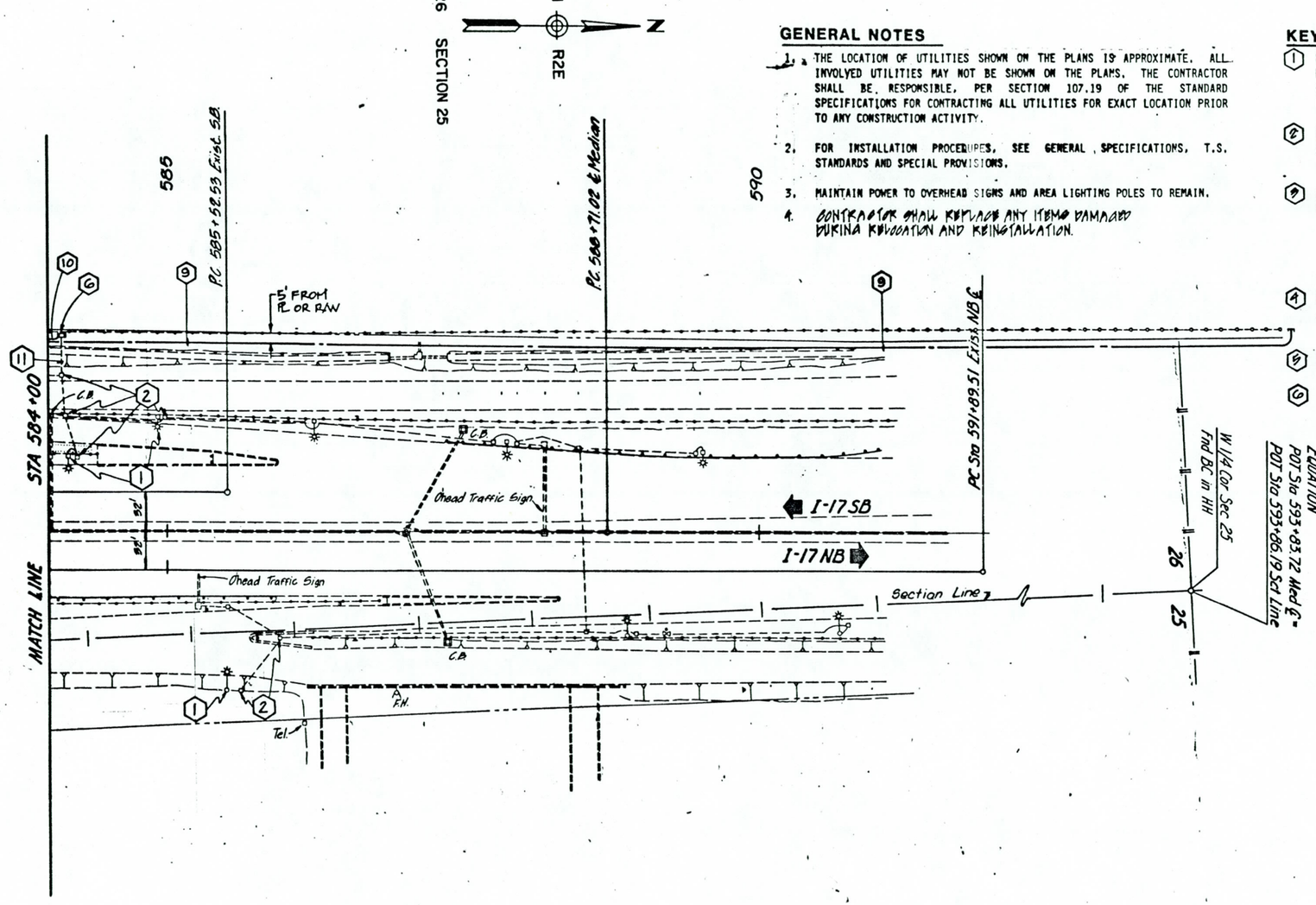
SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

I-17-3-912

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	52	73	

RGA ENGINEERING CORPORATION
3/26/86 — DATE — FOR THE CONSULTING ENGINEER
DESIGN: NJR | DRAWN: FH, JS | CHECKED: JDB, DLS



GENERAL NOTES

1. THE LOCATION OF UTILITIES SHOWN ON THE PLANS IS APPROXIMATE. ALL INVOLVED UTILITIES MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE, PER SECTION 107.19 OF THE STANDARD SPECIFICATIONS FOR CONTRACTING ALL UTILITIES FOR EXACT LOCATION PRIOR TO ANY CONSTRUCTION ACTIVITY.
2. FOR INSTALLATION PROCEDURES, SEE GENERAL SPECIFICATIONS, T.S. STANDARDS AND SPECIAL PROVISIONS.
3. MAINTAIN POWER TO OVERHEAD SIGNS AND AREA LIGHTING POLES TO REMAIN.
4. CONTRACTOR SHALL REPLACE ANY ITEMS DAMAGED DURING REMOVAL AND REINSTALLATION.

KEYNOTES

(1) REMOVE EXISTING AREA LIGHTING POLE FROM EXISTING FOUNDATION, DISCONNECT FROM SYSTEM, STORE POLE OFF SITE, COVER AND PROTECT FOUNDATIONS FROM DETOUR CONSTRUCTION. REPLACE AND RECONNECT AREA LIGHTING POLE IN THEIR EXISTING LOCATIONS AFTER DETOUR ROADWAYS ARE REMOVED.

(2) PROTECT EXISTING PULL BOXES, RECONNECT CONDUCTORS AS REQUIRED.

(3) EXISTING 480 VOLT SERVICE POLE, WITH PHOTO ELECTRIC CELL, BREAKER SAFETY SWITCH, CONTACTOR AND OTHER ATTACHMENTS ARE TO BE REMOVED.

(4) NOT USED.

(5) EXISTING U.G. CONDUIT AND WIRES TO BE REMOVED BETWEEN PULL BOXES.

(6) NEW A.D.O.T. TYPE II LOADCENTER CABINET. FURNISHED & INSTALLED PER A.D.O.T. REQUIREMENTS.

(7) EXISTING O.H. ELECTRIC SERVICE LINE TO BE REMOVED. COORDINATE DISCONNECTION OF SERVICE WITH ARIZONA PUBLIC SERVICE.

(8) APS TRANSFORMER (480V-1Ø-25KVA) VERIFY EXACT LOCATION WITH ARIZONA PUBLIC SERVICE.

(9) 4"C FROM APS TRANSFORMER PRIMARY SIDE TO TERMINATION POINT APPROXIMATELY 1175' NORTH OF TRANSFORMER. COORDINATE EXACT CONDUIT LOCATION AND TERMINATION WITH APS. TRENCHING & CONDUIT SHALL BE PER APS REQUIREMENTS.

(10) 2#1/0 CU & 1#6 CU. GND. IN 2"C FROM APS TRANSFORMER (KEYNOTE #8) SECONDARY SIDE TO NEW LOADCENTER (KEYNOTE #6).

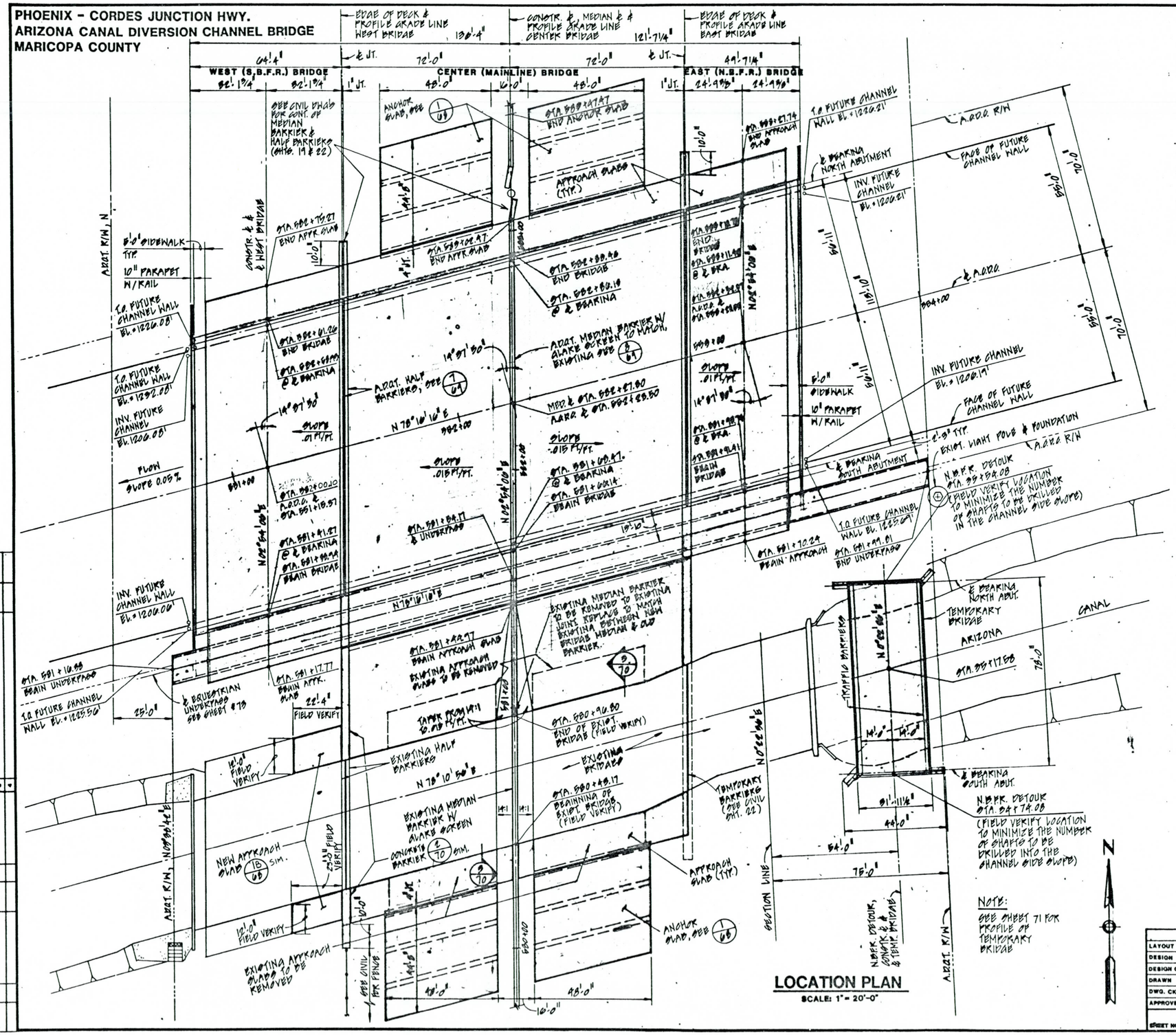
(11) PROVIDE CONDUIT & CONDUCTORS AS REQUIRED TO RECONNECT EXISTING LIGHTING CIRCUITS TO NEW LOADCENTER CABINET.

(12) APS TRANSFORMER (120/240V-1Φ) FOR EXISTING SIGN. WORK BY OTHERS.

SURVEY NOS.	FINISHED PLANS	REVISIONS	LOCATION	DATE

ARIZONA CANAL DIVERSION CHANNEL
ROADWAY LIGHTING

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



LOCATION PLAN
SCALE: 1" = 20'-0"

REVISION	DATE	PROJECT	AS BUILT
0	JUNE		

9/18/90 DATE — FOR THE CONSULTING ENGINEER
DESIGN: GBC DRAWN: JHG CHECKED: DKL

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: ARIZONA DEPARTMENT OF TRANSPORTATION, "STD. SPECS. FOR ROAD AND BRIDGE CONSTRUCTION" 1982 EDITION, & SUPPLEMENT OF 1985.

DESIGN SPECIFICATIONS

AASHTO STD. SPECS. FOR HIGHWAY BRIDGES, THIRTEENTH EDITION, (1983) AS AMENDED BY 1984 & 1985 INTERIM SPECIFICATIONS.

SEISMIC RISK ZONE II

LOADING CLASS - HS20-44 AND/OR INTERSTATE ALTERNATE LOADING.

DEAD LOAD - DEAD LOAD INCLUDES ALLOWANCE OF 25 POUNDS PER SQUARE FOOT FOR FUTURE WEARING SURFACE.

CONCRETE

ALL CONCRETE SHALL BE CLASS 'S'

F'_c = 4500 PSI - SUPERSTRUCTURE (f_c = 1400 PSI & n = 7.58)
F'_c = 4000 PSI - DRILLED SHAFTS
F'_c = 3000 PSI - ALL OTHER CLASS 'S' CONCRETE (f_c = 1200 PSI & n = 9.29)

CONSTRUCTION JOINTS (CJ) SHALL BE PERMITTED ONLY AT INDICATED LOCATIONS. ADDITIONAL C.J.'S OR CHANGES TO THOSE SHOWN SHALL BE APPROVED BY THE ENGINEER.

CHAMFER ALL EXPOSED CORNERS 3/4" AS PER ADOT STD. BM-1 UNLESS NOTED OTHERWISE.

DIMENSIONS SHALL NOT BE SCALED FROM DRAWINGS.

REINFORCING STEEL

REINFORCING STEEL SHALL CONFORM TO ASTM SPECIFICATION A615.

GRADE 40 REINF. STEEL ———— F_s = 20,000 PSI
GRADE 60 REINF. STEEL ———— F_s = 24,000 PSI

BAR SIZES #6 AND SMALLER SHALL BE DESIGNED AS GRADE 40 AND FURNISHED AS GRADE 40 OR 60. BAR SIZES #7 AND LARGER SHALL BE GRADE 60.

ALL DIMENSIONS FOR REINFORCING STEEL SHALL BE TO CENTER OF BARS UNLESS NOTED OTHERWISE.

ALL REINFORCING STEEL SHALL HAVE 2" CLEAR COVER UNLESS NOTED OTHERWISE.

PRESTRESSING STEEL
1/2" Ø 7 WIRE LOW RELAXATION STRAND ———— F'_s = 270,000 PSI

BARRIERS AND CURBS SHALL BE CONSTRUCTED AFTER THE DECK HAS BEEN CAST AND TENSIONED.

ALL STATIONING IN MEDIAN & STATIONING UNLESS OTHERWISE NOTED.

LEGEND

NEW CONSTRUCTION
N.B.F.R. NORTHBOUND FRONTAGE ROAD
S.B.F.R. SOUTHBOUND FRONTAGE ROAD

		DATE
LAYOUT	JHG	2/90
DESIGN	GBC	2/90
DESIGN CK'D	DKL	2/90
DRAWN	JHG	2/90
DWG. CK'D	GBC, DKL	2/90
APPROVED	HEP	9/90

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
LOCATION PLAN AND GENERAL NOTES

SHEET NO. 53 OF 73	I-17 ROUTE	208.28 MILEPOST	WEST 1448 CYN 1448 EAST 1448 STRUCTURE NO.	I-17-3-912 PROJECT NO.	BRIDGE ENGINEER

DATE	NO.	REVISION OF REVISION	FOR	DATE	NO.	FOR	DATE
					1		
					2		
					3		
					4		

BLUE PRINT RECORDS

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

NOTE:
BOOK ELEVATION SUPPLEMENT FOR GUIDED LINE INFORMATION AVAILABLE UPON REQUEST BY REQUEST OF CONTRACTOR.

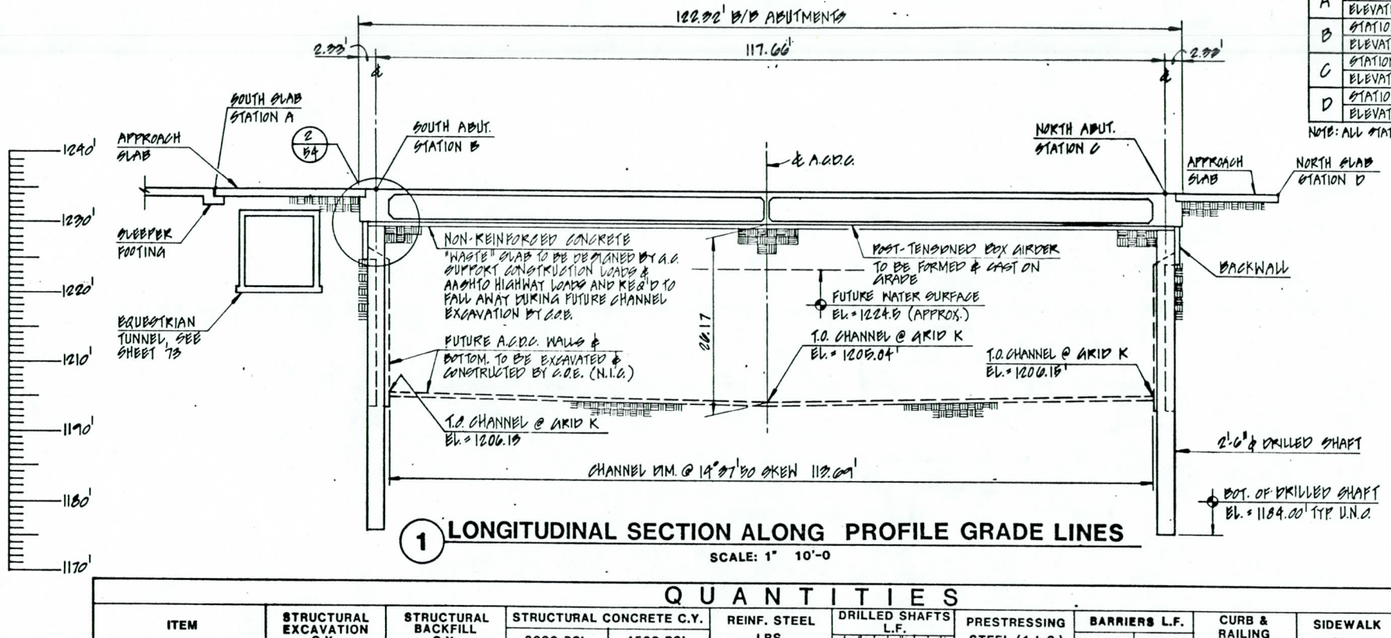
NOTE:
FOR PROFILE GRADE INFORMATION SEE SHEET 59.

		ARID H1	ARID K	ARID A2
		WEST (S.B.F.R.)	CENTER (MAINLINE)	EAST (N.B.F.R.)
A	STATION	58120.17	58144.97	58170.71
	ELEVATION	1238.40	1236.06	1234.20
B	STATION	58149.67	58160.47	58200.21
	ELEVATION	1238.46	1235.16	1234.26
C	STATION	58267.33	58286.13	58317.87
	ELEVATION	1238.75	1235.69	1234.87
D	STATION	58299.62	58302.42	58334.16
	ELEVATION	1238.80	1238.77	1234.61

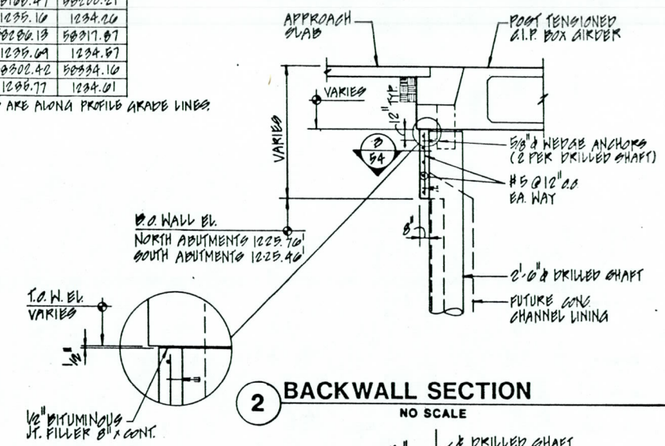
NOTE: ALL STATIONS & ELEVATIONS ARE ALONG PROFILE GRADE LINES.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	54	73	

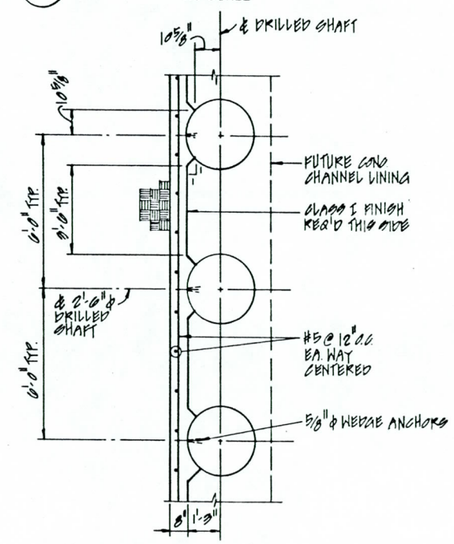
9/10/90
DATE
RGA ENGINEERING CORPORATION
FOR THE CONSULTING ENGINEER
DESIGN: SEC DRAWN: JHS CHECKED: DKL



1 LONGITUDINAL SECTION ALONG PROFILE GRADE LINES
SCALE: 1" 10'-0



2 BACKWALL SECTION
NO SCALE



3 BACKWALL PLAN
NO SCALE

QUANTITIES

	ITEM	STRUCTURAL EXCAVATION C.Y.	STRUCTURAL BACKFILL C.Y.	STRUCTURAL CONCRETE C.Y. 3000 PSI	STRUCTURAL CONCRETE C.Y. 4500 PSI	REINF. STEEL LBS.	DRILLED SHAFTS L.F. 2'-0" ϕ	DRILLED SHAFTS L.F. 2'-6" ϕ	DRILLED SHAFTS L.F. 4'-0" ϕ	PRESTRESSING STEEL (1 L.S.)	BARRIERS L.F. MEDIAN	BARRIERS L.F. HALF	CURB & RAILING L.F.	SIDEWALK S.F.	GLARE SCREEN
CENTER BRIDGE (MAINLINE)	FOUNDATIONS														
	CONCRETE WALLS	552	552	24		2300									
	SUPERSTRUCTURE	3587			1348	226,945				1	122	244			122
	APPR. & ANCHOR SLABS	205		1027		143,430					85				85
	SUBTOTAL	4344	552	1066	1348	370,375		2300			207	244			207
WEST BRIDGE (S.B.F.R.)	FOUNDATIONS							1012	150						
	CONCRETE WALLS	280	280	32		2794									
	SUPERSTRUCTURE.	1191	68		578	118,049				1		122	122	610	
	APPROACH SLABS			101		16,215					85				
	SUBTOTAL	1571	448	133	578	137,108		1012	150		85	122	122	610	
EAST BRIDGE (N.B.F.R.)	FOUNDATIONS							928	150						
	CONCRETE WALLS	444	444	29		2509									
	SUPERSTRUCTURE	1687	68		459	77,600				1		122	122	610	
	APPROACH SLABS			64		8,765					82				
	SUBTOTAL	2131	512	93	459	88,874		928	150		82	122	122	610	
TEMPORARY * BRIDGE	NORTH ABUTMENT	15		16		1,750	132								
	SOUTH ABUTMENT	15		16		1,750	132								
	BARRIERS											100			
	SUBTOTAL	30		32		3,500	264					100			
	TOTALS	8076	1512	1324	2385	599,857	264	4140	900		374	648	244	1220	207

* PROVIDED BY F.C.D.M.C.

NOTE: SEE SHEET #73 FOR EQUESTRIAN UNDERPASS QUANTITIES.

BLUE PRINT RECORDS																			
DATE	NO.	DATE	FOR	DATE	NO.	DATE	FOR	NO.	DESCRIPTION OF REVISIONS	DATE
								1		
								2		
								3		
								4		

		DATE
LAYOUT	JHS	2/90
DESIGN	SEC	2/90
DESIGN CK'D	DKL	2/90
DRAWN	JHS, AD	2/90
DWG. CK'D	SEC, DKL	2/90
APPROVED	HED	9/90

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
LONGITUDINAL X-SECTION & QUANTITIES

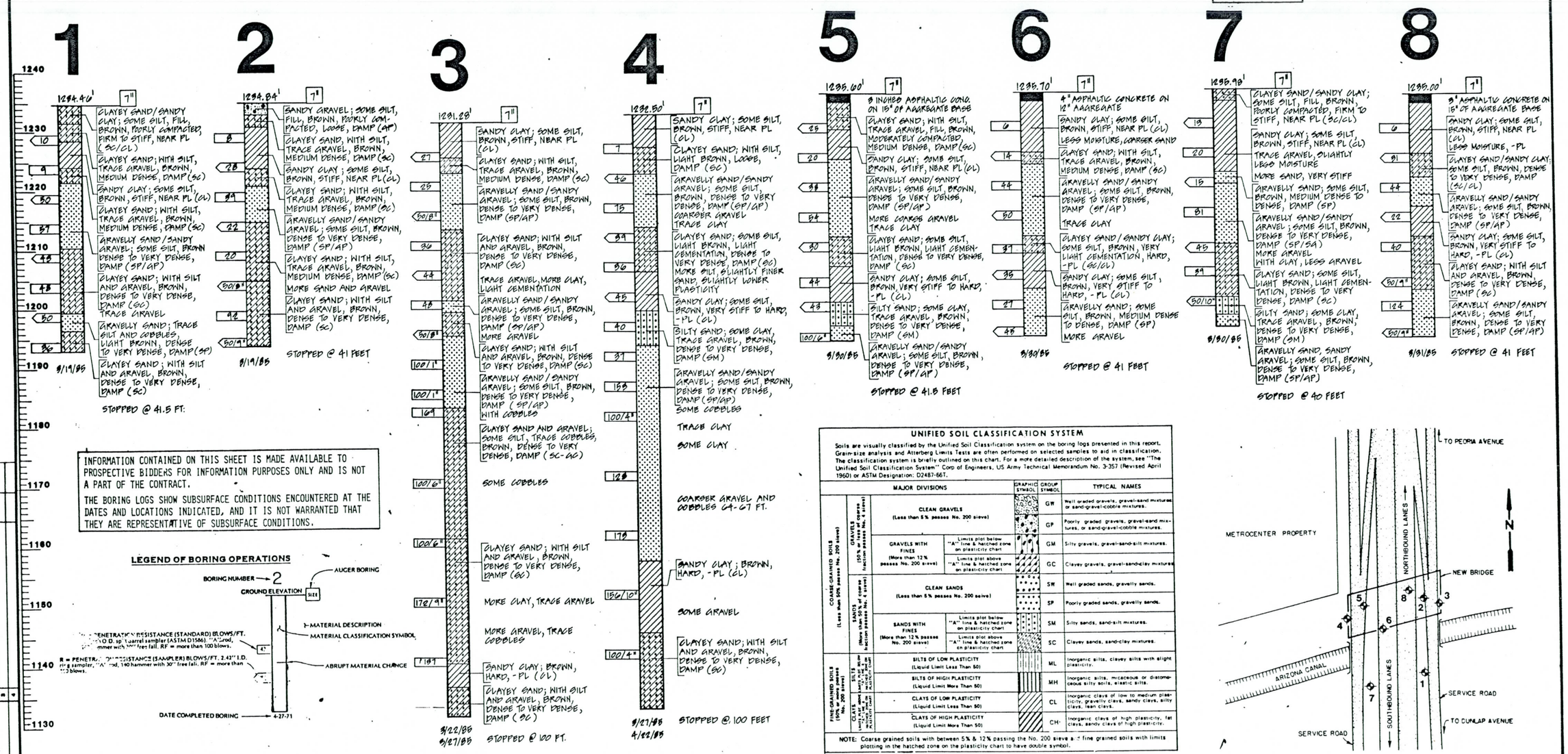
SHEET NO. 54 OF 73	I-17 ROUTE	208.25 MILEPOST	WEST 1442 CTR 1440 EAST 1441 STRUCTURE NO.	I-17-3-912 PROJECT NO.

BRIDGE ENGINEER

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	55	73	

9/19/86 — DATE
RGA ENGINEERING CORPORATION
FOR THE CONSULTING ENGINEER
DESIGN: JHS — DRAWN: JHS — CHECKED: SAG



INFORMATION CONTAINED ON THIS SHEET IS MADE AVAILABLE TO PROSPECTIVE BIDDERS FOR INFORMATION PURPOSES ONLY AND IS NOT A PART OF THE CONTRACT.

THE BORING LOGS SHOW SUBSURFACE CONDITIONS ENCOUNTERED AT THE DATES AND LOCATIONS INDICATED, AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS.

LEGEND OF BORING OPERATIONS

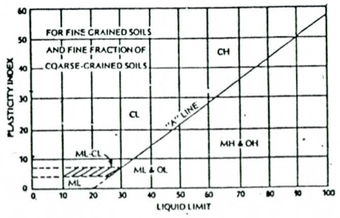
SOIL FRACTIONS

Component	Size Range
Boulders	Above 12 in.
Cobbles	3 in to 12 in.
Gravel	3 in. to No. 4 sieve
Coarse Gravel	3 in. to ¾ in
Fine Gravel	¾ in. to No. 4 sieve
Sand	No. 4 to No. 200
Coarse	No. 4 to No. 10
Medium	No. 10 to No. 40
Fine	No. 40 to No. 200
Fines (silt or clay)	Below No. 200 sieve

Soil Classification: ASTM D2487

Classification is visual unless accompanied by mechanical analysis and Atterberg limits. Percentage shown on log denotes visual approximation ± 5%.

PLASTICITY CHART



UNIFIED SOIL CLASSIFICATION SYSTEM

Soils are visually classified by the Unified Soil Classification system on the boring logs presented in this report. Grain-size analysis and Atterberg Limits Tests are often performed on selected samples to aid in classification. The classification system is briefly outlined in this chart. For a more detailed description of the system, see "The Unified Soil Classification System" Corp of Engineers, US Army Technical Memorandum No. 3-357 (Revised April 1960) or ASTM Designation: D2487-66T.

MAJOR DIVISIONS				GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS (More than 50% passes No. 200 sieve)	GRAVELS (50% or less of coarse fraction passes No. 4 sieve)	CLEAN GRAVELS (Less than 5% passes No. 200 sieve)			GW	Well graded gravels, gravel-sand mixtures, or sand-gravel-cobble mixtures.
					GP	Poorly graded gravels, gravel-sand mixtures, or sand-gravel-cobble mixtures.
		GRAVELS WITH FINES (More than 12% passes No. 200 sieve)	Limits plot below "A" line & hatched zone on plasticity chart		GM	Silty gravels, gravel-sand-silt mixtures.
			Limits plot above "A" line & hatched zone on plasticity chart		GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction passes No. 4 sieve)	CLEAN SANDS (Less than 5% passes No. 200 sieve)			SW	Well graded sands, gravelly sands.
					SP	Poorly graded sands, gravelly sands.
		SANDS WITH FINES (More than 12% passes No. 200 sieve)	Limits plot below "A" line & hatched zone on plasticity chart		SM	Silty sands, sand-silt mixtures.
			Limits plot above "A" line & hatched zone on plasticity chart		SC	Clayey sands, sand-clay mixtures.
FINE-GRAINED SOILS (50% or more passes No. 200 sieve)	SILTS (Liquid Limit Less Than 50)	SILTS OF LOW PLASTICITY (Liquid Limit Less Than 50)			ML	Inorganic silts, clayey silts with slight plasticity.
		SILTS OF HIGH PLASTICITY (Liquid Limit More Than 50)			MH	Inorganic silts, micaceous or diatomaceous silty soils, elastic silts.
	CLAYS (Liquid Limit Less Than 50)	CLAYS OF LOW PLASTICITY (Liquid Limit Less Than 50)			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		CLAYS OF HIGH PLASTICITY (Liquid Limit More Than 50)			CH	Inorganic clays of high plasticity, fat clays, sandy clays of high plasticity.

NOTE: Coarse grained soils with between 5% & 12% passing the No. 200 sieve and fine grained soils with limits plotting in the hatched zone on the plasticity chart to have double symbol.

BORING LOCATION PLAN

NO SCALE

		DATE
LAYOUT	JHS	2/86
DESIGN		
DESIGN CK'D		
DRAWN	JHS	2/86
DWG. CK'D	SEC, DRL	2/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
SOIL BORING LOGS

SHEET NO.	ROUTE	MILEPOST	STRUCTURE NO.	PROJECT NO.	
55 OF 73	I-17	208.25	WEST 1442 CTR 1440 EAST 1441	I-17-3-912	BRIDGE ENGINEER

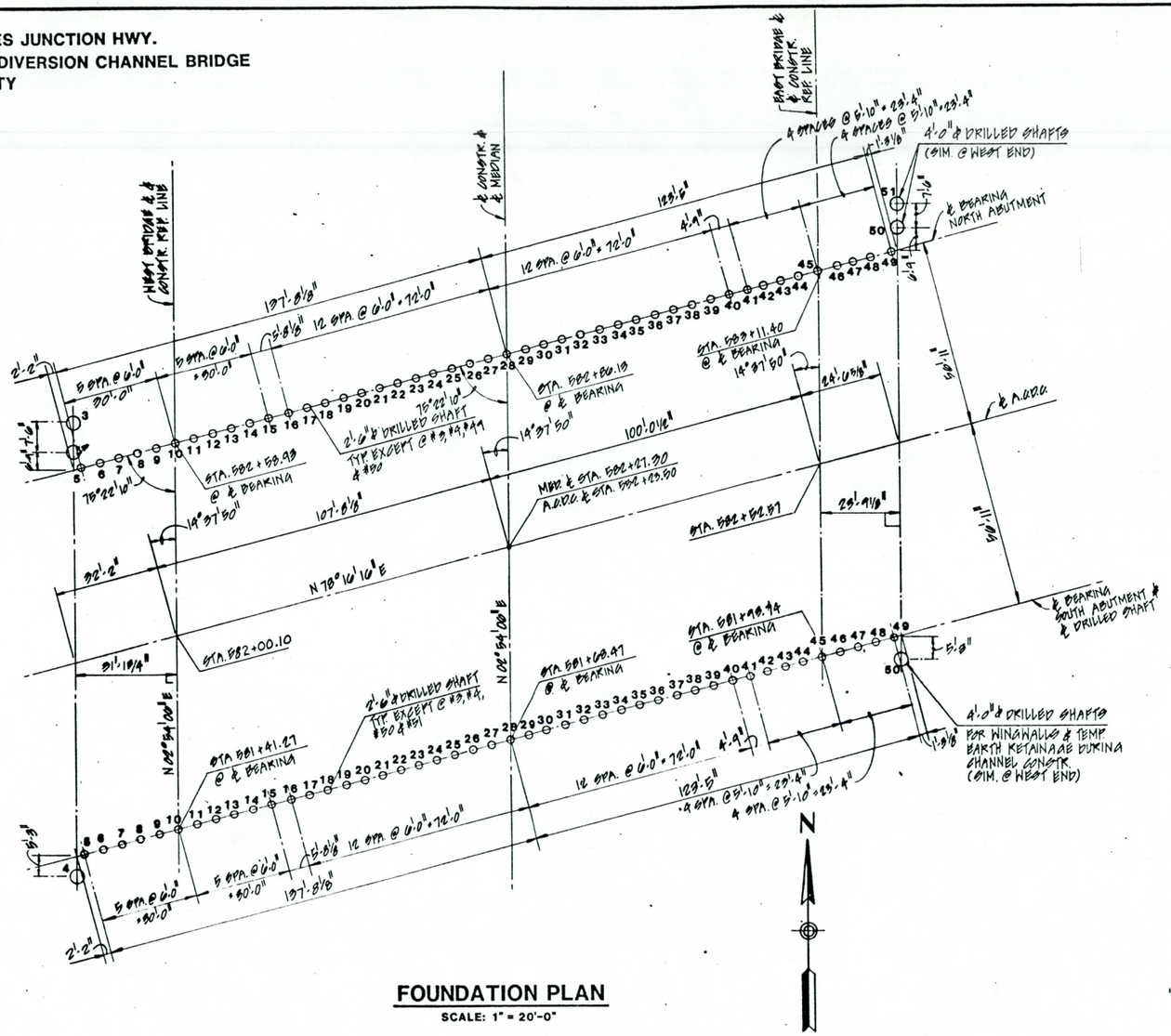
NO.	DESCRIPTION OF REVISIONS	DATE
1		
2		
3		
4		

BLUE PRINT RECORDS FOR — DATE NO. — DATE NO. — FOR

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

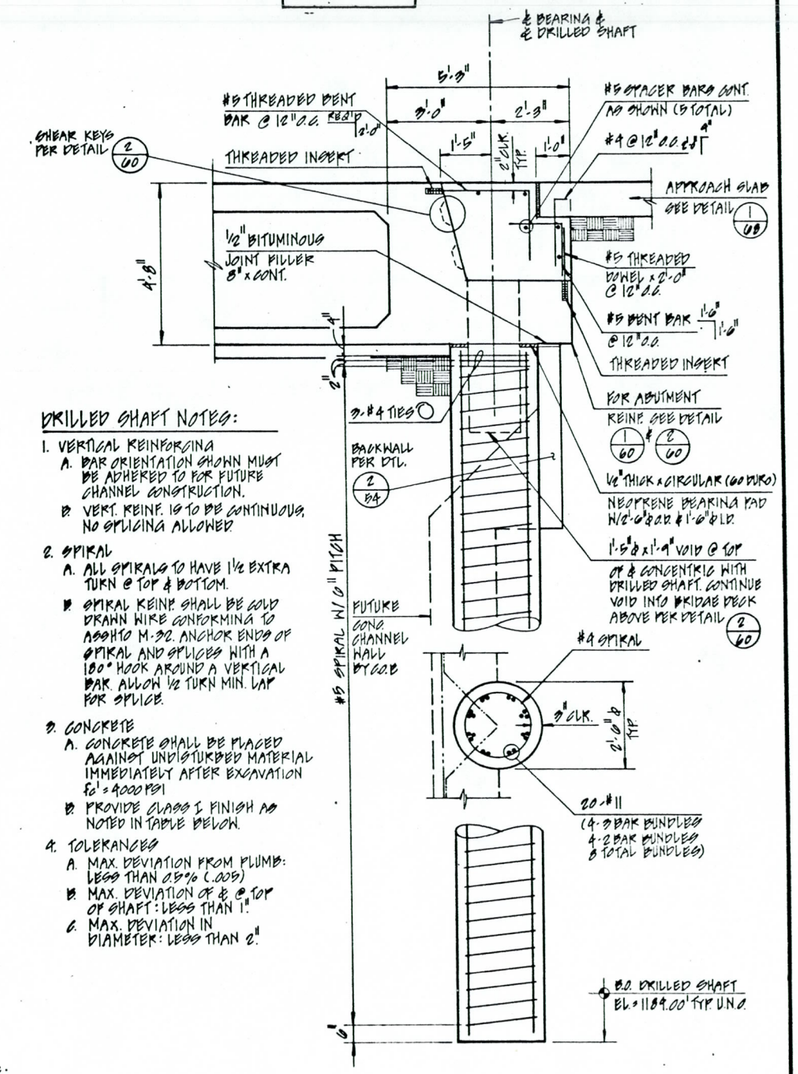
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	56	73	

9/10/86 DATE — HGA ENGINEERING CORPORATION — FOR THE CONSULTING ENGINEER
DESIGN: GEO DRAWN: JHS CHECKED: DRL



FOUNDATION PLAN

SCALE: 1" = 20'-0"



DRILLED SHAFT NOTES:

1. VERTICAL REINFORCING
   A. BAR ORIENTATION SHOWN MUST BE ADHERED TO FOR FUTURE CHANNEL CONSTRUCTION.
   B. VERT. REINF. IS TO BE CONTINUOUS, NO SPLICING ALLOWED
2. SPIRAL
   A. ALL SPIRALS TO HAVE 1½ EXTRA TURN @ TOP & BOTTOM.
   B. SPIRAL REINF. SHALL BE COLD DRAWN WIRE CONFORMING TO AASHTO M-32. ANCHOR ENDS OF SPIRAL AND SPLICES WITH A 180° HOOK AROUND A VERTICAL BAR. ALLOW ½ TURN MIN. LAP FOR SPLICE.
3. CONCRETE
   A. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED MATERIAL IMMEDIATELY AFTER EXCAVATION f'_c = 4000 PSI
   B. PROVIDE CLASS I FINISH AS NOTED IN TABLE BELOW.
4. TOLERANCES
   A. MAX. DEVIATION FROM PLUMB: LESS THAN 0.5% (.005)
   B. MAX. DEVIATION OF ℄ @ TOP OF SHAFT: LESS THAN 1"
   C. MAX. DEVIATION IN DIAMETER: LESS THAN 2".

1 ABUTMENT SECTION

SCALE: 1/2" = 1'-0"

NORTH ABUTMENT - TOP OF DRILLED SHAFT ELEVATIONS (+1200 FT.)

1	2	3	4	5*	6*	7*	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
		29.11	29.11	30.39	30.45	30.52	30.58	30.64	30.70	30.76	30.83	30.89	30.95	31.01	29.86	29.95	30.04	30.14	30.23	30.33	30.42	30.51	30.61	30.70	30.80

27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47*	48*	49*	50	51
30.89	30.98	30.91	30.83	30.75	30.67	30.59	30.51	30.43	30.35	30.27	30.19	30.11	30.02	30.30	30.25	30.19	30.14	30.09	30.04	29.99	29.93	29.88	24.57	24.57

SOUTH ABUTMENT - TOP OF DRILLED SHAFT ELEVATIONS (+1200 FT.)

1	2	3	4	5*	6*	7*	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
			29.79	30.10	30.16	30.22	30.28	30.34	30.40	30.47	30.53	30.59	30.65	30.71	29.82	29.42	29.51	29.61	29.70	29.79	29.89	29.98	30.08	30.17	30.27

27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47*	48*	49*	50
30.36	30.39	30.31	30.29	30.21	30.18	30.05	29.97	29.89	29.81	29.73	29.65	29.57	29.49	30.02	29.97	29.91	29.86	29.81	29.75	29.70	29.64	29.59	24.21

* NOTE:
UPPERMOST 5'-0" OF SHAFT SHALL HAVE CLASS I FINISH

		DATE
LAYOUT	JHS	2/88
DESIGN	GEO	2/88
DESIGN CK'D	DRL	2/88
DRAWN	JHS	2/88
DWG. CK'D	GEO, DRL	2/88
APPROVED	HED	9/88

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
FOUNDATION PLAN

SHEET NO. 56 OF 73 | I-17 ROUTE | 208.25 MILEPOST | WEST CTR EAST 1442 1440 1441 STRUCTURE NO. | I-17-3-912 PROJECT NO. | BRIDGE ENGINEER

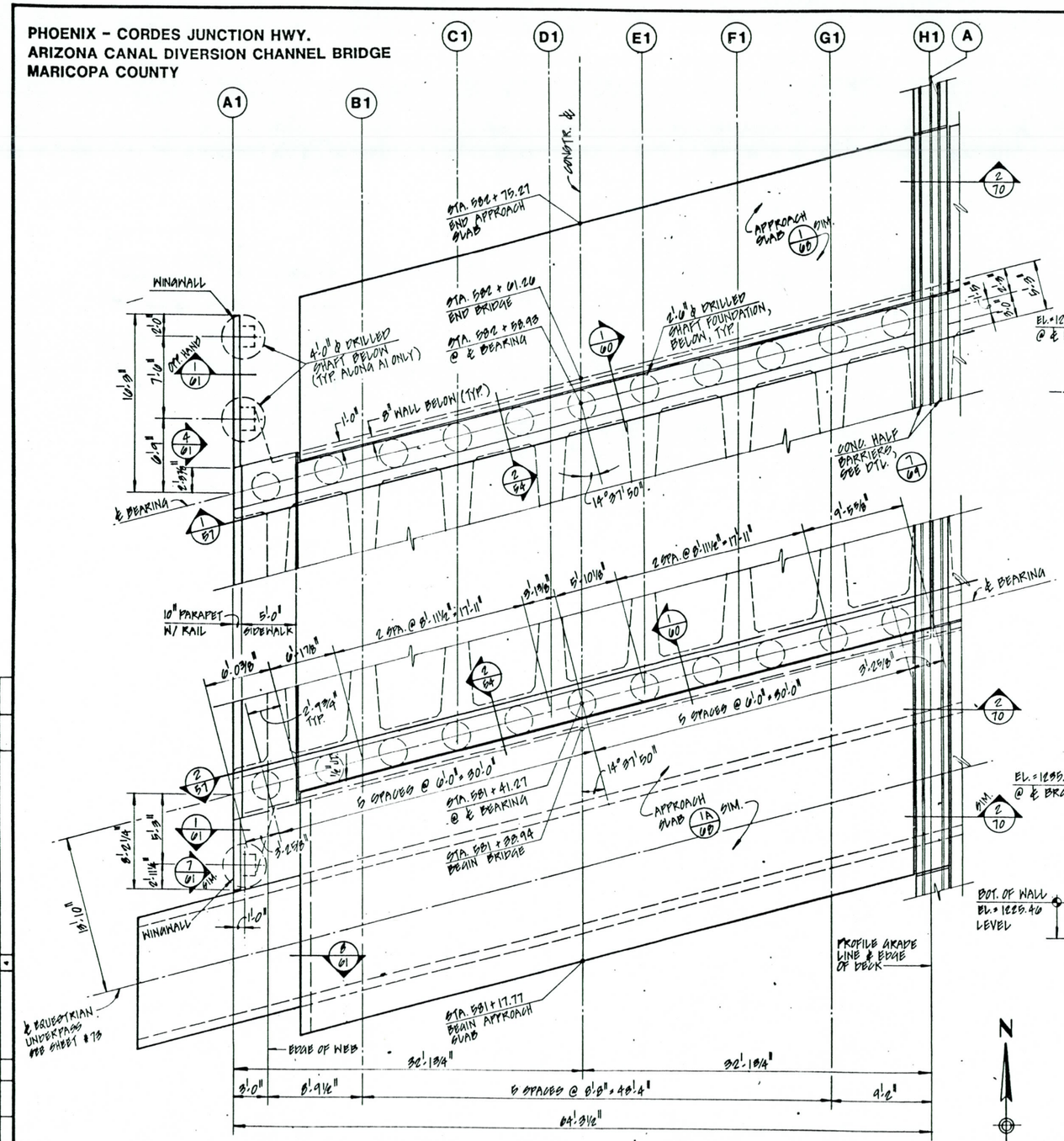
NO.	DESCRIPTION OF REVISIONS	DATE
1		
2		
3		
4		

BLUE PRINT RECORDS — FOR — DATE — NO.

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

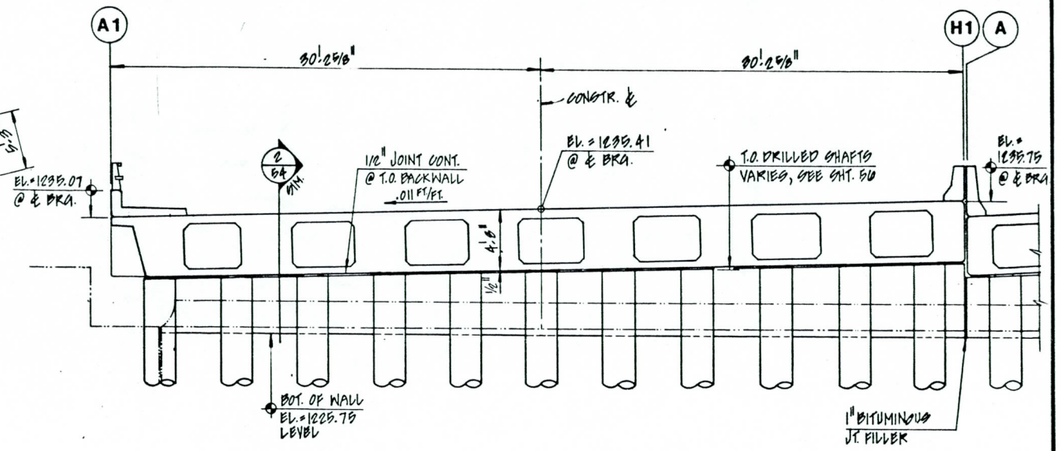
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	57	73	

NGA ENGINEERING CORPORATION
9/18/80 DATE — FOR THE CONSULTING ENGINEER
DESIGN: SEO DRAWN: JHG CHECKED: DRL



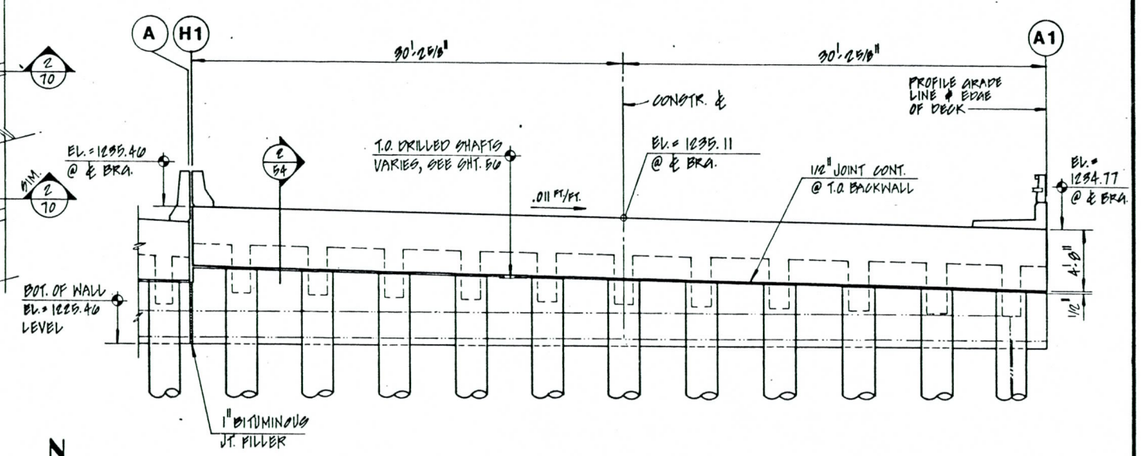
WEST (S.B.F.R.) BRIDGE - NORTH & SOUTH ABUTMENT PLANS

SCALE: 3/16" = 1'-0"



1 NORTH ABUTMENT ELEVATION

SCALE: 3/16" = 1'-0"



2 SOUTH ABUTMENT ELEVATION

SCALE: 3/16" = 1'-0"

N

		DATE
LAYOUT	JHG	2/80
DESIGN	SEO	2/80
DESIGN CK'D	DRL	2/80
DRAWN	JHG	2/80
DWG. CK'D	SEO, DRL	2/80
APPROVED	HEP	9/80

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

ARIZONA CANAL DIVERSION CHANNEL
WEST (S.B.F.R.) BRIDGE
PLANS AND ELEVATIONS

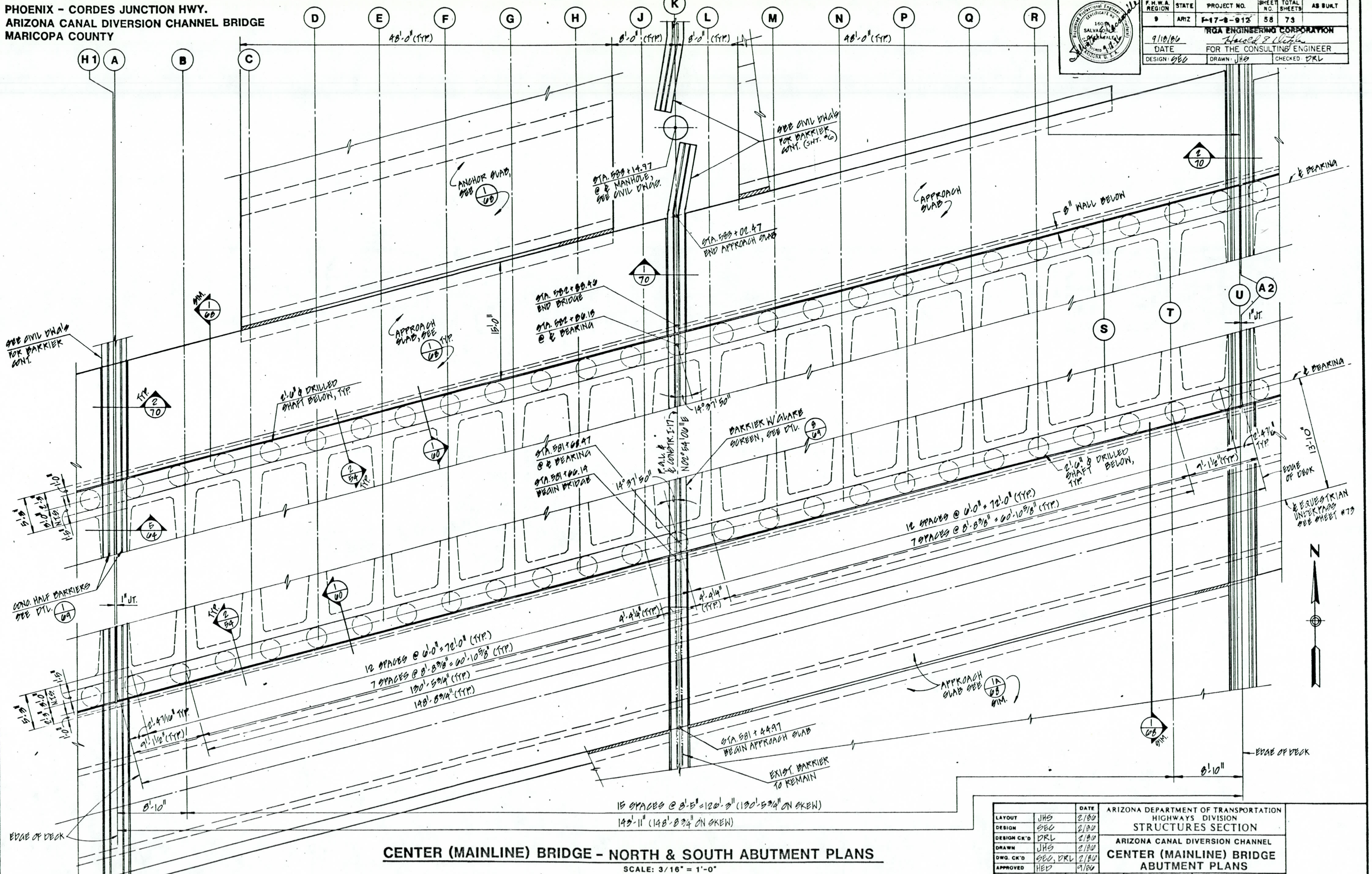
SHEET NO. 57 OF 73	I-17 ROUTE	208.25 MILEPOST	WEST 1442 CTR. EAST 1440 1441 STRUCTURE NO.	I-17-3-912 PROJECT NO.	BRIDGE ENGINEER

BLUE PRINT RECORDS							
DATE	NO.	FOR	DATE	NO.	FOR	NO.	DESCRIPTION OF REVISION	DATE
						1		
						2		
						3		
						4		

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	F-17-3-912	58	73	

RGA ENGINEERING CORPORATION
9/18/86 DATE — FOR THE CONSULTING ENGINEER
DESIGN: SEC DRAWN: JHS CHECKED: DRL



CENTER (MAINLINE) BRIDGE - NORTH & SOUTH ABUTMENT PLANS

SCALE: 3/16" = 1'-0"

		DATE
LAYOUT	JHS	2/86
DESIGN	SEC	2/86
DESIGN CK'D	DRL	2/86
DRAWN	JHS	2/86
DWG. CK'D	SEC, DRL	2/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

ARIZONA CANAL DIVERSION CHANNEL
CENTER (MAINLINE) BRIDGE ABUTMENT PLANS

SHEET NO.	ROUTE	MILEPOST	STRUCTURE NO.	PROJECT NO.	
58 OF 73	I-17	208.25	WEST 1442 CTR 1440 EAST 1441	I-17-3-912	BRIDGE ENGINEER

DATE	NO.	DESCRIPTION OF REVISIONS	DATE
	1		
	2		
	3		
	4		

BLUE PRINT RECORDS

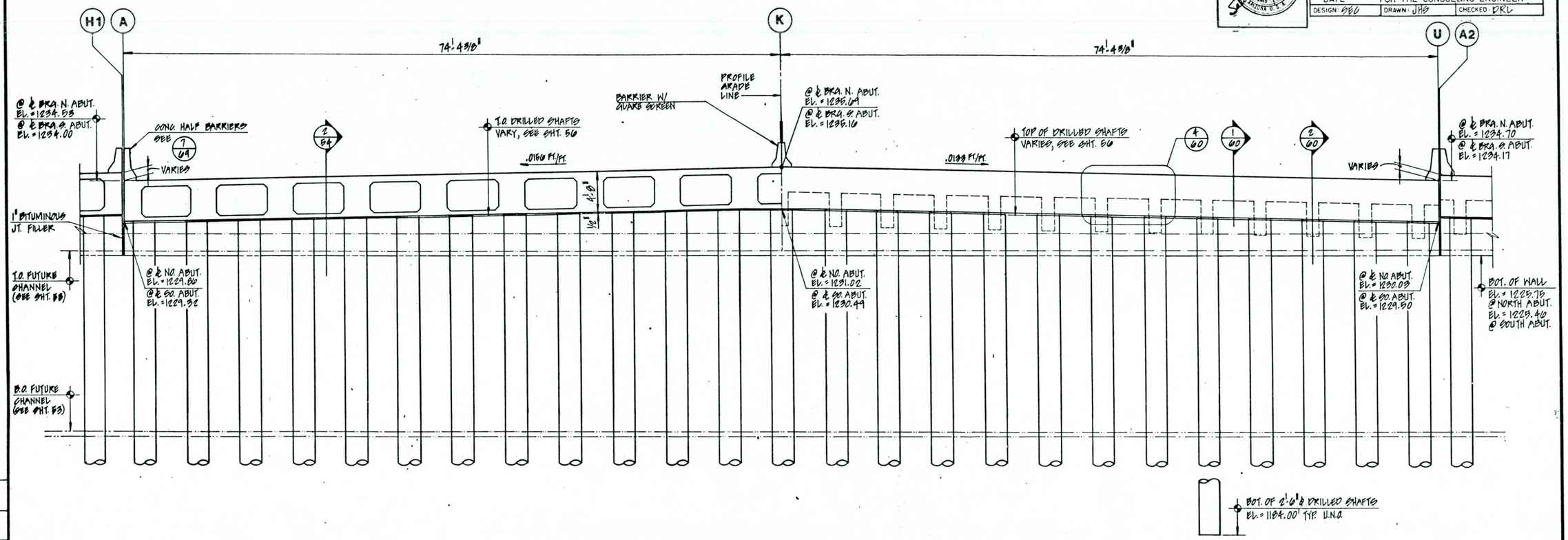
FOR	DATE	NO.	FOR	DATE	NO.

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	55	73	

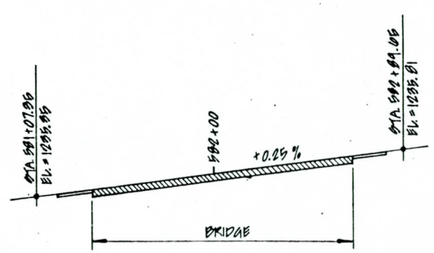
9/18/80 DATE — MGA ENGINEERING CORPORATION FOR THE CONSULTING ENGINEER

DESIGN: GEO | DRAWN: JHG | CHECKED: DRL

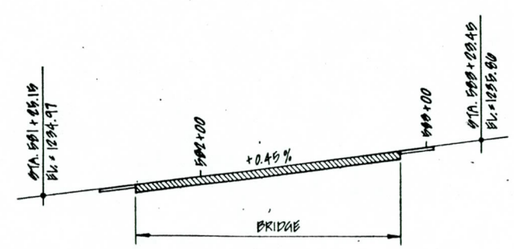


1 NORTH ABUTMENT ELEVATION - CENTER (MAINLINE) BRIDGE (SOUTH ABUT. ELEV. SIMILAR)

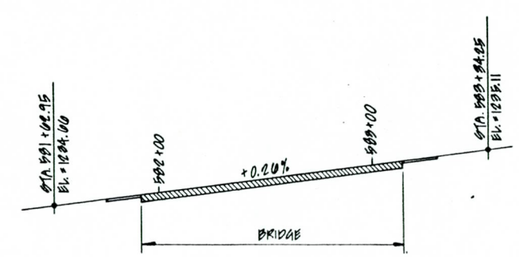
SCALE: 3/16" = 1'-0"



WEST (S.B.F.R.) BRIDGE PROFILE GRADE
(@ GRID H1)



CENTER (MAINLINE) BRIDGE PROFILE GRADE
(@ GRID K)



EAST (N.B.F.R.) BRIDGE PROFILE GRADE
(@ GRID A2)

		DATE
LAYOUT	JHG	2/80
DESIGN	GEO	2/80
DESIGN CK'D	DRL	2/80
DRAWN	JHG	2/80
DWG. CK'D	GEO, DRL	2/80
APPROVED	HBD	9/80

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

ARIZONA CANAL DIVERSION CHANNEL
CENTER (MAINLINE) BRIDGE
ABUTMENT ELEVATION

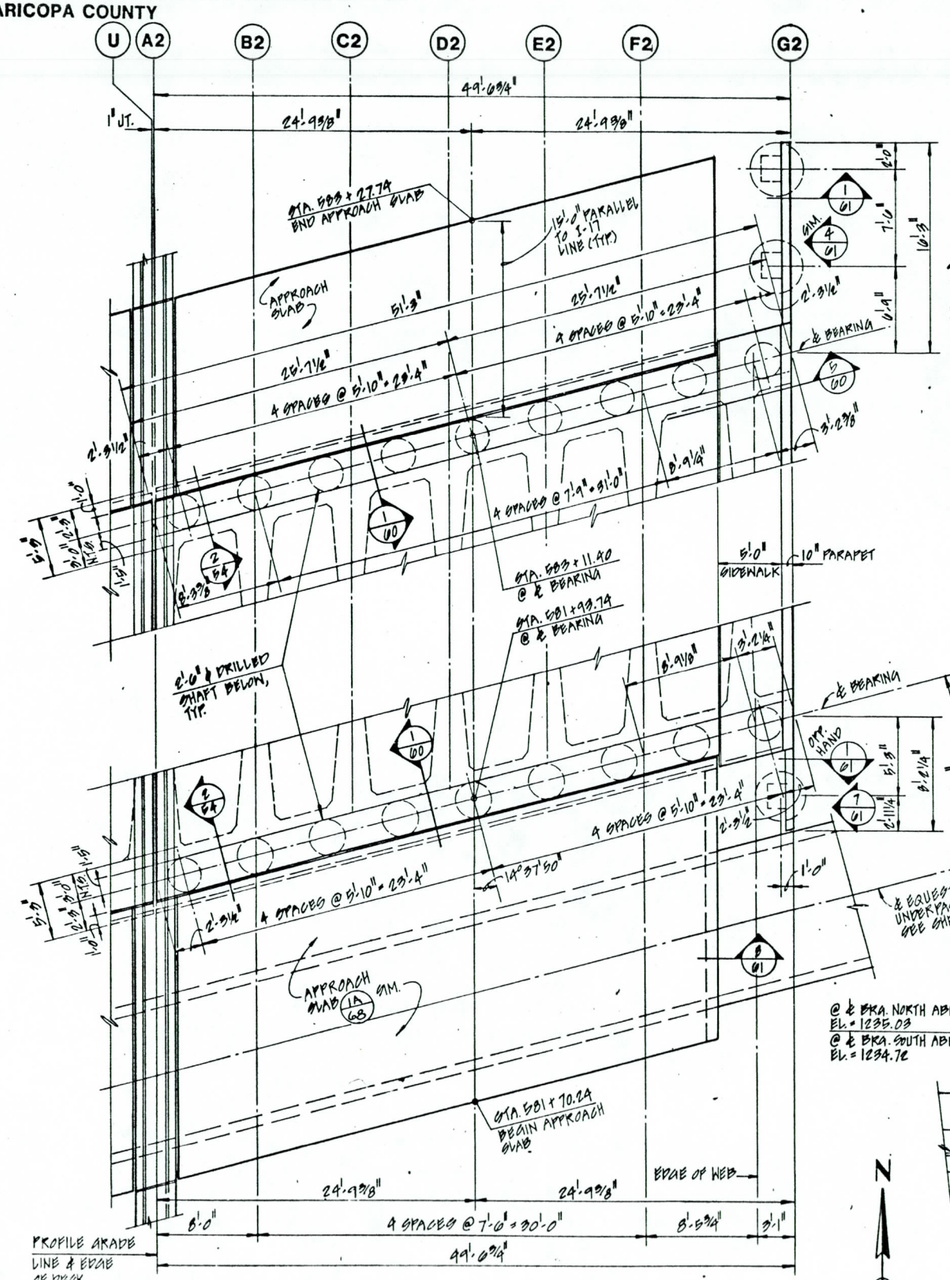
SHEET NO. 59 OF 73	I-17 ROUTE	208.25 MILEPOST	WEST 1442 CTR. 1440 EAST 1441 STRUCTURE NO.	I-17-3-912 PROJECT NO.	BRIDGE ENGINEER

BLUE PRINT RECORDS

DATE	NO.	FOR	DATE	NO.	FOR

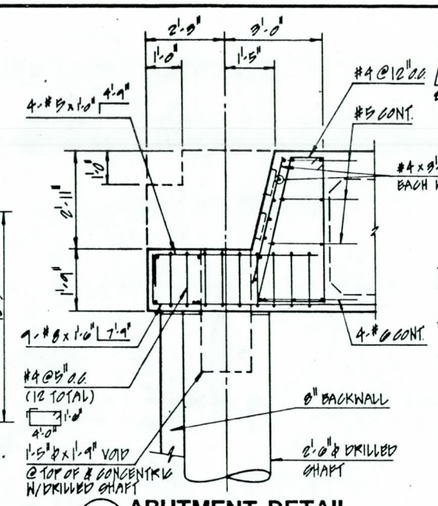
NO.	DESCRIPTION OF REVISIONS	DATE
1		
2		
3		
4		

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



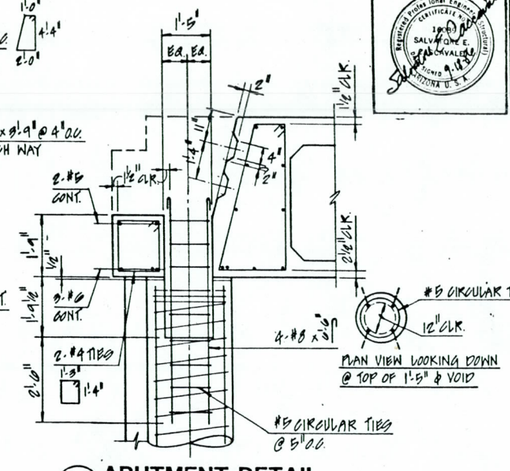
EAST (N.B.F.R.) BRIDGE - NORTH & SOUTH ABUTMENT PLANS

SCALE 3/16": 1'-0"



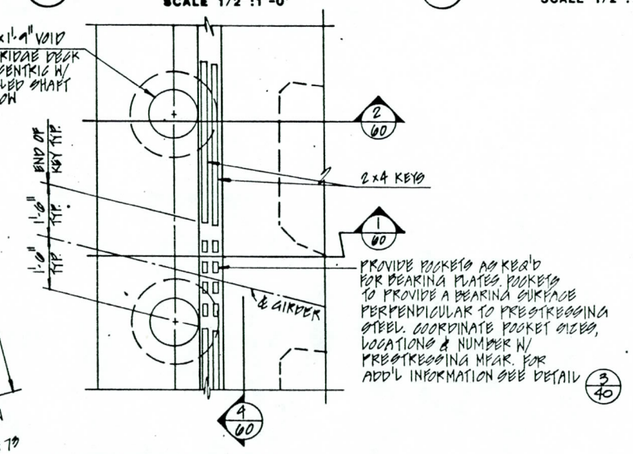
1 ABUTMENT DETAIL

SCALE 1/2":1'-0"



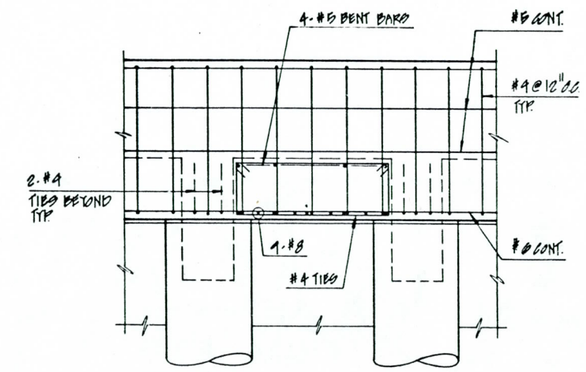
2 ABUTMENT DETAIL

SCALE 1/2":1'-0"



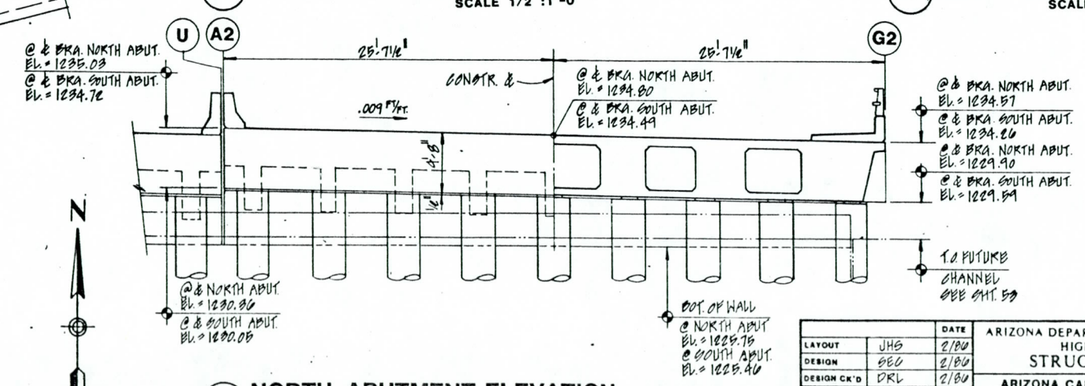
3 ABUTMENT PLAN

SCALE 1/2":1'-0"



4 SECTION THRU ABUTMENT

SCALE 1/2":1'-0"



5 NORTH ABUTMENT ELEVATION
SOUTH ABUT. SIMILAR

SCALE: 3/16":1'-0"

N

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	60	73	

9/19/80 DATE — RGA ENGINEERING CORPORATION — FOR THE CONSULTING ENGINEER

DESIGN: GEC — DRAWN: JHS — CHECKED: DRL

NO.	DESCRIPTION OF REVISIONS	DATE
1		
2		
3		
4		

BLUE PRINT RECORDS FOR — DATE NO. — FOR — DATE NO.

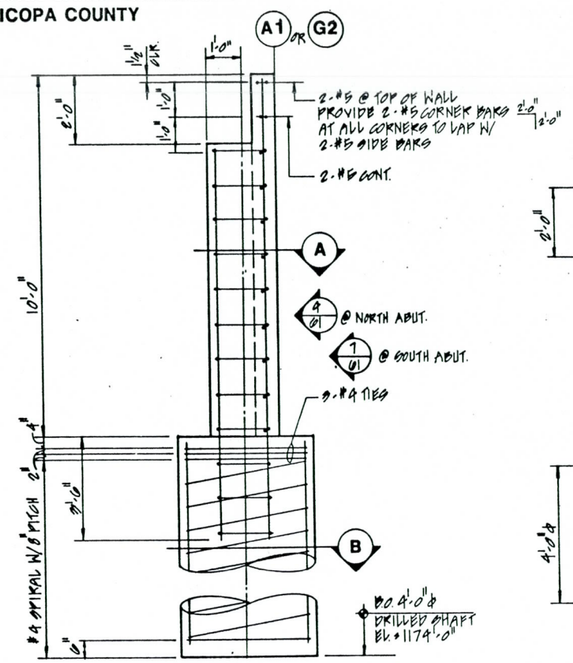
		DATE
LAYOUT	JHS	2/80
DESIGN	GEC	2/80
DESIGN CK'D	DRL	2/80
DRAWN	JHS	2/80
DWG. CK'D	GEC	2/80
APPROVED	HBD	9/80

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

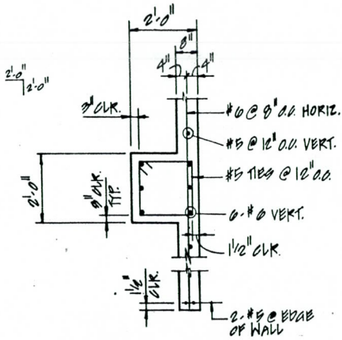
ARIZONA CANAL DIVERSION CHANNEL
EAST (N.B.F.R.) BRIDGE
PLANS & SECTIONS

SHEET NO. 60 OF 73 — I-17 ROUTE — 208.25 MILEPOST — WEST 1442 CTR 1440 EAST 1441 STRUCTURE NO. — I-17-3-912 PROJECT NO. — BRIDGE ENGINEER

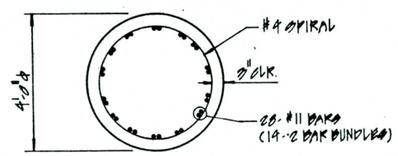
PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



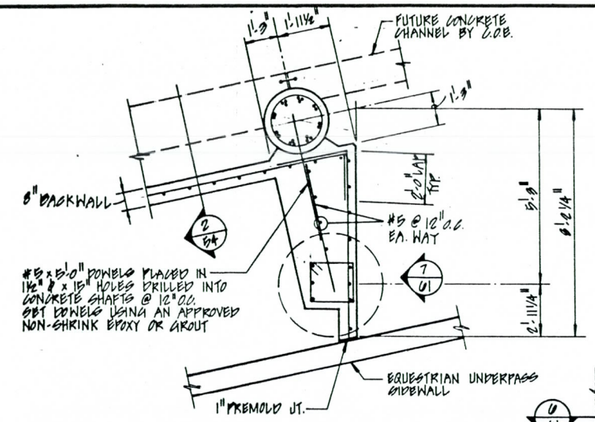
1 SECTION THRU WINGWALL PIER
SCALE: 1/2" = 1'-0"



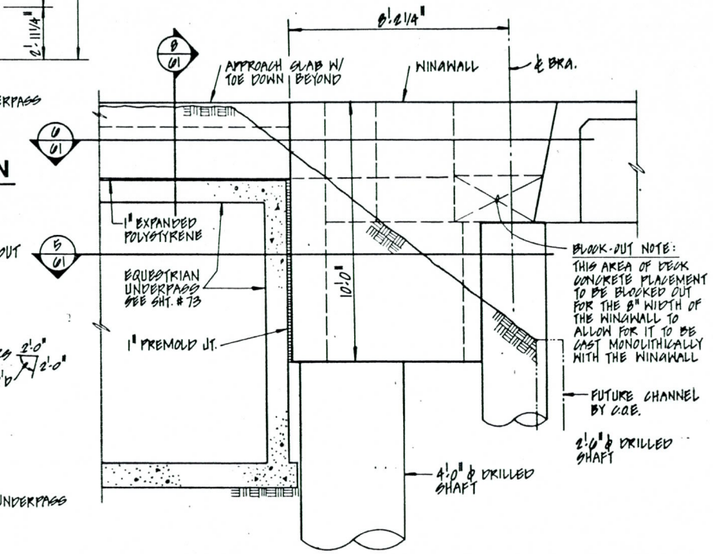
A PLAN

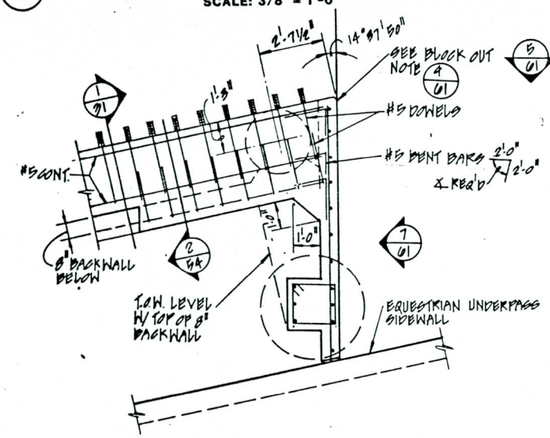


B PLAN



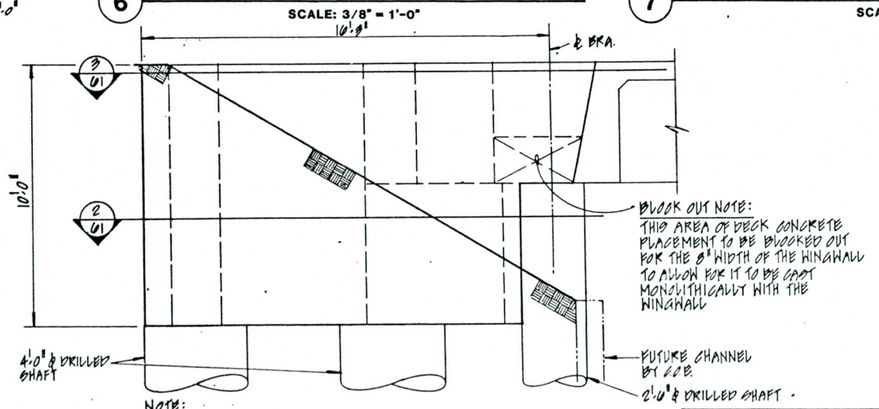
5 SOUTH ABUTMENT WINGWALL PLAN
SCALE: 3/8" = 1'-0"



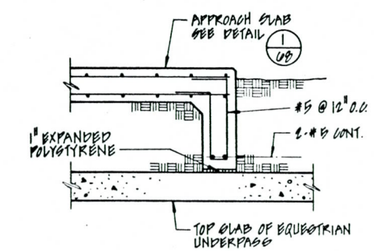


6 SOUTH ABUTMENT WINGWALL PLAN
SCALE: 3/8" = 1'-0"

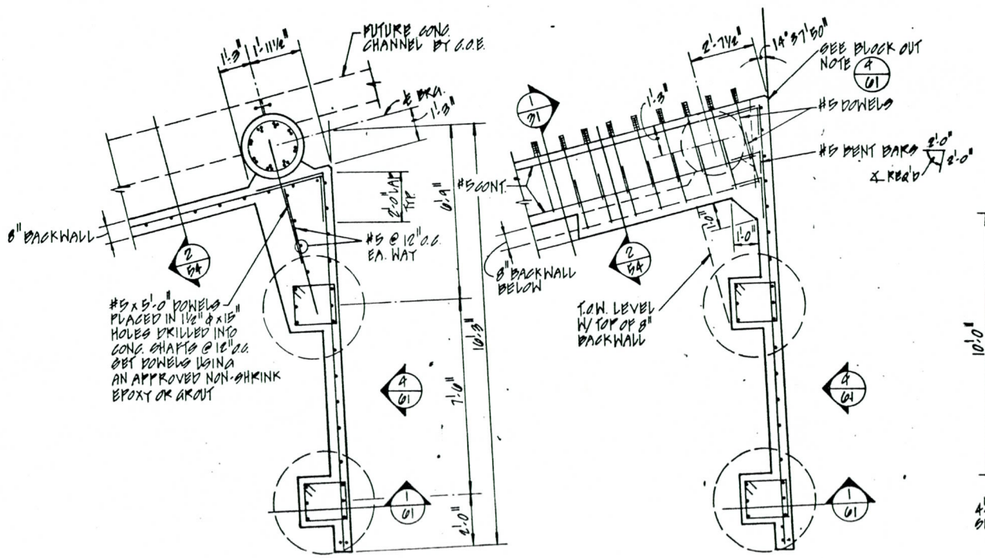
7 SOUTH ABUTMENT WINGWALL ELEVATION
SCALE: 3/8" = 1'-0"



NOTE:
WINGWALL ELEVATION SHOWN IN FINAL CONFIGURATION AFTER C.O.E. CHANNEL CONSTRUCTION. THIS PROJECT REQUIRES THE A.D. TO BACKFILL THE WINGWALL AREAS BACK TO ORIGINAL GRADE.



8 APPROACH SLAB TOE DOWN
SCALE: 1/2" = 1'-0"



2 NORTH ABUTMENT WINGWALL PLAN
SCALE: 3/8" = 1'-0"

3 NORTH ABUTMENT WINGWALL PLAN
SCALE: 3/8" = 1'-0"

4 NORTH ABUTMENT WINGWALL ELEVATION
SCALE: 3/8" = 1'-0"

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	61	73	

9/19/96 DATE
NGA ENGINEERING CORPORATION
FOR THE CONSULTING ENGINEER
DESIGN: GEC DRAWN: AD CHECKED: DRL

		DATE
LAYOUT	GEC	2/96
DESIGN	GEC	2/96
DESIGN CK'D	DRL	2/96
DRAWN	AD, JB	2/96
DWG. CK'D	DRL, GEC	2/96
APPROVED	HED	9/96

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
WINGWALL PLAN & DETAILS

SHEET NO.	ROUTE	MILEPOST	WEST CTR. EAST	STRUCTURE NO.	PROJECT NO.	BRIDGE ENGINEER
61 OF 73	I-17	208.25	1442 1440 1441		I-17-3-912	

BLUE PRINT RECORDS					
DATE	NO.	DESCRIPTION OF REVISION	DATE		
	1				
	2				
	3				
	4				
DATE	NO.	FOR	DATE	NO.	FOR

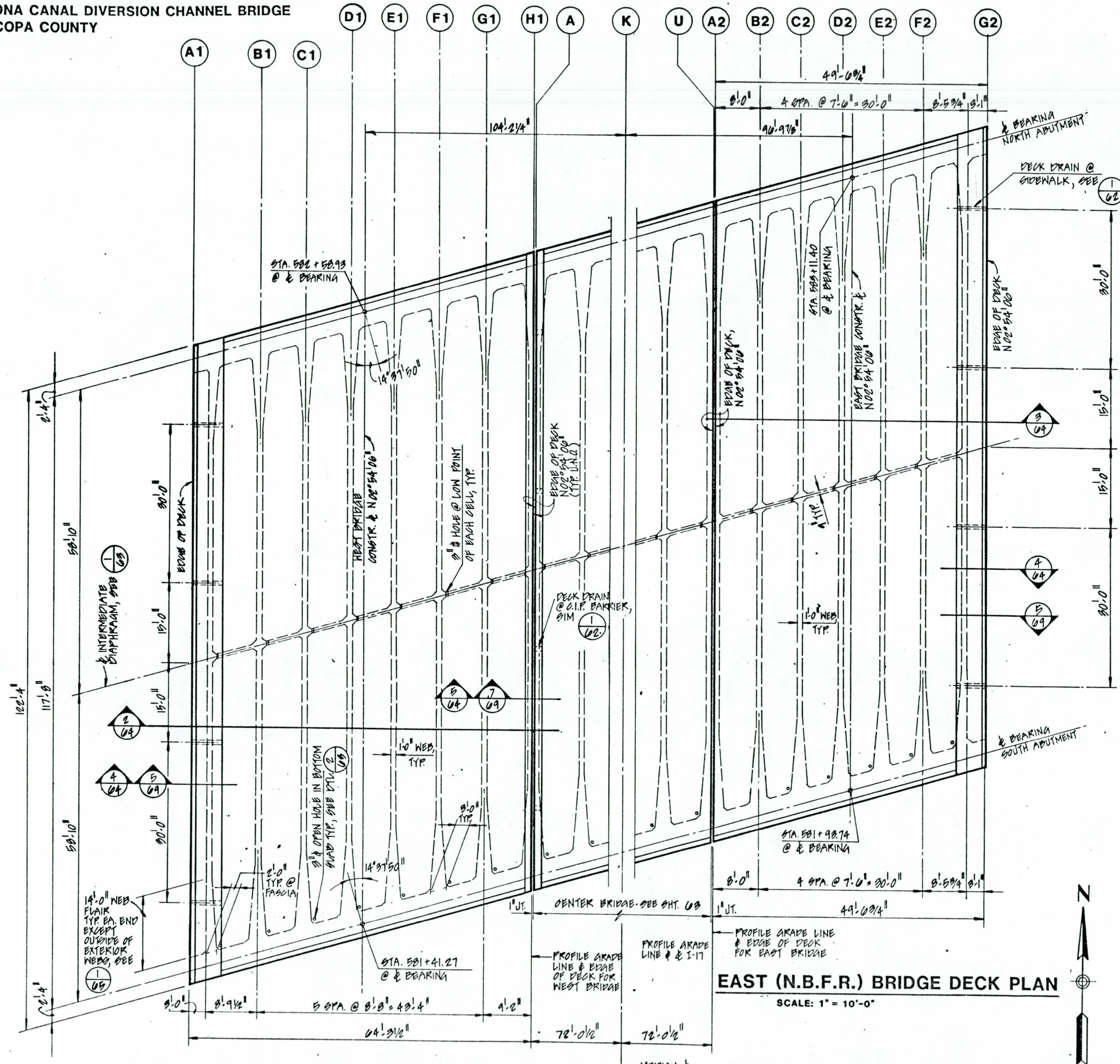
PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	62	73	

HGA ENGINEERING CORPORATION

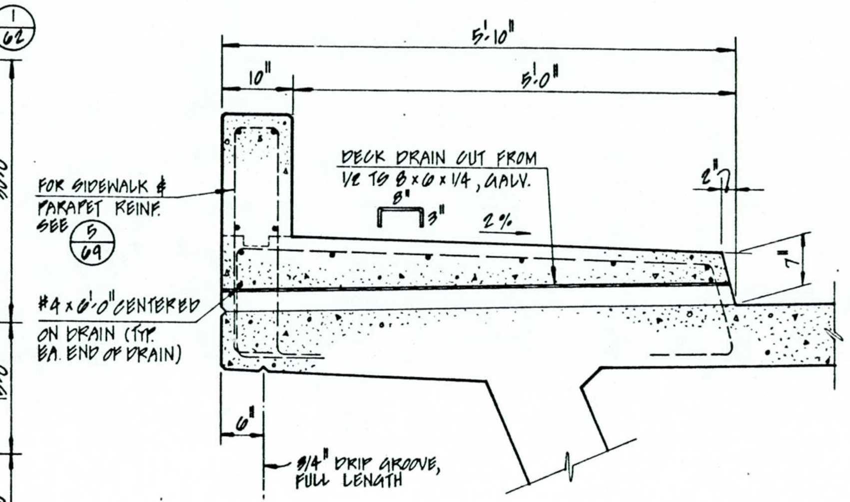
9/18/86 — DATE — Harold E. Dittz — FOR THE CONSULTING ENGINEER

DESIGN: SEC | DRAWN: JHS | CHECKED: DRL



WEST (S.B.F.R.) BRIDGE DECK PLAN
SCALE: 1" = 10'-0"

EAST (N.B.F.R.) BRIDGE DECK PLAN
SCALE: 1" = 10'-0"



(1) DECK DRAIN DETAIL
SCALE: 1" = 10'-0"

BLUE PRINT RECORDS

DATE	NO.	FOR	DATE	NO.	FOR	NO.	DESCRIPTION OF REVISIONS	DATE
						1		
						2		
						3		
						4		

		DATE
LAYOUT	JHS	2/86
DESIGN	SEC	2/86
DESIGN CK'D	DRL	2/86
DRAWN	JHS	2/86
DWG. CK'D	SEC	2/86
APPROVED	HED	9/86

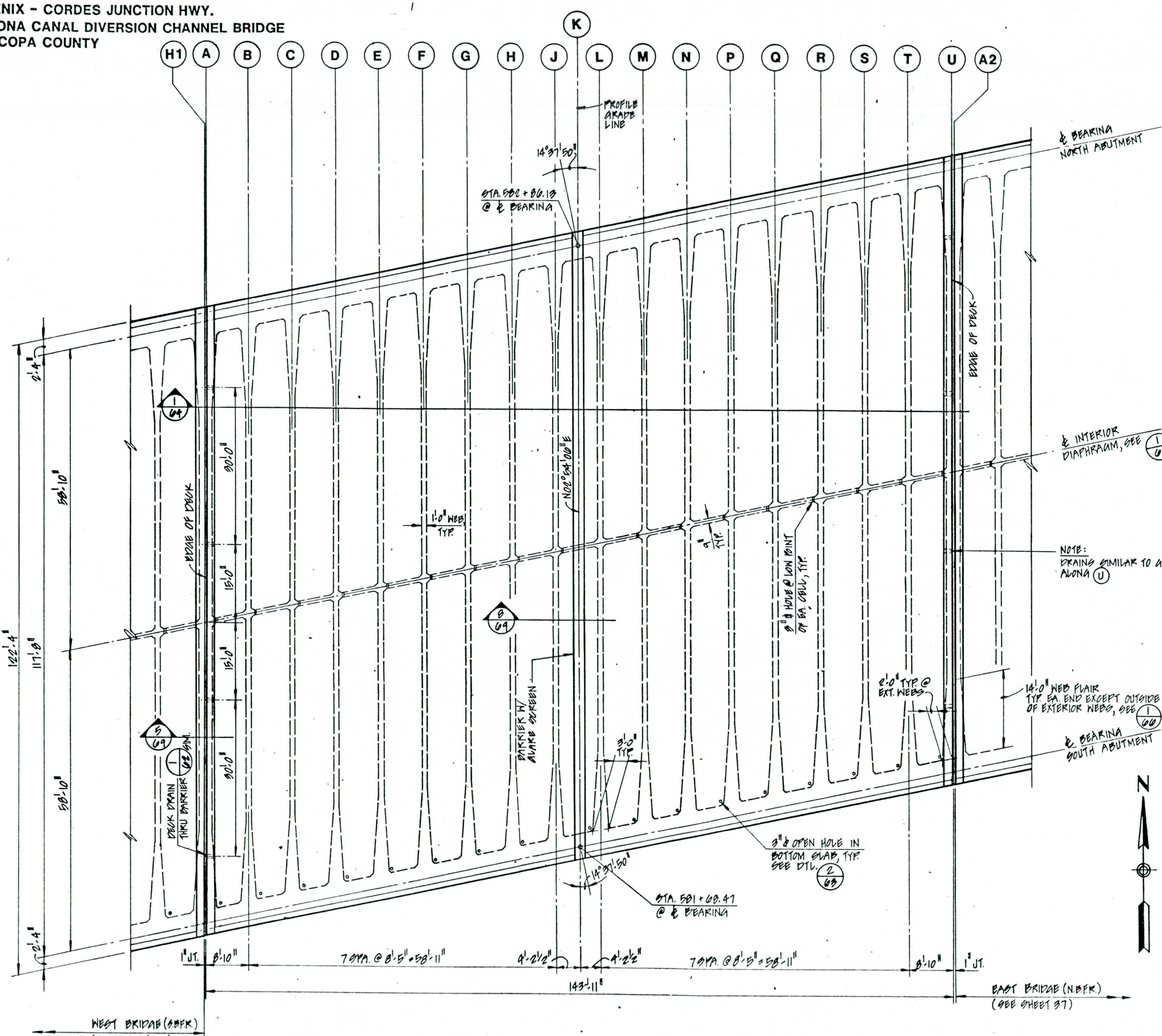
ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

ARIZONA CANAL DIVERSION CHANNEL

DECK & GIRDER PLANS

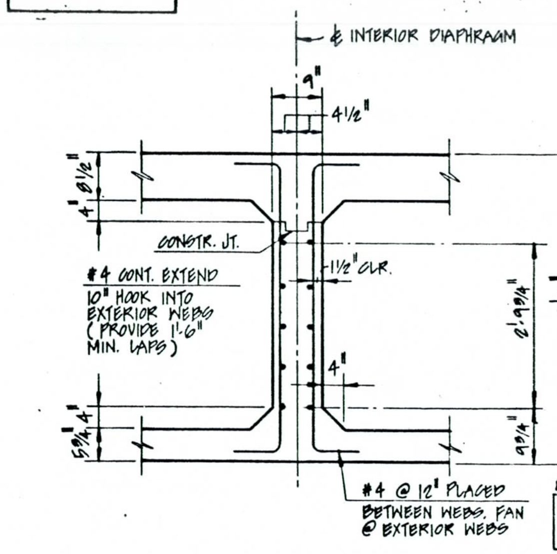
SHEET NO.	ROUTE	MILEPOST	STRUCTURE NO.	PROJECT NO.	
62 OF 73	I-17	208.25	WEST 1442 CTR 1440 EAST 1441	I-17-3-912	BRIDGE ENGINEER

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



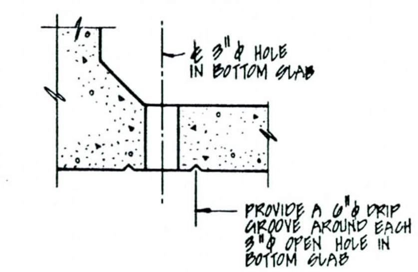
CENTER (MAINLINE) BRIDGE DECK PLAN

SCALE: 1" = 10'-0"



1 INTERMEDIATE DIAPHRAGM DTL.

SCALE: 3/4" = 1'-0"



2 DRIP GROOVE DETAIL

NO SCALE

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	63	73	

9/18/86 DATE — RGA ENGINEERING CORPORATION, Harold E. Dietz, FOR THE CONSULTING ENGINEER

DESIGN: SEC | DRAWN: JHS | CHECKED: DRL

Registered Professional Engineer, Certificate No. 16089, Salvatore G. Cavalele, Arizona U.S.A., signed 9-18-86

BLUE PRINT RECORDS			
DATE	NO.	FOR	
REVISIONS	NO.	DESCRIPTION OF REVISIONS	DATE
	1		
	2		
	3		
	4		

		DATE
LAYOUT	JHS	2/86
DESIGN	SEC	2/86
DESIGN CK'D	DRL	2/86
DRAWN	JHS	2/86
DWG. CK'D	SEC	2/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

ARIZONA CANAL DIVERSION CHANNEL

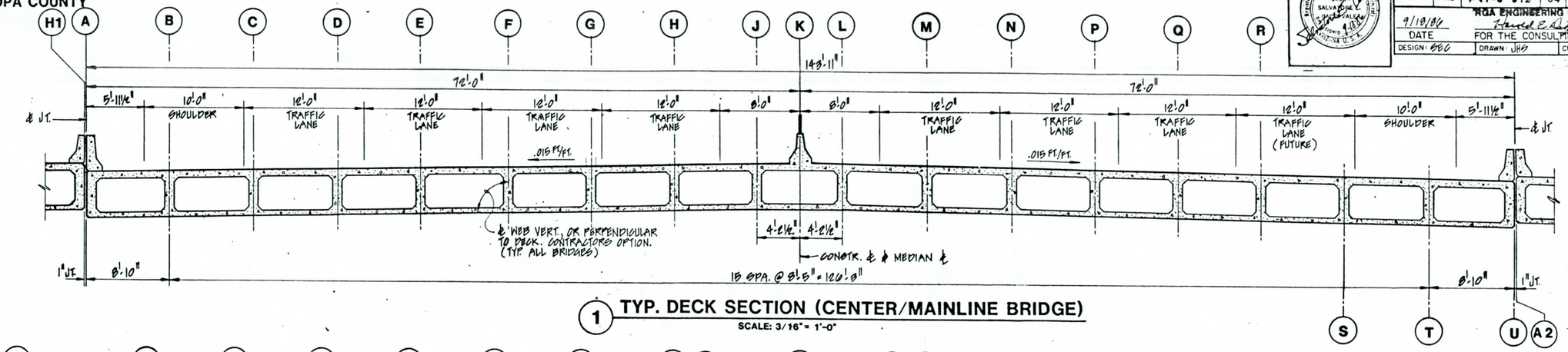
DECK AND GIRDER PLAN

SHEET NO.	ROUTE	MILEPOST	STRUCTURE NO.	PROJECT NO.	
63 OF 73	I-17	208.25	WEST 1442, CTR 1440, EAST 1441	I-17-3-912	BRIDGE ENGINEER

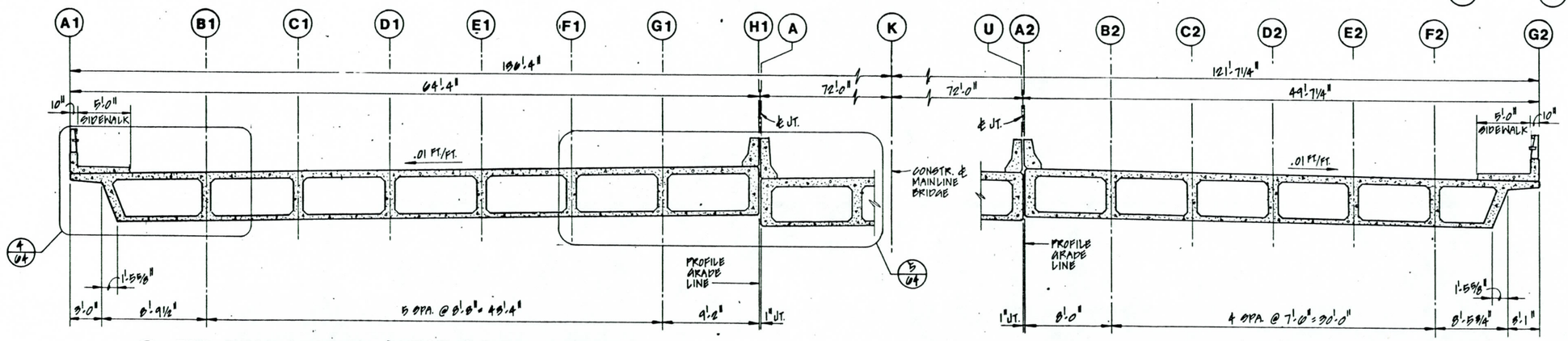
PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	64	73	

9/19/86 — DATE
MGA ENGINEERING CORPORATION
FOR THE CONSULTING ENGINEER
DESIGN: SBC — DRAWN: JHS — CHECKED: DKL



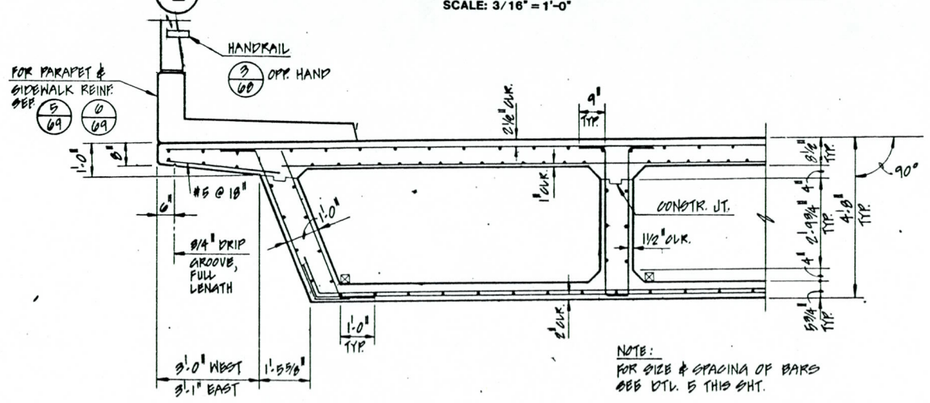
1 TYP. DECK SECTION (CENTER/MAINLINE BRIDGE)
SCALE: 3/16" = 1'-0"



2 TYP. DECK SECTION (WEST/S.B.F.R. BRIDGE)
SCALE: 3/16" = 1'-0"

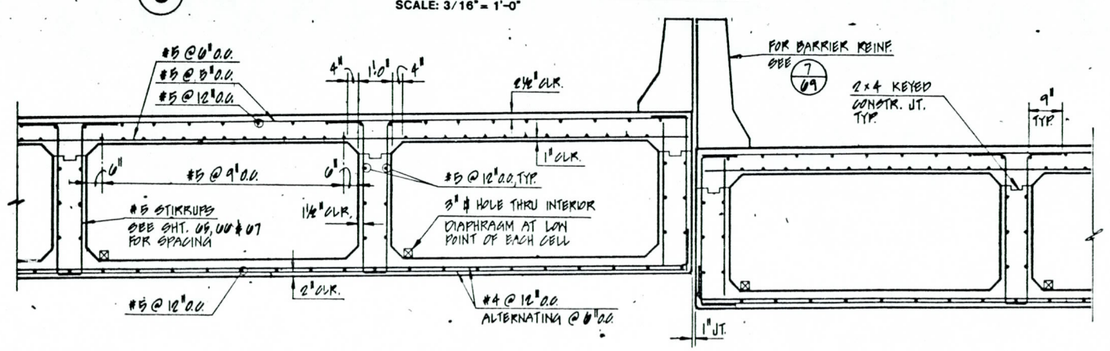
3 DECK SECTION (EAST/N.B.F.R. BRIDGE)
SCALE: 3/16" = 1'-0"

MINIMUM LAP SPLICE SCHEDULE	
BAR SIZE	MINIMUM LAP SPLICE UNLESS NOTED OTHERWISE
#4	1'-4"
#5	1'-8"
#6	2'-0"
#7	2'-4"
#8	3'-1"
#9	3'-11"
#10	4'-11"
#11	6'-1"



NOTE:
FOR SIZE & SPACING OF BARS SEE DTL. 5 THIS SHT.

4 TYP. EXT. GIRDER SECTION
SCALE: 1/2" = 1'-0"



5 TYP. GIRDER SECTION
SCALE: 1/2" = 1'-0"

		DATE
LAYOUT	JHS	2/80
DESIGN	SBC	2/80
DESIGN CK'D	DKL	2/80
DRAWN	JHS	2/80
DWG. CK'D	SBC, DKL	2/80
APPROVED	HED	9/80

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
DECK SECTIONS

SHEET NO. 64 OF 73	I-17 ROUTE	208.25 MILEPOST	WEST CTR EAST 1442 1440 1441 STRUCTURE NO.	I-17-3-912 PROJECT NO.	BRIDGE ENGINEER

BLUE PRINT RECORDS					
DATE	NO.	FOR	DATE	NO.	FOR

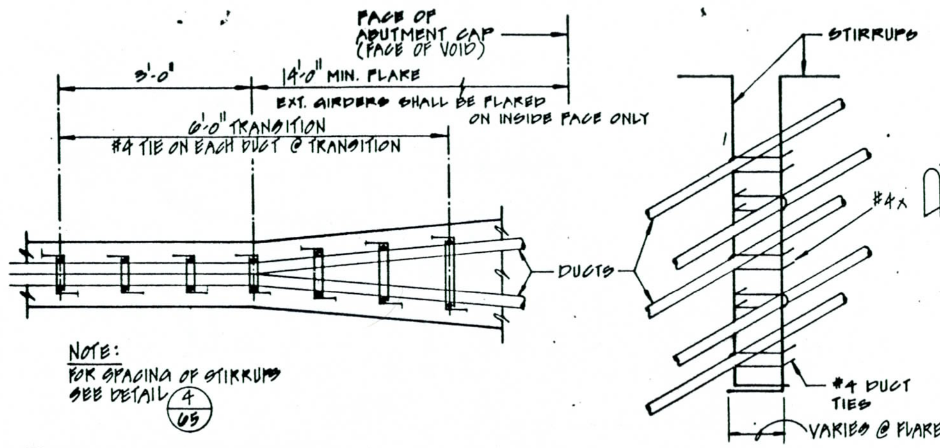
NO.	DESCRIPTION OF REVISIONS	DATE
1		
2		
3		
4		

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

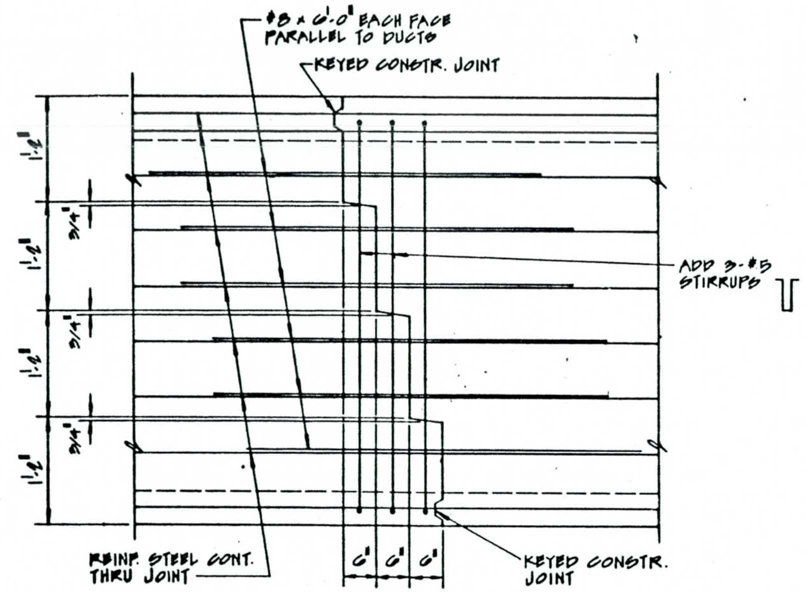
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	65	73	

REGISTERED PROFESSIONAL ENGINEER (STRUCTURAL) CERTIFICATE 16089 SALVATORE E. CACCAVALE ARIZONA U.S.A. Signed 9.18.86

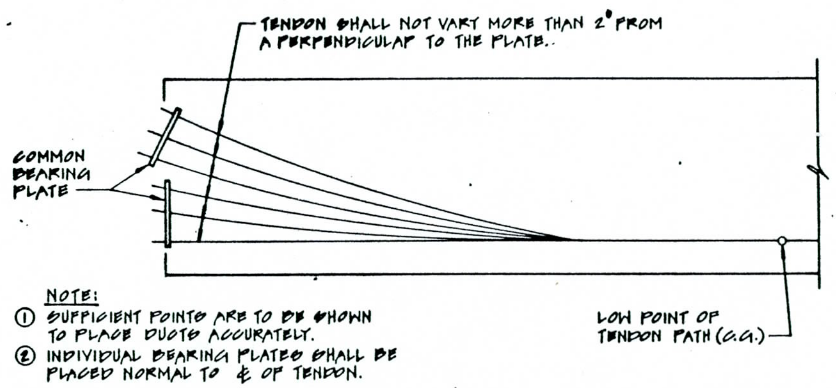
RGA ENGINEERING CORPORATION
9/18/86 DATE — FOR THE CONSULTING ENGINEER
DESIGN: KKH — DRAWN: JHS — CHECKED: DRL



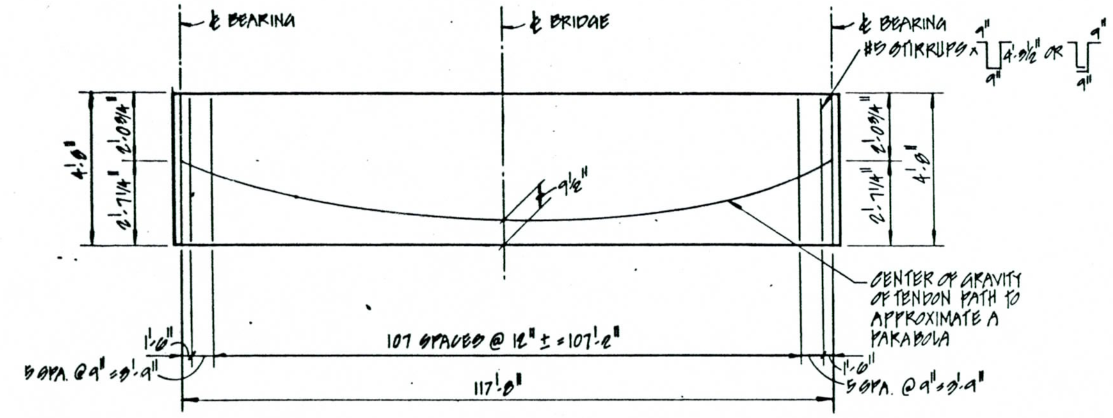
1 **DUCT & WEB FLARE DETAIL**
NO SCALE



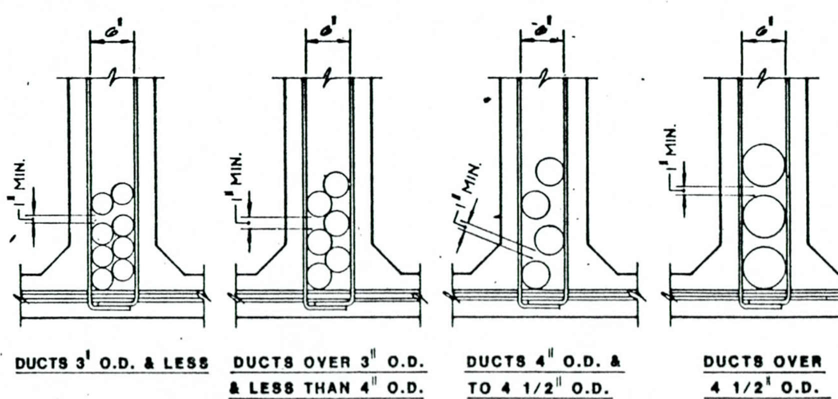
2 **CONSTRUCTION JOINT DETAIL ELEVATION**



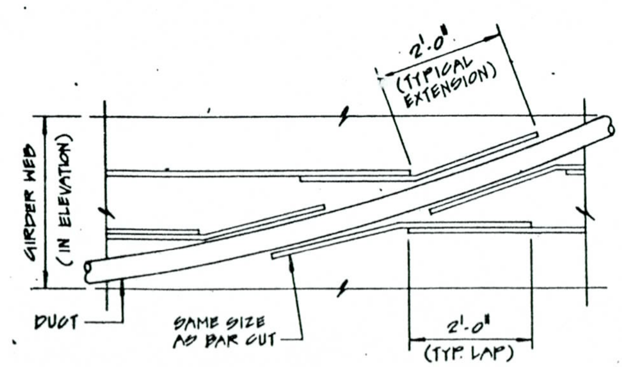
3 **COMMON BEARING PLATE PRESTRESSING PATH**
NO SCALE



4 **TENDON PATH & SHEAR REINF.**
NO SCALE



5 **CLEARANCE REQUIREMENTS FOR DUCTS**
NO SCALE



6 **ADJUSTMENT OF WEB REINFORCING CONFLICTING W/ DUCTS**
NO SCALE

PRESTRESSING NOTES

(A) CONCRETE F'_c = 4500 PSI MINIMUM AFTER 28 DAYS. F'_c = 3000 PSI MINIMUM AT TIME OF STRESSING

(B) PJACK FORCE = 19,075 KIPS PER BRIDGE REQUIRED AT JACKING END.

A_S = PJACK/.74 F'_S.

(C) PJACK SPECIFIED AT THE JACKING ENDS INCLUDES FRICTION LOSSES, ANCHORAGE LOSSES, AND PROVISION FOR 35,200 PSI LOSS IN STRESS.

(D) TENDONS SHALL BE JACKED TO 0.74 F'_S AND ANCHORED AT AN EQUIVALENT ANCHOR SET = 5/8".

(E) DESIGN IS BASED ON μ = .25; K = .0002.

(F) REINFORCING STEEL MAY BE ADJUSTED DURING THE INSTALLATION OF PRESTRESSING DUCTS AS REQUIRED TO PROVIDE PLANNED CLEARANCES FOR THE METAL CONDUITS, ANCHORAGES, JACKS AND EQUIPMENT IF APPROVED BY THE ENGINEER.

(G) DUCTS SHALL BE SECURELY TIED TO THE VERTICAL STIRRUPS AT 4'-6" MAXIMUM SPACING TO PREVENT DISPLACEMENT DURING CONCRETING.

(H) BEARING PLATES SHALL BE PLACED TIGHTLY AGAINST THE FORMS WHICH SHALL BE BRACED AND ANCHORED TO SUPPORT THEIR WEIGHT.

(I) CONTRACTOR SHALL SUBMIT ELONGATION AND JACKING CALCULATIONS BASED ON $\alpha\mu$ + KL = 0.054 FOR A DISTANCE L= 118' (JACKING FROM ONE END).

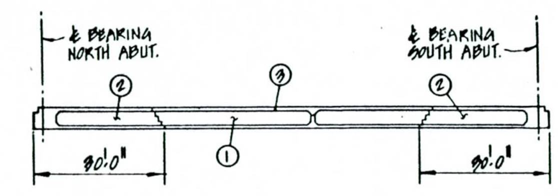
(J) AT THE CONTRACTOR"S OPTION THE PRESTRESSING FORCE MAY VARY UP TO + 5% FROM THE THEORETICAL EQUAL FORCE PER WEB PROVIDED THE TOTAL PJACK IS OBTAINED AND DISTRIBUTED SYMMETRICALLY ABOUT THE CENTERLINE OF THE TYPICAL SECTION.

(K) NO MORE THAN 1/2 OF THE PRESTRESSING FORCE IN ANY ONE GIRDER MAY BE STRESSED BEFORE AN EQUAL FORCE IS STRESSED IN THE ADJACENT GIRDERS. AT NO TIME DURING THE STRESSING OPERATIONS SHALL MORE THAN 1/6 OF THE TOTAL PRESTRESSING FORCE BE APPLIED ECCENTRICALLY ABOUT THE CENTERLINE OF THE STRUCTURE.

(L) CONTRACTOR SHALL SUBMIT ANCHORAGE BEARING STRESS CALCULATIONS NOT TO EXCEED 3000 PSI OR 0.9 F'CI.

(M) 1/2 Ø 7 WIRE LOW RELAXATION STRAND, F'_S = 270 KSI.

(N) POST TENSIONING SHALL OCCUR AFTER 7 DAY MOIST CURE.



NOTES:
1. TOP SLAB ③ SHALL BE PLACED SEPERATELY FROM ① & ②.
2. ③ MAY BE PLACED CONTINUOUSLY OR IN PARTS AS APPROVED BY THE ENGINEER; PROVIDING NO TRANSVERSE CONSTRUCTION JOINTS FALL ABOVE THE ② AREAS.
3. ALTERNATIVE POURING SEQUENCES PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER WILL REQUIRE A NO-COST SUPPLEMENT AGREEMENT DETAILING JOINT LOCATIONS AND CONDITIONS.

POURING SCHEDULE
NO SCALE

		DATE
LAYOUT	JHS	2/86
DESIGN	RKH	2/86
DESIGN CK'D	DRL	2/86
DRAWN	JHS	2/86
DWG. CK'D	SEC, DRL	2/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

ARIZONA CANAL DIVERSION CHANNEL
WEST (S.B.F.R.) BRIDGE
PRESTRESSING DETAILS

SHEET NO.	ROUTE	MILEPOST	STRUCTURE NO.	PROJECT NO.	BRIDGE ENGINEER
65 OF 73	I-17	208.25	WEST 1442 CTR 1440 EAST 1441	I-17-3-912	

NO.	DESCRIPTION OF REVISIONS	DATE
1		
2		
3		
4		

BLUE PRINT RECORDS

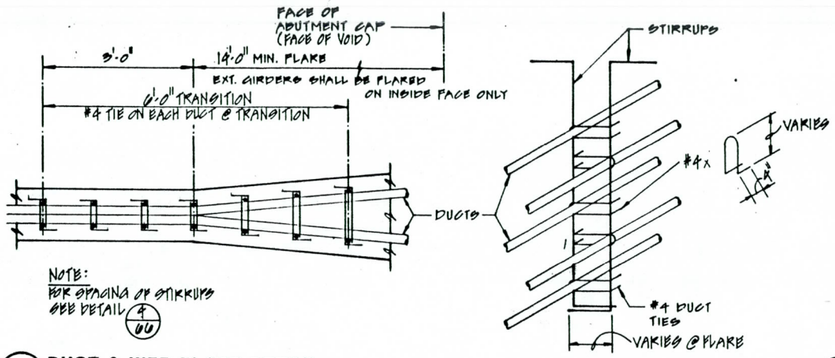
DATE	NO.	FOR	DATE	NO.	FOR

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

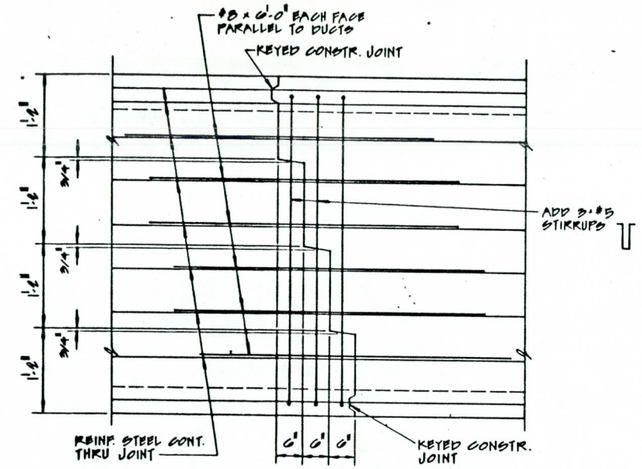
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	88	73	

9/19/86 DATE — RGA ENGINEERING CORPORATION — FOR THE CONSULTING ENGINEER

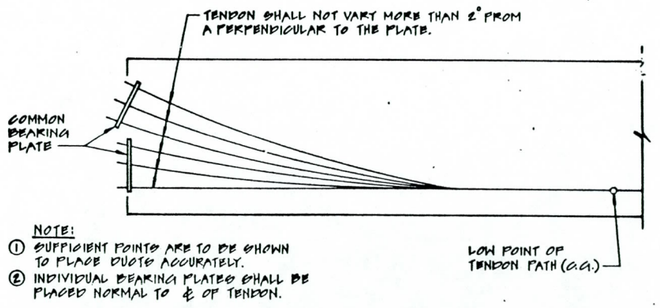
DESIGN: KKH | DRAWN: JHG | CHECKED: DKL



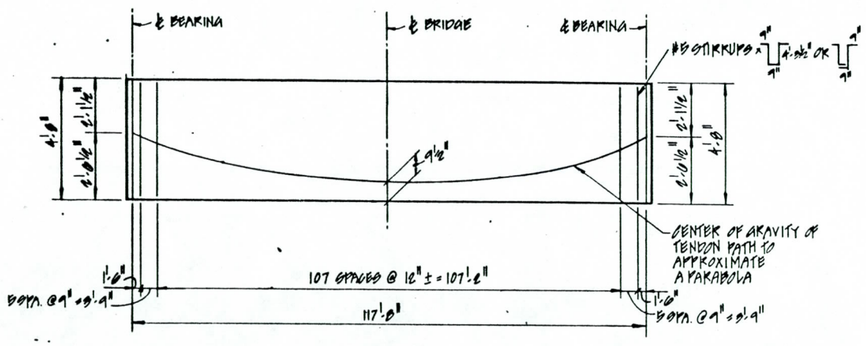
1 DUCT & WEB FLARE DETAIL
NO SCALE



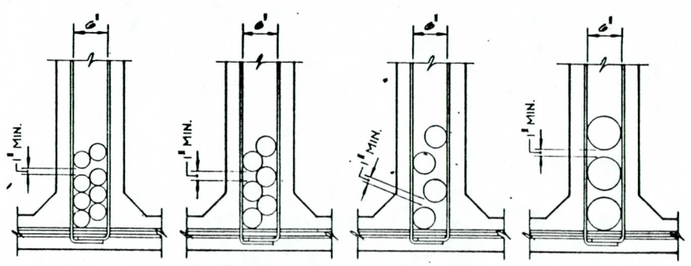
2 CONSTRUCTION JOINT DETAIL ELEVATION
NO SCALE



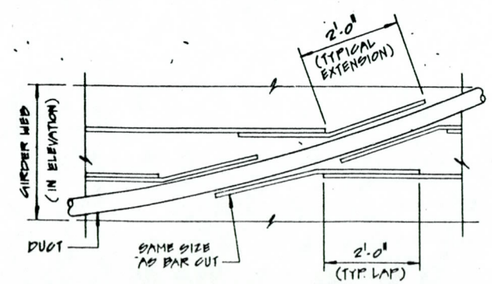
3 COMMON BEARING PLATE PRESTRESSING PATH
NO SCALE



4 TENDON PATH & SHEAR REINF.
NO SCALE



5 CLEARANCE REQUIREMENTS FOR DUCTS
NO SCALE



6 ADJUSTMENT OF WEB REINFORCING CONFLICTING W/ DUCTS
NO SCALE

PRESTRESSING NOTES

(A) CONCRETE F'_c = 4500 PSI MINIMUM AFTER 28 DAYS.
F'_{ci} = 3000 PSI MINIMUM AT TIME OF STRESSING.

(B) PJACK FORCE = 40,720 KIPS PER BRIDGE REQUIRED AT JACKING END.
A_s = PJACK/.74 F'_s.

(C) PJACK SPECIFIED AT THE JACKING ENDS INCLUDES FRICTION LOSSES, ANCHORAGE LOSSES, AND PROVISION FOR 35,200 PSI LOSS IN STRESS.

(D) TENDONS SHALL BE JACKED TO 0.74 F'_s AND ANCHORED AT AN EQUIVALENT ANCHOR SET = 5/8".

(E) DESIGN IS BASED ON μ = .25; K = .0002.

(F) REINFORCING STEEL MAY BE ADJUSTED DURING THE INSTALLATION OF PRESTRESSING DUCTS AS REQUIRED TO PROVIDE PLANNED CLEARANCES FOR THE METAL CONDUITS, ANCHORAGES, JACKS AND EQUIPMENT IF APPROVED BY THE ENGINEER.

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(J) AT THE CONTRACTOR'S OPTION THE PRESTRESSING FORCE MAY VARY UP TO ± 5% FROM THE THEORETICAL EQUAL FORCE PER WEB PROVIDED THE TOTAL PJACK IS OBTAINED AND DISTRIBUTED SYMMETRICALLY ABOUT THE CENTERLINE OF THE TYPICAL SECTION.

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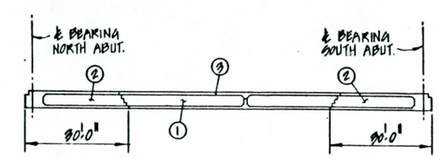
(L) CONTRACTOR SHALL SUBMIT ANCHORAGE BEARING STRESS CALCULATIONS NOT TO EXCEED 3000 PSI OR 0.9 F'CI.

(M) 1/2 Ø 7 WIRE LOW RELAXATION STRAND, F'_s = 270 KSI.

(N) POST TENSIONING SHALL OCCUR AFTER 7 DAY MOIST CURE.



NOTES:
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2. ③ MAY BE PLACED CONTINUOUSLY OR IN PARTS AS APPROVED BY THE ENGINEER; PROVIDING NO TRANSVERSE CONSTRUCTION JOINTS FALL ABOVE THE ② AREAS.
3. ALTERNATIVE POURING SEQUENCES PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER WILL REQUIRE A NO-COST SUPPLEMENT AGREEMENT DETAILING JOINT LOCATIONS AND CONDITIONS.

POURING SCHEDULE
NO SCALE

		DATE
LAYOUT	JHG	2/86
DESIGN	KKH	2/86
DESIGN CK'D	DKL	2/86
DRAWN	JHG	2/86
DWG. CK'D	SEG, DKL	2/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
CENTER (MAINLINE) BRIDGE
PRESTRESSING DETAILS

SHEET NO. 66 OF 73 | I-17 ROUTE | 208.25 MILEPOST | WEST CTR EAST 1442 1440 1441 STRUCTURE NO. | I-17-3-912 PROJECT NO. | BRIDGE ENGINEER

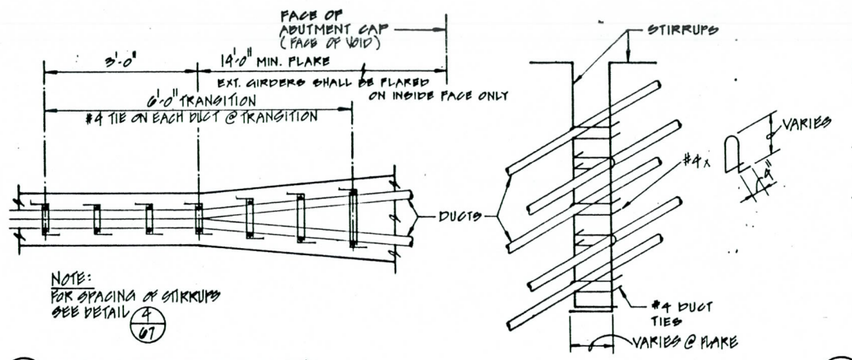
NO.	DATE	BY	DESCRIPTION OF REVISIONS
1			
2			
3			
4			

BLUE PRINT RECORDS
FOR | DATE | NO. | FOR | DATE | NO. | FOR

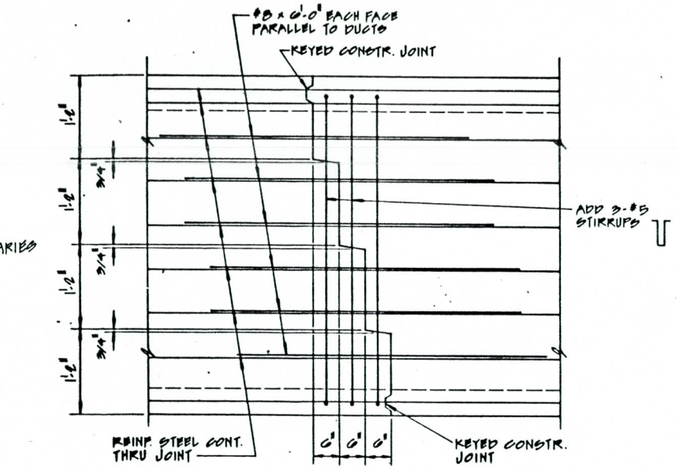
PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	67	73	

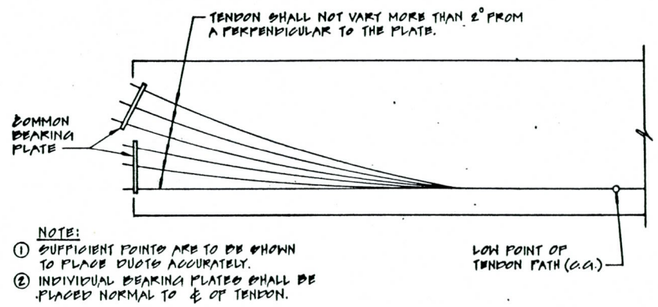
RGA ENGINEERING CORPORATION
9/19/86 — DATE — FOR THE CONSULTING ENGINEER
DESIGN: KKH — DRAWN: JHS — CHECKED: DKL



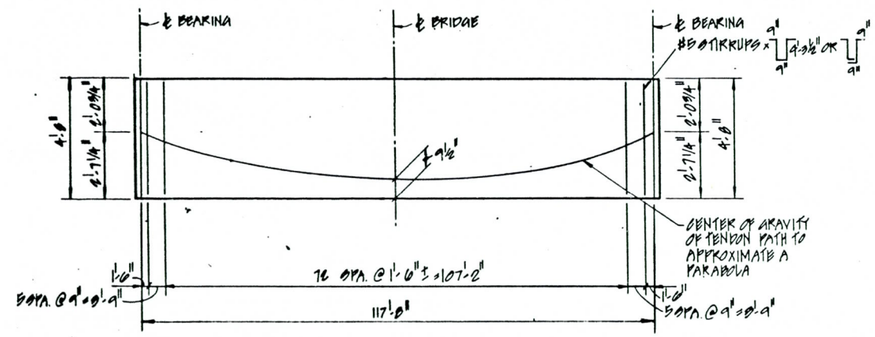
1 DUCT & WEB FLARE DETAIL
NO SCALE



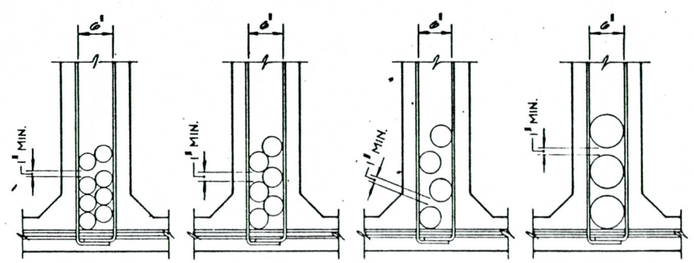
2 CONSTRUCTION JOINT DETAIL ELEVATION
NO SCALE



3 COMMON BEARING PLATE PRESTRESSING PATH
NO SCALE

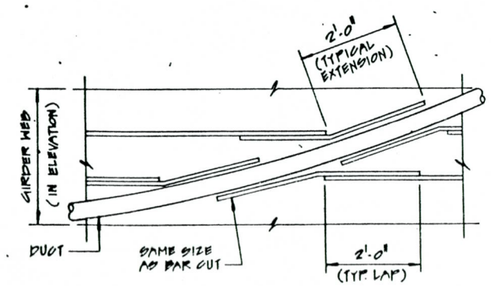


4 TENDON PATH & SHEAR REINF.
NO SCALE



DUCTS 3' O.D. & LESS — DUCTS OVER 3' O.D. & LESS THAN 4' O.D. — DUCTS 4' O.D. & TO 4 1/2' O.D. — DUCTS OVER 4 1/2" O.D.

5 CLEARANCE REQUIREMENTS FOR DUCTS
NO SCALE



6 ADJUSTMENT OF WEB REINFORCING CONFLICTING W/ DUCTS
NO SCALE

PRESTRESSING NOTES

(A) CONCRETE F'_c = 4500 PSI MINIMUM AFTER 28 DAYS.
F'_c = 3000 PSI MINIMUM AT TIME OF STRESSING

(B) PJACK FORCE = 14,120 KIPS PER BRIDGE REQUIRED AT JACKING END.
A_s = PJACK/.74 F'_s

(C) PJACK SPECIFIED AT THE JACKING ENDS INCLUDES FRICTION LOSSES, ANCHORAGE LOSSES, AND PROVISION FOR 32,280 PSI LOSS IN STRESS.

(D) TENDONS SHALL BE JACKED TO 0.74 F'_s AND ANCHORED AT AN EQUIVALENT ANCHOR SET = 5/8".

(E) DESIGN IS BASED ON μ = .25; K = .0002.

(F) REINFORCING STEEL MAY BE ADJUSTED DURING THE INSTALLATION OF PRESTRESSING DUCTS AS REQUIRED TO PROVIDE PLANNED CLEARANCES FOR THE METAL CONDUITS, ANCHORAGES, JACKS AND EQUIPMENT IF APPROVED BY THE ENGINEER.

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(H) BEARING PLATES SHALL BE PLACED TIGHTLY AGAINST THE FORMS WHICH SHALL BE BRACED AND ANCHORED TO SUPPORT THEIR WEIGHT.

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(J) AT THE CONTRACTOR"S OPTION THE PRESTRESSING FORCE MAY VARY UP TO + 5% FROM THE THEORETICAL EQUAL FORCE PER WEB PROVIDED THE TOTAL PJACK IS OBTAINED AND DISTRIBUTED SYMMETRICALLY ABOUT THE CENTERLINE OF THE TYPICAL SECTION.

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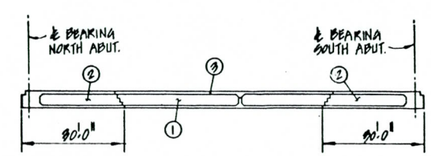
(L) CONTRACTOR SHALL SUBMIT ANCHORAGE BEARING STRESS CALCULATIONS NOT TO EXCEED 3000 PSI OR 0.9 F'CI.

(M) 1/2 @ 7 WIRE LOW RELAXATION STRAND, F'_s = 270 KSI.

(N) POST TENSIONING SHALL OCCUR AFTER 7 DAY MOIST CURE.



NOTES:
1. TOP SLAB ③ SHALL BE PLACED SEPERATELY FROM ① & ②.
2. ③ MAY BE PLACED CONTINUOUSLY OR IN PARTS AS APPROVED BY THE ENGINEER; PROVIDING NO TRANSVERSE CONSTRUCTION JOINTS FALL ABOVE THE ② AREAS.
3. ALTERNATIVE POURING SEQUENCES PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER WILL REQUIRE A NO-COST SUPPLEMENT AGREEMENT DETAILING JOINT LOCATIONS AND CONDITIONS.

POURING SCHEDULE
NO SCALE

		DATE
LAYOUT	JHS	2/86
DESIGN	KKH	2/86
DESIGN CK'D	DKL	2/86
DRAWN	JHS	2/86
DWG. CK'D	SBC, DKL	2/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
EAST (N.B.F.R.) BRIDGE
PRESTRESSING DETAILS

SHEET NO. 67 OF 73 — I-17 ROUTE — 208.25 MILEPOST — WEST 1442 CTR 1440 EAST 1441 STRUCTURE NO. — I-17-3-912 PROJECT NO. — BRIDGE ENGINEER

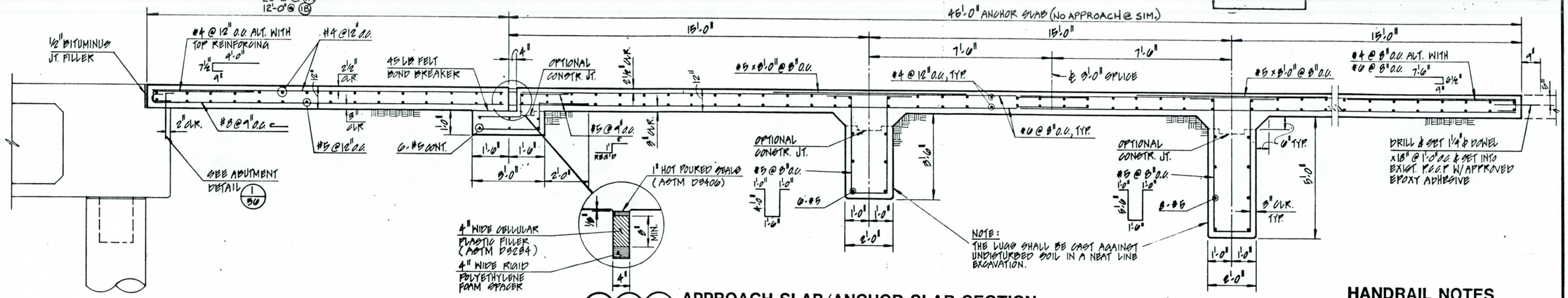
NO.	DESCRIPTION OF REVISIONS	DATE
1		
2		
3		
4		

BLUE PRINT RECORDS — FOR — DATE NO. — FOR — DATE NO.

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

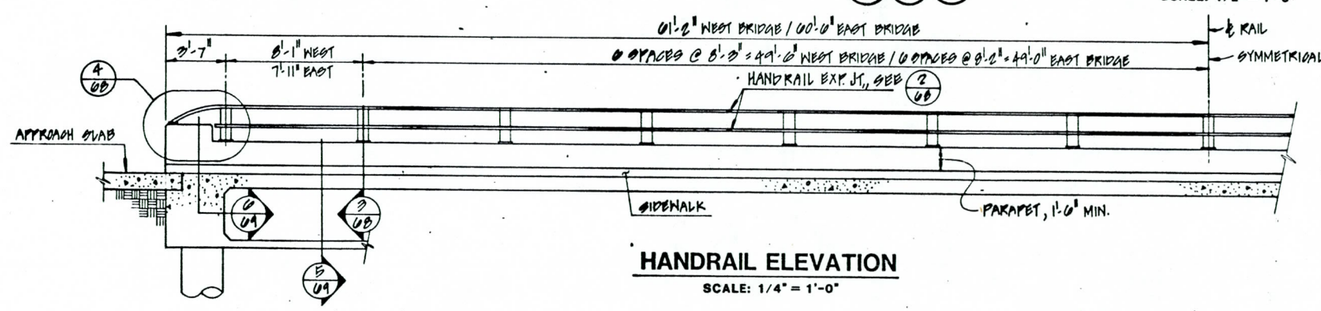
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	68	73	

RGA ENGINEERING CORPORATION
4/18/86 DATE — FOR THE CONSULTING ENGINEER
DESIGN: GEO | DRAWN: JHG | CHECKED: DKL



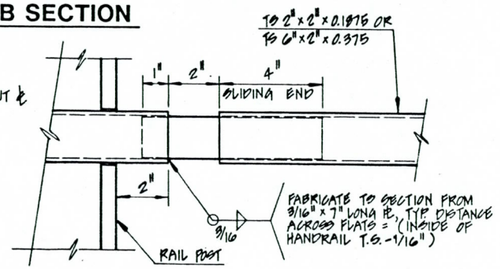
1 1A 1B APPROACH SLAB/ANCHOR SLAB SECTION

SCALE: 1/2" = 1'-0"



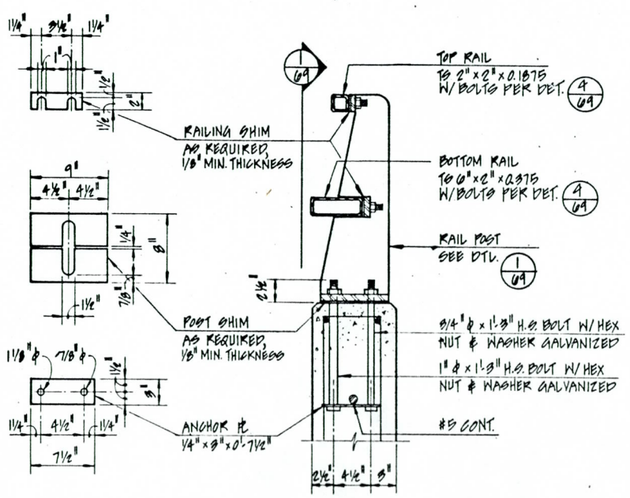
HANDRAIL ELEVATION

SCALE: 1/4" = 1'-0"



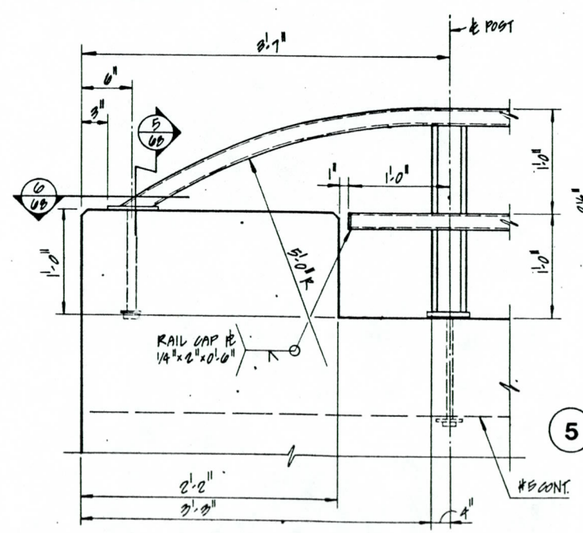
2 HANDRAIL EXPANSION JT. DETAIL

NO SCALE



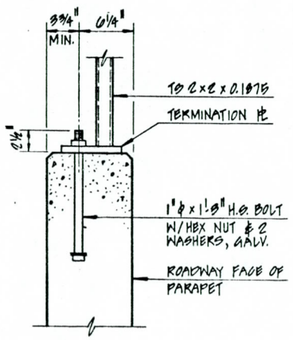
3 HANDRAIL SECTION

SCALE: 1 1/2" = 1'-0"



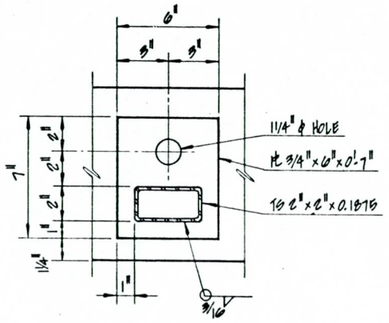
4 HANDRAIL TERMINATION ELEVATION

SCALE: 1 1/2" = 1'-0"



5 SECTION

SCALE: 1 1/2" = 1'-0"



6 PLAN

SCALE: 3" = 1'-0"

HANDRAIL NOTES

MATERIALS

STEEL:
ALL ANCHOR PLATES, POST CONSTRUCTION AND STEEL TUBING SHALL BE AASHTO M183 (ASTM A36) AND SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111(ASTM A123).

BOLTS:
ANCHOR BOLTS, STUDS, NUTS AND WASHERS SHALL BE AASHTO M164 (ASTM A325). ALL EXPOSED PORTIONS OF ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123).

GENERAL NOTES

- CONSTRUCTION - ARIZONA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, EDITION OF 1982. & SUPPLEMENT OF 1985.
- DESIGN - AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, 1983, AND 1984 SUPPLEMENT.
- ALL POSTS SHALL BE NORMAL TO PARAPET.
- PANEL LENGTHS OF RAIL SHALL BE CONTINUOUS AND ATTACHED TO A MINIMUM OF TWO POSTS.
- RAIL SPLICES SHALL BE LOCATED AT BARRIER RAIL JOINTS, DECK EXPANSION JOINTS AND ABUTMENT EXPANSION JOINTS AND SHALL BE CONSTRUCTED AS DETAILED.
- TORQUE RAIL TO POST NUTS TO 175 FT. LBS. (EXCEPTION-TS 2x2 TUBE IS WRENCH TIGHT).
- FOR SPACING OF RAIL POSTS, CONCRETE DIMENSIONS AND REINFORCING STEEL, SEE PROJECT PLANS.
- DIMENSIONS SHALL NOT BE SCALED FROM DRAWINGS.

WELDING NOTE

ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE, D1.1, 1980, REVISED TO DATE, AND AS MODIFIED BY THE AASHTO STANDARD SPECIFICATIONS FOR WELDING OF STRUCTURAL STEEL HIGHWAY BRIDGES, 1981, REVISED TO DATE.

		DATE
LAYOUT	JHG	9/86
DESIGN	GEO	9/86
DESIGN CK'D	DKL	9/86
DRAWN	JHG	9/86
DWG. CK'D	GEO	9/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

ARIZONA CANAL DIVERSION CHANNEL
APPROACH /ANCHOR SLAB SECTION & HANDRAIL DETAILS

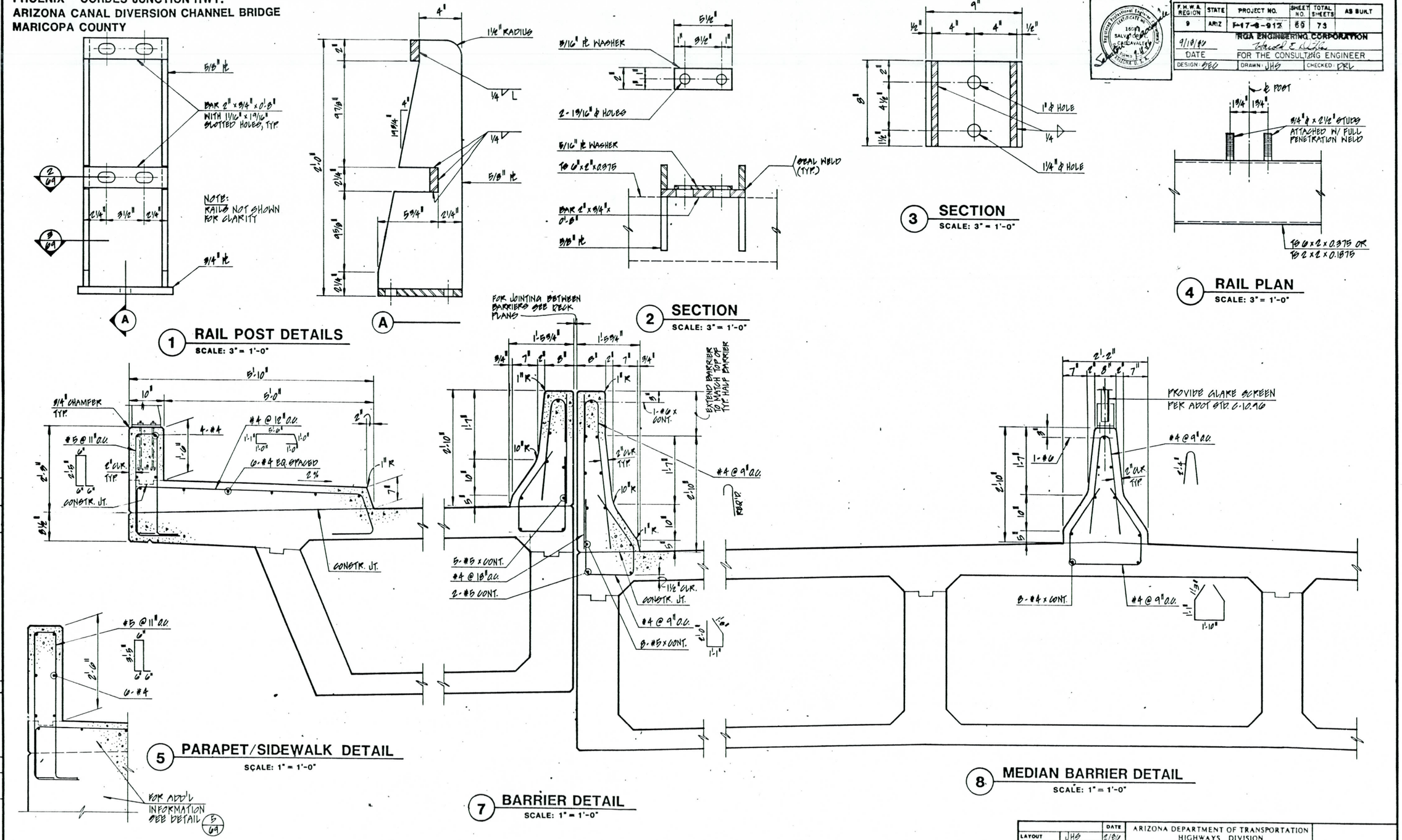
SHEET NO.	ROUTE	MILEPOST	STRUCTURE NO.	PROJECT NO.	
68 OF 73	I-17	208.25	WEST 1441 CTR 1440 EAST 1441	I-17-3-912	BRIDGE ENGINEER

| BLUE PRINT RECORDS | | |

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	F-17-3-913	69	73	

NGA ENGINEERING CORPORATION
9/19/90 DATE — FOR THE CONSULTING ENGINEER
DESIGN: SEO DRAWN: JHS CHECKED: DRL



		DATE
LAYOUT	JHS	2/90
DESIGN	SEO	2/90
DESIGN CK'D	DRL	2/90
DRAWN	JHS	2/90
DWG. CK'D	SEO, DRL	2/90
APPROVED	HED	7/90

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
RAIL & BARRIER DETAILS

SHEET NO. 69 OF 73	I-17 ROUTE	208.26 MILEPOST	WEST 1440 CTR 1442 EAST 1441 STRUCTURE NO.	I-17-3-912 PROJECT NO.	BRIDGE ENGINEER

BLUE PRINT RECORDS

DATE	NO.	DESCRIPTION OF REVISION	DATE	NO.	FOR

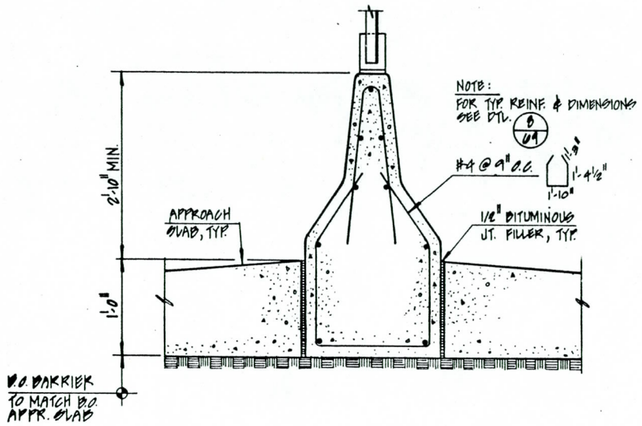
PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	70	73	

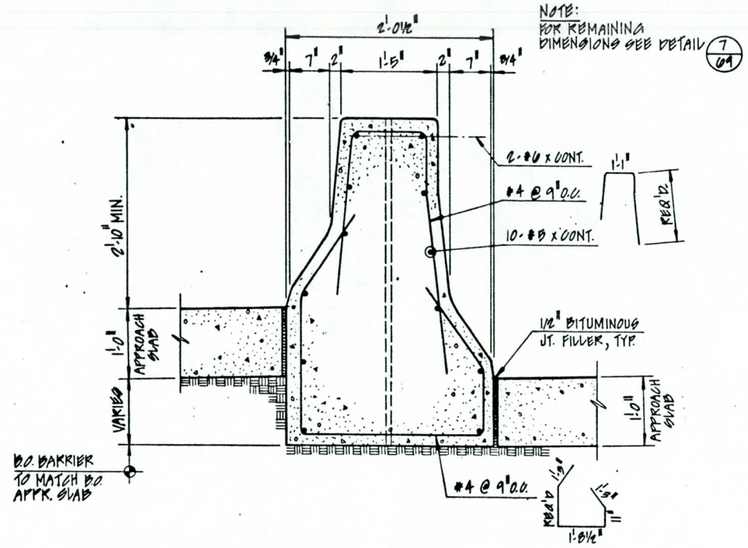
9/10/86
DATE

HGA ENGINEERING CORPORATION
Harold E. Dalke
FOR THE CONSULTING ENGINEER

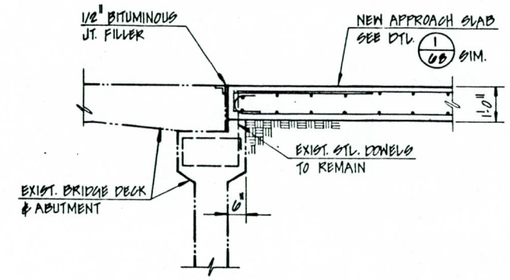
DESIGN: OBC | DRAWN: JHG | CHECKED: DRL



1 BARRIER AT APPROACH SLAB
SCALE: 1" = 1'-0"



2 BARRIER AT APPROACH SLAB
SCALE: 1" = 1'-0"



3 APPROACH SLAB AT EXIST. ABUTMENT AT EXISTING BRIDGE OVER ARIZONA CANAL
SCALE: 1/2" = 1'-0"

BLUE PRINT RECORDS FOR

DATE	NO.	FOR	DATE	NO.

NO.	DESCRIPTION OF REVISIONS	DATE
1		
2		
3		
4		

		DATE
LAYOUT	JHG	2/86
DESIGN	OBC	2/86
DESIGN CK'D	DRL	2/86
DRAWN	JHG	2/86
DWG. CK'D	DRL	2/86
APPROVED	HED	9/86

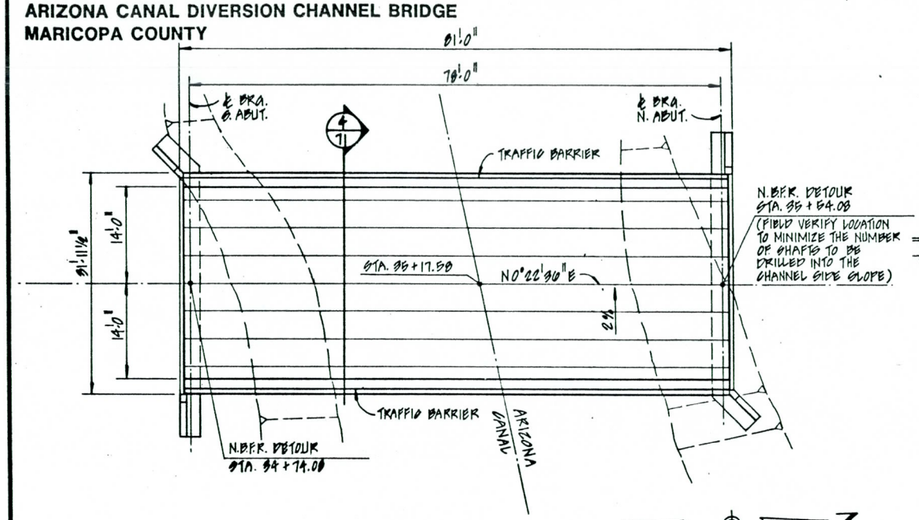
ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
MISCELLANEOUS DETAILS

SHEET NO. 70 OF 73	I-17 ROUTE	208.25 MILEPOST	WEST CTR EAST 1443 1440 1441 STRUCTURE NO.	I-17-3-912 PROJECT NO.	BRIDGE ENGINEER

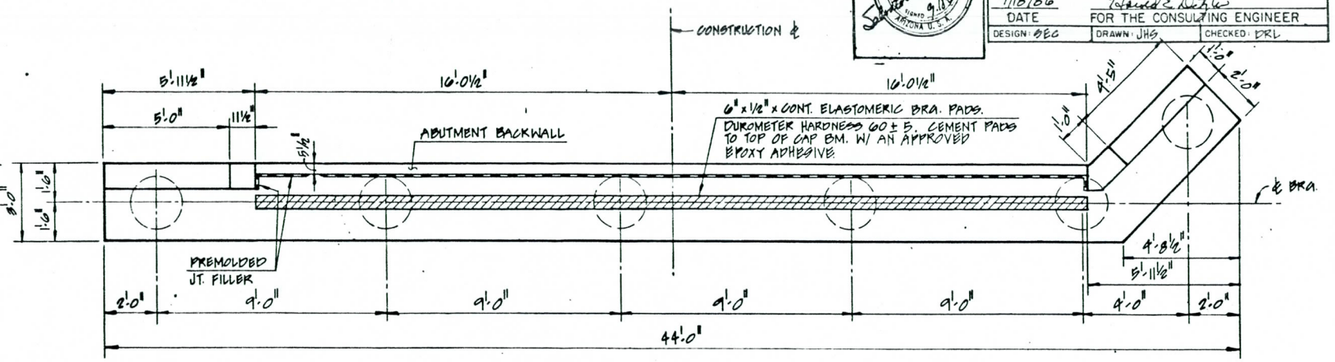
PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	F-17-3-912	71	73	

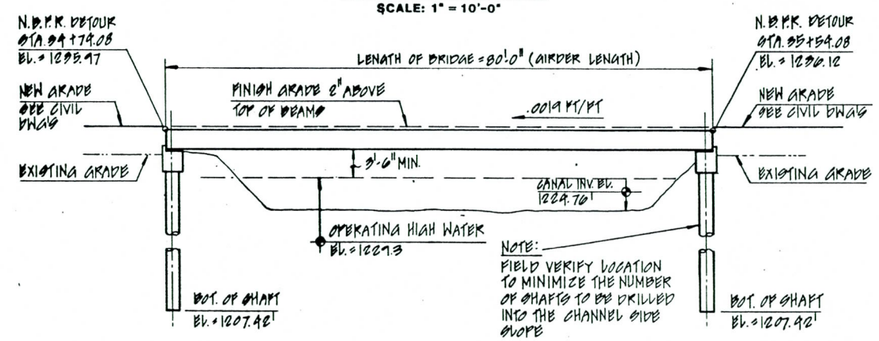
RGA ENGINEERING CORPORATION
9/8/86 — DATE — FOR THE CONSULTING ENGINEER
DESIGN: SEC — DRAWN: JHG — CHECKED: DRL



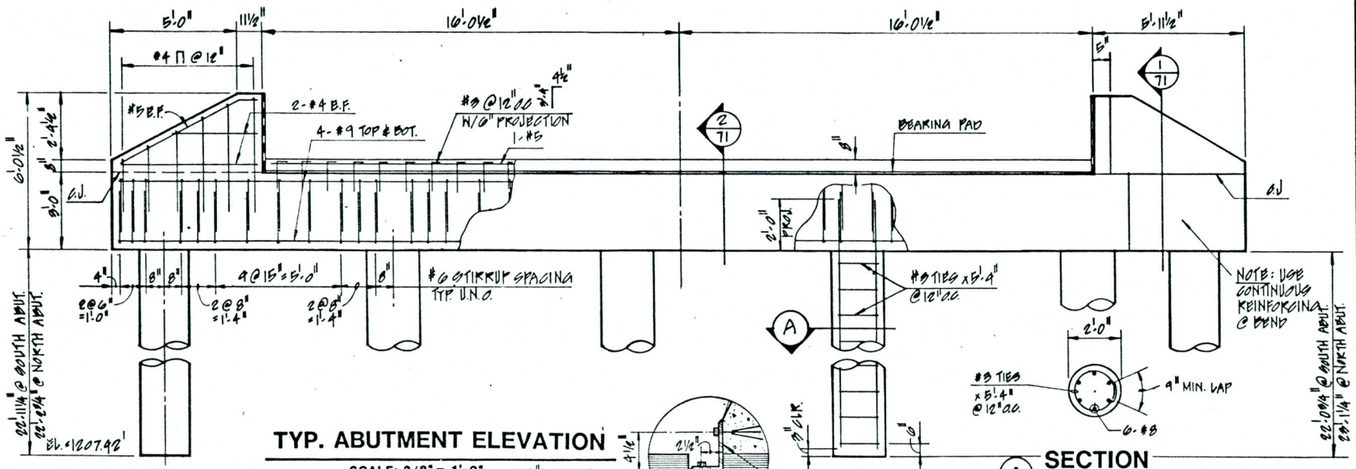
LOCATION PLAN
SCALE: 1" = 10'-0"



TYP. ABUTMENT PLAN
SCALE: 3/8" = 1'-0"



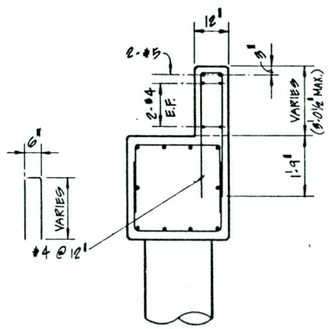
SECTION ALONG CONSTR. ℄
SCALE: 1" = 10'-0"



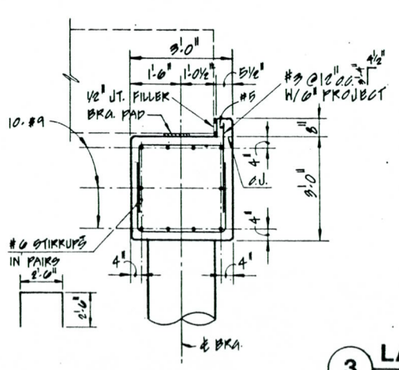
TYP. ABUTMENT ELEVATION
SCALE: 3/8" = 1'-0"

SECTION A
A

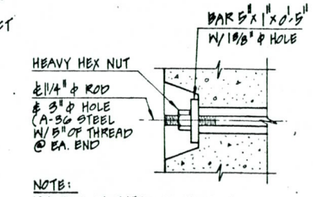
NOTE:
WINGWALLS AND ABUTMENT BACKWALLS TO BE POURED AFTER PRECAST BOX UNITS HAVE BEEN ERECTED IN PLACE.



1 SECTION
SCALE: 1/2" = 1'-0"

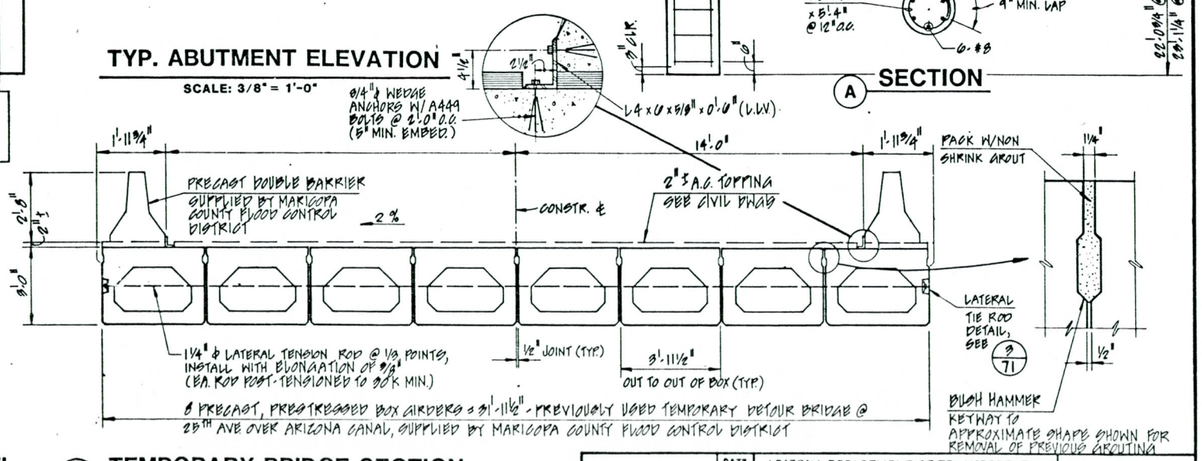


2 SECTION
SCALE: 1/2" = 1'-0"



NOTE:
RECESS IN EXTERIOR FACE OF EXTERIOR BEAMS ONLY.

3 LATERAL TENSION ROD DTL.
NO SCALE



4 TEMPORARY BRIDGE SECTION
SCALE: 3/8" = 1'-0"

		DATE
LAYOUT	JHG	2/80
DESIGN	SEC	2/80
DESIGN CK'D	DRL	2/80
DRAWN	JHG, AD	2/80
DWG. CK'D	SEC, DRL	2/80
APPROVED	HED	9/86

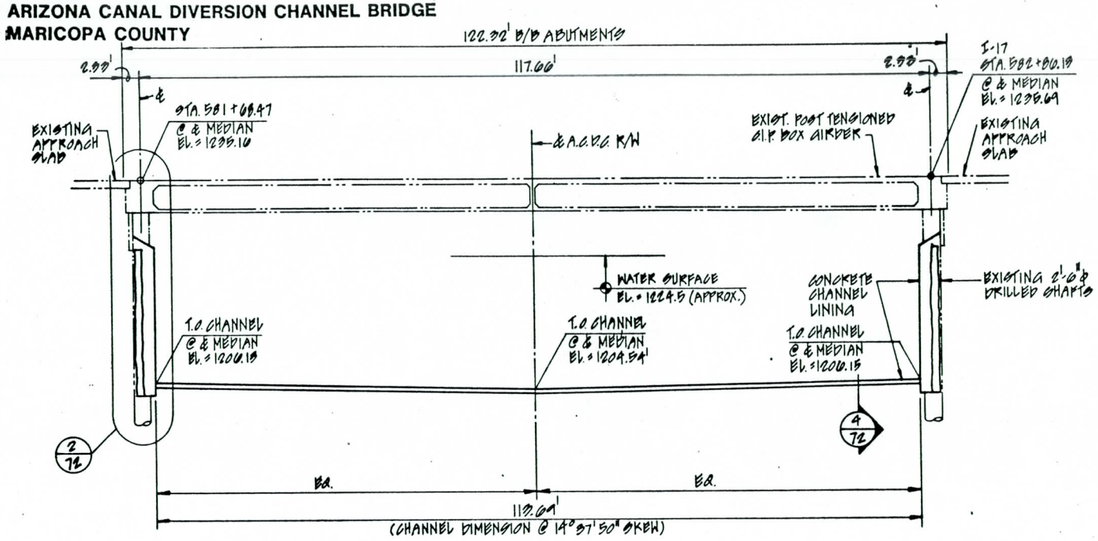
ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
TEMPORARY BRIDGE
N.B.F.R.

SHEET NO.	I-17 ROUTE	208.25 MILEPOST	WEST 1442 / CTR 1440 / EAST 1441 STRUCTURE NO.	I-17-3-912 PROJECT NO.	BRIDGE ENGINEER
71 OF 73					

BLUE PRINT RECORDS

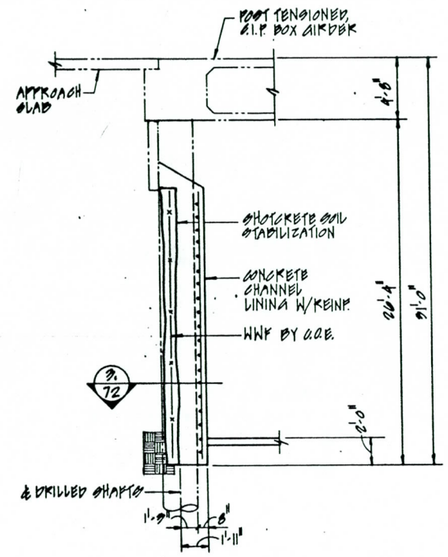
DATE	NO.	DESCRIPTION OF REVISIONS	FOR	DATE	NO.	FOR
			1			
			2			
			3			
			4			

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY



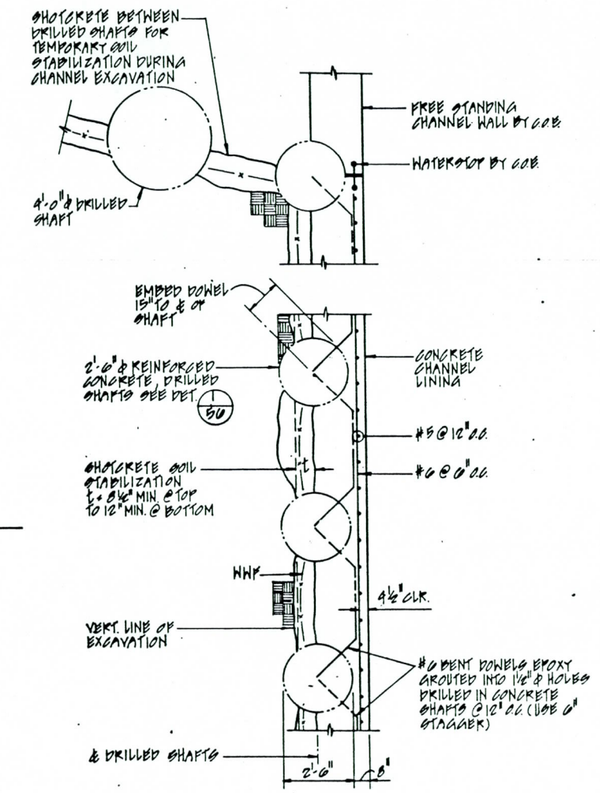
1 LONGITUDINAL SECTION ALONG CL I-17

SCALE: 1" = 10'-0"



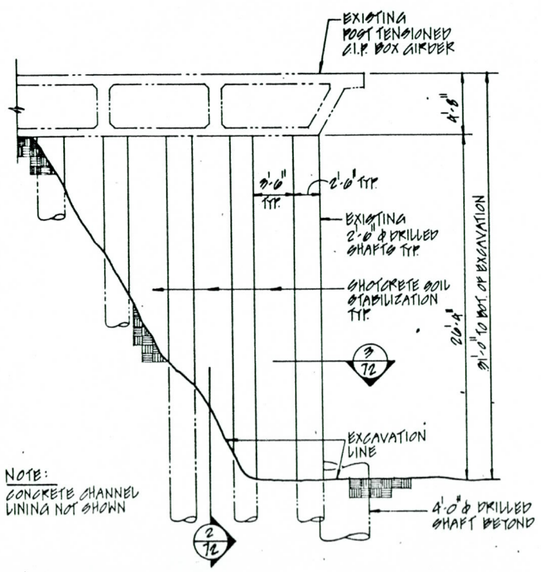
2 SECTION

SCALE: 3/16" = 1'-0"



3 PLAN

SCALE: 3/8" = 1'-0"



NOTE:
CONCRETE CHANNEL LINING NOT SHOWN

4 ELEVATION

SCALE: 3/16" = 1'-0"

NOTE

ALL DETAILS ON THIS SHEET ARE NOT IN CONTRACT AND ARE INCLUDED FOR REFERENCE ONLY. FUTURE CONSTRUCTION OF CHANNEL TO BE DONE UNDER DIRECTION OF THE U.S. CORPS OF ENGINEERS.

(THIS SHEET IS FOR REFERENCE ONLY)

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	72	73	

9/18/86 DATE — HGA ENGINEERING CORPORATION FOR THE CONSULTING ENGINEER

DESIGN: SEC DRAWN: AD CHECKED: DRL

		DATE
LAYOUT	AD	2/86
DESIGN	DRL	2/86
DESIGN CK'D	DRL	2/86
DRAWN	AD	2/86
DWG. CK'D	DRL, DRL	2/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION

ARIZONA CANAL DIVERSION CHANNEL
DRILLED SHAFTS & CHANNEL LINING DETAILS

SHEET NO. 72 OF 73	I-17 ROUTE	208.25 MILEPOST	WEST 1442 CTR 1440 EAST 1441 STRUCTURE NO.	I-17-3-912 PROJECT NO.	BRIDGE ENGINEER

BLUE PRINT RECORDS

DATE	NO.	DESCRIPTION OF REVISIONS	DATE	NO.
		1		
		2		
		3		
		4		

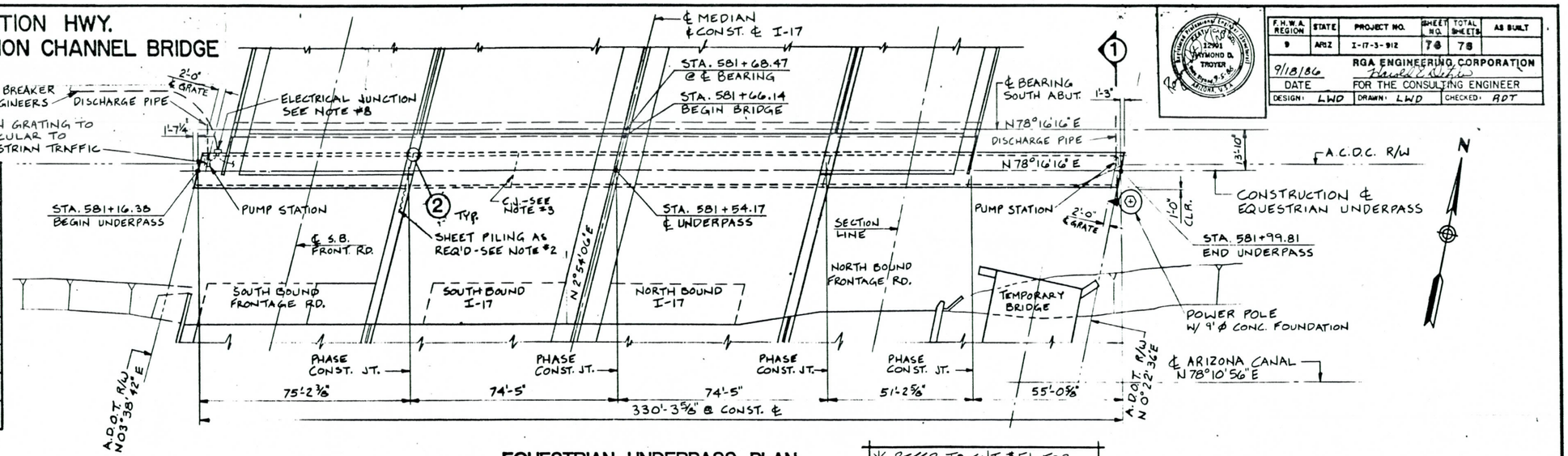
FOR FOR

PHOENIX - CORDES JUNCTION HWY.
ARIZONA CANAL DIVERSION CHANNEL BRIDGE
MARICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	73	78	

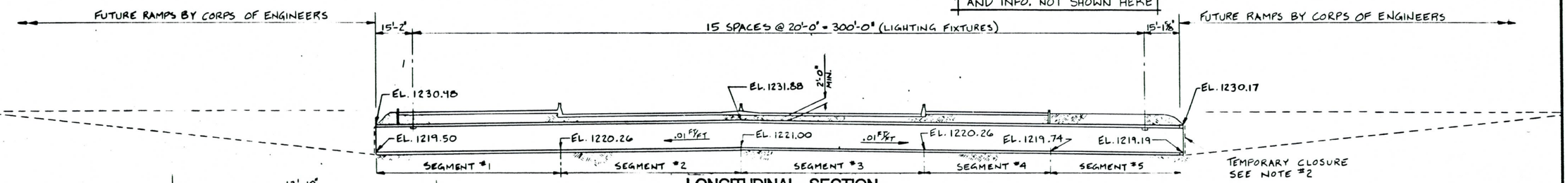
9/18/86 — DATE
RGA ENGINEERING CORPORATION
FOR THE CONSULTING ENGINEER
DESIGN: LWD | DRAWN: LWD | CHECKED: RDT

APPROXIMATE QUANTITIES		
ITEM	QUANTITY	UNIT
STRUCTURAL EXCAVATION	2250	CY
STRUCTURAL BACKFILL	300	CY
CONCRETE	476	CY
REINFORCING STEEL	79,400	LB
LIGHTING	1	LS
PUMPS, PITS, GRATES & DISCHARGE LINES	1	LS
SHEET PILING AND LAGGING	1	LS

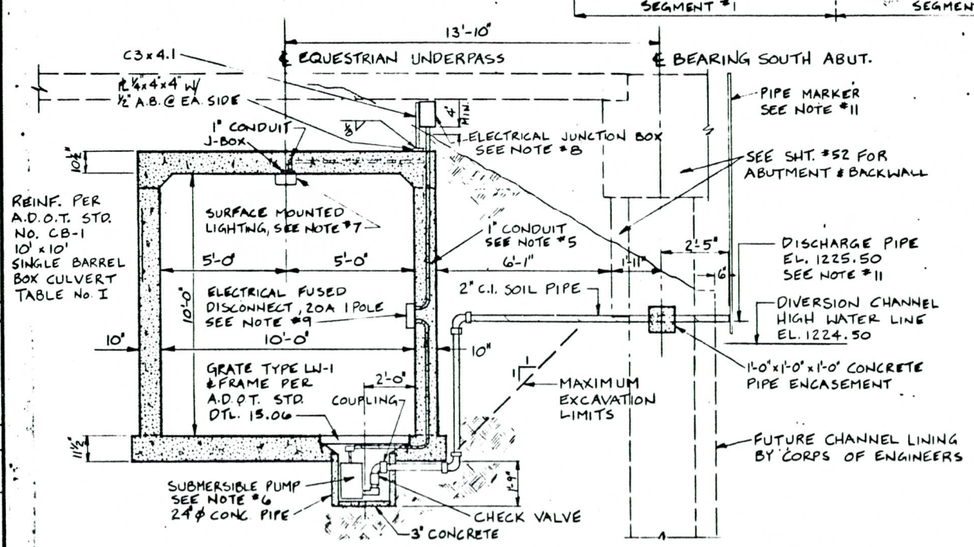


EQUESTRIAN UNDERPASS PLAN
SCALE: 1"=20'

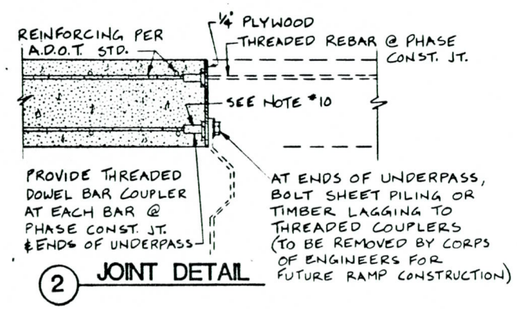
✳ REFER TO SHT. #51 FOR COMPLETE LOCATION PLAN AND INFO. NOT SHOWN HERE



LONGITUDINAL SECTION
SCALE: 1"=20'



1 SECTION
SCALE: 3/8" = 1'-0"



2 JOINT DETAIL

NOTES

1. PHASE CONSTRUCTION JOINTS TO BE LOCATED AS SHOWN ON PLAN.
2. CONTRACTOR SHALL RETAIN A SOILS CONSULTANT, REGISTERED IN ARIZONA, TO DESIGN AND SEAL CALCULATIONS FOR SHEET PILING BULKHEADS BETWEEN PHASES AND TEMPORARY CLOSURE AT ENDS OF UNDERPASS.
3. ADDITIONAL CONSTRUCTION JOINTS SHALL BE PROVIDED IN ACCORDANCE WITH A.D.O.T. STANDARD NO. CM-1 BETWEEN ENDS AND PHASE JOINTS @ 38'-6" O.C. MAXIMUM.
4. PRECAST BOX UNITS MAY BE USED PROVIDED A CIVIL OR STRUCTURAL ENGINEER, REGISTERED IN ARIZONA, SUBMITS AND OBTAINS APPROVAL FOR THE PRECAST UNITS PRIOR TO BID OPENING.

NOTES CONTINUED

5. ELECTRICAL CONDUIT SHALL BE IMBEDDED IN SITE CAST CONCRETE. CONDUIT FOR OPTIONAL PRECAST UNITS MAY BE BURIED OUTSIDE UNITS PROVIDED CONDUIT IS PROPERLY PROTECTED FROM CORROSION. PROVIDE EXPANSION COUPLINGS AT CONSTRUCTION JOINTS
6. SUBMERSIBLE PUMP SHALL BE 25 G.P.M. @ 20 FT. HEAD ⅓ H.P. GORMAN RUPP MODEL S 1½ A3A WITH AUTOMATIC LEVEL CONTROL. OTHER ACCEPTABLE MANUFACTURERS ARE HYDROMATIC, WEIL, OR OTHER APPROVED EQUAL.
7. LIGHTING FIXTURES SHALL BE LITHONIA 5'x8" 70 W HIGH PRESSURE SODIUM MODEL 20470 RALWP, CEILING MOUNTED OR APPROVED EQUAL.
8. APPROVED NEMA 4 ELECTRICAL JUNCTION BOX SIZED AS REQUIRED PER N.E.C. SHALL BE PROVIDED AT WEST END OF UNDERPASS. TEMPORARY POWER SHALL BE PROVIDED TO THIS POINT FOR TESTING AND APPROVAL OF ELECTRICAL SYSTEMS. PERMANENT POWER SUPPLY TO BE INSTALLED DURING FUTURE CONSTRUCTION BY CORPS OF ENGR.
9. ELECTRICAL DISCONNECT SHALL BE 20A 1 POLE, FUSE SIZED PER EQUIPMENT PROVIDED, IN NEMA 12 ENCLOSURE, INSTALLED AT EACH PUMP LOCATION. THESE SHALL BE APPROVED, LOCKABLE, WEATHERPROOF TYPE FIXTURES.
10. DOWEL BAR COUPLER SHALL DEVELOP NOT LESS THAN 125% OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING BAR.
11. CONTRACTOR TO PROVIDE TEMPORARY PLUG AT END OF DISCHARGE PIPE AFTER TESTING OF PUMP. PROVIDE WOOD 2x4 MARKER, PAINTED WHITE, FROM END OF PIPE TO 1'-0 ABOVE GRADE.
12. WIRING SHALL BE #10 THW. SPLICES SHALL BE LOCATED AT JUNCTION BOXES ONLY.

THE NATIONAL BLUE STAKE, INC. CALL FOR THE BLUE STAKES 263-1100 BLUE STAKE, INC. CALL COLLECT

		DATE
LAYOUT	LWD	9/86
DESIGN	LWD	9/86
DESIGN CK'D	RDT	9/86
DRAWN	LWD	9/86
DWG. CK'D	RDT	9/86
APPROVED	HED	9/86

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURES SECTION
ARIZONA CANAL DIVERSION CHANNEL
EQUESTRIAN UNDERPASS
PLAN, DETAILS, & NOTES

SHEET NO. 73 OF 73 | I-17 ROUTE | 208.25 MILEPOST | STRUCTURE NO. | I-17-3-912 PROJECT NO. | BRIDGE ENGINEER

RGA 85003403

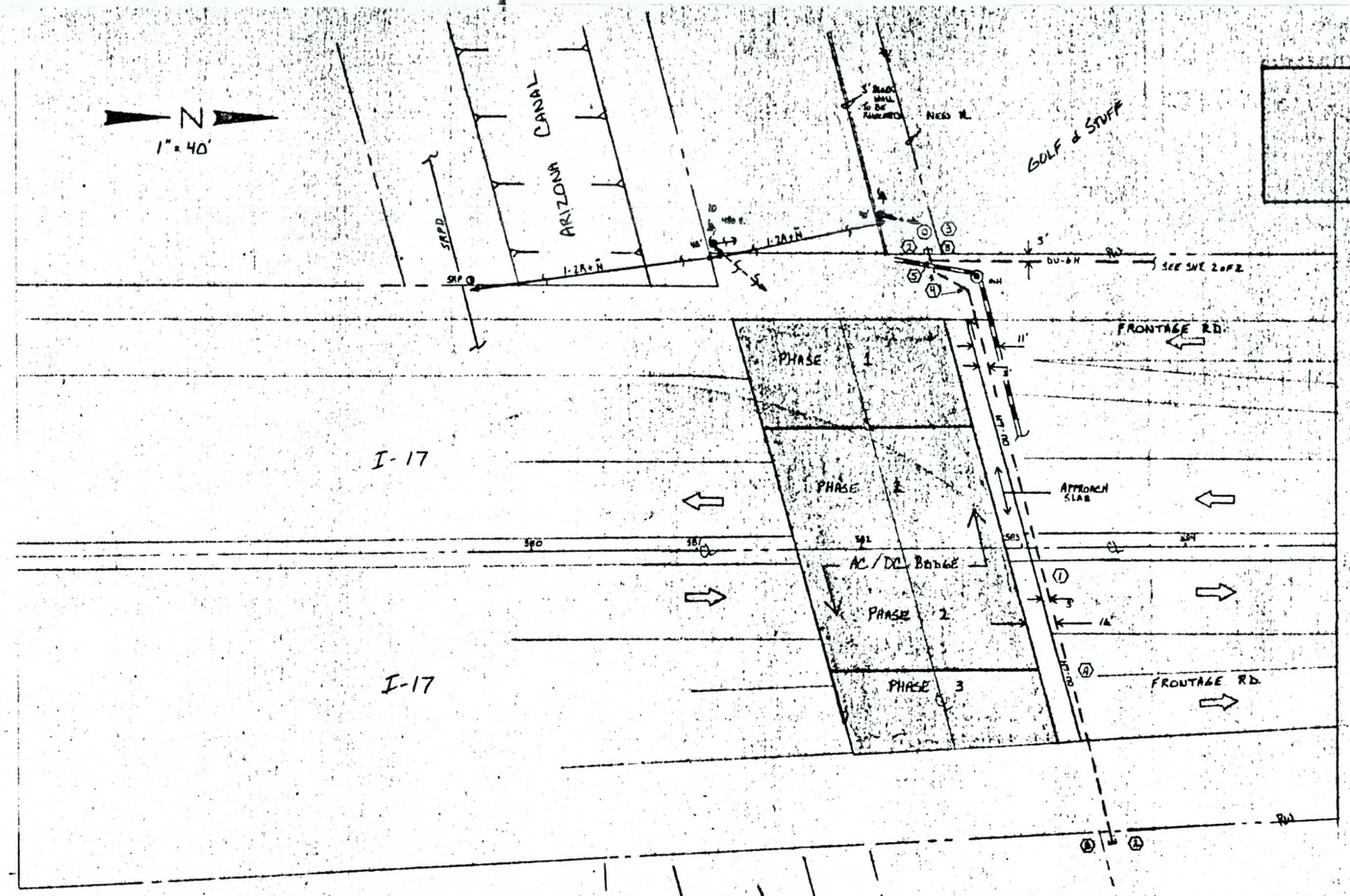
NO.	REVISIONS	BY	DATE
1			
2			
3			
4			

FULL PRINT RECORDS FOR BRIDGE NO. DATE

FHWA REGION	STATE	PROJ. NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-3-912	73A		

CONSULTING ENGINEER

DES. DR. CK. DATE



NOTE: CONCRETE ENCASED DUCT BANK WILL HAVE TO BE INSTALLED IN PHASES AS SHOWN ON DRAWING ACROSS I-17

GENERAL NOTES FOR DUCT BANK CONSTRUCTION

1. All work to comply with 1004 section of the APS Electric Distribution Construction Standards (E.D.C.S.) Manual.
2. Trenches backfill and compacted per APS specifications as defined in the 1000 section of the APS E.D.C.S. Manual.
3. Installed 5" E.B. Conduit (C.I. 0331-00128) and/or 3" O.D. Conduit (C.I. 0331-0100) encased in concrete as specified in the 1000 Section of the APS E.D.C.S. Manual.
4. Maximum 3" concrete sections removed around ducts. Conduits to be per the 1000 section of the APS E.D.C.S. Manual unless otherwise noted.
5. Maintain minimum 1 foot vertical separation between all APS locations, i.e., duct bank, conduit and cables and any other ground positions.
6. All conduit to be demoralized and cleaned of all obstructions before installing 4" polypropylene pull tape (C.I. 0331-0279) in each conduit run.
7. Trench depths shown on this sheet are minimum required depths. See plan and profile drawing #6 [illegible] sheet [illegible] through [illegible] for actual depths of APS facilities and underground conduits.
8. Initial specimen and taken for duct bank per 1000 section of the APS E.D.C.S. Manual.
9. Provide bellpipe to be authentic grained.
10. Contractor not to trench closer than 2' to APS facilities [illegible] if in paved areas as APS representative is present.
11. When passing pipe or water contacts, bend not to be sharper than 120 radius minimum radius of 240 [illegible] minimum diameter of the conduit.

NOTES APPLY TO THIS SHEET ONLY

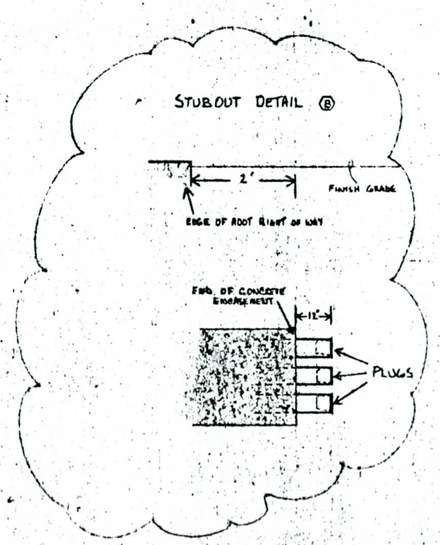
① 1071.2

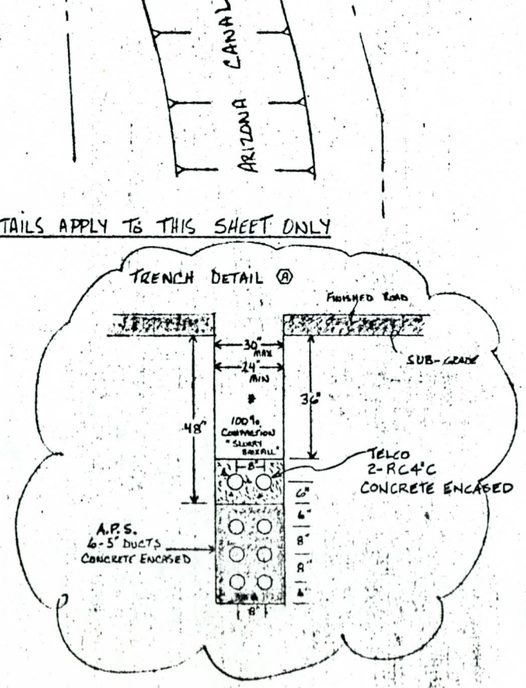
② 1060.1
5" PVC CONDUIT PLUGS
C.I. 0331-00128 (6 + 12)
2 LOCATIONS

③ MANHOLE TO BE INSTALLED AT A LATER DATE.

④ 45° PVC SWEEPS (6)
AT 2 LOCATIONS

⑤ 78° PVC SWEEPS (6)





FOR REFERENCE ONLY

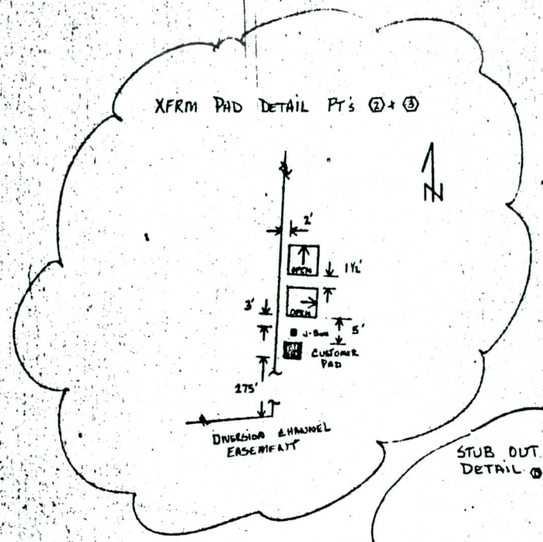
REVISED 5-14-86

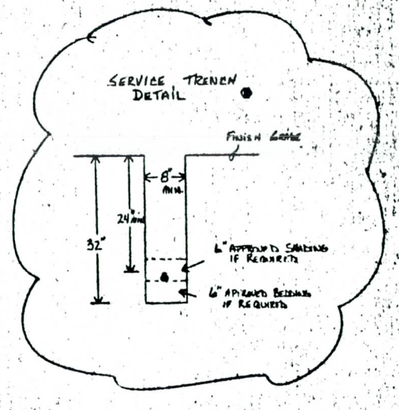
FHWA REGION	STATE	PROJ NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	I-17-6-912	788		

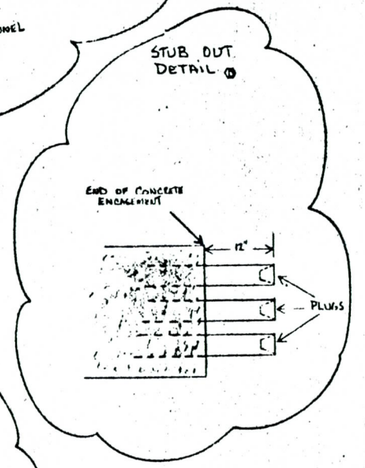
CONSULTING ENGINEER

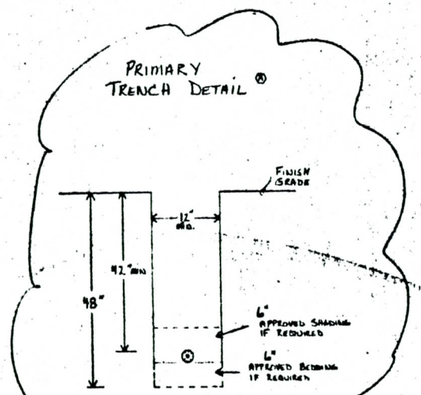
DES | CK | CK | DATE

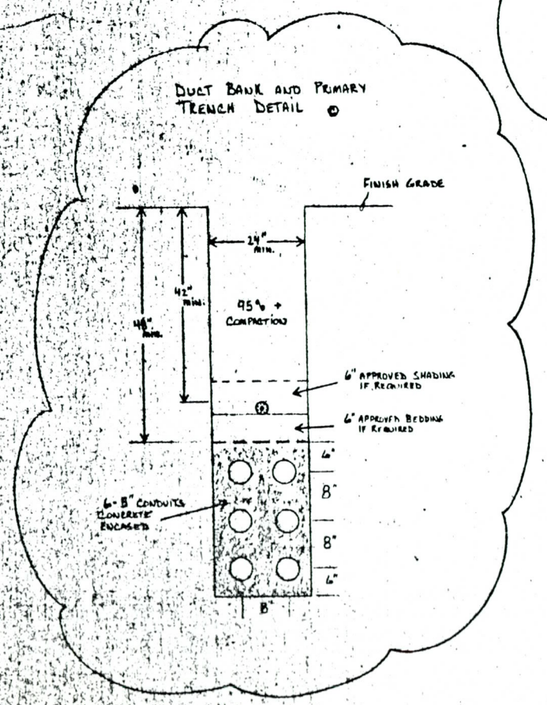
DETAILS APPLY TO THIS SHEET ONLY











NOTES APPLY TO THIS SHEET ONLY

① 1326.2 LOADBREAK SWITCH 65 NX FUSE

② 1125.2-1 25KVA 7.2KV 120/240V 1Ø

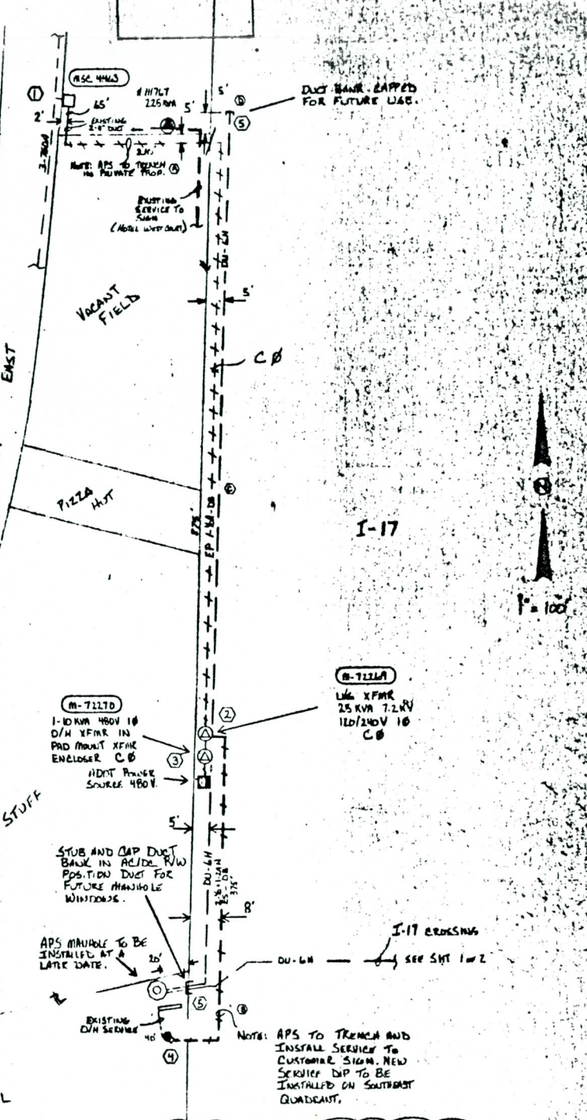
③ 1127.2 10 KVA 7.2KV 480 V. 1Ø

④ 789.2

⑤ 1060.1 5" PVC CONDUIT PLUGS C.I. 0331-00112B (6)

GENERAL NOTES FOR DUCT BANK CONSTRUCTION

1. All work to comply with 1000 section of the APS Electric Distribution Construction Standards (E.D.C.S.) Manual.
2. *Denotes backfill and compaction per APS specifications as defined in the 1000 section of the APS E.D.C.S. Manual.
3. **Denotes 5" E.B. Conduit (CAI 331-1272) and/or 3" B.B. Conduit (CAI 331-1290) encased in concrete as specified in the 1000 Section of the APS E.D.C.S. Manual.
4. Minimum 3" concrete envelope required around ducts. Concrete to be per the 1000 section of the APS E.D.C.S. Manual unless otherwise noted.
5. Maintain minimum 1 foot vertical separation between all APS facilities, (i.e., duct bank, conduit and cable) and any underground conflicts.
6. All conduit to be mandrelled and cleaned of all obstructions before installing ¼" polypropylene pull line (CAI 718-7275) in each conduit run.
7. Trench depths shown on this sheet are minimum requirements. See plan and profile drawing #E 5-3-2226 sheet 1 through 2 for actual depths of APS facilities and underground conflicts.
8. Install spacers and rebar for duct bank per 1000 section of the APS E.D.C.S. Manual.
9. Trench bottom to be uniformly graded.
10. Contractor not to trench closer than 5' to APS facilities (backfill to policy) unless an APS representative is present.
11. When passing over or under conflicts, trench not to be stepped, steeper than 1:25 slope or minimum radius of 140 times the outside diameter of the conduit.



FOR REFERENCE ONLY

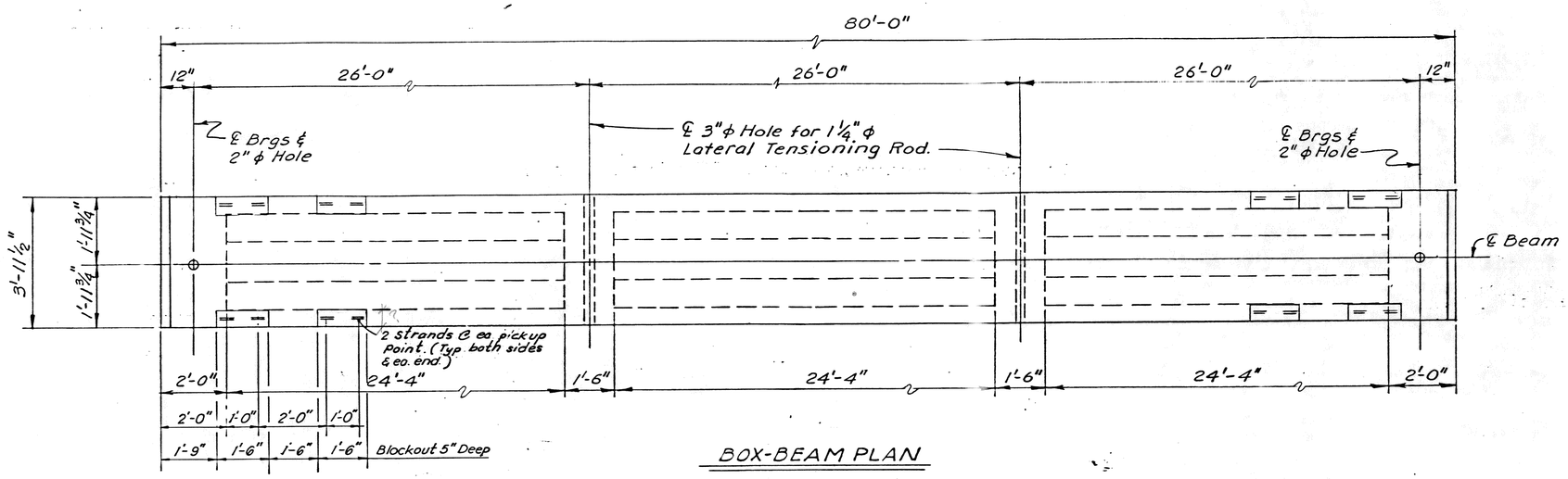
REVISED 5-14-86

WO. 59-0425 A SERB	
BY A. CARRILLO EST. 6/77	
SE SEC 26 T 3N R 2E	
MONOR MAP 17-2E	
SHEET 2 OF 2 DATE 4-30-86	
CUST. SVC. REP. AL FIELD	
NOTE: PLAN-PROFILE # E-8330B	

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGES
MARICOPA COUNTY

TO ACCOMPANY ADDENDUM NO. I

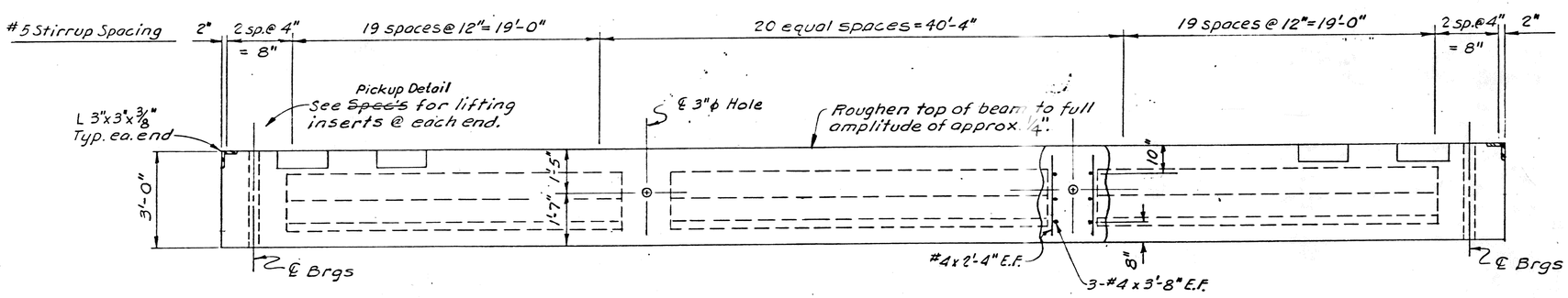
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	1	1	



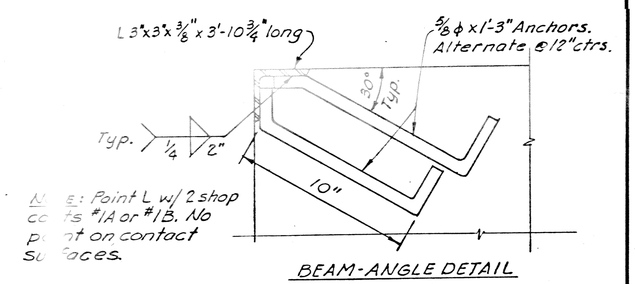
BOX-BEAM PLAN

PRESTRESSING NOTES

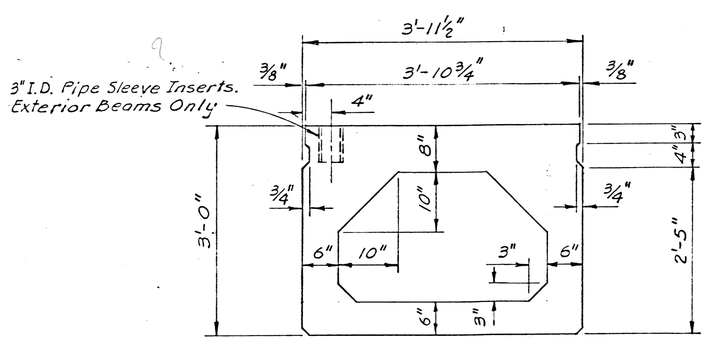
1. Prestressing steel shall be Type 270^K, 7-wire, uncoated, stress-relieved strand conforming to ASTM A416. Minimum ultimate strength of ½"ϕ strand = 41.3^K. Area = 0.153 in^2
2. P_i = initial force per beam = 1,042^K
3. P_f = final force per beam after all losses = 794^K
4. Total prestress losses are assumed to be 45 ksi exclusive of anchorage take-up and any other losses typical of the system of prestressing used.
5. Reinforcing steel shall conform to ASTM 615, Grade 40.
6. Ends of strands shall be protected with a coat of bituminous material.
7. Concrete:
   f_c @ release = 4,000 psi
   f_c' @ 28 days = 5,000 psi
8. Lateral tie rods shall be equivalent to 1¼"ϕ, A36 steel bars tensioned to 30,000 lbs. Tension in rods may be accomplished by applying a torque of approx. 600 ft-lbs.
9. Break bond on strands shown thus ⊗. Ten strands total. Bond shall be broken over a length of 6'-6" @ each end of strand.



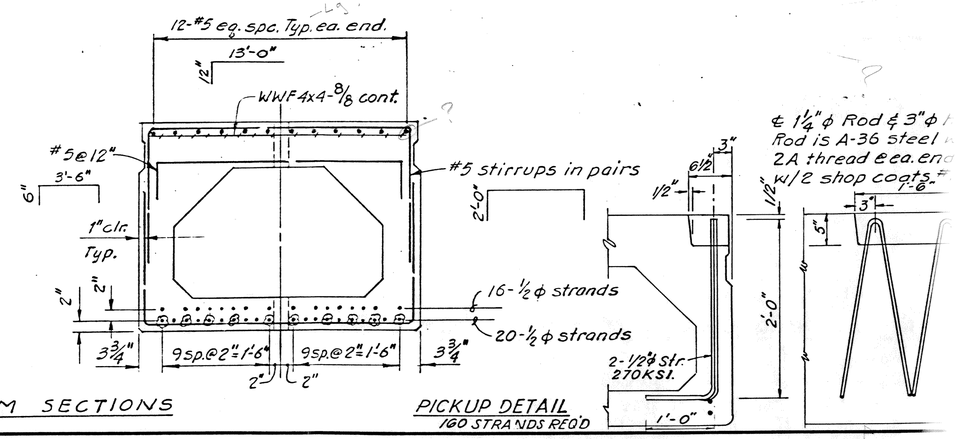
BOX-BEAM ELEVATION



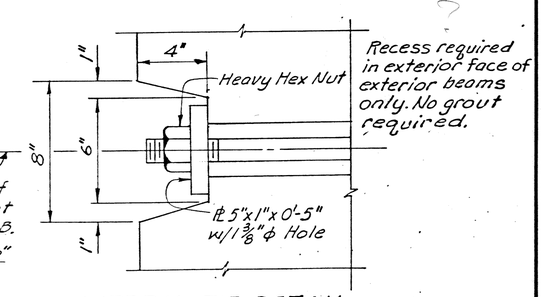
BEAM-ANGLE DETAIL



TYPICAL BEAM SECTIONS



PICKUP DETAIL
160 STRANDS REQ'D



LATERAL TIE DETAIL

Vincent W. Wilson 6/23/83

FLOOD CONTROL DISTRICT
MARICOPA COUNTY

DRAWN: VWW | BEAM DETAILS | DATE: 6/83
REVISED: | DATE:

FABRICATION OF BOX GIRDERS AND CONCRETE BARRIERS

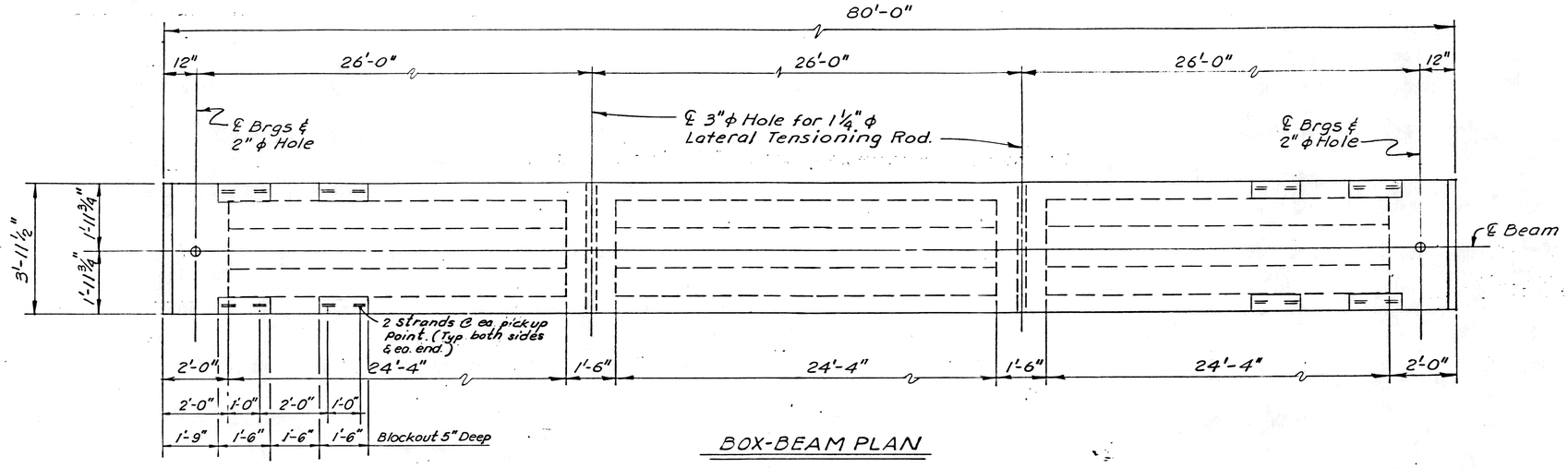
HOFFMAN-MILLER ENGINEERS
Phoenix Arizona

SHEET NUMBER
of

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGES
MARICOPA COUNTY

TO ACCOMPANY ADDENDUM NO. I

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	1	1	



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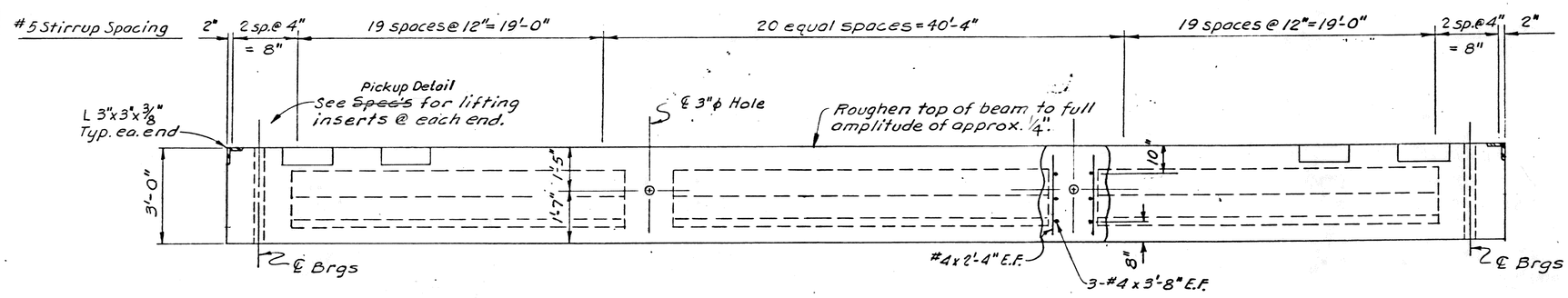
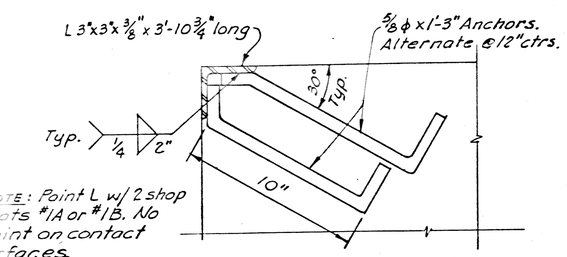
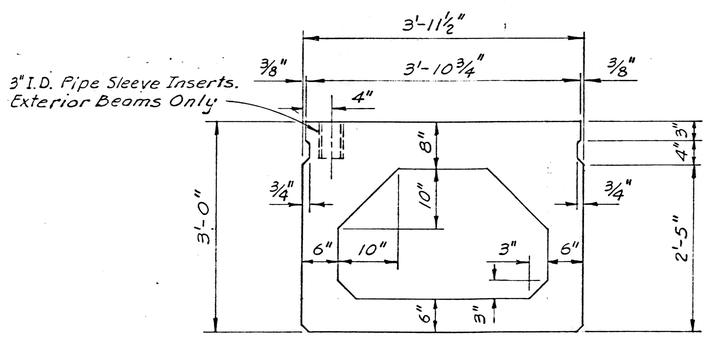
   f'_c @ 28 days = 5,000 psi
8. Lateral tie rods shall be equivalent to 1¼"ϕ, A36 steel bars tensioned to 30,000 lbs. Tension in rods may be accomplished by applying a torque of approx. 600 ft-lbs.
9. Break bond on strands shown thus ⊗. Ten strands total. Bond shall be broken over a length of 6'-6" @ each end of strand.



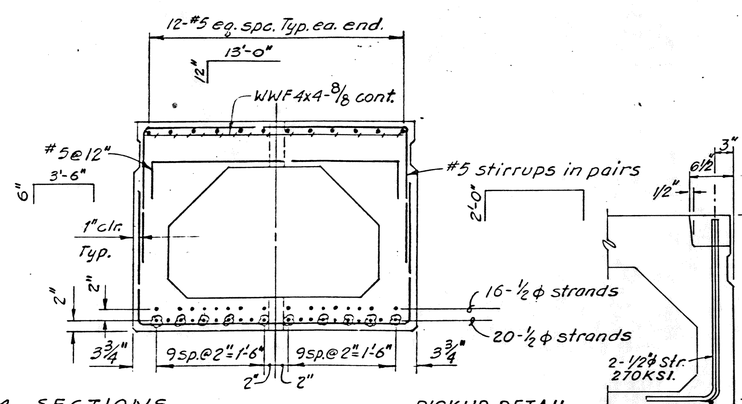
BOX-BEAM ELEVATION



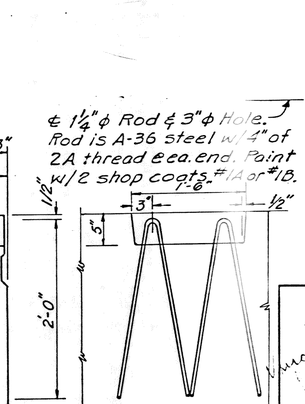
BEAM-ANGLE DETAIL

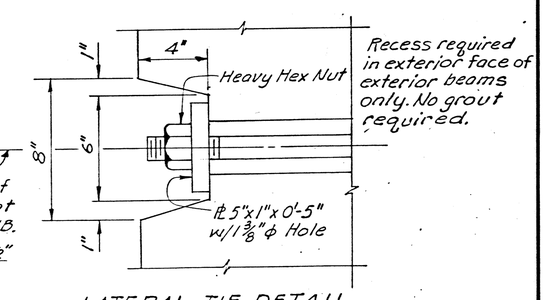


TYPICAL BEAM SECTIONS



PICKUP DETAIL
160 STRANDS REQ'D





LATERAL TIE DETAIL

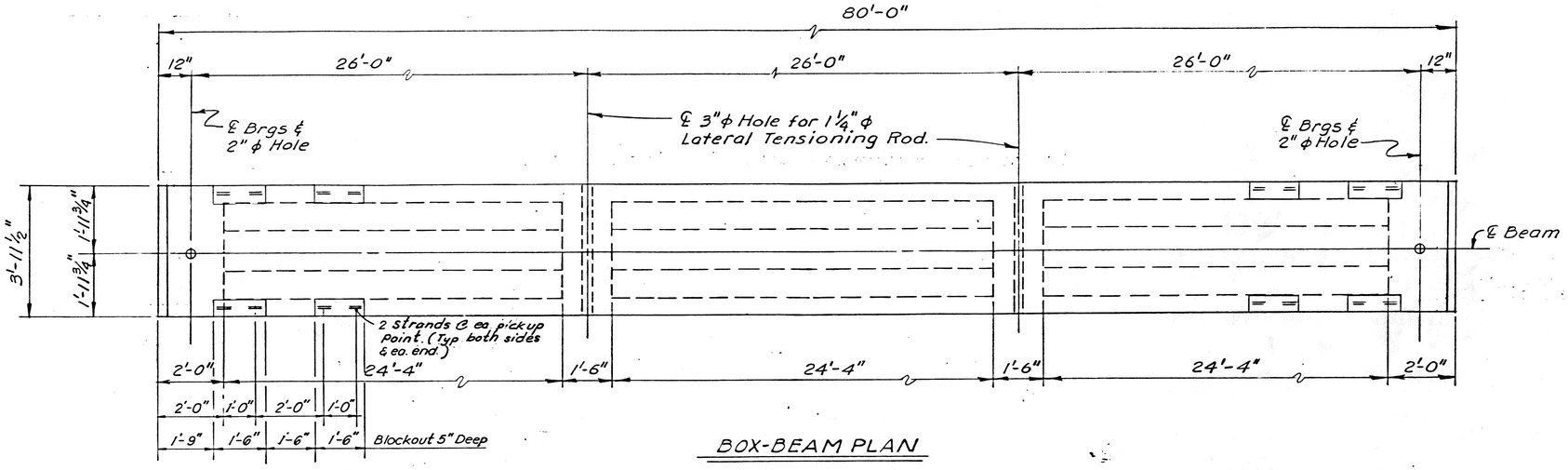
Vincent W. Wesner 6/23/83

FLOOD CONTROL DISTRICT MARICOPA COUNTY	
DRAWN: V.W.W. / REVISED:	BEAM DETAILS — DATE: 6/83 / DATE:
FABRICATION OF BOX GIRDERS AND CONCRETE BARRIERS	
HOFFMAN-MILLER ENGINEERS Phoenix Arizona	SHEET NUMBER of

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGES
MARICOPA COUNTY

TO ACCOMPANY ADDENDUM NO. I

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	1	1	



BOX-BEAM PLAN

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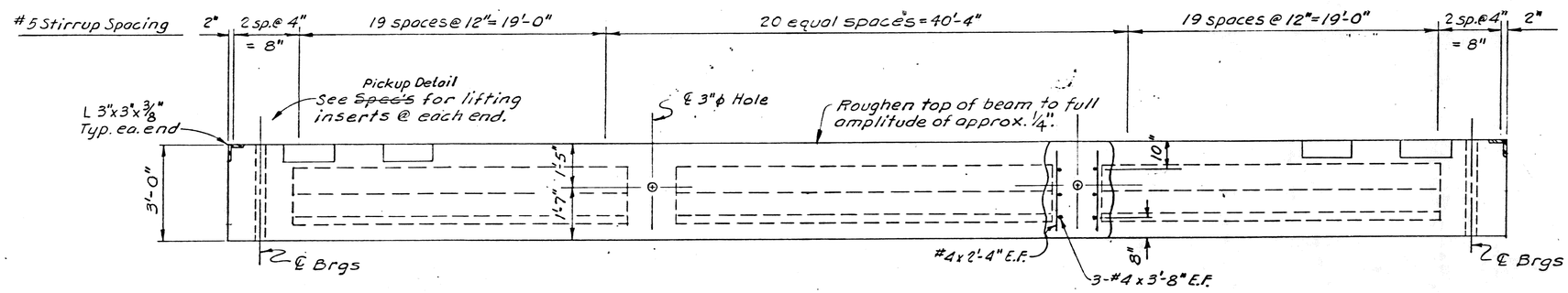
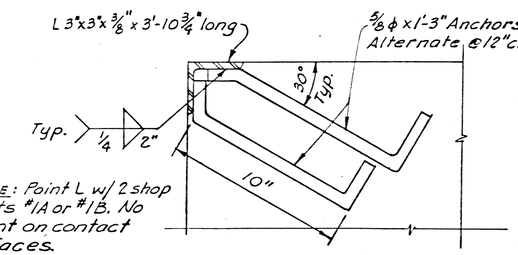
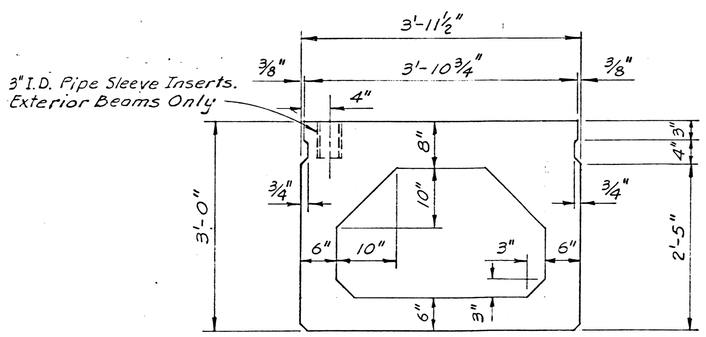


BOX-BEAM ELEVATION

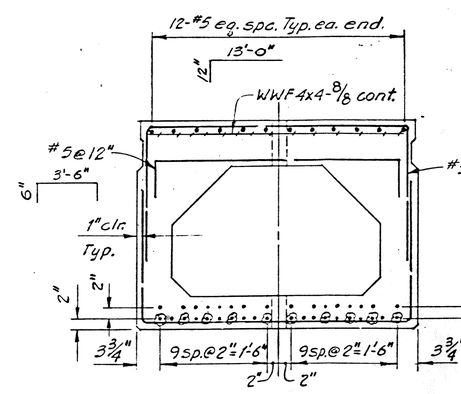


NOTE: Point L w/ 2 shop coats #1A or #1B. No paint on contact surfaces.

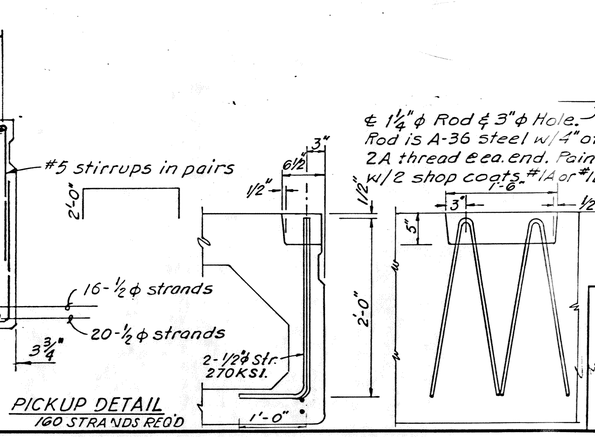
BEAM-ANGLE DETAIL

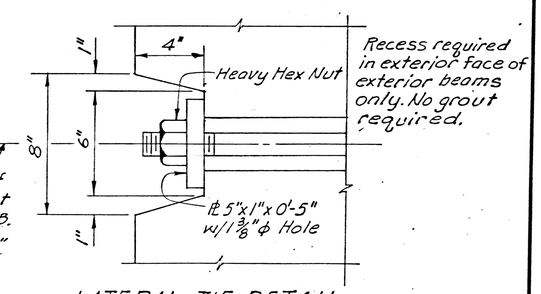


TYPICAL BEAM SECTIONS



PICKUP DETAIL
160 STRANDS REQ'D





LATERAL TIE DETAIL

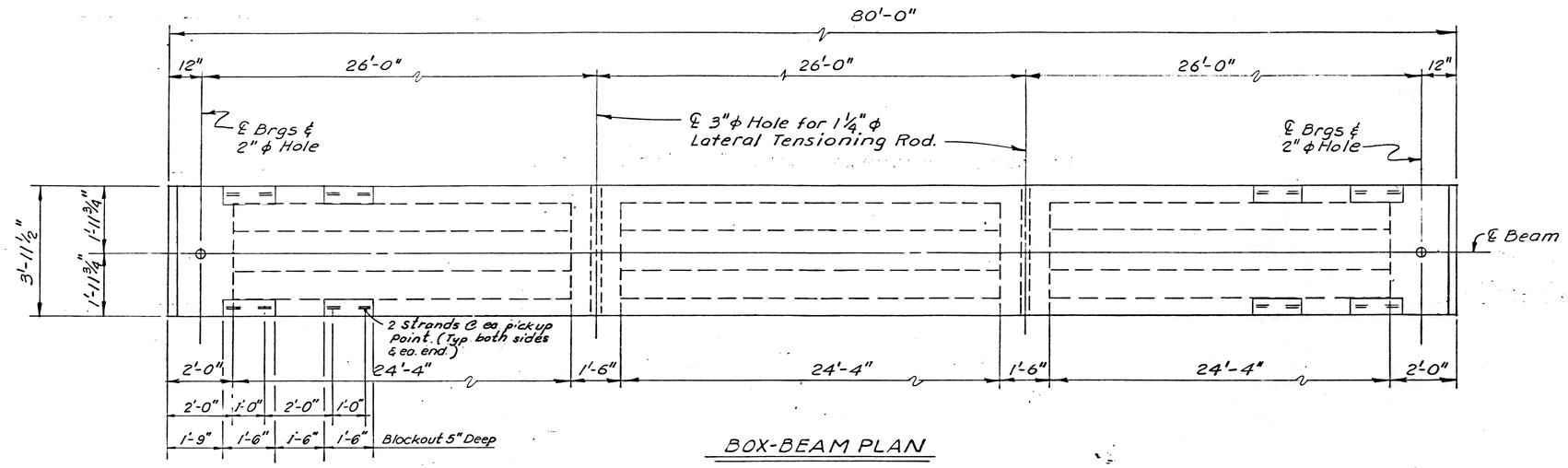
Vincent W. Wu
6/23/83

FLOOD CONTROL DISTRICT MARICOPA COUNTY	
DRAWN: VWW	BEAM DETAILS — DATE: 6/83
REVISED:	DATE:
FABRICATION OF BOX GIRDERS ~~AND CONCRETE BARRIERS~~	
HOFFMAN-MILLER ENGINEERS Phoenix Arizona	SHEET NUMBER of

PHOENIX - CORDES JUNCTION HIGHWAY
ARIZONA CANAL DIVERSION CHANNEL BRIDGES
MARICOPA COUNTY

TO ACCOMPANY ADDENDUM NO. I

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-17-3-912	1	1	



BOX-BEAM PLAN

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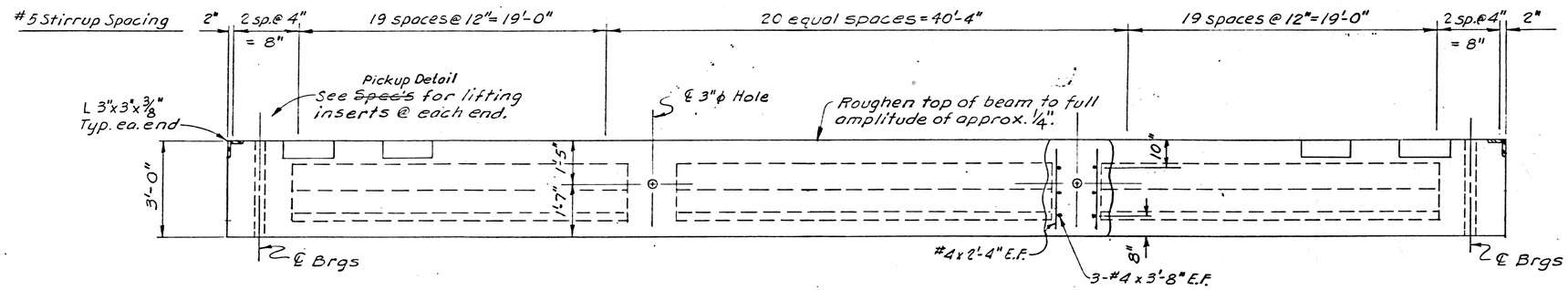
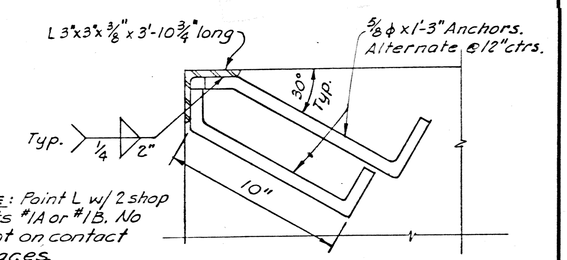
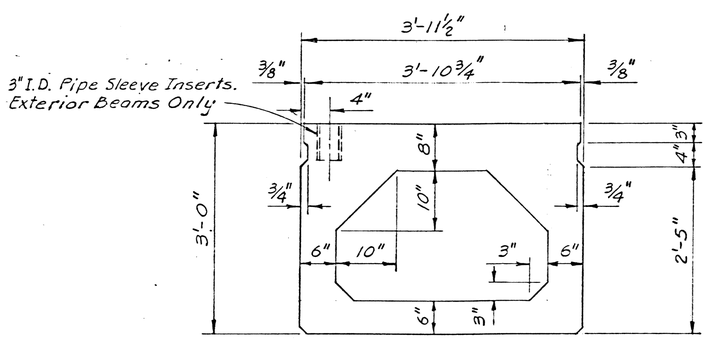


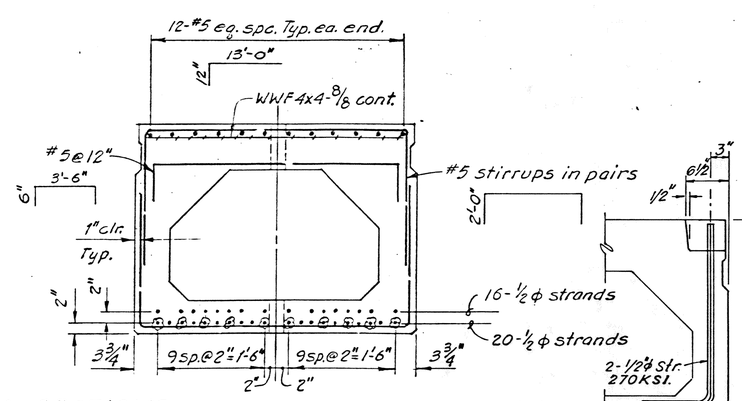
BOX-BEAM ELEVATION



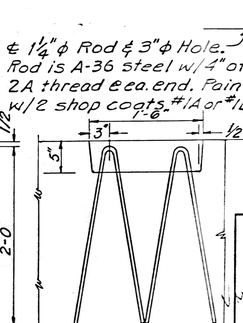
BEAM-ANGLE DETAIL

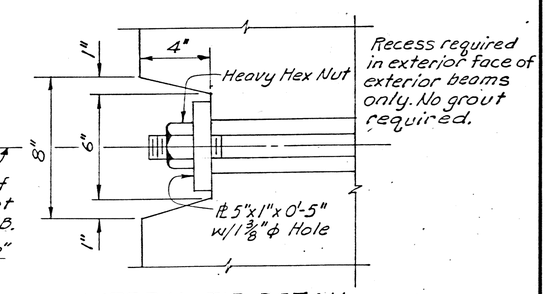


TYPICAL BEAM SECTIONS



PICKUP DETAIL
160 STRANDS REQ'D





LATERAL TIE DETAIL

FLOOD CONTROL DISTRICT
MARICOPA COUNTY

DRAWN: VWW | BEAM DETAILS | DATE: 6/83
REVISED: | DATE:

FABRICATION OF BOX GIRDERS AND CONCRETE BARRIERS

HOFFMAN-MILLER ENGINEERS
Phoenix Arizona

SHEET NUMBER of