CITY OF GLENDALE
Job No. P878010

BRIDGE INSPECTION REPORT

GLENDALE AVENUE BRIDGE
AT
NEW RIVER

Sverdrup

Received 4-6-89
MPL

CITY OF GLENDALE
Job No. P878010

BRIDGE INSPECTION REPORT

GLENDALE AVENUE BRIDGE
AT
NEW RIVER

Prepared by:

SVERDRUP CORPORATION
432 North 44th Street, Suite 250
Phoenix, Arizona 85008
(602) 231-8999

Registered Professional Engineer (Civil)
CERTIFICATE NO.
13769
JOHN F.
FISCHER
Date Signed 7-15-88
ARIZONA, U.S.A.

July 1988

J22.26

CITY OF
GLENDALE
5850 WEST GLENDALE AVENUE
GLENDALE, ARIZONA 85301
(602) 435-4000

Mayor
GEORGE R. RENNER
Councilmembers
RICHARD BELLAH
JOE A. FALBO
ROBERT L. HUFFMAN
IAN HUGH
JAMES C. (JIM) McALLISTER
QUENTIN V. TOLBY

July 19, 1988

Mr. John Rodriguez
Flood Control District of Maricopa County
3335 West Durango Street
Phoenix, Arizona 85009

SUBJECT: PROJECT P878010 - BRIDGE INSPECTION REPORT, GLENDALE AVENUE BRIDGE AT NEW RIVER

Dear Mr. Rodriguez:

Attached for your record is a copy of the final report for the referenced project.

It is planned that corrective action, per the report's recommendations, will be accomplished as funds become available.

Please call our office if you have any questions on this matter.

Sincerely,

Daniel V. Perna, P.E.
Senior Civil Engineer

ks

Attachment

cc: Grant I. Anderson

FLOOD CONTROL DISTRICT
RECEIVED
JUL 22 '88
CH ENG | P & PM
DEP | HYDRO
ADMIN | EMGT
FILE

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Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

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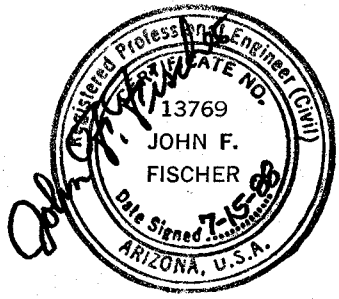


Section I

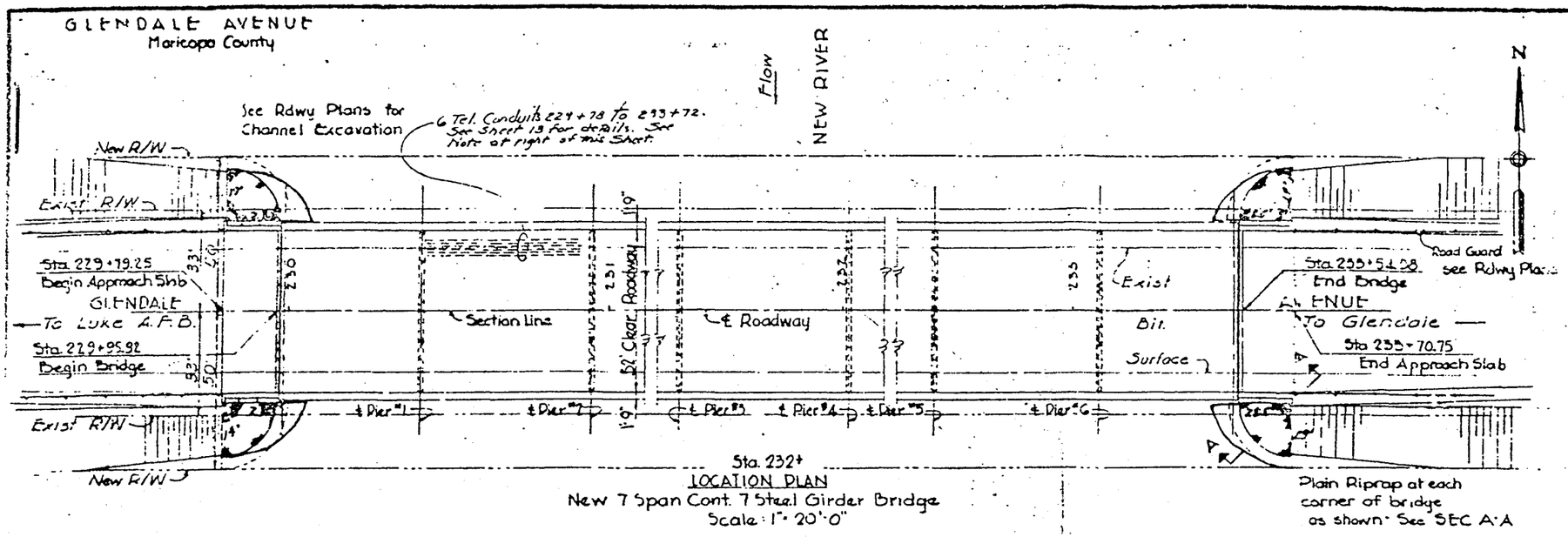
I. INTRODUCTION

The New River Bridge is located on Glendale Avenue approximately one-half mile west of 99th Avenue. The existing structure consists of a seven-span, continuous steel stringer superstructure supported on reinforced concrete wall piers and abutments. The piers and abutments are supported on spread footing foundations. The end spans are 43'-0" in length and the five intermediate spans 52'-6", the total bridge length being approximately 358 feet. The bridge roadway width is 52'-0" curb to curb. There are no sidewalks on the structure. Originally constructed in 1960, the as-built plans indicate that the footings were founded approximately 10 feet below the channel bottom. Figure 1 shows the as-built Location Plan of the structure. Since construction, the normally dry New River channel has degraded, and during an inspection on June 14, 1970, it was recorded that local scour had undermined the pier footing and caused settlement of approximately 1-1/2 inches at Pier No. 5.

After the most recent biennial inspection by the Arizona Department of Transportation (ADOT), it was recommended by the ADOT inspector that a structural consultant be hired to fully evaluate the New River Bridge. ADOT was concerned primarily with the apparent settlement at Pier No. 5, and its effect on the bridge's overall loading, and with the scour occurring in general in the channel and around all the piers. As a result, the City of Glendale contracted with Sverdrup Corporation to perform an in-depth structural evaluation and prepare this report.

The maintenance inspection was performed by John Fischer of Sverdrup Corporation on May 12 and 13, 1988.

GLENDALE AVENUE
Maricopa County



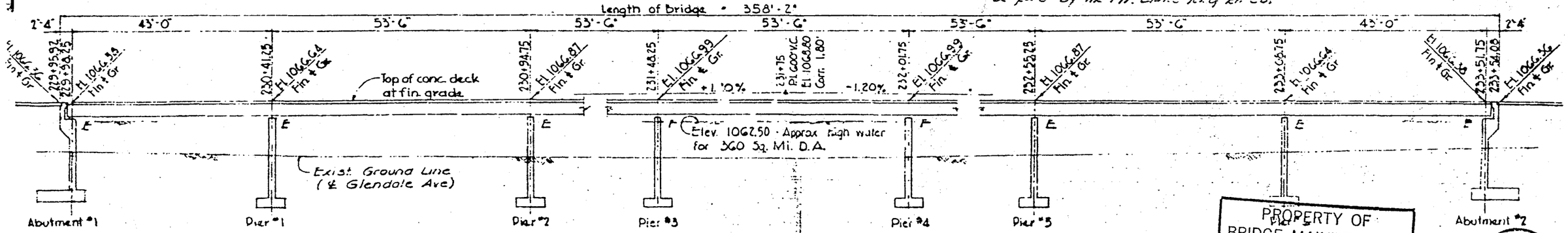
7		S227(3)	7		12-27-69

Alternate No. 1

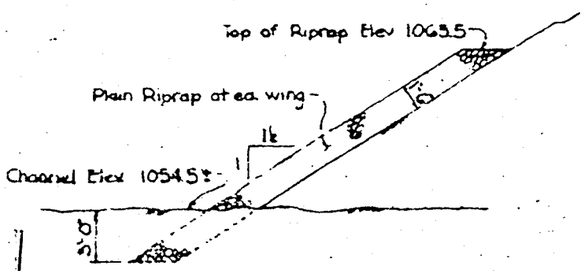
GENERAL NOTES

Construction - Standard Tentative Specs. - Arizona Highway Department Edition of 1959
Design - A.A.S.H.O. Specifications of 1957 revised to date.
Loading Class H20 - S16 - 1944
Composite Design - Dead load carried by steel stringers.
Negative live load bending moment carried by steel stringers.
Positive live load bending moment carried by composite section.
Stresses - f_s = 20,000 #/in² f_c = 1000 #/in² n = 12 Class "A" Conc.
No wearing surface allowance for deck slab design.
Structural steel - A.S.T.M. A-373 f_s = 18,000 #/in²
Reinforcing steel - A.S.T.M. A-305 High bond.
A.S.T.M. A-15 Intermediate grade.
All welding shall conform to American Welding Society Specifications for Welded Hwy & Railway Bridges.
Paint and painting for structural steel, including steel hdrl. shall conform to Standard Specifications.
Contact surfaces shall not be painted.
Shop paint - 1 coat #1A or #1B.
Field paint - 1st coat #3; 2nd coat #10.
Payment for the structural steel item shall be made on the basis of computed net weights in accordance with Standard Specifications, Edition of 1959.

NOTE:
Mt. States Tel. & Tel. Co. shall furnish all materials for tel. conduit installation. Tel. Co. shall install all material between abutments. The General Contractor shall install 4" pipe thru abutments and 3½" x 18" under approach slab. Any expense incurred by the General Contractor installing tel. materials shall be paid by the Mt. States Tel. & Tel. Co.



SECTION ON ℄ ROADWAY
Scale: 1" = 10'-0"



SECTION A-A
Scale ¼" = 1'-0"

Note:
Contractor shall remove exist. pavement in stream bed. Cost of this work to be included in unit bid price of other items.

RECEIVED
FEB 11 1988
Sverdrup
PHOENIX

PROPERTY OF
BRIDGE MAINTENANCE
STRUCTURE NO. 9141
City of Glendale
FAS-227 (Glendale Ave)

APPROXIMATE QUANTITIES

ITEM	STD. Nº	SHEET Nº	STRUC. EXCAV. C.Y.	CONC. CLASS A C.Y.	REINF. STEEL lbs	STRUC. STEEL lbs	SPEC. HDRL. LIN. FT	PLAIN RIPRAP C.Y.	SPEC. CONTR. C.Y.
ABUTMENT #1	Spec.		430	182.56	16,800				840
PIERS	Spec.		1380	405.30	60,105				None
ABUTMENT #2	Spec.		430	182.56	18,900				840
DECK	Spec.			442.93	83,230	323,690	711		
RIPRAP	Spec.							96	
TOTALS			1958.40 ~~2240~~	1223.35	181,845 ~~150,935~~	323,690 ~~323,690~~	711	94.5 ~~96~~	1680

Sta. Rdwy Jt RJ-2 Sheet 8 of 8

APPROVED BY: [signature] ASST. COUNTY ENGINEER, PLANS
APPROVED [signature] COUNTY ENGINEER

ALL CONCRETE CLASS "A"

MARICOPA COUNTY HIGHWAY DEPARTMENT
SHOWN 12-57 LOCATION PLAN
STA 232+ GLENDALE AVENUE BRIDGE OVER NEW RIVER
HOFFMAN-MILLER ENGINEERS PHOENIX, ARIZONA 57012-2

S-227 (3) Revised 6-19-58 HLM

FIG. 1

Section II

Section II

II. STRUCTURAL INSPECTION FINDINGS

Prior to performing the inspection, Sverdrup reviewed the inspection records of the eight inspections done by Maricopa County Highway Department (MCHD) and ADOT since 1970. The only major items of concern found in each inspection have been the continued degradation of the river channel and the local scour around the piers. On June 14, 1970, it was noted that the north end of Pier No. 5 had settled 1-1/2 inches and the river channel had dropped 7 feet since construction. On December 11, 1973, the scour depth at Pier No. 3 was measured to be 9.1 feet.

Sverdrup reviewed the most recent ADOT Bridge Inspection Report for Inspection Number 8 done on November 30, 1987, and the resulting updated ADOT Structure Inventory and Appraisal. Sverdrup is in agreement with ADOT's findings and the calculated Sufficiency Rating of 14.9. Copies of the Bridge Inspection Report and Structure Inventory and Appraisal are included in the Appendix.

During the inspection, photographs were taken as a record of existing conditions and to help illustrate certain problems. The photographs are presented with captions in Section III of this report. Pertinent photographs will be referenced in the text which follows to aid the reader in understanding conditions being described.

The remainder of Section II will now discuss specific conditions observed during the inspection.

A. DECK

The top surface of the concrete deck slab and concrete curbs exhibited mostly fine pattern or map cracks, but also some medium transverse and random cracks, throughout the length and width of the bridge. Several small spalls were also noted.

The bottom surface of the deck slab was in excellent condition, except in the cantilever portions overhanging the exterior stringers, where some spalling and corrosion of reinforcement was observed.

At the RJ-2 expansion joints at each abutment the usual type of spalling of concrete has occurred on the concrete edges, probably due to wheel impact on the uneven concrete surfaces and steel sliding plate (Photos 37 and 39).

B. SUPERSTRUCTURE

The main load carrying members consist of seven 27WF102 steel stringers. Instances of corrosion of the structural steel were very few and very minor.

Sighting west along the bottom flange of the north exterior stringer from a ladder at Pier No. 6 (Photos 47 and 48), the settlement of Pier No. 5 and the resulting sag in the steel stringer are very evident. Analysis of the survey

data in Section IV indicates that the settlement of the north end of Pier No. 5 is probably on the order of 1.5 inches. The stress in the north exterior stringer due to this settlement is calculated in Section V to be 3.4 kips per square inch, resulting in an overstress of approximately 18 percent at Pier No. 6. Visual inspection of the steel stringers there and elsewhere, however, did not reveal any signs of distress other than the noticeable sag at Pier No. 5 already mentioned.

The structural steel channel diaphragms between the south exterior stringer and the adjacent interior stringer have been removed and replaced with modified plate diaphragms to accommodate a 12-inch ductile iron water line added between these stringers since original construction of the bridge.

C. SUBSTRUCTURE

At the south end of Abutment No. 1 (west), there is a large horizontal crack in the backwall just below the corbel which supports the deck expansion joint (Photo 52). The portion of the wall above the crack protrudes as much as 1/2 inch out beyond the lower portion. This crack appears to have been caused by the approach slab pushing against the top of the abutment backwall. This is more apparent from the roadway above, where the expansion joint is closed at its south end (Photo 38). The joint between the approach slab and the backwall has grown in size due to intrusion of debris.

Debris has fallen through the expansion joints at both abutments and accumulated in piles up to 6 inches deep on the bridge seats (Photo 50).

The as-built bridge plans indicate that the footings had approximately 8 feet of soil cover over them when constructed. The exposed concrete surfaces of the pier walls received a rubbed finish during construction. The lower boundary of the finished surface is now seen to be well above the channel bottom. This is readily visible in Photos 10, 11, 18, and 19. The top of the footing at the upstream end of Pier No. 3 is now exposed (Photos 14 and 15). The footing at Pier No. 2 has been covered with a blanket of grouted rip-rap, but dimensions measured from the top of the pier wall indicate that the rip-rap has been placed directly on the top of the footing (Photos 10, 11, and 12). The amount of cover over all the pier footings has decreased to some extent since construction. Measurements taken of the distance from channel bottom to top of each pier and abutment wall are tabulated in Section VI of this report. Although Pier No. 5 has experienced settlement due to scour in the past, Piers No. 2 and 3 would now appear to be in greatest danger of scour attack. What appears to be exploratory pits have been excavated at the ends of some of the other piers and left open (Photos 9, 16, 17, 19, 20, and 22). Where this occurred, the measurement to channel bottom was taken to the top of the pit.

A U.S. Geological Survey gauging station is attached to the south end of Pier No. 4 (Photo 16).

Abutment No. 1 and all the piers have one to three vertical hairline cracks in the middle portion of their walls. The cracks appear to be due to shrinkage since they are of uniform width from top to bottom.

D. CHANNEL AND CHANNEL PROTECTION

As already discussed in the preceding section on substructure, the river channel is much lower than when the bridge was built in 1960. There has been a general degradation of the channel rather than just scour at the bridge or just local scour around the piers.

The lowering of the channel has been at least partly due to the gravel mining which has taken place in the river bed over the years. Gravel mining operations are currently in existence within 1/4 mile both upstream and downstream of the bridge. When the river flows, it will move material from the high spots and deposit it in the gravel mining pits.

There are remnants of concrete slab channel lining in front of Abutment No. 1, extending out for approximately half of Span No. 1 (Photo 7), and at Abutment No. 2, extending all the way to the east face of Pier No. 6 (Photo 20). These slabs would appear to be at about the original elevation of the channel bottom when the bridge was constructed in 1960, although they were probably added later.

Channel lining at this bridge is currently planned by the Corps of Engineers in cooperation with the Flood Control District of Maricopa County. The relative cost of this scheme is compared with other alternatives in Section VII of this report.

E. ROADWAY-SAFETY

At the ends of the approach slabs, the asphalt approach pavement is very rough and uneven (Photos 36 and 40). At their interface, the approach pavement is higher than the approach slab. A thin layer of asphalt overlay has been applied, with a tapered thickness on the leading edge of the approach slab, in an attempt to eliminate the bump; but much of the asphalt has spalled off.

The C-7-1 approach guardrails at all four corners is obsolete, and all corners, except the northeast, have been damaged (Photos 28, 29, and 31).

The bridge rail and curb are geometrically and structurally deficient, and the rail has suffered obvious damage in six locations (Photos 41 through 46).

F. RECOMMENDATIONS

The area of greatest concern is the vulnerability of the pier footings to local scour. Preliminary plans have been prepared by the Corps of Engineers for grouted rip-rap scour protection covering the channel bottom under the bridge. At the present time, Coe & Van Loo Consulting Engineers are designing soil

cement bank protection for the New River channel for the Flood Control District of Maricopa County. Coe & Van Loo are recommending that a concrete slab channel lining with welded wire fabric reinforcement be used for scour protection at the Glendale Avenue Bridge, rather than the grouted rip-rap. Sverdrup concurs with this recommendation.

The cost comparison in Section VII of this report indicates that a replacement structure, even if only of the same width as the existing bridge, would be too costly. If this structure can be made safe with minimum repairs, it will then be capable of providing service until the growth of the city in this area can justify the expense of a new wider bridge with sidewalks.

Meanwhile, in addition to scour protection, the stress in the steel stringers caused by the settlement at Pier No. 5 should be eliminated by jacking the stringers up to their original theoretical elevations and inserting shims at the bearings.

As pointed out previously in the inspection findings, there are other deficiencies which should be corrected:

a. Replace the existing bridge rails and curbs with current ADOT Standard B-21.18, Type B, concrete barriers.

b. Clean the debris from the bridge seats at both abutments. The debris tends to hold moisture and will hasten corrosion of the bearings supporting the superstructure.

c. Mill or grind the asphalt pavement adjacent to the bridge approach slabs to eliminate uneven joints.

d. Replace approach guardrails at all four corners of the bridge.

Until the recommended scour protection has been provided, the City of Glendale should station someone at both ends of the bridge to monitor the integrity of the structure during medium and larger sustained flows with velocities exceeding 5 feet per second. These personnel must have the means and the authority to close the bridge to traffic at the first sign of distress.

Section III

III. INSPECTION PHOTOGRAPHS

1. View of the Glendale Avenue Bridge at New River from downstream looking northeast.

2. View from upstream looking southwest.

3. From Abutment #1 looking east along south side of the bridge.

4. From Abutment #2 looking west along north side of bridge.

5. Looking north at Abutment #1.

6. Looking southwest at Abutment #1.

7. Remnants of concrete slab channel lining at Abutment #1.

8. Looking north at downstream end of Pier #1.

9. Looking south at upstream end of Pier #1.

10. Looking north at downstream end of Pier #2.

11. Looking south at upstream end of Pier #2.

12. Looking south at upstream end of Pier #2. Note blanket of grouted rip-rap on top of footing.

13. Looking north at downstream end of Pier #3.

14. Looking south at upstream end of Pier #3. Note top of footing is exposed.

15. Exposed footing at upstream end of Pier #3.

16. Looking north at U. S. Geological Survey gauging station at downstream end of Pier #4.

17. Looking south at upstream end of Pier #4.

18. Looking north at downstream end of Pier #5.

19. Looking south at upstream end of Pier #5.

20. Looking north at downstream end of Pier #6.

21. Looking south at upstream end of Pier #6.

22. Apparent exploratory pit at upstream end of Pier #6.

23. Looking northeast at Abutment #2.

24. Looking northwest at Abutment #2.

25. Looking south at Abutment #2.

26. Looking south at upstream end of Abutment #2 bridge seat.

27. Looking west along center-line of Glendale Avenue from about 120 feet east of bridge. Section quarter corner is in foreground.

28. Looking west along south edge of roadway. Note damage to guard rail.

29. Looking east along south edge of roadway.

30. Dado at southwest corner of bridge.

31. Looking east along north edge of roadway. Note damage to guard rail.

32. Dado at northwest corner of bridge.

33. Looking east along north curb of bridge.

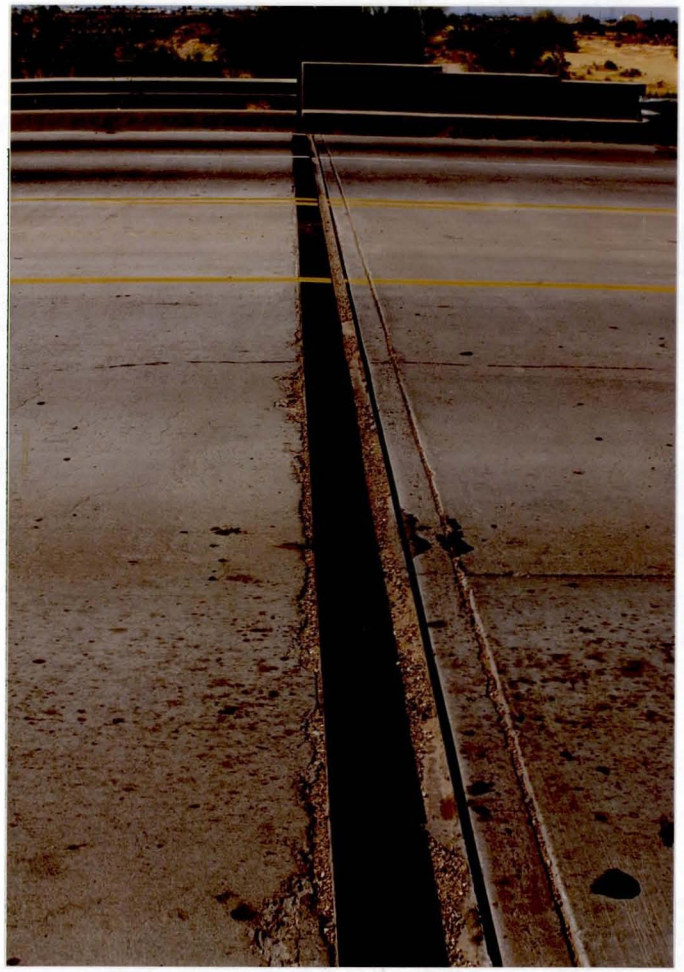
34. Interface between guard rail and dado at northeast corner of bridge.

35. Looking northwest at guard rail on north side of roadway at east approach.

36. Joint between asphalt approach pavement and portland cement concrete approach slab at west Abutment #1.

37. RJ-2 roadway expansion joint at west Abutment #1. Note spalls along edge of concrete deck slab.

38. RJ-2 roadway expansion joint at Abutment #1. Note debris in joint between approach slab and abutment backwall, and note how end of expansion joint at the curb is closed further than rest of joint.



39. RJ-2 roadway expansion joint at east Abutment #2. Note spalls along edge of concrete deck slab.

40. Joint between asphalt approach pavement and portland cement concrete approach slab at east Abutment #2.

41. Slight damage to bridge rail on north side near Pier #3.

42. Slight damage to bridge rail on north side in Span #4.

43. Extensive damage to bridge rail on north side near Pier #5.

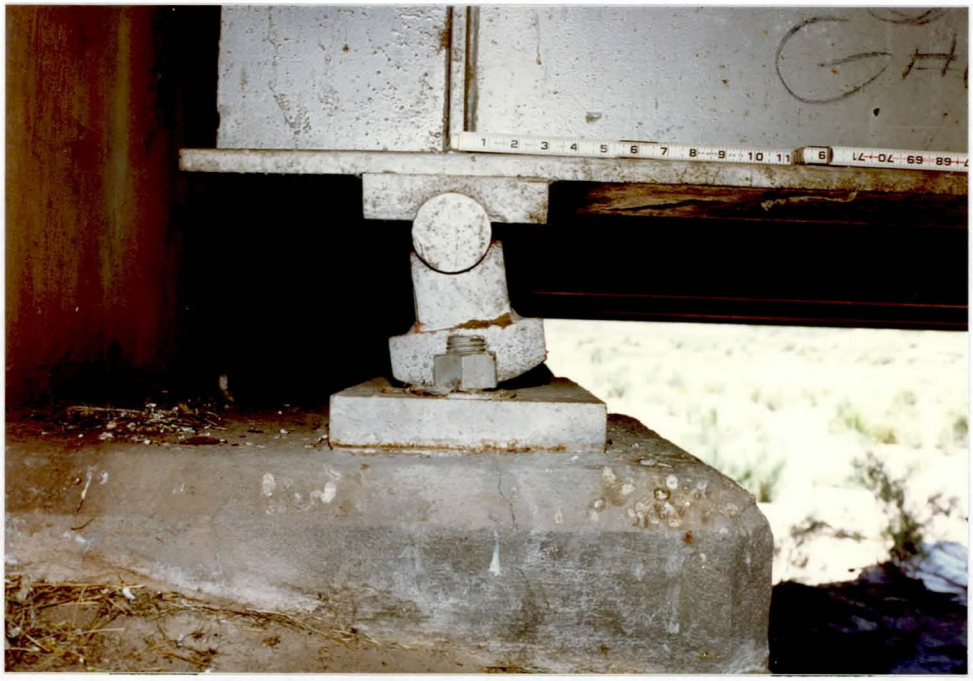
44. Slight damage to bridge rail on north side near Pier #6.

45. Slight damage to bridge rail on south side near Pier #1.

46. Extensive damage to bridge rail on south side near Pier #5.

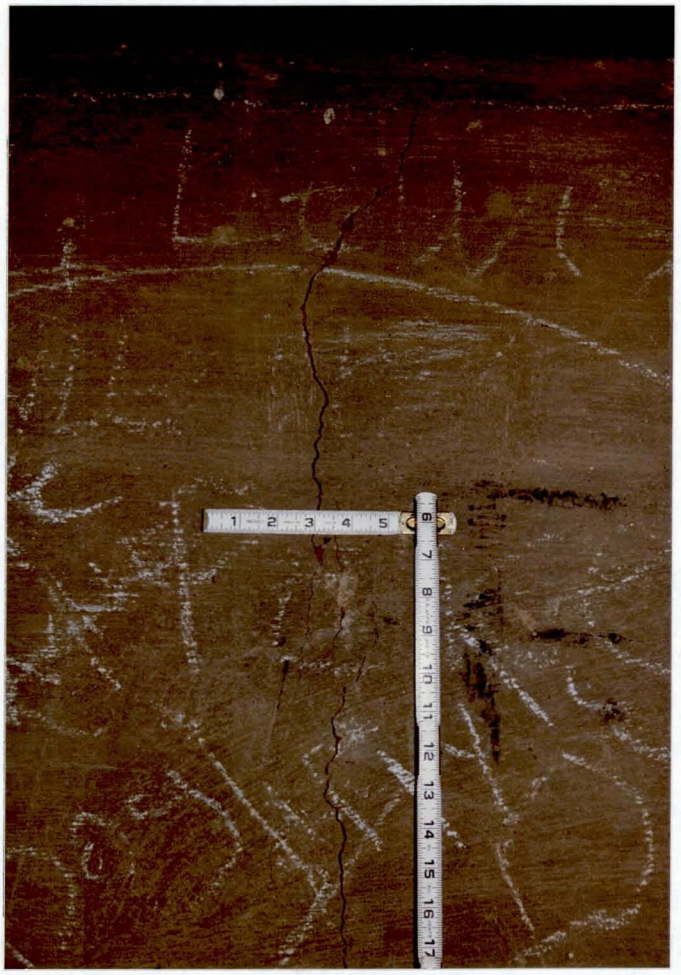
47. On North side of bridge, looking west from Pier #6, sighting across tops of piers. Note top of Pier #5 is below line of sight between top of Pier #6 and top of Pier #4.

48. Sighting west along bottom flange of north exterior stringer from Pier #6. Note sag in steel stringer at Pier #5.



49. Pinned rocker expansion bearing under center stringer at Abutment #1.

50. Pinned rocker expansion bearing under third stringer from north side at Abutment #2. Note accumulation of debris on bridge seat on either side of bearing pedestal, typical at both abutments.



51. Vertical crack on east face of Pier #6 wall near center.

52. At the south end of west Abutment #1, large horizontal crack in backwall.

53. At west Abutment #1, horizontal crack near top of bridge seat between second and third stringer from south side.

Section IV

Section IV

IV. SURVEY DATA

SVERDRUP

JOB 50097 City of Glendale

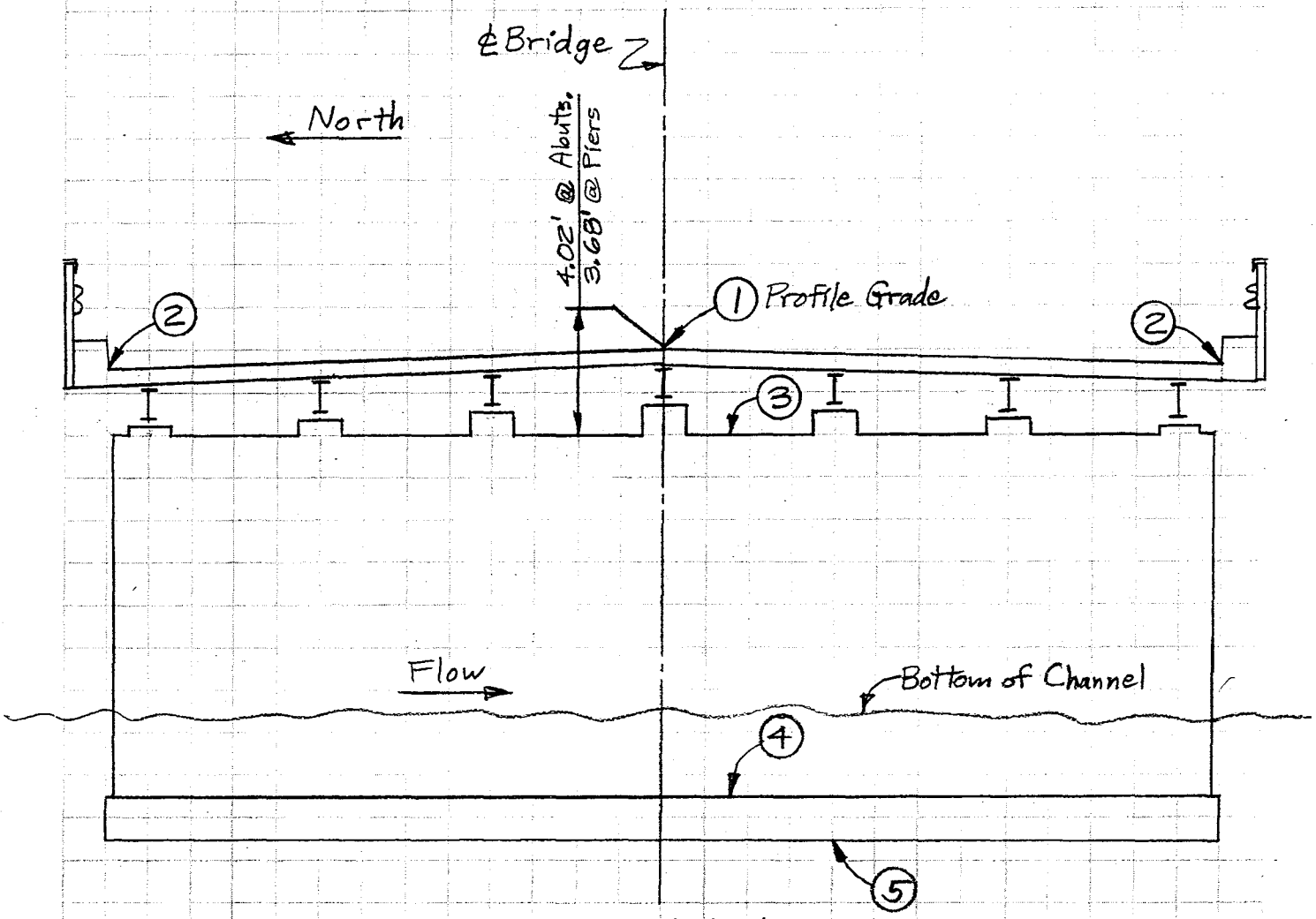
SHEET NO. ____ OF ____

DATE 5-11-88

COMPUTATIONS FOR Glendale Ave. Bridge @ New River

BY JFF CHKD ____

Theoretical Elevations at Piers & Abutments



ELEVATION
(Looking Ahd. Sta.)

Theoretical As-Built Elevations:

Unit	Profile Grade (1)	Gutter Line (2)	Top/Abut./Pier (3)	Top/Ftg. (4)	Bott./Ftg. (5)
Abut. 1	1066.38	1066.13	1062.36	1047.36	1044.86
Pier 1	1066.64	1066.39	1062.96	1045.71	1043.71
2	1066.87	1066.62	1063.19	1045.94	1043.94
3	1066.99	1066.74	1063.31	1046.06	1044.06
4	1066.99	1066.74	1063.31	1046.06	1044.06
5	1066.87	1066.62	1063.19	1045.94	1043.94
6	1066.64	1066.39	1062.96	1045.71	1043.71
Abut. 2	1066.38	1066.13	1062.36	1047.36	1044.86

WESTERN ENGINEERS ARIZONA INC.

CONSULTING ENGINEERS & LAND SURVEYORS

1 West Deer Valley Road, #122, Phoenix, Arizona 85027
(602) 254-1418 or (602) 582-4933

May 20, 1988

Sverdrup Corporation
Attention: Mr. John Fischer
432 N. 44 Street, Suite 250
Phoenix AZ 85008

RE: City Of Glendale - Glendale Avenue Bridge at New River
Sverdrup File No. 50097

Dear Mr. Fischer:

As discussed, I am enclosing the field notes and some sketches showing the Glendale Avenue Bridge. The elevations in the field book are based upon the C.O.E. datum on the one-quarter corner monument 100 feet east of the bridge.

I have used the plan elevation on the centerline of abutment #1 as the vertical control for my sketches. This way you have both true and plan elevations on the structure.

If you have any questions or require further information, please contact me.

Sincerely,

WEI ARIZONA, INC.

Tom Service

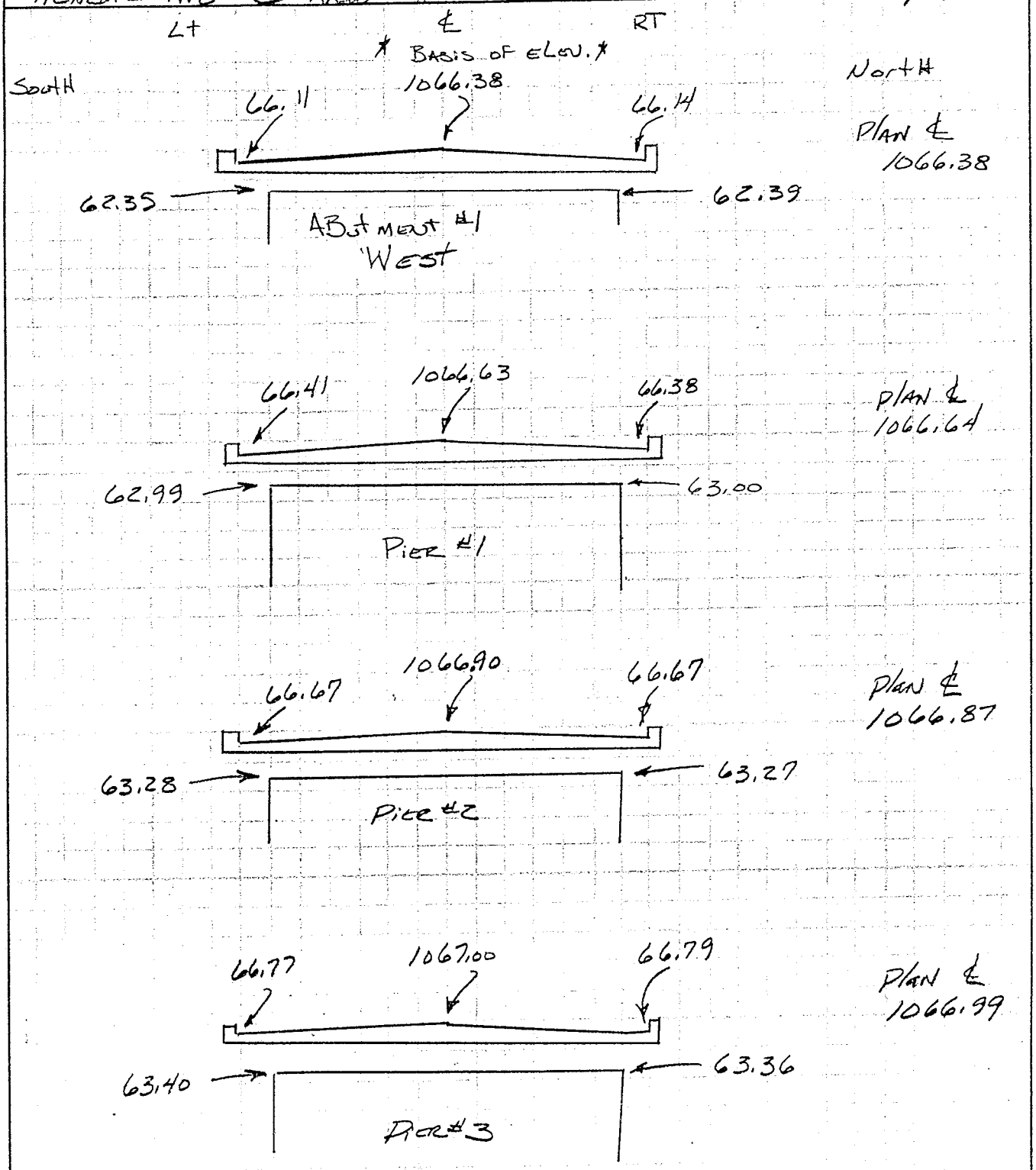
Tom Service
Vice President

TS/kc

CLIENT / DESCRIPTION:
Maricopa County Bridge
Glendale Ave @ New River

W.O. 2108 PAGE 1 OF 2

BY: TS DATE: 5/19/20



Note* Elevations based on Abut. #1 Plan ℄ Grade
All Elev. Adjusted +0.61 From Field Notes.

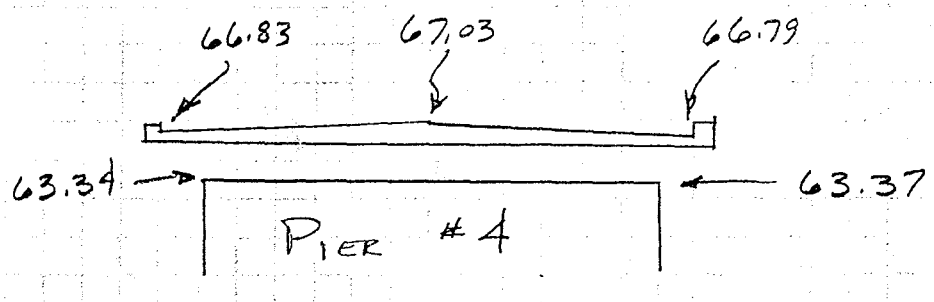
WESTERN ENGINEERS, INC.

CLIENT / DESCRIPTION:
MARICOPA COUNTY

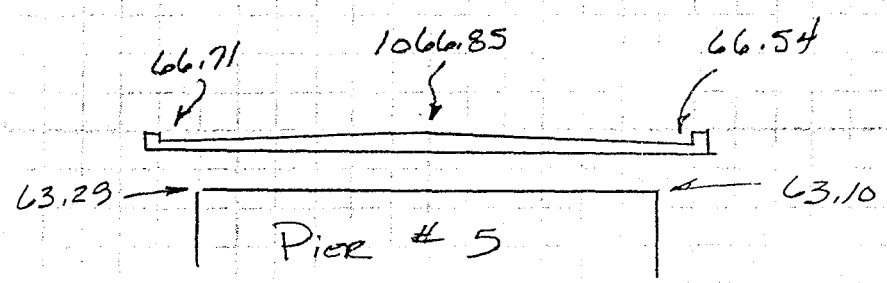
GLENDALE AVE @ NEW RIVER

W.O. 2/08 PAGE 2 OF 2

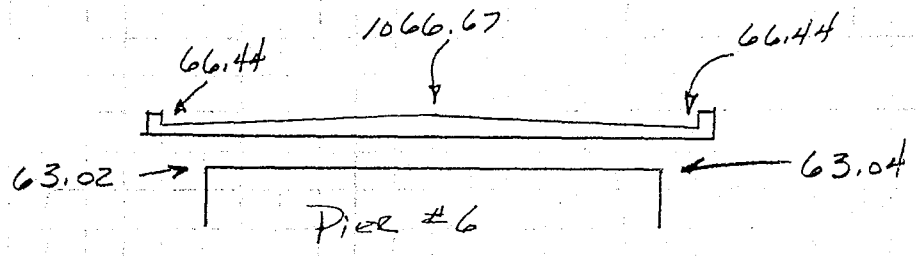
BY: TS DATE: 5/19/88



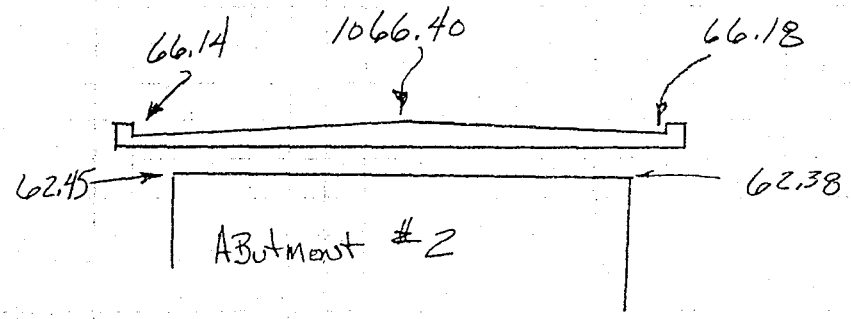
PLAN ℄ 1066.99



PLAN ℄ 1066.87



PLAN ℄ 1066.64



PLAN ℄ 1066.38

WESTERN ENGINEERS, INC.

Glendale Ave Bridge
AT
New River

Western Engineers Inc - Arizona
1. West Deer Valley Rd Ste 122
Phoenix AZ 85027

582-4933 // 254-1418

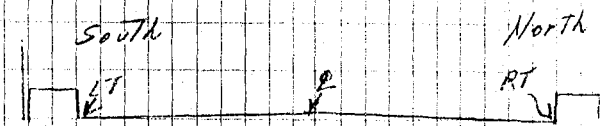
Party Chief Polo Gonzales
π Dave Hill
φ James Farthing

5-18-88
AG, DH, JF

①

1/4 Cor. 100' EAST of Bridge

Elev on Bridge Deck



As built Top Side Bridge

Note: Elevations Based upon 1/4 Corner 100' East of Bridge. C.O.E. Datum

STA	99 ℄ Glendale +	HI	As built −	Elev	BM/
	5.89	1069.98			1064.09
East End					
No = RT			4.41	65.57	
℄			4.19	65.79	
South = LT			4.45	65.53	
6th Pier					
RT			4.15	65.83	
℄			3.92	66.06	
LT			4.15	65.83	
5th Pier					
RT			4.05	65.93	
℄			3.74	66.24	
LT			3.88	66.10	
4th Pier					
RT			3.80	66.18	
℄			3.56	66.42	
LT			3.76	66.22	
T.P.	3.61	1070.00	3.59	1066.39	

5-18-88
AG DH JF

(2)

STA	+	HI	−	Elev	BM
		1070.00			
#3 Pier					
RT			3.82	1066.18	
℄			3.61	66.39	
LT			3.84	66.16	
#2 Pier					
RT			3.94	66.06	
℄			3.71	66.29	
LT			3.94	66.06	
#1 Pier					
RT			4.23	65.77	
℄			3.98	66.02	
LT			4.20	65.80	
West end			~~4.47~~		
North RT			4.47 ~~4.23~~	65.53	
℄			4.23	65.77	
South LT			4.50	65.50	
	3.81	1070.23	3.58	1066.42	
			6.14	1064.09	1064.09

BM 1/4 cor 100' East of Bridge

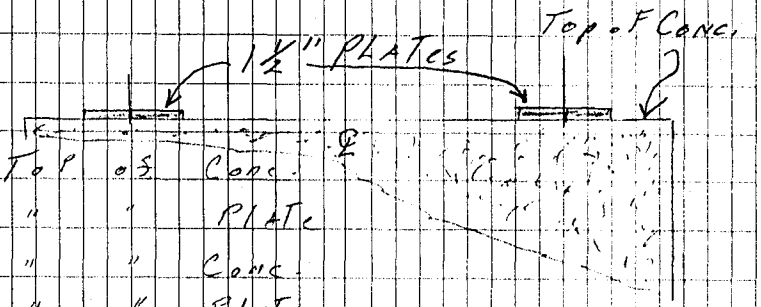
E/L = 0.00

5-18-88 (3)

AG DH JF

STA	As built +	HI	Piers −	Elev	BM	
	2.93	67.02	~~7.09~~		1064.09	1/4 cor 100' East of Bridge
	1.82	61.75	7.09 ~~5.88~~	59.93		
S.T TBM			5.88	55.87		Cotton Picker in Conc. between ABT #2 & Pier #6
TBM	4.74	60.61			55.87	Cotton Picker in Conc.
ABT 2#						
(EAST) No			+1.16	1061.77		Top of Conc.
			+1.58	62.19		Top of 1½ Metal rod Plate
So			+1.23	61.84		Top of Conc.
			+1.59	62.20		Top of Plate
Pier 6#						
No			+1.82	62.43		Top of Conc.
			+2.18	62.79		" " Plate
So			+1.80	62.41		" " Conc.
			+2.18	62.79		" " Plate
			4.74	1055.87		Cotton Picker
	5.67	61.54	~~1.60~~		55.87	Cotton Picker
	7.12	67.06	1.60 ~~2.96~~	59.94		
			2.96	64.10	-64.09	1/4 cor ✓

EK = +0.01



5-18-88
AG, D.H., J.F.

(4)

STA	+	Asbuilt Piers HI	−	Elev	BM	
	3.43	59.30 ~~59.29~~	~~5.58~~		55.87	Cotton Picker
	0.65	54.37	5.58	53.72		P.K. in Pier #4
Pier 5#						
No			+8.12	1062.49 ~~1046.25~~		Top of conc.
			+8.52	62.89		Top of Plate
So			+8.31	62.68		Top of Conc.
			+8.63	63.00		Top of Plate
Pier 4#						
No			+8.39	62.76		Top of conc.
			+8.76	63.13		Top of Plate
So			+8.36	62.73		Top of conc.
			+8.77	63.14		Top of Plate
TP	4.03	51.98	6.42	47.95		
Pier 3#						
No			+10.74	62.75		Top of conc
			+11.15	63.13		Top of Plate
So			+10.81	62.79		Top of conc.
			+11.12	63.10		Top of Plate

Asbuilt Piers

AM

5-18-88 (5)
A.G. D.H. J.F.

STA	+	HI	-	Elev		
		51.98				
Pier #2						
N°			+10.68	1062.66		Top of conc.
			+11.04	63.02		Top of Plate
S°			+10.69	62.67		Top of Conc.
			+11.05	63.03		Top of Plate
TP	6.58	56.63	1.93	50.05		
Pier #1						
N			+5.76	62.39		Top of conc.
			+6.11	62.24		Top of Plate
S			+5.75	62.38		Top of Conc.
			+6.16	62.79		Top of Plate
ABT #1						
N			+5.15	61.78		Top of Conc.
			+5.55	~~61.68~~ 62.18		Top of Plate
S			+5.11	61.74		Top of Conc.
			+5.54	62.17		Top of Plate
	7.09	56.91	6.81	49.82		
			1.05	55.86	55.87	← cotton picker

E/C = 0.01

Section V

V. BEAM ANALYSIS FOR SUPPORT SETTLEMENT

SVERDRUP

JOB 50097 City of Glendale

COMPUTATIONS FOR Glendale Ave Bridge @ New River

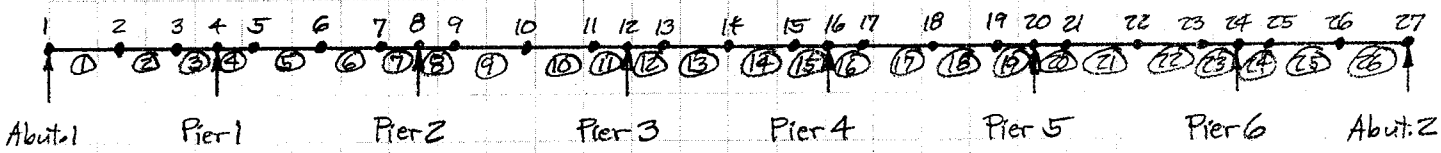
SHEET NO. ____ OF ____

DATE 5-18-88

BY JFF CHKD ____

STRESS Model

Sverdrup Computer Program P7003 on VAX 11/780



SVERDRUP

JOB 50097 City of Glendale

COMPUTATIONS FOR Glendale Ave. Bridge @ New River

SHEET NO ____ OF ____

DATE 5-18-88

BY JFF CHKD ____

Member Properties 27WF102 : $A = 30.01^{\square''}$, $d = 27.07''$, $I_{x-x} = 3604.1 in^4$

Without Cover Pls. – $AX - \frac{30.01^{\square''}}{144 \square''/\square'} = 0.2084 \ ft^2$

$IZ - \frac{3604.1 \ in^4}{20736 \ in^4/ft^4} = 0.17381 \ ft^4$

$S_x = 266.3 \ in^3$

With Cov. Pl. ½" × 8" × 10'-0" Top & Bott. –

$AX - \frac{30.01 + 2 \times .5 \times 8}{144} = 0.2640 \ ft^2$

$IZ - \frac{3604.1 + 2 \times .5 \times 8 \times 13.785^2}{20736} = \frac{5124.3}{20736} = 0.24712 ft^4$

$S_x = \frac{5124.3}{.5 \times 27.07 + .5} = \frac{5124.3}{14.035} = 365.1 \ in^3$

Constant $E = 29{,}000 \ ksi \times 144 \ \square''/\square' = 4{,}176{,}000 \ ksf$

Overstress

From computer output on following pages, for 1.5" support settlement at Pier 5, the maximum negative bending moment at any support occurs at Pier 6, equal to 104.49 'k.

Additional bending stress @ Pier 6 due to settlement only $= \frac{104.49'k \times 12''/'}{365.1 \ in^3} = 3.4 \ ksi$

Assume maximum bending stress due to D+L+I = Full Allow. = 18 ksi

% Overstress $= \frac{18 + 3.4}{18} = 118\%$

```
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0000000000    11111111111111111111111  Digital Equipment Corporation - VAX/VMS Version V4.4  11111111111111111111111    0000000000
0000000000    11111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111    0000000000

                                        DDDD   EEEEE   CCCC  N   N  EEEEE  TTTTT
                                        D   D  E      C      N   N  E        T
                                        D   D  E      C      NN  N  E        T
                                        D   D  EEEE   C      N N N  EEEE     T
                                        D   D  E      C      N  NN  E        T
                                        D   D  E      C      N   N  E        T
                                        DDDD   EEEEE   CCCC  N   N  EEEEE    T

                         000   55555   333    222   FFFFF   III    SSSS   CCCC  H   H  EEEEE  4  4    222
                        0   0  5      3   3  2   2  F        I    S      C      H   H  E      4  4   2   2
                        0  00  555        3      2  F        I    S      C      H   H  E      4  4       2
                        0 0 0     5      3      2   FFFF     I     SSS   C      HHHHH  EEEE   44444     2
                        00  0      5     3    2    F        I        S  C      H   H  E         4     2
                        0   0  5   5  3   3   2    F        I        S  C      H   H  E         4    2
                         000    555    333   22222  F        III   SSSS    CCCC  H   H  EEEEE     4   22222

                                  000    333   55555  55555   999    333     ;;      1
                                 0   0  3   3  5      5      9   9  3   3    ;;     11
                                 0  00      3  555    555    9   9      3           1
                                 0 0 0     3      5      5    9999     3     ;;      1
                                 00  0      3      5      5      9      3    ;;      1
                          ..     0   0  3   3  5   5  5   5      9  3   3     ;      1
                          ..      000    333    555    555    999    333     ;     111

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by UIC [DECNET].  The records are variable length with FORTRAN (FTN) carriage control.  The longest record is 80 bytes.

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started on printer _LTA1: on 20-MAY-1988 14:04 from queue L_PRN.

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Issue 4771-3

2

DATA SWITCHES ON 2

Scanned 4771-3

```
          20-MAY-88      15:59:28
STRUCTURE - GLENDALE AVENUE BRIDGE AT NEW RIVER
* JOB NO. 50097 CITY OF GLENDALE       PROGRAM P7003
*
NUMBER OF JOINTS    27
NUMBER OF SUPPORTS   8
NUMBER OF MEMBERS   26
NUMBER OF LOADINGS   1
TYPE PLANE FRAME
METHOD STIFFNESS
TABULATE ALL
*
JOINT COORDINATES
  1 X    0.    Y 0. S
  2 X   17.2   Y 0.
  3 X   38.    Y 0.
  4 X   43.    Y 0. S
  5 X   48.    Y 0.
  6 X   69.75  Y 0.
  7 X   91.5   Y 0.
  8 X   96.5   Y 0. S
  9 X  101.5   Y 0.
 10 X  123.25  Y 0.
 11 X  145.    Y 0.
 12 X  150.    Y 0. S
 13 X  155.    Y 0.
 14 X  176.75  Y 0.
 15 X  198.5   Y 0.
 16 X  203.5   Y 0. S
 17 X  208.5   Y 0.
 18 X  230.25  Y 0.
 19 X  252.    Y 0.
 20 X  257.    Y 0. S
 21 X  262.    Y 0.
 22 X  283.75  Y 0.
 23 X  305.5   Y 0.
 24 X  310.5   Y 0. S
 25 X  315.5   Y 0.
 26 X  336.3   Y 0.
 27 X  353.5   Y 0. S
MEMBER INCIDENCES
  1   1   2
  2   2   3
  3   3   4
  4   4   5
  5   5   6
  6   6   7
  7   7   8
  8   8   9
  9   9  10
 10  10  11
 11  11  12
 12  12  13
 13  13  14
 14  14  15
 15  15  16
 16  16  17
 17  17  18
 18  18  19
 19  19  20
```

4771-3

4

```
 20 20 21
 21 21 22
 22 22 23
 23 23 24
 24 24 25
 25 25 26
 26 26 27
CONSTANTS E 4176000. ALL
MEMBER PROPERTIES PRISMATIC
  1 AX .2084 IZ .17381
  2 AX .2084 IZ .17381
  3 AX .264  IZ .24712
  4 AX .264  IZ .24712
  5 AX .2084 IZ .17381
  6 AX .2084 IZ .17381
  7 AX .264  IZ .24712
  8 AX .264  IZ .24712
  9 AX .2084 IZ .17381
 10 AX .2084 IZ .17381
 11 AX .264  IZ .24712
 12 AX .264  IZ .24712
 13 AX .2084 IZ .17381
 14 AX .2084 IZ .17381
 15 AX .264  IZ .24712
 16 AX .264  IZ .24712
 17 AX .2084 IZ .17381
 18 AX .2084 IZ .17381
 19 AX .264  IZ .24712
 20 AX .264  IZ .24712
 21 AX .2084 IZ .17381
 22 AX .2084 IZ .17381
 23 AX .264  IZ .24712
 24 AX .264  IZ .24712
 25 AX .2084 IZ .17381
 26 AX .2084 IZ .17381
JOINT RELEASES
  1 MOMENT Z FORCE X
  4 MOMENT Z FORCE X
  8 MOMENT Z FORCE X
 12 MOMENT Z
 16 MOMENT Z
 20 MOMENT Z FORCE X
 24 MOMENT Z FORCE X
 27 MOMENT Z FORCE X
*
LOADING 1 - SETTLEMENT OF 1.5 INCHES AT PIER 5
JOINT DISPLACEMENTS
 20 DISPLACEMENT Y -.125
TRACE
SOLVE



AVERAGE BAND WIDTH                    0.96


          DOUBLE PRECISION
               LOG 281
PROBLEM CORRECTLY SPECIFIED, EXECUTION TO PROCEED.
```

4771-3

STRUCTURE - GLENDALE AVENUE BRIDGE AT NEW RIVER

LOADING 1 - SETTLEMENT OF 1.5 INCHES AT PIER 5

MEMBER FORCES

MEMBER	JOINT	AXIAL FORCE	SHEAR FORCE	MOMENT
1	1	0.000	0.059	0.00
1	2	0.000	-0.059	1.01
2	2	0.000	0.059	-1.01
2	3	0.000	-0.059	2.23
3	3	0.000	0.059	-2.23
3	4	0.000	-0.059	2.52
4	4	0.000	-0.206	-2.52
4	5	0.000	0.206	1.50
5	5	0.000	-0.206	-1.50
5	6	0.000	0.206	-2.98
6	6	0.000	-0.206	2.98
6	7	0.000	0.206	-7.45
7	7	0.000	-0.206	7.45
7	8	0.000	0.206	-8.48
8	8	0.000	0.705	8.48
8	9	0.000	-0.705	-4.95
9	9	0.000	0.705	4.95
9	10	0.000	-0.705	10.40
10	10	0.000	0.705	-10.40
10	11	0.000	-0.705	25.74
11	11	0.000	0.705	-25.74
11	12	0.000	-0.705	29.27
12	12	0.000	-2.441	-29.27
12	13	0.000	2.441	17.06
13	13	0.000	-2.441	-17.06
13	14	0.000	2.441	-36.02
14	14	0.000	-2.441	36.02
14	15	0.000	2.441	-89.11
15	15	0.000	-2.441	89.11
15	16	0.000	2.441	-101.31
16	16	0.000	4.843	101.31
16	17	0.000	-4.843	-77.10
17	17	0.000	4.843	77.10
17	18	0.000	-4.843	28.23
18	18	0.000	4.843	-28.23
18	19	0.000	-4.843	133.56
19	19	0.000	4.843	-133.56
19	20	0.000	-4.843	157.77

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20	20	0.000	-4.902	-157.77
20	21	0.000	4.902	133.26
21	21	0.000	-4.902	-133.26
21	22	0.000	4.902	26.64
22	22	0.000	-4.902	-26.64
22	23	0.000	4.902	-79.98
23	23	0.000	-4.902	79.98
23	24	0.000	4.902	-104.49
24	24	0.000	2.430	104.49
24	25	0.000	-2.430	-92.34
25	25	0.000	2.430	92.34
25	26	0.000	-2.430	-41.80
26	26	0.000	2.430	41.80
26	27	0.000	-2.430	0.00

6

APPLIED JOINT LOADS, FREE JOINTS

JOINT	FORCE X	FORCE Y	MOMENT Z
2	0.000	0.000	0.00
3	0.000	0.000	0.00
5	0.000	0.000	0.00
6	0.000	0.000	0.00
7	0.000	0.000	0.00
9	0.000	0.000	0.00
10	0.000	0.000	0.00
11	0.000	0.000	0.00
13	0.000	0.000	0.00
14	0.000	0.000	0.00
15	0.000	0.000	0.00
17	0.000	0.000	0.00
18	0.000	0.000	0.00
19	0.000	0.000	0.00
21	0.000	0.000	0.00
22	0.000	0.000	0.00
23	0.000	0.000	0.00
25	0.000	0.000	0.00
26	0.000	0.000	0.00

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REACTIONS,APPLIED LOADS SUPPORT JOINTS

JOINT	FORCE X	FORCE Y	MOMENT Z
1	0.000	0.059	0.00
4	0.000	-0.264	0.00
8	0.000	0.911	0.00
12	0.000	-3.146	0.00
16	0.000	7.283	0.00
20	0.000	-9.745	0.00
24	0.000	7.332	0.00
27	0.000	-2.430	0.00

FREE JOINT DISPLACEMENTS

JOINT	X-DISPLACEMENT	Y-DISPLACEMENT	ROTATION
2	0.0000	-0.0004	0.0000
3	0.0000	-0.0002	0.0000
5	0.0000	0.0003	0.0001
6	0.0000	0.0015	0.0000
7	0.0000	0.0007	-0.0001
9	0.0000	-0.0009	-0.0002
10	0.0000	-0.0051	-0.0001
11	0.0000	-0.0025	0.0004
13	0.0000	0.0031	0.0007
14	0.0000	0.0176	0.0004
15	0.0000	0.0086	-0.0015
17	0.0000	-0.0109	-0.0024
18	0.0000	-0.0763	-0.0031
19	0.0000	-0.1233	-0.0007
21	0.0000	-0.1231	0.0007
22	0.0000	-0.0755	0.0031
23	0.0000	-0.0105	0.0023
25	0.0000	0.0082	0.0014
26	0.0000	0.0147	-0.0005

SUPPORT JOINT DISPLACEMENTS

JOINT	X-DISPLACEMENT	Y-DISPLACEMENT	ROTATION
1	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000
8	0.0000	0.0000	-0.0002
12	0.0000	0.0000	0.0006
16	0.0000	0.0000	-0.0019
20	0.0000	-0.1250	0.0000
24	0.0000	0.0000	0.0019
27	0.0000	0.0000	-0.0010

4771-3

Section VI

VI. SCOUR MEASUREMENTS

SVERDRUP

JOB 50097 City of Glendale

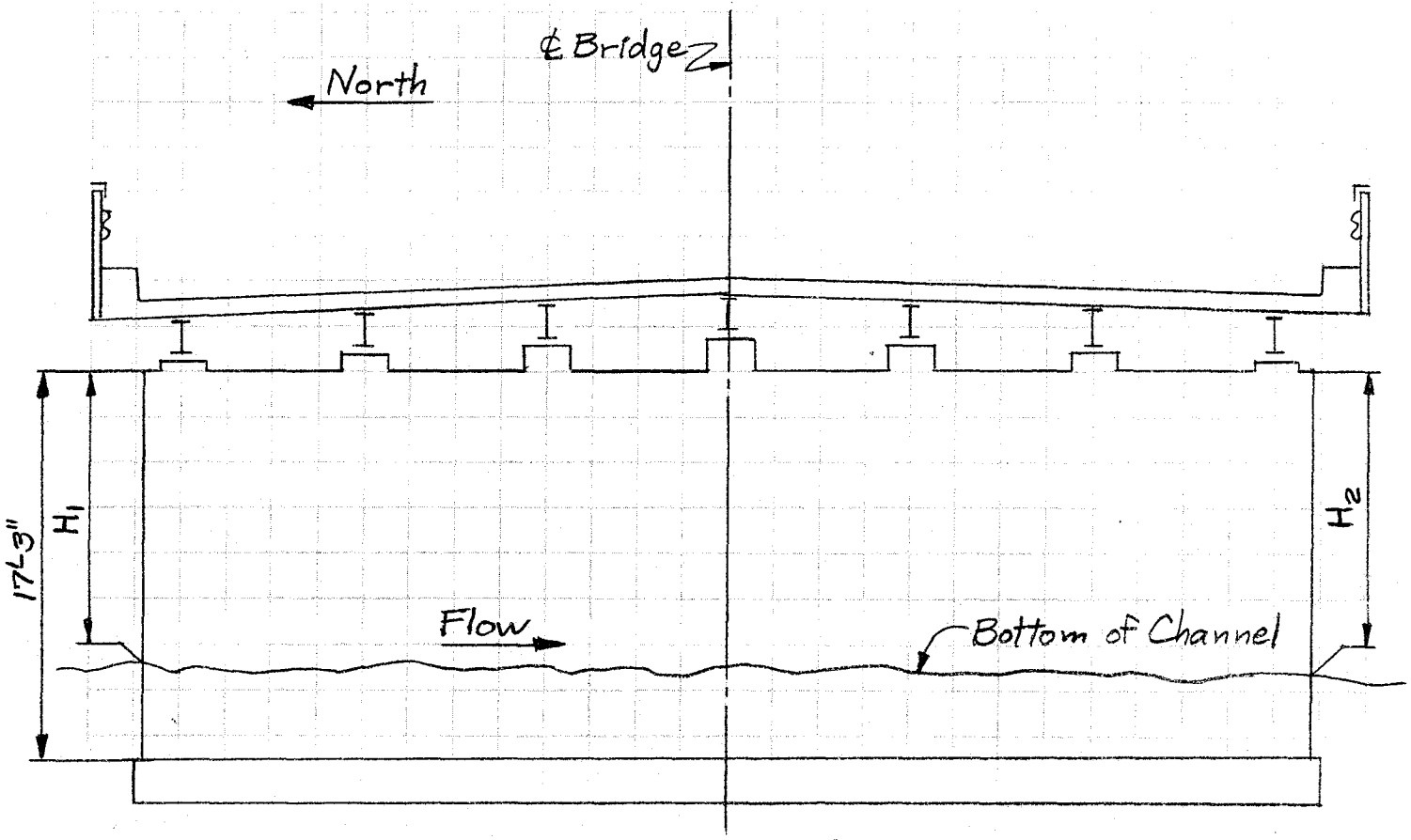
COMPUTATIONS FOR Glendale Ave. Bridge @ New River

SHEET NO. ____ OF ____

DATE 5-16-88

BY JFF CHKD ____

Measurements to Bottom of Channel



ELEVATION
(Looking Ahd. Sta.)

Unit	H_1	H_2
Abut. 1	10'-5"	6'-8"
Pier 1	11'-4"	13'-8"
2	16'-4"	16'-8"
3	17'-3"	16'-0"
4	13'-4"	14'-0"
5	12'-4"	12'-9"
6	8'-10"	9'-5"
Abut. 2	5'-2"	5'-8"

Section VII

VII. COST ESTIMATES AND COMPARISONS

SVERDRUP

JOB 500917 City of Glendale / Glendale Ave. Br. @ New River

SHEET NO. 1 OF 6

DATE 5-19-88

COMPUTATIONS FOR Cost Est.

BY JFF CHKD

Cost Comparisons

Concrete Slab Scour Protection	$500,000
Jacking Superstructure @ Pier 5 to Original Elevation & Inserting Steel Shims @ Brgs.	$25,000
Bridge Rail Replacement (including approach guard rail & traffic control)	$97,800
	$622,800
New Bridge w/ 68' Rdwy & Two 6' Sdwks.	$1,500,000

SVERDRUP

JOB 50097 City of Glendale / Glendale Ave. Br. @ New River SHEET NO. 2 OF 6

DATE 5-18-83

COMPUTATIONS FOR Cost Est. BY JFF CHKD

New Bridge Alternative

Assume existing channel width is adequate.
Assume, therefore, that new bridge length approx. same as existing ≈ 360'.
Assume Type VI prestressed AASHTO girder superstr. on round conc. column piers with cap beam, with columns on drilled shaft foundations.

Bridge width:

Rail	1'-0"
Sdwk.	6-0
Curb	7
Rdwy.	68-0
Curb	7
Sdwk.	6-0
Rail	1-0
	83'-2"

Approx. Cost = 83.17 × 360' × $50/SF = $1,500,000

Jacking Superstructure @ Pier 5 & Inserting Steel Shims @ Brgs.

Labor — 6 men × $50/hr. × 8 hrs/day × 5 days = $12,000
Equip. Rental — 10,000
Materials — 3,000
$25,000 Incl. OH & profit

Bridge Rail Replacement

ADOT B-21.18 Conc. Barrier 392' × 2 × $75/ft. for removal & replacement = $58,800
Approach Guard Rail 4 × [100' × $20/ft. + $1,500] = 14,000
$72,800
Traffic Control 25,000
$97,800

SVERDRUP

JOB LOBENDALE BRIDGE INSPECT.

COMPUTATIONS FOR SCOUR PROTECT. EX.

SHEET NO. 3 OF 6

DATE 5/25/88

BY ML CHKD

SEE SHT 2

$A_8 = 5(19) + \frac{1}{2}(15)(19) = 238$ #

$A_1 = 45(3.5) + \frac{1}{2}(45)(6) = 286$ #

$A_2 = \frac{1}{2}(50)(2.5) + 125(50) = 125$ #

$A_3 = \frac{1}{2}(125)(50) + 85(50) = 44$ #

$A_4 = 125(125) + \frac{1}{2}(125)(2.25) = 203$ #

$A_5 = 50(3) + \frac{1}{2}(50)(3.5) = 238$ #

$A_6 = 6(30) + \frac{1}{2}(30)(2.5) = 218$ #

$A_7 = 10(10) + \frac{1}{2}(10)(18) = 190$ #

TOTAL = 1542 # @ 145+30 = 270,000 FT³ (10,000 Yd³)

TOP OF SCOUR PROTECT.

EX BELOW TOP OF SCOUR PROTECT.

$[2(340)(15)]2 + 2\{\frac{1}{2}(15)(50)(340)\}2 = 530,400$ FT³ (19,650 Yd³)

~~TOTAL EX = 19650 Yd³~~

TOTAL FILL = 19650 Yd³

CONCRETE WALLS & SLAB (@ 8' THK)

$[2(33.75)(340) + 85(340)].66 = 34570$ FT³ (1280 Yd³)

TOTAL Conc. = 1280 Yd³

TOTAL MESH = 51900 FT²

STRUCT. BACKFILL = $(145)\left(\frac{.54 + .31 + .19 + .19 + .31 + .54}{6}\right)(340)/27 = 635$ Yd³

@ \$15/Yd³ = \$9525

SVERDRUP

JOB LAKEDALE BRIDGE INSPECT.

COMPUTATIONS FOR SCOUR PROTECT RECHECK

SHEET NO. 4 OF 6

DATE 5/25/83

BY KL CHKD

$A_1 = 286$ #

$A_2 = 185$ #

$A_3 = 44$ #

$A_4 = .25(50) + \frac{1}{2}(50)(1.25) = 44$ #

$A_5 = 54(1.5) + \frac{1}{2}(54)(1.5) = 122$ #

$A_6 = 54(2.25) + \frac{1}{2}(54)(2.5) = 189$ #

$A_7 = 46(5) + \frac{1}{2}(46)(5.5) = 357$ #

AVE AREA	AVE d	
268	6.44	ABUT 1
286	4.74	PIER 1
185	2.76	" 2
44	2.64	" 3
83	5.64	" 4
156	6.71	" 5
278	10.09	" 6
274	12.09	ABUT 2

				AREA (USING ↗)
TRIB. W. =	@ ABUT 1 -	45/2	= 22.5'	145
	PIER 1 -	95/2	= 47.5'	275
	" 2 -	100/2	= 50.'	138
	" 3 -	100/2	= 50.'	132
	" 4 -	105/2	= 52.5'	296
	" 5 -	105/2	= 52.5'	352
	" 6 -	100/2	= 50'	565
	ABUT 2 -	45/2	= 22.5'	272
			TOTAL	2065 #

2065 # @ 175' = 361,400 FT³ (13,385 Yd)

SLAB EX = 175(350)(66)/27 = 1500 Yd³

FROM SHT. 1 SLOPE EX = 19650 Yd³

TOTAL EX = 34,535 Yd³
@ $5/Yd³ = $172,675

FROM SHT 1 - TOTAL FILL = 19650 Yd³
@ $5/Yd³ = $98,250

FROM SHT 1 - TOTAL CONC. = 1280 Yd³
@ $150/Yd³ = $192,000

SHT 1 - STRUCT. BACKFILL - 635 Yd³ - $9525

TOTAL COST. = $472,450.00
Say $500,000

SVERDRUP

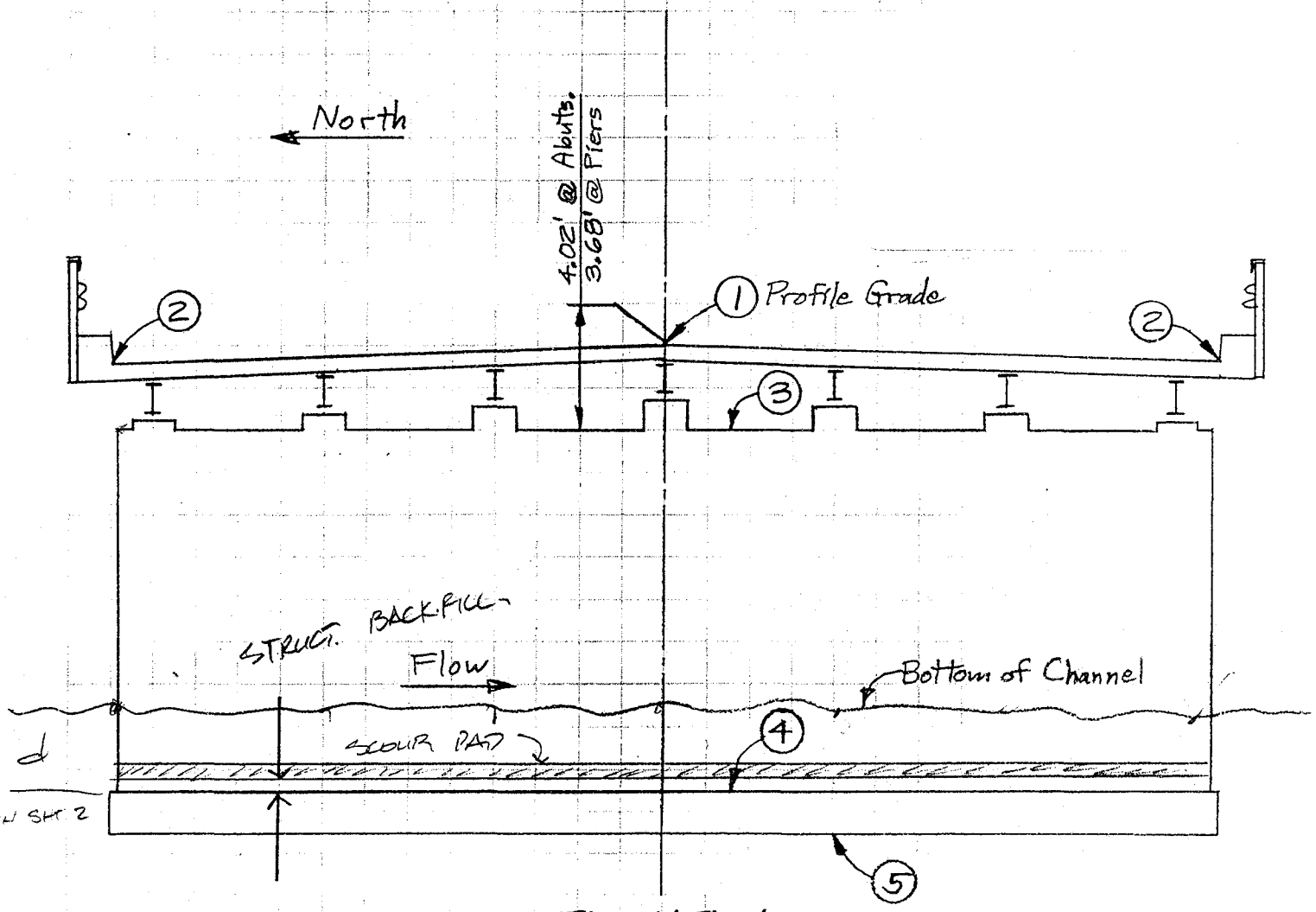
JOB 50097 City of Glendale

SHEET NO. 5 OF 6

DATE 5-11-88

COMPUTATIONS FOR Glendale Ave. Bridge @ New River BY JFF CHKD

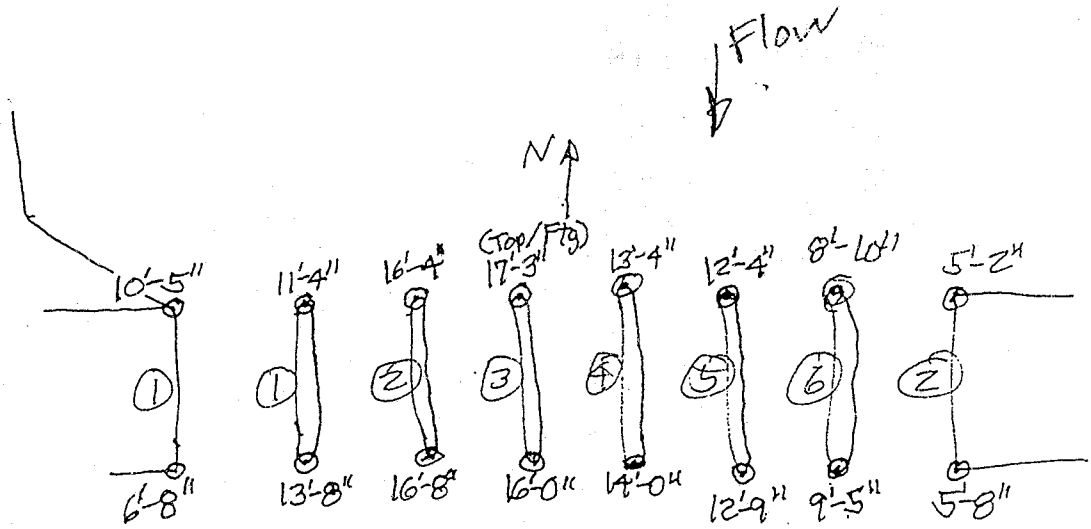
Theoretical Elevations at Piers & Abutments

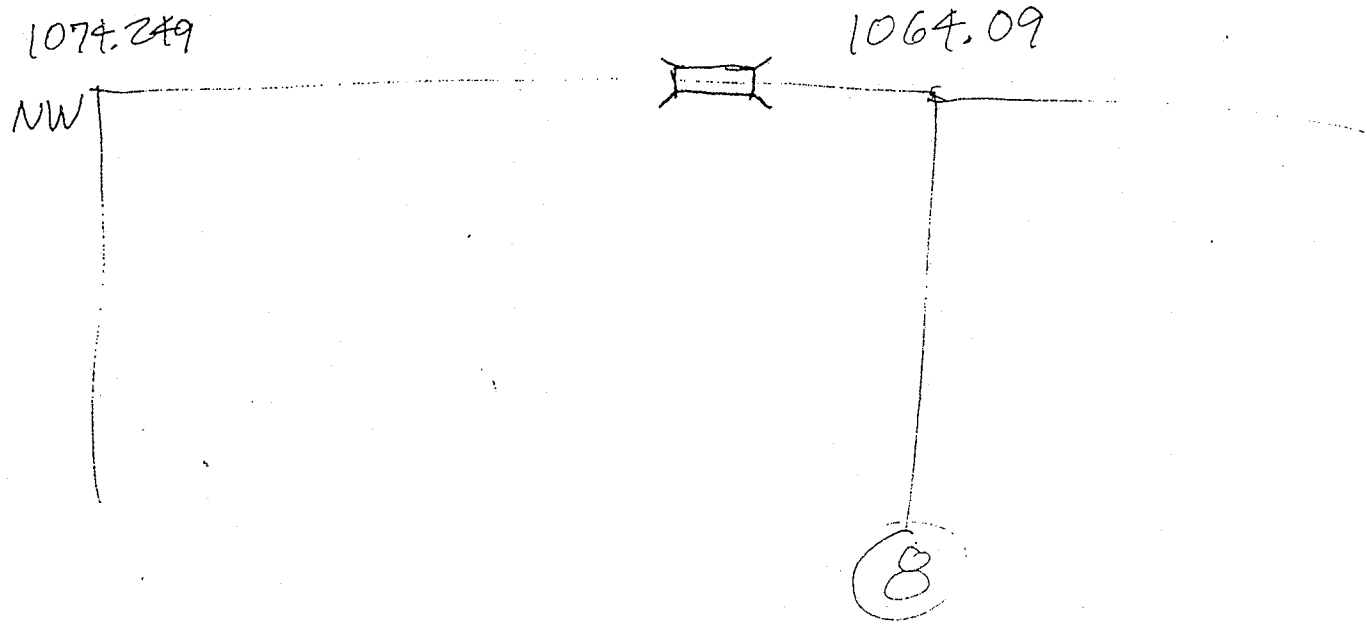


ELEVATION
(Looking Ahd. Sta.)

Theoretical As-Built Elevations:

Unit	Profile Grade (1)	Gutter Line (2)	Top/Abut./Pier (3)	Top/Ftg. (4)	Bott./Ftg. (5)	Bottom of Channel K d	Bottom of Channel S d
Abut. 1	1066.38	1066.13	1062.36	1047.36	1044.86	51.9	55.7
Pier 1	1066.64	1066.39	1062.96	1045.71	1043.71	51.6	49.3
2	1066.87	1066.62	1063.19	1045.94	1043.94	46.9	46.5
3	1066.99	1066.74	1063.31	1046.06	1044.06	46.1	47.3
4	1066.99	1066.74	1063.31	1046.06	1044.06	50.1	49.3
5	1066.87	1066.62	1063.19	1045.94	1043.94	50.9	50.4
6	1066.64	1066.39	1062.96	1045.71	1043.71	54.1	53.5
Abut. 2	1066.38	1066.13	1062.36	1047.36	1044.86	57.2	56.7





Sighting west from southend pier 6, it appears that maybe only north end has settled.

Appendix

(100) STRUC NAME: NEW RIVER BRIDGE PRINC ROUTE: MILEPOST: 0.00 (8) STRUCTURE NUMBER: 9141

(1) STATE: ARIZONA (2) HIGHWAY DISTRICT: 02 (3) COUNTY: MARICOPA (4) CITY/TOWN: GLENDALE

(6) FEATURE UNDER: NEW RIVER (7) FACILITY ON: GLENDALE AVENUE (9) LOC: 1/2 MI W 99TH AVE

STRUCTURE DATA

		ROUTE UNDER	ROUTE ON	(27)	YR BLT/RECONS	6000	(53)	VERT CL OVER	99 FT 99 IN
(5)	INVENTORY RTE		150050300	(28)	LANES ON STR 4	UNDER 0	(54)	MIN VERT UNDERCL	00 FT 00 IN
(10)	ADT VERT CLR	00FT 1IN	99FT 99IN	(31)	DESIGN LOAD	5	(55)	MIN LAT CL RIGHT	99.9 FT
(11)	MILEPOINT	0.00	4.46	(32)	APP RD WIDTH	70 FT	(56)	MIN LAT CL LEFT	00.0 FT
(12)	ROAD SEC NO		00000	(33)	BR MEDIAN	0	(57)	WEARING SURFACE TYPE	1
(13)	OFF BR DESC			(34)	SKEW	00	(100)	PRINCIPAL ROUTE UNDER	
(14)	OFF MILEPOINT	0.00	0.00	(35)	STR FLARED	N0	(101)	WEARING SURFACE THICK.	IN
(15)	OFF SEC LENG	0.0	0.0	(36)	TRAF FEATURES	0000	(102)	FOUNDATION TYPE	11
(16)	LATITUDE	0 M	33D 32.2M	(37)	HISTORICAL SIGNIFICANCE	5	(103)	DIST MAINTENANCE ORG	
(17)	LONGITUDE	0 M	112D 16.9M	(38)	NAV CONTROL	00	(104)	PROJ NO	S227 (3)
(18)	VULNERABILITY		3	(39)	NAV VERT CL	000	(105)	STA PRINC RTE	229+79.25
(19)	DETOUR LENGTH	MI	03 MI	(40)	NAV HORIZ CL	0000	(106)	BRIDGE RAIL TYPE	6
(20)	TOLL		3	(41)	O C P	OPEN	(107)	INSPECTION QUARTER	8
(21)	CUSTODIAN		4	(42)	TYPE SERVICE	15	(108)	INSPECTION NUMBER	8
(22)	OWNER		4	(43)	STR TYPE MAIN	402	(110)	SPECIAL INSPECTION	NO
(23)	FAP NUMBER			(44)	STR TYPE APPROACH	000	(111)	POSTED LIMIT	TONS
(24)	HIGHWAY SYS		07	(45)	NO SPANS MAIN	7	(112)	REPAIR PRIORITY	2
(25)	ADMIN URIS		4	(46)	NO SPANS APPROACH	0000	(113)	PROPOSED MAINT TYPE	00
(26)	FUNC CLASS		43	(48)	MAX SPAN LENGTH	54 FT	(114)	EST MAINT COST	$
(29)	ADT	0	15000	(49)	STR LENGTH	358 FT	(115)	MAINT COMPLETED MO	YR
(30)	YEAR OF ADT	19	1979	(50)	WALK/CURB LT 2.0 FT RT	2.0 FT	(116)	ACT MAINT COST	$
(47)	TOT HORIZ CL	FT	52.0 FT	(51)	BR RDWY WIDTH CURB/CURB	52.0 FT	(117)	CULVERT BBL HEIGHT	FT
				(52)	DECK WIDTH OUT TO OUT	56.0 FT	(118)	CULVERT BBL LENGTH	FT
							(119)	CULVERT FILL HEIGHT	FT

CONDITION	RATING		PROPOSED IMPROVEMENTS	
(58) DECK	5	(73)	YEAR NEEDED	1987
(59) SUPERSTRUCTURE	6	(74)	TYPE OF SERVICE	1
(60) SUBSTRUCTURE	3	(75)	TYPE OF WORK	301
(61) CHANNEL & CHANNEL PROTECTION	3	(76)	IMPROVEMENT LENGTH	500 FT
(62) CULVERT & RETAINING WALLS	N	(77)	DESIGN LOADING	5
(63) ESTIMATED REMAINING LIFE	25 YRS	(78)	ROADWAY WIDTH	70 FT
(64) OPERATING RATING	243	(79)	NUMBER OF LANES	4
(65) ROADWAY-SAFETY	5	(80)	ADT 30000 (81) YEAR	1990
(66) INVENTORY RATING	230	(82)	PROPOSED RDWY IMPROVEMENT YEAR	1987
		(83)	APPROACH IMPROVEMENT	3

APPRAISAL	RATING			
(67) STRUCTURE CONDITION	4	(84)	COST OF IMPROVEMENTS	1213
(68) DECK GEOMETRY	3	(85)	P E COST	61
(69) UNDERCLEARANCE VERTICAL & LATERAL	N	(86)	DEMOLITION COST	
(70) SAFE LOAD CAPACITY	5	(87)	SUBSTRUCTURE COST	465
(71) WATERWAY ADEQUACY	3	(88)	SUPERSTRUCTURE COST	728
(72) APPROACH ROADWAY ALIGNMENT	8	(89)		
		(90)	DATE OF LAST INSPECTION	11/30/87

(14.9) SUFFICIENCY RATING S (120) COMMENTS:

Data Documents/Inc.

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ARIZONA DEPARTMENT OF TRANSPORTATION
STRUCTURES SECTION

BRIDGE INSPECTION REPORT

PAGE 1 OF 3

8 STRUCTURE NUMBER 9141

90 DATE 113087 108 INSPECTION NO. 8 INSPECTED BY Runner - Wise

109 STRUCTURE NAME NEW RIVER BRIDGE PRINCIPAL RTE. & MP. Glendale Ave FAU 5030

2 DISTRICT 1 103 ORG. AREA Phoenix 110 SPEC. INSP. NEXT INSP. DUE - QTR. 4 YR 89

3 COUNTY Maricopa 013 4 CITY Glendale 040

CONDITION	COND. RTG.	SEE NOTE
DECK: (58) 5		
Deck and/or wearing surface Conc. - Extensive minor/mod. trans, random & patt. crk	6	
Sidewalks, curbs, median Conc. - Minor trans cracks - ok	7	
Expansion joints RT-2 - Spalls at the edges of both joints	5	
SUPERSTRUCTURE: (59) 6		
Main members 7 span cont WF	6	
Bracing, diaphragms, etc. Channels - Missing bolts on N. side of channel at SW corner	6	①
Bearing devices Rockers - Slight tilt at East abut - West vertical - ok	8	
SUBSTRUCTURE: (60) 3		
Abutments Full height conc. - on spread footing	6	②
Piers Conc wall - on spread footing	3	③
Wingwalls, Dadoes, Retaining Walls, etc. Wings & dados are ok	8	
WATERWAY: (61) 3		
Bank Protection Some conc & conc. rubble at each abut	7	
Channel Gravel mining operations - Upstream & downstream - See Photos	3	③
ROADWAY - SAFETY: (65) 5		
Approaches Conc. approach slabs - Approaches are rough	5	④
Fills	8	
Bridge rail, Parapet, Barrier Guard rail & angle rail with channel posts	5	⑤
Approach guardrail / barrier C-7-1 -	5	⑥
Lighting NA	N	
Signing Black/white at all four corners - ok	8	

REMARKS, NOTES, RECOMMENDATIONS:

① Recommend replacing bolts - See Photo
② Large horiz crack in abut haunch - West abut SW corner - See Photo
③ Nose/footing of pier #3 is exposed - See Photo. Pier #5 has settled up to 1½" sometime in the past. Cover over the remaining piers vary from 2' to 5± according to the profile. As has been recommended since Insp. #2 some type of scour protection is in order. Until protection is installed - Recommend the City station someone at the bridge & monitor the structure during medium & larger flows. continued Page 3

112 REPAIR PRIORITY 2

Registered Professional Engineer (Civil) CERTIFICATE NO. 5813 HAROLD G. RUNNER Date Signed 12/9/87 ARIZONA, U.S.A.

P.E. SEAL

29 ADT ON 15000 30 YR 79 29 ADT UNDER 30 YR 63 EST. REMAIN LIFE 25 111 POSTED LIMIT

64-4502 C R6/87

8 STRUCTURE NO. 9141 108 INSPECTION NO. 8 PAGE 2 OF 3

APPRAISAL

STRUCTURAL CONDITION	DECK GEOMETRY	UNDERCLEARANCES
67 4 Settlement at Pier #5 Gravel mining operations Cover over pier footings	68 3 52' c/c 70' approach 2<b=3	69 N
SAFE LOAD CAPACITY	**WATERWAY ADEQUACY**	**APPROACH RDWY. ALIGNMENT**
70 5 INV=230 Settlement at Pier #5	71 3 little cover over pier footings - Gravel mining operations	72 8

APPRAISAL CODE:

N - NOT APPLICABLE
9 - SUPERIOR TO DESIRABLE CRITERIA
8 - EQUAL TO DESIRABLE CRITERIA
7 - BETTER THAN MIN. CRITERIA
6 - EQUAL TO MIN. CRITERIA
5 - SLIGHTLY BETTER THAN ADEQUATE AS IS
4 - MIN. ADEQUACY TO LEAVE IN SERVICE
3 - BASICALLY INTOLERABLE-HIGH REPAIR PRIORITY
2 - BASICALLY INTOLERABLE-HIGH REPLACEMENT PRIORITY
1 - REPAIR NEEDED TO RESTORE SERVICE
0 - REPLACEMENT NEEDED TO RESTORE SERVICE

APPRAISAL REMARKS:

REMARKS, SKETCHES, ETC.

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ARIZONA DEPARTMENT OF TRANSPORTATION
STRUCTURES SECTION

SUPPLEMENTAL PAGE TO INSPECTION REPORT

8 STRUCTURE NUMBER 9141

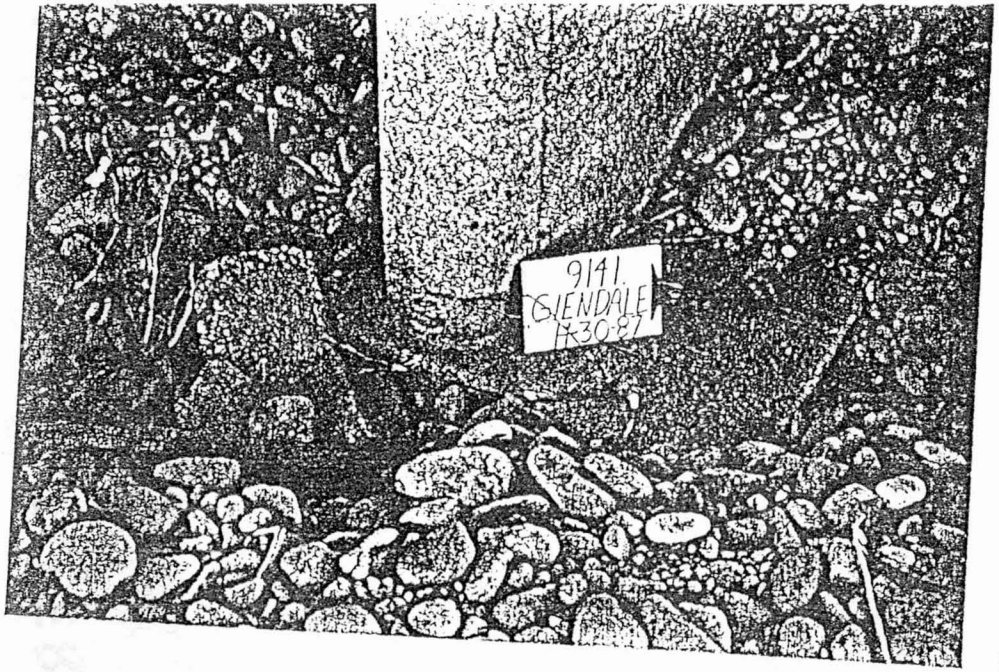
90 DATE 113087 108 INSPECTION NO. 8

(3) Someone has evidently done some foundation investigation. Holes have been dug at the tails of the piers

(4) Recommend shaving the AC at the approaches

(5) Bridge rail has been damaged on the North side - See Photo Recommend repair.

(6) Guardrail damaged at NW, SE & SW corners - Recommend repair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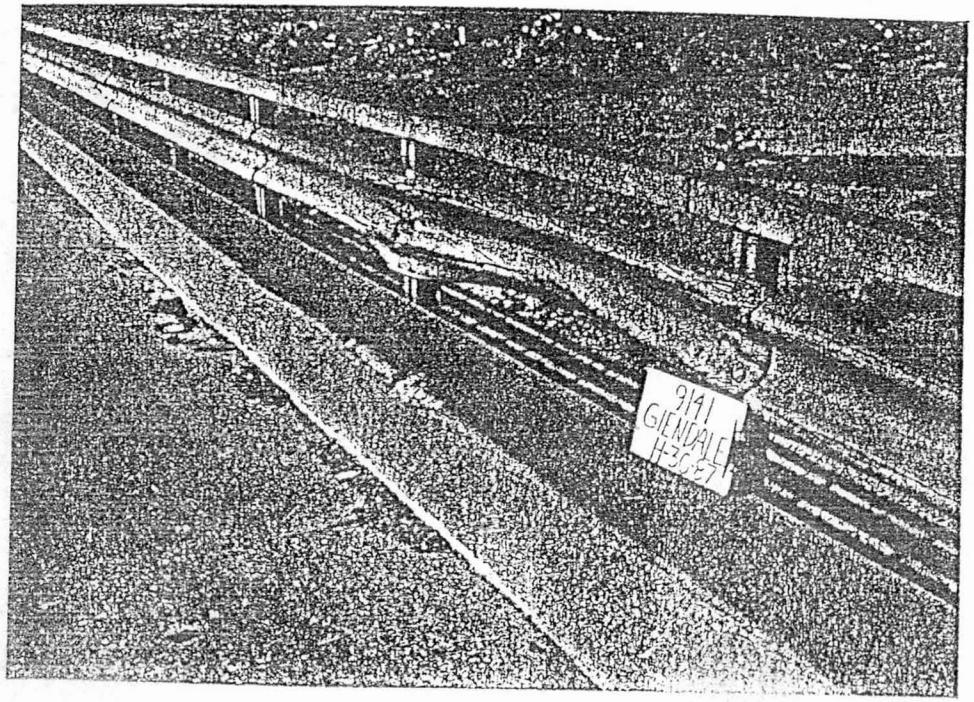
GIENDALE
H-30-87

9141
GIENDALE
H-30-87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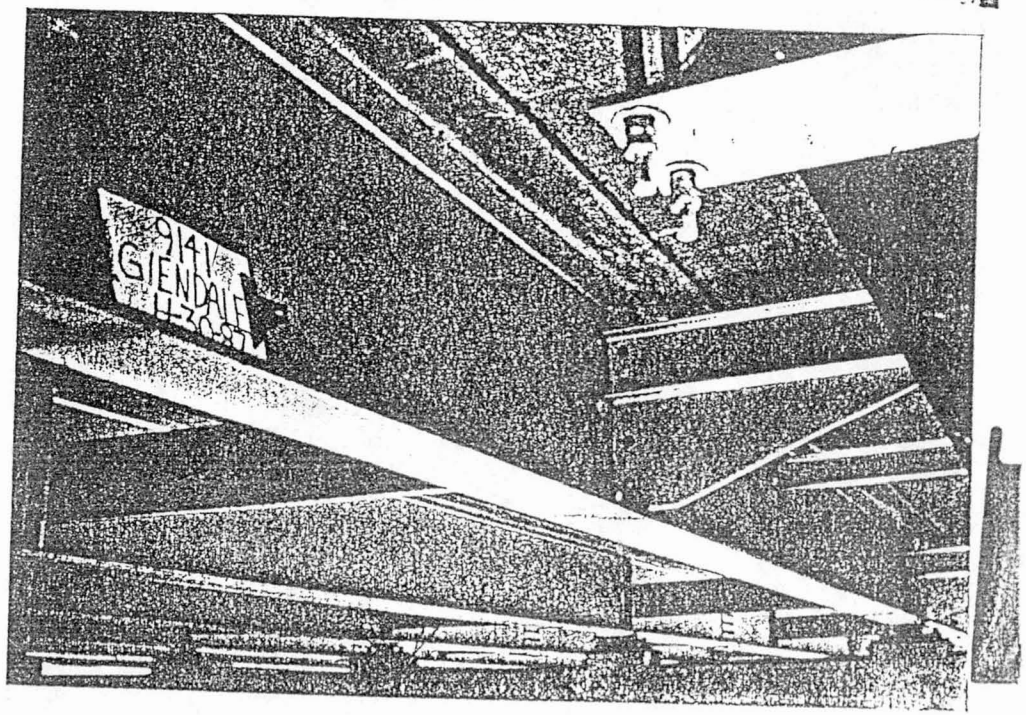
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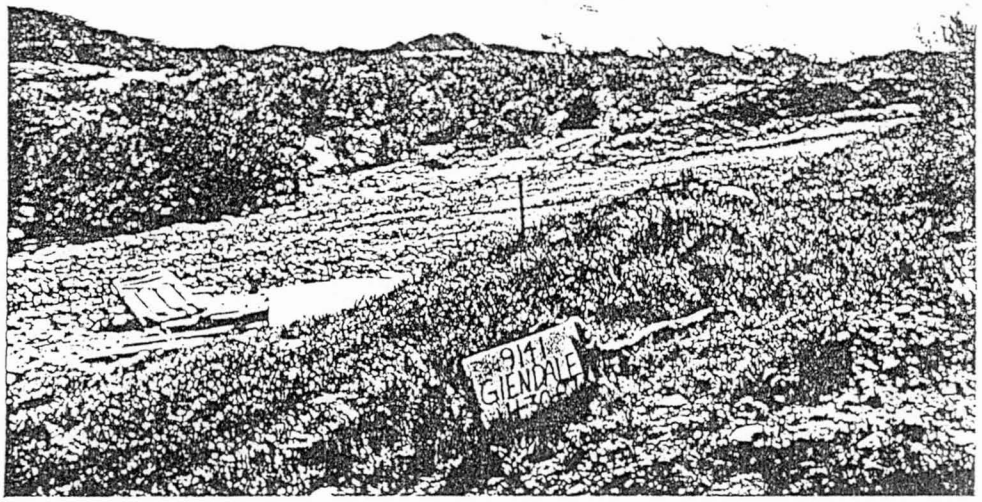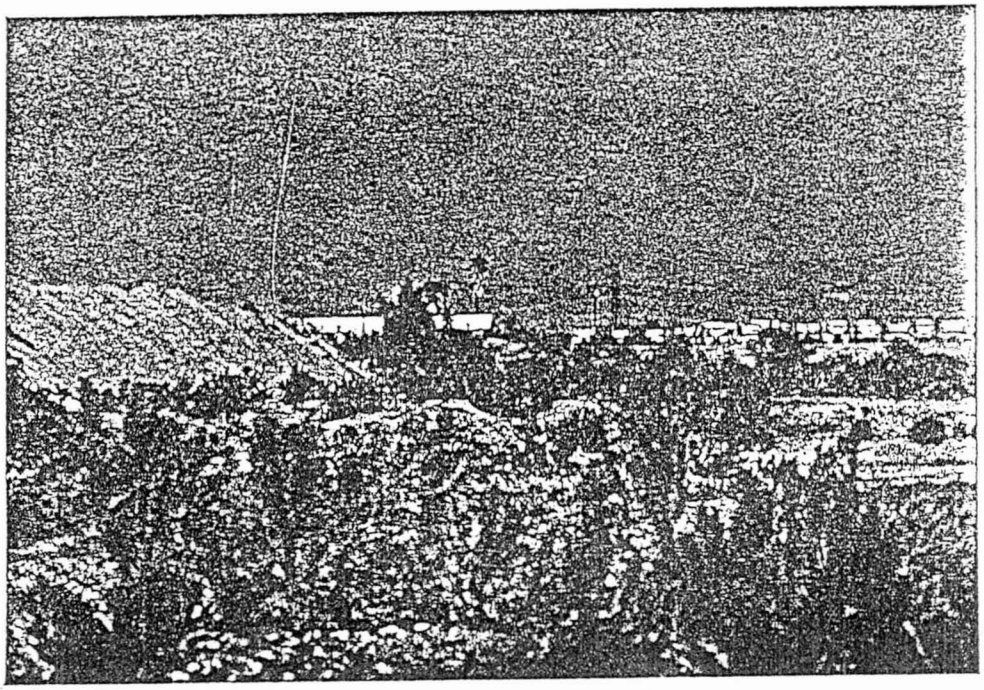
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GLENDALE