



BOARD OF SUPERVISORS AGENDA ITEM REPORT
CONTRACTS / AWARDS / GRANTS

Requested Board Meeting Date: September 6, 2016

or Procurement Director Award ☐

Contractor/Vendor Name (DBA): HDR Engineering, Inc.

Project Title/Description:

Countywide Culvert Load Rating Project.

Purpose:

Amendment of Award: Contract No. CT-TR-15-349, Amendment No. Two (2). This amendment increases the not-to-exceed amount from \$699,208.00 to \$774,953.00. The additional scope of work addresses changes to the number and type of culverts being load rated. Administating Department: Transportation

Procurement Method:

Subsequent to Solicitation For Qualifications No. 151476, on November 4, 2014, the Board of Supervisors awarded a contract for this project not to exceed \$699,208.00 for a contract term of February 20, 2015 to June 19, 2016. Previous Amendment No. One (1) extended the contract termination date to December 31, 2016.

Attachment: Amendment No. Two (2)

Program Goals/Predicted Outcomes:

The goal is to obtain and review plans for culverts to be load rated to assess the existing condition of culverts on the load rating list; perform field assessments as needed for those culverts which may indicate a significant level of deterioration from the original condition.

Public Benefit:

The public benefit is that the Department of Transportation will be able to identify the culverts whose deteriorating conditions will need to be addressed to protect the traveling public.

Metrics Available to Measure Performance:

The consultant will complete the load rating testing and inspections on all identified culverts.

Retroactive:

No

Procure Dept 08/12/16 PM02:45

To: COB- 8-15-16 (11)
Pgs. 18

Original Information

Document Type: _____ Department Code: _____ Contract Number (i.e., 15-123): _____
Effective Date: _____ Termination Date: _____ Prior Contract Number (Synergen/CMS): _____
☐ Expense Amount: \$ _____ ☐ Revenue Amount: \$ _____
Funding Source(s): _____

Cost to Pima County General Fund: \$ _____

Contract is fully or partially funded with Federal Funds? ☐ Yes ☐ No ☐ Not Applicable to Grant Awards
Were insurance or indemnity clauses modified? ☐ Yes ☐ No ☐ Not Applicable to Grant Awards
Vendor is using a Social Security Number? ☐ Yes ☐ No ☐ Not Applicable to Grant Awards

If Yes, attach the required form per Administrative Procedure 22-73.

Amendment Information

Document Type: CT Department Code: TR Contract Number (i.e., 15-123): 15-349
Amendment No.: Two (2) AMS Version No.: Six (6)
Effective Date: September 6, 2016 New Termination Date: _____
☒ Expense ☐ Revenue ☐ Increase ☐ Decrease Amount This Amendment: \$75,745.00
Funding Source(s): _____

Federal Funds (FHWA) 89%; County HURF 11%

Cost to Pima County General Fund: _____

Contact: Anthony V. Schiavone

Department: Procurement 8-8-16 Telephone: 724-3245

Department Director Signature/Date: _____

Deputy County Administrator Signature/Date: _____

County Administrator Signature/Date: _____

(Required for Board Agenda/Addendum Items)

Handwritten signatures and dates:
8-8-16
8-8-16
8/9/16
8/11/16
8/12/16

PIMA COUNTY DEPARTMENT OF TRANSPORTATION

PROJECT: COUNTYWIDE CULVERT LOAD RATING PROJECT

CONSULTANT: HDR Engineering, Inc.
1 S. Church Avenue, Suite 625
Tucson, AZ 85701

CONTRACT NO.: CT-TR-15-349

AMENDMENT NO.: Two (2)

FUNDING: Federal Funds (FHWA) 89%,
County HURF 11%

CONTRACT

NO. CT-TR-15-349

AMENDMENT NO. 02

This number must appear on all
invoices, correspondence and
documents pertaining to this
contract.

CONTRACT TERM: 02/20/2015 to 06/19/2016	ORIGINAL CONTRACT AMOUNT:	\$	699,208.00
TERMINATION PRIOR AMENDMENT: 12/31/16	PRIOR AMENDMENT(S):	\$	-
TERMINATION THIS AMENDMENT: 12/31/2016	AMOUNT THIS AMENDMENT:	\$	75,745.00
	REVISED CONTRACT AMOUNT:	\$	774,953.00

CONTRACT AMENDMENT

WHEREAS, COUNTY and CONSULTANT have entered into the Contract referenced above; and

WHEREAS, upon reviewing the as-built plans, several culverts have been identified with more complex geometry beyond what was initially scoped; and

WHEREAS, COUNTY requires additional services for the comprehensive load rating of all Corrugated Metal Pipes (CMPs) and Reinforced Concrete Pipes (RCPs) culverts; and

WHEREAS, CONSULTANT agreed to perform the additional services at a price that was reviewed and accepted by COUNTY.

NOW, THEREFORE, it is agreed as follows:

CHANGE: ARTICLE II – SCOPE, first paragraph as follows:

From: CONSULTANT agrees to provide Countywide Culvert Load Rating services for the COUNTY as described in **EXHIBIT 'A' – SCOPE OF WORK** (11 pages) an attachment to this Contract.

To: CONSULTANT agrees to provide Countywide Culvert Load Rating services for the COUNTY as described in **EXHIBIT 'A' – SCOPE OF WORK** (11 pages) and **EXHIBIT 'A-1' – SCOPE OF WORK (MODIFICATION 1 AND 2)** (11 pages) attachments to this Contract.

ADD the attached **EXHIBIT 'A-1' – SCOPE OF WORK (MODIFICATION 1 AND 2)** (11 pages) to the contract.

CHANGE: ARTICLE III – COMPENSATION AND PAYMENT, first paragraph as follows:

From: In consideration of the services specified in this Contract, the COUNTY agrees to pay CONSULTANT as follows: Not To Exceed Six Hundred Ninety-Nine Thousand, Two Hundred Eight Dollars (\$699,208.00). CONSULTANT'S fees and method of compensation shall be based on an Hourly Not to Exceed Basis or other method mutually agreeable to both Parties at the time services are requested in accordance with provisions described in **EXHIBIT 'B': CONSULTANT FEE SCHEDULE** (5 pages), an attachment to this Contract.

To: In consideration of the services specified in this Contract, the COUNTY agrees to pay CONSULTANT as follows: Not To Exceed Seven Hundred Seventy-four Thousand, Nine Hundred Fifty-three Dollars (\$774,953.00). CONSULTANT'S fees and method of compensation shall be based on an Hourly Not to Exceed Basis or other method mutually agreeable to both Parties at the time services are requested in accordance with provisions described in **EXHIBIT 'B': CONSULTANT FEE SCHEDULE** (3 pages), and **EXHIBIT 'B-1': CONSULTANT FEE SCHEDULE (SCOPE MODIFICATION 1 AND 2)** (5 pages) attachments to this Contract.

ADD the attached **EXHIBIT 'B-1': CONSULTANT FEE SCHEDULE (SCOPE MODIFICATION 1 AND 2)** (5 pages) to the Contract.

This Amendment shall be effective on September 6, 2016.

All other provisions of the Contract, not specifically changed by this amendment, shall remain in effect and be binding upon the Parties.

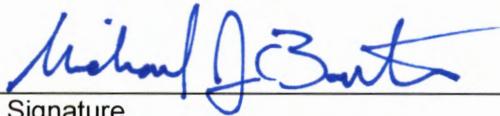
IN WITNESS WHEREOF, the Parties have affixed their signatures to this amendment on the dates written below.

PIMA COUNTY:

CONSULTANT:

Chair, Board of Supervisors

Date


Signature

Michael J. Barton, V.P. Managing Principal
Name and Title (Please Print)

8/11/2016
Date

APPROVED AS TO FORM


Deputy County Attorney

ANDREW FLAGG

Name (Please Print)

8/9/2016
Date

Pima County Department of Transportation
COUNTYWIDE CULVERT LOAD RATING PROJECT
FEDERAL AID PROJECT NO. HBP PPM-0(249)D
ADOT TRACS NO. SB463 01D

PROPOSAL
for
Contract Modification #1

HDR Engineering, Inc.
July 20, 2016

CONTRACT MODIFICATION #1

This document is intended to provide the basis for proposed changes to the scope of work and fee for the County-wide Culvert Load Rating Project that was originally submitted in February, 2015. During the course of work on the project, there have been changes to anticipated work, type, and number of culverts load rated. Changes to the scope of work are as follows:

Task 1.0 Project Administration: No Changes.

Task 2.0 Meetings: No Changes.

Task 3.0 Review Existing Structure Information: No Changes

Task 4.0 Field Activities: No Changes.

Task 5.0 Structure Load Ratings: Over the course of the project, there have been several changes to the type of culvert being rated, addition and removal of other culverts due to discovery of culverts or annexation of culverts by other agencies, and changes in analysis requirements for certain culvert types.

5.1 Load Ratings for Reinforced Concrete Box Culverts: During the course of the work, some culverts were added and some were removed from Pima County's inventory. Additionally, it was discovered that some culverts on the inventory list used for scoping were mislabeled as Reinforced Concrete Box Culverts (RCBC) but were actually pipes or arches. The original number of culverts to be rated was 114. This total number has since been reduced to 111 total culverts. Therefore, the total budget for this task is proposed to be reduced by an amount equivalent to the reduction of three RCBCs required for load rating.

5.2 Load Ratings for Reinforced Concrete Arches: During the course of the work, it was discovered that several Reinforced Concrete Arches (RCA) were mislabeled as RCBC's. The original number of RCA's anticipated in the scope of work was 13 total arches. This number has since been revised to 15 arch structures. Additionally, the initial scope of work was based on the understanding that the arches were single span arches. During review of the as-built plans provided by Pima County, it was noted that seven of the arches to be analyzed consisted of multiple arches that require additional analysis due to framing (interior arch versus exterior arch) or due to varying arch radii or height. Therefore, the total

Pima County Department of Transportation

COUNTYWIDE CULVERT LOAD RATING PROJECT FEDERAL AID PROJECT NO. HBP PPM-0(249)D ADOT TRACS NO. SB463 01D

budget for this task is proposed to be increased by an amount equivalent to the addition of nine arches required to be analyzed for load rating.

5.3 Load Ratings for Steel Plate Arches: During the review of as-built plans provided by Pima County, it was noted that one of the Steel Plate Arches (SPA) had two differing arch spans and heights. This requires an additional analysis of this alternative span arrangement. Therefore, the total budget for this task is proposed to be increased by an amount equivalent to the addition of the extra arch span required to be analyzed for load rating.

Task 6.0 Load Rating Reports: No Changes.

Task 7.0 Load Rating Summary List: No Changes.

Task 8.0 Load Posting Summary List: No Changes.

Task 9.0 Additional Services: As we near completion of the project, the need for additional services is better known. As the scope of these required services is better defined, it is proposed that funds currently under this task be used for the proposed changes listed above. Task 9.1 – Non-Destructive Testing (NDT) and Limited Destructive Testing (LDT) have not been required for this project and are currently not anticipated to be required. Task 9.3 – Additional Work has likewise not been required up to this point. Therefore, because there is sufficient funds originally listed under Tasks 9.1 and 9.3 to cover the changes to tasks 5.1 through 5.3 noted above, it is proposed that these available funds be used for the proposed changes to scope.

EXHIBIT A
CULVERT INVENTORY LIST

February 2, 2015

Page 1

Page 2

Pima County Department of Transportation
COUNTYWIDE CULVERT LOAD RATING PROJECT
FEDERAL AID PROJECT NO. HBP PPM-0(249)D
ADOT TRACS NO. SB463 01D

PROPOSAL
for
ENGINEERING SERVICES

HDR Engineering, Inc.
July 22, 2016

CONTRACT MODIFICATION #2
ADDITIONAL SERVICES

Pima County requires additional services for the comprehensive load rating of their remaining culverts: 12 Corrugated Metal Pipes (CMPs) and 5 Reinforced Concrete Pipes (RCPs) for 17 structures in total. The additional culvert structures to be rated are listed in the Appendix. The project involves:

- Obtaining and reviewing design or as-built plans for structures to be load rated
- Obtaining and reviewing National Bridge Inventory (NBI) inspection reports to assess the existing condition of the structures in the load rating list
- Performing field assessments as needed for those structures which may indicate a significant level of deterioration or structural distress from their original condition
- Completing the load ratings using software and/or worksheets using appropriate rating methods and utilizing both the Load Factor Rating Method (LFR) and Load and Resistance Factor Rating Method (LRFR)

The task structure is set up to modify the original tasks as identified in the original Scope of Work dated February 2015. Specific scope of work items includes the following:

Task 1.0 Project Administration: This work includes coordination between Pima County and HDR, obtaining existing project data, modifying the project work plan and schedule, managing staff, project filing, and preparation of monthly status reports.

Deliverables: Monthly Status Reports to be included with Invoices.

Task 3.0 Review Existing Structure Information: The purpose of this task is to review construction/ as-built plans provided by Pima County for the structures to be load rated. The intent of this task is to provide/determine information in regards to material, geometry, composition, and condition of the structures in order to perform load ratings.

3.1 Review Construction/As-Built Plans: HDR will review the original construction plans or as-built plans (if available) for the structures to be load rated to become familiar with each structure and to develop an action plan (Task 2.3) for load rating the culvert. The plans will be provided to HDR by Pima County.

Pima County Department of Transportation

COUNTYWIDE CULVERT LOAD RATING PROJECT FEDERAL AID PROJECT NO. HBP PPM-0(249)D ADOT TRACS NO. SB463 01D

3.2 Review NBI Inspection Reports: HDR will review the most recent NBI inspection reports to become familiar with the existing condition of each culvert. NBI inspection reports will be provided to HDR by Pima County.

3.3 Structure Information Summary: HDR will develop a summary of relevant structure information based on the results of Tasks 2.1 and 2.2. The summary will be contained in a spreadsheet that includes structure number (Item N8), structure name (Item A209), facility carried (Item N7, facility intersected (Item N6a), year built (Item N27), culvert type (general description), culvert barrel height (Item A217), culvert barrel length (Item A218), culvert fill height (Item A219), structure skew (Item N34), culvert material (Item N43), number of spans (Item N45), length of span (Item N48), structure length (Item N49), current load posting, condition ratings for Items N62 and N67, the Sufficiency Rating and whether or not a field assessment is required or if any additional information is required to perform the load rating. This summary will be used by HDR staff to determine the requirements and processes for load rating each culvert and to develop an internal load rating action plan.

Deliverables: None.

Task 5.0 Structure Load Ratings: HDR will prepare structural calculations to determine the load capacity of the structures using worksheets provided by Pima County and/or developed by HDR. The calculations will be based on the as-built/construction plans provided by Pima County.

The structures will be rated in accordance with the American Association of State and Highway Transportation Officials (AASHTO) Manual for Bridge Evaluation (MBE), 2nd Edition, with current Interim Revisions, using the Load Factor Rating method (LFR) and the Load and Resistance Factor Rating method (LRFR). Calculations will be supplemented by the AASHTO Standard Specifications for Highway Bridges, 17th Edition (LF), and the AASHTO LRFD Bridge Design Specifications, 6th Edition (LRFD) for structure types not covered by the MBE. Inventory and Operating Ratings for an HS20 vehicle will be determined based on the Load Factor Rating method. The Design Load Rating (at both Inventory and Operating levels) for an HL-93 vehicle will be determined based on the Load and Resistance Factor Rating Method. In addition, when culverts exhibit an Inventory Rating of less than 1.0 using the LFR method, the structure will be evaluated using the Load Factor Method for the following AASHTO Legal Loads:

- AASHTO Trucks: Type 3, Type 3S2, and Type 3-3
- Lane-Type Legal Load (Negative Moment only)
- Notional Rating Load (NRL)
- Single-Unit Bridge Posting Loads: SU4, SU5, SU6, and SU7 (When NRL < 1.0)

Loads and axle configurations for these legal loads are contained in Appendix D6A of the AASHTO MBE. The list of culverts to be rated is attached at the end of this Scope of Work. Estimated hours for this work include the initial rating as well as calculation checking and Quality Control (QA/QC) reviews for the rating.

Pima County Department of Transportation

COUNTYWIDE CULVERT LOAD RATING PROJECT FEDERAL AID PROJECT NO. HBP PPM-0(249)D ADOT TRACS NO. SB463 01D

5.4 Load Ratings for Corrugated Metal Pipe Culverts: There are 12 corrugated metal pipe culverts based on the culvert inventory provided by Pima County. These culverts will be rated using an excel program provided by Pima County that was developed by the Michigan Department of Transportation and MathCad worksheets developed by HDR.

It is assumed for this task that there is sufficient information in the provided as-built plans to complete the ratings. If there is insufficient information in the as-built plans provided, additional information will be requested. If sufficient additional information is not available, HDR will work with the county to provide field assessments under a separate work agreement.

5.5 Load Ratings for Reinforced Concrete Pipe Culverts: There are 5 reinforced concrete pipe culverts based on the culvert inventory provided by Pima County. These culverts will be rated using excel and Mathcad worksheets developed internally by HDR. Load rating analysis will be based on the code and industry practice. Pipes will be rated based on their respective class using information provided in the as-built plans provided and the applicable ASTM standard for RCPs.

It is assumed for this task that there is sufficient information in the provided as-built plans to complete the ratings. If there is insufficient information in the as-built plans provided, additional information will be requested. If sufficient additional information is not available, HDR will work with the county to provide field assessments under a separate work agreement.

Task 6.0 Load Rating Reports: This task includes the preparation of a load rating report for each of the structures and summarizes the results of Tasks 2.0 and 3.0. The reports will include as-built or design plans, load rating calculations, and the latest NBI inspection reports. For structures with operating ratings less than 1.0 for any of the AASHTO Legal Loads, a recommendation for a load posting will be made. The reports will be sealed by a Professional Engineer registered in the State of Arizona. A draft version of each report will be submitted to PCDOT for review and comment prior to HDR submitting the final sealed versions.

Deliverables: Draft Load Rating Reports (17 Total)
Final Load Rating Reports (17 Total)

Services not included in this scope of work:

- Load testing of structures. If sufficient information regarding the existing condition of a structure cannot be obtained from the plans or from a field assessment, or if it is determined after rating a structure that a load test will be beneficial, then load testing may be considered and addressed under a supplemental agreement.
- Finite Element Models/Analysis of Culverts.
- Fatigue analysis and estimate of remaining fatigue life of steel culverts.
- Design of strengthening or shoring schemes necessary to increase the load capacity of a culvert.
- Hydrologic and hydraulic analyses including scour of the drainage channels, washes, or rivers.
- Field investigation of culverts without as-built information or insufficient plan information.

Pima County Department of Transportation

COUNTYWIDE CULVERT LOAD RATING PROJECT
FEDERAL AID PROJECT NO. HBP PPM-0(249)D
ADOT TRACS NO. SB463 01D

Design Standards and Guidelines:

American Association of State Highway and Transportation Officials (AASHTO) Manual for Bridge Evaluation, 2nd Edition, with 2011, 2012, 2013, 2014, and 2015 Interim Revisions

American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications, 6th Edition, 2012

American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges, 17th Edition, 2002, with all interims

EXHIBIT A
CULVERT INVENTORY LIST

Structure Number			Structure Name	Facility Carried By Structure	Features Intersected	Location	Year Built	Lanes on Structure	Lanes Under Structure	Average Daily Traffic	Design Load	Open, Posted, or Closed	Structure Type - Material	Structure Type - Design	Number of Spans	Max Span & Length	Deck Condition	Culvert Overall Condition	Operating Rating	Inventory Rating	Structural Evaluation	Bridge Posting	Average Daily Truck Traffic	Wearing Surface Thickness	Culvert Barrel Height	Length Adjusted for Slope	Culvert Barrel Length	Culvert F88 Height	Def	Suff	Reliability Rating		
																							True	Length	A218	A219							
N6	Type	Plans	A209	N7	N6a	N9	N27	N28a	N28b	N29	N31	N34	N41	N43a	N43b	N45	N48	N49	N58	N62	N64b	N66b	N67	N70	N109	A201	A217	Length	A218	A219	Def	Suff	A235
7570	CMP	YES	Small Wash CMPA	Hacienda Del Sol	Small Wash	0.6 mi N River Road	1980	2	0	2200	5	29	A	3	19	3	7	27	N	7	36	36	7	5	0	2	4	51	56	2		99.50	A
8250	CMP	NO	Drawley Wash CMP	Silverbell Rd	Drawley Wash	0.22 mi W of Aguirre Rd	1985	1	0	700	3	42	A	3	19	8	9	34	N	8	38	38	8	5	0	0	6	43	60	4		97.52	A
8720	CMP	YES	Small Wash CMP	Cardinal Del Sol	Small Wash	800' S Mission Twin Butte	1980	2	0	2730	5	45	A	3	19	4	4	35	N	8	36	36	5	6	0	0	4	134	100	18		86.59	A
8721	CMP	YES	Drainageway RCP	Cardinal Del Tierra	Drainageway	500' S North Ina Road	1980	2	0	2040	5	45	A	2	18	5	4	46	N	8	38	36	5	5	0	0	4	89	97	2		97.84	A
8999	CMP	NO	Drainageway CMP	Yelp Road	Drainageway	0.2 mi S of I 10	1985	2	0	208	5	9	A	3	19	4	4	21	N	7	38	36	7	8	0	2	4	44	44	2		99.55	A
8889	CMP	NO	Medway Wash CMP	Puerto Triunfo Rd	Medway Wash	0.25 mi South Craycroft R	1985	2	0	180	5	9	A	5	19	4	0	38	N	7	38	36	7	8	0	2	8	88	83	0		99.38	A
8958	CMP	YES	Drainageway CMP	Stylene Rd	Drainageway	0.1 mi E of Museum	1985	2	0	4100	5	16	A	5	19	4	4	24	N	6	38	36	8	5	0	2	4	81	84	10		98.69	A
8965	CMP	YES	Drainageway CMP	Shannon Road	Subdivided Drainageway	500' E of Orange Grove	1986	2	0	11	6	6	A	3	19	4	0	21	N	6	38	36	8	5	0	2	4	43	43	2		99.09	A
8907	CMP	YES	Small Wash CMP	Capitan Del Sol	Small Wash	1600' N S Ft Dela Colonia	1980	2	0	2500	5	38	A	3	19	8	8	28	N	6	38	36	8	5	0	2	3	87	100	4		99.28	A
9804	CMP	YES	Small Wash CMP	Asia Valley Road	Small Wash	500' E West Arroyo Road	1990	2	0	344	0	0	A	3	19	4	4	23	N	6	36	36	6	5	0	0	4	60	60	2		99.97	A
9807	CMP	YES	Small Wash CMPA	Valencia Road	Small Wash	300' E East Mission Road	1983	4	0	27970	5	45	A	3	18	3	8	28	N	7	36	36	7	5	0	0	4	136	102	4		71.35	A
11213	CMP	NO	Small Wash CMP	Valencia Rd	Small Wash	W/O Camino De La Tierra	1984	5	0	12000	5	48	A	3	19	3	5	141	N	7	36	36	7	5	5	7	5	108	141	1		85.00	N
7572	RCP	YES	Small Wash RCP	Sunrise Drive	Small Wash	200' E E Pontreux Road	1984	4	0	25500	5	14	A	1	19	4	8	27	N	7	38	36	7	5	0	5	6	149	184	8		73.35	A
9805	RCP	YES	Small Wash RCP	Spawchley Blvd	Small Wash	200' E Tanque Verde Loop	1980	2	0	2000	5	8	A	1	19	4	4	23	N	8	36	36	8	5	0	0	4	78	78	4		99.4000015	A
11811	RCP	NO	Small Wash RCP	Valencia Rd	Small Wash	W/O Avenida Don Fernando	5	0	12000	5	45	A	1	19	4	4	40	N	8	38	36	8	5	5	7	4	108.5944	154	2		85	N	
11312	RCP	NO	Small Wash RCP	Valencia Rd	Small Wash	Just S/O Beehive Ave.	5	9	12000	5	9	A	1	19	5	4	32	N	7	36	36	7	5	5	7	4	114.5718	116	2		86	N	
11314	RCP	NO	Small Wash RCP	Valencia Rd	Small Wash	W/O Avenida Don Arturo	8	0	12000	5	50	A	1	19	5	3	26	N	7	38	36	7	5	5	7	3	102.191	118	1		85	N	

HDR Engineering, Inc.
HDR Project Number:
20-Jul-16

**COUNTYWIDE CULVERT LOAD RATING PROJECT
FEDERAL AID PROJECT NO. HBP PPM-0(249)D
ADOT TRACS NO. SB463 01D**

COST PROPOSAL

ESTIMATED DIRECT LABOR:

Staff Classification	Est. Hours	Hourly Rate	Labor Cost
Project Principal	0	240.00	\$0
Contract Manager	0	175.00	\$0
Project Manager	13	150.00	\$1,950
Senior Engineer	8	220.00	\$1,760
Project Engineer	144	145.00	\$20,880
Engineer/ Designer	138	105.00	\$14,490
CAD Technician	0	125.00	\$0
Accountant	0	110.00	\$0
Administration	0	65.00	\$0
Total Estimated Labor	303		\$39,080
Sub-Total			\$39,080

ESTIMATED DIRECT EXPENSES:

	Units	
HDR Vehicle Mileage (Field Assessments @ \$0.445/mile)	0	\$0
Miscellaneous Field Expenses (supplies, meals, etc.)		\$0
Reproduction and Plotting (at \$0.06/ b&w page + color & misc.)		\$0
Deliveries, Postage, Fed-ex, UPS, etc. (at \$25/ delivery)	0	\$0
Sub-Total Estimated Expenses		\$0

ADDITIONAL SERVICES TASK 9.1

	Cost
Inland Engineering (Non-Destructive Testing) (NOT USED)	-\$7,500
Penhall Company (Limited Destructive Testing) (NOT USED)	-\$2,500
HDR Oversight during NDT and LDT (NOT USED)	-\$15,830
HDR Vehicle Mileage (Office to Bridge Sites @ 0.445/mile)	200 \$0
Sub-Total Estimated Additional Services Task 9.1	-\$25,830

ADDITIONAL SERVICES TASK 9.2

Sub-Total Estimated Additional Services Task 9.2 **\$0**

ADDITIONAL SERVICES TASK 9.3

Sub-Total Estimated Additional Services Task 9.3 **-\$13,250**
Total Additional Services **-\$39,080**

Total Estimated Cost of Additional Work **\$39,080**
Total Credit for Work not Performed under Additional Services Task 9.1 and 9.3 **-\$39,080**

Total Change to the Original Contract Amount **\$0**
Additional Services Remaining **\$6,750**

Additional services will only be used upon written approval from the Pima County Bridge Engineer
Average hourly rates are based on HDR's FAR Overhead (158.2%) and a 10% fee.

ESTIMATED LABOR HOURS

7/20/2016	Project Principal	Contract Manager	Project Manager	Senior Engineer	Project Engineer	Engineer/ Designer	CAD Technician	Accountant	Administration	TOTAL HOURS PER TASK	HDR COST OF TASK	Outside Services Cost	Direct Expenses	TOTAL COST OF TASK
Used Loaded Rates	240.00	175.00	150.00	220.00	145.00	105.00	125.00	110.00	65.00					
TASKS														
Task 5.0 STRUCTURE LOAD RATINGS														
5.1 Load Ratings for Reinforced Concrete Box Culverts (Credit for 3 culverts not rated)			-4	-2	-18	-24				-48	-\$6,170			-\$6,170
5.2 Load Ratings for Reinforced Concrete Arches (2 additional arches and 7 requiring additional analyses due to complex geometry)			14	9	146	146				315	\$40,580			\$40,580
5.3 Load Ratings for Steel Plate Arches (1 requiring additional analysis due to complex geometry)			3	1	16	16				36	\$4,670			\$4,670
Subtotal Task 5.0	0	0	13	8	144	138	0	0	0	303	\$39,080	\$0	\$0	\$39,080
TOTAL TASKS 1 THROUGH 8 (WITHOUT ADDITIONAL SERVICES)	0	0	13	8	144	138	0	0	0	303	\$39,080	\$0	\$0	\$39,080
Task 9.0 ADDITIONAL SERVICES														
9.1 Non-Destructive Testing (NDT) and Limited Destructive Testing (LDT) with HDR Oversight		-2	-4	-16	-32	-64				-118	-\$15,830	-\$10,000	\$0	-\$25,830
9.2 Load Rating of SHVs on Pima County Bridge Inventory										0	\$0			\$0
9.3 Additional Work											-\$13,250			-\$13,250
Subtotal Task 9.0	0	-2	-4	-16	-32	-64	0	0	0	396	-\$29,080	-\$10,000	\$0	-\$39,080
Hourly rates are based on HDR's FAR OH (158.2%) and a 10% fee.	0	-2	9	-8	112	74	0	0	0	699	\$10,000	-\$10,000	\$0	\$0

HDR Engineering, Inc.
HDR Project Number:
22-Jul-16

**COUNTYWIDE CULVERT LOAD RATING PROJECT
FEDERAL AID PROJECT NO. HBP PPM-0(249)D
ADOT TRACS NO. SB463 01D**

COST PROPOSAL - CONTRACT MODIFICATION #2

ESTIMATED DIRECT LABOR:

Staff Classification	Est. Hours	Hourly Rate	Labor Cost
Project Principal	0	240.00	\$0
Contract Manager	12	175.00	\$2,100
Project Manager	45	150.00	\$6,750
Senior Engineer	36	220.00	\$7,920
Project Engineer	229	145.00	\$33,205
Engineer/ Designer	232	105.00	\$24,360
CAD Technician	0	125.00	\$0
Accountant	6	110.00	\$660
Administration	10	65.00	\$650
Total Estimated Labor	570		\$75,645
Sub-Total			\$75,645

ESTIMATED DIRECT EXPENSES:

	Units	
Reproduction and Plotting (at \$0.06/ b&w page + color & misc.)		\$100
Deliveries, Postage, Fed-ex, UPS, etc. (at \$25/ delivery)		\$0
Sub-Total Estimated Expenses		\$100

Total Estimated Cost \$75,745

Average hourly rates are based on HDR's FAR Overhead (158.2%) and a 10% fee.

ESTIMATED LABOR HOURS - CONTRACT MODIFICATION #2

	Project Manager	Contract Manager	Project Manager	Senior Engineer	Project Engineer	Engineer/ Designer	CAD Technician	Accountant	Administration	TOTAL HOURS PER TASK	HOUR COST OF TASK	Outside Services Cost	Direct Expenses	TOTAL COST OF TASK
Used Loaded Rates	240.00	175.00	150.00	220.00	145.00	105.00	125.00	110.00	65.00					
TASKS														
Task 1.0 PROJECT ADMINISTRATION														
		2	6					6	6	20	\$2,300			\$2,300
Subtotal Task 1.0	0	2	6	0	0	0	0	6	6	20	\$2,300			\$2,300
TASK 3.0 REVIEW EXISTING STRUCTURE INFORMATION														
3.1 Review Design or As-Built Plans			1		1	2				4	\$505			\$505
3.2 Review NBI Inspection Reports			1		1	2				4	\$505			\$505
3.3 Structure Information Summary			1		1	2				4	\$505			\$505
Subtotal Task 3.0	0	0	3	0	2	4	0	0	0	12	\$1,515			\$1,515
TASK 5.0 STRUCTURE LOAD RATINGS														
5.4 Load Ratings for Corrugated Metal Pipes (12 total)			12	12	100	100				224	\$29,440			\$29,440
5.5 Load Ratings for Reinforced Concrete Pipes (5 Total)			5	5	50	50				110	\$14,350			\$14,350
Subtotal Task 5.0	0	0	17	17	150	150	0	0	0	334	\$43,790			\$43,790
Task 6.0 LOAD RATING REPORTS														
		10	19	19	76	76			4	204	\$28,040			\$28,040
Subtotal Task 6.0	0	10	19	19	76	76	0	0	4	204	\$28,040			\$28,040
TOTAL TASKS 1 THROUGH 6	0	12	45	36	229	230	0	0	10	570	\$75,645	0	\$100	\$75,745

HDR Engineering, Inc.

HDR Project Number:

22-Jul-16

Reproduction & Plotting

Print each set of calcs for the culverts @ 50 pages/set	50	17	\$0.06	\$51.00
Load Rating Reports (Assume 15 pages each)	15	17	\$0.06	\$15.30
Miscellaneous Printing (Drafts, Color Sheets, etc.)				\$33.70
			Total	\$100.00