

PROFESSIONAL CONSULTANT SERVICES AGREEMENT

(14th Street Underpass Drainage Study)

CWE

THIS PROFESSIONAL CONSULTANT SERVICES AGREEMENT ("Agreement") is made and entered into this _____ day of _____, 2016 ("Effective Date"), by and between the CITY OF RIVERSIDE ("City"), a California charter city and municipal corporation and CWE, a California corporation ("Consultant").

1. **Scope of Services.** City agrees to retain and does hereby retain Consultant and Consultant agrees to provide the services more particularly described in Exhibit "A," "Scope of Services" ("Services"), attached hereto and incorporated herein by reference, in conjunction with the 14th Street Underpass Drainage Study ("Project").

2. **Term.** This Agreement shall be effective on the date first written above and shall remain in effect until December 31, 2017, unless otherwise terminated pursuant to the provisions herein.

3. **Compensation/Payment.** Consultant shall perform the Services under this Agreement for the total sum not to exceed Ninety-Five Thousand Six Hundred Four Dollars (\$95,604) payable in accordance with the terms set forth in Exhibit "B." Said payment shall be made in accordance with City's usual accounting procedures upon receipt and approval of an itemized invoice setting forth the services performed. The invoices shall be delivered to City at the address set forth in Section 4 hereof.

4. **Notices.** Any notices required to be given, hereunder shall be in writing and shall be personally served or given by mail. Any notice given by mail shall be deemed given when deposited in the United States Mail, certified and postage prepaid, addressed to the party to be served as follows:

To City

Public Works Department
City of Riverside
Attn: Sweta C. Patel, P.E.
3900 Main Street, 4th Floor
Riverside, CA 92522

To Consultant

CWE
Attn: Dr. Ben Willardson
1561 E. Orangethorpe Ave.
Fullerton, CA 92831-5202

5. **Prevailing Wage.** If applicable, Consultant and all subcontractors are required to pay the general prevailing wage rates of per diem wages and overtime and holiday wages determined by the Director of the Department of Industrial Relations under Section 1720 et seq. of the California Labor Code and implemented by Resolution No. 13346 of the City Council of the City of Riverside. The Director's determination is available on-line at www.dir.ca.gov/dlsr/DPreWageDetermination.htm and is referred to and made a part hereof; the wage rates therein ascertained, determined, and specified are referred to and made a part hereof as though fully set forth herein.

6. **Contract Administration.** A designee of the City will be appointed in writing by the City Manager or Department Director to administer this Agreement on behalf of City and shall be referred to herein as Contract Administrator.

7. **Standard of Performance.** While performing the Services, Consultant shall exercise the reasonable professional care and skill customarily exercised by reputable members of Consultant's profession practicing in the Metropolitan Southern California Area, and shall use reasonable diligence and best judgment while exercising its professional skill and expertise.

8. **Personnel.** Consultant shall furnish all personnel necessary to perform the Services and shall be responsible for their performance and compensation. Consultant recognizes that the qualifications and experience of the personnel to be used are vital to professional and timely completion of the Services. The key personnel listed in Exhibit "C" attached hereto and incorporated herein by this reference and assigned to perform portions of the Services shall remain assigned through completion of the Services, unless otherwise mutually agreed by the parties in writing, or caused by hardship or resignation in which case substitutes shall be subject to City approval.

9. **Assignment and Subcontracting.** Neither party shall assign any right, interest, or obligation in or under this Agreement to any other entity without prior written consent of the other party. In any event, no assignment shall be made unless the assignee expressly assumes the obligations of assignor under this Agreement, in a writing satisfactory to the parties. Consultant acknowledges that any assignment may, at the City's sole discretion, require City Manager and/or City Council approval. Consultant shall not subcontract any portion of the work required by this Agreement without prior written approval by the responsible City Contract Administrator. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement, including without limitation, the insurance obligations set forth in Section 12. The Consultant acknowledges and agrees that the City is an intended beneficiary of any work performed by any subcontractor for purposes of establishing a duty of care between any subcontractor and the City.

10. **Independent Contractor.** In the performance of this Agreement, Consultant, and Consultant's employees, subcontractors and agents, shall act in an independent capacity as independent contractors, and not as officers or employees of the City of Riverside. Consultant acknowledges and agrees that the City has no obligation to pay or withhold state or federal taxes or to provide workers' compensation or unemployment insurance to Consultant, or to Consultant's employees, subcontractors and agents. Consultant, as an independent contractor, shall be responsible for any and all taxes that apply to Consultant as an employer.

11. Indemnification.

11.1 Design Professional Defined. For purposes of this Agreement, “Design Professional” includes the following:

- A. An individual licensed as an architect pursuant to Chapter 3 (commencing with Section 5500) of Division 3 of the Business and Professions Code, and a business entity offering architectural services in accordance with that chapter.
- B. An individual licensed as a landscape architect pursuant to Chapter 3.5 (commencing with Section 5615) of Division 3 of the Business and Professions Code, and a business entity offering landscape architectural services in accordance with that chapter.
- C. An individual registered as a professional engineer pursuant to Chapter 7 (commencing with Section 6700) of Division 3 of the Business and Professions Code, and a business entity offering professional engineering services in accordance with that chapter.
- D. An individual licensed as a professional land surveyor pursuant to Chapter 15 (commencing with Section 8700) of Division 3 of the Business and Professions Code, and a business entity offering professional land surveying services in accordance with that chapter.

11.2 Defense Obligation for Design Professional Liability. Consultant agrees, at its cost and expense, to promptly defend the City, and the City’s employees, officers, managers, agents and council members (collectively the “Parties to be Defended”) from and against any and all claims, allegations, lawsuits, arbitration proceedings, administrative proceedings, regulatory proceedings, or other legal proceedings to the extent the same arise out of, pertain to, or relate to the negligence, recklessness or willful misconduct of Consultant, or anyone employed by or working under the Consultant or for services rendered to the Consultant in the performance of the Agreement, notwithstanding that the City may have benefited from its work or services and whether or not caused in part by the negligence of an Indemnified Party. Consultant agrees to provide this defense immediately upon written notice from the City, and with well qualified, adequately insured and experienced legal counsel acceptable to City. This obligation to defend as set forth herein is binding on the successors, assigns and heirs of Consultant and shall survive the termination of Consultant’s Services under this Agreement.

11.3 Indemnity for Design Professional Liability. When the law establishes a professional standard of care for Consultant’s services, to the fullest extent permitted by law, Consultant shall indemnify, protect and hold harmless the City and the City’s employees, officers, managers, agents, and Council Members (“Indemnified Parties”) from and against any and all claim for damage, charge, lawsuit, action, judicial, administrative, regulatory or arbitration proceeding, damage, cost, expense (including counsel and expert fees), judgment, civil fines and penalties, liabilities or losses of any kind or nature whatsoever to the extent the same arise out of, pertain to, or relate to the negligence, recklessness or willful misconduct of Consultant, or anyone employed by or

working under the Consultant or for services rendered to the Consultant in the performance of the Agreement, notwithstanding that the City may have benefited from its work or services and whether or not caused in part by the negligence of an Indemnified Party.

11.4 Defense Obligation for Other than Design Professional Liability.

Consultant agrees, at its cost and expense, to promptly defend the City, and the City's employees, officers, managers, agents and council members (collectively the "Parties to be Defended") from and against any and all claims, allegations, lawsuits, arbitration proceedings, administrative proceedings, regulatory proceedings, or other legal proceedings which arise out of, or relate to, or are in any way connected with: 1) the Services, work, activities, operations, or duties of the Consultant, or of anyone employed by or working under the Consultant, or 2) any breach of the Agreement by the Consultant.

This duty to defend shall apply whether or not such claims, allegations, lawsuits or proceedings have merit or are meritless, or which involve claims or allegations that any or all of the Parties to be Defended were actively, passively, or concurrently negligent, or which otherwise assert that the Parties to be Defended are responsible, in whole or in part, for any loss, damage or injury. Consultant agrees to provide this defense immediately upon written notice from the City, and with well qualified, adequately insured and experienced legal counsel acceptable to City. This obligation to defend as set forth herein is binding on the successors, assigns and heirs of Consultant and shall survive the termination of Consultant's Services under this Agreement.

11.5 Indemnity for Other than Design Professional Liability. Except as to the sole negligence or willful misconduct of the City, Consultant agrees to indemnify, protect and hold harmless the Indemnified Parties from and against any claim for damage, charge, lawsuit, action, judicial, administrative, regulatory or arbitration proceeding, damage, cost, expense (including counsel and expert fees), judgment, civil fine and penalties, liabilities or losses of any kind or nature whatsoever whether actual, threatened or alleged, which arise out of, pertain to, or relate to, or are a consequence of, or are attributable to, or are in any manner connected with the performance of the Services, work, activities, operations or duties of the Consultant, or anyone employed by or working under the Consultant or for services rendered to Consultant in the performance of this Agreement, notwithstanding that the City may have benefited from its work or services. This indemnification provision shall apply to any acts, omissions, negligence, recklessness, or willful misconduct, whether active or passive, on the part of the Consultant or anyone employed or working under the Consultant.

12. Insurance.

12.1 General Provisions. Prior to the City's execution of this Agreement, Consultant shall provide satisfactory evidence of, and shall thereafter maintain during the term of this Agreement, such insurance policies and coverages in the types, limits, forms and ratings required herein. The rating and required insurance policies and coverages may be modified in writing by the City's Risk Manager or City Attorney, or a designee, unless such modification is prohibited by law.

12.1.1 Limitations. These minimum amounts of coverage shall not constitute any limitation or cap on Consultant's indemnification obligations under Section 11 hereof.

12.1.2 **Ratings.** Any insurance policy or coverage provided by Consultant or subcontractors as required by this Agreement shall be deemed inadequate and a material breach of this Agreement, unless such policy or coverage is issued by insurance companies authorized to transact insurance business in the State of California with a policy holder's rating of A or higher and a Financial Class of VII or higher.

12.1.3 **Cancellation.** The policies shall not be canceled unless thirty (30) days prior written notification of intended cancellation has been given to City by certified or registered mail, postage prepaid.

12.1.4 **Adequacy.** The City, its officers, employees and agents make no representation that the types or limits of insurance specified to be carried by Consultant pursuant to this Agreement are adequate to protect Consultant. If Consultant believes that any required insurance coverage is inadequate, Consultant will obtain such additional insurance coverage as Consultant deems adequate, at Consultant's sole expense.

12.2 **Workers' Compensation Insurance.** By executing this Agreement, Consultant certifies that Consultant is aware of and will comply with Section 3700 of the Labor Code of the State of California requiring every employer to be insured against liability for workers' compensation, or to undertake self-insurance before commencing any of the work. Consultant shall carry the insurance or provide for self-insurance required by California law to protect said Consultant from claims under the Workers' Compensation Act. Prior to City's execution of this Agreement, Consultant shall file with City either 1) a certificate of insurance showing that such insurance is in effect, or that Consultant is self-insured for such coverage, or 2) a certified statement that Consultant has no employees, and acknowledging that if Consultant does employ any person, the necessary certificate of insurance will immediately be filed with City. Any certificate filed with City shall provide that City will be given ten (10) days prior written notice before modification or cancellation thereof.

12.3 **Commercial General Liability and Automobile Insurance.** Prior to City's execution of this Agreement, Consultant shall obtain, and shall thereafter maintain during the term of this Agreement, commercial general liability insurance and automobile liability insurance as required to insure Consultant against damages for personal injury, including accidental death, as well as from claims for property damage, which may arise from or which may concern operations by anyone directly or indirectly employed by, connected with, or acting for or on behalf of Consultant. The City, and its officers, employees and agents, shall be named as additional insureds under the Consultant's insurance policies.

12.3.1 Consultant's commercial general liability insurance policy shall cover both bodily injury (including death) and property damage (including, but not limited to, premises operations liability, products-completed operations liability, independent contractor's liability, personal injury liability, and contractual liability) in an amount not less than \$1,000,000 per occurrence and a general aggregate limit in the amount of not less than \$2,000,000.

12.3.2 Consultant's automobile liability policy shall cover both bodily injury and property damage in an amount not less than \$1,000,000 per occurrence and an aggregate limit of not less than \$1,000,000. All of Consultant's automobile and/or commercial general liability insurance policies shall cover all vehicles used in connection with Consultant's performance of this Agreement, which vehicles shall include, but are not limited to, Consultant owned vehicles, Consultant leased vehicles, Consultant's employee vehicles, non-Consultant owned vehicles and hired vehicles.

12.3.3 Prior to City's execution of this Agreement, copies of insurance policies or original certificates along with additional insured endorsements acceptable to the City evidencing the coverage required by this Agreement, for both commercial general and automobile liability insurance, shall be filed with City and shall include the City and its officers, employees and agents, as additional insureds. Said policies shall be in the usual form of commercial general and automobile liability insurance policies, but shall include the following provisions:

It is agreed that the City of Riverside, and its officers, employees and agents, are added as additional insureds under this policy, solely for work done by and on behalf of the named insured for the City of Riverside.

12.3.4 The insurance policy or policies shall also comply with the following provisions:

- a. The policy shall be endorsed to waive any right of subrogation against the City and its sub-consultants, employees, officers and agents for services performed under this Agreement.
- b. If the policy is written on a claims made basis, the certificate should so specify and the policy must continue in force for one year after completion of the services. The retroactive date of coverage must also be listed.
- c. The policy shall specify that the insurance provided by Consultant will be considered primary and not contributory to any other insurance available to the City and Endorsement No. CG 20010413 shall be provided to the City.

12.4 Errors and Omissions Insurance. Prior to City's execution of this Agreement, Consultant shall obtain, and shall thereafter maintain during the term of this Agreement, errors and omissions professional liability insurance in the minimum amount of \$1,000,000 to protect the City from claims resulting from the Consultant's activities.

12.5 Subcontractors' Insurance. Consultant shall require all of its subcontractors to carry insurance, in an amount sufficient to cover the risk of injury, damage or loss that may be caused by the subcontractors' scope of work and activities provided in furtherance of this Agreement, including, but without limitation, the following coverages: Workers Compensation, Commercial General Liability, Errors and Omissions, and Automobile liability. Upon City's request,

Consultant shall provide City with satisfactory evidence that Subcontractors have obtained insurance policies and coverages required by this section.

13. **Business Tax.** Consultant understands that the Services performed under this Agreement constitutes doing business in the City of Riverside, and Consultant agrees that Consultant will register for and pay a business tax pursuant to Chapter 5.04 of the Riverside Municipal Code and keep such tax certificate current during the term of this Agreement.

14. **Time of Essence.** Time is of the essence for each and every provision of this Agreement.

15. **City's Right to Employ Other Consultants.** City reserves the right to employ other Consultants in connection with the Project. If the City is required to employ another consultant to complete Consultant's work, due to the failure of the Consultant to perform, or due to the breach of any of the provisions of this Agreement, the City reserves the right to seek reimbursement from Consultant.

16. **Accounting Records.** Consultant shall maintain complete and accurate records with respect to costs incurred under this Agreement. All such records shall be clearly identifiable. Consultant shall allow a representative of City during normal business hours to examine, audit, and make transcripts or copies of such records and any other documents created pursuant to this Agreement. Consultant shall allow inspection of all work, data, documents, proceedings, and activities related to the Agreement for a period of three (3) years from the date of final payment under this Agreement.

17. **Confidentiality.** All ideas, memoranda, specifications, plans, procedures, drawings, descriptions, computer program data, input record data, written information, and other materials either created by or provided to Consultant in connection with the performance of this Agreement shall be held confidential by Consultant, except as otherwise directed by City's Contract Administrator. Nothing furnished to Consultant which is otherwise known to the Consultant or is generally known, or has become known, to the related industry shall be deemed confidential. Consultant shall not use City's name or insignia, photographs of the Project, or any publicity pertaining to the Services or the Project in any magazine, trade paper, newspaper, television or radio production, website, or other similar medium without the prior written consent of the City.

18. **Ownership of Documents.** All reports, maps, drawings and other contract deliverables prepared under this Agreement by Consultant shall be and remain the property of City. Consultant shall not release to others information furnished by City without prior express written approval of City.

19. **Copyrights.** Consultant agrees that any work prepared for City which is eligible for copyright protection in the United States or elsewhere shall be a work made for hire. If any such work is deemed for any reason not to be a work made for hire, Consultant assigns all right, title and interest in the copyright in such work, and all extensions and renewals thereof, to City, and agrees to provide all assistance reasonably requested by City in the establishment, preservation and enforcement of its copyright in such work, such assistance to be provided at City's expense but

without any additional compensation to Consultant. Consultant agrees to waive all moral rights relating to the work developed or produced, including without limitation any and all rights of identification of authorship and any and all rights of approval, restriction or limitation on use or subsequent modifications.

20. **Conflict of Interest.** Consultant, for itself and on behalf of the individuals listed in Exhibit "C", represents and warrants that by the execution of this Agreement, they have no interest, present or contemplated, in the Project affected by the above-described Services. Consultant further warrants that neither Consultant, nor the individuals listed in Exhibit "C" have any real property, business interests or income interests that will be affected by this project or, alternatively, that Consultant will file with the City an affidavit disclosing any such interest.

21. **Solicitation.** Consultant warrants that Consultant has not employed or retained any person or agency to solicit or secure this Agreement, nor has it entered into any agreement or understanding for a commission, percentage, brokerage, or contingent fee to be paid to secure this Agreement. For breach of this warranty, City shall have the right to terminate this Agreement without liability and pay Consultant only for the value of work Consultant has actually performed, or, in its sole discretion, to deduct from the Agreement price or otherwise recover from Consultant the full amount of such commission, percentage, brokerage or commission fee. The remedies specified in this section shall be in addition to and not in lieu of those remedies otherwise specified in this Agreement.

22. **General Compliance with Laws.** Consultant shall keep fully informed of federal, state and local laws and ordinances and regulations which in any manner affect those employed by Consultant, or in any way affect the performance of services by Consultant pursuant to this Agreement. Consultant shall at all times observe and comply with all such laws, ordinances and regulations, and shall be solely responsible for any failure to comply with all applicable laws, ordinances and regulations. Consultant represents and warrants that Consultant has obtained all necessary licenses to perform the Scope of Services and that such licenses are in good standing. Consultant further represents and warrants that the services provided herein shall conform to all ordinances, policies and practices of the City of Riverside.

23. **Waiver.** No action or failure to act by the City shall constitute a waiver of any right or duty afforded City under this Agreement, nor shall any such action or failure to act constitute approval of or acquiescence in any breach thereunder, except as may be specifically, provided in this Agreement or as may be otherwise agreed in writing.

24. **Amendments.** This Agreement may be modified or amended only by a written agreement and/or change order executed by the Consultant and City.

25. **Termination.** City, by notifying Consultant in writing, shall have the right to terminate any or all of Consultant's services and work covered by this Agreement at any time. In the event of such termination, Consultant may submit Consultant's final written statement of the amount of Consultant's services as of the date of such termination based upon the ratio that the work completed bears to the total work required to make the report complete, subject to the City's rights under Sections 15 and 26 hereof. In ascertaining the work actually rendered through the termination

date, City shall consider completed work, work in progress and complete and incomplete reports and other documents only after delivered to City.

25.1 Other than as stated below, City shall give Consultant thirty (30) days prior written notice prior to termination.

25.2 City may terminate this Agreement upon fifteen (15) days written notice to Consultant, in the event:

25.2.1 Consultant substantially fails to perform or materially breaches the Agreement; or

25.2.2 City decides to abandon or postpone the Project.

26. **Offsets.** Consultant acknowledges and agrees that with respect to any business tax or penalties thereon, utility charges, invoiced fee or other debt which Consultant owes or may owe to the City, City reserves the right to withhold and offset said amounts from payments or refunds or reimbursements owed by City to Consultant. Notice of such withholding and offset, shall promptly be given to Consultant by City in writing. In the event of a dispute as to the amount owed or whether such amount is owed to the City, City will hold such disputed amount until either the appropriate appeal process has been completed or until the dispute has been resolved.

27. **Successors and Assigns.** This Agreement shall be binding upon City and its successors and assigns, and upon Consultant and its permitted successors and assigns, and shall not be assigned by Consultant, either in whole or in part, except as otherwise provided in paragraph 9 of this Agreement.

28. **Venue.** Any action at law or in equity brought by either of the parties hereto for the purpose of enforcing a right or rights provided for by this Agreement shall be tried in a court of competent jurisdiction in the County of Riverside, State of California, and the parties hereby waive all provisions of law providing for a change of venue in such proceedings to any other county. In the event either party hereto shall bring suit to enforce any term of this Agreement or to recover any damages for and on account of the breach of any term or condition of this Agreement, it is mutually agreed that each party will bear their own attorney's fees and costs.

29. **Nondiscrimination.** During Consultant's performance of this Agreement, Consultant shall not discriminate on the grounds of race, religious creed, color, national origin, ancestry, age, physical disability, mental disability, medical condition, including the medical condition of Acquired Immune Deficiency Syndrome (AIDS) or any condition related thereto, marital status, sex, genetic information, gender, gender identity, gender expression, or sexual orientation, in the selection and retention of employees and subcontractors and the procurement of materials and equipment, except as provided in Section 12940 of the California Government Code. Further, Consultant agrees to conform to the requirements of the Americans with Disabilities Act in the performance of this Agreement.

30. **Severability.** Each provision, term, condition, covenant and/or restriction, in whole and in part, of this Agreement shall be considered severable. In the event any provision, term, condition, covenant and/or restriction, in whole and/or in part, of this Agreement is declared invalid, unconstitutional, or void for any reason, such provision or part thereof shall be severed from this Agreement and shall not affect any other provision, term, condition, covenant and/or restriction of this Agreement, and the remainder of the Agreement shall continue in full force and effect.

31. **Authority.** The individuals executing this Agreement and the instruments referenced herein on behalf of Consultant each represent and warrant that they have the legal power, right and actual authority to bind Consultant to the terms and conditions hereof and thereof.

32. **Entire Agreement.** This Agreement constitutes the final, complete, and exclusive statement of the terms of the agreement between the parties pertaining to the subject matter of this Agreement, and supersedes all prior and contemporaneous understandings or agreements of the parties. Neither party has been induced to enter into this Agreement by and neither party is relying on, any representation or warranty outside those expressly set forth in this Agreement.

33. **Interpretation.** City and Consultant acknowledge and agree that this Agreement is the product of mutual arms-length negotiations and accordingly, the rule of construction, which provides that the ambiguities in a document shall be construed against the drafter of that document, shall have no application to the interpretation and enforcement of this Agreement.

33.1 Titles and captions are for convenience of reference only and do not define, describe or limit the scope or the intent of the Agreement or any of its terms. Reference to section numbers, are to sections in the Agreement unless expressly stated otherwise.

33.2 This Agreement shall be governed by and construed in accordance with the laws of the State of California in effect at the time of the execution of this Agreement.

33.3 In the event of a conflict between the body of this Agreement and Exhibit "A" - Scope of Services hereto, the terms contained in Exhibit "A" shall be controlling.

34. **Exhibits.** The following exhibits attached hereto are incorporated herein to this Agreement by this reference:

Exhibit "A" - Scope of Services
Exhibit "B" - Compensation
Exhibit "C" - Key Personnel

(Signatures on Following Page)

IN WITNESS WHEREOF, City and Consultant have caused this Agreement to be duly executed the day and year first above written.

CITY OF RIVERSIDE, a California
charter city and municipal corporation

CWE, a California corporation

By: _____
City Manager

By: VB Bapna
VIK BAPNA
[Printed Name]

Attest: _____
City Clerk

CEO
[Title]

Approved as to Form:

By: [Signature]
Deputy City Attorney

By: [Signature]
Jason Portman
[Printed Name]
Secretary
[Title]

EXHIBIT “A”

SCOPE OF SERVICES

Scope of Work

The following Scope of Work provides a general overview of the work efforts for this project.

Task 1 Baseline Data Inventory

Task1.1 Data Collection and Review

CWE will meet with the City for a project kickoff meeting. During this time we will also obtain and perform a cursory review of the existing available technical studies from the City, County, and other agencies related to the floodplain hydraulics, local and regional watershed investigations, hydrologic data, topographic data, and as-built plan information. In addition, CWE will interview City staff familiar with the flooding episodes of the past. Research of past storm flood photos for this site will be conducted, that can be used to help validate models, as well as, help understand the possible flooding issues associated with this site.

The adjacent watersheds, and local drainage facilities, will also be reviewed to estimate their capacities and functionality. During larger storms, CWE will identify if these systems may contribute to the flooding under the Fourteenth Street underpass. **This researched information will serve as the foundation to perform the engineering technical analysis.** It is assumed that the City shall provide the data including the Riverside Canal data and RCC storm drain.

Task 1.2 Existing Facility Inventory and Field Investigation

CWE will develop an inventory of the existing drainage facilities within the local watershed tributary to the Fourteenth Street undercrossing. Existing construction drawings provided by the City or other agencies will be used to obtain specific characteristics about the drainage facilities including geometry and vertical/horizontal alignments. A GIS facility database and spreadsheet will be prepared to identify potential information gaps based on the CAD data provided by the City. This GIS data will serve as the basis of the hydraulic modeling efforts.

CWE will perform a field reconnaissance review of the existing facilities and local drainage conditions to validate the existing data and fill potential information gaps in the drainage system.

Task 1.3 Evaluation of Existing Improvements

Based on as-built storm drain plans and the field investigation and verification, CWE will evaluate the existing facilities/utilities including grate inlet and curb opening catch basin capacity to convey the design storm runoff along with possible inadequate pump station capacity. Facilities that will also be investigated are the Riverside Canal, the RCC channel/siphon outlet, and up to two (2) potential upstream drainage systems suspected of contributing to the flooding at the project site based on the field investigation. CWE will contact the facility owners to obtain a capacity, design plans, operation manuals and future planning documents for the Riverside Canal and RCC Channel.

The as-built information and major existing facilities such as sewer systems and waterlines to be provided by the City will be transferred to a base map to minimize potential utility conflicts and construction costs if the study determines the need for a proposed storm drain alignment.

Task 2 Hydrologic Analyses

Task 2.1 Local Tributary Drainage Area Hydrology

Hydrology will be performed for the project site tributary drainage area based on available topographic mapping and locations of adjacent drainage infrastructure. Detailed hydrology of the 10-, 50-, and 100-year return events will be calculated per the Riverside County Flood Control and Water Conservation District's Hydrology Manual. Since the Underpass drainage boundary is surrounded by Freeway, another hydrology study will be performed per FHWA and the Urban Drainage Manual to compare the runoff results. Runoff volume analysis will be used for evaluating pump storage and the pumping rates required to prevent street flooding.

Task 2.2 Regional Drainage Area Hydrology

As part of the hydrologic analysis, CWE will evaluate the upstream drainage area provided by the City based on the existing drainage systems in the area to verify accuracy of the boundaries that may drain to the 14th Street Underpass. CWE will evaluate the topography with one (1) day of field investigation from Task 1.2 to identify which upstream area could potentially contribute to the Fourteenth Street underpass system flows that isn't tabled to other drains based on topography. If additional area is identified, detailed hydrology will be performed for the various design storms and durations, similar to Task 2.1. For purposes of this Scope and Fee, it is assumed that an adjacent upstream watershed with an area of approximately 54 acres may also be evaluated as part of this Task depending on field investigation findings. The higher discharge tributary to the underpass will govern the final design for the drainage system.

Task 4 Hydraulic Analysis: (Option 2: Advanced Modeling 1D/2D Analysis)

Task 4.1 1D/2D Model Setup

CWE will prepare an advanced model of the entire drainage area and drainage system. As stated in Task 3.2, a bifurcation analysis can be complex and is best evaluated using a linked 1D/2D model. This evaluation will yield more realistic and accurate results, and yield more cost effect drainage solutions.

Using City provided topographic data and the results from Task 2, CWE will develop a three-dimensional surface of the project site and portions of the areas expected to potentially deliver runoff to the Fourteenth Street undercrossing. Using XPSWMM, or equivalent, CWE will incorporate storm drain facilities within the final drainage area (i.e. catch basins, laterals, mains, pump station, open channels) into the model and connect them to the topographic

surface model. The result is a streamlined connection of a single comprehensive model capable of evaluating surface to storm drain capture efficiencies, as well as, reverse flows, or situations where pipes under pressure create artesian wells that flow back up onto the surface. For catch basins upstream of the Fourteenth Street watershed, engineering judgement will be used to link those catch basins to their respective storm drain facilities to yield appropriate bypass flows tributary to our project site.

Task 4.2 Model Validation

Once the storm drain system is included in the model, CWE will run a known storm event, such as the September 7th, 2014 storm or the August 29th, 2013 event to correlate the model to observed flows and flooding. Using available rain gage data from either storm, or photographs of the flood depths under the Fourteenth Street Bridge, the model results can be checked, and calibrated, to ensure a confident level of accuracy. This assumes that there is no overflow from the Riverside Canal into the underpass system, which will need to be verified through the calibration process.

Task 4.3 Alternatives Hydraulic Calculations

Once the models are validated properly, CWE would evaluate the existing drainage system's function for the three design storm events for the existing conditions models. Color exhibits will be prepared to identify depth results overlaid on an aerial photograph for each design storm.

CWE will develop a range of conceptual alternative approaches and solutions which will serve to facilitate development of project alternatives. A variety of improvements will be developed based on the hydraulic and topographic constraints. CWE will coordinate with the City, to select up to three (3) concept alternatives for further evaluation. It is assumed that these modifications may require minimal changes to models such as pump sump or pump sizing, minor changes to collection systems including addition of catch basins or upsizing drain capacity, and ~~minor~~ laterals. In the event that there is too much flow to the system, the capacity of the Canal and RCC will need to be evaluated for increased pumping rates at the sump. This may also require design of a bypass line for the system.

The calculations will be compared and checked versus the methodologies identified in the Federal Highway Administration (FHWA) Urban Design Manual (HEC-22), where applicable.

CWE will provide color exhibits showing the potential flooding impacts of each of the three proposed alternative improvements.

Task 4.4 Result 2D Animations

With a 2D model, the results can be presented in either/or both 2D maps or 2D animations. Maps will be prepared using an aerial map of the watershed. Maximum depths can be overlaid using varying colors for different depths. XPSWMM automatically produces 2D animations, which can be recorded and modified for presentation. These are exceptionally useful to "tell the story" of the flooding causes and how the proposed alternatives work to alleviate the issues.

Recommendation on Modeling Approach

CWE has provided costs estimates for both Task 3 and Task 4. Both tasks model the hydrology of the existing and proposed system. As discussed in the task descriptions, urban hydrology can be complicated by bifurcation of flows during large events or if drainage systems are damaged or require maintenance. Simple systems with well-defined drainage facilities and low potential for bifurcation are best modeled using 1D models. Solutions to bifurcation problems using 1D models require assumptions, external calculations, and additional 1D elements to model overflow. These approaches to modeling were often used in the past due to computational run-time and computer memory constraints. The assumptions and connections between the 1D systems often have the potential for introducing errors into the system or the analysis. The benefit of these types of systems is that the input/output is often tabular, easy to represent, and more standardized for checking input numbers and output results.

The development of 2D models and the computational power needed to make these models effective tools has advanced significantly over the last decade. With the advances in 2D models and computers, more studies are being conducted using 2D and 1D/2D models. These models are often used for situations similar to those of the 14th Street Underpass, where urban flows and increased urbanization may have resulted in drainage deficiencies and flow bifurcation. The 1D storm drain network is connected to a 3D topographic surface that allows the dynamic system to be modeled with flows entering and leaving the storm drains based on system capacity and performance of the drain system under the unsteady state flow conditions simulating more realistic conditions. The overland surface flows can be tracked across the surface, accounting for volumes and timing. This type of analysis is better than the 1D system because it tracks flows and accounts for storage and energy losses as flows spread and pond.

We recommend using the 1D/2D modeling approach for the project based on our initial field visits and the problems currently being experienced at the pump station and along the Riverside Canal.

Task 5 Storm Water Pump Station Condition Assessment

CWE will evaluate the data from as-built drawings, the recent pump replacements, and discussion with the maintenance personnel to determine pump station characteristics to use in the hydraulic model for assessment of the pump station performance. We will not evaluate mechanical, electrical, PLC/SCADA and code compliance as part of this project.

Task 6 Project Concept Development and Cost Estimates

Task 6.1 Development of Project Concepts

This task entails development of rough project concepts to evaluate the most cost-effective and maintainable design for the Fourteenth Street underpass drainage system. CWE will work closely with the City to develop up to three (3) project concepts. The alternative will most likely include several improvements within the overall drainage system. Improvements may include (for example) changes in pump system storage or operation, improving adjacent watershed inlet facilities, changes in siphon gate operations, a direct pump line to the siphon, a combination of these, or other solutions that will be

developed during the field reconnaissance and model development which also depends on capacity of downstream facilities.

Task 6.2 Proposed Condition Hydraulic Analysis

This task was added as a component of Task 4.3

Task 6.3 Schematic Design Drawings

CWE will develop schematic drawings for the three (3) concepts. This work item is based on the preparation of one (1) set of drainage improvement drawings for each of the three (3) concepts. The schematic drawings will include the system plan and profile view with typical cross-sections for the proposed improvements at a 1:100 scale. No design details will be provided for the schematic design drawings.

Task 6.4 Preliminary Cost Estimates

CWE will prepare a preliminary cost estimate of construction quantities and costs based on the schematic drawings using current City and County cost data and bid tabulations for similar project types. These numbers will be based on the requirements from the hydraulic analysis of the proposed alternative concepts. Based on the results of the hydraulic assessment of the conceptual models, CWE will also provide quantitative estimates of the implementation/construction costs and life-cycle Operations and Maintenance (O&M) costs. The estimates for costs and O&M requirements will cover a typical 25-year period of flow events.

Task 6.5 Basis of Design Report Preparation

This task includes the preparation of a Basis of Design Report, which will serve as documentation of the engineering design and associated technical analysis to support the schematic designs for the Fourteenth Street underpass pump system. The report will include the backup data regarding final hydrology, hydraulics, existing facility data, design criteria, specific design requirements, design constraints, assumptions, and all engineering calculations or analysis. The report will also include the preliminary cost estimates and conceptual system schematic drawings for the three (3) alternatives and also include the background for the watershed investigation, hydrologic analysis, and hydraulic modeling, design criteria, constraints, design assumptions, and references.

Deliverables - Drainage Study Report: Three (3) hard copies and one (1) PDF copy of the Basis of Design Report will be provided to the City. The Basis of Design Report will include the data and analyses used to determine the preferred alternative along with the preliminary cost estimates and conceptual system schematic drawings for the three (3) alternatives. The electronic submittal will include final versions of the final AutoCAD drawings

and XP-SWMM hydraulic models.

Task 6.6 Project Management and Meetings

CWE will provide monthly status reports on the project and has scheduled time for three (3) meetings with the City and two (2) teleconferences to discuss project status and project coordination. The purpose of these meetings may include a review of work progress, or consultation and discussion needed on project issues. Consultation will be provided with the City to ensure project progress. The meetings and consultation allows adequate communication with the City to allow input and feedback during the conceptual design process.

Assumptions, Limitations, and Exclusions

Our services will be scheduled upon receipt of your written authorization. Work will be scheduled as soon as possible based on our current workload and the availability of qualified personnel. A tentative schedule is provided below based on the tasks and the expected number of working days. When the Notice to Proceed (NTP) is issued, a revised schedule will be provided.

Verbal information can be presented to you during the course of our plan preparation regarding unusual or additional items. Unforeseen circumstances, such as site access, significant changes, or the discovery of conditions that significantly complicate or change the proposed services, may occur and result in the modification of the proposed fee. Our fee proposal has included the following assumptions:

- Existing as-builts, topographic data, hydrology, drainage, and hydrogeologic studies with digital files will be provided by the City
-

EXHIBIT "B"
COMPENSATION

Fee Estimate

The following fees apply to the tasks identified in the Scope of Work above.

Task		Total
1	Baseline Data Inventory	
1.1	Data Collection and Review	\$3,063
1.2	Existing Facility Inventory and Field Investigation	\$2,781
1.3	Evaluation of Existing Improvements	\$4,690
2	Hydrologic Analyses	
2.1	Local Tributary Drainage Area Hydrology	
	Riverside Hydrology Method	\$5,482
	FHWA Hydrology Method	\$2,361
4	Hydraulic Analysis: (Option 2:Advanced Modeling 1D/2D Analysis)	
4.1	1D/2D Model Setup	\$15,531
4.2	Model Validation	\$9,523
4.3	Alternatives Hydraulic Calculations	
	Alternative 1	\$5,043
	Alternative 2	\$4,307
	Alternative 3	\$3,571
4.4	Result 2D Animations	\$3,183
5	Storm Water Pump Station Condition Assessment	
5.1	Data Collection	\$436
5.2	Setting Criteria	\$436
5.3	Field Review	\$436
5.4	Existing Pump Station Assessment	\$0
5.5	Code Compliance, Preventative Maintenance, and Rehabilitation Strategy	\$0
5.6	Pump Station Assessment Report	
	Draft Pump Station Assessment Report	\$0
	City Review	
	Final Pump Station Assessment Report	\$0
6	Basis of Design Report Preparation	
6.1	Development of Project Concepts	\$4,067
6.2	Proposed Conditions Hydraulic Analysis	\$0
6.3	Schematic Drawings	\$8,367
6.4	Preliminary Cost Estimates	\$3,393
6.5	Basis of Design Report Preparation	
	Draft Basis of Design Report	\$8,374
	City Review	
	Final Basis of Design Report	\$4,274
6.6	Project Management and Meetings	\$6,286
	Total Cost	\$95,604

EXHIBIT “C”

KEY PERSONNEL

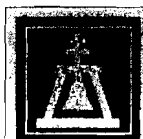


City of Riverside

Proposal to Prepare a Drainage Study Report for the Fourteenth Street Underpass

C. Organization Chart

This organization chart depicts the roles and responsibilities of our proposed personnel. All work will be performed from our Fullerton, California, Corporate Headquarters (location and contact information provided below).



Sweta Patel, PE
Senior Engineer

Project Manager

Ben Willardson, PhD, PE, D.WRE, QSD/P ☆

QA/QC

Vik Bapna, PE, CPSWQ, QSD/P ☆

Technical Resources

Hydrology and Hydraulics

Ben Willardson, PhD, PE, D.WRE, QSD/P ☆
Chris Pendroy, CPSWQ, QSD/P
Ali Zahraei, PhD, PE

Design

William Young, PE ☆
Mike Nguyen
Katie Thomas, EIT

☆ Indicates Key Personnel

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(714) 526-7500

Branch Offices

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Utah County, Utah