

CITY OF FLAGSTAFF



- CONFIRMING CHANGE ORDER NO. _____
- CONSULTING CONTRACT CHANGE ORDER NO. 13
- CONSTRUCTION CONTRACT CHANGE ORDER NO. _____
- CONTRACT ALLOWANCE UPDATE NO. _____

PROJECT NO. 346800 PROJECT NAME: Rio de Flag Flood Control Utility Relocation
 FILE NO. 03-04011 PROJECT MANAGER: Trevor Henry
 TO: Shepard Wesnitzer, Inc.

You are hereby directed to make the herein described changes from the plans and/or specifications or perform the following described work not included in the plans and/or specifications of this contract. Description of work to be done:

Provide additional work tasks as described in the proposal dated February 12, 2020 to bring the Rio de Flag Flood Control design services contract to 100%, and to comply with design plans prepared by the US Army Corps of Engineers (USACE) and their design consultant. The added tasks are; additional topographical survey, side storm drain analysis, landscaping design, composite channel design, sanitary sewer siphon design, Beal Road bridge design and traffic signal modifications. There is a 365-day time extension requested with this change order.

Change Order originated by: CITY OF FLAGSTAFF CONTRACTOR CONSULTANT OTHER: _____

Project Manager	<u>2/13/2020</u>	Approval Recommended	<u>Trevor Henry</u>
	Date		
Department Head	<u>2/13/2020</u>	Approval Recommended	<u>Ra Banett for DWF</u>
	Date		
Water Services	<u>2/13/2020</u>	Approval Recommended	<u>James Deen</u>
	Date		
Public Works	<u>2/13/2020</u>	Approval Recommended	<u>John White</u>
	Date		
Community Development	<u>2/13/2020</u>	Approval Recommended	<u>Ra Banett for DWF</u>
	Date		
City Attorney	<u>2/13/2020</u>	Approval Recommended	<u>Christina Paine</u>
	Date		
Purchasing (Chair)	<u>2/13/2020</u>	Approval Recommended	<u>John White</u>
	Date		
City Manager	<u>3/17/2020</u>	Approval Recommended	
	Date		

		END DATES	
ORIGINAL CONTRACT PERIOD	<u>275</u> Days	<u>(10/30/05)</u>	ORIGINAL CONTRACT \$ <u>1,582,521.00</u>
PRIOR TIME CHANGES	<u>5,570</u> Days	<u>(4/30/20)</u>	TOTAL PRIOR VALUE CHANGES \$ <u>1,100,796.34</u>
THIS TIME CHANGE	<u>365</u> Days	<u>(4/30/21)</u>	VALUE OF THIS CHANGE \$ <u>483,100.00</u>
NEW CONTRACT PERIOD	<u>6,210</u> Days	<u>(4/31/21)</u>	NEW CONTRACT \$ <u>3,166,417.34</u>

We, the undersigned consultant, have given careful consideration to the change proposed and hereby agree, if this proposal is approved, that we will provide all equipment, furnish all materials, except as may otherwise be noted above and perform all services necessary for the work above specified and will accept as full payment therefore the prices and time extensions shown above.

FIRM NAME: Shepard Wesnitzer, Inc.
 Accepted Date: 02/12/2020 By: [Signature]

CITY OF FLAGSTAFF



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PROJECT NO. 346800 PROJECT NAME: Rio de Flag Flood Control Utility Relocation

FILE NO. 03-04011 PROJECT MANAGER: Trevor Henry

JUSTIFICATION:

Shepard Wesnitzer Inc. (SWI) completed the design of the Final I utility and right of way relocation plans on February 24, 2010 as part of the City's LERRD (Land, Easements, Rights of Way, Relocation and Disposal) contribution. The USACE has hired TetraTech to complete the 100% flood control design, excluding the structural and landscaping components. The USACE has submitted the draft plans on February 6, 2019 and has projected a final design completion date of April 30, 2020. The USACE has received federal funding as part of their FY 20 work program to complete the Rio de Flag Flood Control Project. In order to comply with the USACE's schedule of May 2020 for design completion, SWI will address any outstanding tasks to comply with the USACE final design and meet the project schedule for construction delivery.

TIME ANALYSIS:

A 365-calendar day contract time extension is proposed to meet the completion of the design at 100% in May 2020 and provide support for the USACE through the initial stages to procure a construction contract, targeting full construction by spring 2021. The USACE has provided a schedule to complete the final design, this contract time extension to SWI should be considered final to meet the final design and initial stages of full construction.

COST ANALYSIS:

Reference attached documentation from SWI dated February 12, 2020 for scope of services and fee proposal regarding the additional tasks for the Rio de Flag Flood Control Project.

Original Contract Amount:	\$1,582,521.00
Total Prior Value Changes:	\$1,100,796.34
Value of this Change Order:	<u>\$ 483,100.00</u>
New Contract Amount:	\$3,166,417.34

This change order exceeds the authorized change order authority and will require City Council approval. The Stormwater Fee increase authorized in November 2018 and collection in July 2019, will provide funding. The Rio de Flag Hydrology account (206-08-385-3236-0-4421) will fund Change Order #13.

CITY OF FLAGSTAFF			PROJECT STATUS FORM	
PROJECT NAME: Rio de Flag Flood Control Utility Relocation		<input checked="" type="checkbox"/> Design <input type="checkbox"/> Construction <input type="checkbox"/> Other		
PROJECT NO. 346800		FILE NO. 03-04011		
ACCT. NO.				
206-08-385-3236-0-4433		100%		\$3,166,417.34
PROPOSED CONTRACT TOTAL <i>(Includes Original Contract Amount & All Change Orders)</i>				\$3,166,417.34
COUNCIL APPROVAL: January 18, 2005		ORIGINAL CONTRACT AMOUNT: \$1,582,521.00		
PROJECT BUDGET \$2,870,940.00		FY: 12/13		
PROJECT BUDGET		FY:		
NOTICE TO PROCEED: January 28, 2005		ORIGINAL CONTRACT PERIOD (calendar days): 275		
ORIGINAL/REVISED COMPLETION DATES: October 30, 2005		ORIGINAL CONTRACT ALLOWANCE: \$75,000.00		
CONSULTANT: Shepard Wesnitzer, Inc.		LOCATION: Flagstaff, AZ		
CITY PROJECT MANAGER: Trevor Henry				
Change Orders	C.O. Amount/ Allowance Amt	C.O. Days	Council Date	REASON FOR CHANGE
Revision Date	New Total	Original / New Total	New Comp. Date	
CO#1	\$14,404.00	0	N/A	Revise sewer crossings & cost estimate due to change in structures & flood elevations by USACE. Amount is to be taken from City Manager's Authority. \$136,346.00/\$150,750.00
8/04/05	\$1,596,925.00	275	10/30/05	
Field Order #1	\$1,290.00	0	N/A	Prepare exhibits and convert files to Arcmap format. \$73,710.00/\$75,000.00
8/22/05			10/30/05	
Field Order #2	N/A	60	N/A	Time extension due to City/USACE delays.
10/26/05		335	12/29/05	
Field Order #3	2,800.00	60	N/A	Time extension due to City/USACE delays.
2/09/06	0	395	2/27/06	
CO#2	\$11,998.00	261	N/A	Additional Title Reports, time extension due to City delay. Amount is to be taken from City Manager's Authority. \$124,348.00/\$150,750.00
3/20/06	\$1,608,923.00	656	11/15/06	
Field Order #4	\$941.98	0	N/A	Prepare Brownfield Exhibits. \$69,968.02/\$75,000.00
5/20/06	N/A	656	11/15/06	
Field Order #5	N/A	60	N/A	Time extension due to City/USACE delays.
11/6/06		716	1/14/07	

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ACCT. NO.				
206-08-385-3236-0-4433		100%	\$3,166,417.34	
PROPOSED CONTRACT TOTAL <i>(Includes Original Contract Amount & All Change Orders)</i>			\$3,166,417.34	
COUNCIL APPROVAL: January 18, 2005		ORIGINAL CONTRACT AMOUNT: \$1,582,521.00		
PROJECT BUDGET \$2,870,940.00		FY: 12/13		
PROJECT BUDGET		FY:		
NOTICE TO PROCEED: January 28, 2005		ORIGINAL CONTRACT PERIOD (calendar days): 275		
ORIGINAL/REVISED COMPLETION DATES: October 30, 2005		ORIGINAL CONTRACT ALLOWANCE: \$75,000.00		
CONSULTANT: Shepard Wesnitzer, Inc.		LOCATION: Flagstaff, AZ		
CITY PROJECT MANAGER: Trevor Henry				
Change Orders	C.O. Amount/ Allowance Amt	C.O. Days	Council Date	REASON FOR CHANGE
Revision Date	New Total	Original / New Total	New Comp. Date	
Field Order #6	N/A	60	N/A	Time extension due to City/USACE delays.
1/08/07		776	3/15/07	
CO#3	\$12,015	730	N/A	Additional design to determine estimate of right of way needed and utility relocations cost for the Corps Limited Re-evaluation Report. Amount is to be taken from City Manager's Authority. \$112,333.00/\$150,750.00
2/1/07	\$1,620,938	1506	3/14/09	
Field Order #7	N/A	60	N/A	Time delays due to City and USACE.
3/09/09		1566	5/13/09	
CO#4	\$1,038,036.34	270	5/05/09	Deliver Phase II of the project per the attached scope and fee.
4/16/09	\$2,658,974.34	1836	2/07/10	
Field Order #8	\$3,600.00	0	N/A	Provide additional sewer flow measurement.
9/14/09	2,662,574.34	1836	2/07/10	
CO#5	\$24,343.00	38	N/A	Accelerate design of lower 850 l.f. of utility plans to meet shovel ready designation. Amount is to be taken from City Manager's Authority. \$87,990.00/\$150,750.00
10/15/09	\$2,683,317.34	1874	3/17/10	

CITY OF FLAGSTAFF			PROJECT STATUS FORM	
PROJECT NAME: Rio de Flag Flood Control Utility Relocation		<input checked="" type="checkbox"/> Design <input type="checkbox"/> Construction <input type="checkbox"/> Other		
PROJECT NO. 346800		FILE NO. 03-04011		
ACCT. NO.				
206-08-385-3236-0-4433		100%		\$3,166,417.34
PROPOSED CONTRACT TOTAL <i>(Includes Original Contract Amount & All Change Orders)</i>				\$3,166,417.34
COUNCIL APPROVAL: January 18, 2005		ORIGINAL CONTRACT AMOUNT: \$1,582,521.00		
PROJECT BUDGET \$2,870,940.00		FY: 12/13		
PROJECT BUDGET		FY:		
NOTICE TO PROCEED: January 28, 2005		ORIGINAL CONTRACT PERIOD (calendar days): 275		
ORIGINAL/REVISED COMPLETION DATES: October 30, 2005		ORIGINAL CONTRACT ALLOWANCE: \$75,000.00		
CONSULTANT: Shepard Wesnitzer, Inc.		LOCATION: Flagstaff, AZ		
CITY PROJECT MANAGER: Trevor Henry				
Change Orders	C.O. Amount/ Allowance Amt	C.O. Days	Council Date	REASON FOR CHANGE
Revision Date	New Total	Original / New Total	New Comp. Date	
Change Order #6	\$0	180	N/A	Time extension due to City/USACE delays as a result of the January 2010 VE study.
3/4/10	\$2,683,317.34	2054	9/13/10	
Change Order #7	\$0	365	N/A	Time extension due to City/USACE delays as a result of the 2010 VE study and revisions to the 90% plans.
9/9/10	\$2,683,317.34	2419	9/13/11	
Change Order #8	\$0	365	N/A	Time extension due to City/USACE delays as a result of the 2010 VE study and revisions to the 90% plans.
9/8/11	\$2,683,317.34	2784	9/13/12	
Change Order #9	\$0	365	N/A	Time extension due to City/USACE delays as a result of the 2010 VE study and revisions to the 90% plans.
9/13/12	\$2,683,317.34	3149	9/13/13	
Change Order #10	\$0	972	N/A	Time extension due to City/USACE delays.
5/21/15	\$2,683,317.34	4,121	5/12/2016	
Change Order #11	\$0	491	N/A	Time extension due to City/USACE delays.
9/15/16	\$2,683,317.34	4,612	9/15/2017	

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PROJECT NAME: Rio de Flag Flood Control Utility Relocation		<input checked="" type="checkbox"/> Design <input type="checkbox"/> Construction <input type="checkbox"/> Other	
PROJECT NO. 346800		FILE NO. 03-04011	
ACCT. NO.			
206-08-385-3236-0-4433	100%	\$3,166,417.34	
PROPOSED CONTRACT TOTAL <i>(Includes Original Contract Amount & All Change Orders)</i>			\$3,166,417.34
COUNCIL APPROVAL: January 18, 2005		ORIGINAL CONTRACT AMOUNT: \$1,582,521.00	
PROJECT BUDGET \$2,870,940.00		FY: 19	
PROJECT BUDGET		FY:	
NOTICE TO PROCEED: January 28, 2005		ORIGINAL CONTRACT PERIOD (calendar days): 275	
ORIGINAL/REVISED COMPLETION DATES: April 30, 2020		ORIGINAL CONTRACT ALLOWANCE: \$75,000.00	
CONSULTANT: Shepard Wesnitzer, Inc.		LOCATION: Flagstaff, AZ	
CITY PROJECT MANAGER: Trevor Henry			
Change Orders	C.O. Amount/ Allowance Amt	C.O. Days	Council Date
Revision Date	New Total	Original / New Total	New Comp. Date
Change Order #12	\$0	958	N/A
3/7/19	\$2,683,317.34	5,845	4/30/20
Change Order #13	\$483,100.00	365	3/17/2020
2/13/2020	\$3,166,417.34	6,210	4/30/21

COMMENTS: The allocations shown above are inclusive of all Change Orders shown.

Purchase Order Number: 14-000120	Line Number: 1	Amount	\$698,015.35
Purchase Order Number: 14-000120	Line Number: 2	Amount	\$7,244.66



Shephard Wesnitzer, Inc.
Engineering an environment of excellence

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 www.swiaz.com

Engineering an environment of excellence.

Ms. Christine Cameron
 City of Flagstaff
 211 W. Aspen Avenue
 Flagstaff, AZ 86001 ("Client")

February 12, 2020
 Job # 04473

RE: Rio De Flag
 Additional Services Change Order #13

Dear Ms. Cameron:

SWI has been asked to provide supplemental survey, additional side drain analysis, and subconsultant design to produce 100% Construction Plans. Please provide a change order for the additional services listed below.

1.0 SCOPE OF SERVICES, ADDITIONAL
 We propose to provide the following:

Item No.	Description	Fee
1.	<p>Topographic Survey (Time & Material Not to Exceed): Perform a topographic survey for the areas identified by SCI, NCD, Norris, and Tetra Tech to produce 100% Construction plans. The supplemental topographic survey will include all surface utility appurtenances within the proposed composite channel that have not been accounted for: water valves, fire hydrants, vaults, sewer manholes and cleanouts, storm drain manholes and catch basins, and FDC's. Item includes dipping the sewer and storm drain manholes and catch basins. Underground utility locating/potholing is not included in this item. City of Flagstaff GIS will be used in conjunction with the survey data.</p> <p>This item also includes survey of the historic wall locations as identified by the City of Flagstaff and any other items as identified by the design team dated November 22, 2019.</p> <p>Existing storm drain facilities (i.e., catch basins and storm drain pipes) will also be surveyed to support Item 2, Side Drain Analysis, below. Items include catch basin locations; catch basin curb opening lengths and grate dimensions and elevations; catch basin inverts; and storm drain pipe materials, sizes, and inverts.</p> <p>This item also includes survey of the backyards of the homes along Navajo Drive, the Butler Tunnel, and Beal Street.</p>	\$16,500
2.	<p>Side Drain Analysis: This item includes providing supplemental analysis and design of the side drains for four (4) specific areas within the Rio de Flag corridor.</p>	

Navajo Drive:

\$8,900

This study area is located along Navajo Dr. south of Beal Rd., where the Rio de Flag plans include the construction of a flood wall along on the east side of the Rio.

Based on the site visit on November 5, 2019, it was discussed among City and Tetra Tech staff that the proposed improvements for this study area does not require any supplemental hydrologic analysis. It is anticipated that the proposed improvements will only be modifications to the existing storm drain pipes that outlet into the Rio de Flag just upstream of Thorpe Rd. and just downstream of Beal Rd. These improvements are anticipated to include truncating the existing storm drain pipes at the new flood wall and fitting each pipe with a flap gate to prevent flows in the Rio de Flag from backing up into the pipes.

SWI will coordinate the design with the City of Flagstaff, the Army Corps of Engineers, and Tetra Tech. SWI will incorporate the supplemental and/or new side drain facilities for these specific areas into the Street Reconstruction Plans. Multiple design iterations are not included.

Item also includes up to one (1) site visit and two (2) additional coordination meetings with Tetra Tech, if necessary.

North Lake (Standalone Project):

\$49,600

This study area is considered as 'North Lake' and is located near the existing City of Flagstaff Court building where flood waters have historically ponded before draining to the south across Rt. 66 and the BNSF railway corridor. This project is assumed to be a standalone project.

Tasks will include supplemental hydrologic analysis for the 10-year and 100-year storm events to determine peak discharge rates at various points of interest (e.g., specific catch basin locations or concentration points) within previously identified side drain drainage basins, hydraulic analysis to determine the capacities of existing roadways and storm drain systems, and design of supplemental and/or new storm drain facilities to convey the 10-year and 100-year runoff to the Rio de Flag main stem facilities in accordance with the City of Flagstaff Stormwater Management Design Manual (SMDM). It is assumed that the new storm drain facilities for this area will run to the west within Aspen Ave. and connect to the Rio de Flag main stem facilities near the City of Flagstaff Library and City Hall. This will result in a shorter run of storm drain and less intergovernmental coordination than constructing new facilities to the south, across Rt. 66 and the BNSF railway.

SWI will coordinate the analyses and design with the City of Flagstaff, the Army Corps of Engineers, and Tetra Tech. Multiple design iterations are not included.

Item also includes up to two (2) site visits and three (3) additional coordination meetings with Tetra Tech, if necessary.

Santa Fe Avenue (Standalone Project):

\$55,900

This study area is located at West Santa Fe Ave., where significant runoff from Mars Hill and the downtown neighborhood have historically drained into Rt. 66 and the Rt.66/Milton Rd. underpass under the BNSF railway. This project is assumed to be a standalone project.

Tasks will include supplemental hydrologic analysis for the 10-year and 100-year storm events to determine peak discharge rates at various points of interest (e.g., specific catch basin locations or concentration points) within previously identified side drain drainage basins, hydraulic analysis to determine the capacities of existing roadways and storm drain systems, and design of supplemental and/or new storm drain facilities

to convey the 10-year and 100-year runoff to the Rio de Flag main stem facilities in accordance with the SMDM. Currently, storm drain facilities run to the west up Santa Fe Ave. It is anticipated that these facilities will need to be upsized and may need to be extended further upstream to supplement in-street flow capacities in accordance with the SMDM. New storm drain facilities may also be required in Grand Canyon Ave. and/or Coconino Ave. to provide the necessary conveyance capacity in for those roadways.

SWI will coordinate the analyses and design with the City of Flagstaff, the Army Corps of Engineers, and Tetra Tech. Multiple design iterations are not included.

Item also includes up to one (1) site visit and two (2) additional coordination meetings with Tetra Tech, if necessary.

Malpais Lane:

\$43,900

This study area is located at the intersection of Malpais Ln. and Milton Rd., adjacent to the Dairy Queen, where runoff from West Rt. 66, Milton Rd., and Malpais Ln. have historically combined to create significant local flooding.

Tasks will include supplemental hydrologic analysis for the 10-year and 100-year storm events to determine peak discharge rates at various points of interest (e.g., specific catch basin locations or concentration points) within previously identified side drain drainage basins, hydraulic analysis to determine the capacities of existing roadways and storm drain systems, and design of supplemental and/or new storm drain facilities to convey the 10-year and 100-year runoff to the Rio de Flag main stem facilities in accordance with the SMDM. It is anticipated that existing storm drain facilities in this area will need to be upsized and may need to be extended to the west up West Rt. 66. It is also assumed that the new storm drain facilities for this area will run to the north within Malpais Ln. and connect to the Rio de Flag main stem facilities where they cross Malpais. This will result in a shorter run of storm drain, less intergovernmental coordination, fewer utility conflicts, and less traffic interruption than constructing new facilities to the northeast along Milton Rd. to the five-points intersection.

SWI will coordinate the analysis and design with the City of Flagstaff, the Army Corps of Engineers, and Tetra Tech. SWI will incorporate the supplemental and/or new side drain facilities for these specific areas into the Street Reconstruction Plans. Multiple design iterations are not included.

Item also includes up to one (1) site visit and two (2) additional coordination meetings with Tetra Tech, if necessary.

3. Beal Bridge Design:

\$43,800

This item will include the design of the Beal Bridge to accommodate the flows for the Rio De Flag project. The hydrology analysis is assumed to be provided by Tetra Tech. The improvements will include the drainage structure, street improvements, channel improvements, and water and sewer realignment.

4. Landscaping:

\$47,200

Items below are tasks that will be completed by Norris Design Group.

Task 1: Design Development – 60% Design

Upon approval of the Schematic Design and notice to proceed, Norris Design shall prepare the Design Development documentation necessary for coordination and pricing of the landscape, irrigation, and pocket parks. Structures such as ramadas and playground equipment are anticipated to be prefabricated and not custom. Norris Design will perform an internal quality assurance review before distribution of the Design Development documents to the Design Team. It is anticipated that these

drawings will be submitted to the City for review. Specific to Design Development Norris Design anticipates the following deliverables:

- A. Provide one (1) Design Development (60%) Review Package Submittal:
 - a. Design Development Landscape Plans
 - b. Design Development Landscape Details
 - c. Design Development Pocket Park Plans
 - d. Design Development Pocket Park Details
 - e. Design Development Site Amenities and Materials Schedules
 - f. Design Development Irrigation Plans, identifying points of connection, water and power requirements, mainline, and controller location
 - g. Design Development Irrigation Details
 - h. Required City Notes and Landscape Charts
- B. Attend up to two (2) coordination meetings (in Flagstaff) and approximately four (4) conference call meetings. Norris Design anticipates that the Construction Document phase will span six weeks.

Task 2: Construction Documents – 100% Design and Permit

Upon approval of the Design Development drawings and your notice to proceed, Norris Design shall prepare the final Construction Documents. Plans will be coordinated with the Design Team and the Owner. Norris Design will incorporate minor design modifications required based on budgetary analysis and owner feedback. Norris Design anticipates submitting one (1) 90% CD set prior to issuing the final Construction Documents. The Construction Documents will be packaged for review and approval of from the Design Team and the City of Flagstaff.

- A. Provide one (1) Construction Documents (100%) Review Package Submittal:
 - a. Final Landscape Plans
 - b. Final Landscape Details
 - c. Final Pocket Park Plans
 - d. Final Pocket Park Details
 - e. Enlargement Plans as needed
 - f. Final Site Amenities and Materials Schedules
 - g. Final Irrigation Plans, identifying meter location, mainline, lateral lines, valves, drip irrigation lines, controller locations, etc.
 - h. Final Irrigation Details
 - i. Required City Notes and Landscape Charts
 - j. Technical Specifications including: Irrigation System, General Landscape, Soil Preparation, Seeding and Sodding
- B. Attend up to three (3) coordination meetings (in Flagstaff) and five (5) conference call meetings. Norris Design anticipates that the Construction Document phase will span eight weeks.

Optional Services:

Optional Task 3: Landscape Restoration Plans Between Thorpe Road and Bonito Street **\$7,700**

Norris Design will provide Landscape and Irrigation plans for the areas disturbed by drainage improvements between North Thorpe Road and North Bonito Street (not including Frances Short Pond). This task would run concurrent with Task 1 and Task 2. No pocket parks are anticipated for this area.

Optional Task 4: Construction Administration **\$10,500**

Norris Design will provide construction administration services for the hardscape, landscape, and irrigation portion of the project, as required. The services that are anticipated in this scope of work are as follows:

- A. Attend a pre-construction meeting
- B. Review and respond to eight (8) shop drawings and other required contractor submittals for the project pertaining to our construction documents

- C. Review and respond to eight (8) RFI's
- D. Review and tag trees at a local greater Flagstaff nursery. Norris Design anticipates two (2) visits to fulfill project requirements.
- E. Attend five (5) field visits to the project site during construction activity and follow-up with a written report for each visit
- F. Attend one (1) substantial completion review & provide written report
- G. Attend one (1) final completion review & provide written report
- H. Attend one (1) warranty review & provide written report

5. **Composite Channel:**

\$130,300

Items below are tasks that will be completed by Natural Channel Design.

Task 1: Design and Coordination Meetings

NCD will attend multiple design meetings as part of the design team. These meetings will be needed to provide timely coordination on utility relocations; rights-of-way and easement needs; verify most current information on crossings designs; flood culvert alignment, elevations and dimension changes; and other project parameters which are needed and relevant to the channel design process. We anticipate multiple meetings with City staff for design review and potential public outreach meetings to present the design and answer questions from stakeholders.

Task 2: Engineering Plan Development

NCD will be responsible for design and plan development of the open channel, above the USACE box culvert from back of sidewalk to back of sidewalk between road crossings extending from Bonito Street to Route 66. Design will include open channel plan/profile, cross sections, channel substrate, in-stream geomorphic and aesthetic features, construction notes, construction specifications, quantities, estimated costs and basis of design report for the open channel construction.

NCD also understands that the channel will be utilized to capture and convey a portion of the local storm runoff where possible, with excess flows routed into the box culvert at each road crossing. Due to the limited space available for the channel, it should not be expected to carry a significant portion of the storm flows but will need to carry some flows to support the vegetation and aesthetic intent. Design will include a limited hydraulic analysis (HydroCAD) of the open channel under the chosen seasonal base flow rate and the potential high flow conditions as well as consideration and incorporation of any low impact development benefits available within the stream corridor. IT is understood that USACE's design consultant (Tetra Tech) will provide the design and plans for the channel overflow structures into the box culvert with NCD coordination.

NCD will prepare a limited hydrologic analysis for multiple intercept points along the channel route to assist in modeling the hydraulic performance for each reach and to determine the size requirements for outlets to the underground channel. Close coordination between NCD and SWI in this design element will be needed to ensure excess street runoff from the adjacent residential areas (above that which can be carried by the open channel) is captured into SWI's plans for storm drains and catch basins which diverts that flow into the USACE box culvert rather than the channel.

Within the deliverables for this task will be a design for the capture of a portion of the seasonal snowmelt flows arriving at Frances Short Pond and piping those to the headworks of the open channel at Bonito Street. NCD will include within the PS&E deliverables, a plan for the inlet at the pond and plan/profile for the pipeline to the open channel headworks at Bonito Street.

It is expected that NCD's plans and specifications will be sealed by NCD and then incorporated into SWI deliverables to the City of Flagstaff.

Task 3: Design Coordination of Stream Crossings

NCD will develop conveyance pipe size and configuration for road/stream crossings that are most compatible with the design stream function and incorporate those parameters in the open channel plans up to the new backs of sidewalks at the four road/stream crossings. SWI will incorporate the required pipe size into their plans for each of the road crossings from back of sidewalk and back of sidewalk.

SWI will also utilize this information to form the basis of final designs for road and utility crossings. It is anticipated that four road crossings and potentially two trail crossings will be needed for the reach.

Task 4: FUTS Trail and Planting Design Coordination

The design of the open channel corridor is understood to include a leg of the Flagstaff Urban Trail System (FUTS) and be inclusive of landscape architecture to provide for a linear park effect for the length of the project.

NCD will provide a final design for the FUTS trail and crossings. This design will work in concert with the channel alignment to utilize the space within the project corridor and provide a non-motorized travel corridor compatible with the FUTS system.

- 6. **Sanitary Sewer Siphon:** \$50,100
Items below are tasks that will be completed by Water Works Engineering.

Task 1: Design

Water Works will provide detailed design and permitting for a 0.1 MGD sanitary sewer siphon following common industry standards/scope as detailed below:

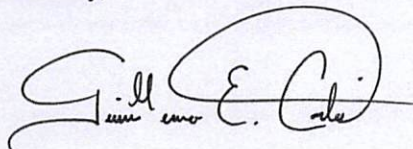
- Dual 8-inch barrels
- Manual isolation gates
- Air jumper
- Odor control to be determined
- Permitting fees to be paid by Owner
- Geotechnical report for soil conditions via Owner
- Project sewer demands provided by Owner
- Excludes:
 - Construction phase services other than responding to RFIs
 - Sewer system modeling

- 7. **Final Points Signal Modification:** \$18,700
This item will be completed by Lee Engineering.

ASWO#1 DESIGN TOTAL: \$465,000.00
ASWO#1 DESIGN TOTAL WITH OPTIONAL SERVICES: \$483,100.00

Your signature below will serve as your acceptance of this Work Order, pursuant to the terms and conditions of the original contract. Feel free to call if you have any questions or concerns.

Sincerely,



Guillermo E. Cortes, P.E.
Vice President

Accepted: _____ Date: February 12, 2020

SCHEDULE OF MANPOWER REQUIREMENTS AND FEES

SHEPARD-WESNITZER, INC.
 Consulting Engineers
 Sedona, Flagstaff, Prescott, Cottonwood

CITY OF FLAGSTAFF
 ASWO #1 - TOPO SURVEY, SIDE DRAIN ANALYSIS,
 BEAL BRIDGE DESIGN, 100% LANDSCAPE PLANS,
 100% COMPOSITE CHANNEL, SEWER SIPHON,

PHASE	TASK ID	TASK DESCRIPTION	Principal in Charge	E-3	E-2	Project Surveyor	Surveyor	Subcontract Fee	Task Fee
IX	1	SURVEY	\$185	\$150	\$135	\$145	\$105	1	

A		Supplemental Topographic Survey				44	96		\$16,500.00
2		SIDE DRAIN ANALYSIS							\$8,900.00
A		Navajo Drive	6	16	40				\$8,900.00
B		North Lake							\$9,600.00
B		North Lake	18	76	258				\$49,600.00
C		Santa Fe Avenue	18	84	296				\$55,900.00
D		Dairy Queen	18	76	216				\$43,900.00
3		BEAL BRIDGE DESIGN							\$4,000.00
A		Hydraulic Analysis	4		24				\$4,000.00
B		Construction Plans	8	40	160				\$29,100.00
C		Drainage Report	8		24				\$4,700.00
D		Meetings & Coordination	8	16	16				\$6,000.00
4		100% LANDSCAPE PLANS - NORRIS							\$47,200.00
A		100% Landscape Plans							\$47,200.00
B		Optional Task 3: Landscape Restoration Plans							\$7,700.00
C		Optional Task 4: Construction Administration							\$10,500.00
5		100% COMPOSITE CHANNEL PLANS - NCD							\$130,300.00
A		100% Composite Channel Plans							\$130,300.00
6		SANITARY SEWER SIPHON - WATER WORKS							\$50,100.00
A		100% Sanitary Sewer Siphon Plans							\$50,100.00
7		FIVE POINTS TRAFFIC SIGNAL MODIFICATION							\$18,700.00
A		100% Traffic Signal Plans							\$18,700.00
		Total Time and Material Fees for A-L Engineering Services, Not To Exceed							\$483,100.00