Ames Construction
City of Flagstaff
Lone Tree Overpass Design-Build
Design Services - Amendment #2 R2

2/10/2022

Task #	Description	Cost
1	Design Management & Construction Review	$737,382.69
2	Cost Models, GMP Development & Schedules	$187,200.00
	Total Direct Cost Ames	$924,582.69
	Overhead @ 6%	$55,474.96
	Subtotal	$980,057.65
	Profit @ 8%	$78,404.61
	Subtotal Ames	*$1,058,462.27*
3	Subs: Geotech (BNSF), ROW Legals & Exhibits Survey & Temp Shoring Design.	$152,678.00
4	Subs: Additional ROW Title, Relocation & Exhibits/Legals	$49,500.00
Design	WSP Scope & Fee for Design Services Amendment #2 (w/ $300k Contin.)	$4,105,074.90
	Subtotal	$4,307,252.90
	Overhead @ 6%	$258,435.17
	Subtotal Design, ROW, Subcontracted Work	*$4,565,688.07*
	Design Services Amendment #2	**$5,624,150.34**
	Owner Contingency @ 5%	$281,207.52
	TOTAL DESIGN SERVICES AMENDMENT #1	***$5,905,357.86***

Assumptions:
1) WSP's (and sub consultant's) scopes of work is attached as a separate document.
2) Scope of work based upon current, 15% design plans/concepts.
3) Scope assumes BNSF acceptance of current track phasing.
4) Scope of work based upon current Rio De Flag concepts/phasing that have not yet been fully developed.

Ames Scope of Work
Design Services Amendment #2
9/27/2021

Task No	Task Description	Item Description	Unit	Qty	Unit Cost	Task Manhours Weeks	Hrs/Wk	MH	MH Rate	Total
1	Design Management & Construction Review Ames' Design Management: constructability reviews, TWG meetings, stakeholder coordination, utility coordination, construction work plan development, safety/environmental/quality plans development. Earthwork Supt - To manage BNSF Geotech Effort (see Task 3)	**Labor**								
		Project Manager				70	30	2100	$137.74	$289,254.81
		DB Coordinator				70	10	700	$127.79	$89,451.92
		Project Engineer				70	20	1400	$74.71	$104,596.15
		Construction Manager				60	20	1200	$114.52	$137,423.08
		Railway Superintendent				40	10	400	$94.62	$37,846.15
		Administrative Assistant				70	10	700	$43.13	$30,187.50
		Earthwork Superintendent				4	40	160	$114.52	$18,323.08
		Safety Manager				2	40	80	$101.25	$8,100.00
									Subtotal Labor	$715,182.69
		Non Labor								
		Per Diem (Non-supervisor)	Day	0	$90.00					$0.00
		Per Diem (Supervisor)	Mo	12	$1,850.00					$22,200.00
									Subtotal Non Labor	$22,200.00
									Task Total	$737,382.69

Task No	Task Description	Item Description	Unit	Qty	Unit Cost	Task Manhours Weeks	Hrs/Wk	MH	MH Rate	Total
2	Cost Models, GMP Development & Schedules Ames' budget development, 30%/60%/90% cost models, GMP development, design schedule management, creation of construction schedule.	**Labor**								
		Chief Estimator				12	40	480	$127.79	$61,338.46
		Estimator				12	40	480	$104.57	$50,192.31
		Jr. Estimator				12	40	480	$74.71	$35,861.54
		Scheduler				10	40	400	$99.52	$39,807.69
									Subtotal Labor	$187,200.00
		Non Labor								
		Per Diem (Non-supervisor)	Day		$90.00					$0.00
		Per Diem (Supervisor)	Mo		$1,850.00					$0.00
									Subtotal Non Labor	$0.00
									Task Total	$187,200.00

Task No	Task Description	Item Description	Unit	Qty	Unit Cost	Task Manhours Weeks	Task Manhours Hrs/Wk	Task Manhours MH	MH Rate	Total
3	Subs: Geotech (BNSF), ROW Legals & Exhibits Survey & Temp Shoring Design. Geotechnical Investigation for BNSF Railway Lowering. Geotechnical Investigation for the BNSF Lowering will be completed in the spring after the final alignment is agreed to by BNSF.	**Labor**								
									Subtotal Labor	$0.00
		Non Labor								
	Additional survey for ROW Legals & Exhibits (Northern Exploration).	Miscellaneous Pothole (SSC)	Day	10	$3,152.00					$31,520.00
		Western Tech - BTEX	LS	1	$10,380.00					$10,380.00
		Geotech Support Contin.	LS	1	$20,000.00					$20,000.00
	TranSystems - Temporary Shoring Design	Northern Exploration (survey)	LS	1	$20,000.00					$20,000.00
		ROW Survey Contingency	LS	1	$30,000.00					$30,000.00
		TranSystems (temp shoring)	LS	1	$40,778.00					$40,778.00
									Subtotal Non Labor	$152,678.00
									Task Total	$152,678.00

Task No	Task Description	Item Description	Unit	Qty	Unit Cost	Task Manhours Weeks	Task Manhours Hrs/Wk	Task Manhours MH	MH Rate	Total
4	Subs: Additional ROW Title, Relocation & Exhibits/Legals	**Labor**								
									Subtotal Labor	$0.00
		Non Labor								
		Title Reports	LS	1	$6,000.00					$6,000.00
		Relocation Agent	LS	1	$18,000.00					$18,000.00
		Exhibits & Legals	LS	1	$25,500.00					$25,500.00
									Subtotal Non Labor	$49,500.00
									Task Total	$49,500.00

WSP USA
Contract No. 2021-23
LONE TREE OVERPASS

Project No. 03-19004

Scope of Work
For
Amendment 2 Design Services
Design through Release for Construction

February 2022

Scope of Services

GENERAL DESCRIPTION OF WORK:

WSP USA (WSP) will provide Design Services for the Lone Tree Overpass project for Ames Construction (Ames). The project involves the construction of a new connection between Lone Tree Avenue and Butler Avenue to the south and a new connection at US 66 to the north. The project also includes improvements along Lone Tree Avenue from Sawmill Road to the south to Butler Avenue to the north and along Butler Avenue from Elden Street to the west to Gabel Street to the east. The new roadway will provide an elevated grade separation of the new United States Army Corps of Engineers (USACE) Rio de Flag channel and the Burlington Northern-Santa Fe (BNSF) Railroad. The project area will extend to the drainage area for the project, which includes the Southside neighborhood to the west Cherry Hill to the north, the petroleum facility to the east, and Sawmill Road to the south. Project limits will also extend east and west within the BNSF right-of-way to the extent required to complete the realignment of the railroad and associated work.

The project will be developed in a multi-phase program with scope specific to each phase of design. This Scope of Work covers the development of construction plans, limited to the specific tasks outlined below, through Release for Construction (RFC). Work performed by subconsultants is outlined in attachments at the end of this Scope of Work. Survey, Utility SUE, Right-of-Entry with BNSF, including BNSF specific insurance requirements, field monitoring, and material disposal will be performed outside of this contract by Ames and others. It is anticipated that the duration for this phase will be approximately 16 months.

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For this phase of the project, a total of three submittals are assumed and are outlined as follows:

1. Preliminary Design Submittal (60%): Design plans and special provisions will be developed to an approximate 60% level design for all disciplines and submitted to the City for review. This level of design will include all major features but not have complete details included with submission. Intent of this submittal is to provide enough information to the City and Stakeholders to perform a 60% level review of concepts and provide comments to the Design Team.
2. Final Design Submittal (95%): Design plans and special provisions will be developed to an approximate 95% level design of all disciplines and submitted to the City for review. This level of design is considered substantially complete and will include all major features and supporting details. This submittal is intended to allow the City and Stakeholders a final review of the project for comments prior to Release for Construction.
3. Release for Construction (Sealed Plans): Sealed plans and special provisions will be submitted to the City for acceptance. These plans and special provisions will serve as the basis for the construction documents to be used by Ames Construction for construction of the project.

TASK 1.0 - PROJECT MANAGEMENT AND COORDINATION

The work under this task will provide general project management and coordination activities during this phase of the project. This task includes meetings, project documentation, coordination with subconsultants, and development of meeting agendas, minutes, and action item logs.

SUBTASKS:

TASK 1.1 PROJECT MANAGEMENT: Project management work will include coordination with Ames Construction, onboarding, and coordination with subconsultants, monthly invoicing, financial management, schedule management, and project tracking.

TASK 1.2 PROJECT COORDINATION: Project coordination will be required between WSP Staff, Ames Construction, subconsultants, City of Flagstaff, ADOT, USACE, and BNSF. Project coordination will include the following subtasks:

Task 1.2A Project Coordination: This work includes general project coordination for the Design Manager and designated staff to coordinate work between disciplines, subconsultants, Ames, the City, and Stakeholders. Coordination activities include activity meetings, technical discussions, project coordination, management of document control, and other coordination activities.

Task 1.2C Technical Working Group Meetings (TWG): These meetings will be used to discuss key project features, make design decisions for the project, and allow for City input during the development of the project design. Decisions that impact the project will be tracked on a decision tracking log with open decisions to be closed once direction is determined. It is anticipated that TWG meetings will be held every other week during the first 6 months and then monthly until completion for a total of up to 22 TWG meetings. It is assumed that all design key task leads will participate in all of these meetings (WSP Personnel - Design Manager/Structures, Roadway, Drainage; Non-WSP – Rail,

Utilities, Landscaping) and that other disciplines will attend as needed for specific action items and discussions (WSP Personnel Geotechnical (12), Public Involvement (10), Environmental (12), Traffic (12), Economist (4)).

Task 1.2C Stakeholder Coordination Meetings: Also included in this task is coordination with Project Stakeholders such as ADOT, USACE, and BNSF. Up to 30 additional meetings are anticipated for this coordination each assumed at two-hour duration plus time for preparation and tracking. This assumes up to 6 for each of USACE, ADOT, and BNSF, as well as additional meetings with utilities, the City, and other unidentified stakeholders. These stakeholder meetings are assumed in addition to the TWG meetings and will be attended by the appropriate Task Lead and discipline staff, the Design Manager, and one junior staff. The Task Lead and discipline staff is accounted for in their respective task scope; this only covers time for the Design Manager and one designated support staff.

A meeting agenda, meeting minutes, action item list, and decision tracking log will be developed for each meeting to document progress and submitted to participants for review and comment.

TASK 1.3 QUALITY PROGRAM: This task will provide the Project Quality Assurance for this Phase. The Quality Assurance Manager will manage the Quality Control program and will review all deliverables developed during this phase for adherence to the PQMP prior to every deliverable.

ASSUMPTIONS: It is assumed that most of the meetings will be virtual and do not require travel. The exception is that it is assumed that 12 of the TWG meetings will be in person, assumed to be one per month, attended by up to 5 key task leads (WSP Personnel - Design Manager/Structures, Roadway, Drainage, Utility, and one other lead as needed).

DELIVERABLES: Meeting Agenda (Electronic PDF), Meeting Minutes (Electronic PDF), Decision Tracking Log (Provided with Meeting Minutes), Action Items Log (Provided with Meeting Minutes)

TASK 2.0 – ROADWAY DESIGN

The work under this task includes the final roadway design for Lone Tree Road between Butler Avenue and US-66, improvements along US-66 to incorporate impacts for the new intersection, improvements along Butler Avenue to incorporate impacts for the new intersection, design of the Elden Corridor, reconfiguration of driveways impacted by the project, and design of the realignment of the Flagstaff Urban Trail System (FUTS) along US-66. Limits include the intersections of Lone Tree Road with Butler Avenue and US-66. Tasks include final road layout, horizontal and vertical geometry and driveway profiles, roadway modeling, typical sections, and cross sections. Curb returns, staking plans, intersection details, and roadway details are included in this task.

SUBTASKS:

TASK 2.1 INTERNAL AND STAKEHOLDER COORDINATION: This task involves internal project coordination and stakeholder meetings, project documentation, and development of meeting agendas, minutes, and action item logs for stakeholder meetings. Coordination is needed with major stakeholders, including ADOT, the City, and potentially City Commissions. We anticipate that all meetings with stakeholders will be virtual. Each meeting is assumed at two-hour duration plus time for preparation and tracking. Meeting agendas and minutes will be prepared and distributed for each meeting unless otherwise noted.

Interagency Coordination: Based on our experience with these stakeholders, we anticipate the following meetings (8 total):

- Quarterly meetings with ADOT to establish intersection and roadway concepts. Anticipate 4 Virtual meetings each stakeholder.
- 4 breakout virtual meetings with City of Flagstaff and/or City Commissions

It is assumed that all key Roadway task leads will participate in all these meetings (WSP Personnel - Roadway Manager & Roadway Engineer).

Internal Coordination: Biweekly or monthly internal and coordination meetings are anticipated between the project manager and the design team (22 total assumed, 1-hour duration).

ASSUMPTIONS: It is assumed that meetings will be virtual and do not require travel.

DELIVERABLES: Meeting Agenda (Electronic PDF), Meeting Minutes (Electronic PDF)

TASK 2.2 PRELIMINARY ROADWAY PLAN SUBMITTAL: This task includes development of the Preliminary Roadway Plan Submittal. Roadway plan sheets are estimated at 40 scale except for sheets where a different scale is determined to be more appropriate. For this work, it is anticipated that a total of 60 plan and detail sheets will be required. A draft Sheet list has been prepared as follows:

- Cover, General Notes, Index (3 Sheets)
- Typical Sections (6 Sheets)
    - Includes sections for Lone Tree North, Elden Corridor, Butler Avenue, and US-66
- Roadway Detail Sheets (10 Sheets)
    - Includes Barrier Summary, Roadway Details, Curb Access Ramps, and Driveway Layouts
- Roadway Geometry Sheets (10 sheets)
    - Includes Lone Tree North, Elden Corridor, Butler Avenue, and US-66
- Demolition Plans (8 Sheets)
- Roadway Plan and Profile Sheets (20 Sheets)
    - Includes Lone Tree North, Elden Corridor, Butler Avenue, US-66, Side Roads, and Driveways
- Intersection Staking Plans (3 Sheets)
- Cross Sections (31 Sheets) – Sheets will be produced using InRoads and will be reviewed for general acceptance. They will not be revised, updated, or annotated to a bid quality set.

DELIVERABLES: Preliminary Design Submittal (Electronic PDF and associated files)

TASK 2.3 FINAL ROADWAY PLAN SUBMITTAL: This task involves further refinement of the Preliminary Design Submittal to develop the Final Design Submittal. Concepts and details will be further refined, and comments received from the Preliminary Design Submittal will be evaluated and incorporated as necessary into the design. Final design plans will identify traffic infrastructure and include necessary details to complete the work.

DELIVERABLES: Final Design Submittal (Electronic PDF and associated files)

TASK 2.4 RFC ROADWAY PLAN SUBMITTAL: This task involves further refinement of the Final Design Submittal to develop the RFC Design Submittal. Concepts and details will be finalized, and comments received from the Final Design Submittal will be evaluated and incorporated as necessary into the design.

DELIVERABLES: RFC Design Submittal (Electronic PDF and associated files)

TASK 2.5: Final quantities will be developed with the Preliminary, Final, and RFC Design Submittal for use by Ames Construction during development of their GMP for comparative purposes. Quantities developed by WSP are not intended to be used as standalone quantities for price development. WSP will not provide an Engineer's Cost Estimate as part of this work. Work under this task also includes quantity reconciliation between Ames Construction and the design team.

DELIVERABLES: Quantities available upon request for comparative purposes.

LIMITATIONS: Upon Ames' request, the design Earthwork Model will be provided to subgrade limits. The use of the design Earthwork Model for construction should be limited to rough grading only and is not intended to be used for fine grading at intersections, warped areas, or transition areas. A more refined Earthwork Model may be provided under a separate amendment as agreed to by all parties. Information shown on the construction plans shall be considered precedent when there is a discrepancy between this model and the construction documents.

TASK 3.0 – TRAFFIC DESIGN

The Work under this task includes the evaluation of additional alternative intersection concepts for the Lone Tree / Butler Road intersection, revisions to the Traffic Impact Analysis to capture these additional alternatives, and final design of signing, pavement marking, traffic signal, roadway lighting, and roadway lighting modification plans for US Route 66, Lone Tree Road, Butler Avenue, and the FUTS trail and pathways. As part of this task, we anticipate that we will require re-evaluation and updates to the regional travel demand model, and that we will provide exhibit development for the additional intersection concepts and attendance at preparation meetings and one Flagstaff Mayor and Council meeting, and the submittal of a new Traffic Report to the City and ADOT. In addition, a concept for the construction sequencing and maintenance and protection of traffic plans will be included. The intersections of Lone Tree Road / Franklin Road and Lone Tree Road / Sawmill Road will have a traffic signal warrant evaluation completed. It is anticipated that the Lone Tree Road / Sawmill Road will meet traffic signal warrants and that final design for a traffic signal at this intersection will be required.

The following roadways and intersections are included under the scope of this task:

- Four additional intersection concepts for the Lone Tree Road / Butler Avenue intersection
- US Route 66 – Signing, Pavement Marking (existing roadway lighting on north side remains)
- Lone Tree Road (US Route 66 to Butler Avenue) – Signing Pavement Marking, Roadway Lighting
- Butler Avenue (Elden Street to Lumber Street) – Signing, Pavement Marking, Road Lighting Modifications
- US Route 66 / Lone Tree Road – Intersection – Signal/Signing/Striping/Lighting
- Lone Tree Road / Butler Avenue – Intersection – Signal/Signing/Striping/Lighting
- Lone Tree Road / Franklin Road – Intersection – Warrant Study
- Lone Tree Rd / Sawmill Rd – Intersection – Warrant Study, Signal/Signing/Striping/Lighting

SUBTASKS:

TASK 3.1 INTERNAL AND STAKEHOLDER COORDINATION: This task involves internal project coordination and stakeholder meetings, project documentation, and development of meeting agendas, minutes, and action item logs for stakeholder meetings. Coordination is needed with major stakeholders, including ADOT, the City, and potentially City Commissions. We anticipate that all meetings with stakeholders will be virtual. Each meeting is assumed at two-hour duration plus time for preparation and tracking. Meeting agendas and minutes will be prepared and distributed for each meeting unless otherwise noted.

Interagency Coordination: Based on our experience with these stakeholders, we anticipate the following meetings (8 total):

- Quarterly meetings with ADOT to establish intersection and roadway concepts. Anticipate 4 Virtual meetings each stakeholder.
- 2 breakout virtual meetings with the City of Flagstaff to review materials for a Mayor and Council meeting
- Attendance at a Mayor and Council meeting, including a powerpoint presentation. It is assumed that the presentations will be limited to the four intersections requested and a discussion of the EIS.
- 4 breakout virtual meetings with City of Flagstaff and/or City Commissions

It is assumed that all key Traffic task leads will participate in all these meetings (WSP Personnel - Traffic Manager & Sr Traffic Engineer).

Internal Coordination: Biweekly or monthly internal and coordination meetings are anticipated between the project manager and the design team (22 total assumed, 1-hour duration).

It is assumed that only the Traffic task lead will participate in all these meetings (WSP Personnel - Traffic Lead).

ASSUMPTIONS: It is assumed that meetings will be virtual and do not require travel.

DELIVERABLES: Presentation to Mayor and Council. Meeting Agenda (Electronic PDF), Meeting Minutes (Electronic PDF)

TASK 3.2 REGIONAL TRAVEL DEMAND MODEL VERIFICATION: This task includes a review of the regional travel demand model assumptions relative to Lone Tree lane configuration (roadway) and intersection coding relative to the LTO/Butler intersection and the Sawmill development. Revisions to the model will be conducted to determine any potential reouting of traffic under the capacity constraints of the current alternatives. MetroPlan will be consulted during this process. If significant changes in daily volumes result from the regional model changes, new peak hour traffic volumes will be developed.

DELIVERABLES: Revised traffic volumes to be incoroporated into TIA and EIS as required. No formal deliverable.

TASK 3.3 PRELIMINARY INTERSECTION EVALUATION: This task includes refinement of Option 5 presented to Flagstaff Mayor and Council on January 25th, 2022. Three additional options will be developed, 2, 3 and 4. Option 5 will become Option 1. Along with these exhibits, bicycle routes through these options will be evaluated for Options 1-4. Level of Service (LOS) results will be developed and/or refined for all four options. Further review of State of the Art intersection safety features will be conducted with findings evaluated for inclusion with the additional intersection concepts. PowerPoint slides of Options 1-4 will be developed

DELIVERABLES: Information will be used to support presentation to Mayor and Council and development of TIA. No formal deliverable.

TASK 3.4 REVISED IMPACT ANALYSIS: This task includes the development of a new Traffic Impact Analysis for submittal to the City and ADOT. The new report will replace the previously submitted Traffic Impact Analysis and will address the comments received by ADOT and the changes in direction by the City. Due to the changes in intersection layouts made through the various Mayor and Council meetings, the new report will focus only on the preferred alternative and not include evaluations of the various iterations.

DELIVERABLES: A new standalone Traffic Report.

TASK 3.5 TRAFFIC PLANS: This task includes development of Traffic design plans (Preliminary, Final, and RFC). Design plans will identify traffic infrastructure and include necessary details to complete the work. Additional tasks are included for roadway lighting analysis to confirm light pole spacing on the new Lone Tree Road roadway, voltage drop calculations for new lighting system, and a traffic signal warrant analysis at Lone Tree Road / Sawmill Road. Traffic control plans will include maintaining access through the project for pedestrians and bicyclists. In addition, traffic control at the Lone Tree / Butler Road intersection will be maintained with a temporary traffic signal, as needed. Traffic plan sheets are estimated at 40 scale and will match roadway plan set scale. For this work, it is anticipated that a total of 78 plan and detail sheets will be required. A draft Sheet list has been prepared as follows:

- Signing Plans (16 Sheets)
    - General Notes, Sign Summary Sheets, Signing Plans, Sign Format Sheets
- Pavement Marking Plans (8 Sheets)
    - General Notes/Legend/Quantity Table, Pavement Marking Plans

- Roadway Lighting Plans – Lone Tree Road (7 Sheets)
    - General Notes/Legend, Details, Electric Summary Sheet, Pole Schedule, Roadway Lighting Plans
- Roadway Lighting Modification Plans – US 66 and Butler Ave. (4 sheets)
- Traffic Signal Plans (12 Sheets, US Route 66 / Lone Tree Road, Lone Tree Road / Butler Avenue, Lone Tree Road / Sawmill Road)
    - General Notes, Legend, Plans, Phasing Diagram/Cabinet Schedule, Pole Schedule, Conductor Schedule
- Construction Sequencing Plans - (9 Sheets)
- Traffic Control Plans (22 Sheets)
    - General Notes, Summary Tables, Plans

Task 3.5A Preliminary Traffic Plan Submittal: This task includes development of the Preliminary Plan Submittal. This level of design will include all major features but not have complete details included with submission. Included with this task is a Preliminary Traffic Plan Update that will include an update to the preliminary signal and pavement marking design at the Lone Tree Road / Butler Avenue and the Route 66 / Lone Tree Road intersections based on input from the City of Flagstaff regarding pedestrian and bicycle facilities after a Draft Preliminary Traffic Plan is submitted for review and comment.

Task 3.5B Final Traffic Plan Submittal: This task involves further refinement of the Preliminary Design Submittal to develop the Final Design Submittal. Concepts and details will be further refined, and comments received from the Preliminary Design Submittal will be evaluated and incorporated as necessary into the design. Final design plans will identify traffic infrastructure and include necessary details to complete the work.

Task 3.5C RFC Traffic Plan Submittal: This task involves further refinement of the Final Design Submittal to develop the RFC Design Submittal. Concepts and details will be finalized, and comments received from the Final Design Submittal will be evaluated and incorporated as necessary into the design.

DELIVERABLES: Preliminary Design Submittal (Electronic PDF and associated files), Final Design Submittal (Electronic PDF and associated files), RFC Design Submittal (Electronic PDF and associated files)

TASK 3.6 QUANTITIES: Final quantities will be developed with the Preliminary, Final, and RFC Design Submittal for use by Ames Construction during development of their GMP for comparative purposes. Quantities developed by WSP are not intended to be used as standalone quantities for price development. WSP will not provide an Engineer's Cost Estimate as part of this work. Work under this task also includes quantity reconciliation between Ames Construction and the design team.

DELIVERABLES: Quantities available upon request for comparative purposes.

TASK 4.0 – DRAINAGE DESIGN

The Work under this task includes preparation of final drainage design construction documents. The task includes submittal of the Preliminary, Final and RFC drainage plans and specifications. The drainage design plans will include typical sections, drainage details, and channel/culvert/storm drain plan and profile sheets.

Additional tasks include analysis of the existing offsite drainage to confirm the previous analyses, an analysis of these conditions as modified by the project, and coordination with stakeholders including the USACE for connectivity to Rio de Flag and BNSF to establish proposed drainage concepts on railroad ROW. A drainage report will be completed to document the analysis performed.

SUBTASKS:

TASK 4.1 INTERNAL AND STAKEHOLDER COORDINATION: This task involves internal project coordination and stakeholder meetings, project documentation, and development of meeting agendas, minutes, and action item logs for stakeholder meetings. Coordination is needed with major stakeholders, including ADOT, USACE, and BNSF, who have facilities in the project area. We anticipate that all meetings with stakeholders will be virtual. Each meeting is assumed at two-hour duration plus time for preparation and tracking. Meeting agendas and minutes will be prepared and distributed for each meeting unless otherwise noted.

Interagency Coordination: Based on our experience with these stakeholders, we anticipate the following meetings (10 total):

- Quarterly meetings with BNSF and USACE to establish drainage concepts and to perform analysis acceptable by the stakeholders. Anticipate 4 Virtual meetings each stakeholder.
- 2 breakout virtual meetings with City of Flagstaff Stormwater Department

It is assumed that key drainage task leads will participate in all these meetings (WSP Personnel - Drainage Task Lead & Drainage Engineer).

Internal Coordination: Biweekly or monthly internal and coordination meetings are anticipated between the project manager and the design team (22 total assumed, 1-hour duration). Two breakout meetings for SWPPP related coordination with subconsultant performing SWPPP task is anticipated (2 assumed, 2-hour duration).

It is assumed that key drainage task leads will participate in all these meetings (WSP Personnel - Drainage Task Lead & Drainage Engineer).

ASSUMPTIONS: It is assumed that meetings will be virtual and do not require travel.

DELIVERABLES: Meeting Agenda (Electronic PDF), Meeting Minutes (Electronic PDF)

TASK 4.2 DRAINAGE ANALYSIS: This task includes final drainage design as part of the construction document plan preparation. WSP will finalize the hydrologic analyses and design of facilities identified in previous phases of this project. Design efforts will include sizing of Storm Drains, Culverts, Detention Basins, and Ditches & Minor Channels. Existing and proposed pavement drainage hydrology will be analyzed. Coordination with BNSF track profiles and track design will continue from previous phases to determine the best approach for drainage and alignment within BNSF ROW using BNSF design codes and standards as the basis of design and evaluation. A Final Drainage Report will be submitted as documentation for all analysis completed.

Final Survey/Topographic Data Assessment: Final survey and topographic data will be assessed to confirm drainage analysis performed in previous phases. Existing manholes will be reviewed and assessed to determine construction status (reconstruct versus adjust) for the proposed design. WSP will conduct one field visit to visually identify existing drainage inventory and conditions. It is assumed that this field visit will be performed by two drainage engineers.

Hydrology: This task will finalize the existing hydrologic analysis of the project area based on final survey, topographic data and record drawings. WSP will use the prior work completed and progress the analysis to a final design level that requires densification of drainage area detail. Calculations will be based on updated data and changes to the schematic design. The final runoff discharges calculated will be used in sizing of storm drains and routing of detention basins to meet pre-project vs. post-project conditions.

Hydraulics| Storm Drain Modeling and Culvert Analysis: This task will establish the existing condition to set design parameters for proposed condition. The record drawings and other collected data will be used to perform the existing condition hydraulic analysis. Existing and proposed Condition Hydraulics will be modeled for both BNSF Culverts and On-Site storm drain systems. Proposed results will be compared against existing results to verify pre vs post criterion are met and no adverse impacts to surrounding properties result. The flow rates from the existing and proposed hydrologic analyses will be used to establish starting conditions. Pipe material type selection will be performed based on the storm drain layout to meet requirements for each jurisdiction within the project limits.

Low Impact Development (LID) Requirements: This task will include final design of retention/detention basins, bioswales, bleeder pipes or other facilities required to satisfy the City of Flagstaff LID requirements. Conceptual designs from previous phases will be incorporated with the final design. The single basin on the northwest side of Lone Tree Road is a combination basin that handles both retention and detention. To accommodate the LID requirement of Lone Tree Road, the retention runoff volume will be retained at the bottom of the basin whereas the remaining volume of the basin will be used as detention to attenuate flows breaching the RDF. Basins are required to meet drain time requirements and analysis is required to perform the double ring infiltration tests per the Geotechnical requirements. It is to be determined whether natural percolation or an underdrain system will be used to drain the basin. HECHMS/PondPack will be used to route the flows to the detention basin and compute the peak outflow for pre vs post project conditions.

Drainage Grading Design and Scour Mitigation: This task includes design efforts required to complete final design level grading including drainage swales, basins, culvert inlets/outlets and scour mitigation. 3D DTM models will be created using INROADS for the proposed design and will be used in earthwork calculations and 3D base file creation.

Drainage Report Preparation: WSP will prepare a Drainage Report documenting the analysis and design of the project. The Drainage Report will be submitted for Draft review, followed by a Final submittal that will incorporate comments received during the review period. The Drainage Report will be submitted in draft form for review with the Preliminary Design Submittal package. An updated unsealed Final Drainage Report will be provided with the Final Design Submittal. Comments will be incorporated and the Final Drainage Report. The Final Drainage Report will be sealed and submitted with the final RFC submittal.

ASSUMPTIONS: It is assumed that no new offsite drainage areas that were not addressed in previous phases will be encountered.

DELIVERABLES: Draft Drainage Report (Electronic PDF), Final Sealed Drainage Report (Electronic PDF), Electronic Package containing Final Report and Back Up Design Documentation electronic versions of models (Zip File)

TASK 4.3 DRAINAGE PLANS: This task includes progression of the previous work into the project final design plans. It is anticipated that drainage design will be incorporated with the roadway final plans. Final design plans will identify drainage infrastructure and include necessary details or plan and profiles. Drainage plan sheets are estimated at 40 scale and will match roadway plan set scale. For this work, it is anticipated that a total of 35 plan and detail sheets will be required. A draft Sheet list has been prepared as follows:

- Summary Sheets (2 Sheets)
    - One summary sheet each for Storm drains and Culverts are anticipated.
- Onsite Drainage Plan (11 Sheets)
    - Two (2) sheets for Route 66
    - Two (2) sheets for Lone Tree Overpass
    - Three (3) sheets for Elden Loop
    - Two (2) sheet for Butler Ave
    - Two (2) Sheets side streets plan
- Onsite Drainage Profiles (8 Sheets)
    - Four (4) sheets for Route 66 Storm drain replacements and outlets.
    - Two (2) sheets for Lone Tree Overpass
    - Two (2) sheets for Elden Street and Butler Ave
- Offsite Drainage Culvert/Channel Plan & Profile (6 Sheets)
    - Two (2) Culvert plan and profile to replace two existing crossings under BNSF.
    - Four (2-North & 2-South) plan and profile sheets for surface drainage in the BNSF right-of-way and lateral connections to new culverts outletting to RDF.
- Drainage Special Details (8 Sheets)
    - Estimate two (2) sheets for LID facilities and detail for detention basin.

- Estimate two (2) sheets for BNSF and RDF detail improvements.
- Estimate four (4) sheets of Miscellaneous Drainage Details.

Task 4.3A Preliminary Drainage Plan Submittal: This task includes development of the Preliminary Plan Submittal. This level of design will include all major features but not have complete details included with submission.

Task 4.3B Drainage Roadway Plan Submittal: This task involves further refinement of the Preliminary Design Submittal to develop the Final Design Submittal. Concepts and details will be further refined, and comments received from the Preliminary Design Submittal will be evaluated and incorporated as necessary into the design. Final design plans will identify traffic infrastructure and include necessary details to complete the work.

Task 4.3C RFC Drainage Plan Submittal: This task involves further refinement of the Final Design Submittal to develop the RFC Design Submittal. Concepts and details will be finalized, and comments received from the Final Design Submittal will be evaluated and incorporated as necessary into the design.

Drainage Package Preparation: In addition to the Plan Sheet and Special Provision Submittals, ILandXML and 3D base files will be created and included with every submittal.

ASSUMPTIONS:

1. Mapping required outside of the project topographic design level mapping will be provided by the City, County, State or USGS, whichever provides the most pertinent data.
2. It is unknown whether Rio de Flag will be constructed prior to or after this project. Therefore, all connections to the Rio de Flag channel will meet either condition. If Rio de Flag is constructed prior to this project, WSP Drainage will assist WSP Environmental in coordinating directly with USACE to obtain any approvals and/or permits (up to 18 months for 401/408). WSP assumes that if the Rio de Flag is not constructed, the existing watercourse permits will be obtained prior to construction.
3. The plans will be prepared utilizing the current City of Flagstaff Standards as of the Notice to Proceed date for this work assignment. Drainage facilities located on Route 66 shall be designed using ADOT Standards. Drainage facilities located within BNSF right-of-way will be designed using BNSF Standards, but plans will be prepared following project criteria. BNSF CADD standards will not be used for this section of the drainage design.
4. Design will utilize topographic survey provided by AMES in June 2021. Any supplemental topographic survey required in final design will be performed by AMES.
5. Existing drainage patterns will be maintained.
6. Design Exceptions and/or Variances are not included in this scope of work. If required, they will be executed by contract modification.
7. All record drawings shall be provided by the City of Flagstaff

DELIVERABLES: Preliminary Design Submittal (Electronic PDF and associated files), Final Design Submittal (Electronic PDF and associated files), RFC Design Submittal (Electronic PDF and associated files)

TASK 4.4 QUANTITIES: Final quantities will be developed with the Preliminary, Final, and RFC Design Submittal for use by Ames Construction during development of their GMP for comparative purposes. Quantities developed by WSP are not intended to be used as standalone quantities for price development. WSP will not provide an Engineer's Cost Estimate as part of this work. Work under this task also includes quantity reconciliation between Ames Construction and the design team.

DELIVERABLES: Quantities available upon request for comparative purposes.

TASK 5.0 – STRUCTURAL DESIGN

The Work under this task includes development of final design plans, special provisions, and structural calculations for the Lone Tree Overpass bridge, associated retaining walls, and specially designed details required for the project. This task also includes coordination with BNSF and USACE to coordinate geometry and permits due to substructure elements located within or near their respective right-of-way. Task will also develop a structural phasing concept for construction of the bridge to coordinate phasing required for realignment of the BNSF railroad tracks as part of this project.

SUBTASKS:

TASK 5.1 INTERNAL AND STAKEHOLDER COORDINATION: This task involves internal project coordination and stakeholder meetings, project documentation, and development of meeting agendas, minutes, and action item logs for stakeholder meetings. Coordination is needed with major stakeholders, including ADOT, USACE, and BNSF, due to impacts the bridge structure has on their facilities. We anticipate that all meetings with stakeholders will be virtual. Each meeting is assumed at two-hour duration plus time for preparation and tracking. Meeting agendas and minutes will be prepared and distributed for each meeting unless otherwise noted.

Interagency Coordination: Based on our experience with these stakeholders, we anticipate the following meetings (8 total):

- Quarterly meetings with BNSF and USACE to establish drainage concepts and to perform analysis acceptable by the stakeholders. Anticipate 4 Virtual meetings each stakeholder.

It is assumed that key structure task leads will participate in all these meetings (WSP Personnel - Structures Task Lead & Structural Engineer).

Internal Coordination: Biweekly or monthly internal and coordination meetings are anticipated between the project manager and the design team (22 total assumed, 1-hour duration).

It is assumed that key structure task leads will participate in all these meetings (WSP Personnel - Structures Task Lead & Structural Engineer).

ASSUMPTIONS: It is assumed that meetings will be virtual and do not require travel.

DELIVERABLES: Meeting Agenda (Electronic PDF), Meeting Minutes (Electronic PDF)

TASK 5.2: The bridge structure will cross the proposed USACE Rio de Flag canal, the BNSF railroad ROW, and the Flagstaff Urban Trail System (FUTS) south of Route 66. The selected bridge span arrangement is a four-span arrangement as shown in the previous phase. The superstructure type is anticipated to consist of a mix of precast, prestressed AASHTO box beams across the FUTS trail, Bulb T-Girders across BNSF right-of-way, and either Bulb T-Girders or a cast-in-place post tensioned box across USACE and Elden Corridor. The structure type for the southern two spans has not yet been selected. A preferred superstructure type will need to be selected prior to advancement of structural design of these spans. The substructure is anticipated to be a system of piers supported on drilled shafts founded in bedrock. The bridge design will include development of final design plans, special provisions, a Load Rating Report for use by ADOT, and Structural Calculations. The design will be based on the following:

DESIGN REQUIREMENTS: AASHTO LRFD Bridge Design Specifications, 8th Edition 2017, HL-93 Design Vehicle
AASHTO Manual for Bridge Evaluation, 3rd Edition, 2018, LRFR Rating

Bridge plan sheets are estimated at 40 scale. For this work, it is anticipated that a total of 60 plan and detail sheets will be required. A draft Sheet list has been prepared as follows:

- General Plan and Elevation (2 Sheets)
- Typical Sections & Profile Grades (2 Sheets)
- General Notes & Sheet Index
- Foundation Plans (2 Sheets)
- Foundation Details (2 Sheets)
- Abutment 1 Plan & Elevation
- Abutment 2 Plan & Elevation
- Abutment Details (3 Sheets)
- Wingwall Details
- Pier 1 Plan & Elevation
- Pier 2 Plan & Elevation
- Pier 3 Plan & Elevation
- Pier Details (4 Sheets)
- Bearing Details
- Framing Plan (4 Sheets)
- Girder Details (3 Sheets)

- Box Beam Details (3 Sheets)
- CIP Box Details (4 Sheets)
- Prestressing Details
- Deck Plan (2 Sheets)
- Abutment Diaphragm Details (2 Sheets)
- Pier Diaphragm Details (2 Sheets)
- Intermediate Diaphragm Details (3 Sheets)
- Deck Section and Details (2 Sheets)
- Barrier Details
- Miscellaneous Details (3 Sheets
- Camber Details (3 Sheets)
- Screed Elevations (4 Sheets)

Task 5.2A Preliminary Bridge Plan Submittal: This task includes development of the Preliminary Plan Submittal. This level of design will include all major features but not have complete details included with submission.

Task 5.2B Drainage Bridge Plan Submittal: This task involves further refinement of the Preliminary Design Submittal to develop the Final Design Submittal. Concepts and details will be further refined, and comments received from the Preliminary Design Submittal will be evaluated and incorporated as necessary into the design. Final design plans will identify traffic infrastructure and include necessary details to complete the work.

Task 5.2C RFC Bridge Plan Submittal: This task involves further refinement of the Final Design Submittal to develop the RFC Design Submittal. Concepts and details will be finalized, and comments received from the Final Design Submittal will be evaluated and incorporated as necessary into the design.

DELIVERABLES: Preliminary Design Submittal (Electronic PDF and associated files), Final Design Submittal (Electronic PDF and associated files, includes unsealed Load Rating Report), RFC Design Submittal (Electronic PDF and associated files, includes Sealed Load Rating Report, Sealed Structural Calculations available upon request)

TASK 5.3: Walls are required to support the elevated roadway at the approaches to the bridge structure and are anticipated to be required to support the FUTS trail along the northern BNSF right-of-way line. While wall type has not been finalized, they are anticipated to be either cast-in-place cantilevered retaining walls following ADOT Standard Drawing details or MSE walls to be designed using a proprietary system with an as yet unidentified MSE Wall Designer. The wall design will include development of final design plans, special provisions, and Structural Calculations for any special details. The design will be based on the following:

DESIGN REQUIREMENTS: AASHTO LRFD Bridge Design Specifications, 8th Edition 2017, HL-93 Design Vehicle

Wall plan sheets are estimated at 40 scale. For this work, it is anticipated that a total of 11 plan and detail sheets will be required. A draft Sheet list has been prepared as follows:

- Wall Location Plan
- Wall Plan & Elevation (7 Sheets)
- Wall Typical Sections
- Miscellaneous Wall Details (2 Sheets)

Task 5.3A Preliminary Wall Plan Submittal: This task includes development of the Preliminary Plan Submittal. This level of design will include all major features but not have complete details included with submission.

Task 5.3B Drainage Wall Plan Submittal: This task involves further refinement of the Preliminary Design Submittal to develop the Final Design Submittal. Concepts and details will be further refined, and comments received from the Preliminary Design Submittal will be evaluated and incorporated as necessary into the design. Final design plans will identify traffic infrastructure and include necessary details to complete the work.

Task 5.3C RFC Wall Plan Submittal: This task involves further refinement of the Final Design Submittal to develop the RFC Design Submittal. Concepts and details will be finalized, and comments received from the Final Design Submittal will be evaluated and incorporated as necessary into the design.

DELIVERABLES: Preliminary Design Submittal (Electronic PDF and associated files), Final Design Submittal (Electronic PDF and associated files), RFC Design Submittal (Electronic PDF and associated files, Sealed Structural Calculations available upon request)

TASK 5.4: Miscellaneous details are required to support other disciplines. The full scope of these details has not yet been identified but are estimated based on similar projects with similar scope of work. This work will include development of final design plans, special provisions, and Structural Calculations for any special details when required. The design will be based on the following:

DESIGN REQUIREMENTS: AASHTO LRFD Bridge Design Specifications, 8th Edition 2017, HL-93 Design Vehicle

For this work, it is anticipated that a total of 6 detail sheets will be required. Anticipated special details may include the following:

- Custom Catch Basin Design and Details
- Non-Standard Light Pole Foundations
- Aesthetic Wall or Artwork Supports and Connections

- Project Specific Barrier Details

These details will be included with their respective disciplines that they are applicable.

DELIVERABLES: Preliminary Design Submittal (Electronic PDF and associated files), Final Design Submittal (Electronic PDF and associated files), RFC Design Submittal (Electronic PDF and associated files, Sealed Structural Calculations available upon request)

TASK 5.5 QUANTITIES: Final quantities will be developed with the Preliminary, Final, and RFC Design Submittal for use by Ames Construction during development of their GMP for comparative purposes. Quantities developed by WSP are not intended to be used as standalone quantities for price development. WSP will not provide an Engineer's Cost Estimate as part of this work. Work under this task also includes quantity reconciliation between Ames Construction and the design team.

DELIVERABLES: Quantities available upon request for comparative purposes.

TASK 6.0 – UTILITY COORDINATION

The Work under this task includes coordination with our subconsultant, Peak Engineering, for utility work required on the project. This coordination will involve coordinating utilities with the various disciplines to identify and avoid conflicts.

DELIVERABLES: None.

TASK 7.0 - ENVIRONMENTAL

TASK 7.1 USACE WUSA JD COORDINATION: The Work under this task includes coordination with the United States Army Corps of Engineers (USACE) to seek a determination for an Approved Jurisdictional Determination (AJD) for the Lone Tree Overpass Project. The AJD will be sought to facilitate construction routes across the site.

TASK 7.2 ADOT COORDINATION: Also included under this task is coordination with the Arizona Department of Transportation (ADOT) Environmental Planning, where required, to obtain clearances and Rights of Entry and permitting for the work.

TASK 7.3 ESA SITE VISITS: Additional field visits are also included to finish the Environmental Site Assessments (ESA) started in the initial phases as the right-of-way acquisitions could not completed in one phase. These ESAs will continue under the scope remaining from the previous phase. It is assumed that two additional field visits will be required to complete the ESAs started in preliminary phases. The time under this task includes travel time and time in the field required to complete the ESA.

TASK 7.4 USACE PERMIT COORDINATION: The work under this task includes coordination with the USACE to obtain permits under Section 408 for the Lone Tree Overpass project. The USACE has indicated that a 408 permit may be required as the Rio de Flag project is an established, planned project.

TASK 7.5 ENVIRONMENTAL EVALUATION MEMORANDUM: The work under this task will develop an environmental evaluation memorandum to evaluate several environmental factors as requested by the City. Factors that may be considered in this memorandum may include Equity, Safety, Historical Properties, Environmental Impacts, etc. This memorandum will be based on existing data and limited desktop research and will not reach the level of analysis typically required by a Environmental Assessment under the National Environmental Policy Act.

DELIVERABLES: Environmental Evaluation Memorandum (Electronic, Draft and Final).

TASK 8.0 – GEOTECHNICAL

The Work under this task includes performing double-ring percolation tests for the proposed retention basin for the project. In addition, a field exploration for the planned shoring wall will also be performed. These tasks are described below.

SUBTASKS:

TASK 8.1 PERCOLATION TESTS: Three percolation tests will be performed in general accordance with ASTM D3385 at an approximate depth of about 5 feet below existing site grades, which represents the approximate bottom of basin. In order to perform the tests, pits will need to be excavated to the planned depth using a rubber-tired backhoe. Upon completion of the tests, the pits will be backfilled with the excavated soils and compacted using the backhoe. The results of the percolation tests will be provided in a technical memorandum.

WSP will contract with Speedie and Associates located in Flagstaff, Arizona, to complete the double ring infiltrometer tests. The scope of work for Speedie and Associates is attached at the end of this document.

TASK 8.2 SHORING WALL EXPLORATION: This task includes a field investigation using geologic mapping, geotechnical borings, laboratory testing and seismic surveys to develop an understanding of the subsurface conditions and development of a subsurface profile for shoring wall design.

WSP will perform geologic mapping along the south edge of the railroad tracks to document the presence of exposed bedrock outcrops along the length of the proposed shoring wall. The mapping will include observation of the character of the bedrock that may impact excavation methods including fracture frequency and hardness. This information would be used along with the planned borings and seismic lines for developing an interpretation of the geologic and geotechnical profile for the shoring wall.

WSP will subcontract with Geomechanics Southwest Inc. (GSI) to complete the borings. The field exploration for the shoring wall will consist of the advancement of 10 soil borings to a depth of 30 feet, or refusal. The borings will be advanced using auger drilling techniques using a track-mounted drill rig. Standard SPT and ring samplers will be driven to collect in-situ soil samples on 5-foot or less intervals in the borings. The borings will be backfilled with cuttings upon completion. The scope of work for GSI is attached to the end of this document.

Appropriate laboratory tests will be performed to evaluate soil properties and characteristics for engineering analysis and design as required for the shoring wall. The laboratory tests are expected to include the following types of tests.

- Sieve Analysis
- Atterberg Limits
- Moisture Content
- Unit Weight
- Consolidation
- Direct Shear
- pH & Resistivity
- Chlorides & Sulfates

Laboratory testing will be completed by Speedie And Associates.

Seismic surveys will be performed under the supervision of WSP for the shoring wall to evaluate the depth to bedrock and subsurface conditions. The seismic surveys will be performed by Atlas using a combination of techniques. The scope of work for Atlas is attached to the end of this document.

The above data, interpretations and recommendations will be incorporated into our geotechnical report for the project. Recommended design parameters for design of the shoring wall, as well as recommendations for slopes and subballast, will also be incorporated into our final report.

Additional subconsultants, if needed, will be added to the project with approval of Ames and the City through contract modification.

ASSUMPTIONS/EXCLUSIONS:

1. The soils excavated from the pits will be used to backfill the excavations and compaction testing of the material will not be required.

It is assumed adequate space is available along the south side of the siding tracks for drill rig access or a graded path will be provided by Ames. Crossing of the existing tracks will not be needed. Drill production rates assume no interruptions will be required for train passage. A single mobilization of drill equipment will be needed and fieldwork will occur during daytime hours.DELIVERABLES: Percolation Test Results Memorandum

TASK 9.0 – PUBLIC INVOLVEMENT

The Work under this task includes providing Public Involvement (PI) services and support for the Project during this phase. The WSP Public Involvement team will work closely with the City to determine scope and effort of each task outline below in order to meet the intent of the PI program. WSP will also work closely with the City's Public Information Officer to present a unified message to stakeholders and the public.

SUBTASKS:

TASK 9.1 PUBLIC INVOLVEMENT PLAN AND STAKEHOLDER OUTREACH: WSP will review and update the Public Involvement Plan (PIP) developed in Phase I for relevancy and efficacy. WSP assumes three City of Flagstaff reviews, including final approval. WSP will also update the comprehensive stakeholder/project outreach list developed in previous phases. WSP assumes the City of Flagstaff will provide updates to any existing adjacent project distribution lists and will share any new relevant lists.

TASK 9.2 STAKEHOLDER OUTREACH: WSP will also attend stakeholder and property owner meetings related to right-of-way acquisition and neighborhood and business group meetings, as needed. WSP assumes all meetings will be held virtually. WSP assumes attendance at up to 6 meetings. WSP will also monitor and respond to project emails.

TASK 9.3 MATERIAL - UPDATE: WSP will update the previously developed print collateral materials twice during this phase with support from the technical project team, including:

- Project Messaging Document with Q & A
- Project Overview fact sheet
- PowerPoint presentation
- Email blast graphics
- Social media posts for the City of Flagstaff's Facebook/Twitter accounts (12 total).

WSP assumes three City of Flagstaff reviews, including final approval of materials. WSP assumes the fact sheets and comment forms will be translated to Spanish. WSP assumes up to 6 presentations will be prepared. WSP also assumes email blasts will be sent by City of Flagstaff.

TASK 9.4 IN-PERSON PUBLIC MEETING #2: WSP will plan and coordinate an in-person meeting to provide an update and solicit input on the project's design at approximately the time of the Preliminary Design submittal. This meeting is anticipated to have a duration of up to two hours.
WSP will:

- Locate and reserve a meeting space.
- Provide two PI staff members for logistical/administrative support and three technical staff to support the meeting.
- Hold one planning conference call with project team members.
- Provide a summary of the meeting including documentation of all public comments and questions.
- Record the meeting presentation (voiceover) and place all materials on the project website.
- Create a registration site for meeting attendees to pre-register for the meeting. Pre-registering would be optional for attendees.
- Develop a meeting notification mailer (size 5.5"x8.5", two-sided printing). WSP will draft, layout, print and mail a meeting postcard via Every Door Direct Mail (EDDM) for up to 9,000 businesses and residential stakeholders along mail carrier routes near the project location to provide notification of the public meeting. WSP will print additional copies of the mailer for distribution by the City of Flagstaff, as desired.
- Develop and place a newspaper advertisement in the Arizona Daily Sun to announce the meeting.

- Develop 11”x17” meeting notification posters (English and Spanish) (25 total).
- Develop graphic intensive email blasts for electronic notification of the meeting (2 total).
- Develop online and hard copy comment form/survey (English and Spanish) (Printing: 250 total color copies - 200 English/50 Spanish per comment form).
- Draft and lay-out display board graphics formatted for virtual presentation (up to 12 graphics) and printed on foam core boards.

WSP assumes up to 200 people will attend the in-person meeting and up to 100 public comments/questions will be submitted.

ASSUMPTIONS: It is assumed that this meeting will be in person for support and technical staff. Time and costs for travel are included. It is assumed that this is an evening meeting and an overnight stay will be required.

TASK 9.5 IN-PERSON PUBLIC MEETING #3: WSP will plan and coordinate an in-person meeting to provide an update and solicit input on the project’s design between the Preliminary and Final Design submittals. This meeting is anticipated to have a duration of up to two hours. WSP will:

- Locate and reserve a meeting space
- Provide two PI staff members for logistical/administrative support and three technical staff members to support the meeting.
- Hold one planning conference call with project team members.
- Provide a summary of the meeting including documentation of all public comments and questions.
- Record the meeting presentation (voiceover) and place all materials on the project website.
- Create a registration site for meeting attendees to pre-register for the meeting. Pre-registering would be optional for attendees.
- Develop a meeting notification mailer (size 5.5”x8.5”, two-sided printing). WSP will draft, layout, print and mail a meeting postcard via Every Door Direct Mail (EDDM) for up to 9,000 businesses and residential stakeholders along mail carrier routes near the project location to provide notification of the public meeting. WSP will print additional copies of the mailer for distribution by the City of Flagstaff, as desired.
- Develop and place a newspaper advertisement in the Arizona Daily Sun to announce the meeting.
- Develop 11”x17” meeting notification posters (English and Spanish) (25 total).
- Develop graphic intensive email blasts for electronic notification of the meeting (2 total).
- Develop online and hard copy comment form/survey (English and Spanish) (Printing: 250 total color copies - 200 English/50 Spanish per comment form).

- Draft and lay-out display board graphics formatted for virtual presentation (up to 12 graphics) and printed on foam core boards.

WSP assumes up to 200 people will attend the in-person meeting and up to 100 public comments/questions will be submitted.

ASSUMPTIONS: It is assumed that this meeting will be in person for support and technical staff. Time and costs for travel are included. It is assumed that this is an evening meeting and an overnight stay will be required.

TASK 9.6 WEBSITE AND VIRTUAL MEETING ROOM - UPDATE: WSP will update and host the project website and virtual meeting room for the project with support, as needed, from the technical team. WSP will also help develop a 3D model/flyover of the project design. WSP assumes:

- The website will include the following information: home page, Q&A, public involvement information, project documents, public meeting recording, a contact/comment form to join the project mailing list and the virtual meeting room.
- The virtual meeting room will include a project summary, project information station areas, the informational video, attendee sign-in and instructions on how to navigate the site.

WSP assumes three City of Flagstaff reviews, including final approval of materials.

TASK 9.7 AS-NEEDED SERVICES: WSP proposes the following as-needed services to promote the project and engage the community during project design. WSP assumes a separate scope and fee will be provided to the City of Flagstaff for these as-needed services. Work under this task would not start without direct approval from the City Project Manager to proceed.

As-needed services could include:

- Community art contest
- Signage
- Media event
- Pop-up events/booths
- Social media campaign
- Advertising
- Retail window display

DELIVERABLES: Public Involvement Plan Updates, Stakeholder Distribution List Updates, In-Person Public Meetings and Summary, Monitor Email Address, Project Website and Virtual Public Meeting Room Updates, Flyover Video, Fact

Sheets, Online Surveys/Comment Forms, Mailers, Posters, Email Blasts, Social Media Posts, Display Board Graphics, PowerPoint Presentations

SUBCONSULTANTS

WSP will be supported during this phase by four subconsultants:

1. TranSystems Corporation for rail design and permit / Construction Maintenance Agreement coordination with BNSF Railroad.
2. Peak Engineering for utility coordination, public involvement support, and local roadway design support.
3. Wheat Design Group for Landscaping, Exhibit/Graphic support, and stormwater pollution prevention plan (SWPPP) development.
4. Speedie and Associates for percolation testing.
5. GSI for exploratory drilling.
6. Atlas for seismography.

There is also an identified need for a Artist to be included as part of the anticipated scope of this project. The artist has not yet been identified but will be brought on during Final Design. The Scope of Services will be determined during Final Design and amended to this contract. Anticiapted services include development of artistic concepts to be incorporated into the project, coordination with the project team, and attendance at public meetings. A fee for this work has been established based on direction from the City. Scope of services for the Artist will be adjusted as needed to meet the identified fee.

Additional subconsultants, if needed, will be added to the project with approval of Ames and the City through contract modification. The scope of work for each identified subconsultant is attached at the end of this document.

PAYMENT TERMS

This work will be performed by WSP and its Subconsultants on a time and material basis utilizing the billable rates as shown in the attached fee proposal, not to exceed $3,299,390.10 based on the scope outlined herein. If additional scope is required, a subsequent contract amendment will be submitted at Ames' direction. WSP will invoice Ames for the actual hours of the work and expenses incurred as required for the Scope of Work.

EXCLUSIONS:

Services excluded from this Scope of Work include, but are not limited to:

1. Survey – Including topographic, right-of-way, utility location, etc.
2. Permits and associated fees except as specifically included within this scope of work.
3. Outside agency costs required for site access or project plan reviews, such as BNSF review, flaggers, utility costs, insurance requirements, etc.

4. Real Estate Services and Right-of-way Acquisition
5. Construction support services such as shoring design, falsework design, construction survey, etc.
6. Coordination with the State Historic Preservation Office or Heritage Preservation program for historic or historic eligible properties.
7. Cultural or archeological services.

OTHER INFORMATION REQUIRED (FROM OTHERS):

Items required for successful completion of the work include:

1. Updated field and right-of-way boundary survey provided early in final design will be critical for the timely completion of this project. Delays in timely receipt of updated survey may result in additional work to verify and revise final design based on new information received and may result in project delays.
2. Cultural clearances for areas within ADOT ROW. This clearance will need to be completed by the City prior to receiving final approval for design plans.
3. Requirements for demolition and removal of historic properties. The City is providing this coordination. Delays in coordination may delay ROW acquisitions within the project area.

CONTINGENCY

The following is a listing of potential City Contingency items that may be utilized at the discretion of the City Project Manager. The project team shall obtain written approval from the City Project Manager prior to expending contingency item funds. It is not intended to be all-inclusive but represents potential contingency items identified in the preparation of this scope.

1. **ADDITIONAL GEOTECHNICAL INVESTIGATIONS:** Additional geotechnical investigation may benefit the project by defining high risk soil corridors identified by Ames Construction. Investigation could be used to define bedrock level or obstructions in fill.
2. **ADDITIONAL HYDRAULIC INVESTIGATIONS:** Capacity evaluations of existing culverts south of Butler Avenue have been excluded due to preliminary investigation showing minimal changes in hydraulic volume. If after preliminary design of this section of the road the City has concerns about capacity, a hydraulic investigation of changes to these culverts could be undertaken to verify capacity concerns for these culverts.
3. **CITY SUPPORT OF SERVICES NOT COVERED:** Upon the City's request, WSP can provide support for services not covered or excluded from this Scope of Work, such as cultural investigations and historic property coordination.

ATTACHMENTS

1. Scope and Fee Proposal from TranSystems Corporation

2. Scope and Fee Proposal from Peak Engineering
3. Scope and Fee Proposal from Wheat Design Group
4. Scope and Fee Proposal from Speedie and Associates
5. Scope and Fee proposal from Geomechanics Southwest Incorporated (GSI)
6. Scope and Fee proposal from Atlas

Contract No.: 2021-23

Lone Tree Overpass

New Contract:

Contract Mod: X No. 2

DERIVATION OF COST PROPOSAL SUMMARY

ESTIMATED DIRECT LABOR

Classification	Manhours	% of Total Hours	Billable Hourly Rate	Estimated Labor Costs
Project Principal	152	0.8%	$290.00	$44,080.00
Design Manager	1,475	7.6%	$245.00	$361,375.00
Sr Project Engineer	2,751	14.1%	$230.00	$632,730.00
Project Engineer	3,429	17.6%	$155.00	$531,495.00
Engineer	3,877	19.9%	$125.00	$484,625.00
Senior Designer	392	2.0%	$150.00	$58,800.00
Designer	1,816	9.3%	$100.00	$181,600.00
CADD Tech / Graphics	3,597	18.5%	$115.00	$413,655.00
Senior Geologist	136	0.7%	$300.00	$40,800.00
Env. Coordinator	244	1.3%	$200.00	$48,800.00
PI Specialist	1,055	5.4%	$150.00	$158,250.00
Sr Economist	0	0.0%	$155.00	$0.00
Sr Planner	200	1.0%	$125.00	$25,000.00
Planner / GIS	176	0.9%	$95.00	$16,720.00
Accountant	64	0.3%	$120.00	$7,680.00
Administration	96	0.5%	$90.00	$8,640.00
TOTAL Hours	19,460			
			Sub-Total Labor Expense:	$3,014,250.00

ESTIMATED DIRECT EXPENSES

Outside Reproduction	$437.50
Courier/Postage	$500.00
Mileage	$3,685.50
Travel	$10,700.00
Miscellaneous Expenses	$11,000.00
Sub-Total Direct Expenses:	$26,323.00

ESTIMATED OUTSIDE SERVICES AND CONSULTANTS

Subconsultant	Method of Compensation	DBE	Fee
TranSystems	Hourly	No	$191,326.00
Peak Engineering	Hourly	No	$262,820.00
Wheat Design Group	Hourly	Yes	$225,663.90
Speedie	Hourly	No	$8,730.00
GSI	Hourly	No	$13,391.00
Atlas	Hourly	No	$27,571.00
Artist (TBD)	Hourly	No	$35,000.00
	Sub-Total Outside Services Expense:		$764,501.90

ESTIMATED TOTAL

TOTAL ESTIMATED COST: $3,805,074.90

CONTRACT TIME: 16 months
(Amendment 2 Design Services)

CONTINGENCY (10%) $300,000.00

Joy Melitz

Signature

02/10/2022

Date

Lone Tree Overpass

Contract No. 2021-23

TASK/DISCIPLINE	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration	Total
1.0 PROJECT MGMT	152	726	282	0	390	0	0	0	24	24	20	0	0	0	64	96	1,778
2.0 ROADWAY	0	172	514	1038	560	0	480	1220	0	0	0	0	0	0	0	0	3,984
3.0 TRAFFIC	0	92	456	608	939	392	336	842	0	0	0	0	0	0	0	0	3,665
4.0 DRAINAGE	0	0	728	992	998	0	460	416	0	0	0	0	0	0	0	0	3,594
5.0 STRUCTURES	0	373	473	561	870	0	540	800	0	0	0	0	0	0	0	0	3,617
6.0 UTILITIES	0	24	120	0	120	0	0	0	0	0	0	0	0	0	0	0	264
7.0 ENVIRONMENTAL	0	16	24	0	0	0	0	0	0	220	0	0	200	176	0	0	636
8.0 GEOTECHNICAL	0	0	106	230	0	0	0	0	112	0	0	0	0	0	0	0	448
9.0 PUBLIC INVOLVEMENT	0	72	48	0	0	0	0	319	0	0	1035	0	0	0	0	0	1,474
10.0 ECONOMICS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
PROJECT TOTAL HOURS	152	1475	2751	3429	3877	392	1816	3597	136	244	1055	0	200	176	64	96	19460

Lone Tree Overpass
Contract No. 2021-23

1.0 PROJECT MGMT TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
1.1 Project Management (16 Month Duration)	416	32	128			128										64	64
1.2 Project Coordination	0																
1.2A Project Coordination (16 Month Duration)	568		400			136											32
1.2B Technical Working Group Meetings (22 Total, 2 hours)	554		138	282		66				24	24	20					
1.2C Stakeholder Meetings (30 Total, 2 hours)	120		60			60											
1.3 Quality Program	120	120															
SUBTOTAL 1.0 PROJECT MGMT	1778	152	726	282	0	390	0	0	0	24	24	20	0	0	0	64	96

Task Cost: $ 366,880.00

Lone Tree Overpass
Contract No. 2021-23

2.0 ROADWAY TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
2.1 Internal and Stakeholder Coordination	76			38	38												
2.2 Preliminary Roadway Plan Submittal	1735		75	200	500	200		160	600								
2.3 Final Roadway Plan Submittal	1733		73	200	400	280		240	540								
2.4 RFC Roadway Plan Submittal	224		24	60	60				80								
2.5 Quantities	216			16	40	80		80									
SUBTOTAL 2.0 ROADWAY	3984	0	172	514	1038	560	0	480	1220	0	0	0	0	0	0	0	0

Task Cost: $ 579,550.00

Lone Tree Overpass
Contract No. 2021-23

3.0 TRAFFIC TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
3.1 Internal and Stakeholder Coordination	102		8	54	24	16											
3.2 Regional Travel Demand Model Verification	92			14		78											
3.3 Preliminary Intersection Evaluation	206		24	54		88			40								
3.4 Revised Impact Analysis	88		0	30		54			4								
3.5 Traffic Plans	0																
3.5A Preliminary Traffic Plan Submittal	1595		28	150	284	315	252	136	430								
3.5B Final Traffic Plan Submittal	1028		24	96	180	224	140	80	284								
3.5C RFC Traffic Plan Submittal	338		8	42	80	84		40	84								
3.6 Quantities	216			16	40	80		80									
SUBTOTAL 3.0 TRAFFIC	3665	0	92	456	608	939	392	336	842	0	0	0	0	0	0	0	0

Task Cost: $ 528,265.00

Lone Tree Overpass
Contract No. 2021-23

4.0 DRAINAGE TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
4.1 Internal and Stakeholder Coordination	102			46	56												
4.2 Drainage Analysis	1100			220	340	360		180									
4.3 Drainage Plans																	
4.3A Preliminary Drainage Plan Submittal	920			192	226	242		80	180								
4.3B Final Drainage Plan Submittal	770			154	196	196		80	144								
4.3C RFC Drainage Plan Submittal	486			100	134	120		40	92								
4.4 Quantities	216			16	40	80		80									
SUBTOTAL 4.0 DRAINAGE	3594	0	0	728	992	998	0	460	416	0	0	0	0	0	0	0	0

Task Cost: $ 539,790.00

Lone Tree Overpass
Contract No. 2021-23

5.0 STRUCTURES TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
5.1 Internal and Stakeholder Coordination	84		38		46												
5.2 Bridge Design	0																
5.2A Preliminary Bridge Plan Submittal	1362		120	242	235	250		140	375								
5.2B Final Bridge Plan Submittal	840		100	100	140	200		100	200								
5.2C RFC Bridge Plan Submittal	490		50	50	100	150		40	100								
5.3 Wall Design	0																
5.3A Preliminary Wall Design Submittal	205		15	15		60		70	45								
5.3B Final Wall Design Submittal	140		15	15		40		50	20								
5.3C RFC Wall Design Submittal	100		15	15		40		20	10								
5.4 Miscellaneous Structural Details	180		20	20		50		40	50								
5.5 Quantities	216			16	40	80		80									
SUBTOTAL 5.0 STRUCTURES	3617	0	373	473	561	870	0	540	800	0	0	0	0	0	0	0	0

Task Cost: $ 541,880.00

Lone Tree Overpass
Contract No. 2021-23

6.0 UTILITIES TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
6.1 Utility Coordination	264		24	120		120											
	0																
SUBTOTAL 6.0 UTILITIES	264	0	24	120	0	120	0	0	0	0	0	0	0	0	0	0	0

Task Cost: $ 48,480.00

Lone Tree Overpass
Contract No. 2021-23

7.0 ENVIRONMENTAL TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
7.1 USACE WUSA JD Coordination	120		8								40			32	40		
7.2 ADOT Coordination	144		8	24							40			32	40		
7.3 ESA Site Visits	112													56	56		
7.4 USACE Permit Coordination (408)	60										60						
7.5 Environmental Evaluation Memorandum	200										80			80	40		
SUBTOTAL 7.0 ENVIRONMENTAL	636	0	16	24	0	0	0	0	0	0	220	0	0	200	176	0	0

Task Cost: $ 95,160.00

Lone Tree Overpass
Contract No. 2021-23

8.0 GEOTECHNICAL TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
8.1 Percolation Tests	88			16	40					32							
8.2 Shoring Wall borings, mapping and Seismic Refraction surveys (field, data interps, recommendations)	360			90	190					80							
SUBTOTAL 8.0 GEOTECHNICAL	448	0	0	106	230	0	0	0	0	112	0	0	0	0	0	0	0
																Task Cost:	$ 93,630.00

Lone Tree Overpass
Contract No. 2021-23

9.0 PUBLIC INVOLVEMENT TASK DESCRIPTION	Total Hours	Project Principal	Design Manager	Sr Project Engineer	Project Engineer	Engineer	Senior Designer	Designer	CADD Tech / Graphics	Senior Geologist	Env. Coordinator	PI Specialist	Sr Economist	Sr Planner	Planner / GIS	Accountant	Administration
9.1 Public Involvement Plan and Stakeholder Outreach	64		4									60					
9.2 Stakeholder Coordination	44		4									40					
9.3 Materials - Update	121								46			75					
9.4 In-Person Public Meeting #2	232		12	24					86			110					
9.5 In-Person Public Meeting #3	213		12	24					67			110					
9.6 Website and Virtual Meeting Room - Update	120											120					
9.7 As-Needed Services	680		40						120			520					
SUBTOTAL 9.0 PUBLIC INVOLVEMENT	1474	0	72	48	0	0	0	0	319	0	0	1035	0	0	0	0	0

Task Cost: $ 220,615.00

Lone Tree Overpass
Contract No. 2021-23

DIRECT EXPENSES

ITEM	No.	Unit Cost	Cost
Outside Reproduction			
11"x17" Copies (Color)	50	$ 1.25	$ 62.50
11"x17" Copies (B&W)		$ 0.50	$ -
8 ½" x 11" Copies (Color)	500	$ 0.75	$ 375.00
8 ½" x 11" Copies B&W)		$ 0.25	$ -
		SUB-TOTAL:	$ 437.50
Courier/Postage/Overnight Mail			
Courier		$ 7.95	$ -
Postage	1000	$ 0.50	$ 500.00
Overnight Mail		$ 5.00	$ -
		SUB-TOTAL:	$ 500.00

Mileage								
Monthly Coordination Mtgs		@			0	$ 0.585	$	-
Field Review Meetings	5 mtgs	@	300 miles	roundtrip	1500	$ 0.585	$	877.50
TWG In Person Meetings	12 mtgs	@	300 miles	roundtrip	3600	$ 0.585	$	2,106.00
Public Meetings	2 mtgs	@	300 miles	roundtrip	1200	$ 0.585	$	702.00
Comment Resolution Mtgs		@			0	$ 0.585	$	-
		@			0	$ 0.585	$	-
		@			0	$ 0.585	$	-
						SUB-TOTAL:	$	3,685.50

Travel									
Airfare	1 staff	@	2 trips	@	$700 RT	2	$ 700.00	$	1,400.00
Airfare	1 staff	@	1 trips	@	$700 RT	1	$ 700.00	$	700.00
Meals	9 staff	@	3 days	@	$66/day	27	$ 66.00	$	1,782.00
Meals	4 staff	@	12 days	@	$66/day	48	$ 66.00	$	3,168.00
Meals	2 staff	@	2 days	@	$66/day	4	$ 66.00	$	264.00
Meals	1 staff	@	6 days	@	$66/day	6	$ 66.00	$	396.00
Lodging	1 staff	@	4 days	@	$115/day	4	$ 115.00	$	460.00
Lodging	11 staff	@	2 days	@	$115/day	22	$ 115.00	$	2,530.00
Rental Car		@		@	$70/day	0	$ 70.00	$	-
							SUB-TOTAL:	$	10,700.00

Miscellaneous Expenses		
Database ERIS Reports		
Public Meeting Advertisement	$	2,076.00
Public Meeting Mailer (2 meetings)	$	6,246.00
Meeting Boards	$	240.00
Website Hosting & Domain Renewal	$	432.00
ESA Expenses (ERIS Costs: ELS/AUL Search, DB/PSR Reports, City Directory)	$	1,435.00
Undefined Expenses	$	571.00
SUB-TOTAL:	$	11,000.00

TOTAL DIRECT EXPENSES

TOTAL:	$ 26,323.00

ATTACHMENT 1

SCOPE AND FEE FROM TRANSYSTEMS CORPORATION

TranSystems
2400 Pershing Road | Suite 400
Kansas City, MO 64108
Tel 816 329 8600
www.TranSystems.com

Design Services (30% to 60% Design)

Upon approval of the 30% Design Plans we will continue design in accordance with the BNSF Engineering Instructions and The American Railway Engineering and maintenance-of-Way Association (AREMA) Manual for Railway Engineering. The following tasks are included:

- Review and address all 30% comments received from BNSF.
- Finalize all proposed horizontal and vertical geometrics.
- Develop phased rail cross sections at an interval of 50 feet. Cross sections for the tracks will be based on the standard BNSF typical section for main line construction.
- Develop phased construction plans including location of temporary retaining wall
- Develop the construction limits of the proposed project and estimate the approximate amount of right-of-way (or easement) to be acquired from the adjacent property owners.
- Develop an opinion of probable construction cost for the proposed rail improvements based upon the 60% design.

Design Services (60% to Final Design)

Upon BNSF review of the 60% Design Plans we will continue to final design. The following tasks are included:

- Review and address all 60% comments received from BNSF.
- Finalize all phased grading model (2 Phases)
- Finalize phased construction plans including location of temporary retaining wall
- Develop final construction limits of the proposed project and estimate the approximate amount of right-of-way (or easement) to be acquired from the adjacent property owners.
- Develop an opinion of probable construction cost for the proposed rail improvements based upon final design.

Utilities & Property

This task identifies the potential existing utility conflicts and property needs including coordination with Ames, WSP and Peak Engineering on relocation and acquisition.

Project Meetings and Administration

This task involves scheduling, conducting, and summarizing BNSF meetings throughout the course of the Final Design. Descriptions of these meetings are provided in the following sub-tasks. Project administrative duties include coordination efforts of the different engineering disciplines involved in design and conducting the necessary quality reviews prior to providing review submittals to the City, WSP and BNSF. The following work will be performed.

TranSystems
2400 Pershing Road | Suite 400
Kansas City, MO 64108
Tel 816 329 8600
www.TranSystems.com

- Twelve (22) Technical Working Group (TWG) meetings are budgeted during this phase. These meetings will be held two times per month for six months and once per month for 10 months.
- Ten (10) meetings between the City, BNSF, TranSystems, WSP and Ames are scheduled to discuss preliminary design and phasing of track and operations. Eight (8) meetings are scheduled to be virtual and two (2) in-person for project walkthroughs.

Deliverables

This task involves submitting the below items on an agreed upon schedule with the City, Ames and WSP.

- Estimated Quantities for railroad work
- Final plans of railroad work

Time of Completion

Following a "Notice to Proceed" from the City, it is anticipated that the Final Design Services will be completed within 16 months.

Exclusions

The below items are excluded from our scope.

- Coordination and payment for railroad flagging (if necessary)
- Railroad and project specific insurance policies
- Liquidated damages for delays in railroad approvals
- Permitting, geotechnical investigation, survey, bridge design, hydrology and hydraulics

	Principal	Project Manager	Engineer 3	Engineer 2	Technician 3	Technician 2		
Rates	$ 350.00	$ 240.00	$ 205.00	$ 120.00	$ 115.00	$ 100.00		
Task								
Project Management							Hours	Fee
Twelve (22) TWG Meetings		44					44	$ 10,560.00
BNSF Coordination	24	40	20				84	$ 22,100.00
Ten (10) Team Meetings with BNSF	4	20	10				34	$ 8,250.00
Schedule Development	8	20					28	$ 7,600.00
SUBTOTAL PROJECT MANAGEMENT	36	124	30	0	0	0	190	$ 48,510.00
Design Services (30% to 60% Plans)							Hours	Fee
Review Amendment 2 Survey		2		16	24		42	$ 5,160.00
Finalizing Horizontal and Vertical Alignments		4	32	12			48	$ 8,960.00
Phased Grading Model		16	40	120			176	$ 26,440.00
Phased Construction Plans		8	16	40	60	220	344	$ 38,900.00
Plan Review - QA/AC Process	16	8					24	$ 7,520.00
SUBTOTAL DESIGN SERVICES (30% TO 60% PLANS)	16	38	88	188	84	220	634	$ 86,980.00
Design Services (60% to Final Plans)							Hours	Fee
Address BNSF Comments	2	8	4	16		40	70	$ 9,360.00
Finalize Grading Model		4	20	60			84	$ 12,260.00
Utility Coordination with Peak		4	8	8			20	$ 3,560.00
Property Coordination with WSP		4	8	8			20	$ 3,560.00
Hydrology & Hydraulics Coordination with WSP		4	16	8			28	$ 5,200.00
Plan Review - QA/AC Process	16	8					24	$ 7,520.00
Opinion of Probable Cost		16	24	20			60	$ 11,160.00
SUBTOTAL DESIGN SERVICES (60% TO FINAL PLANS)	18	48	80	120	0	40	306	$ 52,620.00
EXPENSES								
Airfare (2 Trips)						$800/flight		$ 1,600.00
Car Rental						4 days @ $200/day		$ 800.00
Lodging						4 days @ $138/day		$ 552.00
Meals						4 days @ $66/day		$ 264.00
SUBTOTAL PRELIMINARY DESIGN SERVICES								$ 3,216.00
TOTAL AMENDMENT 2 DESIGN FEE								$ 191,326.00

ATTACHMENT 2

SCOPE AND FEE FROM PEAK ENGINEERING

SCOPE OF SERVICES – CONSTRUCTION DOCUMENTS

Date:	October 2021
Project:	**Lone Tree Overpass**
WSP Project No:	30900823A
Peak Project No:	20WSP01.1
Prepared For:	WSP & AMES Construction *(Client: City of Flagstaff)*
Prepared By:	J.Leid

PROJECT DESCRIPTION

The project is the extension of Lone Tree Road from Butler Avenue to Route 66. This requires a bridge over the BNSF railway tracks and the Rio de Flag channel, utility relocations, geometric changes to local intersecting streets and widening of Route 66 for added lanes. The project also includes widening of Lone Tree Road between Sawmill Drive and Butler Avenue and roadside improvement for FUTS and sidewalk.

The project is being delivered Design-Build with Ames Construction, WSP, Transystems and Peak Engineering. Peak Engineering's responsibilities include design of water and sewer relocations and design of Lone Tree road improvements south of Butler Avenue. Additionally, Peak will support public involvement efforts.

This is the third phase of the project which is preparation of construction documents. The first phase was development of schematic design (~15% design) and preliminary guaranteed maximum price (GMP). The second phase, underway, is subsurface utility exploration and geotechnical exploration.

The following scope of work itemizes Peak Engineering's responsibilities for Phase 3. This scope of work is based on the schematic design documents for the project.

SCOPE & DELIVERABLES

PHASE 3, TASK 1: Administration & Coordination Meetings

Peak Engineering has budgeted to attend the following meetings:

- 22 two-hour long design-build team and/or client meetings (PM & PE)
- 2 four-hour design-build team and/or client meetings (PM & PE)
- Preparation, Support and Attendance at two public meetings (PM & Admin)
- Attendance at one Council meeting (PM Only)
- Attendance at one meeting with Mountain Line, the local transit authority (PM Only)
- Attendance at one meeting with MetroPlan (PM Only)
- Participation in regular team coordination meetings through the course of design (16 month design schedule) and weekly updates and tracking of utility coordination efforts.

Administration costs are estimated to be 10% of the total proposed fee, distributed monthly for the duration of the scope. Administration costs include internal project management (schedule, staffing, quality assurance, budget management) and communications not related to meetings listed above.

PHASE 3, TASK 2: Water & Sewer Utility Design and Franchise Utility Coordination

Peak Engineering's scope for design of utilities is as shown in Phase 1: Schematic Design.

3-2A: Design Development (~60% Design)

Peak Engineering will prepare 60% design plans. The plans will include call-out text and construction notes with enough information to communicate intent but will not be fully keynoted or detailed. For 60% design, we will show profiles of the water and sewer utilities based on existing grade above the pipe or of roadway centerline (TBD). We will show proposed grades of Brannen, Elden Street Extension and Lone Tree as applicable. This assumes that WSP will provide final design grades for the City streets. The plans will show proposed water valve & hydrant locations, manhole locations and service locations for both utilities.

We anticipate the following design sheets:

- Cover
- General Notes & Index
- Construction Control (future submittal)
- Details
- Topographic & Right of Way Survey (existing conditions sheets), if furnished.
- Water line Plan and Profile
- Sewer line Plan and Profile

WSP is responsible for stormdrain design and we will show this utility in the background of the water and sewer design plans, if provided.

We will furnish estimated quantities in an excel spreadsheet for the team's use.

Peak Engineering will submit plans to and request utility response letters from APS (electric), UniSource Energy Services (UES, natural gas), Lumen (communications), Altice (communications) and AT&T (communications).

Deliverables: 60% Water & Sewer Design Plans, Quantity Spreadsheet, Franchise Utility Letters

3-2B: Water & Sewer Final 1 Plans

Peak Engineering will prepare Final 1 Plans. Refer to Task 3-2A for anticipated plan sheets. The sheet(s) listed as future submittals will be developed and included in this task. The Final 1 Plans will be fully developed, detailed and sealed for submittal to the City of Flagstaff and ADEQ.

The water and sewer profiles will show utility crossings and water and sewer services. A utility conflict table will be included, as required by the City of Flagstaff.

Peak Engineering will prepare an Engineer's Design Report per the requirements of ADEQ. Peak Engineering will prepare the ADEQ application for the City's signature. We assume that the City will provide capacity assurance and prepare a check for the submittal fee. Peak Engineering will make the ADEQ submittal. Note that the Engineer's Design Report requires that the City furnish hydraulic modelling results.

Peak Engineering will update the overall project quantities spreadsheet.

Peak Engineering will prepare draft special provisions. The special provisions will reference the City of Flagstaff Engineering Standards & Specifications and MAG Specifications.

This phase includes a detailed quality control (QC) review of the team's design plans for coordination and to check for conflicts between disciplines. Peak will prepare a QC checklist and will include this with the Final 1 submittal if requested.

Deliverable: Final 1 Water and Sewer Design Plans, Engineer's Design Report (Water & Sewer), Quantity Spreadsheet, QC Checklist.

3-2C: Water & Sewer Final 2 Plans

Peak Engineering will address comments and edits in Final 2 Plans for approval and signatures. If required, Peak Engineering will address comments and resubmit to ADEQ.

Peak Engineering will finalize the Special Provisions.

Deliverable: Final 2 Water and Sewer Design Plans, Engineer's Design Report (Water & Sewer) Addendum, Special Provisions, Quantity Spreadsheet, Comment Responses.

3-2D: Franchise Utility Coordination

Peak Engineering will conduct follow up meetings with the following franchise utility companies to present the anticipated relocations exhibit that was prepared in Phase 1. The goal of these meetings will be to understand prior rights, relocation responsibility and relocation timelines.

- Arizona Public Service (APS)
- Unisource Energy (UES)
- Lumen
- Altice
- AT&T

Peak Engineering will prepare agendas and meeting notes from these meetings. Peak will document anticipated relocations in a KMZ file that the AMES Team could use in the field with Google Earth or similar mapping software.

Deliverable: Meeting minutes, Utility company communication tracking log, KMZ File identifying anticipated relocations.

PHASE 3, TASK 3: Lone Tree Road Widening

Peak Engineering's scope of work for the Lone Tree Road widening includes design of the median for an inside widening, coordination of intersection improvements for signalization changes or additions at Franklin and Sawmill, and relocation of a water and reclaimed water crossing at Churchill Drive. This scope also includes modifications to the outside curb alignment or edge improvements such as parkway, sidewalk and FUTS.

3-3A: Concept Design

Peak Engineering will work with WSP to determine lane geometry and design requirements for Lone Tree south of Butler Avenue. Peak will prepare concept plans.

Peak Engineering will prepare preliminary linework for the median curb modifications for the inside widening. This includes evaluation of existing roadway cross-slopes for drainage. The

median modifications are intended to begin at the intersection of Lone Tree and Butler and extend south to Franklin Avenue. South of Franklin Avenue, the median narrows to allow for westbound left turn movements at Franklin. It is assumed that the roadway will taper to match existing immediately south of the intersection of Sawmill and Lone Tree.

In addition to interior widening, we will prepare preliminary linework for edge improvements which includes replacement/addition/rebuilding of the FUTS, sidewalk and parkway from Butler to Sawmill.

This phase includes a meeting with Mountain Line to review impacts to Stops 4 and 16 on Routes 14 and 4, respectively. If they are impacted, this proposal assumes that Mountain Line will provide the design documents for shelter and stop pad relocation(s). It is assumed that stops 5 and 15 on these same routes will not be impacted by the improvements.

Peak Engineering will coordinate with WSP on proposed signal placement at the Franklin and Sawmill intersections and will show horizontal geometry for sidewalk and ramp modifications at these two intersections.

Peak Engineering will analyze roadway drainage capacity and provide the results in a memo format to be included with the concept plans. Hydraulic analysis of crossing drainage structures and channels is not included in this scope of services. Should the crossing box culverts require modification, our plans will call for an extension to match the current slope, size and configuration. New headwalls may be required and will be depicted on the plans but the structural design, if required, will be done by WSP. The drainage memo will include a description of the crossing drainage structures and proposed changes to those structures.

Deliverable: Concept Plans, Drainage Memo

3-3B: Design Development (~60% Design)

Peak Engineering will prepare 60% design plans. Comments from the concept plans will be addressed in the 60% design plans. The plans will include call-out text and construction notes with enough information to communicate intent but will not be fully keynoted or detailed. For 60% design, we will show existing grades and geometry and a proposed centerline.

We anticipate the following design sheets:

- Cover
- General Notes & Index
- Construction Control (future submittal)
- Details
- Plan and Profile
    - Centerline Horizontal Alignment
    - Centerline Profile (existing and proposed)
    - Existing Outside Back of Curb Profile Left
    - Existing Outside Back of Curb Profile Right
- Roadway Cross Sections – 25’ Increments
- Franklin Ave & Sawmill Ave Intersection Design (ADA ramps, signal positions, etc)
- Striping & Signage
- Water and Reclaimed Water Relocations (Plan & Profile)

We will furnish estimated quantities in an excel spreadsheet for the team's use.

Peak Engineering will prepare a preliminary drainage report. Note that this scope does not include analysis of the existing channels. Should the box culverts crossing Lone Tree Rd require an extension, we intend to match the existing geometry of the box, headwall and wing walls.

Peak Engineering will submit plans to and request utility response letters from APS (electric), UniSource Energy Services (UES, natural gas), Lumen (communications) and Altice (communications).

The City of Flagstaff has requested realignment of the water and reclaimed water main that currently cross Lone Tree Road at or near Churchill Drive. The realignments are intended to improve the developability of the City owned parcel at the southwest corner of Butler and Lone Tree. This proposal assumes that the realignments will fall below the threshold for ADEQ submittal and review and that hydraulic analysis and an engineer's design report is not required (construction cost <$50,000 for each utility).

Deliverables: 60% Roadway Design Plans, Quantity Spreadsheet, Preliminary Drainage Report, Franchise Utility Letters

3-3C: Final 1 Roadway Construction Documents

Peak Engineering will prepare Final 1 Plans. Refer to Task 3-3B for anticipated plan sheets. The sheet(s) listed as future submittals will be developed and included in this task. The Final 1 Plans will be fully developed, detailed and sealed for submittal to the City of Flagstaff.

Peak Engineering will prepare a final drainage report.

Peak Engineering will update the quantities spreadsheet.

Peak Engineering will prepare draft special provisions. The special provisions will reference the City of Flagstaff Engineering Standards & Specifications and MAG Specifications.

This phase includes a detailed quality control (QC) review of the team's design plans for coordination and to check for conflicts between disciplines. Peak will prepare a QC checklist and will include this with the Final 1 submittal if requested.

Deliverable: Final 1 Roadway Design Plans, Final Drainage Report, Quantity Spreadsheet, QC Checklist.

3-3D: Final 2 Roadway Construction Documents

Peak Engineering will address comments and edits in Final 2 Plans for approval and signatures. If required, Peak Engineering will address comments and resubmit to ADEQ.

Peak Engineering will finalize the Special Provisions.

Deliverable: Final 2 Roadway Design Plans, Drainage Report Addendum, Special Provisions, Quantity Spreadsheet, Comment Responses.

Assumptions & Exclusions:

A topographic survey will be conducted by others and furnished to Peak in AutoCAD format with the project surface (DTM). The topographic survey will include benchmarks for survey control.

Easements and right of way dedication documents, if required, will be prepared by others. We can show proposed easements in the design plans.

Peak's scope for showing utility information in the project basemap is based on available as-built and GIS data, adjusted for survey field-located appurtenances and the results of the Subsurface Utility Exploration conducted by Ames Construction.

Peak's scope for drainage design is limited to the portion of Lone Tree Rd south of Butler Avenue to Sawmill and does not include analysis of the existing channels/crossings of Lone Tree Road.

WSP will provide a report on geotechnical investigation which includes the design pavement structural section.

Peak will coordinate franchise utility design and show linework from franchise utility companies, if provided.

Should the headwalls on Lone Tree at Franklin and Sawmill require extension, this work would need to be prepared by a structural engineer; Peak will coordinate headwall height and geometry.

Wheat Design Group will prepare the landscape, irrigation and erosion control plans for inclusion with Peak's roadway design plans.

Peak's scope for this phase does not include design for the local streets north of Butler Avenue.

Peak's scope does not include coordination with ADOT.

Peak's scope does not include review or permitting fees. It is assumed that WSP will be responsible for making the submittals.

Construction phase services are not included.

The quantities spreadsheet that Peak Engineering has included in this scope of work is for use by Ames Construction during development of their GMP for comparative purposes. Quantities developed by Peak Engineering are not intended to be used as standalone quantities for price development. Peak Engineering will not provide an Engineer's Opinion of Probable Construction Cost as part of this work.

FEE SUMMARY

	Description	**Proposed Fee**
PHASE 3, TASK 1:	Administration & Coordination Meetings	$39,160
PHASE 3, TASK 2:	Water & Sewer Utility Design	$94,595
PHASE 3, TASK 3:	Lone Tree Road Widening	$129,065
	Total Proposed Fee	**$262,820**

Please refer to the cost detail summary, attached, for a breakdown of hours and hourly rates in support of the proposed fee. **This work will be performed on a time and material basis utilizing the established rates as shown in the attached fee proposal, not to exceed the fee shown in the attached fee proposal based on the scope outlined herein.** If additional scope is required, a subsequent contract modification will be submitted at WSP's direction. Peak will invoice WSP for the actual hours of the work required for the Scope of Work and for efforts required to administer the task.

SCHEDULE

Peak anticipates work beginning October 2021 with completion of the construction documents by the end of 2022.

END

Client Name: Ames Construction (prime), WSP (design lead)

Project Name: City of Flagstaff Lone Tree Overpass CONSTRUCTION DOCUMENTS

Project Number: 20WSP01

Client Information

Name: ***WSP***

Address:

Project Budget Summary

	Task Description	Principal Engineer		Project Manager		Project Engineer		Designer		Engineering Intern		Technical Drafter		Clerical		Total Hours	Labor Cost per Task
	Hourly Rate:	$190		$170		$155		$125		$85		$90		$75			
		Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars		
1	T1: Admin & Coordination Meetings	9.00	$ 1,710	106.00	$ 18,020	106.00	$ 16,430	24.00	$ 3,000	-	$ -	-	$ -	-	$ -	245.00	$ 39,160
2	T2A: Design Development (60% Design)	48.00	$ 9,120	13.00	$ 2,210	67.00	$ 10,385	100.00	$ 12,500	-	$ -	-	$ -	-	$ -	228.00	$ 34,215
3	T2B: Water & Sewer Final 1 Plans	48.00	$ 9,120	17.00	$ 2,890	57.00	$ 8,835	111.00	$ 13,875	-	$ -	-	$ -	-	$ -	233.00	$ 34,720
4	T2C: Water & Sewer Final 2 Plans	18.00	$ 3,420	4.00	$ 680	26.00	$ 4,030	50.00	$ 6,250	-	$ -	-	$ -	-	$ -	98.00	$ 14,380
5	T2D: Franchise Utility Coordination	-	$ -	10.00	$ 1,700	36.00	$ 5,580	32.00	$ 4,000	-	$ -	-	$ -	-	$ -	78.00	$ 11,280
6	T3A: Concept Design	12.00	$ 2,280	10.00	$ 1,700	107.00	$ 16,585	123.00	$ 15,375	-	$ -	-	$ -	-	$ -	252.00	$ 35,940
7	T3B: Design Development (60% Design)	12.00	$ 2,280	10.00	$ 1,700	104.00	$ 16,120	179.00	$ 22,375	-	$ -	-	$ -	-	$ -	305.00	$ 42,475
8	T3C: Final 1 Roadway Construction Documents	12.00	$ 2,280	24.00	$ 4,080	68.00	$ 10,540	144.00	$ 18,000	-	$ -	-	$ -	-	$ -	248.00	$ 34,900
9	T3D: Final 2 Roadway Construction Documents	9.00	$ 1,710	7.00	$ 1,190	45.00	$ 6,975	47.00	$ 5,875	-	$ -	-	$ -	-	$ -	108.00	$ 15,750
10	Not Used	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
	LABOR TOTAL:	168	$ 31,920	201	$ 34,170	616	$ 95,480	810	$ 101,250		$ -				$ -		$ 262,820

Reimbursable Project Expenses

A	Printing & Reprographics	$ -
B	Mileage	$ -
C	Meals & Lodging	$ -
D	Equipment	$ -
E	Other (Parking)	$ -
	RPE TOTAL:	$ -

Sub-Consultants

Survey	$ -
Landscape Architect	$ -
Architect	$ -
Geotechnical	$ -
Other	$ -
SUB-CONSULTANT TOTAL:	$ -

PROJECT TOTAL:

$ 262,820

ATTACHMENT 3

SCOPE AND FEE FROM WHEAT DESIGN GROUP

WHEAT | DESIGN GROUP
LANDSCAPE ARCHITECTS

October 28, 2021

Jason Carlaftes, P.E.
WSP

RE: City of Flagstaff, Lone Tree Overpass Project – Amendment 2
Flagstaff Contract No. 03-19004

Hello Jason,
We are pleased to submit this Scope and Fee proposal for providing landscape architecture services for the Lone Tree Overpass project. This proposal is for Amendment 2 only. I have based this scope and fee on our phone conversations, team meetings and documents shared with the design team.

SCOPE OF WORK

Assumptions:

1. *Landscape Architectural design services are provided for 18-months.*
2. *Scope does not include a native plant inventory.*
3. *The following City of Flagstaff Engineering Standards will be used for design of landscape architectural project features: Title 10 – Streets; Title 17 - Erosion Control; Title 18 - Landscaping Standards for Rights-of-Way; and Title 19 - Irrigation Systems.*
4. *LID/green infrastructure will be integrated into our hardscape and landscape plans where feasible. City of Flagstaff's Low Impact Development Manual (January 2009) will be utilized during design.*
5. *WSP will provide CAD base design files and aerials.*
6. *Quantities will be developed for each submittal and used by Ames Construction during development of their GMP for comparative purposes. Quantities developed by Wheat Design Group are not intended to be used as standalone quantities for price development. Wheat Design Group will not provide a cost estimate as part of their work.*
7. *Structure aesthetics refers to architectural enhancements that relate to the overpass structure only. Structure aesthetics includes formliner design for retaining walls, bridge barrier, piers and abutments. Also includes design of decorative pedestrian fencing on the overpass.*
8. *Hardscape/streetscape design includes design of gateway features to be located on the north and south ends of the overpass.*
9. *Wheat Design Group in collaboration with project public artist will design all structure aesthetics and hardscape/streetscape elements.*
10. *Design of structure aesthetics and hardscape/streetscape elements will be presented to the City of Flagstaff's Beautification and Public Art Commission for review.*
11. *Scope does not include park design. A park design concept can be provided as part of an exhibit reflecting how this project provides accessibility to a future park. Park design can be provided under a separate contract amendment.*
12. *The technical review, checking procedures, and monitoring process shall follow WSP's Project Specific Quality Management Plan, including internal QC Reviews and Interdisciplinary Reviews. Hours are allocated for QC review for each submittal.*
13. *All submittals will be in pdf format; including no mylars for Signed & Sealed Final submittal.*
14. *All submittals will be emailed to WSP.*

TASK 1.0 PROJECT MANAGEMENT / MEETINGS

This task includes project administration, invoices, managing project files, and preparing for and attending project meetings. Meetings include:

- (16) Project team technical meetings (1x per month)(all virtual)
- (22) Team Working Group (TWG) meetings (2 x per month for 6 months; 1 x per month for 10 months)
- (2) Over-the-Shoulder Review Meetings (after 60% and 100% submittals)(virtual)
- (4) Site Visits for research and other miscellaneous meetings (in Flagstaff)

Other tasks include:

- Written responses to review comments
- Base file set-up

TASK 2.0 PUBLIC INVOLVEMENT

Public involvement includes:

- Preparation and attendance to (3) Task Force Meetings focused on aesthetics (in Flagstaff)
- Preparation and attendance to (2) Public Meetings (in Flagstaff)
- 3D model build-out to Sawmill Road for renderings; currently the 3D model only includes from Route 66 to Butler Avenue. 3D model will be used to display not only civil and structural aspects of the project, but will also exhibit structure aesthetics to the overpass such as decorative fencing and formliner design for the retaining walls.
- Production of project animation (fly-through from Route 66 to Sawmill Road) using 3D model

Deliverables:

1. (2) Exhibit boards for each Task Force and Public Meeting reflecting landscape/aesthetic concepts (36" x 48" board). Graphics on boards will include 3-D renderings, rendered plans and section views, plant palette, and supporting images (10 boards total).
2. 11 x 17's color hand-outs reflecting landscape/aesthetic concepts to be distributed at Task Force meetings (approx. 100 for each meeting, 300 total).
3. 3D model and renderings; multiple views of the bridge structure and adjacent area.
4. 3D Animation of project; produced with Lumion software.

TASK 3.0: 60% SUBMITTAL

Preliminary Design Submittal (60%): Design plans and special provisions will be developed to an approximate 60% level design and submitted to the City for review. This level of design will include all major features but not have complete details included with submission. Intent of this submittal is to provide enough information to the City and Stakeholders to perform a 60% level review of concepts and provide comments to the Design Team. Design collaboration with project public artist is included in this phase.

Deliverables:

1. Preliminary Structures Aesthetics key map and details
2. Preliminary Hardscape/ streetscape plans and details
3. Preliminary Landscape plans and details
4. Preliminary Irrigation plans and details
5. Preliminary Erosion control plans and details
6. Quantities

7. Preliminary Special Provisions

**Refer to Assumptions section on page 1 of this amendment for additional scoping information relating to the design of structure aesthetics and hardscape elements/gateway features.*

TASK 4.0: 95% SUBMITTAL

Final Design Submittal (95%): Design plans and special provisions will be developed to an approximate 95% level design and submitted to the City for review. This level of design is considered substantially complete and will include all major features and supporting details. This submittal is intended to allow the City and Stakeholders a final review of the project for comments prior to Release for Construction. Design collaboration with project public artist is included in this phase.

Deliverables:

1. Final Structures Aesthetics key map and details
2. Final Hardscape/ streetscape plans and details
3. Final Landscape plans and details
4. Final Irrigation plans and details
5. Final Erosion control plans and details
6. Quantities
7. Final Special Provisions

TASK 5.0 PSE SUBMITTAL

Release for Construction (Sealed Plans): Sealed plans and special provisions will be submitted to the City for acceptance. These plans and special provisions will serve as the basis for the construction documents to be used by Ames Construction to complete the work.

Deliverables:

1. Signed & Sealed plans, Estimate and Special Provisions

TASK 6.0 SWPPP BOOK

To be submitted with the 95% submittal.

Deliverables:

1. SWPPP Book for Contractor using ADOT template

FEES

Total consultant cost is **$225,663.90.** Work will be provided on an hourly rate Not to Exceed basis, billed monthly based actual hours worked. The work will be based on the hourly rates provided and based on the hours and tasks listed in the attached cost derivation documents. Work beyond this scope will be considered additional services and will not proceed without approval from the Client. Additional work may be provided under a separate contract amendment.

WHEAT | DESIGN GROUP
LANDSCAPE ARCHITECTS

We very much look forward to working with WSP, Ames Construction and the City of Flagstaff on this project.

Sincerely,

Laura Mielcarek
Principal, Wheat Design Group

WHEAT | DESIGN GROUP
LANDSCAPE ARCHITECTS

Wheat Design Group DERIVATION OF COST PROPOSAL SUMMARY

PROJECT: **City of Flagstaff, Lone Tree Overpass Project – Amendment 2** DATE: 10/28/2021

Flagstaff Project No.: 03-19004
CONTRACT TIME: 18 Months
CONTRACT TYPE: Hourly rate, Not to Exceed

CONSULTANT: Wheat Design Group, Inc.
PREPARED BY: Laura Mielcarek, Principal
DBE: #1025

DIRECT LABOR COST

TASK DESCRIPTION

	CLASSIFICATION	No. HOURS Hours	UNIT RATES	TOTAL COST Cost
Landscape Architectural Services	Project Manager-Sr.	330	$155.00	$51,150.00
	Registered LA	415	$136.50	$56,647.50
	Designer	726	$94.60	$68,679.60
	CADD Technician	472	$90.00	$42,480.00

(A) Direct Labor 1943 Hrs. **$218,957.10**

DIRECT EXPENSES

TRAVEL (Rental car, fuel, lodging, meals for site visit)	$5,536.80	
REPRODUCTIONS	$450.00	
EXHIBITS (36" x 48" boards)	$720.00	
=		**$6,706.80**

(E) OUTSIDE SERVICES & SUBCONSULTANT COSTS

Sub Names	Sub Fees

(F) TOTAL COST FOR ALL SUBCONSULTANT AND OUTSIDE SERVICES = **$0.00**

(G) TOTAL COST = **$225,663.90**

Laura Mielcarek, Principal

10/28/2021
Date

Wheat Design Group Workhour Estimate by Task
Lone Star Overpass project - Amendment 2
Flagstaff Project No. 03-19004

	Description	Project Manager-Sr.	Registered LA	Designer	CADD Technician	TOTAL
1.0	**Project Management / Meetings**					
	Project Management (over 16 months)	16	0	0	0	16
	Project team technical meetings (16)	16	0	0	0	16
	Team Working Group (TWG) Meetings (22)	22	11	0	0	33
	Over-the-shoulder Review Meetings after submittals (2)	4	4	0	0	8
	Site Visits (4) (2 people)	64	64	0	0	128
	Subtotal	**122**	**79**	**0**	**0**	**201**

	Description	Project Manager-Sr.	Registered LA	Designer	CADD Technician	TOTAL
2.0	**Public Involvement**					
	Preparation and attendance for Task Force Meetings focused on aesthetics (3)	24	40	24	24	112
	Preparation and attendance to Public Meetings (2)	24	28	24	24	100
	Production of 3D model and renderings	4	16	100	0	120
	3D project animation	4	8	80	0	92
	Subtotal	**56**	**92**	**228**	**48**	**424**

	Description	Project Manager-Sr.	Registered LA	Designer	CADD Technician	TOTAL
3.0	**60% Submittal**					
	Initial Structure aesthetics key map and details	8	24	80	60	172
	Initial Hardscape/streetscape plans and details	8	12	40	40	100
	Initial Landscape plans and details	8	12	32	32	84
	Initial Irrigation plans and details	8	12	32	32	84
	Initial Erosion control plans and details	8	16	28	28	80
	Quantities	4	4	0	8	16
	Special Provisions	12	12	0	0	24
	Project Specific Quality Management Plan	8	8	8	0	24
	Subtotal	**64**	**100**	**220**	**200**	**584**

	Description	Project Manager-Sr.	Registered LA	Designer	CADD Technician	TOTAL
4.0	**100% Submittal**					
	Final Structure aesthetics key map and details	8	40	80	60	188
	Final Hardscape/streetscape plans and details	8	12	60	40	120
	Final Landscape plans and details	8	12	24	24	68
	Final Irrigation plans and details	8	12	24	24	68
	Final Erosion control plans and details	8	12	20	20	60
	Quantities	4	4	0	8	16
	Special Provisions	12	12	0	0	24
	Project Specific Quality Management Plan	8	8	8	0	24
	Subtotal	**64**	**112**	**216**	**176**	**568**

	Description	Project Manager-Sr.	Registered LA	Designer	CADD Technician	TOTAL
5.0	**PSE Submittal**					
	Signed & Sealed plans and Special Provisions	8	16	24	24	72
	Project Specific Quality Management Plan	8	8	8	0	24
	Subtotal	**16**	**24**	**32**	**24**	**96**

	Description	Project Manager-Sr.	Registered LA	Designer	CADD Technician	TOTAL
6.0	**SWPPP Book**					
	Production of SWPPP Book	2	2	24	24	52
	Project Specific Quality Management Plan	6	6	6	0	18
	Subtotal	**8**	**8**	**30**	**24**	**70**
	TOTAL WORKHOURS	**330**	**415**	**726**	**472**	**1,943**

10/28/2021

EXHIBIT A: ESTIMATED DIRECT EXPENSES - LONE TREE OVERPASS PROJECT - AMENDMENT 2

TRAVEL: SITE VISITS

Mileage:	# of Trips	avg. mi. per round trip	Cost/mi.	Cost	Notes
	9	520	$0.560	$2,620.80	

Lodging:	Trips	Rooms per night	Cost/night	Cost	
	9	2	$96.00	$1,728.00	9 Trips to Flagstaff

Meals:	Days	2 Meals Per Day for 2 people	Cost/Day	Cost	
	9	18	$66.00	$1,188.00	2 meals per day for 2 people

TOTAL TRAVEL =	$5,536.80

PLOTTING

say 0 total

	No. of Copies	Cost per Copy	Cost
Vellum Plots (24x36)		$3.50	$0.00
Photo Mylars		$9.00	$0.00

TOTAL PLOTS =	$0.00

REPRODUCTIONS:

Reports (See EXHIBIT B) $0.00

Copies other than reports

Color Copies	No. of Copies	Cost per Copy	Cost
8 1/2"x11'		$0.50	$0.00
11"x17"	300	$1.50	$450.00
Black & White Copies			
8 1/2"x11'		$0.05	$0.00
11"x17"		$0.12	$0.00
Blacklines (24x36)		$1.50	$0.00

TOTAL REPRODUCTIONS =	$450.00

EXHIBITS

	No. of Copies	Cost per Copy	Cost
Aerial Photo, 40 scale		$8.00	$0.00
(Mounting on 36" x 48" Foam Board for public meetings)	10	$72.00	$720.00
Presentation Blacklines		$4.00	$0.00
Color Photo Reductions		$8.00	$0.00

TOTAL EXHIBITS =	$720.00

SPECIALIZED VENDORS

	Cost
IAS Laboratories - Horticultural Soil Analysis	$0.00
Vendor Name	$0.00
Vendor Name	$0.00

TOTAL SPECALIZED VENDORS =	$0.00

ATTACHMENT 4

SCOPE AND FEE FROM SPEEDIE AND ASSOCIATES

SPEEDIE AND ASSOCIATES
Geotechnical ▪ Environmental ▪ Materials Engineers

www.speedie.net

September 2, 2021

Kevin Porter, P.E.
WSP USA
350 West Washington Street, Suite 300
Tempe, AZ 85281

RE: Proposal for Percolation Testing
Lone Tree Overpass Retention Basin
Butler Ave & Lone Tree
Flagstaff, AZ
Proposal No. 78146SFr

Dear Mr. Porter:

We are pleased to provide our cost estimate to conduct double ring percolation testing at the above referenced site that will satisfy requirements for estimating infiltration rate. All work on this project will be carried out under the overall supervision of a registered Professional Engineer in the state of Arizona.

We understand that testing will consist of three double ring infiltrometer tests at depths of 5 feet below existing grade to ascertain water dissipation rates. The tests will be performed at the locations and bottom depths of proposed water retention basins. Testing will conform to ASTM D3385 standards for infiltration testing.

We will dig three pits to depths of 5 feet below existing grade, create field logs of the soil profiles, and perform the percolation tests. We will analyze the data obtained from field and laboratory testing and prepare a letter style report detailing infiltration/dissipation rates together with field logs of soil profiles. . If refusal on bedrock is encountered at less than 5 feet, the client will be made aware and the test hole will be relocated. Access to the site by conventional rubber-tired backhoe is assumed to be free and unencumbered. As the excavator, Speedie & Associates will arrange for location of public utilities, provided we are given at least 5 days advanced notice. Speedie & Associates will not locate private utilities, and if required, a reputable private locator should be contracted by the client. Excavated pits will not be left open overnight, and will be caution-taped off during the investigation.

Charges for our services have been determined on the basis of our standard Fee and Rate Schedule, a copy of which is attached and made a part hereof. We propose to provide the services set forth herein for a lump sum amount of **$4,000.00**, which includes all testing, equipment rental, field work, reimbursable expenses, and an electronic copy of the report (pdf format; paper copies available upon request). Should we be informed that additional copies of the report are needed after it has been finalized, there will be an additional charge of $15.00 per report. Time from authorization to proceed to letter report submittal at this time is on the order of 2 to 3 weeks following the scheduled investigation. This time frame does not include delays due to inclement weather, frozen ground, or delays in the field not caused by Speedie & Associates and subcontractors.

We appreciate the opportunity to submit this proposal for your consideration. If the terms set forth are satisfactory, please sign the attached copy, and return it for our records.

Respectfully submitted,
SPEEDIE & ASSOCIATES

Gabe S. Epstein, PhD

APPROVED AND ACCEPTED for WSP USA

By:_____ Print Name: _____

Date: _____

SPEEDIE AND ASSOCIATES
Geotechnical ▪ Environmental ▪ Materials Engineers

ENGINEERING SERVICES

Northern Arizona 2021 Fee and Rate Schedule

Fees for services will be based upon the time worked on the project at the following rates:

Title	Rate Per Hour
Principal	$ 150.00
Project Manager	125.00
Sr. Geologist/Engineer	125.00
Project Engineer/Geologist	110.00
Environmental Specialist	90.00
Special Inspector (Architectural)	85.00
Special Inspector (Structural/Geotechnical)	80.00
Staff Engineer/Geologist	85.00
Sr. Engineering Technician	75.00
Draftsman	75.00
Materials Testing Technician	60.00
Clerical/Administrative	55.00

REIMBURSABLE EXPENSES
Light Truck Mileage Rate: $0.50 per mile
The following items are reimbursable to the extent of actual expenses plus 25%:

1. Transportation, lodging and subsistence for out of town travel
2. Special mailings and shipping charges
3. Special materials and equipment unique to the project
4. Duplication or reprinting/copying reports

TEST BORINGS AND FIELD INVESTIGATIONS
On projects requiring test borings, test pits, or other explorations, the services of reputable contractors to perform such work shall be obtained.

SUBCONTRACTORS/SUBCONSULTANTS CHARGES
Any charges for subcontractors/subconsultants are subject to a 25% handling fee if invoiced by Speedie & Associates or such charges can be directly paid by the CLIENT.

SPECIAL RATES
The following rates may be subject to a 35% increase:

- Overtime – time over 8 hours per weekday and on Saturday
- Sunday and Holidays
- Rush orders
- Night Shift

EXPERT WITNESS
Deposition and testimony; 4-hour minimum, $250.00 per hour.

The following Terms and Conditions are included and hereto made a part of this agreement.

Initials _____
Initials _____

SPEEDIE AND ASSOCIATES
Geotechnical ▪ Environmental ▪ Materials Engineers

TERMS AND CONDITIONS

1. STANDARD OF CARE

In performing our professional engineering services, Speedie & Associates, Inc. (S&A) will use the degree of care and skill ordinarily exercised by members of our profession currently practicing in the same locality under similar conditions. No warranty, expressed or implied, is made or intended by our proposal for consulting services, our contract, oral or written reports, or services.

2. SCOPE OF SERVICES

2.1 "ON-CALL" SERVICES

Unless otherwise agreed by both parties in writing, all construction materials testing will be performed on an "on-call" basis. Both parties agree that test results for "on-call" testing, where the CLIENT does not request S&A's continuous construction and field observation, will be based only on the representative sample or limited location tested.

2.2 CONSTRUCTION/FIELD OBSERVATION OR REMEDIATION OBSERVATION

If the CLIENT desires more extensive or full-time project observation to help reduce the risk of problems arising during construction, the CLIENT shall request such services as "Additional Services" in accordance with the terms of this agreement. Should the CLIENT for any reason choose not to have S&A provide construction or field observation during the implementation of S&A's specifications or recommendations, or should the CLIENT unduly restrict S&A's assignment of observation personnel, CLIENT shall, to the fullest extent permitted by law, waive any claim against S&A, and indemnify, defend, and hold S&A harmless from any claim or liability for injury or loss arising from field problems allegedly caused by findings, conclusions, recommendations, plans or specifications developed by S&A. CLIENT also shall compensate S&A for any time spent or expenses incurred by S&A in defense of any such claim. Such compensation shall be based upon S&A's prevailing fee and rate schedule.

3. OWNERSHIP OF DOCUMENTS

All reports, plans, specifications, field data, notes and other documents prepared by S&A shall remain the property of S&A. Any reuse of such documents for other purposes must be with the written consent of S&A.

4. SAFETY

While on a CLIENT'S jobsite, S&A's personnel have no authority to exercise any control over any construction contractor, any other entity, or their employees in connection with their work, health or safety precautions. The CLIENT agrees that the General Contractor is solely responsible for jobsite safety and warrants that this intent shall be made evident in the CLIENT'S agreement with the General Contractor. The CLIENT may be charged for additional work for interruption, downtime required, or safety measures required by hazardous job conditions.

5. INSURANCE

Upon request, S&A will furnish certificates of insurance for Workers Compensation, General and Auto insurance, and Professional Errors or Omissions insurance. S&A is not responsible for damage of any cause beyond the coverage of its insurance.

6. INDEMNIFICATION

6.1 ENVIRONMENTAL SERVICES

It is understood and agreed that should the CLIENT hire S&A in matters involving the actual or potential presence of hazardous substances, the CLIENT will indemnify S&A, and its employees and representatives, from and against claims that are the result of negligent acts or omissions on the part of the CLIENT, its employees or representatives. S&A will indemnify the CLIENT from and against claims that are solely the result of negligent acts or omissions on the part of S&A, its employees or representatives.

Initials _____
Initials _____

6.2 NON-ENVIRONMENTAL SERVICES

Both parties agree that S&A's scope of services will not include asbestos, hazardous or toxic materials. Should it become known in any way that such materials may be present at the jobsite or adjacent area that may affect the performance of S&A's services, S&A may suspend its services without any liability until the CLIENT retains appropriate consultation to identify, abate, and/or remove the asbestos, hazardous or toxic materials and warrants that the jobsite is in compliance with applicable laws and regulations. The CLIENT will indemnify S&A and his employees and representatives from and against claims that are the result of negligent acts or omissions on the part of the CLIENT, his employees and representatives. S&A shall indemnify the CLIENT from and against claims, which are solely the result of negligent acts or omissions on the part of S&A, its employees and representatives.

7. LIMITS OF LIABILITY

The CLIENT agrees that S&A shall not be liable for losses caused by or arising from any acts of the CLIENT, his employees or subcontractors. Should any of S&A's employees be found to have been negligent in the performance of professional services rendered, the CLIENT agrees that the maximum aggregate amount of S&A's liability shall be limited to $50,000.00 or the amount of the fee paid to S&A for professional services, whichever amount is greater.

8. WAIVER OF LIMITATION OF PROFESSIONAL LIABILITY

In the event the CLIENT is unwilling or unable to limit liability in accordance with the paragraph above, then CLIENT shall agree to pay S&A a sum equivalent to an additional 20% of the total fee to be charged for the professional services. Said sum is to be called "Waiver of Limitation of Liability Charge." This charge will in no way be construed as being a charge for insurance of any type, but will be increased consideration for the greater risk involved in performing the work up to the limit of proceeds available from S&A's professional insurance coverage.

9. SAMPLE DISPOSAL

9.1 NON-HAZARDOUS SAMPLES

Test samples are substantially altered during testing and are disposed of immediately upon completion of tests. Drilling samples are disposed of thirty (30) days after submission of our report. If requested in writing, samples can be held after thirty (30) days for an additional storage fee, or returned to the CLIENT.

9.2 HAZARDOUS SAMPLES

If toxic or hazardous substances are involved, S&A will return such samples to the CLIENT. Or using a manifest signed by the CLIENT, S&A will have such samples transported to a location selected by the CLIENT for final disposal. The CLIENT agrees to pay all costs for storage, transport and disposal of samples. The CLIENT recognizes and agrees that S&A is acting as a bailee and at no time assumes title to samples involving hazardous or toxic materials.

10. PAYMENT

Progress invoices will be submitted to the CLIENT monthly with a final billing at completion of services. Invoices are due and payable upon receipt. The CLIENT agrees to pay a finance charge of 1.5 % per month on all past due accounts over thirty (30) days. The CLIENT'S obligation to pay for all work contracted is in no way dependent upon the CLIENT'S ability to obtain financing, zoning approval, or the CLIENT'S successful completion of the project. S&A reserves the right to suspend work under its agreement if the CLIENT fails to pay invoices as due. The CLIENT agrees to pay all costs for collection of payment, including attorney's fees.

11. LITIGATION

In the event of litigation between parties to this agreement, if S&A is the prevailing party, S&A shall be entitled to recover all related costs, expenses, and reasonable attorney fees.

Initials _____
Initials _____

ATTACHMENT 5

SCOPE AND FEE FROM GSI

Geomechanics Southwest, Inc.

5435 W. Mohave Street
Phoenix, Arizona 85043
602-252-0559
www.gsidrilling.com

AROC 079441 / ADWR 498

Date: September 24, 2021
Proposal # [15921P]

Mr. Kevin Porter, P.E.
WSP USA
1230 W. Washington Street, Suite 405
Tempe, Arizona 85281
kevin.porter@wsp.com

RE: Lone tree roadway Project additional scope – Flagstaff, Arizona

SCOPE:

- **Provide a CME-75HT track-mounted drill with required support equipment.**
- **Auger/Sample ten (10) borings to a depth of 30-ft (300-ft TOTAL).**
- **Traffic control will be the responsibility of others.**
- **GSI will provide BNSF trained crew.**

ITEM	QUANTITY	UNITS	UNIT PRICE	LINE TOTAL
Prep/Mobilization/Demobilization*	1	EACH	2160.00	$2,160.00
Daily Prep / Local Travel	4	HOURS	210.00	$ 840.00
Auger Drill/Sample	300	L.F.	18.00	$5,400.00
Standby / Access / Safety / Move Drill (est.)	10	HOURS	240.00	$2,400.00
Auger Bit Wear – Per 100-ft	3	EACH	250.00	$ 750.00
Support Truck 4x4	4	DAYS	175.00	$ 700.00
Crew Expenses (2-men) lodging $94.00 per man	3	NIGHTS	188.00	$ 564.00
Crew Expenses (2-men) M&IE $42.00 per man	2	DAYS	84.00	$ 168.00
Crew Expenses (2-men) M&IE $56.00 per man	2	DAYS	112.00	$ 224.00
Geotech Ring Set: set of 6 w/sleeve (est.)	10	EACH	18.50	$ 185.00
			ESTIMATED TOTAL	**$13,391.00**

GSI assumes 4 days on site with mobilization.

*** Mobilization / Demobilization track-mounted rig was derived as follows: 7 hours of roundtrip travel and 2 hours of prep at rig rate of $240/hr. for a total of $2,160.00**

We at Geomechanics Southwest Inc., appreciate the opportunity to provide you with an estimate. If you have any questions, please don't hesitate to call or email us. We look forward to hearing from you soon.

Respectfully submitted by,

GEOMECHANICS SOUTHWEST, INC.

Mike Shelquist 09/24/2021
Mike Shelquist
Operations Manager – Phoenix

WSP 092421 Lone tree roadway additional scope

ATTACHMENT 6

SCOPE AND FEE FROM ATLAS

9185 South Farmer Avenue, Suite 111
Tempe, AZ 85284
480.855.3201 | oneatlas.com

September 27, 2021
Proposal No. 21-10986 Rev.3

Mr. Dave Peterson, PG
WSP
1230 West Washington Street, Suite 405
Tempe, Arizona 85281

Subject: **Proposal for Geophysical Evaluation**
Lone Tree Overpass, Between Butler Avenue and Interstate 40 2-D ReMi and P-Wave Refraction Study
Flagstaff, Arizona

Dear Mr. Peterson:

In accordance with your request, Atlas Technical Consultants, LLC (Atlas), has prepared this revised proposal to perform geophysical seismic evaluations for the project located between Butler Avenue and I-40 Business Loop/Historic Route 66 (US66) in Flagstaff, Arizona. The purpose of our study will be to collect four two-dimensional (2-D) refraction microtremor (ReMi) and eleven P-wave refraction seismic profiles at the subject site, based on the information you provided via email on September 24, 2021.

METHOD SUMMARY

Our scope of services will include the performance of four roll-along two-dimensional (2-D) ReMi seismic profiles at your specified locations of the project site. Two 2-D ReMi profiles will be performed at each of the planned bridge abutment locations, two lines north and two lines south of the BNSF railway alignment. The purpose of the four proposed 2-D ReMi profiles is to collect seismic velocities of the subsurface for use in estimating depth to bedrock and to check for the presence of seismic velocity inversions where faster layers overlie slower layers. Another benefit of the ReMi method is that it also provides IBC Vs100 seismic Site Class, a parameter useful for your calculations of seismic site response for the planned bridge structure.

The 2-D ReMi seismic technique uses recorded surface waves (specifically Rayleigh waves) that are contained in background noise to develop a shear wave (S-wave) 2-D velocity profile of the study area down to a depth, planned in this case to be up to approximately 30 feet or more below ground surface (bgs).

Our proposed 2-D ReMi evaluation will include the use of a 24-channel Geometrics digital StrataView or Geode seismograph and 24 or more 4.5-Hz vertical component geophones. For the performance of each 2-D ReMi line, the geophones will be spaced 10 feet apart for a spread length of 230 feet. The spread will be advanced 10 times, 10 feet at a time, to create a 100 foot long 2-D shear wave profile. At each spread location, multiple 32-second-long records will be collected. Ten one-dimensional (1-D) ReMi data collections will be performed along each 2-D transect. The 1-D solutions form the basis of the 2-D seismic velocity profile.

The data is processed using Surface Plus 9.1 Advanced Surface Wave Processing Software (Geogiga Technology Corporation, 2020), which uses the refraction microtremor method (Louie, 2001) and other surface wave analysis methods. The program generates phase-velocity dispersion curves for each record and provides an interactive dispersion modeling tool where the users determine the best fitting model. The result is a 1-D shear-wave velocity model of the site at each roll-along data gather position with roughly an 85 to 95 percent accuracy based on published studies of the ReMi method. The 1-D models are then run in a mathematically robust data modeling inversion process to develop a 2-D profile for each line. The 2-D surface wave velocity versus depth figure results produced by the data inversion process for each line are provided in our report.

Our scope of work will also include the performance of 11 2-D P-wave (compression wave) seismic refraction tomography spreads, data compilation/processing and analysis. The P-wave profiles will be conducted near the south edge of the existing BNSF railway using a Geometrics Geode, or Geometrics StrataView, 24-channel digital seismograph and 24 14-Hz geophones. The seismic source will be a manually operated 16 or 20-pound steel sledgehammer and metal strike plate. To develop one 1,265-foot-long P-wave profile, the seismic refraction evaluation will entail the performance of 11 P-wave spreads collected using roll-along methods, and using a 50% overlap between spreads to create the desired 2-D profile. The geophones will be spaced 10 feet apart for a spread length of 230 feet per each of the 11 spreads. After the collection of each P-wave profile, the geophone spread will be advanced 115 feet such that the first half of the next profile overlaps with the spread before it.

Seismic refraction data will be compiled and processed using RAYFRACT Seismic Refraction Tomography software (Intelligent Resources Inc.) which employs wave path analysis. RAYFRACT first provides forward modeling refraction, transmission and diffraction and back-projects traveltime residuals along wave paths also known as Fresnel volumes instead of conventional analysis rays. This increases the numerical robustness of the inversion. A smooth minimum-structure 1-D starting model is determined automatically directly from the seismic traveltime data by horizontally averaging DeltatV method 1-D velocity-depth profiles along the seismic line. The starting model is then refined with 2D WET Wavepath Eikonal Traveltime inversion. The resulting 2-D velocity model provides a tomographic image of the P-wave velocities which can be used to estimate subsurface geologic conditions.

SCOPE OF SERVICES

The geophysical evaluation will include:

- Review of available background information provided by your office.
- Performance of four 2-D ReMi shear wave profiles. Two 2-D ReMi profiles will be performed at each bridge abutment location.
- Performance of 11 overlapping 230-foot-long P-wave seismic refraction tomography spreads along the south edge of the railway alignment, resulting in a 2-D profile up to 1,265 feet long.

- Our evaluations will be designed to obtain S-wave and P-wave velocity data from depths of approximately 30 feet bgs or more.
- The findings from our evaluation will be presented in an illustrated letter report, including four 100-foot-long 2-D shear wave ReMi profiles and one 2-D P-wave tomography profile up to 1,265 feet long.

FEE ESTIMATE

We estimate up to 8 field days and a 3-man field crew will be needed for our evaluation. Based on the breakdown of fees below, our total fee will be **$27,571**.

Item	Rate Type	Cost	Amount	Total
Mobilization/Demobilization	1	Fixed	$750	$750
Field Data Collection (2-D ReMi)	Daily	$3,300	3	$9,900
Field Data Collection (2-D P-wave Seismic Refraction,1,265 feet profile)	Daily	$3,100	4	$12,400
Per-Diem (3-man field crew)	Daily	$350	8	$2,800
Administration	Hourly	$67	3	$201
CADD/Drafting	Hourly	$95	16	$1,520
			Total	**$27,571**

ASSUMPTIONS:

In preparing this proposal, we have made the following assumptions:

- The project site will be readily accessible via a four-wheel drive pickup type vehicle and will be reasonably clear of surface obstructions.
- The proposed field services will be performed during normal (daylight) working hours.
- Site access will be granted, and Atlas will not need to obtain any permits or environmental clearance as a part of this project.
- If our work zone is located within 20 feet of railway tracks, WSP will provide BNSF flagmen during our fieldwork who shall warn our field crew of approaching trains on the railway and who will also provide "all clear" messages to return to work. However, if the southern sidings can be temporarily "deactivated" by BNSF operations, then BNSF might not require flagmen.
- BNSF will agree that we can leave geophone sensors, seismograph, and cables on the ground surface near the railway during the passage of trains and Atlas will not have to remove equipment from the railway alignment during field data collection. We assume that our equipment is shorter in height than the railway embankment fill section plus ballast plus rail height.

- We understand from communications with WSP that you estimate the frequency of trains on the railway passing the project area on an hourly basis to average about one train per 20 minutes daily. We have assumed a conservative daily production rate for geophysical field data acquisition on the basis of WSP's estimated train frequency in our proposal fees herein. If field conditions vary from this estimate in a way that impacts our field production rate more than is assumed herein, we will contact you from the field to discuss fee options if trains are more frequent than estimated.
- Local construction traffic and/or other sources of equipment and ground vibrations (trains, other vehicles, heavy equipment, power generators, drill rigs, and pile drivers) located on site or nearby will be sources of deleterious seismic noise and interfere with our seismic survey methods and seismic results. Our geophysical field evaluation should be scheduled by WSP for projected workdays when locally generated ground vibrations will be unlikely to occur (except for the unavoidable train passages).
- The fees estimated herein do not include costs that may arise due to unforeseen or unfavorable conditions, or for post-report consultations. Our fees for such services, if provided, will be on an hourly basis with your authorization.

We appreciate the opportunity to submit this proposal and look forward to working with you on this project. If our proposal meets with your approval, please authorize our services by signing the attached Professional Services Agreement (PSA) and returning it to our office. We will, in turn, send you a fully executed original for your records. Should you have questions regarding this proposal, please contact our office.

Respectfully submitted,
Atlas Technical Consultants LLC

Mark Edwards, RG (Arizona)
Principal Geologist/Geophysicist

Paul Neuberger
Senior Staff Geophysicist

PN:LB:MDE:my

Distribution: Dave.Peterson@wsp.com

Attachment: Professional Services Agreement

ATLAS TECHNICAL CONSULTANTS LLC

2021 PROFESSIONAL SERVICES AGREEMENT

THIS AGREEMENT is made and entered into at San Diego, California, by and between Atlas Technical Consultants LLC, a Delaware limited liability company, hereinafter referred to as "Consultant" and WSP hereinafter referred to as “Client.”

Client intends to employ the Consultant to provide geophysical services for the planned overpass in Flagstaff, Arizona hereinafter referred to as "Project."

Now, therefore, in consideration of the terms and conditions hereinafter set forth, the parties hereto agree as follows:

1) Cooperation and Project Understanding

(a) Consultant will render the professional services set forth in the Scope of Work contained in the Consultant’s Proposal, which is attached hereto and incorporated into this Agreement. Client will compensate Consultant in accordance with said Proposal.

(b) If Client requires additional services, Client agrees that said additional services shall be paid for by Client at Consultant’s fee schedule in effect at the time of the services, or as agreed between Client and Consultant. Additional services verbally requested by Client or by any representative of the Client for the Project shall be subject to all of the terms and conditions of this Agreement unless modified by an amendment or addendum to the Agreement, or a new agreement between the parties for the additional services. A written modification to the Agreement may be requested by either Consultant or Client, and if such a modification is requested, any additional services shall be provided only upon approval in writing by both parties to said modification.

(c) Client will make available to Consultant all relevant information in its possession regarding existing and proposed conditions of the Project site. This information shall include, but not be limited to, all plans, specifications, surveys, test data, and written reports by previous consultants that may pertain to the Consultant’s scope of work. Client will immediately transmit to Consultant any new or revised information, which may have an effect on Consultant’s services under this Agreement.

(d) It is acknowledged that opinions, recommendations, and advice that may be provided by Consultant will be based on information furnished by Client or other persons or entities retained by Client, and on information obtained by Consultant through Consultant’s own investigation, testing, inspection, and observation of work being performed by others. Consultant shall not be responsible for any incorrect advice, judgment, or decision based on any inaccurate or incomplete information furnished by Client or Client’s representatives, and Client will indemnify and hold harmless Consultant against all claims, demands, or liability arising out of or contributed to by such information or lack thereof.

(e) It is also acknowledged that, unless specifically set forth in Consultant’s Scope of Work in attached Proposal, Consultant does not direct, control, or supervise the work of other persons or entities on the Project other than those that may be directly retained as subcontractors by Consultant. (Business and Professions Code § 6703.1)

2) Project Site

(a) If applicable, the Client shall indicate to Consultant the property lines of the Project site and be responsible for the accuracy of any boundary markers.

(b) The Client shall secure free and lawful access to the Project site for all necessary equipment and personnel of Consultant. Client shall notify any and all possessors of the project site that Client has granted Consultant free access to the Project site, and Client shall secure permission (and any

permits) necessary to allow Consultant free access to the Project site at no charge to Consultant unless specifically agreed to otherwise in the Proposal attached hereto.

(c) If applicable, the Client shall take steps to see that the property is protected, on or off-site, including all landscaping, shrubs, and flowers. While Consultant will take all reasonable precautions to minimize any damage to the property, it will not be responsible for damage to lawns, shrubs, landscapes, walks, sprinkler systems, or underground utilities and installations caused by movement of earth or equipment.

(d) If applicable, the Client shall locate for Consultant and shall assume responsibility for the accuracy of Client's representations as to the locations of all underground utilities and installations. Consultant will not be responsible for damage by it to any such utilities or installations not so located, and any such damage by Consultant may, at Consultant's option, be repaired by Consultant and billed at cost plus 15% to Client.

(e) If applicable, Client shall notify Consultant of all locations where hazardous materials or wastes were stored, used, or disposed on the Project site.

(f) If applicable, Consultant agrees to backfill or adequately cover all open test holes made by it prior to leaving Project site unattended. Consultant agrees that all test holes will be backfilled upon completion of the job. However, Client may request test holes to remain open after completion of Consultant's work. In the event Client so requests, Client agrees to pay for all costs in connection with covering and backfilling said test holes at a later date, and Client shall indemnify and hold harmless Consultant for all claims, demands, and liabilities arising from its request.

3) Safety

Consultant will not be responsible for the general safety on the job or the safety of any equipment or individuals on the Project site other than its own personnel and the equipment under its direction.

4) Ownership of Documents

All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by Consultant, as instruments of service, shall remain the property of Consultant. In the event Client defaults on payment for Consultant's services, Client agrees that all reports and other work furnished to Client or its agents will be returned upon demand and will not be used by Client for any purpose whatsoever. Consultant will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.

5) Samples

Consultant, or a subcontracted laboratory, will retain all soil, rock, and concrete samples for thirty (30) days after the issuance of Consultant’s report or notification to terminate work. If the Client desires extended storage, the Client shall notify Consultant prior to the expiration date of this period. Extended storage or transfer will be at Client’s expense.

6) Professional Standard

Client recognizes the inherent risks associated with the construction of improvements to real property. Client further recognizes that there may be significant variation in site conditions or in the work inspected or materials tested by Consultant. Consultant is responsible for performing its services in accordance with the standard of care set forth in the following paragraph, but this does not relieve the contractor or subcontractor from responsibility for their own work.

Consultant's services consist of professional and technical advice and observation only. Consultant will be responsible only for its own data, interpretations, and recommendations, but shall not be responsible for the interpretations by others of the information developed. In the performance of its professional services, Consultant will proceed with work diligently with competent personnel, and will comply with that level of care and skill ordinarily exercised by reputable professional engineers, geologists, and special inspectors currently practicing under similar conditions in the same or similar localities. No warranty of any kind

whatsoever, express or implied, is made or intended by Consultant, its employees or agents, in connection with the services provided under this Agreement.

7) Indemnification

To the fullest extent permitted by law, Client agrees to indemnify, defend, and hold harmless Consultant, its officers, employees, and agents from any and all claims, damages, losses, and expenses, including reasonable attorney's fees and costs of litigation arising out of resulting from the services to be provided under this Agreement. However, such indemnification shall not apply to the extent that any such claims, damages, losses, and expenses are due to the willful misconduct or sole negligence of Consultant.

8) Dispute Resolution

In an effort to resolve any conflicts that arise during the design or construction of the project or following completion of the project, the Client and Consultant agree that all disputes between them arising out of relating to the Agreement shall be resolved in accordance with the following procedures:

(a) Special Meeting. The parties shall first attempt to resolve any difference by businesslike negotiations. Either the Client or Consultant may call a special meeting, which shall specify the nature of the dispute to be resolved. This meeting shall be held within 3 working days of a written request, and shall take place at the job sites, Consultant's office, or such other location as shall be mutually agreed. The meeting shall be attended by representatives of Client, Consultant, and if necessary, other involved parties, who have authority to resolve the dispute. The parties shall make a good faith effort to resolve their differences at this meeting.

(b) Mediation. If the parties are not able to resolve the conflict through negotiation within 5 business days of the special meeting, the Client and Consultant agree that the dispute shall be submitted to nonbinding mediation unless mutually agreed in writing otherwise. This mediation shall be a prerequisite to either party pursuing further legal action, and no such legal action shall be initiated by either party until a good faith effort has been made by the parties to resolve their differences through the mediation process unless both parties agree to waive this mediation requirement. The costs of the mediation shall be equally shared by all involved parties.

9) Delays

Consultant will be excused for any delay in completion of this Agreement caused by acts of God, acts of Client or Client's employees or agents, inclement weather, labor trouble, acts of public utilities, public bodies or inspectors, extra work, failure of Client to make payments promptly, or other contingencies unforeseen by Consultant and beyond the reasonable control of Consultant.

10) Termination of Agreement

In the event that either party desires to terminate this Contract prior to completion of the Project, written notification of such intention to terminate must be tendered to the other party. In the event that Client notifies Consultant of such intention to terminate Consultant's services prior to completion, Consultant reserves the right to complete such analysis and records as are necessary to place files in order, to dispose of samples, put equipment in order, and, where considered necessary to protect its professional reputation, to complete a report on the work performed to date. In the event that consultant incurs costs in Client's termination of this Agreement, a termination charge to cover such costs shall be paid by the Client.

In the absence of notification of termination, this Agreement shall continue in full force and effect until such time as Consultant has completed its services.

11) No Third-Party Beneficiaries

This Agreement is entered into solely for the benefit of Client and Consultant and in no way is intended to benefit or extend any right or interest to any third party. It is the intention of Client and Consultant that they are the sole beneficiaries to the rights and obligations arising here from, and any benefit to be derived by any third party is merely incidental to and unintended by the Agreement.

12) Corporate Protection

It is intended by the parties to this Agreement that the Consultant's services in connection with the Project shall not subject the Consultant's individual employees, officers, or directors to any personal legal exposure for the risks associated with this project. Therefore, notwithstanding anything to the contrary contained herein, the Client agrees that as the Client's sole and exclusive remedy, any claim, demand or suit shall be directed and/or asserted against the Consultant, a California corporation, and not against any of the Consultant's individual employees, officers or directors.

13) Attorneys' Fees

In the event that either party becomes involved in litigation arising out of this Agreement or the interpretation or performance thereof, the prevailing party shall be entitled to recover its reasonable attorneys' fees, court costs and other non-reimbursable litigation expenses.

14) Merger Clause

This Agreement, including the attached incorporated proposal, constitutes a final, complete, and total integration of any and all understandings between the parties. It supersedes all prior communications, understandings and agreements, whether oral or written.

Any subsequent change, alteration, addition, or modification must be mutually agreed upon, in writing, and signed by both parties.

15) Notices

Any notice required or permitted under this Agreement may be given by ordinary mail at the address contained in this Agreement, but such address may be changed by written notice given by one party to the other from time to time. Notice shall be deemed received in the ordinary course of the mail.

16) Assignments

The rights and obligations of either party to this Agreement shall not be assigned or otherwise transferred without the prior written consent of the other party. Subject to the foregoing, each party to this Agreement, where applicable, binds itself, its partners, successors, executors, administrators, and assigns with respect to all covenants, conditions, and promises of this Agreement.

17) Individual Responsibility

If Client is a corporation, the individual or individuals who sign this Agreement on behalf of Client warrant that they are duly authorized agents of Client.

18) Invoices

Consultant will submit invoices to Client, at Consultant's option, either monthly or upon completion of the services. Invoices for Consultant's services are due and payable upon receipt and shall be considered past due if not paid within 30 calendar days of the due date. Invoices will show charges for different personnel and expense classifications. A more detailed separation of charges and backup data will be provided upon Client's request.

A FINANCE CHARGE OF 1.5% PER MONTH, CALCULATED FROM THE INVOICE DUE DATE, WILL BE ASSESSED ON ANY INVOICES NOT PAID WITHIN 30 DAYS.

19) Disputed Invoices

If the Client objects to any portions of an invoice, the Client shall so notify the Consultant in writing within 30 calendar days of receipt of invoice. The Client shall identify the specific cause of the disagreement and the amount in dispute and shall pay that portion of the invoice not in dispute in accordance with the other terms of this Agreement. Any dispute over invoiced amounts due which cannot be resolved within 11 days be direct negotiation between the parties shall be resolved in accordance with the Dispute Resolution provisions of this Agreement. Finance charges as stated above shall be paid by the Client on all disputed invoice amounts that are subsequently resolved in the Consultant's favor, calculated on the unpaid balance from the due date of the invoice.

20) Previous Consultant Fees

Client agrees that any previous consultant retained to perform professional services that are the same or related to those for which this Agreement has been entered, has been or will be promptly paid in full by client. Client shall obtain full rights to use previous consultant's work product, if same is to be used by Consultant.

21) Severability

If any term or provision of this Agreement should be found to be in violation of any law or ordinance, it shall be deemed stricken from the Agreement, and the remainder of the Agreement shall remain in full force and effect.

22) Governing Law and Jurisdiction

This Agreement shall be governed by the law of the State of California, and jurisdiction for any disputes arising under this Agreement shall be brought in a court of competent jurisdiction in San Diego, County, California.

23) Limitation of Liability

CONSULTANT'S LIABILITY FOR DAMAGES DUE TO PROFESSIONAL NEGLIGENCE WILL BE LIMITED TO AN AMOUNT NOT TO EXCEED THE TOTAL FEES RECEIVED BY CONSULTANT UNDER THIS AGREEMENT, OR THE AMOUNT OF $50,000, WHICHEVER IS GREATER.

IT IS INTENDED THAT THIS LIMITATION APPLY TO ANY AND ALL CLAIMS, LOSSES, COSTS OR DAMAGES, INCLUDING ATTORNEY'S FEES AND EXPERT WITNESS FEES AND COSTS, RESULTING FROM OR RELATED TO THE PROJECT OR THIS AGREEMENT.

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of this _____ day of _____, 2021.

CLIENT:

_____
Signature

_____
Name

_____
Title

_____
Address

_____
Date

_____
Telephone Number

ATLAS TECHNICAL CONSULTANTS LLC

_____
Signature

_____
Name

_____
Title

_____
Address

September 27, 2021
Date

21-10986
Proposal Number

6280 Riverdale Street
San Diego, CA 92120
(877) 215-4321 | oneatlas.com

September 27, 2021

Atlas Proposal No. 21-10986

Mr. Dave Peterson
WSP
1230 West Washington Street, Suite 405
Tempe, Arizona 85281

Subject: **PRELIMINARY INFORMATION REQUEST**
GEOPHYSICAL SERVICES
LONE TREE OVERPASS
FLAGSTAFF, ARIZONA

Dear Mr. Peterson:

Please provide the following information regarding the above referenced project and return this information with the signed Professional Services Agreement to our San Diego office via fax at (619) 280-3450 or mail at your earliest convenience. We request this information as a routine matter in order to prepare and mail to you an accurate preliminary 20-day notice. If you have a construction lender, your lender will also be protected. Thank you for your prompt attention to this matter. Should you have any questions regarding this request please feel free to contact our office at (619) 280-4321.

PROPERTY OWNER:_____

MAILING ADDRESS:_____

_____

PHONE NUMBER:_____

GENERAL CONTRACTOR:_____

MAILING ADDRESS:_____

_____

PHONE NUMBER:_____

CONSTRUCTION LENDER:_____

MAILING ADDRESS:_____

_____

PHONE NUMBER:_____

Sincerely,

Veronica Tabada

Contracts
$27,571