E. SCOPE OF WORK

E. SCOPE OF WORK

PROJECT UNDERSTANDING

The City of Fort Bragg is systematically identifying, designing, and constructing surface improvements throughout the City, implementing the goals of the 2017 Pavement Management Program. The 2022 Streets Rehab, Street Striping and Bollard Installation Project is a continuation of that effort. With the 2022 Project, the City intends to rehabilitate eight (8) identified streets, replace striping, pavement legends and raised pavement markers on nine (9) streets, and add removable bollards to select locations in the Central Business District (CBD). To better understand this project, our team performed site visits on November 22 and November 30. We also reviewed the following documents: 2018 Street Safety Plan, 2017 Pavement Management Program Update Final Report and the 2004 Storm Drain Master Plan. The limits of this project as are generally described in the tables below.

Work Limits

1. Street Rehabilitation					
Primary Streets					
Street	**Area (sf) (RFP)**	**PCI (RFP)**	**Width (ft) (2017 PMP)**	**Length (ft)***	**Recommended Treatment (RFP)**
Boatyard St.	32,185	71	41	785	AC Overlay 2"
East Chestnut St.	19,920	18	40	480	Full Depth HMA
North Franklin St.	47,432	87	43	1,100**	Digout and Repair
South Franklin St.	43,564	72	43	1,010**	Digout and Repair
South Harold St.	10,192	25	16	640	Reconstruct
West Fir St.	35,475	16	43	825	AC Overlay 2"
TOTAL	188,768	-	-	4,840	-
Secondary Streets					
Street	**Area (sf) (RFP)**	**PCI (RFP)**	**Width (ft) (2017 PMP)**	**Length (ft)***	**Recommended Treatment (RFP)**
Azalea Circle	10,450	22	38	275	Reconstruct
Penitenti Way	10,450	25	38	275	Reconstruct
TOTAL	20,900	-	-	550	-

**Length was calculated by dividing the area by the street width reported in the Section Description Inventory from the 2017 PMP (pages 33 to 38). Work limits will be clarified with the City prior to start of work.*

***Figure 1 of the RFP shows Franklin St. from Cypress St. to E. Bush St. (approximately 6,000 lf) as selected for rehab. Our proposal assumes that the rehab area of Franklin St. is approximately 2,110 lf as calculated and described above. Work limits on N. and S. Franklin St. will be clarified with the City prior to start of work.*

2. Street Striping		
Street	**Begin**	**End**
E. Chestnut St.	SR 1	S. Franklin St.
S. Lincoln St.	E. Chestnut St.	Willow St.
S. Harold St.	Maple St.	E. Oak St.
E. Oak St.	SR 1	31460 E. Oak St.
N. Franklin	E. Oak St.	E. Manzanita St.
E. Redwood Ave.	SR 1	N. Harold
E. Pine St.	SR 1	N. Corry St.
E. Manzanita St.	SR 1	N. Franklin

3. Bollard Placement		
New Proposed Bollards		
Primary Street	**Intersecting Street**	**Location**
N. Franklin St.	E. Oak St.	South Side
E. Oak St.	N100E	West Side
E. Alder St.	N100D/N200D	East Side
E. Alder St.	N100E/N200E	West Side
E. Redwood Ave.	N200D/N300D	East Side

3. Bollard Placement		
New Proposed Bollards		
Primary Street	**Intersecting Street**	**Location**
E. Redwood Ave.	N200E/N300E	West Side
E. Laurel St.	N300D/N400D	East Side
E. Laurel St.	N300E/N400E	West Side
Pine St.	N400E/N500E	West Side
Central Business District Added Bollards		
Primary Street	**Intersecting Street**	**Location**
N. Franklin St.	E. Redwood Ave.	South Side
N. Franklin St.	E. Laurel St.	South Side

Rehabilitation Methods

With the design of the 2020 Maple Street Storm Drain and Alley Rehabilitation project, we evaluated several pavement rehabilitation methods and found that due to the remote location of the City of Fort Bragg, methods such as Full Depth Reclamation or Cold In-Place Recycling were not viable, cost-effective alternatives.

We also confirmed, with our geotechnical investigation, that there were strong subgrade soils within that project's limits allowing us to optimize pavement design and reduce construction costs. For the 2022 project, we will also utilize geotechnical investigation, to optimize pavement design. While this approach may cost more during design, we anticipate that the City will save at least three times the design cost during construction.

Street Rehabilitation

The City has identified eight (8) streets to receive surface treatments with this project consisting of structural overlays, digouts and repairs, and reconstruction, including full depth HMA or other means. The total length of the streets to receive surface treatments is just over 1 mile. Figure 1 of the RFP shows the general location of the work areas. The surface treatment areas for each street will be clarified by the city with specific start and stop locations, prior to dispatching our survey crews.

Boatyard St.: Work area limits on Boatyard St are understood to extend north, form the observed 'newer pavement' aligned with the yield sign near SR20 to the newer pavement observed near the north driveway into the Harvest Market (180 Boatyard Dr.).

Overall, the surface is in fairly good condition, consistent with the reported PCI of 71. Several areas are identified as requiring digouts and replacement of the asphalt surface, and others showed visible signs of base failure. This street may be a good candidate for localized surface and base repairs and the application of an engineered overlay or other surface treatment.

The pavement surface changes near the curb returns at State Route (SR) 20. Work within the Caltrans Right of Way, if necessary, will require a Caltrans Encroachment Permit.

East Chestnut St.: Work area limits on East Chestnut Street are understood to extend east from the Caltrans right of way which is assumed to be the east crosswalk stripe to through the curb returns on the east side of the intersection with S Franklin St.

The surface of E. Chestnut St. changes several times within the work area. Areas of base failure, as well as surface failure, are evident. Localized repair of the failure areas may allow for a less intensive rehabilitation than the full depth HMA proposed in the RFP.

Traffic loops for the signal at E. Chestnut and SR 1 will need to be replaced with this project and will require coordination with Caltrans and likely an encroachment permit.

North and South Franklin St.: Work limits on North and South Franklin extend from N. Harbor Dr. to South St. and are then intermittent, between E. Cypress St. and E. Bush St. The work limits on North and South Franklin will need to be clarified by the City prior to start of work.

Between E. Cypress St. and E. Bush St, raveling was observed with areas of visible surface and base failure. Failure areas were observed primarily within the travel lanes. The shoulders/parking lanes show less signs of distress. This street is a candidate for localized repairs and a slurry seal or microsurface.

S. Franklin St. at Madrone St. - Change in pavement surface can be clearly seen on Madrone St. This project may consider extension of surface treatment limits to this location and other similar locations to present a continuous finished product.

Some of the colored and textured pavements may need to be reconstructed in the Central Business District. We have experience with several different methods which could be employed to replace the colored and textured pavements including stamped and stained asphalt and TrafficPatternsXD, a thermoplastic product that can be applied to asphalt surfaces.

South Harold St.: Work area limits on South Harold St. are understood to extend south from the face of curb at Chestnut St. to the end of the street.

This street has defects that include trench patches and base failures. This street is a likely candidate for removal of the existing pavement and replacement with full depth HMA. Full depth HMA may be applied similar to the detail used to reconstruct alleys with the 2020 project.

West Fir St.: The 2019 Streets Rehabilitation project included the design of an overlay treatment which, ultimately, was not constructed due to funding constraints. The limits of that project extended from the west end of Fir St., 825 ft east terminating between the cross-walk stripes near SR1. We are assuming that the work limits will be the same for this project.

Raveling, shoving and cracking were observed along this street. Base failure was not frequently observed. This street may be a good candidate for localized surface and base repairs and application of an overlay as previously proposed.

Azalea Circle St.: Work area limits on Azalea Circle are understood to extend west from the face of curb at S. Sanderson Way to the end of the Cul-de-sac.

Severe raveling and aging defects were observed along this street. Base failure does not appear to be a significant defect. This street may be a good candidate for removal of the existing HMA, recompaction of the existing base and application of a new HMA surface.

Penitenti Way: Work area limits on Penitenti St. are understood to extend west from the face of curb at S. Sanderson Way to the end of the Cul-de-sac.

Severe raveling and aging defects were observed along this street. Base failure does not appear to be a significant defect. This street may be a good candidate for removal of the existing HMA, recompaction of the existing base and application of a new HMA surface.

ADA Improvements: Per the United States Department of Justice (USDOJ) and Department of Transportation (USDOT), pavement rehabilitation projects that include an overlay or major alteration to the pavement surface require that existing curb ramps be improved to current Americans with Disabilities Act (ADA) standards, where necessary, and curb ramps be installed, where none exist, at locations where a sidewalk or other pedestrian walkway crosses a curb. However, the USDOJ and USDOT interpretation of the ADA does not require installation of ramps or curb ramps in the absence of a pedestrian walkway with a prepared surface for pedestrian use. Where maintenance treatments are applied, ADA improvements are not required. Where required, standard ADA construction details will be used. In locations where conflicts with utility poles, drain inlets or existing grades present challenges, ADA improvements will be designed to meet the location-specific requirements.

Our review of the project shows improvements will likely be required at the following locations:

ADA Improvements				
Ramp No.	**Primary Street**	**Intersecting Street/Address**	**Quadrant**	**Notes**
1	Boatyard St.	180 Boatyard St.	Northeast	New City Type G curb ramp at T-Intersection. Extended curb and gutter replacement to fix ponding & slope may be required.
2	E. Chestnut St.	SR 1 (Caltrans)	Northeast	New Caltrans Standard Case B curb ramp – One Ramp Installation on corner. Relocation to center ramp will be evaluated. MH adjustment likely. Crosswalk markings need to be corrected to allow crossing to northwest corner.
3	E. Chestnut St.	SR 1 (Caltrans)	Southeast	New Caltrans Standard Case C curb ramp – One Ramp Installation on corner. Relocation to center ramp to be evaluated. MH adjustment likely. Crosswalk markings need to be corrected to allow crossing to southwest corner.
4	S. Franklin St.	South St.	East	New Ramp will be needed if reconstruction limits extend to the valley gutter at South Street. New City Type E (blended) curb ramp to match other existing curb ramps at intersection. New crosswalk marking requires to provide safe crossing to north Corner. Pedestrian Barrier required. 50' of new sidewalk is recommended to fill gap in sidewalk to the south to connect sidewalk to new ramp.
5	S. Franklin St.	N. Harbor Dr.	Northeast & Southeast	It appears there is no existing pedestrian walkway that crosses a curb at this intersection. If a curb ramp at the Northeast and Southeast corner are preferred by the City, then improvements will include two new custom curb ramp designs (non-standard) with a section of new sidewalk to fill in gap and a new driveway crossing. *We have not included the design of these curb ramps in our fee proposal.*
6*	S. Harold St.	E. Chestnut St.	Southwest	New custom (non-standard) curb ramp and bulb-out to align with Southeast curb ramp with bulb out.
7*	S. Harold St.	E. Chestnut St.	Southeast	New custom (non-standard) curb ramp and bulb-out to get around FH and utility pole on east side. May need to relocate DI.
8	W. Fir St.	SR 1 (Caltrans)	Southwest	New Caltrans Standard Case CM (blended) curb ramp similar to existing conditions with new curb and gutter. Could be avoided if improvements begin west of crosswalk.
9	W. Fir St.	SR 1 (Caltrans)	Northwest	New Caltrans Standard Case CM (blended) curb ramp similar to existing conditions with new curb and gutter. Could be avoided if improvements begin west of crosswalk.
10	W. Fir St.	Stewart St.	Northeast	New City Type G curb ramp.
11	W. Fir St.	Stewart St.	Southeast	New City Type G curb ramp and drain inlet adjustment. May need to acquire ROW due to utility pole.
12	W. Fir St.	Stewart St.	Southwest	New City Type G curb ramp.
13	W. Fir St.	Stewart St.	Northwest	New City Type G curb ramp.
14	W. Fir St.	West St.	Northeast	New City Type G curb ramp.
15	W. Fir St.	West St.	Southeast	New City Type G curb ramp.
16	Azalea Circle	S. Sanderson Way	Northwest	New City Type G curb ramp.
17	Azalea Circle	S. Sanderson Way	Southwest	New City Type G curb ramp.

ADA Improvements				
Ramp No.	**Primary Street**	**Intersecting Street/Address**	**Quadrant**	**Notes**
18*	Penitenti Way	S. Sanderson Way	Northwest	New City Type G curb ramp with bulb out due to existing sidewalk with 3-foot width.
19*	Penitenti Way	S. Sanderson Way	Southwest	New City Type G curb ramp and bulb out to align with new Northwest curb with ramp bulb out.

**Curb ramps which require custom designs*

Utility Coordination: Work around existing utilities will require documentation and coordination with the utility owners. Manhole lids and valve boxes were observed on the surface throughout the project limits which will require adjustment to grade within the proposed work area. The excavation required to rehabilitate the paved surfaces is expected to have a maximum depth of 8" to 12" which should avoid most standard depth underground utilities. If a pocket of clayey soil is discovered, deeper excavation may be required to mitigate.

With the 2020 Project, we crossed several shallow utilities, which are challenging. From utility maps, we will identify underground facilities within the work area and the utilities that we will be crossing and coordinate with the City to pothole specific locations with their crews.

Storm Drain: Existing paved surfaces within the work area may have poor drainage. Adjacent properties often convey storm water to the road surface using under sidewalk drains. The proposed design should maintain and/or improve, when necessary, the surface drainage conditions, including maintaining the existing under sidewalk drains. Missing gutter sections may be installed in specific areas to improve surface drainage.

Underground storm drainage improvements are not identified as a component of this RFP. The 2004 Storm Drain Master Plan recommends installation of underground conduits within Franklin St. and Fir St. A new 30" conduit is recommended for installation in Franklin St. between Pine St. and Fir St. A new 48" conduit is identified within Fir St. between SR1 and West St. Should the City decide to include the master plan storm drain improvements with this project, R.E.Y. has included an ***optional*** scope of work task to design the underground improvements, including an optional Utility Mark and Locate task.

Street Striping

As stated in the RFP, pavement surface markings are essential in conveying direction and guidance to drivers and pedestrians. The 2018 Street Safety Plan included public engagement and analysis of existing conditions and presented recommendations for striping implementation along Pine St., within the limits of this project. The concepts of the 2018 Safety Plan may be implemented on the other streets within this project. We will look to that plan and the MUTCD to develop striping plans.

Bollard Placement

The City, in coordination with the Central Business District, has identified locations for the placement of removable bollards. The purpose of the bollards is to limit vehicular traffic and protect pedestrians during special events such as the farmers market, parades and car shows. Proposed bollards will be similar to the existing removable bollards which are located on N. Franklin St. between E. Laurel St. and E. Pine St.

Post Construction Stormwater Management

We have reviewed the Mendocino County Low Impact Development Standards Manual and found that the City of Fort Bragg is outside of the MS4 area and does not need to comply with those standards. Consistent with the Construction General Permit (CGP), water pollution control plans will be prepared and included with the design documents.

California Environmental Quality Act (CEQA)

Section 15301(c) of CEQA provides a categorical exemption for projects on existing highways and streets which do not create additional automobile travel lanes. This project is consistent with 15301(c) and the appropriate CEQA document will be filing of a Notice of Exemption (NOE).

Project Budget

We understand that the City has adopted the 2022 Capital Improvement Program which includes a project construction budget $1.7M. We understand that the City would like to construct the project in 2022. We have observed construction costs to be higher on projects bid in the summer. With a summer bid period, we will adjust the unit costs in our engineers cost estimates accordingly.

We will apply unit costs, projected from the 2020 Maple Street Storm Drain and Alley Rehabilitation project (table below) to develop construction budgets, early in the design process. This will help us to determine if work limit adjustments will need to be made to deliver the project within budget.

Estimated Unit Costs

Bid Item	Units of Measure	Unit Cost
Remove Base and Surfacing	CY	$150.00
Adjust Utility to Grade	EA	$1,760.00
Conform Grind	LF	$18.00
HMA	Ton	$210.00
HMA Overlay 2”	SF	$2.60
HMA Overlay 1.5”	SF	$1.95
Slurry Seal (Type II)	SF	$6.90
Concrete Sidewalk	SF	$27.00
Traffic Stripe	LF	$1.95

PROJECT APPROACH

Our approach includes a clear definition of the existing conditions and thoughtful development of solutions to remedy observed deficiencies and achieve compliance with ADA. We have included tasks in our base scope of services to perform a rigorous field investigation that will sample and analyze the existing road sections and soils and define the topography so we can design cost-effective pavement rehabilitation and ADA compliance improvements. As part of our optional tasks, we have proposed locating underground utilities and designing drainage improvements to minimize utility conflicts during construction and resolve drainage deficiencies.

Information Gathering: Our Project Manager, Aaron Brusatori, will meet with City staff to discuss what worked well for the City on previous projects, understand what can be improved upon, we will review observations, and further clarify project objectives. We will collect all available supplemental information from the City such as utility maps for water and sewer, right of way maps, utility contact information, confirm recent bid documents and bid results as well as comments or correspondence with adjacent land owners that may provide valuable insight into the project, (we want the City, businesses, and the residents happy with the finished product). We will then reach out to utility providers and request facility maps to help identify the underground utilities which may present conflicts with the proposed surface treatments. Using the information collected, we will then refine our field investigation plan and schedule field investigation work. The subsequent field work will include collection of topography, measuring of inverts and manholes and geotechnical investigation.

In the information gathering stage, we ask the city to paint specific locations for underground service alerts for our geotechnical investigation. We will provide maps and direction for each mark out location.

Pavement Assessment: Our pavement assessment efforts include pavement analytics, boots on the ground observations, geotechnical investigation, and laboratory testing.

Figure 1 of the RFP indicates surface treatments including; ac overlay of 2”, full depth HMA, digout and repair, and reconstruct. While digout and repair solutions are straight forward, overlay, full depth HMA, and reconstruct solutions require specific information for cost-effective solutions. Our approach will ensure we deliver cost-effective solutions.

Pavement analytics will be performed using the LiDAR data that is collected with our topographic survey. This data be used to create a map and to quantify the area of surface defects for digout repair. This information will then be verified with a boots-on-the-ground survey. We have found that when the area of defects exceeds 20% of the area

of the street section, reconstruction is likely a more cost-effective solution. We will confirm the quantity of digouts and determine a cost-effective solution.

We performed laboratory testing on two subgrade samples with the 2020 Maple Street Storm Drain and Alley Rehabilitation project found that the R-Values were more than 10 times higher than the assumed R-Value of 5 which is required when laboratory testing is not available according to the City of Fort Bragg Standard Specifications. The high R-Values of the subgrade soils allowed for a cost-effective engineered pavement design. For this project, we will perform select pavement cores to determine the depth of the existing pavement and base materials and to collect subgrade samples for laboratory testing and to establish R-Values. Engineered pavement design will be performed using this information.

The value of the geotechnical investigation can be illustrated with the following example:

> *The minimum structural sections for streets classified as Minor & Cul-de-Sac is 3" HMA over 6" of Class II AB, as required by the City Standards. If laboratory testing proves R-Values of 40 or more, the minimum structural section can be replaced with a section of 2.5" HMA over 4.5" AB. This results in a savings of $1.24/square foot. Applied to the total area of S. Harold St, Azalea Circle and Penitenti Way, the project can realize a savings of $38,000!*

The products of our field work will be used to develop and evaluate the surface treatments recommended in the PMP as well as alternative solutions for presentation to and selection by the City.

Optional Task: We have included optional tasks for the design of the storm Drainage system which is identified in the 2004 Storm Drainage Master plan. If the City wants to include these storm drainage improvements into the project, we have developed a scope of work to facilitate the design. With the storm drainage design, we recommend utilization of SiteScan to locate and mark the underground utilities within the proposed conduit alignment, prior to our field surveying, as this allows us to consider utility crossing locations and depths, before we establish the alignment. With the completion of 60% storm drainage design, we will coordinate with the City to pothole and measure underground utility crossings. The storm drainage design is an ***optional task*** which is not included in our base scope of services.

Letter Report: A letter report will be prepared to summarize the findings from our pavement analytics and geotechnical investigation. We will present options for surface treatments, including application of structural sections from the City Standards and our engineered pavement designs. A high-level budgetary cost estimate will also be prepared, which applies the unit costs for surface treatment options to the areas of surface treatment shown in Figure 1 of the RFP.

The Letter Report can be utilized by the City to facilitate selection of preferred design solutions for inclusion with the final design. The final Letter Report will reflect the selections made by the City and memorialize our path forward.

Plan Development: The selected design solutions from the Letter Report will be advanced into the Plans, Specifications and Estimates (PS&E). Construction documents will be prepared to describe the work required of the contractor. These documents will be submitted to the City for review and comment. All plan comments will be tracked in a comments matrix which will be submitted with the subsequent submittal, to ensure that each item is addressed. Layout and striping plans will be prepared at 40 scale.

We are planning to prepare specific construction details for ADA ramps 6, 7, 18 and 19 identified in the ADA Ramp table above. These curb ramps will be shown in construction details at 5 or 10 scale, depending upon complexity, and will include callouts for slopes and grades.

All other curb ramps will be noted for replacement with standard plans or details consistent with Caltrans and or city standards. The plan sheets will identify these ramps by type and list the area of concrete removal and replacement required for each, but will not include location specific grades or slopes.

Quality Assurance: Principals of R.E.Y. will perform reviews of documents prior to submittal to the City. Care will be taken to ensure that the construction documents meet our internal quality standards.

SCOPE OF SERVICES

Our Scope of Services will incorporate the Project Approach effort as clarified in the tasks identified below. Our scope of services is based upon our knowledge of the proposed project and our experiences with similar projects. We have included the value-added services, which we believe will result in a reduction in construction costs. R.E.Y. is willing to discuss the value of this effort to determine if the City would like to include these services. Our services will be delivered under the following tasks with the assumptions listed:

Scope Tasks

1. Project Management
2. Utility Coordination
3. Surveying
4. Pavement Assessment and Verification
5. Soil Investigation / Pavement Evaluation
6. Letter Report
7. Plans, Specifications and Estimates
8. Bid Period Services and Construction Support

Assumptions

- Proposed improvements will be contained within existing right of way and land acquisitions (permanent or temporary) will not be necessary
- *Coordination with the State Architects office is not required (no work is proposed on school property)*
- *Permits to enter and construct will be obtained by others*
- *The City will clarify the limits of work within each of the subject street sections prior to dispatch of survey crews*
- *The project's CEQA document will be a Categorical Exemption (15301 Existing Facilities)*
- *ADA Compliance will be included only where required by law, and clarified by FHWA in this document: https://www.fhwa.dot.gov/civilrights/programs/doj_fhwa_ta.cfm*
- *Proposed ADA improvements will be contained within existing impervious areas, and additional impervious surfaces will be designed to be less than 5,000 square feet*
- *Three project meetings will be conducted with the City to facilitate the review and approval of the construction documents, one on-site and two others will be virtual*
- *The City will assist with placing 'door hangers' requesting residents to move vehicles parked along the street to facilitate topographic mapping and measuring of inverts within drain inlets*
- *The City will provide front end bid documents*
- *The City will mark out the locations of missing or damaged gutter and or curb and gutter that they want upgraded with the project prior to the Mobile LiDAR scan*
- *The City, using R.E.Y. provided maps, will mark out geotechnical exploration areas for USA*

Task 1: Project Management

1.01 Project Coordination: R.E.Y. will manage the project team from notice to proceed through 100% Plans, Specifications and Estimates. We will prepare monthly invoices which will be submitted with status reports.

Project Manager, Aaron Brusatori, will coordinate with internal resources as well as our subconsultants to document topography, pavement soils information and subsurface utility locations. Our team will coordinate with City-forces to pothole locations where utility conflicts are probable based on existing data.

We will reach out to Caltrans to inform them of possible encroachments into their rights of way. We will provide additional details and prepare an encroachment permit application with the PS&E phase.

"During my years as a County Supervisor and Transportation Commission member I always appreciated Aaron's ability to present any given project to the Board and public clearly and concisely. He was always knowledgeable about the project, anticipated potential areas of concern and had possible solutions prepared. All while remaining objective and open minded to alternative suggestions from either the Board or public."

John Plasse, Commissioner, Amador County Transportation Commission and Retired Amador County Supervisor

Throughout the design and project delivery process, Aaron will conduct brief, bi-weekly, check in calls. These calls help to address questions and keep the project on schedule. If any action items are generated during these calls, they will be memorialized with a summary email.

1.02 Meetings: The project will include three formal meetings, one in-person and two virtual.

Our project will begin with a virtual Kick-Off meeting with the City. This is our first coordinated Team collaboration and will set the course of the project.

The second meeting is proposed shortly after submittal of the Draft Letter Report. The surveying and geotechnical investigation will have also been completed prior to this meeting. In this meeting City staff and Aaron will meet to review the findings and solutions presented in the Draft Letter Report, this will be an in-person meeting at the City office. We will have opportunity to observe and discuss specific areas of concern while in the field. Upon conclusion of that meeting, or shortly thereafter, it is expected that the City will have selected alternatives and provided direction for incorporation into the Plans, Specifications and Estimates.

The third meeting, virtual, is proposed after the City, has reviewed the 60% construction documents. We will conduct a conference call with the City to discuss the comments received and further develop or clarify solutions. We may also discuss construction funding opportunities so that the project may be adjusted to fit the available budget. We may work with City Staff to identify potential cost savings and/or phasing to meet known construction funding objectives at that time.

1.03 Phase II MS4: We will document that the City of Fort Bragg is outside of the MS4 Area limits as shown in the County of Mendocino Low Impact Development Standards Manual, Version 2.2 – May 2021. Although this project is not subject to MS4 requirements, water pollution control plans and details will be included in our design for conformance with the Construction General Permit (CGP).

1.04 CEQA NOE: We will prepare a Notice of Exemption for endorsement by the City and final recordation with the County of Mendocino.

> *Deliverables: Contract, budget and schedule management, coordination with the City and subconsultants, monthly summary of work and invoices, up to 3 meetings with City Staff, meeting agendas and minutes, prepared in digital .pdf format and 8.5"x11" hard copies, as applicable*.

Task 2: Utility Coordination

2.01 Utility Letters: At project inception, R.E.Y. will send out A letters to the appropriate utility companies to obtain system maps prior to performance of field work. These maps will be used to focus the utility locating efforts within the work area. After City review and comment on the 60% design, R.E.Y. will identify any utility conflicts and send out Utility B letters to the appropriate utility purveyor(s). After City review of the 100% design, R.E.Y. will send out Utility C letters to the affected utility purveyors.

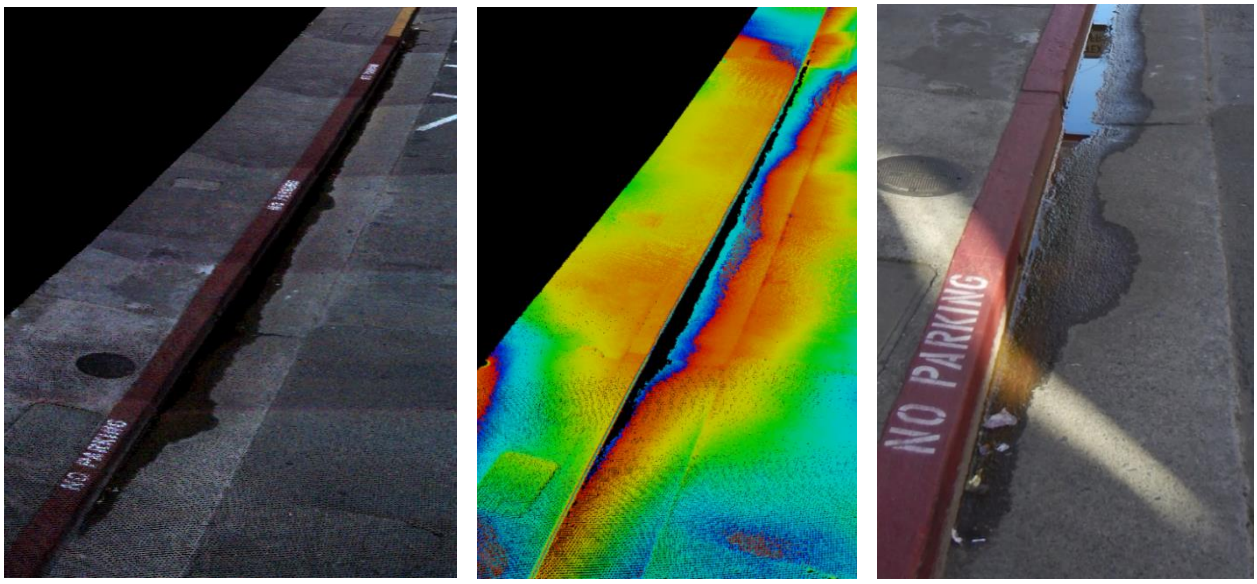
Task 3: Surveying

R.E.Y. will dispatch field crews to collect topography. Our survey work includes two stage effort with conventional and LiDAR data collection.

R.E.Y. LiDAR Data SR1 at Pine St.

3.01 Topography: To define the project area topography, R.E.Y. will use a combination of terrestrial LiDAR and conventional surveying. Our engineers will work with our Survey crews to define the areas where the benefits of a dense LiDAR point cloud can be realized to document drainage flow patterns and to facilitate the design of non-standard ADA improvements. For the streets which are only to receive striping, the collected data will be extracted to establish limits of existing pavement, these areas will not be vertically controlled.

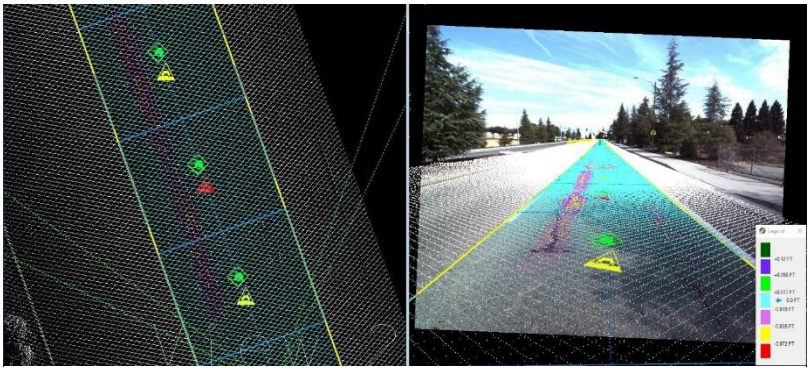
3.02 Right of Way Determination: It is assumed that all of the proposed improvements will fall within existing City rights of way. Depiction of existing rights of way will be based upon best-fitting record dimensions to physical improvements along the streets planned for pavement rehabilitation.



LiDAR Data Set – Gutter Drainage

Task 4: Pavement Assessment and Verification

4.01 Pavement Analytics: From the LiDAR data, we can extract lane lines which will be used as the bounds for each individual lanes' automated pavement condition analysis. Using TopoDOT software, we will create grids the width of the lane and 11' long, establish a plane using the dense point cloud, and identify any deviations from that plane. Based on the characteristics of the deviation, it will be classified as "rutting", "corrugation", "pothole", "bump", or "depression", and each will be colored green, yellow, and red based on severity. The software will generate a report using ASTM D6433 severity threshold standards and indicate where they occur. The report will be used to generate a map of the identified areas which will then be "Ground Verified" with boots on the ground observations, to confirm the information.



Aerial and traveled lane view of TopoDOT pavement analysis software graphical

In addition, R.E.Y. will be able to utilize the same data that was extracted with the TopoDOT analysis to develop a CAD drawing quantifying the areas requiring dig outs.

4.02 Ground Verification: We will utilize the dig out map from the previous task to verify the locations and quantities of dig outs.

Deliverables: Base map including topography with one-half-foot contours and boundary information derived from records, overhead and underground utility locations, in digital .dwg and hard copy format.

Task 5: Soil Investigation / Pavement Evaluation

To provide cost-effective, alternative solutions, we have included task for Soil Investigation and Pavement Evaluation. The product of this task will be optimization of pavement designs to reduce construction costs.

Geocon will explore and evaluate the existing pavement structural section details and subsurface conditions within the project area and provide appropriate pavement rehabilitation recommendations. Our investigation will include

a field exploration program, geotechnical laboratory testing, engineering analysis, and report preparation. We have included the following tasks to complete this effort:

- Review available project maps and plans to select exploration locations.
- Perform a site reconnaissance to review project limits, existing conditions, and to evaluate exploration equipment access.
- Obtain a business license from the City of Fort Bragg (if/as required).
- Obtain an encroachment permit from the City of Fort Bragg (assumed no fee and bond requirements waived for this City project).
- ***City forces*** will mark out exploratory excavation locations in the field and Geocon will open an Underground Service Alert (USA) a minimum of two-working days (as required by law) prior to performing exploratory excavations at the site.
- Provide traffic control measures (cone-off work areas and provide necessary signage) during field operations as needed in accordance with City encroachment permit requirements. Given the narrow alley widths, this may require short-term alley closures.
- Perform up to seven (7) pavement cores using a portable electric core drill with a drill rig. Pavement cores will be retained for reference and photo documentation.
- Measure the existing pavement section material thicknesses (HMA and AB, if present) at each core location.
- Perform auger borings at the core locations to depths up to 15 feet to evaluate subsurface soil conditions and observe if shallow groundwater conditions are present.
- Obtain representative material samples (asphalt, aggregate base, and subgrade soil) from the core locations.
- Upon completion, backfill the excavations with sand/pea gravel. Asphalt cores will be patched with cold-patch asphalt concrete or rapid-set concrete per City permit requirements.
- Perform laboratory tests to evaluate pertinent geotechnical parameters.
- Analyze field and laboratory data and prepare a summary report to include (but not be limited to) the following:
    - Site Plan showing locations of pavement cores/borings.
    - Existing pavement structural section material thicknesses at the core locations.
    - Description of site geology
    - Laboratory test results
    - Pavement rehabilitation recommendations
    - Concrete sidewalk, curb and gutter recommendations.
    - Construction considerations.

Deliverables: Soils report, Pavement Design

Task 6: Letter Report

6.01 Draft Letter Report: In the Letter Report, information collected and the products of the field work will be compiled, analyzed, reduced, summarized and presented. The Letter Report will include analysis of constructability and longevity of the proposed pavement rehabilitation solutions along with a high-level budgetary cost estimate which applies the unit costs for surface treatment options to the areas of surface treatment shown in Figure 1 of the RFP.

6.02 Final Letter Report: Upon review of the draft Letter Report, a final Letter Report will be issued memorializing the City's choices.

Deliverables: Draft & Final Letter Report including Cost Estimates in digital .pdf and native file formats.

Task 7: Plans, Specifications and Estimates

R.E.Y. will utilize the topographic information, subsurface investigations, and the City's selected design solutions to prepare construction documents which implement the solutions, improve drainage and provide accessible pedestrian facilities where necessary.

R.E.Y. will make minor modifications to the technical specifications that were prepared for the Maple Street Storm Drain and Alley Rehabilitation project so that they reflect the details for this project.

The technical specifications and special provisions will include City of Fort Bragg Standard Specifications and reference to Caltrans standard plans and specifications, when applicable. The construction contract will include the City's prepared front end contract language along with state contract requirements.

The R.E.Y. team will prepare cost estimates for submittal at the 60%, 90% and 100% design levels. These estimates will be based on quantities calculated from the plans with application of unit costs which consider recently-received bids for projects in Fort Bragg, as well as bid results from projects that are geographically appropriate.

The construction plans will be presented in hard copy on 22"x34" format.

7.01 60% Plans, Bid Item List and Estimate: We will prepare the 60% Plans, Bid item list, and Engineer's Estimate of Probable Construction Cost. The 60% plans will include a cover sheet, note and legend sheet, typical details, ADA detail placeholders, layout sheets at 40 scale, water pollution control plans, and striping plans at 40 scale.

7.02 60% Comment Response Matrix: Once comments on the 60% submittal package have been received, we will prepare a comment response matrix to document the response to comments.

7.03 90% Plans, Specifications and Estimates: The 90% Plans, Technical Specifications and Engineer's Estimate of Probable Construction Cost will be improved and incorporate the 60% comments. Details for 'custom' ADA ramps will be included at 90%. Staging and traffic control requirements will be included in the Special Provisions to provide the contractor the constraints under which they will be working. The City will provide the Front-End Specifications including the Notice to Bidders, Proposal (Agreement), General Conditions, and Special Provisions, etc. R.E.Y. will combine the Technical Specifications with the Front-End Specifications for this submittal. The Engineer's Estimate will be updated to reflect the quantities from the 90% Plans.

7.04 90% Comment Response Matrix: Once comments on the 90% submittal package have been received, we will update the comment response matrix to include the 90% comments.

7.05 Caltrans Encroachment Permit: At the 90% design level, we will prepare an encroachment permit application for Caltrans to facilitate work within their right of way. For this project we expect to replace traffic loops in E. Chestnut St. which serve the traffic signals on SR1, the limits of surface improvements at W Fir St. and Boatyard St. may also encroach into the Caltrans right of way.

7.05 100% (Final) Plans, Specifications and Estimates: Once the comments on the 90% submittal package have been received, we will update the comment matrix and prepare the 100% Plans, Specifications, and Engineer's Estimate of Probable Construction Cost. The 100% submittal will be bid ready.

7.06 60%, 90% and 100% (Final) Storm Drainage Design (Optional Task): Following the same pattern of submittal and review described above, R.E.Y. can prepare plan and profile sheets to facilitate the construction of the storm drainage pipes identified, within the project limits, from the 2004 Storm Drainage Master Plan. The proposed conduits are shown on N. Franklin between Pine St. and Fir St. and on Fir St. between SR1 and West Street. Design of these conduits will require additional effort to mark and locate existing underground utilities.

7.07 Utility Mark and locate for Storm Drain Alignment (Optional Task): SiteScan will utilize ground penetration and other non-destructive methods to locate existing underground facilities and determine approximate depths without excavation. These methods have proven useful in identifying unmapped utilities. Next, the R.E.Y. team will evaluate the burial depths of the located utilities and identify a subset of utility locations for *potholing by City forces*. In this approach, the pothole crews can follow 60% engineered design so that the location of the potholes are more accurate and there is less of a chance that additional potholes will be necessary. The limits for mark and locate will be the street sections above the storm drain conduits identified in the previous task.

7.08 Internal QA/QC: Prior to each submittal to the City, submittal documents will be subject to independent internal review. The comments from the internal review cycles will be addressed prior to submittal.

Deliverables: 60% and 90% PS&E Comment response matrix in .pdf and .xls or .doc format; 60%, and 90% PS&E will include an electronic .pdf copy, as well as digital native formats of the documents, .dwg, .doc, and .xls; 100% PS&E will include an original wet signed and stamped plan set and two (2) hard copies, electronic copy of finished product in digital .dwg format, and Microsoft Word and Excel as applicable.

Task 8: Bid Period Services and Construction Support

8.01 Bid Support: Once the bid documents are approved, we will assist the City throughout the bidding process. During the bidding advertisement phase, our team will assist by responding to questions and providing clarifications during the bidding process. We assume the bid support will include assistance with up to eight bidder questions and one bid addendum. Upon receipt of bids, we will prepare a bid analysis spreadsheet to compare contract unit costs and identify any discrepancies.

8.02 Conformed Construction Documents: Once the bidding is complete and a contractor has been selected, all addendums will be merged into one complete set of conformed construction documents.

8.03 Construction Engineering Support: As the design consultant, R.E.Y. will provide a minor amount of construction engineering support as requested by the City and/or construction management team including:

- Respond to Requests for Information (up to five RFI's)
- Provide Design Clarifications and submittal review (up to 10 hours)