RAILPROS

PROPOSAL

STATEMENT OF QUALIFICATIONS TO PROVIDE:
Track Design Services Related to the Amtrak Station Relocation

FOR THE:
City of Maricopa, AZ

CITY OF MARICOPA
PROUD HISTORY · PROSPEROUS FUTURE

39700 W. Civic Center Plaza
Maricopa, AZ 85138
Ph: 520.568.9098
Fx: 520.568.9120
www.maricopa-az.gov

REQUEST FOR STATEMENTS OF QUALIFICATION: RSOQ 14DSD090813 Track Design Services Related to the Amtrak Station Relocation

INTRODUCTION

The City of Maricopa will accept competitive sealed Statements of Qualifications for track design services related to the relocation of the Amtrak station to be submitted at the address or physical location until the date and time detailed below. Statements of Qualifications shall be delivered to the City non-electronically and shall be in the actual possession of the City on or prior to the exact date and time indicated below. Late offers shall not be considered. *Offers shall be submitted in a sealed package with **"RSOQ 14DSD090813 Track Design Services Related to the Amtrak Station Relocation"** and the Offeror's name and address clearly indicated on the front of the package.* All offers shall be completed in ink or typewritten. Offerors are strongly encouraged to carefully read the *entire* Request for Statement of Qualifications.

Pre-submittal Meeting:	October 3, 2013, 10:00 am, 39700 Civic Center Plaza, Maricopa, AZ
Offer Due Date:	October 21, 2013
Offer Time:	2:00:00 PM Arizona Time
Number of Qualifications:	1 unbound original and 8 bound copies (please label original)
Contact:	Pattie LaCombe, Purchasing Manager
E-Mail (Questions only) :	patricia.lacombe@maricopa-az.gov
Mailing Address:	39700 Civic Center Plaza, Maricopa, Arizona 85138
Proposal Delivery Location:	39700 Civic Center Plaza, Maricopa, Arizona 85138

OFFER

To the City of Maricopa: The undersigned on behalf of the entity, firm, company, partnership, or other legal entity listed below offers on its behalf to the City an offer that contains all terms, conditions, specifications and amendments in the Notice of Request for Statement of Qualifications issued by the City. Any exception to the terms contained in the Notice of Request for statement of qualifications must be specifically indicated in writing and are subject to the approval of the City prior to acceptance. The signature below certifies your understanding and compliance with the Terms and Conditions contained in the Request for Statement of Qualifications package issued by the City.

Arizona Transaction (Sales) Privilege Tax License Number: Not Applicable	For clarification of this offer contact: Name: Buzz Berger, P.E. Email: buzz.berger@railpros.com
Federal Employer Identification Number: 33-0905680	Telephone: 925.878.8124
RailPros, Inc. Company Name	Authorized Signature for Offer
1 Ada Parkway, Suite 200 Address	Eric Hankinson, P.E. Printed Name
Irvine CA 92618 City State Zip Code	President Title

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SOLICITATION AMENDMENT No.1:
RSOQ 14DSD090813
Track Design Svcs Amtrak Station Relocation

An **original** signed copy of this amendment shall be received by the City of Maricopa Purchasing Office with your offer or prior to the Solicitation due date and time. This Solicitation is amended as follows:

1. **Instructions to Offeror**

3. PRE-SUBMITTAL CONFERENCE: ~~Wednesday,~~ Thursday, October 3, 2013, 10:00 am at City of Maricopa, City Hall, 39700 Civic Center Plaza, Maricopa, AZ 85138.

ALL OTHER PROVISIONS OF THE SOLICITATION SHALL REMAIN IN THEIR ENTIRETY.

Offeror hereby acknowledges receipt and understanding of the above amendment. October 17, 2013 Signature Date Eric Hankinson, P.E., President Typed Name and Title RailPros, Inc. Company Name 1 Ada Parkway, Suite 200 Address Irvine CA 92618 City State Zip	The above referenced Solicitation Amendment is hereby executed this 1st (first) day of October, 2013, at Maricopa, Arizona. Patricia A. LaCombe Patricia A. LaCombe, CPPB As Purchasing Manager, and not personally.

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RAILPROS

Ms. Patricia LaCombe
Purchasing Manager
Maricopa City Hall
39700 W. Civic Center Plaza
Maricopa, AZ 85138
Attention: Patricia LaCombe, Purchasing Manager

Subject: Request for Statement of Qualification: RSOQ 14DS090813 Track Design Services Related to the Amtrak Station Relocation

Dear Ms. LaCombe and Members of the Selection Panel:

RailPros appreciates this opportunity to propose our team for track design for the new Maricopa Amtrak station. We have assembled a team of highly-qualified design professionals with outstanding track records, relevant experience and a comprehensive understanding of the project. Our recent experience in similar track and station design projects and working extensively with Union Pacific (UPRR) gives us a unique perspective on what is involved with successfully completing this project quickly and efficiently.

RailPros is pleased to offer unmatched understanding of Class I railroad and Amtrak concerns. Our firm is staffed with former officers and field employees from Union Pacific, Amtrak, BNSF Railway, Southern Pacific, Norfolk Southern, Conrail, and other major railroads. We have maintained our relationships with those railroads – the best evidence is that these railroads continue to select RailPros for projects. Our firm's professionals have an in-depth understanding of your project and are skilled at managing and designing projects to UPRR standards.

Project Understanding:

RailPros understands this project which involves design for a new siding track on UPRR property at Maricopa to allow for future relocation of the Amtrak station and, ultimately, construction of a grade separation at SR-347. The siding would be designed to UPRR standards, would be approximately 3300 feet long and would be located adjacent to the UPRR property line to allow for future construction of a passenger platform and station on City-owned property. The new track would connect to the UPRR Sunset Route main line at each end, and would also include a new crossover in the UPRR main line at the west end of the project. The City needs to progress design quickly in order to get UPRR's signal design department started on their component of the work.

We anticipate key design elements to include: railroad track and earthwork design to UPRR standards, drainage and culvert design to UPRR standards, platform and station planning to UPRR and Amtrak standards, environmental clearances, and utility coordination.

Project Manager:

RailPros is committing Buzz Berger, PE, to lead the project. Buzz leads our rail design group and has designed literally hundreds of miles of main line track, sidings, and spurs. Buzz is a veteran of the railroad industry, a former UPRR employee, has worked on UPRR design projects, and has a history of developing practical, cost effective designs, and proactively identifying both constraints and solutions.

Supporting Buzz is a team of firms with local experience and knowledge relevant to this area, to UPRR, and to rail projects in general. We are proud to include Entellus, Inc., to lead the survey, roadway planning, and utility coordination efforts. Entellus is familiar with rail projects, having completed crossing design projects for the City of Phoenix as well as a major track design project for ConocoPhillips' refinery on the BNSF Railway. But most importantly, Entellus has performed the drainage planning for this area for the local flood control districts and can hit-the-ground-running on this crucial component of the project.

Likewise, we are proud that EcoPlan has joined our team. They have extensive experience with environmental permitting for transportation projects, but also for public projects in UPRR's right-of-way, including AZDOT's Marsh Station relocation of the UPRR overcrossing of Interstate 10, the widening of Speedway Blvd. in Tucson and the

Houghton Road widening, which includes a grade separation over the UPRR. While we do not anticipate permitting issues, EcoPlan can quickly and efficiently perform the research needed to justify the lack of a federal permitting nexus.

Expertise:

RailPros is unique in this industry and in the region and we have the experienced staff for this project that understand UPRR's processes, including former UPRR employees who understand the "UP way" of completing a design project, and who have worked on design projects for UPRR before. Our team also understands Amtrak station operations and design criteria, and the way the station ties-in to the rest of the project. With several former senior Amtrak managers on-staff (including Eric Hankinson, Tom Crowell, Johnny Johnson, Buzz Berger, and Chris Coffman), RailPros also brings ongoing relationships with Amtrak staff which may assist in the Amtrak review process.

Commitment:

Our commitment to serve the needs of our clients guides our professional endeavors and ensures excellence. We accomplish this commitment through project management, excellence of staff, being responsive and flexible, and paying attention to each detail. We require our subconsultants to bring this same commitment to our team and we assure the City that when you hire RailPros you will get a cohesive, responsive, and efficient team to successfully deliver your project.

Buzz Berger, PE, Regional Manager, will serve as the point of contact during the proposal evaluation period. He can be reached by phone at 714-734-8765 ext. 133 (office), 925-878-8124 (cell), and email Buzz.Berger@railpros.com

Contractual:

We acknowledge receipt of Amendment No. 1, Exhibit A, the 2 rounds of Questions and Answers/Clarifications and sign-in sheet from the pre-proposal meeting.

We request further discussion with the City regarding the indemnity clause and liquidated damages clause in the City's contract language.

The following persons are authorized to make representations and sign contracts on behalf of RailPros:

Eric Hankinson, President, 714-734-8765 ext 112, via email at: eric.hankinson@railpros.com

Johnny Johnson, Vice President, 714-734-8765 ext 117, via email at: johnny.johnson@railpros.com

Tom Crowell, Vice President, 213-929 ext1115, via email at: tom.crowell@railpros.com

Chris Mockus, Vice President, 714-734-8765 ext 125, via email at: chris.mockus@railpros.com

All share the same mailing address and fax information, as follows:

1 Ada Parkway, Suite 200, Irvine, CA 92618.

Fax: 714-734-8755

Thank you for considering our team's qualifications for the Amtrak Station Track project. We are confident in our ability to exceed your expectations and deliver this project quickly and efficiently.

I, Chris Mockus, am authorized to bind RailPros to contract with the City of Maricopa.

Sincerely,

RailPros, Inc.

Chris Mockus, Vice President

4. Firm Overview

A. Primary Line of Business and Description of Our Team

RailPros is focused on railroad planning, design, and construction management. Our team includes civil engineers, signal, and operating employees from major freight and passenger railroads (including UPRR, BNSF Railway, Amtrak, Metrolink, and others), as well as seasoned design engineers who have provided engineering services throughout the Western United States for both public and private clients. Our team members also have substantial field experience, giving them unique insight into "real-world" railway design, construction, operation, and maintenance. As a result, our designs are practical and cost-effective, which directly benefits our clients.

RailPros was founded in 2000 by Johnny Johnson, PE, and Eric Hankinson, PE, and has grown to over 65 staff in 5 offices locations in Southern and Northern California. Our affiliated firm, RailPros Field Services (with an additional 60 employees), provides construction management, construction inspection, railroad coordination, railroad flagging, and design review services to railroads across the country, including Union Pacific, Norfolk Southern, Kansas City Southern, and many shortlines and industrial clients.

We are currently providing rail design, program management, and construction management services to clients in California, Oregon, Washington, and Utah. Examples of our projects include track and signal design for the Point Defiance Bypass project in Washington (which includes 13 miles of new track, new centralized traffic control, and new grade crossing signals); program management for Metrolink's $250 million Positive Train Control project; program management for San Diego Association of Governments' $600 million Oceanside to San Diego commuter rail capacity program; planning for Sound Transit's 25-mile Eastside Rail Corridor; design for grade crossings on UPRR's line in Utah; working as an embedded consultant for UPRR to provide liaison with the Bay Area Rapid Transit extension to San Jose, California; construction management for UPRR's Santa Teresa yard project in New Mexico; and bridge construction management for UPRR's Sunset Route project.

B. Office in State of Arizona

RailPros is proud to have Entellus, Inc. as a key member of our team. Entellus is a local engineering firm headquartered in Phoenix and has been doing business as Entellus, Inc. since 1996. Entellus has a diverse resume of complex civil engineering projects including roadway, hydrology and hydraulics, and survey projects in Pinal County. Entellus' local presence and the commitment of Entellus' principal, Tim Crall, PE, provide the City of Maricopa with immediate access to our team members, especially for utility coordination.

Our team also includes EcoPlan Associates for environmental clearances. While we do not expect NEPA permitting requirements, we do recommend some effort to document that there are no environmental issues (such as archaeological or endangered species). Accordingly, we have this skill set available. EcoPlan Associates is headquartered in Arizona, and, because the majority of their work is in Arizona, they are familiar with the respective permitting agencies and tribes. EcoPlan has also worked on multiple projects in Arizona on UPRR property to obtain environmental clearances.

We are also proud to have Ninyo and Moore as a part of our team to provide geotechnical engineering support for the project. Ninyo and Moore have provided geotechnical engineering services for UPRR's Phoenix Automobile Loading Facility, UPRR's Red Rock Classification Yard, and UPRR's gantry cranes at the intermodal yard at Tucson. Ninyo and Moore have also worked on public agency projects along UPRR's corridor, including an Arizona DOT project which constructed a new railroad bridge over the Interstate 10 bridge. Not only does Ninyo and Moore understand the geotechnical conditions in the vicinity, but they also understand UPRR's requirements for geotechnical explorations and documentation, which will help streamline the City of Maricopa project.

C. Firm Structure and Organization Chart

- RailPros, Inc., is a corporation. RailPros has been in business since 2000. RailPros also meets the federal size standard for a Small Business in the Architecture and Engineering NAICS classification.
- Entellus, Inc. is a corporation. Entellus was originally founded in 1985 as AGK and was subsequently renamed Entellus, for a total of 28 years in business.
- Ninyo and Moore, Inc. is a corporation. Ninyo and Moore was founded in 1986.
- EcoPlan Associates is a corporation. EcoPlan was founded in 1991.

RailPros will lead the design team, performing track and earthwork design. Entellus is our key subconsultant, and will be responsible for drainage design, utility relocation, and any roadway design (if necessary). Our other subconsultants, Ninyo and Moore and EcoPlan Associates are responsible for geotechnical investigations and any environmental documentation, respectively. Below is our organization chart showing our teaming relationships.

5. Experience and Qualifications of the Team

A. Provide a Detailed Description of the Team Experience with Track Design, Private Rail Lines Tying into Railroad Facilities

Our team has extensive experience with railroad track design and private rail lines tying into railroad facilities. Our team members have done work on a number of freight railroads, including Union Pacific and BNSF Railway, as well as several public agencies which own freight tracks (such as the Port of Long Beach, the Port of Portland, and the Port of San Diego). Our team has also done work for passenger railroads, including North County Transit District (the Coaster and Sprinter rail lines), Metrolink, and Amtrak, involving both stations and track projects. To demonstrate that we have met the Evaluation Critera 9a-9d on page 3 of the RFSOQ, we indicate the specific criteria throughout our proposal with

this type of symbol: Ⓐ

Our team has worked on several scenarios exactly analogous to the City's project: planning and design of station/ passenger tracks tying-in to Union Pacific tracks. Additional information about this experience is provided, below. We have also done planning and design for other private industry tracks tying-in to tracks owned by a freight railroad. We have done this work for an intermodal yard, a dry-bulk terminal, and several oil transload facilities.

Moreover, leaders of our team were employed by these railroads prior to joining RailPros: Buzz Berger worked for both Union Pacific and Amtrak while Eric Hankinson worked for Amtrak. Eric and Buzz understand both railroads' internal processes and "hot button" issues.

In addition, RailPros is currently working for Union Pacific, managing the submittal process and reviewing submittals for the Bay Area Rapid Transit system ("BART") extension to San Jose, Calif., a project which is being built within Union Pacific's right of way and which requires relocation of UPRR's tracks. RailPros is also currently providing construction management services to UPRR for several portions of the Sunset Route project, and for the Santa Teresa yard project in New Mexico.

RailPros is also performing track, earthwork, and railroad signal design for the Point Defiance Bypass project, which includes 13 miles of track design to UPRR and BNSF's common standards, several private industry track tie-ins, multiple grade crossings, and a centralized traffic control railroad signal system. The project is sponsored by the Washington State Department of Transportation. Design work on this project has gone smoothly, and follows a successful design process that Buzz employed as Design Manager while working on two previous, similar track and signal projects that were constructed (on time and on-budget) for Sound Transit in the same area. One of the keys to this success has been Buzz's detailed earthwork modeling efforts in constrained areas. While less detail and effort is needed in "open" areas, where right of way or physical obstacles constrain a project, Buzz has found great benefit in fully detailing the proposed digital terrain model. A key part of this is his attention to QA/QC during the design process and having truly independent reviewers check the plans prior to advertising for construction.

B. Experience of Key Personnel

Eric Hankinson, PE

RailPros co-founder Eric Hankinson will serve as Principal-in-Charge. Eric has himself managed and designed several Amtrak station projects on the Union Pacific, including platforms at Van Nuys, Calif. and Oxnard, Calif. Eric was the Director of Engineering at Amtrak West, and is well versed in Amtrak's requirements and standards. Indeed, Eric led the effort to develop platform and station standards for Amtrak's West Region.

As Director of Engineering, Eric oversaw development of Amtrak's West region station design standards and best practices, and oversaw design of over a dozen station and platform facilities. Of particular relevance, Eric was responsible for the project to bring Amtrak stations throughout California (over 36 facilities) into compliance with the Americans with Disabilities Act. A major part of this project involved analyzing the relationship of platforms with other parts of a station (such as shelters, parking lots, kiss-n-ride areas, etc). Historically, these transitions were made with stairways, but modern access codes require provision of ramps. This places a premium on understanding the elevation and distance between the track, platform, and back-of-platform amenities. Ⓑ

Eric is also well-versed in the Federal Railroad Administration's new "Level Boarding" rule and its implications. This rule states that platforms on tracks used exclusively by passenger trains must be constructed at an elevation matching the height of the floor of the railcars (typically 15" above the top of rail). Traditionally, passenger platforms were constructed

at a uniform height of 8" above the top of rail (as depicted in the City's concept drawings). Eric understands the details and many caveats in this rule. (C)

Buzz Berger, PE

Buzz Berger will serve as Project Manager and have daily leadership responsibility for the team and the design, and coordination with the City and the City's railroad coordination consultant. Buzz was a former field employee of Union Pacific Railroad (UPRR) and manager at Amtrak. Buzz's railroad background gives him unique insight into design and construction: he knows how projects are actually built. From this experience, he is able to take a practical, efficient approach to design projects. In addition to freight rail design, Buzz's design experience includes planning and final design for freight and passenger rail projects, as well as passenger stations.

Buzz has worked on several scenarios exactly analogous to the City's project: planning, designing, and constructing new track within Union Pacific right of way to serve Amtrak stations. These projects were located at Sacramento, California, and Auburn, California.

At Sacramento, additional station tracks and platform capacity was needed at the existing station. Buzz designed two new siding tracks that connected with UPRR's existing main line, designed the platform improvements, and coordinated with UP for protection of utilities owned by Union Pacific (railroad signal cables, telephone, water and natural gas lines) that served nearby UP buildings. Buzz also coordinated closely with fiber optic providers who had buried cables in the immediate vicinity. The track was constructed by a contractor, with tie-ins at each end, where the new track joined the existing UP track, performed by Union Pacific. This project worked very well, with close coordination between Union Pacific and Amtrak's contractor. Buzz's familiarity with UP managers at Roseville and in Omaha helped facilitate this project, and allowed Amtrak's contractor to work with minimal oversight from UP. (A) (B) (D)

At Auburn, Buzz designed a new siding track that served both the new station as well as a passenger train layover facility (a location where passenger trains are stored and minor maintenance is performed). As with the preliminary arrangement at Maricopa, the track included a power operated derail and power-operated turnout to access the track. In this case, since all track was very close to the UPRR main line, Union Pacific constructed all the track. Buzz coordinated track design with design for the platform and station facility (a non-staffed station featuring a small shelter, canopy, and restroom) itself. Design and construction of this project went very smoothly, with both Amtrak and UPRR's work coming in on-time and on-budget. Buzz's ability to design the project and provide track plans from which UPRR forces could work and ability to rely on UPRR Standard Plans (with the knowledge that UPRR forces knew the details of track construction and didn't need plans to explain these details to them) sped the construction phase. However, due to the very constrained right of way, the layover track was much closer to the main line than UPRR or Amtrak would have preferred. (A) (B) (D)

Moreover, Buzz has worked on numerous other station planning and design projects, including the planning and layout study for the Amtrak Freighthouse Square station in Tacoma (on Sound Transit's tracks), Washington; planning and design for phased construction of new tracks and platforms at Amtrak's King Street station in Seattle (on BNSF Railway). Both the Freighthouse Square and King Street projects were performed under for the Federal Railroad Administration's High Speed Rail program. Designs were developed to FRA's regulatory criteria, as well as their staff's recommended practices for station, platform, and track design.

Other Amtrak stations for which Buzz has provided planning, design/PS&E, and/or construction management include: Sacramento, CA (on UP tracks); Richmond, CA (on UP); Santa Clara, CA (on UP); Rocklin, CA (on UP); Martinez, CA (on UP); Emeryville, CA (on UP); Carlsbad, CA (on Coaster); Encinitas, CA (on Coaster); Stanwood, Washington (on

BNSF tracks); plus several more. From these successful projects, Buzz has a demonstrated familiarity with FRA's and Amtrak's standards and station and platform design practice, as well as these agencies' processes and staff.

Buzz also has substantial experience with freight railroad projects in general and Union Pacific projects in specific. He joined RailPros approximately one year ago, but had previously led several projects for Union Pacific; he has also performed track design for other freight railroad clients such as BNSF Railway; Puget Sound and Pacific (a new siding designed to join UPRR/BNSF standards); Dakota, Minnesota, and Eastern; Tacoma Rail; and several heavy-haul dedicated mining railroads outside the United States. Buzz is also RailPros' lead for the Point Defiance Bypass project (referenced above) which his being funded by the Federal Railroad Administration, and which is being designed using UPRR and BNSF's common standards.

(A) (D)

Buzz led a major planning study for Union Pacific; the study analyzed improvements to UPRR's Martinez Subdivision, which extends between Oakland, Calif. and Martinez, Calif. This corridor, like the Sunset Route, is a busy intermodal freight corridor, but it also has a substantial amount of passenger traffic (over 40 passenger trains per day on some portions of the route). Buzz was responsible for developing concept plans for freight improvements, including new sidings, industrial track connections, reconfiguration of tracks at existing passenger stations, and over 30 miles of additional main line track adjacent to existing main lines. The complex geometry at many locations required detailed track design and earthwork modeling to validate the concepts. (A) (D)

Buzz is completely familiar with not only the FRA's Track Safety Standards (49 CFR Part 213) and how they affect track design (for example, for curvature and superelevation), but also the other regulations that would affect construction. For example, the FRA's regulations for Roadway Worker Protection (49 CFR Part 214) affect track construction and maintenance activities, while the FRA's railroad operating practice regulation, in conjunction with the railroad signal regulations, affect the configuration of the turnouts and derails at the ends of the siding. Not only is Buzz familiar with these regulations' impact on design, but he also worked under these regulations on a daily basis while employed at the railroad and thus understands their implications. (C)

As a result of his rail design, construction, and operations experience, Buzz was selected as the Quality Control Lead for UPRR's Sumner (Washington) Siding project; he was responsible for reviewing plans for conformity with UPRR's standards, standard railroad practice, and internal consistency. Design for this project went smoothly, though the very difficult geotechnical conditions (including any wetlands) were a known challenge and mitigation drove the overall project cost estimates. Buzz was also selected as the civil and track lead for the value engineering study for Union Pacific for the Colton Crossing project, a major project that ultimately constructed a long bridge, embankment approach, and relocated utilities in order to grade-separate the crossing of the UP and BNSF tracks in Colton, California. (A) (D)

Dan Alvira, PE

Dan Alvira will lead design for any structures, such as cast-in-place concrete culvert headwalls, to UPRR standards. Dan was selected by UPRR to review structure design submittals for the "BART to San Jose" project, a public project sponsored by the Valley Transportation Authority (VTA) in the San Francisco Bay Area. This project is a major relocation of UPRR's main line to accommodate transit tracks in an adjacent corridor. Union Pacific has engaged RailPros not only to review the structure design submittals from other firms for conformance to UPRR's standards, but also to coordinate the overall submittal process from the public agency (VTA) to UP. As a result, Dan knows how to prepare submittals in a manner consistent with UPRR's expectations, thus expediting the review. (D)

In addition to complex steel girder and truss bridge designs, Dan's design experience includes design of several "standard" precast concrete box railroad bridges. This is a type of construction and design common to all freight railroads, including Union Pacific. While we do not anticipate bridge design as part of this project, the abutment design for these structures is exactly analogous to the headwalls that would be required for any new culverts.

Tim Crall, PE

Tim is a principal of Entellus, is a licensed engineer in Arizona, and will have overall responsibility for civil design and potential modifications to Garvey Road, if any prove necessary. As a leader of Entellus, Tim is a veteran of many projects, including the Phoenix Crossing Safety Improvement project and Downtown Phoenix Quiet Zone project. Both of these projects involved extensive roadway modifications (alterations to alignment, profile, channelization, and roadway drainage), as well as an understanding of railroad-related issues. Tim's experience includes significant land development work, which entails all the aspects of roadway alteration and site civil design, including AASHTO, local agency, and even BLM design criteria.

On the Phoenix Quiet Zone and Crossing Safety projects, Tim worked with other Entellus staff who would be assigned to this project, including Jeff Schorey. Tim has also worked with Entellus' Hernan Aristizabal, who is Entellus' senior drainage engineer, on drainage aspects of land development projects, such as the ConocoPhillips Wingate Rail Yard project.

Jeff Schorey

Jeff Schorey will be the site civil lead responsible for utility coordination, and, if necessary, modifications to Garvey Road. In addition to his work with Ti Crall on the Phoenix crossing projects, Jeff also provided planning for the Maricopa Road (SR 347) Access Control project, a roadway planning effort which, though larger in scope than any potential work on Garvey Road for the station project, involved all the same planning activities that the station would require. Jeff is also performing roadway and utility design for the neighborhood waterline replacement in Phoenix, which involves coordination with all types of utilities, including power lines, which are the most likely utility coordination issues for the station project. From this work, Jeff is familiar with AASHTO and local roadway design standards and applying those to planning efforts and PS&E documents.

Mike Dawson

Mike is a senior environmental planner with EcoPlan. Mike has extensive experience with transportation projects, rail projects, and is familiar with all environmental documentation issues that may be encountered at the new siding location. He is also familiar with working with Union Pacific railroad from several roadway and grade separation projects

C. Document Your Approach to Community Outreach with Multiple Stakeholders

We believe the community stakeholders will include neighboring property owners, the Gila River Indian Community, and various departments within the City. While our understanding is that the majority of the outreach efforts will be related to the grade separation project, Entellus' Patrice Miller, AVS, is prepared to assist with outreach should that be necessary.

Patrice has performed community outreach for the local flood control districts as well as for roadway projects for Arizona DOT. Entellus is prepared to perform outreach to the neighboring landowners as well as to the Gila River Indian Community, since their grant is funding part of the project.

We also expect outreach to institutional stakeholders, such as Union Pacific and Amtrak. While we understand the City already has a Railroad Coordinator to manage interactions with Union Pacific, RailPros is familiar with both UPRR's and Amtrak's staff, processes, and procedures, which should help expedite the project. RailPros will be able to help facilitate discussions with Amtrak.

D. Discuss Major Issues Your Team Has Identified and How You Intend to Address those Issues

We believe Union Pacific may have a significant amount of information available that can help speed the design process. UP would have developed this information for their recent "Sunset Route" double-track project in this area. This information would include geotechnical information and potentially nearby boring logs as well as "standard" drawings for the culverts and headwalls used on the Sunset Route project. While it would be necessary to get UPRR's permission to use this information, and while it would have to be reviewed prior to incorporation into the plans (and ultimately

stamped and sealed by an engineer), it would nonetheless speed the design process. Since RailPros performed construction management for portions of the Sunset Route project, we are already familiar with the types of information available. (13) We would recommend having the City's Railroad Coordinator approach UPRR for this information.

Field Reconnaissance

We understand that the concept horizontal track design provided by Mountain States Contracting has been vetted by both the City and by Union Pacific. Unless the City has already obtained a right-of-entry permit, we would immediately initiate UPRR's process to obtain right-of-entry to their property so field survey can commence (the right-of-entry initiates UPRR's internal process so a flagman can be available to protect the surveyors from trains). (13) We are completely familiar with UPRR's insurance requirements, and we have no issues obtaining a right of entry. Upon completing survey, especially a survey of the track locations, we can superimpose the 10% plan design performed by Mountain States onto the actual field survey.

At the same time survey is completed, we will complete geotechnical investigations under the same right of entry, if such information is not already available from UP. While we do not expect significant geotechnical effort for this project, it is typical for UP to require some level of geotechnical exploration at structure locations (which would include culverts and culvert headwalls, both of which can be subject to railroad loading).

Environmental

We believe there is a strong possibility that no NEPA permitting efforts may be necessary for this project, particularly if it is contained entirely within the railroad right of way. We recommend performing sufficient research to confirm there is no federal nexus as be a first step to the environmental review (we assume that the City has not yet undertaken this step) so that the City can be confident in its approach. The City will also need to comply with the Arizona Antiquities Act regarding archeological resources and any potential Section 106 resources under the National Historic Preservation Act (note that the existing railroad may be on the National Register of Historic Places). EcoPlan has experience providing environmental technical analysis in the areas of cultural resources, biological resources, and NEPA compliance.

We do not believe that the Arizona Corporation Commission will be involved in issuing a permit, unless the signals for the new siding necessitate an alteration to the grade crossing at the SR 347 crossing. In this case, the ACC would likely require notification, even though there would be no visible change in the operation of the crossing itself and the existing traffic pre-signal on SR 347 would continue to function, unchanged.

Examples of EcoPlan's successful environmental clearances strategy for rail transportation projects on Union Pacific right-of-way include the ADOT Interstate 10 Marsh Station TI project south of Tucson (which included relocating the UPRR crossing of I-10), the Houghton Road Bridge Widening over UP in Tucson, and the Speedway Boulevard Widening for City of Tucson (which involved a UPRR shoofly to allow widening of Speedway Blvd).

Track Design Completion

Establishing the exact location of track and existing structures will be critical, since it appears that the westernmost turnout located by Mountain States appears to be very close to an existing bridge (the bridge does not show on Mountain States' plan). This is a key design issue, and UP may require identification of structure locations on the plans. However, if UP has already approved this placement, there should be no need for further horizontal design, except for minor adjustments to conform the design to the actual surveyed locations of the tracks and to add the spiral

transitions to the curves - as noted on the Mountains States plan, the spirals would be included during final design (it is typical to include spirals on curves sharper than 10 minutes, and effectively an FRA requirement to include spirals on superelevated curves). We will also work to avoid conflicts with the existing utility poles at the west end of the site, though we have utility coordination staff available if the need arises.

After adding curve spirals to the track design, we would develop a vertical profile. The key consideration here is allowing adequate headroom over the culverts for the track, while still keeping the track at or below the main line elevation. There is an advantage to keeping the siding track low, since that would require less earthwork, but the trade-off may be more (but smaller) culverts in order rot pass the volume of water. Hydrology and hydraulics will be a driving factor, as well as the embankment fill slopes and their effect on the drainage ditch along the south side of Garvey Road. Setting the elevation of the siding track below the main line will require meeting UPRR's vertical curve design criteria; while these criteria are fairly restrictive, we believe it can be accomplished; our team members worked through similar vertical curve issues with Union Pacific on the Martinez Subdivision planning study and on the Point Defiance Bypass project. (A) (D)

Another portion of the project involves locating the track in proper relationship to Garvey Road so that the platform can eventually be constructed on City property. At this time, the critical elements are to coordinate the track and future platform elevations with other potential station amenities. In particular, the elevation of the future platform should not be so high that a retaining wall would be required behind it. Such a wall would add construction expense, and would also cause a difficult transition for passengers walking down from the platform to the station area – Americans with Disabilities Act (ADA) provisions mandate ramps at such locations. While this may be necessary, we will work to avoid this situation if possible in order to simplify and reduce the cost of future platform and station construction.

To verify the situation, we recommend preparation of a conceptual level platform plan and elevation and a conceptual plan (which can be very high level) of how passengers flow would work from the trains to the platform, and what geometry would leave as many open options as possible for the future station design. The photo of the Stanwood (Wash.) station illustrates this scenario. Buzz Berger was the project manager and engineer of record for the Stanwood project. (B)

As noted, Buzz Berger has significant experience with track and station design. Other RailPros staff (Eric Hankinson, Johnny Johnson, and Tom Crowell) were former Director-level employees at Amtrak , were responsible for FRA-compliance of track, structures, and facilities, and also have similar station and track design experience, and have maintained relationships with key personnel at Amtrak (and FRA) who would likely be involved with any project reviews. Each is available to provide quality control reviews for this project. (B) (C)

Drainage Design Considerations

As noted, drainage design is another key consideration. Union Pacific will require documentation for the hydrologic and hydraulic analysis, though if we can show that the UPRR's culverts serve as a control, this analysis should be simplified. Our drainage analysis will be led by Hernan Aristizabal, PE. The project is located near the convergence of the northwest portion of the Sacaton Mountain watershed and the east portion of the Maricopa watershed. The project area is prone to drainage issues (it was inundated in 1983) and is located primarily within the Maricopa Area Drainage Master Plan (ADMP) and potentially within a portion of the Sacaton Mountain ADMP. Both of these plans were prepared for Pinal County Department of Public Works by Entellus, with Hernan's participation, as such, he is already familiar with drainage in this area. Entellus has also performed the FEMA Letter of Map Revision process, should this prove necessary.

Ideally, the track and platform would be set to allow the future station to be elevated above the inundation levels, if this proves to be a reasonable elevation. The ADMP designated this area along the UPRR where the Amtrak siding and station is proposed as "Area Downstream From Embankment" in terms of Areas of Special Drainage Considerations.

The concern to be reviewed primarily is the impact on the Amtrak siding and future station by a failure of the upstream embankment (UPRR tracks). The project area along Garvey Road is signed as a flash flood area, and we would consider the implications of locating the track near the right-of-way line, since that may require placement of fill in the existing ditch south of Garvey Road, possibly creating difficulties for conveying water off and away from the road. This is a consideration not only for the embankment necessary for the track, but also for the future platform.

New culverts would be required in the Amtrak siding to pass water; they would be sized to accommodate peak flows at least as large as the capacity of the existing UPRR culverts. The size and count may be modified to account for the final track elevation and necessary headroom for the Amtrak track relative to the floodplain, as well as practical elevation difference from existing grade in the area of the track.

Because Entellus has already completed the ADMP's, we will be able to accelerate and efficiently create specific hydrology models to estimate peak flows affecting the project as well as subsequent hydraulic calculations. We will be able to "hit the ground running" on this critical design component.

Railroad Coordination

As the City is well aware, coordination with Union Pacific and Amtrak are key to the success of the project. The first element of this success is to meet UPRR's requirements for track design. This will likely be a similar process to their industrial track process (which is explained on UPRR's own website).

Before the final phase of bid document development, the terms of the Construction and Maintenance Agreement with UP should be finalized and incorporated into the bid documents. These terms will outline the limits of UPRR's work and the City's work, define the relationship and timing of any joint construction activities by both parties (which are mutually interdependent) and outline the extent to which UP will influence the pace of construction – all key points for a construction contractor to understand.

Another critical path item will be coordination with Union Pacific's Signal Department. As the City is aware, railroad signal design and construction are long lead-time items. Our team is able to assist the City in understanding the railroad signal and related operational issues. It is likely that the current intermediate signal location will need to be relocated when the new control points are constructed at either end of the siding. Our Project Manager, Buzz Berger, is not only a former track department employee, but also a former employee of Union Pacific's Signal Department, has managed major (20+ mile) signal design and construction projects.

Moreover, RailPros' signal designer, Joe Zerzan, was the former Manager of Signal Design for the entire Southern Pacific Railroad and subsequently the Manger of Design for Southwest Signal, the firm which designed the signal system which was recently constructed as part of the UPRR's expansion of the Sunset Route. We are well-versed in the technical issues, and Joe is familiar with the signaling philosophy on this Route; we are ready to assist the City in understanding the issues and providing the necessary technical and design details (potentially even including conceptual designs to UP) that will ultimately smooth the way for Union Pacific to complete the signal design in a timely manner.

Construction

Our team is familiar with both railroad construction and the coordination necessary to successfully work with Union pacific and its different departments (including both track and signal departments). Our team's past success on projects on UP, as well as the fact that UP has engaged us to assist them in coordinating with public agencies (as on the BART to San Jose project), bears this out. And, our team's successful projects (such as the Pt. Defiance Bypass Project, the Cedar Creek Siding project, and the grade crossing design project in Phoenix) demonstrate our ability to develop clear, biddable, constructible design documents incorporating biddable terms for all the unique items associated with construction in or near an operating railroad environment, such as flagging, site access and railroad work windows,

and Railroad Protective Insurance for contractors.

During the construction phase, we are prepared to use any delivery method the City may choose. Team member Entellus has prepared designs, construction drawings, specifications, special provisions, etc for hundreds of public works projects complying with agency procurement requirements (ARS Title 34).

Entellus has been heavily involved in the Construction Manager at Risk (CMAR), Design-Build (DB), and Job Order Contracting (JOC) delivery of projects under Arizona Revised Statutes Article 34-603. Entellus is a pre-eminent CMAR design firm with a solid 10-year history of leading CMAR horizontal construction in Arizona. Entellus has completed over 50 Alternative Project Delivery (APD) projects in Arizona, the majority of which have been Construction Manager At Risk. Example include the Gilbert Road (Phoenix), Pecos Road (Chandler), and Higley Road (Gilbert) Improvements, each of which was a CMAR project. The Sky Harbor Drainage Improvements and South Air Cargo Bullpen were both JOC. (C)

E. Provide Ideas, Concepts and/or Approaches You Have Used in the Past; What Worked and What Did Not and Why

As part of our overall design approach, we ensure our clients are not confronted with "surprises" that require unanticipated time, budget, or public relations effort. Throughout the design process we will keep the City fully informed of what we're doing and why. We are committed to ensuring there are no surprises, and also committed to ensuring that the City is sufficiently informed that you can drive all decisions, rather than being "forced" into a design solution that may not suit your needs.

One example of this may arise from strict compliance with UPRR's design standards, which could conceivably create a great expense for the City in some situations. If we find this, working with your Railroad Coordinator, we can help you evaluate the level of effort and time involved in obtaining a design deviation/exception from UP, and offer our recommendations. Our understanding of the technical details of design and construction allows us to consider the constraints early-on, to give you time to make these decisions. We can communicate these technical issues in a Basis of Design (BOD) document for the City, if desired. Such BOD's often identify design standards, but we feel it is just as important to explain the ramification of these standards as part of the BOD document. Our clients uniformly applaud our "no surprises" approach.

Early on, we will obtain field survey (to UPRR's standards for accuracy and for geographic extents), conform the conceptual track horizontal alignment to the survey, and develop a track vertical profile, identifying all obstacles on the plans. In this way, UP can fully evaluate the proposed plans and clearly understand where deviations from their design standards (if any are needed) may be warranted. This has worked to great benefit for constrained track designs (such as this station project) where there is little space between railroad curves and tangents are at near minimum lengths, since it allows verification of the concept design (in this case, done with aerial images). For example, it will verify the bridge, culvert, and spiral transition locations (as noted above), which will be critical elements that affect conformance of the design with UPRR's standards. If there are issues (eg, created by bridge locations or spirals) they can be resolved early on, since the track design is the geometric foundation for the rest of the project – including railroad signals.

Another crucial part of our approach to design is to ensure there is enough room for the physical manifestations of the railroad signal system – the signals themselves, the bungalows, the access roads and pads, and the associated grading for each of these. Even for apparently simple projects, we have seen designs that omitted these features entirely or address them only with a "generic" standard or "typical" plan, encounter difficulties during the UP approval process or during construction. Fundamentally, this is because the "typical" designs do not match the specific field conditions well. To avoid this pitfall, we ensure each of these features are designed into the earthwork model and fully account for drainage patterns and right of way constraints. (D)

A key part of preparing a design that is easy for Union Pacific's signal department to address is the actual locations of the signals themselves, ensuring there is adequate sight distance for locomotive engineers, and ensuring the locations at the platform do not impose "delay-in-block" rules upon the trains, which, as the name implies, are associated with extensive train delays (often resulting from the actual location at which a passenger train stops at a platform with respect to a signal). Our team understands the interrelated nature of the tracks, signals, and platform, which we will address during final design to ensure the delay-in-block rule is not a constraint to either UP or Amtrak.

This methodology has also been a key part of our success in previous design projects, and the value of his bespoke approach has been borne-out wherever there is any kind of constraint: the design is well thought-out, conforms to the site, and the avoids discrepancies which often manifest themselves only during construction (when they are most expensive to fix). Buzz Berger understood and demonstrated the advantages of this approach during the Martinez Subdivision planning study for UP, for the Sumner Siding for UP, and for the Pt. Defiance Bypass and Cedar Creek Siding projects (which used UP common standards). (1)

Lastly, we suggest that the City explore a cantilevered-edge platform design (please refer to Figure A). This would allow the earthwork to be built in its final configuration now, with little or no rework later that would otherwise result in destabilizing the just-completed embankment. By moving the platform footing away from the track, and allowing the platform edge to hang-over the footing (cantilever toward the track), we keep the footing as far as possible from the zone of railroad loading influence. We have used this platform design extensively in the past on freight railroads (including UP) and with Amtrak with good results: UP likes the design because it is not only more easily constructed, but also because it makes track maintenance simpler. Amtrak and clients like the design because it makes it easier to obtain UP approval.

This is a scenario we would fully discuss with the City before including in any plans to UP, since the cantilevered edge platform involves higher cost. The City needs to be aware of this approach and its implications before we incorporate it into design documents and thus build expectations with UPRR's plan reviewers. While the platform does not need to be fully designed now, establishing this geometry of this concept now will help both the UP and Amtrak review processes, since it will clearly identify the platform geometry and the constructability. (2)

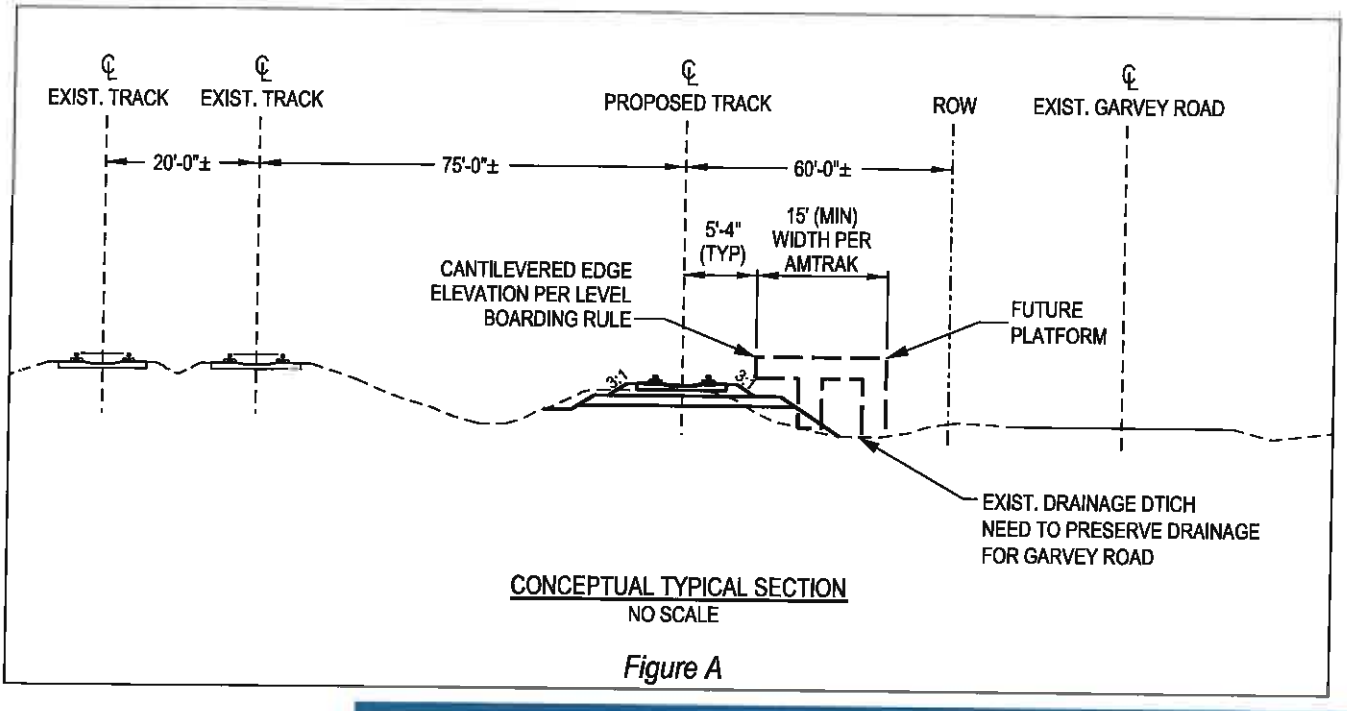


Figure A

6. Licenses

Please see Page v for copies of applicable licenses for each staff member who will be assigned to the project.

7. Disclosures of Conflict of Interest

No conflicts of interest exist as defined by Arizona Revised Statutes, Title 38, Chapter 3, Article 8.

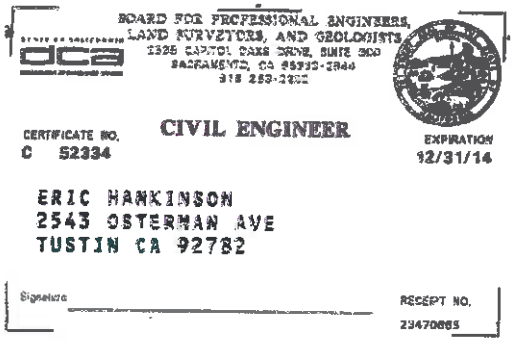
8. Confidential Information

RailPros has not included any confidential information in this proposal.

9. Substitute W-9 Form

Please see page vi-vii for a copy of RailPros' substitute W-9 form.

6. Licenses

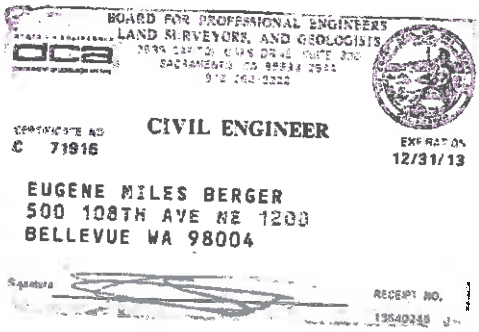


BOARD FOR PROFESSIONAL ENGINEERS, LAND SURVEYORS, AND GEOLOGISTS
2535 CAPITOL OAKS DRIVE, SUITE 300
SACRAMENTO, CA 95833-2944
916 263-2222

CERTIFICATE NO. C 52334 — CIVIL ENGINEER — EXPIRATION 12/31/14

ERIC HANKINSON
2543 OSTERMAN AVE
TUSTIN CA 92782

Signature _____ RECEIPT NO. 23470865

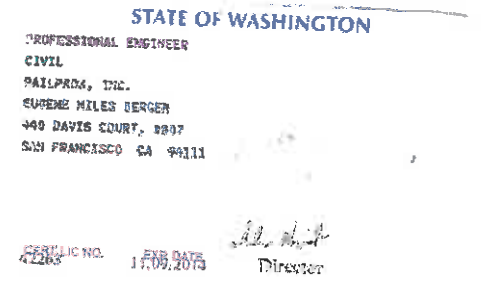


BOARD FOR PROFESSIONAL ENGINEERS, LAND SURVEYORS, AND GEOLOGISTS

CERTIFICATE NO. C 71916 — CIVIL ENGINEER — EXPIRATION 12/31/13

EUGENE MILES BERGER
500 108TH AVE NE 1200
BELLEVUE WA 98004

Signature _____ RECEIPT NO. 13540248



STATE OF WASHINGTON

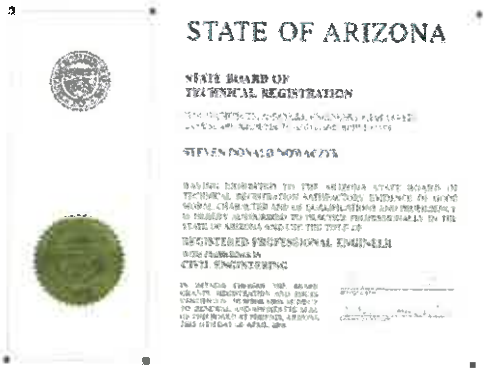
PROFESSIONAL ENGINEER
CIVIL
RAILPROS, INC.
EUGENE MILES BERGER
449 DAVIS COURT, #807
SAN FRANCISCO CA 94111

CERTIFICATE NO. 42263 — EXP DATE 11.09.2015 — Director

BOARD FOR PROFESSIONAL ENGINEERS, LAND SURVEYORS, AND GEOLOGISTS

Daniel Juan Alerto

PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING



STATE OF ARIZONA

STATE BOARD OF
TECHNICAL REGISTRATION

STEVEN DONALD SOBACZYK

REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING

Name Registration Number	Address	Status	Practice Area Dates Registered
CRALL, TIMOTHY DUANE 22861	2255 N 44TH ST #125 PHOENIX, AZ 85008	AC	ENGINEER/CIVIL 2/23/1989 - 6/30/2014

Name Registration Number	Address	Status	Practice Area Dates Registered
ARISTIZABAL, HERNAN ALERTO 29737	2255 N 44TH ST PHOENIX, AZ 85008	AC	ENGINEER/CIVIL 12/1/1995 - 12/31/2013

Name Registration Number	Address	Status	Practice Area Dates Registered
FRANCETIC, DANIEL GREGORY 33874	2255 N 44TH ST, SUITE 125 PHOENIX, AZ 850083299	AC	LAND SURVEYOR 6/21/1999 - 6/30/2014

CITY OF MARICOPA
PROUD HISTORY · PROSPEROUS FUTURE

39700 W. Civic Center Plaza
Maricopa, AZ 85138
Ph: 520.568.9098
Fx: 520.568.9120
www.maricopa-az.gov

Attachment A

SUBSTITUTE W-9 FORM

PART I: Company Information:

1. Name *(as shown on Income Tax Return)*: RailPros, Inc.
2. Business Name *(if different than above)*: _____
3. DUNS #: 009975504
4. Federal employer identification number *(or SSN)*: 33-0905680
5. Type of organization *(check one)*:

☐ Individual/Sole Proprietor
☐ Limited Liability Company*
☒ Corporation
☐ Partnership
☐ Other: _____

***Choose the tax classification**
☐ Disregarded Entity
☐ Corporation
☐ Partnership

6. Order Address:

1 Ada, Suite 200 (*Order address*) | Irvine, (*City*) | CA (*State*) | 92618 (*Zip code*)

7. Remittance address *(if different than above)*:

Same (*Remittance address*) | (*City*) | (*State*) | (*Zip code*)

8. Contact person for bid invitations: Liz Slevin
9. Phone Number: 714.734.8765 Fax Number: 714.734.8755
10. Email address of contact person: liz.slevin@railpros.com
11. Applicant is a *(check one)*:

☐ Factory Representative
☐ Jobber
☐ Manufacturer
☐ Authorized distributor
☐ Retail dealer
☐ Contractor
☒ Consultant
☐ Other: _____

12. Indicate if the business is registered as a minority or woman-owned company.

☐ Minority-owned ☐ Woman-owned ☒ Not Applicable

13. How long has the company been in business? 13 years
14. Does applicant currently hold a valid business license issued by the City of Maricopa?

☐ Yes ☒ No

PART II: COMMODITY OR SERVICE DESCRIPTION

CITY OF MARICOPA
PROUD HISTORY · PROSPEROUS FUTURE

39700 W. Civic Center Plaza
Maricopa, AZ 85138
Ph: 520.568.9098
Fx: 520.568.9120
www.maricopa-az.gov

1. Commodity/Service description *(this section must be completed):*
Civil engineering consulting services.

PART III: APPLICANT TERMS & CERTFICATION

Terms:

The City of Maricopa may take up to 30 calendar days after the receipt of vendor's invoice to render payment unless other arrangements are made through a written contract. Applicant's signature below signifies acceptance of those terms.

Under Penalties of perjury, I certify that:

1. The number shown on this form is my correct federal employer identification number.
2. I am not subject to backup withholding because of failure to report interest and dividend income.
3. I am a U.S. person (including a U.S. resident alien).
(NOTE: You must cross out item 2. above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return).
4. The following business ownership classifications are applicable:
Disadvantaged Business Enterprise Ownership Classification (Select One Only):

- ☐1 Non-Small/Non-Minority/Non-Disabled
- ☒2 Small Business (Per ARS §41-1001.14)
- ☐3 Minority Owned Business [Per 15 CFR §1400.1(a)]
- ☐4 Woman Owned Business
- ☐5 Owned By Disabled Individual (Per ARS §41-1492.5)
- ☐6 Small Business/Minority Owned
- ☐7 Small Business/Woman Owned
- ☐8 Small Business/Disabled Owner
- ☐9 Minority Woman Owned Business
- ☐10 Disabled-Minority Owned Business
- ☐11 Disabled-Woman Owned Business
- ☐12 Small Business/Minority-Woman Owned
- ☐13 Small Business/Disabled-Minority Owned
- ☐14 Small Business/Disabled-Minority-Woman Owned

"The Internal Revenue Service does not require your consent to any provision of this document other than the certifications required to avoid backup withholding."

Eric Hankinson
Name *(Please print)*

Signature

President
Title *(Please print)*

10/17/2013
Date

RAILPROS

APPENDIX

STATEMENT OF QUALIFICATIONS TO PROVIDE:
Track Design Services Related to the Amtrak Station Relocation

FOR THE:
City of Maricopa, AZ

Eric Hankinson, PE // Quality Assurance / Quality Control

RELEVANT HIGHLIGHTS

Firm: RailPros

Years of Experience: 20+

Education: BS, Civil Engineering, California State University, Fullerton

Professional Credentials: Registered Civil Engineer: CA No. C52334

Mr. Hankinson has over 20 years of railroad, structural, and civil engineering experience in the design, construction and project management of a wide range of transportation projects including track construction, bridges, grade crossings, grade separations, drainage projects, stations, and other railroad facilities. He has dealt extensively with project stakeholders, resource agencies and host railroads in the planning, design, and construction of various rail projects. He has performed engineering services for several clients including: the Union Pacific Railroad (UPRR), Burlington Northern Santa Fe Railway (BNSF), Southern California Regional Rail Authority (SCRRA), North County Transit District (NCTD), Peninsula Corridor Joint Powers Board (Caltrain), Caltrans, Amtrak, Swift Transportation, California Commerce Center, the County of Orange, and the cities of San Diego, Del Mar, Oceanside, Santa Ana, and San Gabriel.

Orange County Grade Crossings Safety Improvement Project // Orange County, CA

Managed all aspects of the design of traffic signal improvements at 20 locations associated with grade crossing safety improvements on two Metrolink Subdivisions in Orange County. Responsible for design review and quality performance. Included design and design services during construction of presignal, queue-cutter signals, traffic signal modifications and the implementation of advanced preemption. The project involved extensive coordination with eight cities, the California Public Utilities Commission, and Orange County Transportation Authority.

Downtown San Diego Grade Crossing Improvements and Quiet Zone // San Diego, CA

Project manager and civil engineer of record for civil design and implementation of a quiet zone in downtown San Diego involving $20 million in improvements at 12 multi-track at-grade crossings, including exit gates, median extensions, pedestrian gates, presignals, queue-cutter signals and other safety measures. The project involves several railroad operators (Trolley, Coaster, Amtrak, BNSF) and coordination with multiple agencies (CPUC, City, CCDC) and multiple adjacent property owners.

Oceanside Quiet Zone Development // Oceanside, CA

Managing the design and implementation of a quiet zone in Oceanside, CA involving $3 to $5 million in improvements at 5 multi-track at-grade crossings including exit gates, median extensions, pedestrian gates, and other safety measures. The project involves several railroad operators (Coaster, Amtrak, Metrolink and BNSF) and coordination with multiple agencies (CPUC, City, and multiple adjacent property owners).

Santa Margarita Bridge Replacement and Second Track // San Diego County, CA

Project Management assistance on behalf of NCTD and SANDAG. Managed all aspects of the design and environmental phase including environmental clearance, alternatives analysis and type selection, permits, QA/QC, contract management, and value engineering. The $40 million project includes 0.7 miles of new track, 1.7 miles of track upgrades, signals, demolition of the existing bridge and construction of the new bridge.

Eugene "Buzz" Berger, PE // Project Manager / Rail Design Lead

Mr. Berger has over 17 years' experience in the design, construction, maintenance and operation of rail infrastructure. He understands a wide range of rail engineering challenges, including grade crossings, track, signal, structures, freight and passenger facilities, and third-party projects such as utility installations. Buzz is the former District Engineer-Northern California for Amtrak, and was previously a signal department field employee (including construction foreman) for Union Pacific Railroad. As a project manager and engineer, Mr. Berger has drawn upon his practical experience to solve complex engineering problems and has led large projects through the conceptualization, scoping, design, and construction phases.

RELEVANT HIGHLIGHTS

Firm: RailPros

Years of Experience: 17

Education: BS, Civil Engineering, University of California, Davis

Professional Credentials:
Registered Civil Engineer:
CA No. C71916
WA No. 42263
British Columbia No. 160643

Point Defiance Bypass Project // Tacoma, WA

Buzz served as both Project Manager and Project Engineer for this complex project. He oversaw the environmental documentation effort and led the design phase of work. The project includes approximately 14 miles of new track, industrial spurs, drainage improvements, upgrades to 18 grade crossings (including improvements to roadway profiles, alignments, drainage, new railroad crossing signals, new traffic signals with new phasing and timing), installation of centralized traffic control, and utility relocations. Buzz coordinated both with the client and coordinated design disciplines, performed the track and railroad grading design to freight railroad (UP and BNSF) standards (since they would also operate on this track), and played an active role in all aspects of civil design for the plans, specifications, and estimate. Buzz also coordinated interactions between the engineering and environmental teams, roadway authorities, state regulatory agencies, municipalities, the state highway department, and two military installations, and the freight rail operator. The overall construction estimate was approximately $90 million; and the first phase (approximately 1/3 of the total project) was constructed within the engineer's estimate.

King Street Improvements // Seattle, CA

As both Project Manager and Project Engineer, Buzz coordinated track, signal, and station civil designs with the railroad operating plan for this busy passenger facility. The project involves reconfiguring the yard leads and mainline connections to the busy King Street passenger station in downtown Seattle. The 7-track station hosts three distinct passenger services: Sound Transit's Sounder service, the WSDOT-sponsored Cascades intercity service, and two Amtrak long distance train pairs; the station is also on an important BNSF Railway route. Buzz also served as design manager and lead track/platform/civil designer.

Stanwood Station // Stanwood, WA

As both Project Manager and Project Engineer, Buzz was project manager and project engineer for the conceptual and final design of a new station platform and shelters at Stanwood to be served by the WSDOT/Amtrak Cascades service. The conceptual engineering included a study of the infrastructure investment required to expend BNSF line capacity if Sounder commuter rail service were to be extended north from Everett to Stanwood. Final design included public involvement workshops, coordination with the municipality, utility companies, BNSF, and local stakeholders to complete the design and construction of the station facility, including new a new passenger platform, shelters, lighting, roadway and drainage improvements, and railroad operational coordination with a new siding located north of the site. The project was completed and constructed on-time and on-budget.

Freighthouse Square Feasibility Study // Tacoma, WA

Buzz developed a feasibility study to identify conceptual costs and overall project feasibility of relocating the existing Tacoma Amtrak station to a new location. The concept included station sizing, design of station platforms, resolution of level-boarding and ADA issues, identification of parking requirements, and developing conceptual costs for several options.

Sacramento Station Improvements // Amttrak, UPRR

While working as the Northern California District Engineer for Amtrak, Buzz was the project manager for a suite of

improvements to the busy passenger station at Sacramento, California. This Amtrak station was located on the UP main lines, with additional platform tracks built and maintained by Amtrak on adjacent property owned by UP. Buzz set the elevations of the platforms as they were rebuilt to conform with ADA. Buzz's work at this site included managing design for new platforms on four tracks (including two on the main line), coordinating those platforms with the existing site configuration, and designing a new main line connection for an existing track (which was built by UP) as well as an entirely new, additional station track on UP property (which was built by Amtrak and tied-in to UP's track). Buzz also set the passenger facility design criteria and footprint for the future station.

Auburn Station and Layover Facility // Auburn, CA

While working as the Northern California District Engineer for Amtrak, Buzz was responsible for track and layover facility design at Auburn, California. Buzz performed track design, which was given to Union Pacific for them to construct. The track design included coordination with the elevations of a station platform that the City of Auburn had previously designed with Buzz's input. The design was complicated by the constrained space for the station and the layover facility, as well as the need to avoid the "Delayed-In-Block operating rules. The tight confines of the mountainous site meant that all construction had to occur in close proximity to the UP main line and design features (such as cantilevered edge platforms an locating new track so that a fence could be placed between the new track and existing UP main line)were used to minimize the impact of UP's operating on construction, and vice versa. The project was completed on-time and on-budget.

Gold Line Commuter Rail Design-Build // Denver, CO

Buzz served as quality control reviewer for track and related civil improvements for the Gold Line electrified commuter rail project. Reviews items focused on coordination of various design disciplines and adherence of client design standards while also focusing on minimizing construction costs for the design-build team. A key feature of this project was the fact that several miles of the new commuter lie track were located on Union Pacific right-of-way, meaning civil improvements the new track embankment, which significantly altered the drainage shedding off UP's existing tracks.

UPRR Corridor Capacity Expansion Study // Contra Costa County, CA

Buzz managed the development of concepts for capacity expansion on Union Pacific Railroad's busy Martinez Subdivision. The project involved field reconnaissance, development of alignments for additional main tracks and realignments of existing tracks, development of new alignments for connections to other railroads and customers, a review of feasibility of alternate concepts and associated constraints, preparation of conceptual cost estimates which included a range of options, several presentations to the stakeholders, and development of a formal report and associated graphics which the stakeholders used as the foundation for an ultimately successful grant request for over $200 million in public funding. Buzz was the primary contact with the three clients: Union Pacific Railroad, BNSF Railway, and the Port of Oakland. The study was completed for the client on budget and on a tight schedule driven by grant funding deadlines while providing adequate time for stakeholder review of the sometimes sensitive content.

UPRR Colton Crossing Project Value Engineering // Colton, CA

Buzz served as the civil lead for the value engineering study for the $130 million Colton Crossing flyover which would provide a grade separation of the Union Pacific and BNSF Railway tracks at the busy Colton, California. The study analyzed several alternatives to the 60% design and offered alternatives to save cost and increase value for the project sponsors, including revised track configurations to improve UP's operational flexibility and lightweight cellular concrete fill.

UPRR Summer Siding // Summer, WA

Buzz served as Quality Control reviewer for the extension to Union Pacific's Sumner Siding. Buzz reviewed plans, specifications, and estimates prepared for conformance with Union Pacific standards and expectations, internal consistency, inter-disciplinary coordination, and coordination with sensitive environmental areas. Buzz also evaluated the effects on a nearby grade crossing.

Dan Alvira, PE // Rail Structures

RELEVANT HIGHLIGHTS

Firm: RailPros

Years of Experience: 4+

Education: BS, Civil Engineering, California State University, San Luis Obispo

Professional Credentials:

Registered Civil Engineer:
CA No. 79132

Mr. Alvira's structural engineering experience includes the design, peer review and inspections of railroad bridges, culverts, retaining walls, site work and construction shoring systems. This experience includes the design and construction of bridges under live railroad operations. He has performed reviews of many structural submittals and shop drawings in addition to responding to requests for information and preparing design and construction schedules following the critical path method. His onsite foundation testing experience includes the Pile Driving Analyzer (PDA) to verify pile capacities through dynamic methods during driving operations. The PDA services typically include pile preparation, obtaining data, and analyzing data through CAPWAP usually resulting in reduced installation depths, and reduced costs, than those calculated by traditional methods.

UPRR Double Tracking // Imperial County, CA

Mr. Alvira provided structural observation and inspection for several railroad bridge installations along the UPRR Sunset Line over a range of 40 miles of track adjacent to the Salton Sea. Inspection services included monitoring pile installation to ensure capacity was achieved, verifying equipment usage, measuring final pile location for tolerances, welding inspections, superstructure placement, verifying precast concrete was undamaged during delivery and placement, and ensuring minimal impacts to environmentally sensitive waterways.

UPRR Grade Crossings // Casa Grande, AZ

Mr. Alvira provided inspection oversight and coordinated impacts of the project with the stakeholders. Two grade crossing in Casa Grande involved impacts to two industrial facilities that used the rail services to transport their goods. The shipments had to be coordinated with the facilities based around the physical removal of the rail for several days during the grade crossing improvements. Inspection oversight included ensuring that the contractor was performing all the inspections necessary to ensure a quality to product, performed all grading and earthwork.

UPRR VTA - BART Extension // Milpitas, CA

Mr. Alvira is the UPRR representative for the review of structural submittals on the VTA BART extension project. The project includes the review of T-Wall, trench walls, shoring systems and other miscellaneous structures that support UPRR train loads. Mr. Alvira provided comments to ensure conformance with the UPRR standards and AREMA guidelines. The comments provide considerations with constructability concerns, operational concerns, and phasing and staging concerns.

UPRR Bridge Retirements // Tucson, AZ

Mr. Alvira provided inspection oversight and coordination for 12 bridge retirements and replacements with culverts on the main line. The retirements had to ensure a minimum impact to the rail operation and integrity of the track performance. A responsibility of Mr. Alvira was to ensure the backfill was tested for compaction, lift sizes were not exceeded, material used met the specifications, and the culvert was placed at the correct location.

Albany & Eastern Railroad, North Crabtree Retrofit // Crabtree, OR

Mr. Alvira was the design engineer of a 100' long, 100 year-old, steel truss railroad bridge retrofit. The project included a comprehensive feasibility analysis through metallurgical investigation and existing condition analysis to determine general capacity. Mr. Alvira determined existing member and connection capacities and determined required upgrades. The bridge had to remain operational during the construction process with a maximum of 3-day absolute work windows each week over the course of a month. Work required intensive coordination with the owner and contractor for construction feasibility to minimize the cost of construction. Mr. Alvira performed the final walk-through of the project for sign-off and developed the final as-built drawings.

Portland & Western Railroad, Albany Trestle // Albany, OR

Mr. Alvira was the design engineer for the 2050' long, 20' high railroad trestle composed of 30' spans and steel pipe piles. The spans consisted of the BNSF standard precast concrete box girders. Mr. Alvira performed the structural design, construction support and administration, and PDA Testing services. Mr. Alvira designed the structure in accordance with AREMA recommended practices and specifically focused the design on minimizing the cost of construction under live track operating conditions. This was accomplished by keeping the existing timber structure intact by installing the new steel pipe piles to avoid the timber girders; 2 piles installed on either side and 1 pile installed between the girders. The top of the concrete pile cap was designed to be beneath the timber girders to minimize the impact to train operations. Four coordinated absolute work windows of 24 hours each took place during the 8 month construction period which consisted of demolition of the existing timber superstructure and setting of the precast concrete box girders. All submittals including equipment, shop drawings, special inspection reports, schedules and requests for information were reviewed for conformance to the design.

SCRRA PTC // Los Angeles, CA

Mr. Alvira performed structural reviews of several communication towers for the implementation of the PTC system for SCRRA, the South California Regional Rail Authority. The review included confirming the adequacy of the structure of the monopole towers, the drilled shaft tower foundations, and the shelter foundations. The towers were compared with the TIA governing code and the project specifications to ensure the designs were compliant with all requirements. Drilled shaft foundations were compared with the geotechnical report, project specifications, ACI, and the CBC.

SANDAG Program Management // San Diego, CA

Mr. Alvira is a program management team member for SANDAG, the San Diego Association of Governments, on the LOSSAN Corridor from San Diego, CA to Los Angeles; CA. Program management responsibilities include structural design reviews, cost controls, schedule controls, and implementing program documents. As part of schedule controls, Mr. Alvira provides a construction coordination schedule showing overlaps for Form B's and Absolute Work Windows (AWW) to assist in the reduction of operational costs during construction. A specific instance example was the assistance in identifying three AWWs; 3rd party needs, construction needs, and maintenance; in close proximity, both location and date, and reduced the planned number of AWWs to one. Mr. Alvira performed several reviews of bridge designs for conforming to the design criteria and for constructability. Through his comments, large cost savings were seen on several projects, specifically on a new proposed bridge North of Sorrento Valley Coaster Station in San Diego, CA. The cost savings on this project was seen through the elimination of 1/3 of the proposed piling. Many comments were implemented into the design on many of the proposed bridges he reviewed to ensure a reduction in requests for information and possible change orders.

Albany & Eastern Railroad, Bear Creek Bridge Replacement // Linn County, OR

Design engineer for a 54' long steel girder span supported by concrete abutments and steel H-pile railroad bridge. Mr. Alvira designed the structure in accordance with AREMA recommended practices. Services included providing expedited preliminary USACE permitting support for an environmentally sensitive creek completed in only 2 months. Additionally, he provided construction support services including continuous on site observation for environmental and structural conformance, review of all shop drawings, and responding to contractor's requests for information within 1 working day to ensure timely completion of construction.

Combined Sewer Overflow Excavation // Astoria, OR

Construction engineer that provided the contractor a design of a sheet pile wall for the excavation required for a new Combined Sewer Overflow (CSO). The CSO was adjacent to a highly active city street with a main waterline running adjacent to the project site. The steel sheet pile wall was necessary to protect the active water main and maintain access on the street. The foundation of the CSO required a 15ft excavation placing it beneath the ground water elevation requiring constant pumping. Mr. Alvira coordinated the design using materials that the contractor already possessed, observed the installation and performed periodic site observations for continued compliance with the design.

Michael Dawson // Environmental Lead

Mr. Dawson has broad experience in the environmental, community involvement, and transportation fields. His background encompasses 30 years in the federal, state, and county government sectors preparing or directing land use plans, corridor studies, feasibility studies, and project environmental assessments. Mr. Dawson has participated in, or directed the preparation of, hundreds of environmental documents and studies. He is experienced in working with multiple jurisdictions and interest groups to help solve complicated local and regional projects. His thorough knowledge of the environmental field, permitting issues, and regulatory requirements assists the planning and engineering elements of a project.

RELEVANT HIGHLIGHTS

Firm: EcoPlan Associates

Years of Experience: 30

Education: BS, Natural Resources and Recreation Management, University of Arizona

Interstate 10 (Ruthrauff Road to Prince Road) // Tucson, AZ

Managed environmental clearance, including National Environmental Policy Act clearance through the Federal Highway Administration, a Nationwide Section 404/401 permit from the U.S. Army Corps of Engineers, and ongoing cultural resources data recovery. This major reconstruction of Interstate 10 included a new Prince Road overpass at the Union Pacific Railroad and extensive utility relocations. Project elements included a new interchange with a grade-separated railroad crossing, Section 404 permitting, a biological review, historic properties, prime and unique farmland, and noise impacts. Considerable coordination was required with adjacent property owners, the Union Pacific Railroad, and numerous utilities.

Peters and Nall Road Improvements // Pinal County, AZ

Prepared an Environmental Assessment to address the complete reconstruction of a key transportation corridor serving the Ak-Chin Governmental Offices and Ak-Chin Enterprise farming needs. The National Environmental Policy Act document included cultural resources, biological resources, and Section 404/401 permitting, and the project included considerable community involvement. Project approval is being processed through the Bureau of Indian Affairs Western Regional Office.

Houghton Road Widening at UPRR, Environmental Clearance // Tucson, AZ

Prepared the environmental clearance documents for the project, which involved the replacement of the existing Houghton Road Bridge over the Union Pacific Railroad with two new bridges to accommodate traffic demand. Project issues included biological resources (nesting bats), cultural resources (historic railroad), and native plant impacts.

Downtown Tucson Intermodal Center Master Plan Update // Tucson, AZ

Project manager for the Environmental Assessment Update addressing planned revisions to the Master Plan. The Environmental Assessment was prepared to meet Federal Transit Administration requirements. Project issues included coordination with transit operations including Union Pacific Railroad Tucson Depot, Sun Tran, Greyhound, and Old Pueblo Transit, Historic Districts, noise analysis, hazardous materials, and compatibility with adjacent land uses.

Tim Crall, PE, LEED AP // Site Civil Lead

Tim is Vice President and Principal of Entellus, he has 29 years of professional experience which includes engineering and coordination of design teams for a wide range of railroad improvements, electric utility, public works, and large-scale land development projects. Project experience includes railroad crossing improvements and switching stations, major electric utility projects have included civil engineering elements for power plants, substations, and a large diameter gas line. Typical civil engineering elements in support of rail related improvements have included rail layout, track plans, material quality verification, legal descriptions, agreement review, hydrologic and hydraulic analysis, preparation of drainage reports, boundary surveys, topographic surveys, easements, grading and drainage plans and access roads.

RELEVANT HIGHLIGHTS

Firm: Entellus

Years of Experience: 29

Education: BS, Civil Engineering
Tri-State University

Professional Credentials:
Registered Civil Engineer
AZ No. 22861
CA No. 45598
NV No. 11632
NM No. 12898

Railroad Crossing Safety Improvements // Multiple Locations, AZ

Entellus was retained by the City of Phoenix to complete the design for improvements to eight (8) UPRR railroad crossings at existing roadway sections. The improvements included pedestrian crossing modifications, curb and gutter, track crossing material, coordination of railroad access requirements, signage and striping, grading and drainage, utility coordination and relocation, and identification of additional rights-of-way and easement requirements.

Downtown Phoenix Quiet Zone // Phoenix, AZ

Working with a specialty firm, Entellus assisted the initial project scope and provided final engineering and regulatory approvals to get the project construction ready. Our team coordinated several public outreach meetings and completed a quiet zone public information brochure. A field diagnostic team held review and follow-up meetings with the Federal Railroad Administration, the State Corporation Commission, Union Pacific Railroad, and City staff . Our team prepared designs for improvements to establish an initial quiet zone incorporating minimal safety measures using signage and striping. This quiet zone approach requires annual re-certification and is now in place. Designs were also developed incorporating Supplemental Safety Measures including raised center concrete medians, permanent closure of certain pedestrian crossings, and signing and striping. Where fully implemented and approved, this quiet zone approach will not require annual re-certification.

Wingate Rail Project for Conoco Phillips // Gallup, NM

Entellus provided design and construction administration for a major industrial track expansion project for Conoco Phillips Wingate Fractionator Plant east of Gallup, New Mexico. The services included design detail of preferred rail arrangement, to create options to situate the appropriate amount of rail, create switch yard operating plan, specification of materials, cost-estimating and cash flow requirements, purchasing assistance, contractor pre-qualification, construction bidding assistance, construction phasing and construction inspection.

Annual General Engineering On-Call // Pinal County, AZ

Entellus has been providing Pinal County as-needed General Engineering services on Transportation, Water/Wastewater and Water Resource projects. Engineering services include survey services, utility analysis, corridor or drainage studies, roadway design, data collection results, plans and specifications, report review and report preparation. Additionally, Entellus will provide construction phase services which may include construction administration, inspection, commissioning and claims analysis.

Freeport MacmoRan, Bagdad Mine, APS 230Kv Bureau of Land Management Roadway // Pinal County, AZ

Entellus provided the survey and engineering services needed to design 3.6 miles of roads in the mountainous rural area of Arizona near Bagdad. The new roads traverse lands owned by the BLM and the Arizona State Land Department (ASLD) to allow access to construct, and maintain electrical 230Kv structures in very remote areas. Some of

the design challenges included identification of overland routes to minimize grading, establishing turnaround areas, developing longitudinal roadway slopes and horizontal alignments that allow 230Kv structures to be delivered to their remote locations via semitractor trailer and identifying connection points to existing roadways to minimize disturbance. Environmental protection was a major concern therefore Entellus also ensured environmental compliance in regards to, mitigation measures for 404 wash crossings, archeological research, storm water and dust control measures, surface restoration measures, and desert tortoise habitat mitigation.

Steven D. Nowaczyk, PE // Geotechnical Lead

RELEVANT HIGHLIGHTS

Firm: Ninyo & Moore

Years of Experience: 23

Education: BS, Civil Engineering, Michigan State University
MS, Geotechnical Engineering, University of Michigan

Professional Credentials: Registered Civil Engineer
AZ No. 34866, NM No. 19584, CO No. 42018, TX No. 106889, MI No. 42103

Mr. Nowaczyk has several years of geotechnical engineering experience including performing and coordinating geotechnical investigations, monitoring field construction testing activities, performing oversight services for geo-dynamic and geo-investigation projects, providing field quality control support for construction projects, conducting laboratory testing, and reviewing reports. Mr. Nowaczyk provides these services for a variety of project types including dams, highways, bridges, tunnels, treatment facilities, underground utilities, commercial and industrial developments, production plants, airports, sports complexes, hospitals, and educational facilities. As Principal Engineer for Ninyo & Moore's Phoenix office, Mr. Nowaczyk oversees geotechnical investigations and analyses; reviews and prepares soil and foundation reports and specifications; reviews and provides technical support to engineers, geologists, technicians, and construction personnel; coordinates engineering research and development activities; reviews and performs engineering calculations; and assists in business development.

UPRR Classification Yard // Pinal County, CA

Project Principal for a geotechnical evaluation for a new classification yard for the Union Pacific Railroad Company, near Red Rock, Arizona. The new facility will be constructed within a site footprint totaling approximately 1,600 acres including future development area. Mr. Nowaczyk provides oversight during the drilling, logging and sampling of 90 exploratory borings and performing four field percolation tests to a depth of approximately 5 feet; extensive laboratory testing and geotechnical engineering analyses; and preparing a report that presents our findings, conclusions and recommendations for site preparation, grading and foundation types, including anticipated settlements and stability, potential corrosive attack to steel and concrete, and pavement design recommendations.

UPRR Grade Crossings // Casa Grande, AZ

Mr. Alvira provided inspection oversight and coordinated impacts of the project with the stakeholders. Two grade crossing in Casa Grande involved impacts to two industrial facilities that used the rail services to transport their goods. The shipments had to be coordinated with the facilities based around the physical removal of the rail for several days during the grade crossing improvements. Inspection oversight included ensuring that the contractor was performing all the inspections necessary to ensure a quality to product, performed all grading and earthwork.

UP Tucson Yard, Gantry Crane Rail Project // Tucson, AZ

Project Principal for the geotechnical evaluation for the Gantry Crane Rail project located at the Union Pacific (UP) Tucson Yard in Tucson, Arizona. The project included the construction of a new gantry crane supported on rails and is located on the southwest portion of the UP yard adjacent and parallel to the existing unlined Railroad Wash channel. Mr. Nowaczyk oversaw the drilling, sampling and logging of nine vertical exploratory borings along the proposed gantry crane rail alignment, extending to depths of about 20 feet; laboratory testing of selective samples obtained from the borings; and the preparation of a report presenting findings, conclusions, and recommendations regarding the design and construction of the planned improvements.

Interstate 10, Pantano Railroad Overpass // Cochise County, AZ

Senior Project Engineer responsible for directing the subsurface exploration, sampling and testing of foundation soils for the design of a new railroad bridge over Interstate 10, 30 miles east of Tucson, Arizona. The project called for the replacement of the existing bridge. The formational material consisted of heavily cemented conglomerate, requiring specialized drilling methods to obtain core samples for strength testing.

Lower Budkeye Road Railroad Crossing // Phoenix, AZ

Project Principal for the geotechnical evaluation for the railroad spur rehabilitation at Lower Buckeye Road in Phoenix, Arizona. The project included the design and construction of a new railroad spur that crosses Lower Buckeye Road approximately 600 feet east of 27th Avenue in Phoenix Arizona. Mr. Nowaczyk provided oversight for the subsurface

exploration, sampling, laboratory testing, and analysis and development of report recommendations.

Union Pacific Car Facility // Phoenix, AZ

Project Manager for a geotechnical evaluation for the Union Pacific Car Facility expansion in Phoenix, Arizona. The project consisted of the rehabilitation of the existing pavements, the construction of new pavements, and the extension of an existing rail siding approximately 600 feet to the west. The project also involved the abandonment of one or more city-owned streets and the demolition of several structures. Mr. Nowaczyk was responsible for reviewing geotechnical literature, aerial photographs and maps of the site and the general site area; drilling, logging and sampling eight small-diameter exploratory borings; coring of the pavement and hand augering subgrade soils at nine locations to evaluate the asphalt pavement thickness and condition, base/subgrade condition, and the relationship to the various distress patterns observed around the parking lot; performing laboratory tests to selected samples obtained from the borings; and preparing a report presenting findings, conclusions, and recommendations regarding the design and construction of the project.

Arizona Eastern Railway // Safford, AZ

Project Engineer for an initial geologic and geotechnical evaluation for the proposed Arizona Eastern Railway project in Graham County, Arizona. The project consisted of the design and construction of a new railway segment extending from the existing Arizona Eastern Railroad northwest to the Phelps Dodge San Juan Mine in Graham County, Arizona. The railway corridor measure approximately 10 miles in length and was designed for the purpose of servicing the proposed San Juan Mine. Mr. Nowaczyk provided oversight during project activities which included reviewing readily available aerial photographs and published geologic literature, including maps and reports pertaining to the project site and vicinity; providing preliminary evaluation of potential geologic and geotechnical constraints; evaluating geologic hazards along the project corridor; and preparing a report presenting results of the geotechnical evaluation and addressing the geologic hazards underlying and adjacent to the project corridor.

Tangerine Road TI // Marana, AZ

Project Principal for the geotechnical evaluation for a new traffic Interchange over Interstate (I-10), approximately 2,500 feet northwest of the existing Tangerine Road TI and improvements to the existing Tangerine Road TI in Pima County, Arizona. The project includes a new three-span, 250 feet long bridge over I-10, a new five-span, 390 feet long bridge over the Union Pacific railroad, widening of the existing Tangerine Road bridge, approximately 6,500 linear feet of new cross roads, approximately 4,000 linear feet of new frontage roads, four new entrance/exit ramps with retaining walls to accommodate available right-of- way; and an evaluation of potential borrow areas located to the northeast and northwest of the planned improvements. Mr. Nowaczyk oversaw project activities including the planning, coordinating, and executing a subsurface exploration program consisting of 565; laboratory testing on selected soil samples; engineering and geologic analysis; and preparation of a report presenting findings, analysis, and recommendations.

Cienega Creek - Marsh Station Traffic Interchange // Pima County, AZ

Project manager for the geotechnical evaluation for the design of a new traffic interchange in Pima County, about 30 miles east of Tucson. The project included new entrance/exit ramps, a bridge over I-10, 1.8 miles of frontage road with embankment heights up to approximately 30 feet, and pavement design recommendations for the project. The project also included geotechnical evaluation for the design of a new bridge and realignment of the UPRR at this location. The geotechnical evaluation consisted of drilling and sampling 91 soil borings to depths up to 99 feet. Analyses included drilled shaft capacities, slope stability analysis of embankments, and settlement calculations of the proposed bridges, roadway, and railroad embankments.

Jeff Schorey // Utility Coordination / Site Civil Design

RELEVANT HIGHLIGHTS

Firm: Entellus

Years of Experience: 26+

Education: AA, Applied Science, Drafting Technology Glendale Community College

Jeff has over 26 years of design experience in a multitude of disciplines from transportation infrastructure, major utility relocation and coordination, water/wastewater, site development to miscellaneous projects such as, parks, landfills, and effluent recharge facilities. His technical experience includes horizontal and vertical geometric calculations, alignment alternatives analysis, earthwork design, arterial widening, right-of-way determinations and utility relocation. Jeff recently provided roadway improvements and utility coordination on eight railroad crossings at existing roadway intersections in Phoenix. Jeff coordinated with Union Pacific Railroad (UPRR) and utility companies within their right-of-way. Additionally, his experience includes assisting with design of nine Pinal County transportation projects, which include street cross-sections for a system of arterial and collector streets, right-of-way abandonment plans, bridge structure and roadway widening improvements. Jeff has intimate knowledge of the offsite improvement regulations and Standard Details in Pinal County's Subdivision & Infrastructure Design Manual and Traffic Impact Analysis Guidelines.

Railroad Crossing Safety Improvements // Multiple Locations, AZ

Entellus was retained by the City of Phoenix to complete the design for improvements to eight (8) UPRR railroad crossings at existing roadway sections. The improvements included pedestrian crossing modifications, curb and gutter, track crossing material, coordination of railroad access requirements, signage and striping, grading and drainage, utility coordination and relocation, and identification of additional rights-of-way and easement requirements.

Annual General Engineering On-Call // Pinal County, AZ

Entellus has been providing Pinal County as-needed General Engineering services on Transportation, Water/ Wastewater and Water Resource projects. Engineering services include survey services, utility analysis, corridor or drainage studies, roadway design, data collection results, plans and specifications, report review and report preparation. Additionally, Entellus will provide construction phase services which may include construction administration, inspection, commissioning and claims analysis.

Maricopa Road (SR347) Access Control // Pinal County, AZ

Pinal County retained Entellus to establish limited access along Maricopa Road (State Route 347) between the Ak-Chin Casino and the south boundary of the Gila River Indian Community for planning purposes. The study consisted of approximately five miles of Maricopa Road in Pinal County. The purpose of this study was to establish access points and access control features that provided adequate intersection spacing and sight distance to enter and exit Maricopa Road. To accomplish this, existing land use, zoning, estimated traffic volumes, assessor maps and future planned developments were used for analysis. Existing roadway plans for Maricopa Road, along with aerial mapping, were used to determine access point and access control locations. A final report was provided that showed proposed access points and other access control features.

Pinal County Area Wide Street Master Plan // Pinal County, AZ

Pinal County retained Entellus to establish an arterial and collector street master plan bounded by Ellsworth Road on the west, Combs (Riggs) Road on the north, Schnepf Road on the East, and Magma Road on the south, excluding that portion falling within the boundaries of Maricopa County. The purpose of the master plan was to establish the layout and street cross-section for a system of arterial and collector streets for this area. Limited access control was established. The layout and alignment of streets common to Maricopa County and Queen Creek were coordinated with representatives of those two agencies.

Kelvin Road Bridge Replacement ADOT Structure No. 8441 // Pinal County, AZ

Entellus completed a Design Concept Report (DCR), Environmental Assessment (EA), Construction Plans, specifications and estimates for the Kelvin Road Bridge Replacement ADOT Structure #8441 over the Gila River are currently in their final stages. The project included data collection (topographic survey, aerial survey, geotechnical investigation, drainage, right-of-way entry), Hydrology/Hydraulics (existing data review, hydrologic analysis, bridge hydraulics, sediment transport and scour analysis, drainage report) and Roadway (design concept report, materials memorandum, pavement design summary, foundation report).

Dan Francetic, RLS, CFedS // Survey

RELEVANT HIGHLIGHTS

Firm: Entellus

Years of Experience: 20

Education: BS, Surveying, Ohio State University

Professional Credentials:
Registered Land Surveyor
AZ No. 33874
NM No. 18994
NV No 020262

Dan has 20 years experience in the preparation of hundreds of right-of-way plans, writing legal descriptions, research at title companies and recorder's offices, wide range of survey activities, specializing in control work ranging from large GPS surveys for aerial control to intricate checks of steel column layout. He became a Certified Federal Surveyor in 2007. Dan has firsthand knowledge of the field to finish methods required for the successful completion of right-of-way projects. Once field work is complete, Dan will provide QA/QC of our topo point deliverables and will ensure our survey results fit into the design seamlessly. Dan managed all survey activities related to Entellus' work on eight UPRR railroad crossings at existing roadway intersections in Phoenix and two BNSF crossing projects. He also managed the survey activities for a major industrial track expansion project for Conoco Phillips in Gallup, New Mexico.

Railroad Crossing Safety Improvements // Multiple Locations, AZ

Entellus was retained by the City of Phoenix to complete the design for improvements to eight (8) UPRR railroad crossings at existing roadway sections. The improvements included pedestrian crossing modifications, curb and gutter, track crossing material, coordination of railroad access requirements, signage and striping, grading and drainage, utility coordination and relocation, and identification of additional rights-of-way and easement requirements.

Countywide Area Drainage Master Plan (ADMP) // Pinal County, AZ

Pinal County retained Entellus for professional engineering services necessary to produce county-wide ADMPs including an Existing Conditions Evaluation. The County was divided into 20 watersheds, which included areas ranging from natural desert to developed urban areas. Entellus prepared an Existing Facilities Inventory illustrating the location of major man-made drainage facilities (including non-drainage structures) in the watershed. Structures inventoried included dams, bridges, culverts, and many other man-made structures. This information was generated in GIS format and attributed to match the County's existing GIS layer. Entellus created GIS data for the County identifying zones of special flood hazard types.

Annual General Engineering On-Call // Pinal County, AZ

Entellus has been providing Pinal County as-needed General Engineering services since 2004 on Transportation, Water/Wastewater and Water Resource projects. Engineering services include survey services which have been provided by Dan's survey group since 2007. Additionally, Dan's previous experience includes serving on Pinal County's Survey On-call since 2001-2005 providing boundary surveys, topographic surveys, writing legal descriptions, right-of-way surveys and establishing monumentation.

Wingate Rail Project for Conoco Phillips // Gallup, NM

Entellus provided design and construction administration for a major industrial track expansion project for Conoco Phillips Wingate Fractionator Plant east of Gallup, New Mexico. The services included design detail of preferred rail arrangement, to create options to situate the appropriate amount of rail, create switch yard operating plan, specification of materials, cost-estimating and cash flow requirements, purchasing assistance, contractor pre-qualification, construction bidding assistance, construction phasing and construction inspection.

West Maricopa Casa Grande Highway, Peters & Nall Road to Anderson Road // Maricopa, AZ

As part of Dan's previous experience, he was involved in locating section corner monuments and determining roadway centerline and right-of-way based on record documents to prepare right-of-way descriptions and results-of-survey drawings for a roadway crossing approximately 6,500 linear feet of the Ak-Chin Indian Community. Survey services were performed as part of Pinal County's Survey On-call contract.

Track Design Services Related to the Amtrak Station Relocation

West Maricopa Casa Grande Highway, Peters & Nall Road to Anderson Road // Maricopa, AZ

As part of Dan's previous experience, he was involved in locating section corner monuments and determining roadway centerline and right-of-way based on record documents in order to prepare right-of-way descriptions and results-of-survey drawings for separate roadways. The Ralston Road survey involved preparing right-of-way easement documents for 5 miles of roadway on the eastern edge of the Ak-Chin Indian Community. The Warren Road survey involved preparing right-of-way documents for acquisition along 2.5-miles of private property. Survey services were performed as part of Pinal County's Survey On-call contract.

Patrice Miller, AVS // Public Outreach

RELEVANT HIGHLIGHTS

Firm: Entellus

Years of Experience: 28+

Education: BA, History, Ottawa University, MBA, Marketing & Managerial Accounting / Finance, Arizona State University

Pat has over 28 years of experience in communications and marketing in the engineering and construction industry. She has managed and/or supported all aspects of public involvement including public meeting planning and facilitation; design of communication materials including newsletters, flyers, door hangers, postcards, and newspaper advertisements; response to public inquiries; and project website design and coordination and maintenance. Pat believes in the value of communicating with affected communities and involving them early in the planning and design phases of a project through open and meaningful communication activities. She has managed and/or supported public involvement efforts for the Cities of Phoenix and Scottsdale, and the Flood Control District of Maricopa County. In addition, she has facilitated various public and private meetings and events, including strategic planning, value engineering, and brainstorming sessions. Pat's expertise is in-depth project experience working with a diverse group of stakeholders, especially projects which have multi-jurisdictional boundaries and educational and recreational components adjacent to infrastructure facilities as well bilingual (English to Spanish) interpretation. Pat's approach is to have open and consistent communication with the project stakeholders to yield the most prevalent context sensitive and cost effective strategies. Pat will provide an effective, feasible, and inclusive public involvement program that seeks to maintain the City of Maricopa's public image, advocacy for two-way communication and information exchange with agency partners, and integrate stakeholder information into the decision-making process. At the beginning of the project, Pat will coordinate with City staff and organize a project team meeting to reaffirm the City's overall goals and expectations for the project, in addition to discussing a Public Involvement Plan outline that is suitable and meets these expectations.

Project Experience

The following projects are a partial list of Pat's experience facilitating teams and/or supporting public outreach programs to meet project owner goals, reach consensus, and add value to communities.

- City of Phoenix, 7th Avenue ACDC Bike and Pedestrian Underpass
- City of Phoenix, Avenida Rio Salado/Broadway Road Western Segment
- City of Peoria, Lake Pleasant Parkway - Westwing to CAP
- City of Scottsdale, Pima Road Improvements
- Flood Control District of Maricopa County, Glendale/Peoria ADMP
- Flood Control District of Maricopa County, Wittmann ADMP
- Arizona DOT, US89 Junction SR64 to Little Colorado River
- Arizona DOT, US60/Loop 303 Interim Interchange
- USACE, Portland District Bonneville Spillway Gate Full Flow Hoist
- USACE, Omaha District Minot AFB
- USACE, Omaha District Ft. Carson Airfield Runway
- USACE, Omaha District Fort Peck Rehab Powerhouse Unit #2
- USACE, Omaha District Bank Stabilization & Navigation Project
- USACE, Omaha District Programmatic Emergency Spillway Slab Repairs
- Department of State OBO, Georgetown Embassy Rehabilitation
- Department of State OBO, Montevideo Embassy Rehabilitation

- Department of State OBO, Sana'a, Yemen Physical Security Upgrade for the DTFS
- Washington DOT, Central Region I-90 Keechelus Dam (Phase 2A)
- Washington DOT, Eastern Region US395/I-90 Interchange
- Alaska DOT, Aleknagik Wood River Bridge Construction (Phases I & II)
- AC Transit, East Bay Bus Rapid Transit
- Tahoe City, SR89/Fanny Bridge Community Revitalization
- Kentucky Transportation Cabinet, I-71/I-75 at KY 536 Diverging Diamond Interchange

Hernan Aristizabal, PE, CFM // Drainage Lead

RELEVANT HIGHLIGHTS

Firm: Entellus

Years of Experience: 23

Education: BS, Agricultural and Irrigation Engineering, MS, Civil and Environmental Engineering, Utah State University

Professional Credentials:
Registered Civil Engineer

AZ No. 29737
UT No. 177010-2202

Hernan has been engaged in drainage improvement projects in the southwestern United States for the past 23 years. Hernan is experienced with design and analysis projects dealing principally with drainage and water resource issues. These projects have included such tasks as development of hydrology models, floodplain delineations, water distribution system modeling, channel design, culvert design and roadway improvements. He has been involved in the delineation of over 1000 miles of detail and approximated floodplain delineation, and developed drainage master plans for over 10,000 square miles in Arizona including the Countywide Area Drainage Master Plan (ADMP) for Pinal County and several watersheds within Maricopa County. Hernan prepared the Pinal County's ADMP, and is intimately familiar with the major issues associated with the watersheds that may be impacted with the Amtrak relocation project in the City of Maricopa. He will be responsible for analyzing the hydrology and hydraulics for proposed improvement alternatives for both off site, rail embankment culverts and roadway drainage infrastructure.

Countywide Area Drainage Master Plan (ADMP) // Pinal County, AZ

Pinal County retained Entellus for professional engineering services necessary to produce county-wide ADMPs including an Existing Conditions Evaluation. The County was divided into 20 watersheds, which included areas ranging from natural desert to developed urban areas. Entellus prepared an Existing Facilities Inventory illustrating the location of major man-made drainage facilities (including non-drainage structures) in the watershed. Structures inventoried included dams, bridges, culverts, and many other man-made structures. This information was generated in GIS format and attributed to match the County's existing GIS layer. Entellus created GIS data for the County identifying zones of special flood hazard types. Special flood hazards included ponding areas and areas downstream from embankments (potential embankment failure), and recommendations were made for further evaluation. The County included several storage facilities; three PVR structures, Apache Junction FRS, Sonoqui Detention Dike (Queen Creek), Whitlow Ranch Dam (Queen Creek), and many others ranging from large jurisdictional dams to small stock ponds.

Drainage Reviews (CLOMR/LOMR) // Pinal County, AZ

For the last six years, Entellus has been on the Pinal County on-call list for several different categories including: roadway design, drainage design, drainage review, FEMA packages review, and others. As part of this on-call, Entellus has reviewed several CLOMR applications and drainage reports for the County. The CLOMR/LOMR review included checking for adherence to FEMA, County, and local jurisdiction standards and procedures. As part of this process, Entellus provided written comments to the County outlining the results of the technical review and the need for any additional analysis, clarifications, or design changes. Reviews performed for Pinal County ranged from large subdivisions with significant drainage infrastructure to small lot development with limited effect on the floodplains and collector streets for this area.

Annual General Engineering On-Call // Pinal County, AZ

Entellus has been providing Pinal County as-needed General Engineering services on Transportation, Water/Wastewater and Water Resource projects. Engineering services include survey services, utility analysis, corridor or drainage studies, roadway design, data collection results, plans and specifications, report review and report preparation. Additionally, Entellus will provide construction phase services which may include construction administration, inspection, commissioning and claims analysis.

Kelvin Road Bridge Replacement ADOT Structure No. 8441 // Pinal County, AZ

Entellus completed a Design Concept Report (DCR), Environmental Assessment (EA), Construction Plans, specifications and estimates for the Kelvin Road Bridge Replacement ADOT Structure #8441 over the Gila River are currently

in their final stages. The project included data collection (topographic survey, aerial survey, geotechnical investigation, drainage, right-of-way entry), Hydrology/Hydraulics (existing data review, hydrologic analysis, bridge hydraulics, sediment transport and scour analysis, drainage report) and Roadway (design concept report, materials memorandum, pavement design summary, foundation report).

Schnepf Road Bridge Over Queen Creek Evaluation / Pinal County, AZ

Entellus reviewed site conditions and provided an assessment of future scour in the area to determine if the current bridge was safe for traffic. Scope of services included review of as-built plans and site conditions, and preliminary pile capacity calculations for various pile lengths and ground water conditions. Entellus obtained and modified existing hydrologic models to determine the 10-year, 25-year 100-year and 500-year flows at the bridge site. Reviewed site conditions and provided an assessment of potential future scour in the area. Entellus also analyzed two alternatives: strengthening the existing bridge to resist scour and carry required loads; and removal and replacement with a new bridge.