

SOUTH
SAN FRANCISCO
THE INDUSTRIAL CITY

City of South San Francisco

PROPOSAL

2022 West of 101 Pavement Rehabilitation Project

January 12, 2021



Submitted By:

Point Richmond Office

501 Canal Blvd., Suite I

Point Richmond, CA 94804

Phone: 510.215.3620



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1. Introductory Letter

January 12, 2021

Angel Torres, PE, Senior Civil Engineer
City of South San Francisco
Public Works Department - Engineering Division
315 Maple Avenue
South San Francisco, CA 94080

Proposal – 2022 West of 101 Pavement Rehabilitation Project

Dear Mr. Torres and Members of the Selection Committee:

This is an exciting time in the City of South San Francisco's Engineering Division (City) delivering historically one of the City's largest street rehabilitation programs. By front loading maintenance by 2022 as opposed to over a longer time frame the City is able to recognize economies of scale and significant savings in future annual street maintenance costs. This project will also bring meaningful and long-lasting improvements to the community, multi-modal transportation, ADA access, and street aesthetics and overall function. The mission is to provide technical, timely, and cost-effective solutions to implement this program successfully that is well received and positively viewed by the City and its residents.

With over 140 centerline miles of roadway, the City's pavement network represents a significant asset that is highly visible and important to the community and local businesses, and therefore requires good decision making as to how to best manage and maintain. Similar to the projects we designed for the City in 2017 to 2021, NCE's goal is to continue to partner with the City to deliver pavement rehabilitation design documents that balance long-term pavement performance and sustainability, cost-effective design and construction, future maintenance, and minimal traffic disruptions during construction for the City's 2022 West of 101 Pavement Rehabilitation Project.

NCE is a multi-faceted civil engineering, pavement engineering, landscape architecture, and environmental service firm, which specializes in developing and designing pavement maintenance and rehabilitation programs for the City and public agencies all throughout California. NCE assisted the City in developing this program and is powerhouse known for delivering comprehensive multi-year pavement work plans and civil engineering projects involving pavement management, pavement resurfacing, pavement rehabilitation, road reconstruction, complete streets elements, and green infrastructure solutions.

NCE has successfully completed multi-year work plan update, pavement resurfacing, rehabilitation, and reconstruction programs for the City as well as other municipalities throughout the Metropolitan Bay Area, in which we have developed a thorough understanding of what is important to local municipalities. Based on our extensive experience with the City's infrastructure, pavement network, and updating of the City's pavement management system, NCE has unprecedented knowledge of what is important to the City, its staff, and its residents. The NCE team provides the following benefits and distinguishing features to deliver the City's project:

- **Proven Track Record with the City** – NCE has dedicated staff and a large team of professionals that has successfully completed pavement resurfacing, rehabilitation, and reconstruction projects for the City since 2017, that comprised of 47.7 centerline miles of streets for resurfacing and 8.0 centerline miles of streets for rehabilitation.
- **Knowledge of the City's Roadway Network** – NCE has worked recently with the City to develop an update to the City's 6-Year Paving Plan and preliminary rehabilitation project on west of Highway.
- Demonstrated pavement rehabilitation design expertise from designing thousands of local streets.

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- NCE is recognized as a leading pavement expert and will continue to utilize our research with FHWA and Caltrans and experience to bear for selection of pavement materials for the City.
- Familiarity with local regulations and working with Bay Area cities, utilities, and communities.
- Ability to work as a partner and extension of City staff.
- Tailored approach with cost-effective and deliberate pavement strategies with proven long-term performance balanced with other factors such as minimizing traffic impacts and inconveniences to residents and businesses.

Contract Manager and Proposal Contact

Ryan Shafer, PE, GE, is authorized to negotiate and contractually bind NCE to the City's agreement and will be the primary point of contact for clarifications during the proposal evaluation period. His contact information is as follows:

Mr. Ryan Shafer, PE, GE
Phone: (510) 215-3620
Email: rshafer@ncenet.com
Website: www.ncenet.com

NCE Office Address:
501 Canal Blvd, Suite I
Richmond, CA 94804

Required Statements

- NCE acknowledges receipt of Addendums #1, dated January 8, 2021.

The NCE team is committed to the City and the success of your pavement projects. We are very interested in continuing our working relationship with the City to deliver this project. NCE looks forward to your favorable review of our proposal and the opportunity to continue our work with the City.

Sincerely,

NCE

A handwritten signature in blue ink that reads "J. Ryan Shafer".

J. Ryan Shafer, PE, GE
Principal

Richmond, CA

501 Canal Boulevard, Suite I
Point Richmond, CA 94804
(510) 215-3620



2. Consultant Introduction, Qualifications, and Experience

Firm Profile

Founded in 1990, NCE is a client-focused professional consulting firm integrating the disciplines of engineering, science, and planning to address the infrastructure and resources challenges facing our communities today and in the future. Over 85% of NCE's work is with local public entities. This contract will be managed from our Richmond office, which is located less than one hour from the City. Additionally, NCE has more than 100 employees available on an as-needed basis from our Richmond, Oakland, Sacramento, and Fountain Valley, California offices, as well as from our Reno and Lake Tahoe, Nevada offices.

NCE has considerable experience planning and designing roadway facilities either as standalone projects or as integrated components of larger design and infrastructure projects incorporating bicycle, pedestrian, or other modes of transportation. Our company understands public agencies, their culture, how business is done, what is important to local communities, what is required from elected officials and councils/boards, and the pressures that are placed on public works/engineering departments, and planning staff. The following list includes an overview of NCE's primary services and capabilities:

- Roadway and pavement design
- Pavement management program update
- Pavement rehabilitation and evaluation
- Complete streets and Americans with Disabilities Act (ADA) retrofit design
- Bike/pedestrian trail and path design
- Environmental studies for National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) compliance
- Utility relocation design
- Storm drainage design
- Storm water pollution prevention plans (SWPPP)
- Construction documents (PS&E)
- Safe routes to school design
- Storm water management
- Pavement research
- GIS and database management
- Regulatory compliance and permitting
- Sanitary sewer design
- Site assessment and remediation
- Hydrology and hydraulic analysis
- Water quality and erosion control design
- Effluent permitting and system design
- Botanical surveys and vegetation mapping
- Stakeholder and agency outreach
- Construction support services

Subconsultants

Mountain Pacific Surveys | Topographical Survey

Mountain Pacific Surveys (MPS) is a trusted partner of NCE and can complete topographic surveys if necessary, on streets that may require more significant changes to road geometry, reconstruction, or changes to drainage if determined to be needed during design. Our current approach will be to continue to utilize existing County base maps to develop improvement sheets offerings savings by not requiring completion of topographic surveys. MPS has been working previously on City street rehabilitation projects providing professional survey services firm providing boundary surveying and mapping, design surveys, right-of-way engineering, construction surveys, environmental surveys, monitor surveys, and photogrammetric engineering services to the public and private sector. MPS has been involved with numerous projects for street resurfacing as our surveyor.



Psomas | Subsurface Utility Detection

Should there be streets that require reconstruction or improvements in potential conflict with utilities we have retained on our team **Psomas**, a firm with noted expertise in subsurface utility engineering and locating to complete locate utilities with non-invasive geophysical techniques such as ground penetrating radar (GPR). With 70 years of experience, Psomas is a trusted teaming partner having worked on numerous street rehabilitation and maintenance projects with NCE.



Fehr & Peers | Traffic Engineering

Fehr & Peers will provide traffic engineering services if required and represents another highly valued teaming partner providing these services on pavement rehabilitation and complete street projects throughout the Bay Area. Traffic engineering services might include design of more complicated bicycle and pedestrian improvements, signalization upgrades, road diets or reconfiguration of traffic lanes, and/or traffic control plans should the City decide the current approach of having the contractor develop for review by the City is not sufficient. They specialize in providing transportation planning and traffic engineering services to public and private sector clients and emphasize the development of creative, cost-effective, and results-oriented solutions to planning and design problems associated with all modes of transportation. They bring national expertise in pedestrian safety, innovative bicycle planning, transit planning, and best practices in complete streets implementation. Through our transportation planning and traffic engineering design work on state highway improvement projects, we are well-versed with Caltrans's analysis procedures, both for project approval/environmental documents and for engineering plans, specifications, and estimates.



Cal Engineering & Geology, Inc. | Geotechnical Testing Laboratory

Cal Engineering & Geology, Inc. (CE&G) is a certified Local Small Business (#23143) and trusted teaming partner working on many projects with NCE with headquarters in Walnut Creek, an office in San Jose, and an office and geotechnical testing laboratory in Oakland, California. CE&G is an award-winning geotechnical and civil engineering consulting, design, and construction management firm located in the San Francisco Bay Area. CE&G's clients can expect consistent and reliable results. Their Hayward facility is home to an American Association of State Highway and Transportation Officials (AASHTO)-accredited soils and materials testing laboratory.



Similar Relevant Projects

NCE has had the privilege to work with many cities and counties in Northern California, including South San Francisco, on roadway projects. A sample of our relevant experience is provided within this section. These references will allow the City to verify NCE's experience and the level of satisfaction of our clients.

OBAG2 Pavement Rehabilitation Program, South San Francisco, CA



Contracting Agency: City of South San Francisco

Agency Project Manager: Matthew Ruble

Phone: (650) 829-6671

Contract Amount: \$157,200

Funding Source: OBAG 2

Date of Contract: 9/2017

Date of Completion: Fall 2020

NCE Project Manager: Ryan Shafer

Contact Information:
E: rshafer@ncenet.com
P: (510) 333-7684

Project Objective:

- Pavement and civil engineering design, including Caltrans E-76 authorization for construction, utility coordination, pavement and curb/gutter condition survey, pavement deflection testing, pavement coring, pavement design recommendations, PS&Es, bidding and construction support services, and Caltrans encroachment permit
- OBAG2 funded program to preserve local streets and roads within the City's priority development area
- Selected streets based on the City's criteria of the construction budget limited to the grant amount, location within the City's priority development area, and candidates for rehabilitation

Project Description:

The City retained NCE to provide pavement and civil engineering design, including Caltrans E-76 authorization for construction, utility coordination, pavement and curb/gutter condition survey, pavement deflection testing, pavement coring, pavement design recommendations, PS&Es, bidding and construction support services, and Caltrans encroachment permit. It is an OBAG 2 funded program to preserve local streets and roads within the City's priority development area. Selected streets were based on the City's criteria of the construction budget limited to the grant amount, location within the City's priority development area, and candidates for rehabilitation.

Project Outcome / Innovative or advanced techniques/cost-effective designs:

- On-time and on-budget

- Cost-efficient pavement rehabilitation strategies with consideration of conventional and innovative paving materials (e.g., HMA and RHMA).

2017 to 2021 Street Surface Seal and Rehabilitation Projects and Multi-Year Work Plans, South San Francisco, CA



Contracting Agency: City of South San Francisco

Agency Project Manager: Matthew Ruble/Angel Torres

Phone: (650) 829-6671

Contract Amount:
~\$1.2 million

Funding Source:
Capital Improvement Program/ Road Maintenance and Rehabilitation Account/ City Annual Resurfacing Program

Date of Contract: 9/2017

Date of Completion:
Ongoing

NCE Project Manager: Mei-Hui Lee

Contact Information:

E: mlee@ncenet.com

P: (510) 215-3620

Project Objective:

- Pavement and civil design services of annual surface seal and rehabilitation programs with scrub, slurry, cape seals and mill and overlay, including pavement and curb/gutter condition survey, utility coordination, curb ramps, base repairs, drainage, curb/gutter replacement, pavement design recommendations, PS&Es, and bidding and construction support services
- Bicycle and pedestrian improvements including bike lanes, shared boulevards, high-visibility crosswalks, ADA curb ramps, and no parking red curbs
- Traffic engineering improvements in Paradise Valley Neighborhood and drainage improvements on 4th Lane between Spruce avenue and East End

Project Description:

NCE has successfully completed pavement resurfacing, rehabilitation, and reconstruction projects for the City since 2017, that comprised of 47.7 centerline miles of streets for resurfacing and 8.0 centerline miles of streets for rehabilitation. Every two years, the City surveys the streets and enters the data into the StreetSaver® database. This database assists staff in determining the pavement condition index (PCI) for each street segment and the street network overall. NCE assists City to update historical maintenance and rehabilitation records and conduct field review to identify candidate streets for City's annual surface seal and rehabilitation programs. Based on City's paving budgets and maintenance strategy, NCE has also utilized StreetSaver® database and field reviews to develop multi-year work plan for the City in 2018 and 2020.

Project Outcome / Innovative or advanced techniques/cost-effective designs:

- On-time and on-budget
- 5-year work plan in 2018, updated 6-year work plan in 2020, development of preliminary street work plan for the subject 2022 West of 101 Pavement Rehabilitation Project
- Cost-effective base repair program calibrated with City expectations
- Use of slurry, rubberized cape seals, scrub seals to stretch paving funds and avoid more costly overlays; for the 2021 Street Rehabilitation Project NCE was able to utilize Rubberized Cape Seals on 1st, 2nd, 3rd, and 4th lanes in lieu of overlays saving the City over \$700,000 construction costs and allowing the City to access CalRecycle Rubberized Pavement Grant Programs.
- Recommendation of longer performing pavement materials including Rubberized Hot Mix Asphalt (RHMA) on street to help address reflective cracking from underlying concrete and offering up green recycling benefits by diverting tires away from landfills
- Drainage analysis on Hazelwood Dr and Maywood Way

FY 2020-2021 and 2021-2022 Pavement Resurfacing and 5-Year Work Plan Project, Pacifica, CA



Contracting Agency: City of Pacifica

Agency Project Manager:
Lisa Petersen

Phone: (650) 730-4948

Contract Amount:
\$156,800

Funding Source:
Road Maintenance and Rehabilitation Account

Date of Contract: 11/2020

Date of Completion:
Ongoing

NCE Project Manager: Mei-Hui Lee

Contact Information:
E: mlee@ncenet.com
P: (510) 215-3620

Project Objective:

- Develop a cost saving 5-year work plan utilizing cape seals with base repairs in lieu of more costly overlays
- Pavement investigation and design and preparation of civil design plans, specifications, and engineer's estimate for construction
- Design of ADA ramps, curb & gutter repairs, striping and pavement markings, and base repairs/leveling courses
- Apply more cost-effective multi-layer slurry seals and cape seals with base repairs to help mitigate reflective cracking, avoid more costly treatments, and reduce costs for City's concrete repair package

Project Description:

As part of its 5-year work plan developed by NCE, the City allowed for pavement rehabilitation and resurfacing to be designed in advance of construction and allow for earlier bidding to obtain competitive bids. It is the City's desire to have resurfacing projects for each year, grouping and aggregating by neighborhoods for efficiency of design, construction (less mobilization), future maintenance, and to be able to resurface more streets with a limited pavement resurfacing annual budget. More cost-effective cape seal or multi-layer slurry seal with base repair and leveling course is applied on residential streets under poor to failed pavement condition to help City treats more streets within limited budgets.

Project Outcome / Innovative or advanced techniques/cost-effective designs:

- On-time and on-budget
- Pavement design solutions include a combination of pavement rehabilitation, surface reconstruction of the asphalt surface, cape seal, slurry seal, base repairs and leveling courses.
- By utilizing conventional cape seals instead of overlays over 12 centerline miles of additional streets were able to be treated.

Annual Overlay/Rehabilitation 2017-2021 Pavement Design and PS&E, San Leandro, CA



Contracting Agency: City of San Leandro

Agency Project Manager:
Austine Osakwe

Phone: (510) 577-3486

Contract Amount: \$1.5 million

Funding Source:
Measure B and Measure BB and Local Funding

Date of Contract: 10/2017

Project Objective:

- Visible drainage issues were addressed, such as localized ponding in the gutter pan, the design of over 100 ADA ramps, curb and gutter repairs, and improvements to striping and pavement markings with the addition of class II and class IV bike lanes
- Design of traffic calming bulbouts for two streets where NCE analyzed vehicle turning capabilities and impacts to surface drainage
- Submitted and managed three encroachment permit applications with Caltrans
- Engineer's estimate matched that of the winning contractor bid

Project Description:

NCE prepared construction documents and pavement rehabilitation and reconstruction design for 47 arterial, collector, and residential streets (8.1 miles) totaling about \$17 million in construction. NCE's scope of work included pavement investigation and design and preparation of civil design PS&Es for construction.

Project Outcome / Innovative or advanced techniques/cost-effective designs:

- On-time and on-budget
- Design solutions included conventional and RHMA overlays, full-depth asphalt reconstruction, FDR in lieu of more expensive conventional reconstruction, and a pilot project for CCPR on an arterial street
- Inclusion of complete street elements for bicycle and pedestrian improvements throughout the project

Date of Completion:

Ongoing

NCE Project Manager: Ryan
Shafer and Jenny Van Dyke

Contact Information:

E: rshafer@ncenet.com

P: (510) 333-7684

Pavement Rehabilitation / Maintenance and Bikeway Improvements, San Francisco, CA



Contracting Agency:

Presidio Trust of San
Francisco

Agency Project Manager:

Amy Marshall

Phone: (415) 317-8459

Contract Amount: \$784,100

Funding Source:

Presidio Trust Operating
Funds

Date of Contract: 5/2019

Date of Completion:

Ongoing (In Construction)

NCE Project Manager: Ryan
Shafer

Contact Information:

E: rshafer@ncenet.com

P: (510) 333-7684

Project Objective:

- Preparation of plans, specifications, and cost estimates for bidding purposes
- Develop sustainable and cost-effective pavement treatments utilizing recycle in-place technologies (e.g. Cold In-place Recycling) to stay within the Presidio Trusts budget
- Traffic lane modification and lane widening design to include and plan for extensive new bicycle lane facilities
- Improve pedestrian crossings to the extent feasible within the context of pavement maintenance and rehabilitation

Project Description:

- NCE is designed the Presidio Trust's pavement rehabilitation and maintenance project with redesign of the bicycle lane network. Design elements included pavement design, a roundabout, extensive modification to existing striping and markings to introduce class II and III bikeways and an advisory bike lane, roadway grading, drainage solutions and design, and bus platforms.

Project Outcome / Innovative or advanced techniques/cost-effective designs:

- On-time and on-budget
- Introduced cost-effective and sustainable pavement treatment alternatives, such as cold in-place recycling (CIR) that allows the asphalt concrete to be recycled in-place offering up a green technology that recycles existing onsite materials, reduces costly truck trips for import of asphalt paving materials, and reduces greenhouse gases and energy usage.
- The pavement design considered a number of different factors, including medians, curb reveal, depth to underlying concrete, previous overlays and fabric materials, AB thickness, and other buried obstructions, such as rail lines and recommended an appropriate pavement treatment.



3. Organization and Approach

Project Team

NCE brings a diverse and talented group of design professionals that have proven experience and delivery, strong working relationships with City staff, and knowledge of City preferences and design standards in delivering these projects for the City since 2017. Mei-Hui Lee, PE will continue to be the Project Manager and will communicate regularly with the City on project purpose, plans, and progress. Mei-Hui Lee is ready and willing to assist the City wherever she can whether it be offering technical advice and solutions, further modifying and analyzing the pavement management program in StreetSaver® to offer greater efficiencies and cost savings, delivering successful projects on schedule, helping protect valuable City funds with innovative engineering solutions (often which involve minimizing costly removal and disposal and promote recycling and green infrastructure), or how an infrastructure project can improve the community and their daily lives.

Mei-Hui has worked for the City of South San Francisco since 2017, including this 2022 preliminary project, providing her expertise with StreetSaver® to help the City select street candidates, develop multi-year work plans (Figure 1), recommend cost-effective pavement treatments, and has delivered numerous resurfacing and rehabilitation construction documents to the City. Mei-Hui has an intimate knowledge of the City's pavement network and database as she worked with City to develop multi-year work plans and select preliminary candidate streets in West of 101 Pavement Rehabilitation Project within City's paving funding and rehabilitation strategy. This included modifying pavement strategies and unit costs, updating historical maintenance and rehabilitation records, performing funding analyses, conducting field review to verify treatments, and preparing comprehensive reports and work plans for policy makers and the public. Mei-Hui has extensive civil and pavement design and project management experience, including engineering projects related to complete streets, street maintenance and rehabilitation, infrastructure asset management, bike and pedestrian facilities, trails, parking areas, ADA compliance, drainage, and utilities.

As a technical lead, Victor Lemus, PE, will also be a primary point of contact with the City Engineer to coordinate on technical items. Victor has helped the City develop numerous construction documents that have been successfully constructed underbudget and on-time since 2017, including City's annual surface seal and rehabilitation projects, and OBAG2 project. Victor's commitment to delivering high quality documents and responsiveness to City's comments on previous projects have built a great consultant-client relationship. Like Mei-Hui,



Figure 1 – Multi-Year Work Plan



Figure 2 – Completed project in South San Francisco

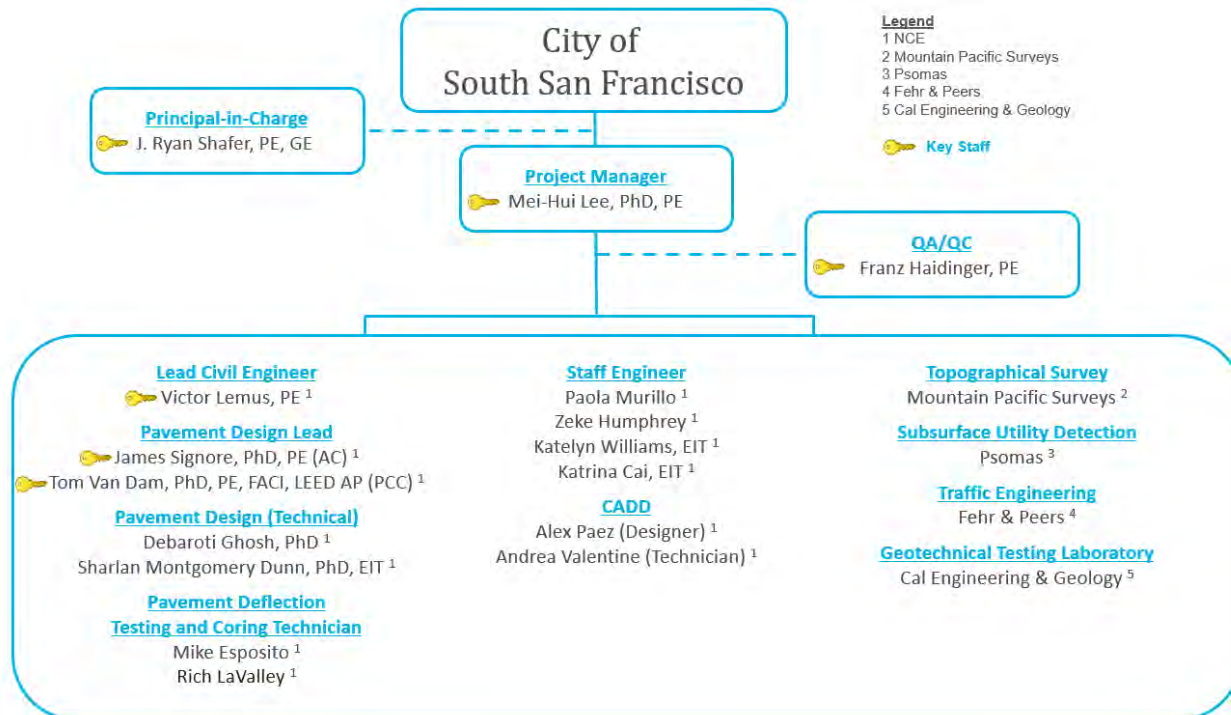
Victor's involvement with various City's projects have given him great insight to City's expectations regarding pavement and civil design, ADA compliance, re-striping standards, and implementation of the Bike and Pedestrian Master Plan. Victor has also helped with estimating the cost of construction for the various projects NCE has done for the City and neighborhood agencies. Keeping up with current unit prices throughout the bay area and California we have been able to estimate the cost of these projects withing a margin of error of +/- 5%. Mei-Hui and Victor with NCE staff have successfully delivered \$14 million value construction projects for the City on-time and on-budget over the past five years. In City's 2021 surface seal and rehabilitation projects, NCE developed cost-effective pavement design plans allowing for treatment of nearly 90 percent of City's downtown, almost double the original work plan selected from StreetSaver®.

We have carefully assembled a team of professionals to support Mei-Hui and Victor and with demonstrated experience providing the services for similar and relevant types of projects including civil design, pavement asset management, pavement testing and design, landscape architecture, hydrology and hydraulics for stormwater assessment and design. The experienced team members assembled below with if necessary additional bench depth from over 100 NCE employees will successfully deliver this larger project for winter bidding (November 2021) to secure more competitive

and lower bidding prices. NCE is committed to providing the staff presented within this section and does not make substitutions of key staff and in fact if anything is prepared to commit any additional resources as needed. Figure 3, below, is our organization chart. Brief qualification summaries for each key personnel follow and their resumes are provided in Appendix A.

Organization Chart

Figure 3 – Project Team Organizational Structure



J. Ryan Shafer, PE, GE – Principal-in-Charge



Years of experience: 22

Qualifications:

- Adds value by helping clients manage and maintain their streets/roads
- Experience managing a range of public and private projects, including vertical development; understands working with diverse project types
- His clients provide feedback that NCE is an effective partner and steward, understanding what is important to each community

Relevant projects (see subsection Similar Experience for descriptions):

- OBAG2 Street Rehab Program, City of South San Francisco, CA
- 2017, 2018, 2020, and 2021 Street Surface Seal and Rehabilitation Projects, City of South San Francisco, CA
- Pavement / Civil Design Services, City of Sunnyvale, CA
- Measure M Street Rehab Program, City of Berkeley, CA
- Annual Overlay/Rehabilitation 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA
- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA

Education:

- MS, Geotechnical Eng., UC Berkeley, 1998
- BS, Geological Eng., Colorado School of Mines, 1996

Licenses:

- Professional Engineer – Civil, CA #62349
- Professional Engineer – Geotechnical, CA #2713

References

Various Richmond Projects |
City of Richmond
Yader Bermudez, Project Manager
510-774-6300 |
yader_bermudez@ci.richmond.ca.us

Various Projects for Town of Moraga, City of Richmond Alameda County (formerly Town of Moraga and City of Richmond)
Edric Kwan

(510) 670-5723
edrick@acpwa.org

Mei-Hui Lee, PhD, PE– Project Manager



Years of experience: 12

Qualifications:

- Brings a depth of expertise to NCE's civil and pavement design, evaluation, and maintenance projects
- Experience includes working with cities and counties for pavement management program (PMP) update, pavement design, pavement structure evaluation, and field surveys
- Develops cost-effective maintenance strategies and prepares multi-year street maintenance plans and budget option reports
- Combine pavement management and design experience to provide cost-effective work plans to clients

Relevant projects (see subsection Similar Experience for descriptions):

- 5-Yr Pavement Program (Work Plan), City of South San Francisco, CA
- OBAG2 Street Rehab Program, City of South San Francisco, CA
- 2017, 2018, 2020, and 2021 Street Surface Seal Projects, City of South San Francisco, CA
- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA
- Pavement Rehab, City of Sunnyvale

Education:

- PhD, Civil Engineering, National Taiwan Univ, Taiwan, 2009
- MS, Civil Engineering, Columbia Univ, New York, 2012
- BS, Civil Engineering, National Taiwan Univ, Taiwan, 2002

Licenses:

- Professional Engineer – Civil, CA #87635

References

2018-2020, 2021 Surface Seal and Rehab | City of South San Francisco

Angel Torres, Senior Engineer
650-515-8286

Angel.torres@ssf.net

FY 20/21 and FY 21/22 Resurfacing Program | City of Pacifica

Lisa Petersen, Public Works Director

650-738-3770

petersenl@ci.pacifica.ca.us

Franz Haidinger, PE – QA/QC



Years of experience: 22

Qualifications:

- Oversees, manages, and develops designs and PS&Es for roadway improvement projects and implements sustainable technologies
- Improves and protects the built environment

Relevant projects (see subsection Similar Experience for descriptions):

- OBAG2 Street Rehab Program, City of South San Francisco, CA
- 2017, 2018, 2020, and 2021 Street Surface Seal Projects, City of South San Francisco, CA
- 2018 Street Rehab, City of South San Francisco, CA
- Pavement and Civil Design Services, City of Sunnyvale
- Measure M Street Rehab Program, City of Berkeley, CA

Education:

- DI (MS), Civil Engineering., Univ of Natural Resources and Life Sciences, Vienna, 1997

Licenses/Certifications:

- Professional Engineer – Civil, CA #64725
- Professional Engineer – Civil, NV #19430
- Troxler Nuclear Testing Equip. Cert., #079039

References

Via Verdi Slide Repair | City of Richmond

Tawfic Halaby, PE, Senior Civil Engineer

510-621-1612

Tawfic_halaby@ci.richmond.ca.us

Parkside and Broadway
Pavement Rehab | City of
Walnut Creek
Alex Wong, PE, Senior Civil
Engineer
925-943-5899
wong@walnut-creek.org

Victor Lemus, PE – Lead Civil Engineer



Years of experience: 6

Qualifications:

- Strives to deliver construction documents with client's needs in mind while following City, County, and other relevant design standards
- Treat every project his own and is respectful of City's deadlines and project budget.
- Assists with curb ramp design, street layout plan and profile design, striping plans and improvements, and civil design details for street improvement projects
- Collects and reviews field data, digouts, and concrete repairs

Relevant projects (see subsection Similar Experience for descriptions):

- OBAG2 Street Rehab Program, City of South San Francisco, CA
- 2017, 2018, 2020, and 2021 Street Surface Seal Projects, City of South San Francisco, CA
- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA
- Pavement and Civil Design Services, City of Sunnyvale

Education:

- BS, Civil and Environmental Engineering, UC Davis, 2014

Licenses:

- Professional Engineer – Civil, CA #89769

References

OBAG 2 Street Rehab | City of South San Francisco

Angel Torres, Senior Engineer
650-515-8286

Angel.torres@ssf.net

2020 Pavement Overlay | Town of Moraga

Sharon Chan, Assistant Engineer
925-260-2136

schan@moraga.ca.us

James Signore, PhD, PE – Pavement Design (AC)



Years of experience: 25

Qualifications:

- Manages projects, data analysis, and technical report review for pavement engineering projects
- Specializes in pavement design and evaluation, materials assessment, rehabilitation, maintenance, and training
- Taught National Highway Institute's and American Society of Civil Engineer's "Techniques for Pavement Rehabilitation" seminars to practicing engineers for 17 years
- Taught graduate courses in pavement engineering at California State University at San Jose and many of his former students are civil engineers at Bay Area local agencies

Relevant projects (see subsection Similar Experience for descriptions):

- OBAG2 Street Rehab Program, City of South San Francisco, CA
- 2017, 2018, 2020, and 2021 Street Surface Seal Projects, City of South San Francisco, CA
- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA
- Pavement / Civil Design Services, City of Sunnyvale, CA
- Annual Overlay/Rehab 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA

Education:

- PhD, Civil Engineering, Univ of IL, Urbana-Champaign, 1998
- MS, Civil Engineering, Univ of IL, Urbana-Champaign, 1994
- BS, Electrical Engineering, Clarkson Univ, 1985

Licenses:

- Professional Engineer – Civil, CA #62647

References

Transportation Infrastructure Rehab Projects | City of Davis

Michael Mitchell, PE, Principle Civil Engineer

530-747-5846
mmitchell@cityofdavis.org

2020 Rehab Project | Presidio Trust

Matt Starkey, PE, Transportation Engineer

628-256-5497
mstarkey@

presidiotrust.org

Tom Van Dam, PhD, PE, FACI, LEED AP – Pavement Design (PCC)



Years of experience: 29

Qualifications:

- Works with clients and the public and can effectively communicate the importance and applicability of highly technical information.
- Authored more than 75 publications and has given more than 100 presentations on pavements, concrete materials and sustainability.
- Led projects for agencies, foundations, departments of transportations and private entities.
- Has been a professor, Director of the USDOT-funded University Transportation Center for Materials in Sustainable Transportation Infrastructure and Director of the Michigan DOT Transportation Materials Research Center.

Relevant projects (see subsection Similar Experience for descriptions):

- Almond Grove District Street Reconstruction, Town of Los Gatos, CA
- 2015 Street Rehab, City of Berkeley, CA
- Measure M Street Rehab Program, City of Berkeley, CA
- On-Call Pavement Engineering Services, San Francisco International Airport, City / County of San Francisco, CA

Education:

- PhD, Civil Engineering, Univ of IL, Urbana, 1995
- MS, Civil Engineering, Univ of IL, Urbana, 1986
- BS, Civil Engineering, Univ of IL, Urbana, 1984

Licenses:

- Professional Engineer – Civil, NV #23424
- LEED Accredited Professional

References

On-Call Pavement Support | Caltrans

David Lim, PhD, PE, Senior Pavement Engineer

916-274-0658

s.david.lim@dot.ca.gov

Aquatic Center Concrete Technical Assistance | City of Elk Grove

Jeff Werner, PE, Engineering Service Manager

916-478-3602

jwerner@elkgrovecity.org

Debaroti Ghosh, PhD – Pavement Design



Years of experience: 5

Qualifications:

- Highly skilled in asphalt material characterization, material rheology assessment, pavement management system, construction material lab testing, non-destructive and accelerated pavement testing
- Proficient in pavement design, soil-mechanics, pavement preservation, concrete pavement evaluation, earthquake engineering and pavement distress identifications
- Experience in rigorous data analysis and structural analysis (empirical and mechanistic-empirical)

Relevant projects (see subsection Similar Experience for descriptions):

- 2018-2020 Street Rehab, City of South San Francisco, CA
- 2021 Street Rehab, City of South San Francisco, CA
- Pavement and Civil Design Services, City of Sunnyvale
- 2020 Street Reconstruction, City of Belmont, CA
- Annual Overlay/Rehabilitation 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA

Education:

- PhD, Civil Engineering, Univ of MN, Twin Cities, 2018
- MS, Civil Engineering, Univ of OK, 2014
- BS, Civil Engineering, Bangladesh Univ of Engineering and Technology, 2010

Sharlan Montgomery Dunn, PhD, EIT – Pavement Design



Years of experience: 6

Qualifications:

- Extensive research and design experience in pavement design, management, and materials
- Project engineer for pavement management, maintenance, rehabilitation, design, and planning projects

Relevant projects (see subsection Similar Experience for descriptions):

- 2018-2020 Street Rehabilitation Project, City of South San Francisco, CA
- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA
- Presidio Trust Pavement Rehab / Maintenance Design Project, City of San Francisco, CA

Education:

- PhD, Civil Engineering, Purdue Univ, 2018
- MS, Civil Engineering, Brigham Young Univ, 2014
- BS, Civil Engineering, Brigham Young Univ, 2011

Licenses / Registrations:

- Engineer in Training, #166471
- MTC StreetSaver® Rater Certification

Alex Paez – CADD Designer



Years of experience: 19

Qualifications:

- CAD design for pavement rehabilitation and reconstruction projects for local cities throughout the Bay Area.

Relevant projects (see subsection Similar Experience for descriptions):

- OBAG2 Street Rehabilitation Program, City of South San Francisco, CA
- Pavement and Civil Design Services, City of Sunnyvale
- Annual Overlay/Rehabilitation 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA
- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA

Education:

- AAS, ITT Technical Institute, Rancho Cordova, CA, 1991

Andrea Valentine – CADD Technician



Years of experience: 3

Qualifications:

- CADD drafter with nearly 40 years of experience providing layout and drawing of civil and structural plans, control lines, profiles, sections, and details based on engineers' sketches and markups.

Relevant projects (see subsection Similar Experience for descriptions):

- 2018-2020 Street Rehabilitation Project, City of South San Francisco, CA
- Pavement and Civil Design Services, City of Sunnyvale
- Annual Overlay/Rehabilitation 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA

Education:

- BA, Theory and Practice of Art, Northwestern Univ, 1974

Paola Murillo – Staff Engineer



Years of experience: 2

Qualifications:

- Involved in street infrastructure and roadway design projects that include field data collection, base repairs, grading and layout, roadway striping design, new curb ramps, drainage, curb and gutter repairs
- Project manager for the Construction Engineering and Management Team at UC Davis, where she led to completion the design and construction of a brick and mortar slab for weather station

Education:

- BS, Civil Engineering with a minor in Construction Engineering and Management, UC Davis, 2018

Relevant projects (see subsection Similar Experience for descriptions):

- 2018-2021 Street Surface Seal and Rehabilitation Projects, City of South San Francisco, CA
- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA

Zeke Humphrey – Staff Engineer



Years of experience: 2

Qualifications:

- Involved in street infrastructure and roadway design projects that include field data collection, base repairs, grading and layout, roadway striping design, new curb ramps, drainage, curb and gutter repairs
- Experience in hydraulic modeling, hydraulic flow modeling, present flood routing analysis, and analyzing and modeling waste diversion data.

Education:

- BS, Civil and Environmental Engineering, UC Davis, 2018

Relevant projects (see subsection Similar Experience for descriptions):

- 2018-2021 Street Surface Seal and Rehabilitation Projects, City of South San Francisco, CA
- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA
- Annual Overlay/Rehabilitation 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA

Katelyn Williams, EIT – Staff Engineer



Years of experience: 3

Qualifications:

- Experience in pavement rehabilitation projects and preparation of design drawings for pavement and roadway design, culverts, roadway shoring, and complete street projects
- Experience with field data collection for base repair marking, curb and gutter surveys, and curb ramp survey and design

Education:

- BSE, Civil & Environmental Engineering, Princeton Univ, 2015

Licenses:

- Engineer-in-Training, CA #159521

Relevant projects (see subsection Similar Experience for descriptions):

- Annual Overlay/Rehabilitation 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA
- Castro Ranch Road Rehabilitation Project, City of Richmond, CA
- Measure M Street Rehabilitation Program, City of Berkeley, CA

Katrina Cai, EIT – Staff Engineer



Years of experience: 3

Qualifications:

- Experience in pavement rehabilitation projects and preparation of design drawings for pavement and roadway design projects
- Performed pavement condition inspections throughout California, as well as sidewalk and curb ramp assessments, pavement management budget analyses using both PAVER and StreetSaver® software

Education:

- BS, Civil Engineering, UC Davis, 2014

Licenses/Certifications:

- Engineer-in-Training – Civil, CA #161501
- MTC StreetSaver® Rater Certification Program

Relevant projects (see subsection Similar Experience for descriptions):

- Annual Overlay/Rehabilitation 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA

- FY20/21 and FY 21/22 Pavement Resurfacing Program, City Pacifica, CA

Mike Esposito – Pavement Deflection Testing and Coring Technician



Years of experience: 20

Qualifications:

- Supervises and conducts transportation asset management on numerous projects throughout Northern Nevada and California. Collects field data, completes pavement deflection testing and coring, and marks base repairs and concrete repairs/

Relevant projects (see subsection Similar Experience for descriptions):

- OBAG2 Street Rehabilitation Program, City of South San Francisco, CA
- 2017, 2018, 2020, and 2021 Street Surface Seal Projects, City of South San Francisco, CA
- 2018 Street Rehabilitation Project, City of South San Francisco, CA
- Pavement and Civil Design Services, City of Sunnyvale, CA
- Annual Overlay/Rehabilitation 2017 to 2021 Pavement Design and PS&E, City of San Leandro, CA

Education:

- Truckee Meadows Community College
- Fayetteville Technical Community College
- General Construction Equipment School

Rich LaValley – Pavement Deflection Testing and Coring Technician



Years of experience: 16

Qualifications:

- Performs FWD operations in all the Western States, and capable of verifying and analyzing FWD and Deflection data
- Accredited by the FHWA as a Distress Rater for 12 years and as a Seasonal Monitoring Technician for five years
- Experienced with care and maintenance of FWD equipment and responsible for the vehicle and all testing equipment in the field
- Performs pavement materials sampling (i.e., coring) at locations across the Western U.S.

Relevant projects (see subsection Similar Experience for descriptions):

- OBAG2 Street Rehabilitation, City of South San Francisco
- 2017, 2018, 2020, and 2021 Street Surface Seal Projects, City of South San Francisco, CA
- 2018 Street Rehabilitation Project, City of South San Francisco, CA

Education:

- Univ of Nevada, Reno, 1984-1988

Key Staff Resumes

Focused resumes highlighting education, training, experience, and applicable registrations/credentials, for each NCE key staff member and subconsultants are included in the Appendix section.

Expertise Application to Project

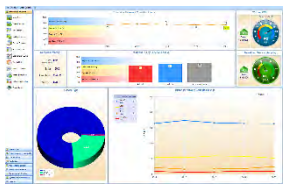
Civil and Pavement Design— NCE's civil and pavement design engineers, and technicians are experienced in developing pavement management programs and then translating the pavement condition data and analysis into buildable plans, specifications, and engineer's cost estimates (PS&E) for many city, county, and state roadway projects. The benefit of this experience to the City is that we thoroughly understand the cost and community impacts of street selection methods and approaches, as well as the pavement designs, when the projects are constructed. NCE staff pride themselves in thinking about how construction will impact a neighborhood, a busy arterial, or pedestrian bicycle traffic and access. NCE has developed outstanding working relationships with the City, implementing street surface seal and rehabilitation projects since 2017. NCE has experience designing thousands of streets throughout the Bay Area.

Street rehabilitation also extends well beyond the pavement and often requires important considerations, such as curb and gutter repairs, pedestrian and bicycle improvements and paths, drainage improvements, stormwater run-off reduction, parking lots, trash capture, landscape and planter improvements, traffic striping and signs, creek restoration, utility relocation, and ADA compliant curb ramps and access. We recently completed street improvements including a quick-build design of new bicycle and pedestrian facilities for the City of Richmond to connect the planned bike and pedestrian pathway across the Richmond-San Rafael Bridge with key transit centers, including the Richmond BART Station and Richmond Ferry Terminal (Figure 4).



**Figure 4 – Class IV Projected Bike Lanes
Near Richmond-San Rafael Bridge**

Pavement Management – NCE has extensive experience evaluating and implementing pavement management systems for numerous public agencies throughout California and the west coast. We are a nationally recognized pavement specialty firm, with broad capabilities and expertise in the areas of pavement management, evaluation and analysis. We are active in the pavement and asset management committees at the Transportation Research Board, a national research organization. With NCE's prior experience with hundreds of other cities on pavement management systems, as well as pavement designs, NCE has delivered accurate, reliable, consistent pavement data which may then be used by agencies to develop the pavement management strategies and make future funding decisions. NCE has been assisting the City with developing multi-year work plans since 2018 (including this 2022 preliminary project) grouping streets together geographically by zones for more efficiently complete maintenance projects with less cost and impact to the community. The recent work plan was updated in 2020 and grouped candidate streets by the City's maintenance zones.



Complete Streets – We understand the importance of incorporating and designing complete streets elements, such as bulbouts, landscaping, green infrastructure (e.g. bioretention), bus transit improvements, lighting, restriping, road diet, buffered and separated bike lanes, and dedicated bike lanes, into street improvement projects – making them safe for multi-modal users, including transit riders, motorists, bicyclists, and pedestrians. NCE is the prime design consultant on the \$15 million Rumrill Blvd complete street multi-modal corridor project for the City of San Pablo shown in the rendering above (Figure 5).



Figure 5 – City of San Pablo Rumrill Blvd Complete Streets



**Figure 6 – City of South San Francisco
OBAG 2 Street Rehabilitation**

ADA Compliance – NCE has a depth of experience in standards for accessible design, including design of over several thousand curb ramps, sidewalks, and accessible paths of travel, maximum running slope for crosswalks, and traffic striping and signage. We understand the criteria the City follows regarding bi-directional curb ramps to provide easy access to City's sidewalks and public paths. NCE has worked with the City on hundreds of curb ramp design from standard Caltrans ramps to more complex custom designs (Figure 6). Paths of travel have ADA consideration as well and NCE understands the running slopes within crosswalks and implied pedestrian paths need to satisfy ADA compliance. Pavement striping and markings should also comply with ADA regulations. NCE has vast experience restriping high visibility crosswalks to City's Standards (ladder crosswalk) and limit lines to allow for safe pedestrian crossing across roadways.

Green Infrastructure – Our engineers and landscape architects incorporate green infrastructure elements in our designs to offer communities improvements to aesthetics and user experience, storm water quality and incorporate recycling technologies to reduce air emissions and carbon footprints. NCE can provide pavement technologies that offer more green approaches to paving, such as diverting thousands of tires away from landfills through their reuse as a component

of rubberized cape seals and rubberized hot mix asphalt. NCE identifies opportunities to reduce heat island impacts with the use of light aggregate in asphalts and portland cement concrete and incorporate green infrastructure and storm water reduction, including permeable pavers to curb cuts with rain gardens and bioretention along sidewalk planter. NCE's landscape architects worked with South San Francisco on its 2021 Green Infrastructure Program (Figure 7) which studied opportunities to integrate a range of green infrastructure elements such as stormwater planters, permeable paving and street trees into City's streetscape in coordination with proposed pavement rehabilitation.

New Technologies and Innovations – Our nationally recognized experts in rigid and flexible pavements stay in touch with, and are actively participating in, development of new material specifications, design processes, and considering sustainability in pavements. NCE evaluates and recommends the most cost-efficient alternatives for agencies, such as cold-in-place recycling, full-depth reclamation, warm mix asphalt, rubberized hot-mix asphalt, and terminal blend asphalt rubber binders. NCE has also collaborated with the City for value engineering the pavement recommendations throughout the City. We perform field review of the recommendations provided by StreetSaver® to verify the proposed treatments are appropriate and cost-efficient. This approach has allowed the City to pave more centerline miles than estimated with the StreetSaver® tool. Many of the technologies NCE can implement will meet the goals of most sustainability plans. As a firm that specializes in pavement design, NCE is involved with projects at both the national and local levels related to pavement technology and sustainability that include:

- Principal investigator for the Federal Highway Administration (FHWA) on sustainable pavement systems in which we developed technical guidelines and prepared a webinar series
- Implemented rubberized hot-mix asphalt as part of the OBAG 2 project in South San Francisco to mitigate reflective block cracking on Camaritas Ave
- Lawrence Berkeley National Laboratory panel sponsored by the California Air Resource Board to evaluate pavement reflectivity to develop statewide climate models
- Caltrans on-call, NCE provides technical solutions and assists with implementing new strategies and policies to improve the state's highway network

Specialty Equipment – NCE has unique capabilities which can provide the City with expertise in Falling Weight Deflectometer (FWD) testing (Figure 8), coring and GIS data collection:

- NCE can evaluate pavement structural conditions with non-destructive testing using NCE's Dynatest Model 8000 FWD. The FWD is a specialized tool that provides a cost-effective design for the City. The in-situ conditions can be quickly evaluated to determine issues such as the extent of subgrade problems or the presence of voids/unstable soils. Pavement designs for phased or staged constructions are possible, as well as the ability to model and use new materials and technologies.
- NCE can evaluate the existing asphalt, base materials, and subgrade materials using NCE's core rig, built to our specifications.
- NCE owns three "Bluebird Pidion BIP-6000" handheld computers with integrated GPS and digital camera. NCE routinely utilizes these devices to provide an efficient way to collect spatial and attribute data for a variety of public infrastructure assets.

Deploying Pavement Technologies – Simply offering innovative pavement technologies does not always solve the problem; rather, ensuring that they

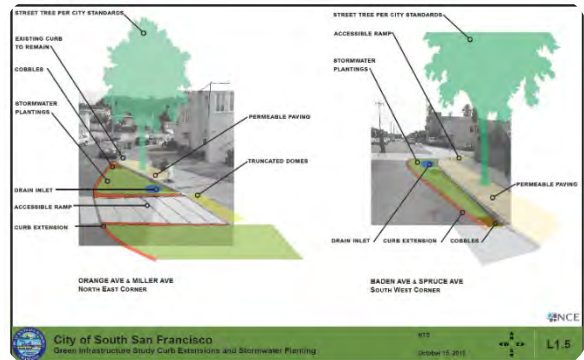


Figure 7 – South San Francisco Green Infrastructure Study



Figure 8 – Falling Weight Deflectometer Testing



Figure 9 – Pavement Preservation Techniques

are appropriate is what makes the difference in the success of a project. There are many factors to consider, including cost, performance, future maintenance, traffic, access, pavement section properties, geometric constraints, and climate, including shaded areas and drip lines. The streets within the City's network have a wide variety of pavement conditions and user needs that we will consider. There are numerous pavement rehabilitation techniques available today with new binders, new additives and polymers all of which may be applied in various layers to preserve pavement life. Figure 9 shows a range of seals and treatments that have worked successfully for NCE's Bay Area clients.

Familiarity with Public Works Projects – NCE's engineering services emphasize realistic economic solutions to our client's needs. Table 1 demonstrates a selection of our extensive experience within the Bay Area.

Table 1. A Sampling of NCE's Long-Term Design Clients

Client	Service	Number of Streets	Construction Dollars	Client Since
City of South San Francisco	• Pavement and civil design services	>200	\$14 million	2017
City of San Leandro	• Pavement and civil design services	>30	\$17 million	2017
City of Pittsburg	• Pavement, civil design, and environmental/hazardous materials	2	\$1 – \$1.5 million	2015
Caltrans – Statewide	• Pavement engineering and pavement materials testing	23 highways	> \$50 million	1998
City of Berkeley	• Pavement and civil design services	> 200	> \$30 million	2005
City of Concord	• Pavement, civil design, and environmental services	2	\$3 million	2016
City of Daly City	• Pavement and civil design services	4	\$1.4 million	2016
City of Davis	• Pavement and civil design services	> 200	> \$20 million	1997
City of Fremont	• Pavement and civil design services	> 200	> \$30 million	1995
City of Mountain View	• Pavement and civil design services	> 5	> \$4 million	2010
City of Orinda	• Pavement, civil design, and environmental engineering services	> 20	> \$8 million	2006
City of Oakland	• Pavement testing and design	> 30	> \$35 million	2000
City of Richmond	• Pavement, civil design, and environmental services	> 200	\$20 million	2005
City of Sacramento	• Pavement and civil design services	> 5	> \$10 million	2014
City of San Ramon	• Pavement and civil design services	> 50	> \$10 million	2007
City of Sunnyvale	• Pavement and civil design services	> 50	> \$10 million	2003
City of Walnut Creek	• Pavement, civil, and geotechnical design services	> 20	> \$1 million	2005
Town of Los Gatos	• Pavement and civil design services	> 10	> \$10 million	1997
Town of Moraga	• Pavement, civil design, geotechnical, and CEQA/NEPA	> 160	> \$8 million	2008

Hydrologic and Hydraulic Analysis – NCE has a depth of knowledge in performing hydrologic, hydraulic, analyses and modeling for the design and maintenance of storm drain that may require repair or improvement along with street rehabilitation. Recently NCE performed a hydrology and hydraulic analysis in the vicinity of Hazelwood Dr and Maywood Way (Figure 10) for the City. Recent storms were observed to stress the storm drain system where the water was bypassing the curb inlets and flooding the roadway. A study was done to calculate the flows at various year events to upgrade the curb inlets and storm drainpipe diameters. A hydraulic model of the proposed system was done and demonstrated the upgrade would prevent overstressing the system for future storm events and the roadway would not flood. Curb ramps were also designed adjacent to the new curb inlets to provide ADA ramps across this intersection.



Figure 10 – Hazelwood Dr and Maywood Wy

Utility Coordination – We understand the implications of utilities to street improvement and resurfacing projects, particularly those identified for reconstruction. Utilities can result in unplanned costs, delays, and street cuts in newly resurfaced streets. NCE has communicated with utilities, such as PG&E, Comcast, AT&T, and Cal Water to ensure we understood what utility work was planned and identify potential conflicts. NCE also coordinates with utility owners throughout the project to obtain facility maps for cross-checking and to appraise them of the proposed work (maximum excavation

depth) and notify them of the City's cut moratorium. During reconstruction, utilities become even more important requiring accurate location of utility alignments to prevent damage and conflicts. NCE has used private utility locators to establish utility depths using cost saving and non-invasive techniques, such as Ground penetrating radar (GPR) in lieu of more invasive and expensive potholing. On several streets where shallow utilities exist, particularly laterals, NCE used thinner pavement sections, such as full-depth hot mix asphalt (HMA) to reduce conflicts with utilities.

Project Understanding and Approach

The City of South San Francisco (City) has completed significant annual surface seal and rehabilitation projects over the past 10 years including slurry seal, cape seal, mill and overlay and reconstruction of over 70 centerline miles. NCE has had the privilege of delivering pavement management programs since 2017. We recently assisted in the development the preliminary work plan on West of 101 Pavement Rehabilitation Project (as shown in Figure 11) with budgetary analyses to determine impacts on network pavement condition and further maintenance.



Figure 11 – Preliminary 2022 projects

The preliminary project was developed based City's pavement management program StreetSaver® and City's desire to complete all rehabilitation projects on west of Highway 101 (Zone 1 to 5) in 2022 for efficiency of design, construction (less mobilization) and future maintenance. It also provides more immediate improvement in network pavement condition index (PCI) and positive message of

significant roadway improvements to the public. Pavement sections on east of Highway 101 (Zone 6) are not included in this project since different paving funding sources will be identified by the City. The preliminary work plan includes approximately 19 centerline miles streets (15% of entire network) for rehabilitation and reconstruction with approximately \$25 million total project costs. Overall network PCI will improve from 75 to 87 upon completion of construction in 2022. On average approximately \$2.0 million per year will be required to maintain PCI at 80s over the next 10 years within City's annual resurface program by zones, which represents a cost savings of \$4.6 million per year from what the City is currently spending to maintain the network.

NCE's goal is to partner with the City on these projects to successfully deliver design documents that balance long-term pavement performance and sustainability, cost-effective design and construction, future maintenance, and minimal traffic disruptions during construction. Part of our commitment to the City and acting as stewards over valuable pavement maintenance funds is helping control costs. NCE recognizes the trend of escalating construction costs and our goal will be to stretch the City's funding to allow the City to stay within the total allocated budget of approximately \$25 million and possibly pave additional streets with the cost savings. This will be achieved by early bidding of project for more competitive bids, separating bid packages by treatment types to eliminate mark-ups on sub-contractors, cost saving pavement treatment alternatives, and writing tightly written pay items and developing detailed design plans.

NCE developed the following approach and scope based on a preliminary field review of all subject street sections noting pavement distresses, approximately percentages of base repairs, preliminary treatments, curb ramps, and other pertinent design features. The street pavements are generally in poor to very poor condition and exhibit predominantly fatigue cracking and longitudinal and transverse cracking both load and age-related distresses, and are candidates for rehabilitation/overlay and possibly isolated reconstruction where completely failed. Concrete slabs on Ridge Court, Ridgeview Court, Stonegate Drive and Tamarack Lane are in failed condition with cracking, spalling and divided slabs.

Base material failure or drainage issue might occur on these concrete street sections. These conditions offer the opportunity for NCE to creatively explore and recommend a variety of innovative and cost saving pavement treatment technologies. Given the size extent of this rehabilitation program with longer stretches of roadway we hope to deploy a new technology for the City that recycles pavements in-place utilizing Cold In-Place Recycling offering 20 to 30% cost savings over conventional mill and overlay treatments.

The following sections represent several of the key scoping items in Section 4.0 of the RFP.

Key Issue: Successful Delivery of Large Scale Paving Program

This is a large-scale paving program that will bring meaningful and long-lasting improvements to the City street network and touches almost every reach of the City. The is also a high-profile project given the cost, geographic spread, and construction over an entire summer and certainly will be front and center with the community. NCE therefore has a very deliberate and planned approach to deliver this project successfully as follows:

- 1) NCE has assembled the same highly experienced team of pavement and civil engineers involved with the design of close to 60 centerline miles of pavement resurfacing in the City since 2017. Mei-Hui Lee and Victor Lemus with additional allocated staff and the support of our 100-person firm are prepared to deliver this project with the same enthusiasm, high level of responsiveness, and attention to the important details.
- 2) Keeping the public informed of limits and types of street improvements, construction methods, duration of construction including construction operating days and hours, traffic control, parking restrictions, and access will be key to this being well received project by the community. Based on our experience completing previous projects of similar size and type, we can assist the City with public information workshops to present this information and answer questions/concerns of residents and businesses. **We have already developed a concept informational sample brochure (attached in Appendix C)** and are prepared to develop public outreach information, presentation, graphics, maps, and schedules that can be used for public workshops, mailers, social media, and on a City project website.
- 3) Bid documents will need to be ready in accordance with the City schedule to ensure competitive bids early in winter when contractors are less busy and secure start of construction in April 2022 to allow for a full 5 to 6 months of construction. Given a typical burn rate of a contractor with a single construction crew of \$3 million per month, this will allow for \$15 to \$18 million of construction to be completed and more if additional crews are allocated.
- 4) NCE will minimize the construction impacts with the selection pavement technologies that can be more readily completed including overlay and base repair thicknesses requiring fewer construction lifts, avoiding reconstruction that could introduce problematic subgrade and utility conflicts, selecting recycle in-place technologies such as CIR that allows a paved surface rather than a rough milled surface with loose millings at the end of the working shift and faster paving with no off/on-haul truck traffic. Figure 12 shows a section of Main Street one of the busiest 4-lane arterial streets leading into Oakley that NCE designed with the paving mat being placed just behind the CIR recycling train.
- 5) Construction staging and traffic control will be discussed and detailed with the City and then written into project plans and specifications to maintain access to communities and businesses and minimize disruptions. If necessary, we have on our team Fehr & Peers that can assist the City with developing traffic control plans for important arterial streets should this be deemed necessary.
- 6) NCE will efficiently collect, organize, and geospatially locate significant quantity of field data using Trimble TerraFlex cloud base geospatial software that we have developed custom data collection fields and routines for common street attributes, including base repairs, curb repairs, curb ramp measurements, utility covers, etc.
- 7) We take a strong sense of pride and stewardship in these street programs and look for opportunistic improvements that would be appropriate to bring up to City staff for consideration including pedestrian access, bike lanes, repair of stormwater collection facilities, drainage issues. These smaller improvements are often noticed and appreciated by City residents and businesses and show attention to detail and a higher level of care.
- 8) Frequent budget and schedule updates will be given to the City to keep project on time and in within budget and make course corrections as the project evolves. As we have done since 2017, cost savings designs will be utilized to



Figure 12 – Oakley CIR Project on Main Street

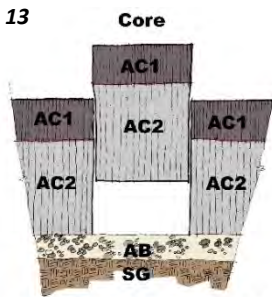
stay under budget and potentially treat more streets such as the 2021 street rehabilitation project with rubberized cape seals in lieu of more costly overlays on low volume alleyway streets 1st, 2nd, 3rd, and 4th lanes in downtown area.

Key Issue: Pavement Investigation and Design

Pavement design, although seemingly straightforward, can miss expectations of clients in numerous ways. For example, a poorly executed pavement design might neglect to sufficiently explore pavement treatment alternatives and material choices, not properly address construction and access impacts to residents, nor consider long-term performance and durability of materials. In addition, issues such as access of equipment on narrow or busy roads, curing time for emulsions and binders resulting in disruptions to traffic and property access, remaining roadway base after pavement section removal and grading, overhead and side clearance of paving equipment to trees, impacts to shallow utilities during construction, and compaction temperature are critical and cannot be overlooked. All of these design facets and many others must be built into the design without creating adverse impacts to the City and residents.

Solution

Figure 13



PAVEMENT CORE WITH AB THICKNESS

NCE has an active research division that works with Federal Highway Administration, California Department of Transportation, and universities affording us the latest knowledge in pavement treatment alternatives and materials, long-term pavement performance, sustainable pavements, constructability issues, and materials and construction defects. NCE translates our research knowledge into practice and applies it to cities and counties on their paving projects.

Our civil, geotechnical, and pavement engineers not only understand the types of pavements and treatment options, also consider the significance of proper field investigations. Pavement design begins with evaluating the existing pavement

structural section, structural adequacy, and subgrade conditions. Our pavement inspection expertise coupled with pavement deflection data and materials testing accurately assess the engineering properties of the existing roadway. Pavement coring investigations will be completed with NCE's owned and operated core rig. Pertinent pavement section information will be collected including previous overlay thicknesses, weak or problematic pavement layers, depth to fabric, pavement materials such as concrete, and base material thickness at all coring locations. Because most of the subject streets contain sections of failed pavement, NCE's field technicians will obtain bulk samples of subgrade for laboratory testing and complete dynamic cone penetrometer tests to estimate engineering properties of subgrade soil materials and potential for problematic subgrade. NCE's geotechnical and civil engineers will include cost saving measures such as revocable bid items for removal and replacement unsuitable wet subgrade materials and use of stabilizing treatment technologies such as FDR to avoid costly change orders for this work. Pavement design will also consider streets that need to be lowered or re-profiled to correct cross-slopes or drainage resulting in removal of additional pavement section materials.

Knowledge of the latest pavement technologies, experience working with the City and local conditions, and thorough field investigations allow NCE to creatively reduce treatment costs and stretch the City's maintenance dollars. NCE has pavement experts on staff with extensive experience utilizing alternative treatment technologies to address specific challenges and reduce paving costs.

For example, on Callan Blvd in Figure 14, we identified low to medium severity of block cracking and longitudinal and transverse cracking that is primarily environmental age-related distresses with smaller area of fatigue cracking without base material pumping. The 2020 surveyed PCI for this street ranges from 40 to 45.

This section of pavement could be an ideal candidate for cost-effective CIR treatment that would remove and reuse existing asphalt pavement materials in an on-site process. This efficiently improves the road surface and strength while reducing construction costs, hauling traffic, and shortening construction periods. It is typically 20% to 30% less expensive than conventional mill with Hot Mix Asphalt (HMA) overlay.



Figure 14 – Callan Blvd CIR Candidate



Figure 15 – Keats Ave Surface Reconstruct/FDR Candidate

The section on Keats Ave in the Figure 15 is in failed condition with pervasive fatigue cracking and will require at least a surface reconstruction while no base material failure or rutting observed in the field, or a shallow cost-effective FDR treatments that would pulverize the existing pavement sections and mix with cement additives to provide a stable base material upon which to place a new asphalt concrete wearing course. If it is determined that fatigue cracking is only age related and stable, another cost-effective treatment strategy would be to utilize isolation layers such as asphalt rubber chip seals (single or double) in combination with an overlay providing the existing road crown can accommodate.

Pavement section on Gellert Blvd in Figure 16 is in poor to fair condition with PCI ranges from 40s to 60s that is primarily non-load related weathering and raveling with smaller area of fatigue cracking. This street is a candidate for a thin mill and overlay or the use of cost-effective sustainable pavement treatments, such as rubber cape seal with base repairs to prevent water from damaging pavement and help resisting reflective cracking.

Figure 16 – Gellert Blvd Surface Seal Candidate



Figure 17 – Tamarack Lane Complete Street

Another key decision the City of South San Francisco will need to make is on rehabilitation strategies of concrete streets (Figure 17) and slabs that are throughout the Paradise Valley neighborhood and the low traffic volume alley way streets in the downtown area. Removal and replacement of these concrete pavements is an involved endeavor not to mention costly considering removal and disposal, constructing a new pavement section, and potential for contaminated soils issues and disposal. A far more sustainable solution to eliminate off-haul and disposal of materials at a landfill would be to preserve these concrete pavements and extend the pavement life with a variety of treatment strategies based on structural analysis of the pavements and pavement design.

NCE would propose to structurally evaluate concrete slabs with very cost effective and non-invasive pavement deflection testing in combination with ground penetrating radar to quickly confirm concrete thickness, integrity, and structural capacity. Treatment strategies to improve ride quality, help prevent reflective cracking from slab joints, and extend pavement life might include dowel bar retrofits for better load transfer in combination with diamond grinding, hot mix asphalt (HMA) and Rubberized Hot Mix Asphalt (RHMA) overlays, concrete overlays both bonded and unbonded solutions, and or the use of stress absorbing membrane interlayers (SAMIs). Fully reconstruction as asphalt concrete with gutter is also an alternative treatment on concrete streets. Recently NCE completed rehabilitation project on 4th Lane between Spruce Ave and its eastern end with reconstructing 6-inches full depth HMA with removing existing concrete slabs.

Key Issue: Detailed Plans and Specifications

A challenge to resurfacing projects is that many streets are involved, which represents a significant area for design. This requires attention to details whether it be capturing street resurfacing features, such as conform and wedge grinds, storm drain inlets and utilities, striping, base repair areas, concrete work for curb and gutter, ADA curb ramps, or considering impacts to businesses, schools, or AC Transit bus routes. In addition, cities are employing and requiring a more complete streets approach to new improvements with reorientation of transportation priorities towards inclusion of pedestrians and bicyclists as well as experience and quality of life. If done incorrectly, poorly detailed plans and locations can result in numerous change orders and adjustments during construction.

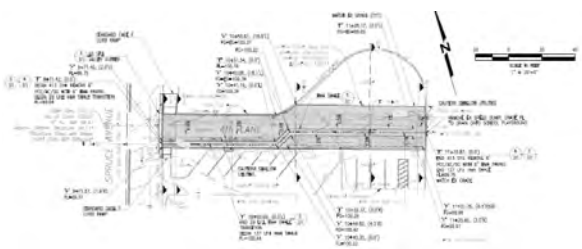


Figure 18 – 4th Lane Reconstruction Plan

Solution



Figure 19 – Non-compliant Curb Ramps in South San Francisco

These types of projects require a detailed and multi-modal mindset. This requires attention to cross-slopes and running slopes for ADA considerations, consideration of drainage patterns when adding bulb-outs to shorten crosswalk distances or provide traffic calming. Inclusion of Class II through Class IV bike lanes require detailed consideration of space constraints particularly roadway widths, perceived level of comfort for bicyclists, impediments or obstructions to cyclists such as poles or drainage inlets, narrowing travel lanes, bike buffers, conflicts with parking and driveways, bus stops, aesthetics and public perception, ROW constraints, and removal of parking.

Providing enough detail in bid documents for the contractor to build improvements accurately and according to the intended purpose with phasing and construction times helps to minimize disruptions to community and businesses. From start to finish of the preparation of the PS&E, NCE will detail items such as edge improvements, edge flow drainage improvements, base repairs, conforms to adjoining streets and driveways, protection of existing facilities, utility locations, ADA curb ramps, striping improvements, and details. Based on discussions with the City this might also include complete street elements such as bulb-outs, rain gardens or bioretention, bicycle and pedestrian improvements, widened sidewalk areas, to name a few.

NCE will identify and evaluate constructability issues during our field review including paving methods and access of equipment, tree clearance and any necessary tree pruning/trimming given City tree ordinances, ramp improvement fit within corner locations, potential impacts to residents or businesses, utilities and detailing in specifications limitation of heavy or vibratory equipment on older shallow and potentially brittle utilities (e.g. City Sewer and/or EBMUD shallow cast iron pipes with welded joints) to name a few.

During construction, the residents and businesses have to live with disturbances and NCE will develop specifications to help minimize these impacts. We develop specifications that are clear as to how traffic, noise, parking, access routes, and dust and debris need to be managed by the contractor. Specifications and plans will be clear to define schools (particularly drop-off/pick-up times), community buildings, businesses and their hours of operation and commute areas/traffic patterns, school bus routes, ADA access needs, and restrictions to construction times and days and other traffic control requirements to minimize delays and impacts. Management of phasing construction work items and project locations for such a large-scale project will also be considered in the development of the plans and specifications. The importance of time tested and continuous improvement on technical specifications is an area in which NCE excels based on our experience designing thousands of roadways throughout the Bay Area.

Key Assumptions

In order to deliver the most cost-effective design strategy, we have made the following key assumptions:

City's Responsibilities

NCE has assumed that the City will be able to provide the following to the extent available:

1. Provide information regarding City-owned utilities (i.e., sanitary sewer and storm drain), boundary, right-of-way, and property limits, site features, and existing construction as available.
2. Provide project requirements, including design objectives, budget, constraints, and criteria.
3. Provide City Standard Provisions and Standard Design Criteria.

Pavement Testing and Design

1. Pavement design will be based on Caltrans Standards with a combination of pavement deflection testing, coring, pavement condition surveys, laboratory testing of subgrade, and observed field conditions depending on rehabilitation strategy.
2. Pavement deflection testing will be completed for all arterial and collector street sections identified for rehabilitation and will also include longer residential streets with poor or failed pavement condition generally greater than 1,200 feet in length identified for rehabilitation.
3. Pavement coring will be performed with spacing criteria and bulk samples as follows:
 - a. Pavement cores will be obtained approximately every 1,500 feet and a minimum of two cores per rehabilitation street section with additional cores taken in shoulder or parking lanes where the street is crowned.

- b. Bulk samples of subgrade for laboratory testing will be limited as most streets are candidates for street rehabilitation. A minimum of one bulk sample will be obtained within streets that generally are in poor to failed condition with a 2020 PCI<30 and potentially a candidate for a surface reconstruct.
4. Base repairs will be measured in length and width to estimate base repair bid quantities for all street sections. It is the intent that base repair quantities will be for bidding quantity purposes only and that actual locations will be marked by NCE with the City's inspectors prior to construction.
5. A no-fee encroachment permit will be pulled with the City for all pavement testing if required.

Topographic Surveying, Base Maps, and Right-of-Way

1. To provide a cost-effective design, NCE's scope assumes rehabilitation plan sheets will be placed onto County aerial base maps. Rehabilitation street sections will be placed onto street layout plans showing the alignment and stationing of the roadway, striping, curb and gutter repairs, etc. Base repair and curb repairs will be marked in the field on the pavement in white paint and numbered and verified prior to construction.
2. A critical assumption is that all street rehabilitation and improvement work will be within City right-of-way, as this has impacts to the level of effort required to completion of design.
3. Design sheet information will be based on field inventories and approximate field measurements to verify items, such as utility covers, cross-slope, street widths and lengths, median locations, repair candidates for curb and gutter, and striping.
4. Again, to provide cost-effective design, our scope does not include any topographic surveys with the assumption that the project will not include significant drainage improvements, complex changes in street geometry or intersection improvements, or full pavement section reconstruction. Should we determine that aerial base maps are not sufficient and topographic information is required for developing drainage improvements and/or for more complex pavement geometries and/or streets that may need to be reconstructed, we can provide topographic survey work at an additional cost.

Utility Coordination and Location

1. Assumes no significant roadway reconstruction requiring lowering or relocation of utilities.
2. NCE will prepare and distribute utility notification letters to collect facility maps and as-builts, confirm utility planned work, and notify utilities of the City's utility cut moratorium on improved streets.
3. The subject street sections are expected to be candidates for rehabilitation, utility location is currently not included in our scope of work. If significant roadway reconstruction is required, we will discuss with the City utility location options (e.g., GPR) and can provide for additional scope and fee.
4. Utility covers will be field located approximately and inventoried for the purposes of placing onto plan sheets and developing bid quantities for adjustment of utility covers and replacement of City-owned frames and covers.

Traffic Striping

1. Traffic striping is assumed to match existing striping.
2. No significant traffic striping changes or design requiring traffic studies or assessment of traffic impacts is planned or included as a part of this scope.
3. Striping plans will be developed for rehabilitation street sections, striping types and quantities will be inventoried for the purposes of developing bid quantities.

Traffic Control Plans

1. Traffic control plans are not included in scope of work. We have assumed as is typical to have contractor prepare traffic control plans in accordance with project technical specifications and requirements and submit to the City traffic engineering group for review. Our teaming partner can prepare traffic control plans for key arterial streets for additional scope and fee if desired by the City.

Curb Ramps

1. It is assumed that all non-compliant curb ramps will be replaced or retrofitted (e.g., detectable warning surface embedded in concrete) in accordance with Caltrans standards. Curb ramps will be replaced or retrofitted based on guidance from the Department of Justice/Department of Transportation Joint Technical Assistance on the Title II of the ADA Requirements to Provide Curb Ramps when Streets, Roads, or Highways are altered through Resurfacing dated July 8, 2013. NCE will implement its experience from previous projects with the City regarding

their standard ramp placement and bidirectional ramp style. Further clarification on curb ramp replacement included in this scope of work is as follows:

- a. Replaced/retrofitted/added curb ramps are assumed to be readily constructed with only minor grade adjustments.
 - b. Utility relocations (e.g. utility poles, utility boxes, and drainage inlets) required to construct curb ramps are not included in this scope of work.
 - c. All ramp construction shall be within City Right-of-Way.
 - d. Curb ramp design for the purposes of this scope of work includes paving conforms up to 2 feet beyond gutter lip or face of curb, or 2 feet beyond back of sidewalk.
 - e. For curb ramps within hills or steepened grades, curb ramp design shall only extend up to 15 feet in the uphill direction, beyond which is considering chasing the grade.
2. Curb ramps will be field verified to determine the appropriate standard case ramp and NCE will develop a curb ramp detail for those that will require a custom curb ramp. Curb ramp details will not be to survey accuracy and not contain elevations, and therefore some adjustments may be required during construction.

Drainage

1. The project will, to the extent possible, and within the context of proposed rehabilitation and preventive maintenance, address visible drainage issues. However, it should be noted that no topographic survey data will be obtained and therefore drainage improvements will not include detailed flow line surveys.
2. No major drainage improvements are assumed for this project requiring significant stormwater drain and pipe alteration and/or reconstruction.

Curb and Gutter and Sidewalk

1. Curb and gutter sections will only be replaced to the extent that it affects pavement treatment (e.g., tree root uplift, settlement, or ponding) or to improve drainage.
2. Sidewalk replacement is not included in this scope of work but can be added if required for additional scope and fee.

Encroachment Permit

1. If based on pavement rehabilitation plans, the limits of rehabilitation are found to extend into a neighboring City or County of San Mateo Right-of-Way, we will complete and obtain the required City or County encroachment permit for construction, if needed, with permitting fees paid by the City.
2. NCE will apply for no-fee City encroachment permits for all field work, including pavement coring work, if required.

Bid Package

1. NCE has assumed for the purposes of developing bid packages the following:
 - a. 2022 West of 101 Pavement Rehabilitation Project – Bid Late Winter 2021

Green Infrastructure

1. NCE will discuss with the City further if the City desires to incorporate a green infrastructure review as part of this scope of work and this can be included additionally in our scope.

CEQA Documents

1. The documentation required for CEQA is assumed to be a Categorical Exemption.



4. Scope of Work

The purpose of our services will be to provide pavement and civil engineering design in support of the planned project by the City. To accomplish the stated purpose, we propose the following scope of services.

Task 1 – Project Management and Meetings

1A) Project Kick-off Meeting / Progress Meetings

NCE's Project Manager will arrange a Kick-Off Meeting with the City to initiate work on the project. The objectives of the Kick-Off Meeting will be:

- Review of the Scope of Work
- Establish Lines of Communication
- Confirm Deadlines
- Establish Project Schedule and Milestones
- Define Design and Operation Criteria

Whether a simple preventive maintenance project or a complex reconstruction project, it is critical to establish effective lines of communication with, and coordination amongst, the various stakeholders from the start to ensure the delivery a high-quality project within budget and on schedule.

In addition to City staff (Engineering, Maintenance, etc.), NCE will research and coordinate, as-needed, with other agencies such as PG&E, AT&T, California Water Service and Westborough Water District, South San Francisco Sewer and Stormwater, Schools, etc., to identify any potential conflicts, requirements, or design issues early to help minimize delays (and costs) later in the design process or during construction. At the Kick-Off Meeting, key deliverables for each Task and the Project Schedule would be reviewed and adjusted accordingly to meet City needs.

NCE is very sensitive to construction costs, particularly the volatile price of materials, which have affected the scope of many similar projects. In order to keep the City aware of overall project costs, NCE will begin developing Preliminary Engineering Cost Estimates as soon as we have developed our engineering design recommendations to closely monitor any potential funding issues, which may develop. During the course of the project, NCE will be seeking to develop the most appropriate and cost-effective pavement rehabilitation alternatives to stay within the planned project budget and schedule.

Throughout the project, NCE staff will be available to attend regularly scheduled progress meetings with the City, to maintain good communications, to offer up efficiency and reduce the number of design review and coordination meetings. Therefore, we have assumed up to six (6) meetings for the 2022 West of 101 Pavement Rehabilitation Project. The purpose of the progress meetings will be to identify and resolve any design or funding issues that may surface in a timely manner, present design alternatives and recommendations to City staff, and continue coordination with project stakeholders as necessary.

- **Deliverables:** Kick-off/Progress Meeting Agendas and Summaries

1B) Public Outreach

In addition, NCE has successfully provided clients with a variety of community outreach and stakeholder facilitation services on the organizational, programmatic, and project levels. NCE's experience includes working with agency staff, interested stakeholders, landowners, and the general public. NCE can assist the City in educating the public whether it is assisting with developing social media content (City website, Twitter, etc.) and/or conducting town hall meetings to engage and inform the public on the conceptual design of the project as well as expected construction impacts. This will include identifying when and where construction will happen, what the community needs to plan for ("Where do I park?"), and keeping the community informed of project progress both during the design and construction phases. This will allow the community to maintain connection with the project and be well informed. Draft public outreach exhibits and information brochure handouts is provided in Appendix C. It assumes NCE will assist in the City's efforts and attend 5 to 10 public information workshop/meetings lead by City staff regarding this project. It is assumed the City will provide venues for meetings and handle mailings and notifications to residents.

- **Deliverables:** Public Outreach Exhibits, Maps, Technical Materials, and Information Brochure Handouts

1C) Modification of Preliminary Work Plan

As part of this project, NCE will review City's StreetSaver® database, historical rehabilitation and maintenance records, current pavement strategies and PTAP-21 report to update candidate street list. NCE will define and confirm City's available funding and project objective and criteria in the kickoff meeting. Next, we will modify the preliminary work plan based on the results of the previous discussion with the City. All pavement sections on west of Highway 101 (Zone 1 to 5) with poor or failed condition (PCI less than 50) will be added in this project. NCE then will perform field reviews to verify pavement condition and preliminary/alternative treatments on each candidate streets. Updated street list and map will be prepared and submitted for the City's review. Streets that are included in OBAG2, 2018-2020 surface seal and rehabilitation project, 2021 surface seal and rehabilitation project or other scheduled paving projects will not be included. Upon completion of this review, NCE will incorporate all comments and changes, and submit a final street list and GIS map.

- **Deliverables:** Final Street List and Map

1D) Utility Coordination

NCE will coordinate with utility agencies early in the design process to help avoid potential construction delays and unnecessary disruptions to public services. Utility coordination will be a critical item to keep utility providers informed about the project and schedule. One of the first and earliest items that NCE will complete is sending notification letters to applicable utility providers with a preliminary project schedule for street rehabilitation. This will allow for the earlier notification to allow utility providers to perform maintenance on their facilities prior to moratorium on the street paving area.

NCE will also carefully document all utility coordination notifications, conversations, and meetings with utility contacts and information in a matrix format with dates of contacts and mailing detailed in this matrix. Follow-up calls will be made for each of the above notifications to confirm receipt. NCE will also keep the City informed of any project delays related to utilities.

- **Deliverables:** Utility notification letters and utility contact matrix.

Task 2 – Pavement Design

The scope of work we would perform under this task consists of the following:

2A) Pavement and Curb & Gutter Condition Survey

NCE will perform a pavement condition survey of each street section based on distresses. The surveys will generally cover the travel and parking lanes. Pavement condition surveys serve the purpose of further refining the appropriate pavement rehabilitation treatments.

This condition survey will generally note the presence of load related and environmental distresses, such as alligator cracking, longitudinal and transverse cracking, rutting, patches and utility cuts, distortions and depressions as they pertain to developing appropriate pavement treatments. In addition, potential base repairs will be identified in the condition survey. Our scope of work and condition surveys do not address issues including but not limited to traffic, safety and road hazards, geometric issues, or short-term maintenance that should be performed (i.e. pothole that should be repaired).

A visual assessment of all curb and gutters will be included to identify areas where drainage or the adjacent pavement has been compromised. Our scope will limit repair recommendations to only those sections of curb and gutter that are damaged to the extent that they will affect pavement (i.e., tree root damage extending into pavement). If damaged curb and gutter areas are more extensive than anticipated, it may require additional time to complete, and we will notify the City if more time is required to complete these surveys.

Prior to looking at curb and gutter, NCE will meet with the City and establish condition criteria for assessment and replacement. Based on the criteria established with the City, NCE will then determine what level of curb and gutter replacement will be pursued for design plans and documents.

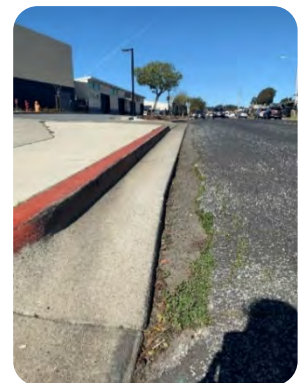


Figure 20 – Typical Curb and Gutter Damage

2B) Pavement Deflection Testing

NCE will perform non-destructive pavement deflection testing in accordance with California Test Method (CTM) 356 to evaluate the structural capacity of the existing pavement section on rehabilitation streets in accordance with key assumptions. The FWD is a conceptually simple yet powerful device for measuring the response of pavements under simulated wheel loads and estimating their structural capacities. Pavement designs are based upon a standard truck wheel loading, which is the 18-kip equivalent single axle load (ESAL). Each dual tire is therefore 9,000 pounds that is easily simulated by the FWD, which has the capacity to simulate loadings of up to 30,000 pounds. As the load is applied to the pavement, up to seven geophones measure the pavement deflection at varying distances from the load.

This scope of work includes pavement deflection testing on the street sections identified under key assumptions. All travel lanes of these street sections will be tested at intervals of typically 100 feet (or at shorter intervals to achieve a minimum of 20 deflection test points for each street) that will be staggered at approximately one-half the test interval length in adjacent lanes or the opposite lanes of traffic. Separate data files will be established for each street section and for each travel direction so that separate analyses can be performed if desired or warranted.

Approximately 1,700 data points will be collected and NCE estimates that the FWD testing will take eight (8) days to complete. The final number of data points to be collected may change to accommodate final street list and field constraints. NCE will arrange for traffic control services during the deflection testing to minimize any inconvenience to traffic, parking and public access. Traffic control will conform to the latest standards contained within the Manual of Uniform Traffic Control Devices (MUTCD) Part VI and the Caltrans Traffic Manual Chapter 5 "Traffic Control for Construction and Maintenance Work Zones," as well as any local requirements that exist. We will also obtain an encroachment permit for pavement deflection testing if required.

2C) Pavement Coring

NCE will collect pavement section core samples (4" – 8" diameter cores) on all street sections at locations determined by NCE. Our current fee estimate assumes up to 128 core locations that we estimate will take 16 days to complete. For each core sample, NCE will measure and record the thickness and material type of each layer encountered in the pavement structural section, including the presence of any pavement reinforcing fabric.

Bulk samples of subgrade will be obtained in support of potential street surface reconstruction in accordance with key assumptions. We will collect bulk samples of subgrade materials at the core locations for laboratory testing such as R-value, moisture content and Atterberg Limits (plasticity index) determinations. Our current fees assume up to 50 bulk samples will be obtained for testing. The presence of aggregate base (AB) will be noted at all core locations and the thickness will only be recorded on those locations where bulk samples are obtained. A dynamic cone penetrometer will also be advanced at critical core locations to estimate AB and subgrade layer properties.

NCE will also include coring work in encroachment permits referenced under project assumptions, similar to deflection testing. Additionally, NCE will provide traffic control in accordance with the same standards discussed in pavement deflection testing.

2D) Pavement Design Recommendations

Using the data obtained in Tasks 2A through 2C, NCE will perform pavement analysis and design services, and develop pavement rehabilitation and preventive maintenance recommendations for each street section. NCE will perform its analysis in accordance with the Caltrans Highway Design Manual. NCE will develop pavement structural section recommendations expressed in the form of a Traffic Index (TI) that will be provided by the City. NCE will develop recommendations including, but not limited to, the following:

- Conventional Hot Mix Asphalt (HMA)
- Rubberized Hot Mix Asphalt (RHMA)
- Warm Mix Asphalt (WMA)
- Alternative rehabilitation methods if feasible (in-place recycling, mill & fill treatments, etc.)
- Locations and treatments of failed pavement sections (base repairs)
- Full-width milling and wedge grinding requirements
- Surface seal treatments including but not limited to slurry seals, microsurfacing, and cape seals both conventional and rubberized

NCE will then summarize its recommendations in a pavement design memorandum to the City that, at a minimum, will include the following:

- Results of pavement condition surveys, deflection testing, coring, and laboratory testing
- Description of testing procedures and analysis performed for the project
- Recommended alternatives for rehabilitation and preventive maintenance

NCE will submit two (2) copies of its draft technical memorandum to the City for initial review. Upon receipt of any comments from the City, NCE will then prepare its final technical memorandum, which will be signed and stamped by NCE's Pavement Engineer. Two (2) copies of the final technical memorandum will then be provided to the City reflecting any comments on the draft technical memorandum.

- **Task 2 Deliverables:** Draft & final Pavement Technical Memorandums

Task 3 – Plans, Specifications & Estimates

The work that will be performed during developing design PS&E are outlined in the subsequent Tasks.

3A) Design Data Gathering

NCE will review relevant available data and records from the City as listed in the previous section, public and private utility providers, and other sources that may be appropriate to support the preparation of project contract documents. These may include, but are not limited to, the City drainage structure inventory maps, aerial photographs of the City; as-built street improvement and infrastructure plans, striping and markings, as-built plans from utility providers, including any preliminary plans for future work that may conflict with this project. The gathered information will be compiled and included in the base map used for design. It shall be noted that available record data (e.g., utilities, right-of-way) used to prepare the base map for streets undergoing rehabilitation will only be shown in their approximate location and that the depth of utilities will not be indicated. Based on our review we will identify any data gaps or missing information and provide this information to the City for review and discussion.

NCE will also confirm with adjacent Cities and San Mateo County if encroachment permits are required to conduct the proposed work. NCE will discuss with the City whether rehabilitation work must occur in the right-of-way, in order to save the City the cost and fees associated with obtaining encroachment permits, if at all possible.

- **Deliverables:** As Needed Encroachment Permits, Base Maps

3B) 60% PS&E

NCE will prepare the 60% PS&E for the planned street rehabilitation. The 60% plans for rehabilitation street sections will incorporate typical design elements including layout plans, pavement treatments, right-of-way parcel lines provided by City, wedge grinds, conform grind locations at intersecting side streets, typical cross sections, curb and gutter repairs, and limits of work. The plans will be prepared in AutoCAD format on 22" x 34" sheets, drawn at a scale of 1" = 20'. Rehabilitation plan sheets will include base repair schedules and will show individual base repair locations on design plans. Base repairs will be marked in the field on the pavement in white paint and numbered and verified prior to construction. Base repair and curb repairs will be marked in the field on the pavement in white paint and numbered, and verified prior to construction. Additionally, a table summarizing major work items (e.g. surface seal area, base repair area, etc.) and their estimated quantities will be developed and included on the respective plan sheets. We find that this information is particularly useful to contractors when assembling construction bids and schedules, thus resulting in more competitive bids, and to the City for verifying pay quantities during construction.

NCE understands that the City will provide the "Front End" documents and Special Provisions. The technical specifications will be prepared in MS Word format and will follow the City's formatting conventions. The technical specifications and details will reference the City's standard provisions and latest Caltrans Standards (including subsequent updates). NCE will, however, recommend deviating from Caltrans standards where, from our experience, such changes will improve the likelihood of achieving a successful construction project without compromising the integrity of the design. NCE recognizes the value of incorporating Caltrans Standard Specifications in projects such as these, both because these specifications have been developed by an agency that designs and builds a vast amount of highway work, and because most contractors performing public works construction in Northern California are familiar with them. Caltrans, however, has the resources to administer projects quite differently than most local agencies, so NCE advocates modifying the Caltrans Standard Specifications to better fit the abilities, needs, and budgets of municipal agencies.

NCE also believes that an efficient yet thorough Quality Control/Quality Assurance program is essential for getting the maximum value out of every dollar spent on construction. Projects designed by NCE therefore, contain technical

specifications that attempt to optimize the balance between using rigid, but time-tested, specifications and meeting local agency needs, with the ultimate goal of obtaining the very best value for its clients.

The Engineer's Cost Estimate will be prepared in MS Excel format and will be based on the most recent construction cost data available to NCE for projects of this type. Because of NCE's involvement in the design and construction of numerous similar projects throughout California, we are confident in our ability to estimate the construction cost of the City's project. This initial estimate will then be updated and refined as the design effort progresses.

It is assumed that the City will require a 10-day review/comment period once the 60% PS&E package is submitted.

- **Deliverables:** One reproducible copy of 60% plans, technical specifications, and engineer's estimate

3C) 90% PS&E

The 60% PS&E will be revised to incorporate comments received from the City. NCE will meet with the City to review these comments, from which the 90% PS&E will be prepared. NCE will provide a response to each comment that is included in a comment table provided by the City. The 90% PS&E will include additional design information and details typically expected at this stage of completion. The 90% PS&E will then be packaged and submitted similar to the 60% PS&E unless directed otherwise.

The technical specifications will be further refined and at this stage of the design. We will review and comment on the City's Front End documents (bid and contract forms, General Provisions, Special Provisions, etc.), which the City will prepare and provide. The Engineer's Cost Estimate will also be updated to reflect the revised quantities of work depicted on the plans.

It is assumed that the City will require a 10-day review/comment period once the 90% PS&E package is submitted.

- **Deliverables:** One reproducible copy of 90% plans, technical specifications, and engineer's estimate

3D) (100%) PS&E

The 90% PS&E will be revised to incorporate comments received from the City. NCE will again meet with the City to review these comments, from which the (100%) PS&E will be prepared. NCE will provide a response to each comment that is included in a comment table provided by the City. The (100%) PS&E will include all notes and details necessary for construction. One reproducible copy of the (100%) PS&E will then be packaged and submitted similar to the 90% PS&E unless directed otherwise.

It is assumed that the City will require a 10-day review/comment period once the (100%) PS&E package is submitted.

- **Deliverables:** One reproducible copy of 100% plans, technical specifications, and engineer's estimate

3E) Final (Bid Set) PS&E

The 100% PS&E will be revised to incorporate comments received from the City. NCE will again meet with the City to review these comments, from which the final (Bid Set) PS&E will be prepared. Similar to 100% PS&E, NCE will provide a response to each comment that is included in a comment table provided by the City. The final (Bid Set) PS&E will include all notes and details necessary for construction. One reproducible copy of the final (Bid Set) PS&E will then be packaged and submitted similar to the 100% PS&E unless directed otherwise.

Upon receipt of the City's final review comments, the project documents will be finalized for bidding purposes.

A final quantity calculation will be tabulated, and this will be entered into the final Engineer's Cost Estimate for the project. All final documents will be reviewed, stamped and signed by NCE's registered civil engineer, and the final PS&E will be delivered to the City in both hard copy and electronic formats.

- **Deliverables:** One wet-signed and one electronic file of the final plans, technical specifications, and engineer's estimate. The electronic files for the final construction plans, specifications, and engineer's estimate will be in AutoCAD 2018 or later version, Microsoft Word, and Microsoft Excel, respectively.

Task 4 – Bidding and Construction Support Services

4A) Bidding Support Services

NCE will provide the City with assistance during the advertisement and bidding periods for each bid package. This will include providing assistance to the City in attending the pre-bid conference, responding to questions received about the

project design, and preparation of any addenda and/or clarifications to the PS&E that are deemed necessary. NCE can also assist the City in determining the responsiveness of bids received and with checking and tabulating bid results.

▪ ***Deliverables:***

- 1) Attend pre-bid meetings
- 2) Prepare responses to questions received regarding project design
- 3) Prepare bid addenda as necessary
- 4) Provide assistance with bid responsiveness (as needed)

4B) Construction Support Services

NCE will provide support services to the City during construction of the project for each bid package. At a minimum, these services are anticipated to include attendance at the pre-construction conference, reviewing contractor submittals and responding to contractor requests for information, field verification of localized repair (pavement digouts and curb and gutter) areas, providing recommendations for any necessary construction changes due to unforeseen field conditions, assisting with the review of Contract Change Orders, and reviewing construction for acceptance. This task does not provide any field inspection services and we understand that all construction inspection will be provided by the City.

▪ ***Deliverables:***

- 1) Attend pre-Construction Conference
- 2) Assist with review of Contractor Submittals and RFIs as necessary
- 3) Provide recommendations for any necessary construction changes due to unforeseen conditions
- 4) Assist with review of Contract Change Orders

Task 5 – Regulatory Compliance

5A) CEQA Categorical Exemption:

CEQA Determination - Projects that are subject to the discretionary approval of a government agency must comply with California Environmental Quality Act (CEQA) regulations and procedures. Based on our experience fulfilling CEQA requirements for road rehabilitation similar to what is proposed in the RFP, this project will likely qualify for a Categorical Exemption as described at California Code of Regulations in Article 19, § 15301 - Existing Facilities or Article 19, § 15302 – Replacement or Reconstruction.

In order to meet CEQA requirements for this project, NCE will conduct a CEQA determination and file a Notice of Exemption (NOE) with the State Clearinghouse. NCE will conduct a succinct but complete review to verify whether the project qualifies for a Categorical Exemption. NCE will then prepare an NOE for the City to review and sign. NCE will address any comments and submit a signed NOE form to the State Clearinghouse. The NOE form will be completed at the same time as the 60% design submittal. At this stage, the project is well defined and there is still ample time for the 30-day public notice period to be completed before the project goes out for bid. The City's responsibilities related to the CEQA determination include reviewing and signing the Notice of Completion (NOC) form. Information that supports the CEQA determination will be provided to the City for their review and records, but are not required to be included in the submittal to the State Clearinghouse. If for any reason the project does not qualify for a Categorical Exemption, NCE can prepare and provide support for CEQA compliance for additional scope and fee.

- ***Deliverables:*** Draft and final notice of exemption form and supporting information for CEQA finding.



5. Schedule of Work

NCE is committed to meet the schedule outlined in the City’s RFP and the following detailed schedule outlines our approach to this program in accordance with the following assumed bid package and general schedule:

- a. 2022 West of 101 Pavement Rehabilitation Project – Bid Package – Bid Documents Late Winter 2021





6. Conflict of Interest Statement

NCE does not have any actual, apparent, direct or indirect, or potential conflicts of interest that may exist with respect to NCE, any of its employees, or any other person relative to the Services to be provided pursuant to this RFP.

7. Litigation Statement

NCE does not have and has not had any litigation that may affect our ability to perform services. There have been no pending litigation or judgments in the past ten years.

8. Cost Proposal / Task Hours

Per the RFP, NCE's cost proposal is being submitted in a separate sealed envelope from the proposal. It should be noted that in good faith to show our commitment to the strong working relationship with the City, we have elected to honor our 2020 rate schedule and in addition have decreased each labor category by \$5.00.

Task Description	NCE Labor Hours							Clerical	Total
	Project Manager	Principal Engineer & QC/QA	Associate Engineer	Project Engineer	Staff Engineer	CADD Designer	Technician Coring/FWD Testing		
1. Project Management & Meetings									
1A. Project Kick-off and Progress Meetings	120	40		80	40			4	284
1B. Public Outreach	80	56		80	64			40	320
1C. Modification of Preliminary Work Plan	40	4	8	24				4	80
1D. Utility Coordination	4			24	40			8	76
Sub-Totals	244	100	8	208	144	0		56	760
2. Pavement Rehabilitation Design									
2A. Pavement and C&G Condition Survey	8			24	80				112
2B. Pavement Deflection Testing			2	4	4		80	2	92
2C. Pavement Coring			2	16	24		320	2	364
2D. Pavement Design Recommendations	16	4	40	120	24			4	208
Sub-Totals	24	4	44	164	132	0	400	8	776
3. Plans, Specifications & Estimates (PS&E)									
3A. Design Data Gathering	4			40	160			2	206
3B. 60% PS&E	120	40	8	960	1,180	1,320		8	3,636
3C. 90% PS&E	80	16		800	900	1,020		8	2,824
3D. 100% PS&E	40	12		120	480	600		8	1,260
3E. Final (Bid Set) PS&E	24	8		64	80	80		24	280
Sub-Totals	268	76	8	1,984	2,800	3,020		50	8,206
4. Bidding and Construction Support Services									
4A. Bidding Support Services	24	4		60	24			4	116
4B. Construction Support Services	24	16		120	24			4	188
Sub-Totals	48	20	0	180	48	0		8	304
5. Regulatory Compliance									
5A. CEQA Categorical Exemption	2	2	4	20				4	32
Sub-Totals	2	2	4	20	0	0		4	32
Total	586	202	64	2,556	3,124	3,020	400	126	10,078



A NCE Staff Resumes

Ryan Shafer, PE, GE – Principal-in-Charge

Ryan Shafer, PE, GE, is an experienced Principal and Project Manager that is highly skilled in managing interdisciplinary teams of engineers, scientists, and planners for complex projects requiring civil engineering, geotechnical engineering, pavement engineering, structural engineering, transportation and traffic engineering, hydrology and hydraulics, coastal engineering, regulatory permits, technical studies and resource assessments, and environmental documents. In addition, he has managed and provided civil and geotechnical engineering on a wide range of public and private projects, including vertical development, municipal roads, trails, drainage infrastructure, landfills, public transit, recreation areas and parks, industrial facilities including refineries, and waterfront structures giving him an understanding of how to work with diverse project types. His clients provide feedback that NCE is an effective partner and steward, understanding what is important to each community.



Education

MS, Geotechnical Engineering, University of California, Berkeley, 1998

BS, Geological Engineering, Colorado School of Mines, 1996

Registrations/Certifications

Professional Engineer – Civil, CA #62349

Professional Engineer – Geotechnical, CA #2713

Affiliations

American Society of Civil Engineers

American Public Works Association

Joined NCE

2005

Total Years of Experience

22 years

Representative Projects

Annual Overlay/Rehabilitation

City of San Leandro, CA

Project Manager. NCE prepared construction documents and pavement rehabilitation and reconstruction design for 23 arterial, collector, and residential streets (5 miles). NCE's scope of work included pavement investigation and design and preparation of civil design PS&Es for construction. Pavement design solutions included conventional and rubberized hot mix asphalt overlays, full-depth asphalt reconstruction, FDR in lieu of more expensive conventional reconstruction, and a pilot project for cold central plant recycling (CCPR) on an arterial street based on recommendations provided by NCE. Visible drainage issues were addressed, such as localized ponding in the gutter pan, the design of over 100 ADA ramps, curb and gutter repairs, and improvements to striping and pavement markings with the addition of class II and class IV bike lanes. NCE submitted and managed three encroachment permit applications with Caltrans as the project encroached on three state routes. NCE's engineer's estimate matched that of the winning contractor bid, indicating that NCE was able to anticipate the value of the scope of work and contractor climate.

2017 to Present Pavement Management Program

City of South San Francisco, CA

Project Manager and Principal Engineer. NCE has been providing to the City a full range of pavement management services including development of a 5-year Paving Work Plan, updating the City's maintenance and rehabilitation decision tree, evaluating alternative pavement treatment technologies, and development of construction documents for bidding. To date we have developed pavement design and civil design for rehabilitation and preventive maintenance of 48 miles (more than 200 street sections) of City streets with a construction cost of over \$14 million. Starting in 2017 to present for the City's Pavement Management Program NCE has provided pavement and civil design services for preventive maintenance on City streets with scrub, slurry, and cape seals and rehabilitation of City streets with mill and overlays as well as surface reconstruction. NCE civil and pavement engineering design services included pavement coring, curb/gutter replacement, utility coordination, curb ramp design, drainage improvements, sidewalk replacement, pavement design recommendations, PS&Es, and bidding and construction support services.

Pavement Rehabilitation/ Maintenance and Bikeway Improvements

Presidio Trust of San Francisco, CA

Project Manager. NCE is designing the Presidio Trust's pavement rehabilitation and maintenance project with redesign of the bicycle lane network. The scope for this project includes preparing plans, specifications, and cost estimates for bidding purposes. Design elements of the project include pavement design, a roundabout, extensive modification to existing striping and markings to introduce class II and III bikeways and an advisory bike lane, roadway grading, drainage solutions and design, and a bus platform. As part of this project, NCE introduced cost-effective and sustainable pavement treatment alternatives, such as cold in-place recycling (CIR) that allows the asphalt concrete to be recycled

in-place offering up a green technology that recycles existing onsite materials, reduces costly truck trips for import of asphalt paving materials, and reduces greenhouse gases and energy usage. The pavement design considered a number of different factors, including medians, curb reveal, depth to underlying concrete, previous overlays and fabric materials, AB thickness, and other buried obstructions, such as rail lines and recommended an appropriate pavement treatment.

Measure M Street Rehabilitation Program

City of Berkeley, CA

Project Manager. Ryan managed development of pavement design and plans specifications, and engineer's estimates (PS&Es) for the Measure M paving projects from 2015 through 2018. With a program cost of over \$30 million, it included more than 30 miles (150 street sections) of surface seal, street rehabilitation, and reconstruction. Complete street elements included new bike lanes, intersection reconfigurations, new pedestrian crosswalks, storm drain improvements, and design of nearly 600 curb ramps, including pedestrian safety improvement bulbouts.

Civil Design and Measure K Paving Program

Town of Moraga, CA

Project Manager. After passing a 1 percent sales tax in 2012 to raise approximately \$8 million for streets and roads, Measure K, the Town selected NCE for a three-year, on-call contract to provide a variety of pavement-related services for this significant community project. The first phase included rubberized cape seals and microsurfacing for more than 14 miles of streets, the second phase included overlays on nearly 7 miles of roadway, and the final phase includes reconstruction of over three miles of mostly residential street sections. NCE recommended the use of FDR where feasible to lower costs and provide environmental benefits of recycle-in-place pavement technology.

2017 to Present Pavement Management Program

City of South San Francisco, CA

Project Manager and Principal Engineer. NCE has been providing to the City a full range of pavement management services including development of a 5-year Paving Work Plan, updating the City's maintenance and rehabilitation decision tree, evaluating alternative pavement treatment technologies, and development of construction documents for bidding. To date we have developed pavement design and civil design for rehabilitation and preventive maintenance of 48 miles (more than 200 street sections) of City streets with a construction cost of over \$14 million.

Starting in 2017 to present for the City's Pavement Management Program NCE has provided pavement and civil design services for preventive maintenance on City streets with scrub, slurry, and cape seals and rehabilitation of City streets with mill and overlays as well as surface reconstruction. NCE civil and pavement engineering design services included pavement coring, curb/gutter replacement, utility coordination, curb ramp design, drainage improvements, sidewalk replacement, pavement design recommendations, PS&Es, and bidding and construction support services.

Rumrill Blvd Complete Streets Project

City of San Pablo, CA

Principal Engineer. NCE is designing an approximately \$15 million in construction value, 2.5-mile-long complete streets project along Rumrill Blvd. This is a Community-based design process focused on transforming the street into a safe and friendly place for people and business by improving conditions for walking, bicycling, and transit. This street corridor will receive a road diet and to add Class IV bikeways in both directions of travel. Additional key project elements include landscape buffers, widened bus stop landings, increasing parking, and video detection at traffic signals for vehicles and bicycles. In addition, the project will include LID design and bioretention basins, landscaping improvements, curb extensions/bulbouts, sidewalk widening, crosswalk improvements with rectangular rapid flashing beacons, median refuges bus stop shelters, expanded street lighting, ADA concrete and roadway improvements (curb ramps, sidewalks, driveways, medians, and regrading pedestrian roadway crossings), storm drainage improvements, trail crossings, wayfinding signs, pedestrian and street lighting.

Mei-Hui Lee, PhD, PE – Project Manager

Dr. Mei-Hui Lee has a PhD in civil and pavement engineering and over twelve years of experience in pavement design, evaluation and maintenance projects. Currently, Dr. Lee serves as the senior engineer for pavement and civil design and pavement management projects at NCE. Her clients include the Counties of Siskiyou, Mendocino, Lake, Trinity, Mariposa and Sacramento as well as multiple cities including South San Francisco, Pacifica, Belmont Sacramento, Davis, Stockton, Elk Grove, Lincoln, and Folsom. Dr. Lee is certified by the MTC inspector certification testing program. She was also involved in trench cut study for City of Sacramento and Pacifica.

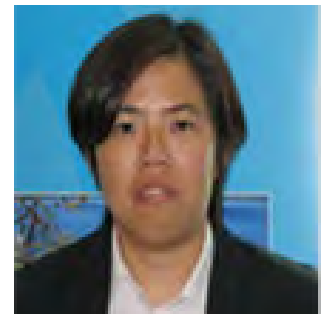
Representative Projects

Pavement Management System Updates

Various Cities and Counties

Project Engineer. Dr. Lee has been involved with updating Pavement Management Systems (PMS) for many Cities and Counties in the Bay Area, Central Valley, and outside of California. She is responsible for the analysis and quality control of pavement distress data collection, updating maintenance and rehabilitation decision trees and the treatment unit costs, and the development of budget scenarios and summary reports. She has developed cost-effective maintenance treatments and strategies, prepared custom multiple-year detailed street maintenance plans and budget option reports, and linked GIS maps with management sections in the client's PMS database. Some of her current/past PMS clients include:

- | | | |
|-----------------------|-------------------|--------------------|
| ■ Ada County, ID | ■ Folsom | ■ Sacramento |
| ■ Amador City | ■ Hayward Airport | ■ County |
| ■ Amador County | ■ Jackson | ■ San Francisco |
| ■ Belvedere | ■ Lake County | ■ San Rafael |
| ■ Belmont | ■ Lakeport | ■ Santa Cruz |
| ■ Benicia | ■ Madera County | ■ Santa Rosa |
| ■ Calistoga | ■ Mariposa County | ■ Siskiyou County |
| ■ Chula Vista | ■ Marin County | ■ South San |
| ■ Clearlake City | ■ Monterey County | ■ Francisco |
| ■ Concord | ■ Moraga | ■ Sonoma County |
| ■ Contra Costa County | ■ Novato | ■ St. Helena |
| ■ Davis | ■ Oakland | ■ Trinity County |
| ■ East Bay Regional | ■ Placerville | ■ University of |
| ■ Park Districts | ■ Pleasant Hill | ■ California-Davis |
| ■ Elk Grove | ■ Plymouth | ■ Vallejo |
| ■ Fairfax | ■ Rio Vista | ■ Yuba City |
| | ■ Sacramento | ■ Yountville |



Education

PhD, Civil Engineering,
National Taiwan University,
Taiwan, 2009

MS, Civil Engineering,
Columbia University, New
York, 2012

BS, Civil Engineering,
National Taiwan University,
Taiwan, 2002

Registrations/Certifications

Professional Engineer –
Civil, CA #87635

MTC StreetSaver® Rater
Certification Program

Affiliations

American Society of Civil
Engineers

American Concrete
Pavement Association

Joined NCE

2014

Total Years of Experience

12 years

2017, 2018-2020 South San Francisco Pavement Management Program/ 2021 Pavement Management Program City of South San Francisco, CA

Senior Engineer/Project Manager. NCE has been providing to the City a various of pavement management services including development of a multi-year Paving Work Plan, updating the City's maintenance and rehabilitation decision tree, evaluating alternative pavement treatment technologies, and development of construction documents for bidding. In 2017 to 2021 pavement management programs, we have developed pavement design and civil design for surface seal and rehabilitation of 48 centerline miles (more than 200 sections) of City streets with a construction cost over \$14 million.

In addition, NCE has modified City's Street Saver database and updated historical maintenance and rehabilitation records to perform budget analyses and develop multi-year work plan. Recently, City's 6-Year Work Plan was updated based on

City's budget, rehabilitation strategy and candidate streets are grouped by maintenance zone for efficiency of design, construction (less mobilization), future maintenance, and to be able to resurface more streets with a limited pavement resurfacing annual budget.

NCE has provided pavement and civil design services for preventive maintenance on City streets with scrub, slurry, and cape seals and rehabilitation of City streets with mill and overlays as well as surface reconstruction.

FY20/21 and FY21/22 Pavement Resurfacing Program

City of Pacifica, CA

Project Manager. NCE has developed 5-Year work plan for the City with surface seal and rehabilitation projects based on City's SB1 funding, as well as pavement management database review and unit cost update. Field reviews were performed to verify pavement condition and treatments to finalize the work plan. NCE then scheduled field calibration meeting with City staff to discuss various surface seal applications and base repair criteria. Cost effective cape seal with leveling courses were designed on residential streets with lower PCI to prevent water from damaging pavement and help resisting reflective cracking. As part of this project, NCE civil and pavement engineering design services included pavement coring, curb/gutter replacement, utility coordination, curb ramp design, drainage improvements, pavement design recommendations, PS&Es, and bidding and construction support services.

Annual Overlay/Rehabilitation 2017-18 Pavement Design and PS&E

San Leandro, CA

Senior Engineer. NCE prepared construction documents and pavement rehabilitation and reconstruction design for 23 arterial, collector, and residential streets (5 miles). NCE provided pavement investigation, design, and preparation of civil design PS&Es for construction. Visible drainage issues were addressed, ADA ramp design, curb and gutter repairs, and improvements to striping and pavement markings with the addition of Class II and Class IV bike lanes. NCE submitted and managed three encroachment permit applications with Caltrans as the project encroached on three state routes. Bidding and construction support services were provided, including bid addenda and construction bulletins.

2015 to 2020 Transportation Infrastructure Rehabilitation Capital Improvement Project

City of Davis, CA

Project Engineer/Senior Engineer. This project involved producing pavement rehabilitations for 698 street sections in Davis from 2015 to 2020 with a construction cost over \$18.5 million. The project involved non-destructive pavement deflection testing, pavement coring, pavement condition surveys and base repair location identification. Following the collection of the field data, rehabilitative recommendations were made based on each street segment's structural integrity and performance. Recommendations for each section were summarized in a pavement design report and submitted to the City. In addition, NCE has updated City's pavement management program in 2015 and 2018. 3-Year work plan for City's capital improvement project was developed in 2017 with annual paving budget \$3.5 million per year.

2015 Street Reconstruction Project

Town of Moraga, CA

Project Engineer. In order to effectively spend funds to be collected from a recent sales tax measure passed by Town residents, NCE worked with Town of Moraga to plan and prepare for the aggressive and cost-effective treatments for the three phase projects. In phase III, a total 13 streets of residential and collector streets are designated for reconstruction or overlay. Mei-Hui served as Project Engineer in preparation of the field data collection, including identifying localized pavement repairs and curb and gutter repairs and pavement design analysis. Pavement reconstruction recommendations were summarized in the report and submitted to the Town.

2015 Street Resurfacing Program

City of San Bruno, CA

Project Engineer. This project included 16 sections in the City's pavement rehabilitation design and seal program. Mei-Hui served as Project Engineer in preparation of the field data collection, including identifying localized pavement coring plan, FWD testing, pavement condition survey and pavement design analysis. She also conducted budgetary analysis on City's StreetSaver® database by different maintenance strategies and funding level. Summary of analysis result were submitted to the City.

Franz Haidinger, PE – QA/QC Manager

While serving in the military after high school, Mr. Franz Haidinger envisioned a future career that would allow him to “work in the natural environment, spending time in the field as well as the office.” In his role at NCE, he enjoys the opportunity to improve and protect the built environment, whether it’s implementing sustainable pavement technologies, creating storm water pollution prevention plans, assessing drinking water sources, or remediating contaminated soil. His clients value his ability to understand their needs, evaluate alternatives and determine the most appropriate solutions. According to Sean Rose, Public Works Director of the Town of Woodside, “Franz is a detail-oriented engineer that does a very thorough job preparing plans and specifications. He did a great job listening to our needs and specific comments and provided thorough and concise responses. Ultimately he provided a high-quality design and he was a pleasure to work with.”

Representative Projects

2017 to Present Pavement Management Program

City of South San Francisco, CA

QC Manager and Principal Engineer. NCE has been providing to the City a full range of pavement management services including development of a 5-year Paving Work Plan, updating the City’s maintenance and rehabilitation decision tree, evaluating alternative pavement treatment technologies, and development of construction documents for bidding. To date we have developed pavement design and civil design for rehabilitation and preventive maintenance of 48 miles (more than 200 street sections) of City streets with a construction cost of over \$14 million.

Starting in 2017 to present for the City’s Pavement Management Program NCE has provided pavement and civil design services for preventive maintenance on City streets with scrub, slurry, and cape seals and rehabilitation of City streets with mill and overlays as well as surface reconstruction. NCE civil and pavement engineering design services included pavement coring, curb/gutter replacement, utility coordination, curb ramp design, drainage improvements, sidewalk replacement, pavement design recommendations, PS&Es, and bidding and construction support services.

Civil Design and Measure K Paving Program

Town of Moraga, CA

Project Manager. Lead Civil Engineer. Responsible for the preparation of construction documents to reconstruct three streets (totaling approximately 200,000 square feet) in the Town of Moraga. FDR was chosen as the reconstruction alternative based on a comprehensive pavement and subgrade investigation. The design plans included grading plans and profiles and included drainage improvements and the design and construction of a retaining wall (soldier piles and lagging) to protect an eroding storm drain culvert outfall. The project included comprehensive regulatory compliance and permitting services, as well as coordination with adjacent property owners (St. Mary’s College) as some of the design elements were sited in biological sensitive areas. Key to the project success was the tight collaboration with staff responsible for the permitting and regulatory compliance tasks, incorporation of permitting requirements and mitigation measures into the design documents, and communication with Town staff and stakeholders. After passing a 1 percent sales tax in 2012 to raise approximately \$8 million for streets and roads, Measure K, the Town selected NCE for a three-year, on-call contract to provide a variety of pavement-related services for this significant community project.



Education

Diplom-Ingenieur
(Equivalent of MS degree),
Civil Engineering, University
of Natural Resources and
Life Sciences, Vienna,
Austria, 1997

Registrations/Certifications

Professional Engineer –
Civil, CA, #64725

Affiliations

American Society of Civil
Engineers
American Public Works
Association

Joined NCE

2004

Total Years of Experience

22 years

Measure M Street Rehabilitation Program

City of Berkeley, CA

Technical Lead/QC Manager. NCE developed the PS&Es and pavement designs. Phases 1 and 2 consisted of 54 rehabilitation and reconstruction street sections and 48 surface seal street sections, traffic control plans, replacing/retrofitting nearly 450 curb ramps, replacement of curb/gutter, storm drains, bike/pedestrian improvements, and intersection reconstruction. Design was completed on a very tight timeframe.

Transportation Infrastructure and Rehabilitation Program (TIRP)

City of Davis, CA

Project Manager. Responsible for the preparation of construction documents for the rehabilitation and reconstruction of several residential streets and arterials in the City of Davis. The project includes the reconstruction of a mile of bike paths currently paved with asphalt concrete to PCC pavement. This project is a continuation of a three-year contract with the City of Davis to improve its streets and bike path network. The work includes topographic surveying, pavement condition analysis, pavement coring and deflection testing, quantity take offs for utility covers, striping, ADA related upgrades, and curb/gutter, and sidewalk repairs. The project was divided into three bid packages, i.e., slurry seal package, road rehabilitation/reconstruction, and bike path reconstruction to attract more contractors and minimize contractor mark-ups on subcontractors.

Via Verdi Slope Stabilization

City of Richmond, CA

Lead Civil Engineer. NCE was retained by the City to assess the extent of a substantial landslide along a section of roadway providing the only access to a residential subdivision with homes and apartment units. With continued landslide movement and distress to the roadway, NCE was tasked to design an emergency access road within a day with construction starting over the weekend and opening to traffic within one week. NCE is now developing slope stabilization alternatives for long-term repair and completing initial permitting. Once a preferred solution has been selected, NCE will move forward with design, permitting, and environmental documents.

Castro Ranch Road Rehabilitation and Complete Streets Improvements

City of Richmond, CA

Lead Civil Engineer. Improvements include pavement rehabilitation featuring CIR, dig-outs, road widening, median islands and pedestrian passage ways, sidewalks, ADA curb ramps, median refuges, Class II bicycle facilities including green painted bicycle lanes, rectangular rapid flash beacons (RRFB), landscaping, storm drain inlet improvements, roadway regrading, and guardrails. The estimated construction cost is \$3.5 million.

Rumrill Boulevard Complete Streets

City of San Pablo, CA

Quality Assurance / Quality Control Manager. NCE is designing an approximately \$15 million in construction value, 2.5-mile-long complete streets project along Rumrill Boulevard. This is a Community-based design process focused on transforming the street into a safe and friendly place for people and business by improving conditions for walking, bicycling, and transit. This street corridor will receive a road diet and to add Class IV bikeways in both directions of travel. Additional key project elements include landscape buffers, widened bus stop landings, increasing parking, and video detection at traffic signals for vehicles and bicycles. In addition, the project will include LID design and bioretention basins, landscaping improvements, curb extensions/bulbouts, sidewalk widening, crosswalk improvements with rectangular rapid flashing beacons, median refuges bus stop shelters, expanded street lighting, ADA concrete and roadway improvements (curb ramps, sidewalks, driveways, medians, and regrading pedestrian roadway crossings), storm drainage improvements, trail crossings, wayfinding signs, pedestrian and street lighting.

Victor Lemus, PE – Lead Civil Engineer

Victor Lemus initially joined us in the summer 2014 as a variable technician and was quickly asked to work with our field engineers, learning and performing pavement surveys on a variety of projects. Victor graduated from the University of California, Davis in 2014 with a BS in Civil and Environmental Engineering and has passed his California PE exam. His coursework included experience with concrete and steel design, earthquake loads on structures, structural analysis and design, green engineering design, pavement engineering, construction principles, project management and geotechnical earthquake engineering.

Representative Projects

2017, 2018-2020 South San Francisco Pavement Management Program/ 2021 Pavement Management Program

City of South San Francisco, CA

Staff Engineer. NCE has been providing to the City a various of pavement management services including development of a multi-year Paving Work Plan, updating the City's maintenance and rehabilitation decision tree, evaluating alternative pavement treatment technologies, and development of construction documents for bidding. In 2017 to 2021 pavement management programs, we have developed pavement design and civil design for surface seal and rehabilitation of 48 centerline miles (more than 200 sections) of City streets with a construction cost over \$14 million.

In addition, NCE has modified City's Street Saver database and updated historical maintenance and rehabilitation records to perform budget analyses and develop multi-year work plan. Recently, City's 6-Year Work Plan was updated based on City's budget, rehabilitation strategy and candidate streets are grouped by maintenance zone for efficiency of design, construction (less mobilization), future maintenance, and to be able to resurface more streets with a limited pavement resurfacing annual budget.

NCE has provided pavement and civil design services for preventive maintenance on City streets with scrub, slurry, and cape seals and rehabilitation of City streets with mill and overlays as well as surface reconstruction.

FY20/21 and FY21/22 Pavement Resurfacing Program

City of Pacifica, CA

Staff Engineer. NCE has developed 5-Year work plan for the City with surface seal and rehabilitation projects based on City's SB1 funding, as well as pavement management database review and unit cost update. Field reviews were performed to verify pavement condition and treatments to finalize the work plan. NCE then scheduled field calibration meeting with City staff to discuss various surface seal applications and base repair criteria. Cost effective cape seal with leveling courses were designed on residential streets with lower PCI to prevent water from damaging pavement and help resisting reflective cracking. As part of this project, NCE civil and pavement engineering design services included pavement coring, curb/gutter replacement, utility coordination, curb ramp design, drainage improvements, pavement design recommendations, PS&Es, and bidding and construction support services.

2017 Berkeley Rehabilitation/ PCC Work and Surface Seal

Berkeley, CA

Staff Engineer. Measure "M" was a \$30 million bond passed to accelerate street improvements in Berkeley. NCE was tasked to consider cost effective treatments that extended paving dollars and offered recycling or environmental benefits. Victor's involvement included field data collection, marking concrete and base repairs in the field and mapping them onto a GPS unit for import into CAD. Victor was also involved in the civil design aspect of the project, most notably regrading reconstruction streets to ensure drainage and eliminate high street cross slopes.



Education

BS Civil & Environmental Engineering, University of California, Davis, 2014

Registrations/Certifications

Professional Engineer – Civil, CA #89769

Affiliations

Chi Epsilon

Joined NCE

2014

Total Years of Experience

6 years

2015 Berkeley Street Surface Seal

Berkeley, CA

Staff Engineer. Victor performed a street seal and striping inventory, field survey of curb ramps, assisted with striping plans and prepared design plans, including vicinity maps and details of curb ramps to adjust to latest ADA requirements, for a surface seal program on 27 streets in the City of Berkeley. The surface seal program included slurry seals and rubberized cape seals with an estimated construction value of \$2 million.

2015 Berkeley Street Resurfacing and Reconstruction

Berkeley, CA

Staff Engineer. The project included the pavement reconstruction and resurfacing of over 54 streets or over six miles of arterials, collector and residential streets. Victor assisted with the design of the striping plans and curb ramps, as well as preparing the civil design sheets and engineer's estimate of probable construction cost.

I-80/Central Avenue Interchange Improvement

Contra Costa Transportation Authority (CCTA) and City of Richmond, CA

Staff Engineer. Improvements were performed as two separate projects to improve traffic congestion in the I-580/I-80 Central Avenue area. Using multiple electronic variable message signs, the first project redirected I-80 westbound on-ramp traffic during weekend peak periods to I-580. The second project improved signalized intersection spacing along Central Avenue by connecting Pierce Street and San Mateo Street, converting Pierce Street access at Central Avenue to "right-in, right-out," and relocating the traffic signal at Pierce Street/Central Avenue to the San Mateo Street/Central Avenue intersection. Victor assisted the core rig operator to extract asphalt concrete and aggregate base core samples for laboratory testing. He also prepared conceptual level exhibits delineating potential extents, assisted on applications for the Local Assistance Procedure, including NEPA exhibits for environmental clearance, right-of-way certification and E-76 process for Caltrans clearance for construction.

Daly City 2016 Pavement Rehabilitation

Daly City, CA

Staff Engineer. NCE completed pavement and civil design services for the 2016 Street Resurfacing Project. The construction cost for this project was approximately \$2 million. Victor completed the PS&E that consisted of setting up project kick-off meetings, coordinating with utilities, pavement coring, field data collection, preparing civil and striping plans, cost estimation of the construction cost and writing Technical Specifications for the bid items.

UC Davis 2017 – Old Davis Road/Transportation Infrastructure

Davis, CA

Staff Engineer. The reconstruction of old I-80 was selected by the city to facilitate access to UC Davis. Initially, Victor helped with pavement coring and dynamic cone penetration testing. Victor's involvement with the transportation infrastructure project was to collect field data and mark digout and concrete repairs that were shown on the plans.

Half Moon Bay 2016-17 Street Reconstruction

Half Moon Bay, CA

Staff Engineer. Eight street sections were identified as needing reconstruction because of low PCI and being past their design life. NCE provided pavement and civil engineering design services for economic reconstruction alternatives of these street sections. Victor coordinated with utilities, designed and regraded the street sections to correct drainage using drainage features and prepared the construction cost estimate.

Lawrence Livermore National Laboratory Pavement Rehabilitation

Livermore, CA

Staff Engineer. NCE and LLNS developed a preventive maintenance and rehabilitation strategy for several roads and parking lots within Site 200. Victor's work included coordinating with the lab to perform pavement coring and field data collection. He also assisted in producing the PS&E documents for contractor bidding.

James Signore, PhD, PE – Pavement Design Lead (AC)

James M. Signore, PhD, PE, specializes in pavement design and evaluation, rehabilitation and maintenance, materials assessment, and training. He has experience in designing pavements for many local agencies, Caltrans and for heavy vehicle loading applications at airfields and ports. He has spent years researching all types of pavement materials, having directed a state-of-the-art AMRL certified and Superpave mix design equipped research laboratory and is well versed in state and local pavement practices and specifications.

Dr. Signore has taught NHI's and ASCE's "Techniques for Pavement Rehabilitation" (including best practices for utility cuts and patches) seminars to practicing engineers for 20 years. He taught graduate courses in pavement engineering at San Jose State University and many of his former students are civil engineers at local agencies. He uses his practical and research experience, technical knowledge and teaching skills to develop an understanding of client needs and the creation of design and rehabilitation strategies that offer the client agency the leading-edge in methods and materials for their pavements. Dr. Signore is a Member of the Transportation Research Board Committee AFD70, Pavement Rehabilitation, AFD70-1, Pavement Interlayer Systems and the FAA Airport Pavement Technical Working Group.

Dr. Signore has worked on several pavement impact studies caused by different truck traffic as well as those from utility cuts e.g. City of Philadelphia. He has used a variety of rigorous technical approaches to determine these impacts such as:

- Development of an experiment design to ensure that all variables affecting pavement impacts are included
- Rigorous statistical analyses to ensure that results and conclusions are significant
- Pavement structural analysis, including the use of deflection testing
- Pavement condition analysis, employing the use of pavement management data

In each case, the appropriate technical approach was selected depending on the type of study and the data available.

Representative Projects

2017 to Present Pavement Management Program

City of South San Francisco, CA

Lead Pavement Engineer. NCE has been providing to the City a full range of pavement management services including development of a 5-year Paving Work Plan, updating the City's maintenance and rehabilitation decision tree, evaluating alternative pavement treatment technologies, and development of construction documents for bidding. To date we have developed pavement design and civil design for rehabilitation and preventive maintenance of 48 miles (more than 200 street sections) of City streets with a construction cost of over \$14 million.

Starting in 2017 to present for the City's Pavement Management Program NCE has provided pavement and civil design services for preventive maintenance on City streets with scrub, slurry, and cape seals and rehabilitation of City streets with mill and overlays as well as surface reconstruction. NCE civil and pavement engineering design services included pavement coring, curb/gutter replacement, utility coordination, curb ramp design, drainage improvements, sidewalk replacement, pavement design recommendations, PS&Es, and bidding and construction support services.



Education

PhD, Civil Engineering,
University of Illinois,
Urbana-Champaign, 1998

MS, Civil Engineering,
University of Illinois –
Urbana-Champaign, 1994

BS, Electrical Engineering,
Clarkson University, 1985

Registrations/Certifications

Professional Engineer –
Civil, CA, #62647

Affiliations

TRB Committee AFD70,
Pavement Rehabilitation

TRB Committee AFD70-1,
Pavement Interlayer
Systems

ASCE Airfield Pavement
Committee

FAA Pavement Technical
Working Group

American Society of Civil
Engineers

Joined NCE

2014

Total Years of Experience

25 years

Measure M Street Rehabilitation Program

City of Berkeley, CA

Lead Pavement Engineer. James is responsible for the development of pavement design and PS&E for the first phase of the project, which consists of 39 rehabilitation and reconstruction street sections and 24 surface seal street sections, replacing/retrofitting nearly 300 curb ramps, replacement of curb/gutter, intersection reconstruction, bike and pedestrian improvements, and traffic control plans.

Transportation Infrastructure Rehabilitation Program (TIRP)

City of Davis, CA

Pavement Design Manager. James is overseeing staff in the design of pavement rehabilitation treatments for eight streets throughout the City. NCE provided civil design for these pavements. Work included preliminary and final field surveys to locate base repair sections, potential rehabilitation strategies, and assess specific pavement conditions. Strategies being considered include CIR, concrete cracking and seating, reconstruction, and mill and overlay.

Measure Q Street Rehabilitation and Maintenance

City of Concord, CA

Project Manager/Pavement Engineer. James managed the project and developed the rehabilitation plans for East Olivera Road and Hillsborough Drive in Concord. These streets exhibited a mix of extensive fatigue cracking and transverse thermal cracking. Tasks ranged from design and construction consulting to client interaction to budget control. The recommendations presented were CIR and FDR. FDR was selected for these streets, which were completed in November 2016. These green treatments eliminated the need for significant and costly full depth base repairs.

Pavement Guidance

Numerous Bay Area Cities, CA

Lead Pavement Engineer. James provided technical support and guidance on various pavement related issues from design to materials to specifications for clients throughout the Bay Area. Selected agencies include Sunnyvale, Oakland, Berkeley, Moraga, Elk Grove, Davis, and Sacramento.

On-Call Pavement Engineering

California Department of Transportation, Statewide, CA

Project Manager. Dr. Signore manages the pavement on-call contract with Caltrans and is responsible for all contractual and project management activities. Major task orders emphasize asphalt and concrete pavement performance and evaluation for all types of pavement issues such as a comparison of ARHM and conventional HMA performance, HMA smoothness specifications, and polyester inlay materials evaluation. He provided technical guidance on the selection and testing of joint filler and spall repair materials and acted as a construction methods assessor on the installation of precast concrete slabs. He wrote, reviewed, or edited numerous interim and final reports including those dealing with continuously reinforced concrete, rapid set concrete, concrete inlay hardeners, and concrete flexural strength.

Pavement Management Systems

Various Cities and Counties

QC Manager. Dr. Signore has been responsible for quality control for Pavement Management Systems (PMS) updates for many cities and counties in California. He is responsible for the quality control of data and responsible for spot checks on the field crews during the pavement condition surveys. Some of his clients include:

- | | | | |
|---------------|-------------------|-------------------------|-----------------------|
| ■ Aliso Viejo | ■ Folsom | ■ Pico Rivera | ■ South San Francisco |
| ■ Buena Park | ■ Garden Grove | ■ San Francisco | ■ Southgate |
| ■ Burbank | ■ Hayward Airport | ■ San Francisco Airport | ■ Stanton |
| ■ Carson | ■ La Mirada | ■ Santa Clarita | ■ Thousand Oaks |
| ■ Dana Point | ■ Lemon Grove | ■ Santa Monica | ■ West Covina |
| ■ Davis | ■ Madera County | ■ Siskiyou County | ■ Yorba Linda |
| ■ Downey | ■ Newport Beach | ■ Sonoma County | ■ Yuba City |
| ■ Elk Grove | ■ Orange | | |

Tom Van Dam, PhD, PE, FACI, LEED AP – Pavement Design Lead (PCC)

In the rapidly evolving field of civil engineering, sustainability is increasingly important. Thomas Van Dam is leading the way by working with the Federal Highway Administration to guide more sustainable pavement practices and applying his expertise on a variety of projects.

One of NCE's five pavement professionals with a PhD, Thomas is proud of the level of expertise that exists within the firm. He enjoys working with clients and the public and can effectively communicate the importance and applicability of highly technical information. He feels that NCE's clients "know they can rely on us to bring them the latest technological knowledge as it relates to pavements and pavement materials."

Thomas brings a range of expertise to his projects. He has authored more than 75 publications and has given more than 100 presentations on pavements, concrete materials and sustainability. An active researcher, he has led projects for agencies, foundations, departments of transportations and private entities. He has also been a professor, Director of the USDOT-funded University Transportation Center for Materials in Sustainable Transportation Infrastructure and Director of the Michigan DOT Transportation Materials Research Center.

Representative Projects

On-Call Pavement Engineering, Statewide

Caltrans, CA

Subject Matter Expert. This is a multi-year on-call contract to provide technical solutions and assist with implementing new strategies and policies that will improve the State's highway network. Key elements include sustainability, forensics, design tools, performance modeling, data analysis, and asphalt and concrete materials.

Almond Grove District Street Reconstruction

Town of Los Gatos, CA

Pavement Engineer. The concept design phase for this high-profile community project included evaluation of "Complete Streets" principles, including street design, typical sections, intersection design, stormwater management and surface treatment concepts, for incorporation into the project. NCE's fee was \$298,500.

2015 Street Rehabilitation

City of Berkeley, CA

Sustainable Pavement Engineer. Thomas is the Sustainable Pavement Engineer in the development of pavement design technologies for the first phase of the project. It consists of 39 rehabilitation and reconstruction street sections and 24 surface seal street sections, replacing/retrofitting nearly 300 curb ramps, replacement of curb/ gutter, intersection reconstruction, bike and pedestrian improvements and traffic control plans.

Measure M Street Rehabilitation

City of Berkeley, CA

Pavement Engineer. NCE is implementing the City's \$30 million, multi-year street surface seal, rehabilitation, and reconstruction project, one of the City's largest projects to date. With a construction cost over \$6 million, it included more than 6 miles of street rehabilitation and reconstruction, nearly 7 miles of surface seal street sections and the replacement or retrofit of nearly 300 curb ramps among other associated improvements.



Education

PhD, Civil Engineering,
University of Illinois,
Urbana, 1995

MS, Civil Engineering,
University of Illinois,
Urbana, 1986

BS, Civil Engineering,
University of Illinois,
Urbana, 1984

Registrations/Certifications

Professional Engineer –
Civil, NV #23424

Professional Engineer –
Civil, MI #6201040662

Professional Engineer –
Civil, IL #062.047665

LEED Accredited
Professional

Affiliations

American Concrete Institute

American Society of Civil
Engineers

Transportation Research
Board

International Society of
Concrete Pavements

American Concrete Institute
Delmar L. Bloem
Distinguished Service
Award (2018)

Joined NCE

2013

Total Years of Experience

29 years

Pavement Engineering On-Call Services

San Francisco International Airport, City and County of San Francisco, CA

Forensic Evaluator. As the Airport's On-Call Pavement Consultant, NCE has multiple responsibilities, including maintaining the MicroPAVER® APMS including automated distress surveys, determining the ACN/PCN for all runways and taxiways, conducting numerous forensic analyses to investigate development of distress on airside pavements, developing construction guidelines for long-lasting longitudinal joints for asphalt pavements and conducting pavement designs for runway rehabilitation and taxiway construction. Thomas has provided technical support throughout this project, guiding the forensic evaluations and reviewing pavement design reports.

Technical Support for Evaluation of Two Runway Pavements

RJ Lee Group / Los Angeles World Airport, Los Angeles, CA

Pavement Engineer. This project consisted of providing pavement and materials expertise to the forensic lead (RJ Lee Group) supporting Los Angeles World Airport (LAWA) in its dispute with those responsible for the recent construction of two runways at LAX. NCE's role was to provide pavement structural analysis information, technical review of the FAA P-501 concrete pavement specification and other project documents, review of petrographic analysis, and field data collection, including visual assessment and dynamic cone penetrometer testing. In the case of Runway 24R, NCE observed and commented on the construction process. Dr. Van Dam supervised the evaluation, met with the client to discuss findings, and conducted field evaluations. The dispute on Runway 24R settled in 2017 and the one on Runway 25L settled in 2018.

Prater Way and El Rancho Drive Resurfacing

Regional Transportation Commission of Washoe County, NV

Pavement Engineer. The project consisted of pavement resurfacing on Prater Way and a short section of El Rancho Drive. NCE investigated the use of a durable thin lift bonded Portland Cement Concrete (PCC) overlay on the El Rancho Drive section. NCE performed hot mix asphalt concrete (HMAC) and Portland Cement Concrete (PCC) pavement analysis and design; plan, specification and cost estimate development and provided construction management and inspection.

Sustainable Pavements Program

Federal Highway Administration

Co-Principal Investigator. This ten-year (Phase I and Phase II), multi-task order IDIQ contract issued by the FHWA to promote the sustainability of pavements is a major initiative with the overarching goal of advancing the knowledge and implementation of sustainability considerations in pavements and pavement materials. The Sustainable Pavements Technical Working Group (SPTWG) is comprised of 20 representatives from key stakeholder groups, including federal and state government, academia, industry and research institutions. The SPTWG provides technical input to the FHWA—specific to sustainability and environmental aspects of pavements and materials—and to serve as a forum for information sharing and exchange. The Sustainable Pavements Reference Manual (<http://www.fhwa.dot.gov/pavement/sustainability/hif15002/hif15002.pdf>), of which Dr. Van Dam is the first author, is a 450-page manual on implementation strategies to improve pavement sustainability.

Project NEON (I-15/US 95 Reconstruction)

Nevada Department of Transportation, NV

Pavement Engineer. NCE is the Pavement Designer for the Design-Build consortium that has been awarded a \$560 million contract by the Nevada Department of Transportation (NDOT) to construct Project NEON. This project is in downtown Las Vegas and extends 3.7 miles along I-15 from Sahara Avenue to the US95/I-15 Interchange. Thomas leads the pavement design team responsible for the evaluation of the interstate pavement designs, design of all local roadways and providing broad technical support on all pavement issues including subgrade and materials.



B Subconsultants' Key Staff Resumes

CHRIS HOCKETT, P.E., G.E.
Principal Engineer



RELEVANT EXPERIENCE

Patterson Pass Road Alameda Co., CA
Project manager and lead engineer for evaluating the effect of construction traffic on existing pavement east of Livermore. A safety improvement project at Patterson Pass Road mile marker 6.4 required the use of 5-axle semi-trailer trucks to offhaul nearly 15,000 cubic yards of soil and rock. Work included construction traffic analysis, calculation of equivalent single axle loads (ESAL), and quantifying the decrease in pavement serviceability along the haul route. As a result of the work, a contingent bid item was incorporated into the construction documents to repair pavement damaged during construction.

Rifle Range Road Stabilization Richmond, CA
Project engineer to provide geotechnical engineering and structural design services for a roadway that had been destabilized by a landslide, and caused the loss of pavement on the downslope of the roadway. Provided geotechnical analyses, foundation report, and PS&E for 70% and 100% plans.

Petersen Road Suisun City, CA
Project manager and lead engineer for geotechnical explorations and reconstruction along Petersen Road for County of Solano. The project consisted of reconstructing the asphalt concrete pavement and widening of the roadway by approximately 20 feet. Full depth reclamation (FDR) of the existing roadway was used to reconstruct the road and enabled recycling of 100 percent of the existing asphalt concrete and road base material to create a stabilized base material that was topped with hot mix asphalt.

Delta De Anza Trail Concord, CA
Project engineer for geotechnical study and report for the design of a new 3,860 foot long trail section with a city park and along the top of a USACE certified levee for East Bay Regional Park District. The geotech investigation included drilling of 10 borings, laboratory testing, geologic mapping, and preparation geotechnical and pavement design recommendations.

Mountain View Pavement Project Mountain View, CA
Completed design services for geologic and geotechnical subsurface exploration and pavement design for pavement rehabilitation projects along three city streets. Project consisted of reconstruction of the existing curbs, gutters, and asphalt pavement along segments of the three streets.

Alameda Point Bay Trail Alameda, CA
Provided geotechnical engineering and pavement design services to the East Bay Regional Park District for development of the 2,500 foot long Alameda Point segment of the Bay Trail. Also provided geotechnical engineering assessments of existing conditions and made recommendations for pavement structural sections for the new portion of the Bay Trail between the Alameda Park and the old marina located east of the intersection of West Hornet Avenue and Ferry Point in Alameda, California.

Power Avenue and California Avenue Pittsburg, CA
Completed a geotechnical exploration and report for the overlay and reconstruction of portions of Power Avenue and California Avenue. Project included a subsurface exploration and recommendations for design and construction of the fast-tracked pavement rehabilitation project.

Castro Valley Creek Bank Distress Castro Valley, CA
QC manager and technical reviewer for a geotechnical investigation and preparation of a geotech report, design concept report, and complete PS&E for the stabilization of an existing log crib retaining wall below a driveway/parking lot along Castro Valley Creek. The stabilization measures included installing a sheet pile retaining wall, grouting the existing voids, and designing a reinforced concrete cap which incorporates a concrete curb. The sheet pile wall and concrete cap were designed to support the driveway independently of the redwood crib wall.



CERTIFICATIONS

Ca Civil Engineer No. 71938
Ca Geotechnical Engineer
No. 2928

YEARS OF EXPERIENCE

15 (15 with CE&G)

EDUCATION

M.S., Civil Engineering, San
Jose State University, 2008
B.S., Civil Engineering,
California Polytechnic State
University, San Luis Obispo,
2004

ACCOMPLISHMENTS

- Preparation of plans, specifications, and engineer's estimates for public works projects
- Development of geotechnical data and design reports and PS&E for trenchless pipelines
- Caltrans foundation design reports for bridges
- Three-dimensional modeling of roadway corridors, retaining walls, and earthwork operations
- Invited lecturer to teach Alameda County staff CE&G's floodwall design process
- Geogrid-reinforced earth embankments and segmental retaining wall designs

RONALDO A. LONGORIA, P.E.

Senior Engineer



REPRESENTATIVE EXPERIENCE

DSRSD Reservoir Access Roads Pavement Services San Ramon, CA
Provided pavement engineering services for highly distressed access roads to the Dublin-San Ramon Services District. Services included reviewing existing data, pavement distresses classification, and providing different repair alternatives together with cost-benefit analyses for each road.

Park Avenue Embankment Repairs Capitola, CA
The project consisted of the construction of a geogrid reinforced slope and reconstruction of outer and bike lanes below Park Avenue in the City of Capitola, California. The damage was caused by a storm in February of 2017 and it extended for approximately 1200 feet. Ronaldo acted as the lead Construction Manager on behalf of the City of Capitola. His tasks included preparation and management of construction documents in accordance with the Caltrans LAPM, conducting a pre-construction meeting, periodic site inspection, overseeing and reviewing results of all the testing compiled by others, materials submittal review and approval, providing RFI responses to contractor, progress payment reports review, and preparation of project closeout binder.

Arroyo De La Laguna Embankment Stabilization Pleasanton, CA
Provided construction management services to the Zone 7 Water Agency for an embankment stabilization project that resulted from the 2016-2017 storms. Services include daily observations and documentation of progress, assistance with coordination of Zone 7 staff, general contractor, and subcontractors, coordinate weekly meetings in CM's absence, and review field test results and protocols. The project was completed in October 2017.

Tuolumne County Road Storm Damage Repairs Tuolumne County, CA
Providing civil and construction management services in support of Buchanan Lane, Italian Bar Road, and Marshes Flat Road Repairs as part of an on-call contract with Tuolumne County. Staff Engineer assisting Principal Engineers with technical review services, FEMA grant funding assistance, and construction administration services.

Slope Stabilization Project at 796 and 802 Cary Drive San Leandro, CA
The project consisted of the construction of a soldier pile retaining wall with tieback anchors to stabilize two private yards affected by a previous landslide in San Leandro, California. Ronaldo acted as the lead Construction Manager on behalf of Alameda County. His tasks included obtaining all the permits needed for the project, a pre-construction meeting coordination, periodic site inspection and testing required during construction, materials submittal review and approval, providing RFI responses to contractor, progress payment reports review, and coordination of a project closeout meeting.

DSRSD Investigation of WWTP Basin 2 Distress Pleasanton, CA
Provided geotechnical and civil engineering services related to failing concrete slabs located on Holding Basin 2 as part of the Dublin-San Ramon Services District Waste Water Treatment Plant in Pleasanton, California. Services included reviewing existing data, field mapping and classification of concrete distresses, and the preparation of a summary investigation memorandum presenting short and long term repair measures with recommended repair limits.

Placido Benavides Rd Design Victoria, TX
Provided roadway design services to the City of Victoria (TX) for a collector road to be constructed in 2020. Engineer-In-Training providing civil engineering design assistance to Professional Engineer in charge of the project. The main tasks included geometric roadway design, stormwater systems design, and gravity sanitary sewer lines design.



CERTIFICATIONS

CA Civil Engineer No. 90204
Certified Commercial 107
UAS Pilot No. 4224500

YEARS OF EXPERIENCE

6 (3 with CE&G)

EDUCATION

B.S., Civil Engineering,
Monterrey Institute of
Technology and Higher
Education, 2014

ACCOMPLISHMENTS

- Proficiency with engineering design softwares including Autocad, Civil 3D, Microstation, and Geopak
- One year of experience as a Surveyor Technician
- Geotechnical Construction Management experience with CE&G



FEHR & PEERS

Geoff Rubendall, PE, TE

Senior Associate

EDUCATION

Bachelor of Science, Civil and Environmental Engineering, University of California, Berkeley, 2004

REGISTRATIONS

Professional Engineer (Civil), California, #71946
Professional Engineer (Traffic), California, #2620

AFFILIATIONS

Institute of Transportation Engineers (ITE)
San Francisco Bay Area Planning and Urban Research Association (SPUR)

EXPERTISE

- Traffic Engineering
- Transportation Planning
- Complete Streets
- Multimodal Planning & Engineering
- Bikeway Facility Design
- Traffic Signal Design
- Traffic Control Design
- Signing/Striping Design
- Roadway Safety Lighting Design
- Site Access/Circulation
- Traffic Operations & Analysis
- Project & Program Management

ABOUT

Geoff Rubendall is a registered civil and traffic engineer with over 15 years of experience evaluating and enhancing the built environment. Geoff believes that considering a combination of safety, equity, and local context for each and every project is critical to improving access and circulation for all travelers within a community.

Geoff's experience spans the spectrum of Fehr & Peers' planning and engineering capabilities — from traffic operations and safety analyses to multimodal/ complete streets design to preparation of construction documents. He is committed to client service and ensuring projects are executed well, on-time, and within budget. His approach to project management is rooted in a drive for quality and this thread weaves itself through everything he does. Whether it is building a team of experts he can trust, critically analyzing challenges and opportunities, mitigating potential problems, or preparing deliverables, he enjoys partnering with project teams to help them realize their vision of a successful project.

Geoff currently leads Fehr & Peers' Engineering Discipline Group, a group of internal staff passionate about expanding engineering knowledge and expertise and evolving the state-of-the-practice. Leveraging the value of different perspectives, Geoff collaborates with technical experts from across the firm to ensure clients have continued access to accurate data, and context-sensitive, innovative solutions.

Oakland On-Call Pavement Rehabilitation Signing & Striping (Oakland, CA)

As part of a pavement replacement program, the City of Oakland requested Fehr & Peers services to provide analyses, recommendations, and final design plans for bicycle and pedestrian striping improvements at seven segments (over four miles of roadway). We collected pedestrian, bicycle, and vehicle data at each study corridor, and utilized our pedestrian crossing tool, Xwalk+, to analyze all uncontrolled crosswalks to develop safety recommendations. Our work resulted in installation of Class 2 bicycle lanes, a road diet (removing a travel lane in each direction), and pedestrian crossing improvements.

Geoff led the team of planners and engineers, and coordinated with city transportation and engineering staff to perform the analyses and provide recommendations to ensure the plans were developed in time to be included in the pavement replacement construction document package. Geoff and his team worked closely with city staff to ensure the striping plans were prepared using city CAD standards and city guidance on bicycle facility design.

Bancroft Protected Bikeway (Berkeley, CA)

Fehr & Peers evaluated two alternative designs for Bancroft Way between Dana Street and Fulton Street as part of the complete streets pilot project for the City of Berkeley's repaving program. The project served as an interim signing and striping project allowing for planned sidewalk and signal modifications to be implemented at a later date. The preferred alternative included a two-way protected bikeway, dedicated transit lane, and changes to signal phasing at intersections to improve mobility for all users.

Geoff served as the associate in charge for the project, providing design oversight and technical support for the planning and design effort. Geoff was responsible for the development of final signing and striping plans and construction management to support the installation of these improvements.

Highway 13 Safety Improvements (Berkeley, CA)

Fehr & Peers assisted with the implementation of pedestrian, bicycle, and signal improvements along the Ashby Avenue and Tunnel Road corridor, designated as Caltrans Highway 13. This culminated in the implementation of over \$2M worth of improvements along the corridor and required working closely with community groups, public works staff, and Caltrans to address potential safety issues that resulted from the Caldecott Tunnel Fourth Bore Project.

Geoff led the community engagement, planning, design, and approval process for restriping Tunnel Road to accommodate bicycles and improve pedestrian connections in the neighborhoods near Tunnel Road. Geoff led walk audits with community members to solicit feedback and understand safety issues, and worked closely with city and Caltrans staff to identify appropriate solutions that met community objectives and the requirements of MUTCD and Caltrans design standards. Ultimately this project included the planning, design, and construction of a Class 2 bicycle facility, a pedestrian hybrid beacon (the first one in Berkeley), an overhead rectangular rapid flashing beacon with a new crosswalk, ~~bulb~~bulbouts/curb extensions, and various traffic signal upgrades to promote safe and efficient traffic flow at eight intersections.

Fulton Street Bikeway (Berkeley, CA)

In response to a near fatal bicycle/car collision in February 2016, the City of Berkeley tasked Fehr & Peers with evaluating and designing much needed improvements along a two-block stretch of Fulton Street near the UC Berkeley campus.

Geoff led the team to identify creative ideas to address the issue in a timely manner, including an intersection analysis to evaluate the effects of reducing travel lanes, and researching appropriate design guidance from the NACTO Urban Bikeway Design Guide. With Geoff's leadership, Fehr & Peers was able to provide the city with a detailed conceptual plan that was installed with a quick turnaround by Bike to Work Day on May 12, 2016. The improvements received a positive response from the city and the

community at large, which led to additional work of a similar nature in Berkeley.

Ninth Street Pathway (Berkeley, CA)

Fehr & Peers led the planning and design effort for closing a critical gap of the Ninth Street Pathway in Berkeley. Work included an off-street pathway and a pathway crossing across Ashby Ave, designated as Caltrans State Route 13. Our effort included the planning and design of the pathway in City right-of-way, and a thorough Caltrans encroachment permit process for a new traffic signal at Ninth Street/Ashby Avenue. The project resulted in closing an east-west sidewalk gap with wider sidewalks and treatments to maintain emergency vehicle access for the nearby fire station.

Geoff led the planning, design, and permitting process for the pathway extension. Geoff and the team worked closely with city and Caltrans staff to study several traffic control and phasing alternatives due to the offset crosswalk configuration. Leveraging City and Caltrans standards with NACTO guidance allowed our team to develop innovative design with appropriate safety measures for the new signalized pathway crossing.

Treasure Island Redevelopment (San Francisco, CA)

Fehr & Peers has been providing ongoing transportation planning and traffic engineering support to the redevelopment of Treasure Island and Yerba Buena Island – which includes building up to 8,000 housing units, three hotels, restaurants, shops, and extensive open space. The unique transportation challenges of a high-density development with minimal capacity to carry private automobiles required innovative concepts to provide the residents and visitors adequate access to and around the island – including a new ferry terminal with frequent service, and myriad pedestrian and bicycle infrastructure options such as bike lanes, cycle tracks, mixed-use paths, and bicycle traffic signals.

Geoff has played a significant role on this project for over ten years, both with Fehr & Peers and his previous employer. He is currently leading the design team in developing the design plans for intersection traffic control, including traffic signals with bike, bus, and emergency vehicle priority infrastructure. Geoff also supports the larger development team by providing roadway design support, including determining intersection traffic control, lane geometry, bicycle and pedestrian facility configuration, and providing input about overall island circulation, access, and mobility. Given the rapid changes in how people move, Geoff is leveraging innovative technologies and concepts to optimize the multimodal mobility for the improved neighborhood.



FEHR & PEERS

Ingrid Ballús Armet, PE

Senior Transportation Engineer

EDUCATION

M.C.P. in City and Regional Planning,
University of California, Berkeley, 2014

M.S. in Transportation Engineering,
University of California, Berkeley, 2013

B.S. in Civil Engineering, Purdue University,
Fort Wayne, 2011

REGISTRATIONS

Licensed PE, Civil Engineering – California
No. 89536

PUBLICATIONS & PRESENTATIONS

Ballús Armet, et al. (2014), "Peer-to-Peer Carsharing: Exploring Public Perception and Market Characteristics in the San Francisco Bay Area, California," *Transportation Research Record: Journal of the Transportation Research Board*, Issue 2416, pp 27–36.

"The Impact of Bikesharing Infrastructure on Crashes and Policy Implications for San Francisco," *Transportation Research Board 93rd Annual Meeting*, 2014, Washington D.C.

ABOUT

Ingrid Ballús Armet has been a transportation engineer and project manager since 2015. She has experience in complete streets design, multimodal operations and safety analysis, curb space management, signal design, and transportation planning.

Born in Barcelona, Ingrid now lives in San Francisco, and is a bicycle and public transit enthusiast with a lifetime of experience navigating cities around the world. Biking and walking in her everyday life creates a connection to her work and a strong desire to see effective improvements. Her passion for accessible transportation and international experience allows her to bring a truly multi-disciplinary approach to improving communities through innovative design, planning, and implementation.

COMPLETE STREETS DESIGN EXPERIENCE

El Camino Real Bicycle and Pedestrian Improvement Plan (Colma, CA)

Ingrid is leading the development of a corridor safety improvement plan for El Camino Real through the Town of Colma. The project began with an assessment of existing traffic, parking and active transportation conditions. Based on this assessment and in coordination with Town staff, the team developed conceptual cross sections for the corridor with safety features for active modes, as well as the potential tradeoffs of the design changes. The design was presented in a concept plan for the full corridor and a virtual preview with a video of a 3D model. The ultimate recommendations will be included in a final plan. The project team engaged the public throughout the project to document existing conditions, solicit feedback on candidate design elements, and refine the ultimate design recommendation. The project included coordination with Caltrans and other local stakeholders through a Task Force, as well as presentations to City Council.

Valencia Bikeway Design Project (San Francisco, CA)

Ingrid served as Project Manager and Design Lead for this fast-paced high-profile bikeway design project in downtown San Francisco. Fehr & Peers provided SFMTA with analysis and design services to define and select safe and practical designs for quick-build implementation of parking-protected bikeways on the Valencia commercial corridor. Fehr & Peers assessed the traffic delay and pedestrian and bicycle safety impacts of several design options and curbside management strategies, which were determined in coordination with SFMTA and incorporating public input.

Ingrid was responsible for developing the concept designs, presenting them to SFMTA staff and incorporating their input into the final recommended alternative.

Grand Boulevard Safe and Healthy Corridor Communities – Community Engagement (Palo Alto, CA and Redwood City, CA)

Ingrid supported the Fehr & Peers team and city staff at several community outreach events in Redwood City and Palo Alto. Ingrid's native Spanish combined with her ability to speak to the technical aspects of the project were crucial in reaching out to communities of concern where language would have otherwise been a barrier.

The study is a multi-city effort to design multimodal performance, safety, and aesthetics improvements on El Camino Real. It involves multiple rounds of outreach in the communities – including pop-up events and a protected bikeway demo – and will conclude with conceptual designs for roadway treatments.

Folsom/Howard Streetscape Project (San Francisco, CA)

Ingrid served as Deputy Project Manager and Design Task Lead for this multimodal streetscape project in downtown San Francisco. Fehr & Peers provided SFMTA with analysis and design services to hone and select project alternatives for the Folsom/Howard Street couplet. Fehr & Peers assessed the traffic, transit delay, and pedestrian safety impacts of several design proposals, which included road diets, midblock crosswalks, transit-only lanes, and one- and two-way cycle tracks. Fehr & Peers created public-facing graphic materials for several Open Houses and prepared 35% design plans for the preferred alternative.

Sixth Street Streetscape Project (San Francisco, CA)

Ingrid served as Design Task Lead and Project Engineer for this multimodal safety project in downtown San Francisco. Fehr & Peers developed three alternative design concepts for the 6th Street corridor and analyzed vehicle, transit, pedestrian, and bicycle operations for each alternative. The alternatives represented tweaks to lane configurations, intersection treatments, signals, etc., while fitting within the Project's "maximum envelope" as defined by the CEQA Project description. In collaboration with the SFMTA, we determined a recommended alternative project design that maximized pedestrian and bicyclist safety benefits while minimizing impacts to vehicle diversion and delay to motor vehicles and transit on 6th Street and surrounding

Senter Road Multimodal Safety Project (San José, CA)

Ingrid served as the primary Spanish translator for this multimodal, corridor-wide safety plan. Ingrid was brought on to this project for her ability to communicate technical aspects of the project in Spanish. She not only translated documents, flyers, and surveys, but she also provided live translation during community meeting presentations and helped explain complex transportation concepts to Spanish-only speakers. Her contribution helped all community members feel welcomed and was crucial to gathering input from community members that are often left out of the planning process.

for each of the four bikeway design alternatives.

Palo Alto On-Call, Transportation Engineering & Planning Services (Palo Alto, CA)

Ingrid served as the Engineering Consultant for on-call design services. She contributed to the development and implementation of various transportation improvements throughout the city, focused on bicycle and pedestrian improvements. She developed conceptual design plans for spot improvement projects, including high-visibility crosswalks, proposed roadway striping, innovative pavement markings, bike lanes and buffers, bike boxes, bicycle and pedestrian wayfinding signage, and multi-use path signing and striping improvements. Ingrid's role supported improvements on several city streets through modifications to previously programmed projects, which allowed the city the opportunity to implement valuable improvements to the bicycle and pedestrian networks on short notice, while taking advantage of previously approved construction funding.

Foster City Pedestrian and Bicycle Assessment (Foster City, CA)

Ingrid served as the Project Engineer for this comprehensive study in Foster City. Fehr & Peers developed Safe Routes to School recommendations for four local schools and provided a citywide bicycle network assessment, including level of traffic stress analysis. Fehr & Peers also provided peer review support for a traffic signal network assessment and several bicycle infrastructure plans. Ingrid was responsible for conducting all technical analysis, developing recommendations, and preparing the report and graphics that best communicated the results and recommendations for the needs of each school and the city.



CHARLES M. WEAKLEY

Principal

California Registered Professional Surveyor #6421

Professional Experience

Mr. Weakley is the manager in charge of all survey work undertaken by Mountain Pacific Surveys. This work is managed on a day-to-day basis by Mr. Weakley or Project Managers reporting directly to Mr. Weakley. His experience in land surveying includes construction layout of subdivision improvement and public roadways, photogrammetric control, precision as-built surveys, cadastral surveys, boundary determinations, and right-of-way calculations. Mr. Weakley is also responsible for the day-to-day operation of our photogrammetric engineering/aerial mapping sister company, Aerometric Surveys located in San Mateo, CA.

Representative Projects

Street and Pavement Rehabilitation Projects, (over 20 jurisdictions, including Berkeley, Moraga, Orinda, San Leandro, Capitola, and others throughout the Bay Area) – Working as a sub-consultant to NCE, over the course of the past 15 years, Mountain Pacific Surveys has performed numerous detailed topographic and utility surveys, ADA ramp surveys, and Right of Way determination for over 100 miles of streets and over 2,000 ramps in support of these City's pavement maintenance programs. Working together extensively on these past projects, NCE and MPS has developed successful strategies and methodologies to efficiently tackle the needs of this type of project.

Mare Island Naval Shipyard, Vallejo, CA – Served as the photogrammetric engineering manager directing the preparation of design level aerial topographic mapping for an approximately 1,200-acre portion of the former shipyard. This project was completed as a sub-consultant to the civil engineering design firm.

One Marina Development, Redwood City, CA – Project Manager for all surveys performed for the development of the One Marina residential condominium development. Performed or supervised aerial control and photogrammetric mapping; supplemental field topographic surveys, private ownership boundary and Cal-Trans Right-of-Way resolution, legal description and record map preparation, mapping of the Highway 101 overcrossing (top and underside), Redwood Creek bank surveys, and construction staking for all new improvements.

San Benito County, CA – Utilizing a combination of traditional photogrammetric techniques and leading-edge LiDAR technology, successfully completed planning level 100 scale mapping of this 10,000-acre project area. Mapping was compiled with a two-foot contour interval and included color digital orthophotos for an approximate 200 square mile area.

Downtown Fairfield Mapping Project, Fairfield, CA – The firm provided aerial control and aerial mapping in both digital and hardcopy format for a 24-block area of downtown Fairfield for a portion of the City's pilot GIS project. Mapping included all streets and utilities with 1' contours and spot elevations at a 50' grid.



STEVEN S. ROHLFS

Project Manager

Certified Chief of Party

California Registered Professional Surveyor #9260

Professional Experience

Mr. Rohlfis currently works as both project manager and Chief of Party on many boundary, topographic mapping, construction staking, and similar projects; performing office research, survey calculations, drafting, easement preparation, boundary resolution, and other similar survey office tasks. He is CAD trained and highly proficient with all applicable survey field and office technology.

Representative Projects

Feather River Levee Project, Marysville, CA – The largest setback levee project in the State of California, Mountain Pacific Surveys provided all of the construction surveying required for the project including slope staking, as-built verification surveys, and right-of-way layout. Mr. Rohlfis served as a survey technician providing office calculations, as well as a Chief of Party.

San Francisco International Airport Terminal 2 Renovations Project, San Francisco, CA – Provided construction surveys for the San Francisco International Airport Terminal 2 Renovations Project. These surveys were based on the SFO horizontal and vertical control network and covered civil and structural improvements to the lower (arrivals) and upper (departures) levels of the Terminal structure.

City of Fairfield Drainage Study, Fairfield, CA – Established required ground control using GPS, RTK and conventional survey methods for aerial photogrammetry. Processed field notes and performed drafting duties in the preparation of a 40-scale aerial base map with a 0.5-foot contour interval and a 50-foot spot elevation grid overlay. Performed field surveys and drafting functions to collect and reduce supplemental field surveys locating storm drain facilities, structure inventory.

Richmond Civic Center, Richmond, CA – Mr. Rohlfis managed client-provided electronic files to compile construction base files, performed rough grade, underground utility, and finish grade construction calculations. Mr. Rohlfis managed and scheduled field crews for staking requests and reviewed as-staked data for quality assurance.

Berkeley Streets and Ramps Project, 2014-2019, Berkeley, CA – Mr. Rohlfis served in both project management and field crew capacities for this multi-year road improvement project. Mountain Pacific Surveys prepared design level topographic mapping for over 10 miles of city streets and hundreds of curb ramps throughout the City. Additionally, right of way research and record data R/W determinations along each mapping strip was also performed. Survey methods included GPS static and RTK collection and conventional ground surveys using NAD 83 State Plane Coordinates and NAVD 88 vertical values.



Tom Pilarski, PLS - Psomas

Subsurface Utility Engineering Director

Tom Pilarski has 26 years of experience in surveying and mapping. He oversees our ASCE Standard 38-02 Utility Detection and Mapping team. Since Psomas expanded its suite of services into the subsurface utility locating and mapping business line, Tom has overseen projects that involved utility location where little or no as-built data existed. He also provides a second opinion when Psomas utility detection crews followed the 811 Dig alert locator to verify the utilities detected. He is responsible for development of Records of Survey, right-of-way mapping, tract and parcel maps, condominium plans, ALTA surveys and easement legal descriptions.

REGISTRATION

2010/CA/Professional Land Surveyor/B732

EDUCATION

2008/Diploma/M.Div./Religious Studies/The Master's University/Santa Clarita

1990/BA/Political Science/University of California, Los Angeles

PROFESSIONAL AFFILIATIONS

California Land Surveyors Association

American Society of Civil Engineers

American Council of Engineering Companies

Utility Engineering and Surveying Institute

EXPERIENCE

With Psomas: 13 years/With Other Firms for: 13 years

Experience

Underground Utilities Locating Services Pool, Chaffey Community College, Rancho Cucamonga, CA: As Subsurface Utilities Engineering Director, overseeing utility detection and mapping services for the Rancho Cucamonga campus. Oversees the mapping of as-built plans as provided by the campus maintenance staff and mapping of utility detection markings from a field survey. Overseeing and providing quality reviews of utility detection and mapping services to ensure that we are adhering to ASCE Standard 38-02.

Pacific Gas and Electric (PG&E) 2019-2022 On-Call Contract: As Subsurface Utilities Engineering Director, overseeing subsurface utility detection for design of both gas and electric projects. Oversees and provides second opinion (verifying the location and completeness of the utility paint marks left by 811 Dig Alert) of work prior to potholing and construction excavation.

EJ Gallo Fermentation and Glass Facilities, Subsurface Utility Detection – Modesto, CA: As Subsurface Utilities Engineering Director for performing subsurface utility detection services for the design of additional facilities being built. This project involved the use of multiple utility detection equipment to detect and mark multiple utilities that were known and unknown to the facilities staff.

SL38-101 Replace Section 1 & 2 – Bakersfield, CA: As Subsurface Utilities Engineering Director, as a subconsultant to ~~Snelson~~, to provide second opinion utility detection services prior to excavating and constructing two gas pipeline replacement projects.

Pasadena Unified School District, Photovoltaics – Pasadena, CA: As Subsurface Utilities Engineering Director for surveying and utility detection services for the development of photovoltaic carport arrays on 28 Pasadena Unified School District school sites. Provided preparation and delivery of record boundaries, underground utility detection services, constraints and easement mapping, topographic design surveys, and collection and mapping of utility detection performed at each school site. Utility detection was performed over the area where the carport arrays were to be constructed and over the conduit design path to the point of connection. Providing oversight and utility detection services at various elementary schools and middle schools as part of their 2020

**Tommy D'Amico, PLS
(2008-2010)**

Summer Modernization project. Also provided multiple methods of locating since there were no as-built records of the underground utilities at each campus.

Disney Prospect Studios, Subsurface Utility Detection – Burbank, CA: Utilities Detection Manager for paving and utility improvements including complete grading and utility submittal to the City of Los Angeles. The project also involved the use of multiple utility detection equipment to detect and mark multiple utilities that were known and unknown to the studio maintenance staff. Performed subsurface utility detection services for RHW design of a new water line.

East San Fernando Transit Corridor Project (LA Metro), San Fernando Valley, CA: Utility Locator on this project consisting of preliminary engineering and supporting the development of technical documents for design-build (D-B) procurement, D-B bid support and design services during construction. The East San Fernando Valley (ESFV) Light Rail Line is a 9.2-mile high capacity transit route connecting the Metro Orange Line in Van Nuys to the Metrolink Sylmar/San Fernando Station, one of the busiest thoroughfares in the San Fernando Valley, which includes 17 stations and an Operations and Maintenance facility through a mix of shared corridor with Union Pacific and Metrolink and street running guideway. Psomas is providing utility engineering design, topographic surveying, and right-of-way engineering services for the Los Angeles County Metropolitan Transportation Authority on the ESFV Transit Corridor project, located in San Fernando Valley, Los Angeles County.

Sempra Pipeline Safety Enhancement Plan (PSEP), Los Angeles, Ventura, and Orange Counties, CA – Los Angeles, CA: Utilities Detection Manager for providing surveying and mapping and subsurface utility detection services in support of hydrotest, replacement projects, and valve upgrades across Southern California. Psomas provided full-time staff augmentation to develop project standards to be used for the surveying and mapping components. Supervising subsurface utility detection services for various PSEP projects. These projects involve utility detection at the beginning of the project to detect and mark various utilities to aid in the pipeline design and prior to construction to verify that the all Dig Alert marks were accurate and complete.



Dennis Mead - Psomas

Subsurface Utility Engineer

EXPERIENCE

With Psomas 2 years/With
Other Firms for: 26 years

Dennis Mead, a noted expert in the field of subsurface utility engineering (SUE), heads Psomas' subsurface utility detection practice. During his 20-year career, he has provided subsurface utility locating services for major utility companies, as well as numerous private contractors. Dennis has supervised more than 2,500 miles of gas transmission mapping projects, as well as various major infrastructure projects. As a component of SUE, Dennis uses subsurface utility detection, which uses the latest equipment to pinpoint the exact location and condition of underground utilities within a project.

Experience

Underground Utilities Locating Services Pool, Chaffey Community College, Rancho Cucamonga, CA: Utilities Detection Supervisor, overseeing utility detection and mapping services for the Rancho Cucamonga campus. Oversees the mapping of as-built plans as provided by the campus maintenance staff and mapping of utility detection markings from a field survey. Overseeing and providing quality reviews of utility detection and mapping services to ensure that we are adhering to ASCE Standard 38-02.

PG&E Survey On-Call; Subsurface Utility Detection Various Locations: Utility Detection Supervisor overseeing and performing subsurface utility detection for design of both gas and electric projects. Oversees and performs second opinion (verifying the location and completeness of the utility paint marks left by 811 Dig Alert) work prior to potholing and construction excavation.

EJ Gallo Fermentation and Glass Facilities, Subsurface Utility Detection – Modesto, CA: Utilities Detection Supervisor for performing subsurface utility detection services for the design of additional facilities being built. This project involved the use of multiple utility detection equipment to detect and mark multiple utilities that were known and unknown to the facilities staff.

SL38-101 Replace Section 1 & 2 – Bakersfield, CA: Utilities Detection Supervisor, as a subconsultant to Snelson, to provide second opinion utility detection services prior to excavating and constructing two gas pipeline replacement projects.

Disney Prospect Studios, Subsurface Utility Detection – Burbank, CA: Utilities Detection Supervisor for paving and utility improvements including complete grading and utility submittal to the City of Los Angeles. The project also involved the use of multiple utility detection equipment to detect and mark multiple utilities that were known and unknown to the studio maintenance staff.

Southern California Gas Co. PSEP Projects; Subsurface Utility Detection Various Locations: Project Manager supervising and performing subsurface utility locating services for various PSEP projects. These projects involved utility detection at the beginning of the project to detect and mark various utilities to aid in the pipeline design and prior to construction to verify that the 811 Dig Alert marks were accurate and complete.



C Sample Brochure

BOND MEASURE DOLLARS AT WORK

WHAT TO EXPECT...

PRIOR TO CONSTRUCTION:

- City will issue notices to each resident affected by upcoming work 1 to 2 weeks before construction.
- Please pay close attention to signs on and around your street indicating when street closures may occur.
- City hall meetings to provide additional information and answer questions or concerns.

Before

After

BOND MEASURE DOLLARS AT WORK

QUESTIONS?

Additional information will be provided at two
City Council Meetings
on November 11 & December 8, 2021 at 7:00pm
at South San Francisco City Hall Office
400 Grand Avenue

For more information, contact:
City of South San Francisco Public Works
(650) 877-8550
or
Awarded Contractor
Contact Name, (XXX) XXX-XXXX
website

For daily updates, visit our Facebook page:
www.facebook.com/CityofSouthSanFrancisco
Questions? Email Us: web-pw@ssf.net



BOND MEASURE DOLLARS AT WORK



CONSTRUCTION PERIOD
- APRIL 2022 THROUGH AUGUST 2022 -

Rehab will include asphalt renovation on 94
streets in the City of South San Francisco, which
equates to almost 19 miles of streets!



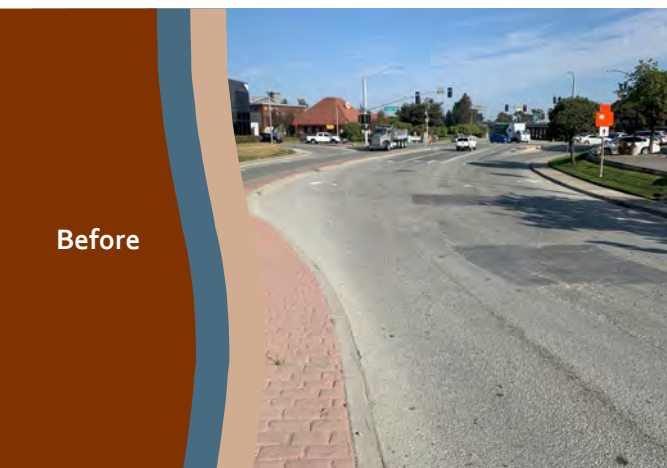
Before

2022 REHABILITATION PROJECT INCLUDES:

- Localized pavement repairs
- Crack sealing
- Curb ramp improvements
- Grinding off pavement surface (milling)
- Asphalt and rubberized asphalt paving
- Refresh pavement striping

The City will be using cost-effective and sustainable pavement technologies to stretch Bond Measure dollars to preserve streets.

The finished pavement surface will be new asphalt and preserve your street for many years!



Before

CITY OF SOUTH SAN FRANCISCO 2022 REHABILITATION PROJECT

BOND MEASURE DOLLARS AT WORK

WHAT TO EXPECT...

DURING CONSTRUCTION:

- Streets will first be “prepped” with crack sealant and localized pavement failures will be removed and repaired.
- The shoulder areas and sometimes the entire street width will be “milled” to accommodate the thickness of the new 2” to 3” asphalt overlay.
- Contractor will sweep up any excess grindings from the milling machine.
- The milled surface will be rough and the elevation difference of approximately 2” to 3” in travel lanes will be bridged by a short and temporary pavement wedge.
- **CAUTION!** Drivers need to pay attention and observe posted construction zone speed limits.
- Expect partial road closures throughout the day during prep and milling operations.
- The prepped and milled surface will be exposed up to one week before the new overlay is placed.
- The asphalt overlay consists of a liquid asphalt binder premixed with aggregate, which is placed and compacted on the street surface.
- Expect road closures throughout the day during overlay operations.



During Construction: Milled Roadway Surface

WHAT TO EXPECT...

DURING CONSTRUCTION:

- Street closures may occur any time between 8am and 5pm.
- Please do not park or drive on streets if construction signage indicates that the street will be closed.
- Please observe temporary posted speed signs.
- To avoid tracking asphalt onto your driveways and property, please pay attention to contractor signage and wait until the street has been cleared for access.
- **CAUTION!** Driving on these streets before they are open will result in possible defects in the new pavement and paving materials tracked onto your driveway and home.



During Construction: Paving

