Newport Mesa Unified School District (NMUSD)  
California  

Proposal to Provide  
Pavement Assessment and Management Plan (PAMP) Services  

August 26, 2021  

GMU Proposal P-21189  
GMU  
23241 Arroyo Vista  
Rancho Santa Margarita, CA 92688
August 26, 2021

Mr. Jonathan Geiszler
Director of Purchasing and Warehouse
NEWPORT-MESA UNIFIED SCHOOL DISTRICT
2985-A Bear Street
Costa Mesa, CA 92626

GMU Proposal P-21189

Subject: Technical Proposal to Prepare a Pavement Assessment and Management Plan (PAMP) for the Newport Mesa Unified School District (NMUSD)

References:

Dear Mr. Geiszler:

GMU is pleased to submit this proposal to the Newport Mesa Unified School District to prepare Pavement Assessment and Management Plan (PAMP) in response to the reference (1) Request for Proposal (RFP).

Established in 1967 and located in Orange County, California, GMU has served as a pavement engineering consultant for many clients over the years and possesses background understanding of the local pavement and geotechnical related challenges. Our in-house scope of expertise includes specialization in pavement engineering, specifically preparation of network-level pavement management plans, project-level pavement evaluations/designs, pavement mix design development, PS&E development, and pavement observation/testing services. The pavement engineering department of GMU, led by Roger Schlierkamp, MSc, PE, has become a trusted resource for pavement engineering services for many local municipalities, commercial property owners, private developers, and Homeowners Associations (HOAs). A select list includes the following:

- Irvine Company Office Properties (ICOP)
- Costa Mesa
- Newport Beach
- Dana Point
- Aliso Viejo
- Saint Margaret of Scotland Episcopal School (SMES)
- Rancho Santa Margarita
- San Juan Capistrano
- Irvine
- Buena Park
- Newport Beach
- Los Angeles Department of Public Works
- Orange County Department of Public Works
This proposal highlights our qualifications, experience, and capabilities to provide pavement assessment and management plan services.

GMU understands that NMUSD is interested in obtaining specialized pavement assessment and management plan services. The proposed scope of work includes developing an inventory of the district asphalt and concrete pavement surfaces, reviewing and incorporating maintenance and rehabilitation activities, performing walking pavement and concrete condition assessments, performing analysis to identify funding needed to optimize the network’s condition, and recommending Maintenance and Rehabilitation (M&R) treatments for the next 5 years.

GMU is confident that the deliverables prepared for this proposed project will provide valuable information and greatly assist NMUSD in prioritizing pavement repairs, budgets, and schedules. We appreciate the opportunity to provide this proposal for NMUSD pavement assessment and management plan. Should you have any questions or comments, please feel free to call the undersigned (949.888.6513).

Respectfully Submitted,

GMU GEOTECHNICAL, INC.

Roger W. Schlierkamp, M.Sc., P.E.
Director of Pavement Engineering

Gregory P. Silver, M.Sc., P.E., G.E.
President, Principal Engineer

Ali A. Zalghout, M.Sc.
Senior Staff Pavement Engineer

RFP requested items:

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<td>Roger Schlierkamp, MS, PE</td>
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<td>Director of Pavement Engineering</td>
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GMU’s California Secretary of State Entity Number: is C1642537. The proposal will remain valid for a period of not less than 90 days. All information submitted within this proposal is true and accurate.
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COMPANY PROFILE – GMU

GMU’s single office and Caltrans-certified pavement/soils materials laboratory is located in Rancho Santa Margarita, California. GMU is the primary consultant for this project and will provide the requested scope of services.

GMU was formed in 1967 and has established a reputation for reliability, innovation, accuracy, efficiency, and excellent service and has provided pavement, geotechnical, testing, and inspection services for over 50 years. This is exemplified by the wide variety of projects that we have successfully worked on, the long-term relationships that we have developed with our diverse group of clients, and the number of project achievement awards that GMU has been awarded. GMU is able to offer an unparalleled level of service because of active principal involvement in each project and a professional staff of individuals that are leaders and experts in their respective fields.

GMU is a small Business Enterprise – California ID No: 59914.

GMU’s office houses a 45-person team of highly qualified professional engineers, geologists, and engineering technicians with specialized experience in pavement engineering, geotechnical engineering, engineering geology, and materials testing. GMU’s staff includes:

- Three (3) pavement distress inspectors, qualified to perform pavement distress surveys to satisfy Orange County Transportation Authority (OCTA) requirements;
- Eleven (11) professional, pavement, and geotechnical engineers licensed in California, including three (3) Masters degrees in pavement engineering;
- Four (4) certified engineering geologists licensed in California; and
- Engineering technicians and registered special inspectors with an average of 15 to 25+ years of experience.
Roger Schlierkamp, the point of contact and project manager for this project, has over eleven (11) years of experience in the field of pavement engineering.

GMU is not partially or totally owned by another business organization or individual. GMU does not have any failures or refusals to complete a contract or any conditions that may impede ability to provide the proposed scope of work.

GMU is in good financial standing. There are no foreseeable conditions that may impede our ability to provide the proposed scope of services.

Upon awarding the project, GMU will provide all the requested insurance documents.

**EXECUTIVE SUMMARY**

**Understanding**

Based on our review of the reference (1) RFP, we understand that NMUSD, which spans 58.83 square miles in Orange County, and composed of thirty-two schools is interested in hiring a pavement engineering consultant to provide services to complete a districtwide Pavement Assessment and Management Plan (PAMP). The scope of work includes developing inventory of asphalt and concrete pavement surfaces, conducting condition assessment, performing pavement coring, performing budget analysis, and developing a five-year master plan for pavement maintenance and rehabilitation.

GMU possesses extensive familiarity of the pavement and soils conditions within the area. By being proactive in considering this information, a more practicable and implementable pavement management plan can be developed.

**Summary of Approach**

This proposal outlines our understanding and approach to providing the requested scope of work per the reference (1) RFP. Our proposed approach will address the requested services, including:

- **Kick-off Meeting, Project Management, and Reporting**: GMU staff will ensure to provide the necessary time to meet and coordinate with NMUSD, ensure an efficient and coordinated project development process, and ensure the delivery of product with high quality while staying within budget and on schedule.

- **Developing Inventory of Paved Surfaces**: An accurate and organized inventory is one of the first steps in a pavement management system process, as it directly affects not only
which streets are inspected but also the budget scenario analysis. GMU will develop an inventory that covers all the paved surfaces across all the NMUSD school sites.

- **Data Collection and Reporting of District School Sites:** We propose to perform walking surveys to collect pavement distress information on all district school sites. The surveys will be performed in accordance with ASTM D6433 – Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys. This standard method describes how to rate the type, extent, and severity of the pavement surface distresses, which is then used to calculate its pavement condition index (PCI) on a 0 to 100 scale for each street segment. This test method is the most common method to rate pavement condition and is used by most agencies in California.

- **Pavement Coring:** GMU will perform 2 pavement corings at each school site to identify the existing pavement structure thicknesses.

- **Pavement Management Software Selection and Training:** We will discuss with the NMUSD the two common options that are widely used for pavement management, MicroPAVER and StreetSaver. We will provide NMUSD with the pros and cons of each software, and recommend the best option. After selection, we will train the NMUSD staff on using the software and accessing the Pavement Management System (PMS) database.

- **Budget Scenario Analysis:** GMU will perform analysis of various budget scenarios, including predicted pavement performance based on available funds and required budget to achieve a target network PCI. The NMUSD pavement maintenance and rehabilitation (M&R) work history information will be incorporated into the pavement management software. GMU will review bid results to consider actual pavement repair costs. These variables will influence the accuracy and conclusions drawn from the budget scenario analysis. A 5-Year M&R plan will also be provided.

- **Pavement Management Plan Report and GIS Database:** We will prepare a final comprehensive network-level pavement management plan report to present all our findings and recommendations. Also, we will provide NMUSD with the PMS database and a GIS layer-based map showing the PCI of all the NMUSD school sites.

- **Accessibility evaluations:** We will provide accessibility review of paved sections including the parking lot and approved paths of travel at all NMUSD school sites.
Mr. Jonathan Geiszler, NEWPORT-MESA UNIFIED SCHOOL DISTRICT
Proposal to Prepare a Pavement Assessment and Management Plan (PAMP) for the Newport Mesa Unified School District (NMUSD)

PERSONNEL

Roger Schlierkamp, MSc, PE, Director of Pavement Engineering
Primary Point of Contact and Project Manager

Mr. Roger Schlierkamp is the Director of Pavement Engineering at GMU. He is a registered Professional Engineer in the state of California and has over 11 years of experience in the field of pavement engineering, including pavement management plan development, pavement mix design development, pavement design/evaluation, and construction observation-and-testing services. Roger successfully managed a Pavement Management Plan (PMP) update for the City of Laguna Niguel and ensured that all the OCTA reporting requirements are met. Roger is currently managing a Pavement Management Program (PMP) update for the City of Chino Hills, which includes evaluating 193 centerline miles of streets. Other notable on-going PMP projects Roger is currently overseeing include Canyon Lake, Crystal Cove Community, Covenant Hills HOA, Casta Del Sol HOA, Lake Forest II MHOA, and Ocean Heights HOA.

Roger’s knowledge stems from his formal education and training in Pavement Engineering at the University of Nevada, Reno which is the host of the Western Regional Superpave Center (WRSC), a center established by the Federal Highway Administration (FHWA) to establish standards and promote the implementation of Superpave pavement technology.

He has applied his specialized background in pavement engineering over a wide range of projects and clients, including local agencies, private-sector clients, ports, airports, material producers, and contractors. During construction, Roger also manages and oversees the quality-assurance/quality-control aspect of pavement projects. His full-circle experience from pavement design/evaluation to construction allows him to develop practical and cost-effective solutions to real-world and complex pavement-related challenges.

Roger presents his knowledge and experience in workshop and classroom settings on topics related to pavement engineering and construction, including as a past instructor for “Construction Materials and Testing” at Santiago Canyon College. Additionally, as a participant of the Greenbook Committee, Roger has helped to shape pavement construction specifications and requirements utilized by numerous agencies and projects throughout southern California.

Photo 1: Roger Schlierkamp, MSc, PE, Director of Pavement Engineering
Ali Zalghout, M.Sc. Senior Staff Pavement Engineer

Ali has over 3 years of experience in pavement materials research. His areas of expertise include pavement design, management, and evaluation, advanced characterization of asphalt concrete, asphalt sustainability, asphalt reclaiming and recycling, long-term pavement performance prediction, and fiber-reinforced asphalt mixtures. His current work includes performing pavement evaluations, developing cost-effective pavement repair recommendations, performing pavement materials mix designs, and performing observation services of pavement-focused construction projects. He is currently working on projects for a number of local agencies, private sector clients, civil engineering firms, paving contractors, and pavement material producers. He has published more than 10 journal articles and conference proceedings in the top pavement engineering journals and conferences.

Ali has a deep understanding of the pavement management process that comes from his master’s degree in pavement engineering, and through the training sessions he has been attending. He has attended the OCTA distress survey training and has received an intensive training for the MicoPAVER software directly from PAVER program manager Dr. Mo Shahin. Ali is certified by OCTA to conduct pavement distress surveys, and he successfully completed a Pavement Management Plan update for the City of Laguna Niguel.

Michel El Sebaaly, M.Sc., E.I.T, Staff Pavement Engineer

Michel completed his Master of Science degree in the pavement engineering and science program at the University of Nevada, Reno in 2020. Prior to pursuing his Master of Science degree, he obtained his bachelor’s degree in civil engineering from University of Balamand in Lebanon.

He has been involved in a wide variety of projects that are related to pavement designs, laboratory testing, data analysis, pavement rehabilitation and preservation. His current work includes supporting a wide-range of pavement engineering projects, including pavement evaluations, pavement field explorations, proposal preparation and cost estimates, and network-level pavement management plans. He is currently working on several projects including the City of Chino Hill’s 190+ miles pavement management plan project, which will help cost-effectively optimize the City’s roadway network.
We will utilize the same key personnel identified in this organization chart for the duration of the contract for the services assigned to each individual. Any changes to key personnel during execution of the work will be discussed, justified, and approved by the City prior to performing the work.

Additional background on our key pavement engineering staff for this proposed project is summarized on the following pages. Detailed resumes, qualifications, and project profiles is also provided in Appendix A – Key Staff Resumes.

UNDERSTANDING OF PROJECT

Having worked on project-level pavement evaluation and pavement-construction projects within the City of Newport Beach and the City of Costa Mesa, GMU possesses background understanding and experience with the local pavement and soils conditions. This background knowledge and experience will be carried over and will help add value into the pavement assessment and management services we are proposing to provide.

Task 1 – Kick-off Meeting, Project Management, and Reporting

A proper implementation of the pavement assessment and management program requires frequent communication and regular updates. GMU staff will ensure to provide the necessary time to meet and coordinate with NMUSD, ensure an efficient and coordinated project development process, and ensure the delivery of product with high quality while staying within budget and on schedule.

Task 1.1 – Kick-off Meeting

GMU will schedule a kick-off meeting with the NMUSD’s maintenance and operations department to review the project and discuss the initial action items. The meeting will include the following discussions:

- Project schedule and budget;
- Meeting dates that best fit NMUSD staff schedule;
- Project understanding;
- Specific project limits;
- Existing and future budgets for maintenance and rehabilitation projects;
- Unit costs for various strategies from past bid histories;
- GIS Shapefile;
- Past pavement management plan reports, excel files, or databases;
- Pavement repair strategies (pavement repair “toolbox”); and
- Other topics that may arise during the project.
Prior to the meeting GMU will prepare and send a meeting agenda covering all the discussion topics. Moreover, GMU will send the meeting minutes covering all the items discussed during the meeting to NMUSD.

GMU will coordinate all activities with NMUSD around student schedules to ensure smooth school operations. GMU will ensure to maintain good and consistent communication with NMUSD project staff.

**Task 1.2 – Progress Reports**

GMU will provide NMUSD with monthly progress reports four (4) days prior to the progress meetings. The progress reports will summarize the progress achieved during the reporting period, and the updated schedule highlighting the items that have been completed.

**Task 1.3 – Scheduling**

Prior to the commencement of work, GMU will provide NMUSD with the project schedule for completion of work. GMU will update the schedule after each progress meeting and will discuss with NMUSD any alterations that might occur.

**Deliverables**

- Schedule of project meetings
- Project milestones
- Meeting agenda prior to each meeting
- Meeting minutes, with action items and due dates will be provided, after each meeting
- Monthly progress reports

**Task 2 – Risk Management**

Upon awarding the project to GMU, we will provide the NMUSD all the proper insurance documents, including general liability, worker’s compensation, and auto insurance. All the documents will list NMUSD as an insured. GMU will submit all these documents to NMUSD prior to the project kick-off.

**Deliverables**

- Statement Acknowledging that GMU can Provide the Requested Insurance
- All the Requested Insurance Documents
Task 3 – Data Collection and Reporting

Task 3.1 – Inventory

GMU will create an inventory of all paved surfaces across all the school campuses included in this project. The inventory will cover all paved surfaces, including Asphalt Concrete (AC) and Portland Cement Concrete (PCC) paved surfaces, sidewalks, blacktops, playgrounds, and other areas of interest. The inventory will mainly include the following items:

- School Campus Name
- Parking Surface Type (AC or PCC)
- Area (measured in Square Feet)
- Construction Date Information (whenever available)
- Sidewalks
- Playgrounds

Task 3.2 – Condition Surveys

To objectively rate the current condition of the pavements across all the school campuses included in this project, GMU will perform pavement surface condition assessments in general accordance with American Society of Testing and Materials (ASTM) D6433 “Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys”. Additionally, GMU personnel that will perform the pavement surface condition assessments are certified by Orange County Transportation Authority (OCTA).

To summarize ASTM D6433, this standard test method defines 20 different asphalt concrete pavement distress types and 19 different portland cement concrete distress types, how to rate and measure them, and how to calculate the Pavement Condition Index (PCI). For asphalt concrete
and portland cement concrete pavements, the different pavement distress types defined by the test method is summarized as follows:

### Asphalt Concrete Pavement Distresses

1. Alligator or Fatigue Cracking
2. Bleeding
3. Block Cracking
4. Bumps and Sags
5. Corrugation
6. Depression
7. Edge Cracking
8. Joint Reflection Cracking
9. Lane/Shoulder Drop-Off
10. Longitudinal / Transverse Cracking
11. Patching / Utility Cut Patches
12. Polished Aggregates
13. Potholes
14. Railroad Crossing
15. Rutting
16. Shoving
17. Slippage Cracking
18. Swell
19. Raveling
20. Weathering

### Portland Cement Concrete Pavement Distresses

21. Blowup/Buckling
22. Corner Break
23. Divided Slab
24. Durability Cracking
25. Faulting
26. Joint Seal Damage
27. Lane/Shoulder Drop-Off
28. Linear Cracking
29. Patching, Large & Utility Cuts
30. Patching, Small
31. Polished Aggregates
32. Popouts
33. Pumping
34. Punchouts
35. Railroad Crossing
36. Scaling
37. Shrinkage Cracks
38. Spalling, Corner
39. Spalling, Joint

Besides identifying the distress type, the severity level of the given distress type is also considered (i.e., low, medium, or high typically), as well as the quantity of each distress type (i.e., square foot or linear foot typically).

The type, extent, and severity level of the distresses identified and measured is used to calculate the Pavement Condition Index (PCI). The PCI is on a 0 to 100 rating scale, where new and properly constructed pavements have a PCI of 100 or close to 100. In general, a street with more distresses, greater quantity of distresses, and higher severity level of distresses will have a lower PCI. Identifying the pavement’s PCI allows the streets to be objectively prioritized and scheduled for improvements.

Moreover, sidewalk assessments will be performed at each school site, and condition information such as cracking, lifting, spalling, uneven pavement and trip hazard will be recorded. The survey will also include assessment of drainage condition over the sites.
Task 3.3 – Quality Control Procedures

For any field that requires data collection, quality control is essential. This concept especially applies to pavement distress data collection for pavement assessment and management planning. GMU understands the importance of accurate data collection and will perform the quality control on the collected data.

GMU will perform PCI surveys utilizing Orange County Transportation Authority (OCTA) certified pavement inspectors. Obtaining this certificate involved performing PCI surveys of control sample units selected by OCTA. OCTA reviewed the pavement distresses identified by the pavement surveyor and issues a certificate if deemed proficient. Identification of pavement distress types, extent, and severities and subsequent PCI calculations for this certification process are performed in accordance with ASTM D 6433.

Beyond PCI surveys performed by OCTA certified pavement inspector(s), additional quality control procedures per the reference OCTA guidelines are implemented to further improve PCI survey accuracy, summarized as follows.

**PCI Data Quality Control**

A second GMU OCTA certified pavement inspector will perform walking re-inspections of random sections inspected by the first inspector. The selected sections will be randomly chosen to span different conditions, such as:

- Different Pavement Types (AC or PCC)
- Different Pavement Conditions (surfaces with different PCI ranges)
- Different Pavement Age
- Different M&R history

For the data to be acceptable, the types and severities of the distresses must be the same and the quantities must be within 10% of each other. If more than 10% of the sites have unacceptable data, then additional sites will be reviewed and compared. This process will continue until at least 95% of the selected sites meet the acceptability criteria. Costs and time to perform re-inspections will not be billed to the City.

Task 3.4 – GIS

GMU Team possesses extensive experience and knowledge in GIS integration and management. GMU will create GIS files that includes NMUSD inventory, and incorporate all the PAMP findings into the GIS system. We will also provide the NMUSD with a Shapefile (SHP) format of the GIS database with location referencing in order to reference data, such as segments, treatment
types, costs, and year of implementation, to the basic inventory. Prior to incorporating the data into GIS, all collected data will be submitted to NMUSD local staff first for review.

**Task 3.5 – Maintenance and Rehabilitation Activities Records**

GMU will incorporate the recent Maintenance and Rehabilitation (M&R) activities (i.e., work history) performed in the past few years into the PAMP database. GMU will request the following information from NMUSD:

- Previous Project plans and specifications
- Previous Project limits
- General repair / treatment types
- Approximate work dates
- Construction cost information or bid results

Incorporating the M&R history into the PAMP is essential. It improves pavement condition predictions and allows more accurate M&R schedules and estimates to be recommended.

Additionally, absent work history information can lead to discrepancies between the predicted PCI and actual measured PCI. The following graph illustrates this concept.

![Figure 6: Illustration showing the effect of M&R activities on pavement performance. Not recording the M&R activity may lead to PCI prediction discrepancies.](image-url)
Task 3.6 – Pavement Coring

Six-inch diameter pavement corings will be performed on the existing asphalt surface using an electric-powered core drill. Sampling and digging below the AC section will be performed using hand tools. The thickness of the existing asphalt concrete (AC) and aggregate base (AB), where encountered, will be recorded. Other information such as aggregate base type and presence of petromat fabric will be recorded as well. Upon completion of the sampling, the core hole will be back-filled with soil cuttings or other suitable backfill materials and capped with asphalt concrete cold patch. GMU will perform 2 cores/site which totals up to 64 pavement corings.

At least 72 hours prior to coring, GMU will mark the pavement coring locations in coordination with the NMUSD, and Dig Alert (Underground Service Alert) will be notified to assess potential conflict with known underground utilities prior to performing pavement corings.

We assume that GMU will be allowed to perform coring across four school sites per day, so the full coring program can be completed in 8 working days. Moreover, traffic control will consist of 3-5 cones around work zone. We have assumed that traffic control crew and traffic control plans will not be required and costs to have traffic control plans prepared or stamped is not considered in our fee.

Deliverables

- Inventory Information for Each Paved Surface School Site
- Pavement and Concrete Condition Summary
- Photographs of Each Pavement and Concrete Condition Throughout the District
- Collected Data in Excel Format
- GIS Shapefiles that Include Inventory and Conditions Summary
- PAMP database with updated M&R work history
- Summary of Coring Information

Task 4 – Review Maintenance and Rehabilitation Strategies

Task 4.1 – Maintenance and Rehabilitation Decision Tree

GMU will develop recommendations for the NMUSD existing maintenance and rehabilitation (M&R) decision tree, within 30 days of data collection completion. Examples of various types of pavement M&R strategies that can be explored and potentially incorporated into the City’s decision tree include:
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**Maintenance / Preservation Treatments**

- Slurry Seal, conventional and latex modified
- Microsurfacing
- Chip Seals
- Cape Seals
- Crack Repair
- Reclaimed Asphalt Pavement Chip Seals
- Rubberized slurry seals

**Rehabilitation**

- Mill and Fill or Mill and Overlay
- Pavement Interlayer Systems
- Rubberized overlays
- Cold In-Place Recycling
- Cold Central-Plant Recycling
- Isolated Repair

**Reconstruction**

- Full-Depth Reclamation
- Soil Stabilization
- Conventional Remove-and-Replace
- Geogrid Stabilization
- Cement, Lime, or Emulsion Treatment for Soil Stabilization

Figure 7: Some examples of M&R treatments recommended by GMU.
GMU has a long history in performing project-level pavement evaluations. We frequently evaluate and consider new strategies with the goal of recommending cost-effective pavement repair solutions. This experience allows us to be thoroughly familiar with these strategies. Our history in performing pavement evaluations and providing design recommendations allows us to offer practical and realistic recommendations for this task.

Historically, the most cost-effective approach to increasing or sustaining a pavement network’s condition is to prioritize maintenance of good roads so they remain in good condition. Roads maintained in good condition will provide a longer service life at a lower overall life-cycle cost than a road that is allowed to deteriorate to a poor condition thereby requiring more expensive repairs (i.e., full reconstruction). The following graph illustrates this concept:

![Pavement Condition Index](image)

**Figure 8: Effect of proactive vs reactive treatments on pavement performance.**

Please note the M&R decision tree is not intended to substitute project-level pavement evaluations and analyses. Additional information, such as subsurface conditions, subgrade soil type, traffic conditions, and more, may be necessary to develop site-specific recommendations.

**Task 4.2 – Unit Cost Update**

GMU will review historical bid results provided to us, collaborate with NMUSD on development of new/revised unit costs for various maintenance and repair strategies, and develop updated unit costs for various maintenance and repair strategies.

Our experience in the construction phase of pavement projects allows us to advise on unit costs for various pavement maintenance, rehabilitation, and reconstruction strategies. In addition to our experience in construction and understanding of unit costs of various strategies, GMU regularly performs pavement evaluation projects that considers construction cost. These designs involve comparing the estimated construction cost for multiple strategies and considering the expected life
of the treatment/repair. Final conclusions and recommendations are based on this type of life-cycle cost analysis.

The unit cost assigned for various maintenance and rehabilitation (M&R) strategies will have a significant impact on the strategy selection, City’s funding projections, and the needs assessment. GMU’s comprehensive range of pavement engineering expertise, from design to construction, will allow us to proficiently perform this task.

![Figure 9: The type of repair and an accurate unit price can affect budget analysis.](image)

**Deliverables**

- Maintenance and Rehabilitation Decision Tree Matrix
- Recommended M&R schedule and estimated required budget for each school site and for each year
- Updated unit cost table

**Task 5 – Final Reports**

**Task 5.1 – Pavement Condition Index (PCI) Analysis**

To efficiently and effectively process and analyze the vast volume of pavement distress information collected across all the school sites, PAVER V7 software will be utilized. PAVER was originally developed in the 1970’s by the Department of Defense to manage their significant inventory of pavements. PAVER is a pavement management program used throughout the world by various agencies, including Cities, HOAs, Counties, States, and Federal agencies, to monitor pavement condition, calculate pavement condition index, predict future pavement condition, strategize/schedule future pavement work, and perform pavement cost analysis.

Using PAVER software, the pavement condition index (PCI) of each of the subject streets will be calculated. The distress types, extent, and severities observed during the pavement surface
condition assessments will be inputted into PAVER. A GIS map will also be generated with PAVER to illustrate condition of the subject streets as a network.

**Task 5.2 – Budget Scenario Analysis**

GMU proposes to evaluate four funding scenarios:

1. Current Budget Scenario (existing budget): This scenario will predict the pavement condition after 5 years of NMUSD school sites pavements with the current available funding.
2. Maintain PCI Scenario (budget required to maintain existing network PCI): This scenario will determine the budget needed to at least maintain the current pavement condition in the next 5 years.
3. Improve PCI Scenario (budget required to improve the network PCI by one point): This scenario will determine the budget needed to improve the pavement condition in the next 5 years.
4. Unlimited Budget Scenario: This scenario will predict the pavement condition while assuming unlimited budget is available. Typically this scenario is used for comparison purposes only.

The information gathered from the previous tasks will be used to prioritize streets for maintenance and/or rehabilitation for each funding scenario. Factors such as funding scenario, strategy selection, unit costs, and pavement condition all affect how the streets are prioritized and what repair should be implemented in order to achieve the desired budget or PCI goal. A table will be provided that shows a 5-year maintenance and rehabilitation schedule that includes the following:

- School Site for Maintenance / Rehabilitation
- Year of M&R
- Type of M&R
- Recommend projects for the coming 5 years

**Task 5.3 – Final Pavement Assessment and Management Program (PAMP) Report**

One draft report and one final report will be prepared to the NMUSD. The PAMP report will include the following:

- Condition / Status of Pavement/concrete across all school sites
- Projected PCI under existing funding levels for all school sites
- Five-year plan for pavement maintenance and rehabilitation based on current and projected budget, including
  - School campus name
  - Limits of work
  - Lengths, widths
Mr. Jonathan Geiszler, NEWPORT-MESA UNIFIED SCHOOL DISTRICT
Proposal to Prepare a Pavement Assessment and Management Plan (PAMP) for the Newport Mesa Unified School District (NMUSD)

- Pavement areas
- Type of treatment
- Cost of treatment
- Year of treatment

- Alternative funding levels required to
  - Maintain existing average network PCI
  - Improve average network PCI

- Backlog by year of unfunded pavement rehabilitation, restoration, and reconstruction needs

Task 5.4 – ADA Transition Plan
GMU will subcontract the ADA task to Martin Brothers Construction Services. The Scope of work in included in Appendix C – ADA Review Scope of Work.

Deliverables

- One Draft Report and One Final Report
- List of Pavement and Concrete Condition Across Each School Site
- Budget Scenario Summary
- Excel Sheets
- PAVER Software Files (E70 files)
- Full PAMP Database

The electronic copy of the NMUSD MicroPAVER database (.e70 file format) will be provided to the City as it is being updated.

Task 6 – Training

We will provide the NMUSD staff with in-person training. We will perform one full day of in-person training covering the following:

- Distress survey procedures (following ASTM D6433): This will help the staff gain an in-depth understanding of manual walking distress surveys.
- In-person customized software training: We will provide a detailed training on using the PAVER software for the technical staff using the actual data collected.

This training session will allow NMUSD staff to perform walking surveys, enter future pavement condition information into the pavement management system software, and perform analysis.
Deliverables

- Training Manual
- List of Training Items

PROJECT SCHEDULE

Below is our proposed schedule to perform the work presented in this proposal.

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Weeks from Notice to Proceed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task - 1 Kick-off Meeting, Project Management, and Reporting</td>
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<tr>
<td>Task - 2 Risk Management</td>
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<tr>
<td>Task - 3 Data Collection and Reporting</td>
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<tr>
<td>Inventory</td>
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<tr>
<td>Condition Surveys</td>
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<td>Quality Control Procedures</td>
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<tr>
<td>GIS</td>
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<tr>
<td>Maintenance and Rehabilitation Activities Records</td>
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<tr>
<td>Pavement Coring</td>
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<tr>
<td>Task - 4 Review Maintenance and Rehabilitation Strategies</td>
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<tr>
<td>Task - 5 Final Reports</td>
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<tr>
<td>PCI Analysis</td>
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<tr>
<td>Budget Scenario Analysis</td>
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</tr>
<tr>
<td>Final PAMP Report</td>
<td></td>
</tr>
<tr>
<td>ADA Transition Plan</td>
<td>X</td>
</tr>
<tr>
<td>Task - 6 Training</td>
<td></td>
</tr>
</tbody>
</table>

After having the Notice to Proceed (NTP), we will conduct a kick-off meeting with the NMUSD on September 20, 2021 to discuss our methodology in detail and go over project schedule.

The walking surveys are planned to be completed within 9 weeks after that. Then, we will perform the analysis and present our finding to the NMUSD.

The first draft of the report will be submitted to the NMUSD for review. We will allow three weeks for NMUSD to review the final deliverables, and then adjust all the comments and perform all the required revisions.

The final report and the other final deliverables will be submitted to NMUSD by week 28, which is **April 30, 2022**.

REFERENCES

1) Irvine Company Office Properties –Parking Lot Pavement Management Plan
7525 Irvine Center Drive, Suite 150, Irvine, California 92618
Mr. David Udden – Manager, Operations
Mr. Jonathan Geiszler, NEWPORT-MESA UNIFIED SCHOOL DISTRICT
Proposal to Prepare a Pavement Assessment and Management Plan (PAMP) for the Newport Mesa Unified School District (NMUSD)

E-mail: dudden@irvinecompany.com
Phone: (949) 398-8918

2) City of Laguna Niguel – 2020, 2022, and 2024 Pavement Management Plan Update
30111 Crown Valley Parkway, Laguna Niguel, California 92677
Mr. Edgar Abrenica – Associate Civil Engineer
E-mail: EAbrenica@cityoflagunaniguel.org
Phone: (949) 362-4338

3) City of Chino Hills – Pavement Management System (PMS) Update
14000 City Center Drive, Chino Hills, California 91709
Mr. Carl Hassel – Senior Engineer
E-mail: chassel@chinohills.org
Phone: (909) 364-2817

4) City of Dana Point Pavement Management Plan Optimization
33282 Golden Lantern, Dana Point, CA 92629
Mr. Matthew Sinacori – Public Works Director / City Engineer
Phone: (949) 248-3574
E-mail: msinacori@danapoint.org
Mr. Werner Abrajno – Senior Civil Engineer
Phone: (949) 248-3577
E-mail: wabrajano@danapoint.org

5) City of Aliso Viejo Pavement Engineering Services
12 Journey, Suite 100
Mr. Shaun S. Pelletier, PE – City Engineer & Director of Public Works
Phone: (949) 425-2533
E-mail: spelletier@cityofalisoviejo.com

LIST OF REPRESENTATIVE PROJECTS

1) Irvine Company Office Properties – Parking Lot Pavement Management Plan

GMU has been working with ICOP on maintaining their commercial building parking lots for the last decade. Starting in 2017 and every year since, GMU perform a network-level parking lot pavement management study that covered approximately 30 parking lots. The scope of work included the following:

- Creating and Inventory (site location, areas, surface type, etc.)
- Performing pavement condition surveys
- Performing concrete curb and gutter and sidewalk assessments
- Performing Pavement Condition Index (PCI) analysis
- Analyzing different budget scenarios
- Developing a Maintenance and Rehabilitation (M&R) planning with the estimated cost.

The following figure shows one of the deliverables produced for this project, including summaries of the pavement condition index of each parking lot, network-level pavement repair recommendations, and estimated cost of repair.

2) City of Laguna Niguel – 2020, 2022, and 2024 Pavement Management Plan Update

GMU recently finalized the City of Laguna Niguel’s 2020 Pavement Management Update report. The PMP update services and report were performed in compliance with OCTA’s Measure M requirements. GMU performed the following:

- Pavement distress survey following ASTM D6433
- Quality Control on the collected data
- Analysis of different budget scenario (PCI under current funding level factoring reduction in funding due to COVID-19, maintain PCI scenario, and improve PCI scenario)
- Prepared reports following OCTA requirements.

GMU’s services for the City of Laguna Niguel will include performing pavement management plan update services for their 2022 and 2024 reports as well.
3) City of Chino Hills – Pavement Management System (PMS) Update

GMU is currently working on the 2021 Pavement Management System (PMS) update for the City of Chino Hills. The last PMS update was performed in 2005 and has not been updated since then. For this project, GMU is performing a major update to the inventory and re-establishing the city’s overall pavement management program, consisting of 193 centerline miles of streets. GMU is performing the following:

- Pavement distress survey following ASTM D6433
- Quality Control on the collected data
- Analysis of various funding scenarios (PCI under current funding level factoring reduction in funding due to COVID-19, maintain PCI scenario, and improve PCI scenario)
- Recommending a pavement management software for the City’s pavement management system

Figure 2: Pavement Condition Index Map illustrating the various conditions of the city’s roadway network, City of Chino Hills 2021 PMP Update.
4) City of Dana Point Pavement Management Plan Optimization

GMU provided pavement management plan review, pavement evaluation/design, and construction observation and testing services for the City of Dana Point, including review and optimization of their pavement management plan recommendations. The recommendations presented in the City’s pavement management plan often did not align with the City’s typical pavement maintenance/repair strategies.

Roger Schlierkamp performed a detailed review of their pavement management plan and conducted visual surface condition assessments of the streets to develop site-specific pavement repair recommendations. Based on the conditions of the roadway, some projects involved coring, laboratory testing, and additional analysis performed by GMU. In addition to optimizing the repair recommendations of current and planned future projects, GMU also reviewed the performance of past projects for the City in order to further improve the cost-effectiveness of future projects and also to incorporate past lessons-learned. A select list and condensed summary of relevant projects that Roger Schlierkamp has provided services on for the City of Dana Point is summarized as follows:

City of Dana Point – 2019-21 As-Needed Engineering and Construction Observation Contract (2019 to current): Provided as-needed pavement and geotechnical engineering support and emergency construction observation & testing services, ranging from emergency waterline repairs to independent assurance testing.

City of Dana Point – FY 2018-19 Pavement Management Plan Review (March 2018 to current): Reviewed PMP reports prepared by others and optimized the network-level pavement repair strategies with site-specific pavement maintenance and rehabilitation recommendations for CIP projects between 2018 and current.

City of Dana Point – FY 2018-19 Annual Roadway Resurfacing Project (November 2019 to current): Performed quality assurance construction observation & testing, laboratory testing, and pavement engineering support.

City of Dana Point – 2017 Slurry Seal Project (November 2017): Reviewed pavement-related project specifications and provided Type I rubberized polymer modified slurry seal observation and testing.

5) City of Aliso Viejo Pavement Engineering Services

GMU provided pavement management plan optimization, pavement evaluation/design, and construction observation and testing services for the City of Aliso Viejo. Roger Schlierkamp has reviewed the City’s pavement management plan and is currently assisting the City optimizing their
existing PMP report and exploring new to improve the longevity of various pavement repair types, including slurry seals and fiber-reinforced AC/ARHM overlay.

City of Aliso Viejo – “CIP Streets”, Zone 4, Zone 5 Streets Pavement Evaluation Project (December 2020 to current): Performed project-level pavement evaluation of approximately half of the city’s roadway network to further optimize the city’s PMP conceptual pavement repair recommendations.

City of Aliso Viejo – Alicia Parkway Rehabilitation Project (July 2019 – September 2019): Performed quality assurance construction observation & testing, laboratory testing, and pavement engineering support.

City of Aliso Viejo – Glenwood Terrace Neighborhood Pavement Rehabilitation Project (2017)
Performed quality assurance construction observation & testing, laboratory testing, pavement engineering support.

ESTIMATED BUDGET

See attachment.
### TABLE 1 - GMU COST ESTIMATE MATRIX

Newport Mesa Unified School District (Without ADA Review Task)

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**ESTIMATED TOTAL (ALL TASKS)**: **$133,695.00**
## ADA Review Task

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Appendix A

Key Staff Resumes
ALI A. ZALGHOUT, M.Sc.
Senior Staff Pavement Engineer – OCTA Certified Pavement Inspector

PROFESSION
Civil Engineer

EDUCATION
M.S. Civil Engineering
(Pavement/Materials Engineering) – Arizona State University, Tempe
B.E. Civil Engineering
American University of Beirut, Beirut, Lebanon

PROFESSIONAL EXPERIENCE
GMU Geotechnical, Inc.
(April 2021 – Present)
Senior Staff Pavement Engineer
Rancho Santa Margarita, California

GMU Geotechnical, Inc.
(August 2019 – April 2021)
Staff Pavement Engineer
Rancho Santa Margarita, California

Arizona State University
(2017 – 2019)
Graduate Researcher, Pavement / Materials
Tempe, Arizona

ACADEMIC AWARDS
- International Road Federation (IRF) Fellowship
- Ira Fulton Schools of Engineering Graduate Fellowship
- Holcim Award for best final year project, American University of Beirut

PROFESSIONAL AFFILIATIONS
- International Road Federation (IRF)
- Academy of Pavement Science and Engineering (APSE)
- American Society of Civil Engineers (ASCE)

SUMMARY OF EXPERIENCE & QUALIFICATIONS
Mr. Zalghout possesses over 3 years of experience in pavement engineering and materials. His areas of expertise include pavement design, management, evaluation, advanced characterization of asphalt concrete, asphalt sustainability, asphalt reclaiming and recycling, long-term pavement performance prediction, and fiber-reinforced asphalt mixtures. His current work includes performing pavement evaluations / designs, developing cost-effective pavement repair recommendations, performing pavement mix designs, and performing observation services of pavement-focused construction projects. He is currently working on projects for a number of local agencies, private sector clients, civil engineering firms, paving contractors, and pavement material producers. He has published more than 10 journal articles and conference proceedings in the top pavement engineering journals and conferences.

Mr. Zalghout’s experience in pavement design and construction includes:
- Pavement Management Plans (PMP) for local Cities and HOAs.
- Budget analysis and Maintenance and Rehabilitation (M&R) planning using PAVER.
- Developing Plans, Specifications, and Engineering Estimates (PS&E) for pavement related projects.
- Field Data Collection using Manual and Semi-Automated surveys.
- Pavement Condition Index (PCI) calculations and analysis.
- Falling Weight Deflectometer (FWD) testing and analysis.
- SuperPave and Marshall Asphalt Mix designs.
- Pavement Design using Caltrans, AASHTO 1993 and Pavement ME methods.
- Slurry Seal observation and testing.
- Parking lot Pavement Rehabilitation.
- Asphalt Binder Testing: Rolling Thin Film Oven (RTFO), Pressure Aging Vessel (PAV), Multiple Stress Creep and Recovery (MSCR), Complex Shear Modulus, and Bending Beam Rheometer (BBR).
Select Pavement Management Projects

- **City of Chino Hills Pavement Management Plan Update (Ongoing)**
  Performing pavement distress surveys, collecting distress data, performing PAVER analysis, and recommending Maintenance and Rehabilitation (M&R) strategies.

- **Canyon Lake Property Owners Association, Pavement Management Plan Development (July 2020)**
  Performed pavement distress surveys, collected distress data, performed PAVER analysis, and recommended Maintenance and Rehabilitation (M&R) strategies.

- **City of Laguna Niguel Pavement Management Plan Update (May 2020)**
  Performed pavement distress surveys, collected distress data, performed PAVER analysis, and recommended Maintenance and Rehabilitation (M&R) strategies. Worked the Pavement Management Plan (PMP) report that was submitted to the Orange County Transportation Authority (OCTA) to keep the City eligible for Measure M2 funding.

- **Casta Del Sol Pavement Management Plan (March 2020)**
  Performed pavement distress surveys, collected distress data, performed PAVER analysis, and recommended Maintenance and Rehabilitation (M&R) strategies.

- **FY21 OC Campus Office Parking (February 2020)**
  Performed network-level pavement study to plan ICOP reserve funding.

- **Groves at Orchard Hills HOA Pavement Management Plan (February 2020)**
  Performed pavement distress surveys, collected distress data, performed PAVER analysis, and recommended Maintenance and Rehabilitation (M&R) strategies.

Select Pavement Evaluation and Design Projects

- **City of Newport Beach - East Coast Highway (November 2020)**
  Performed pavement evaluation consisting of deflection testing, corings, surface condition assessment, laboratory testing, analysis, Ground Penetrating Radar (GPR), and development of pavement rehabilitation repair recommendations.

- **Groves at Orchard Hills HOA Year 1 Sealcoat Project (September 2020)**
  Performed pavement surface condition assessments of various streets throughout the HOA, prioritized streets for maintenance/repair, recommended maintenance/repair strategies, reviewed/developed pavement-related specifications, oversaw quality assurance observation/testing services during construction phase.

- **Dove Canyon HOA Pavement Improvement Project (July 2020)**
  Performed pavement surface condition assessments of various streets throughout the HOA, prioritized streets for maintenance/repair, recommended maintenance/repair strategies, reviewed/developed pavement-related specifications, oversaw quality assurance observation/testing services during construction phase.

- **Technology Drive Plaza I, ICOP Irvine Company Office Properties Pavement Assessment (June 2020)**
  Performed pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services.

- **Technology Drive Plaza II, ICOP Irvine Company Office Properties Pavement Assessment (June 2020)**
  Performed pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services.
• Las Playas Pavement Engineering Services (June 2020)
  Performed pavement surface condition assessments of various streets throughout the
  HOA, prioritized streets for maintenance/repair, recommended maintenance/repair
  strategies, reviewed/developed pavement-related specifications.

• Newport Coast Community Gates Pavement Improvement Project (April 2020)
  Performed pavement surface condition assessments, recommended maintenance/repair
  strategies, reviewed/developed pavement-related specifications, oversaw quality
  assurance observation/testing services during construction.

• 2 Ada Irvine ICOP Irvine Company Office Properties Pavement Assessment (April
  2020)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction
  management advisory, and construction observation/testing services.

• Oak Canyon Irvine ICOP Irvine Company Office Properties Pavement Assessment
  (April 2020)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction
  management advisory, and construction observation/testing services.

• Alton/Technology Irvine ICOP Irvine Company Office Properties Pavement
  Assessment (April 2020)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction
  management advisory, and construction observation/testing services.

• Julian Estates Pavement Evaluation (April 2020)
  Performed pavement surface condition assessments of various streets throughout the
  community, prioritized streets for maintenance/repair, recommended maintenance/repair
  strategies, reviewed/developed pavement-related specifications.

• Village of Sendero Pavement Evaluation (December 2019)
  Performed pavement surface condition assessments of various streets throughout the
  community, prioritized streets for maintenance/repair, recommended maintenance/repair
  strategies, reviewed/developed pavement-related specifications.

• 2 & 4 Technology, Irvine ICOP Irvine Company Office Properties Pavement
  Assessment (November 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction
  management advisory, and construction observation/testing services.

• Barranca I Irvine ICOP Irvine Company Office Properties Pavement Assessment
  (November 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction
  management advisory, and construction observation/testing services.

• Barranca II Irvine ICOP Irvine Company Office Properties Pavement Assessment
  (November 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction
  management advisory, and construction observation/testing services.

• San Joaquin Hills Homeowners Association (October 2019)
  Performed pavement surface condition assessments of various streets throughout the
  HOA, prioritized streets for maintenance/repair, recommended maintenance/repair
  strategies, reviewed/developed pavement-related specifications, oversaw quality
  assurance observation/testing services during construction phase.
• Sand Canyon Business Center Irvine ICOP Irvine Company Office Properties Pavement Assessment (October 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services.

• 5 & 9 Pasteur, Irvine ICOP Irvine Company Office Properties Pavement Assessment (September 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services.

• Discovery Business Park V+VI, Irvine ICOP Irvine Company Office Properties Pavement Assessment (September 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services.

• Discovery Business Park VII ICOP Irvine Company Office Properties Pavement Assessment (September 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services.

• Discovery Business Park VIII+IX ICOP Irvine Company Office Properties Pavement Assessment (September 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services.

• Discovery Business Park X+XII ICOP Irvine Company Office Properties Pavement Assessment (September 2019)
  Performed pavement evaluation, bid document preparation, bid solicitation, construction management advisory, and construction observation/testing services.

Select Quality Assurance Testing and Observation Projects

• Newport Coast Community Gates Observation and Testing (October 2020)
  Performed Quality Control / Quality Assurance (QC/QA) on pavement construction, tracked quantities, addressed change of orders, and prepared QA report.

• Sand Canyon Business Center Irvine ICOP Irvine Company Office Properties Pavement Assessment (June 2020)
  Performed Quality Control / Quality Assurance (QC/QA) on pavement construction, tracked quantities, addressed change of orders, and prepared QA report.

• San Joaquin Hills Homeowners Association (June 2020)
  Performed Quality Control / Quality Assurance (QC/QA) on pavement construction, tracked quantities, addressed change of orders, and prepared QA report.

• 2, 4, 16, & 18 Technology Irvine ICOP Irvine Company Office Properties Pavement Assessment (June 2020)
  Performed Quality Control / Quality Assurance (QC/QA) on pavement construction, tracked quantities, addressed change of orders, and prepared QA report.

• City of Dana Point Roadway Resurfacing Project (March 2020)
  Performed quality assurance for pavement-related materials, including localized AC repairs and slurry seal.

• City of Rancho Santa Margarita FY 19-20 Annual Residential Slurry Seal Project (March 2020)
  Performed quality assurance for pavement-related materials, including localized AC repairs and slurry seal.
• City of Mission Viejo, FY 2019 Residential Slurry Seal Project-CIP 20838 (September 2019)
  Performed quality assurance for pavement-related materials, including localized AC repairs and Type I rubberized polymer modified slurry seal.
• Columbus Grove HOA, Tustin/Irvine (August 2019)

Selected Journal and Conference Papers
• Zalghout, A., S. Castro, and K. Kaloush (Under Review). “Laboratory and Field Evaluation of Plant Produced RAP Mixtures in Hot Climate Areas: Case Study from Phoenix, Arizona,” *Journal of Cleaner Production*.

Invited Talks

Media Coverage
• Appeared in a documentary about Recycled Asphalt on Arizona PBS. Link: https://azpbs.org/catalyst/2019/06/catalyst-recycled-asphalt/
Certifications

- Pavement Inspector Certification. Certified by Orange County Transportation Authority (OCTA).
- Determining the In-Place Density and Relative Compaction of Hot Mix Asphalt Pavement Using Nuclear Gages. Certified by California Department of Transportation (Caltrans).
- Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates Using Nuclear Gage. Certified by California Department of Transportation (Caltrans).

Professional Activities and Services

- **Vice President, International Road Federation Class of 2018**
  My role as a vice president of the class is to keep the class connected, organize reunion meetings, and provide any needed help to the class.

- **Volunteer, Arizona Pavements and Materials Conference**
  Helped in organizational activities during the 14th and 15th Arizona Pavements and Materials Conference.

- **Journal and Conference Articles Reviewer**
  - ASCE Journal of Materials in Civil Engineering
  - Transportation Research Board (TRB)
  - Middle East Society of Asphalt Technologists Conference (MESAT).

- **Session Moderator**
  Moderated the following sessions during the International Road Federation Global R2T Conferences in Las Vegas:
  - TS 6.2: Toward Smart Cities
  - TS 1.3: Preserving Road Assets
  - TS 1.5: Road Inventory & Inspection

- **Staff writer at AUB Outlook newspaper**
  Staff writer, wrote weekly articles for students at AUB
MICHEL EL SEBAALY, M.Sc., E.I.T
Staff Pavement Engineer

PROFESSION
Civil Engineer

EDUCATION
M.S. Civil Engineering
(Pavement/Materials Engineering) –
University of Nevada, Reno
B.Sc. Civil Engineering
University of Balamand, Koura, Lebanon

PROFESSIONAL EXPERIENCE
GMU Geotechnical, Inc.
(March 2021 – Present)
Staff Pavement Engineer
Rancho Santa Margarita, California

University of Nevada, Reno
(2019 – 2020)
Graduate Researcher, Pavement / Materials
Reno, Nevada

CERTIFICATIONS
- Engineer in training (E.I.T)

PROFESSIONAL AFFILIATIONS
- American Society for Testing Materials (ASTM)
- American Society of Civil Engineers (ASCE)

SUMMARY OF EXPERIENCE & QUALIFICATIONS
Mr. El Sebaaly possesses over 2 years of experience in pavement engineering and materials. His principal fields of interest include assessment of pavement rehabilitation and maintenance alternative based on analysis of pavement condition surveys, numerical modeling and analysis of non-destructive data of pavement structures, material testing and characterization (paving materials evaluation and design), project management and inspection. In addition to pavement engineering, he has a strong background in geotechnical engineering, site-specific seismic response analysis, numerical modeling of geomaterials, static and dynamic slope stability analysis, flow of water in soils, retaining structure design and analysis, and interpret field data. His current work includes performing pavement evaluations / designs, developing cost-effective pavement repair recommendations, performing pavement mix designs, and performing observation services of pavement-focused construction projects. He is currently working on projects for a number of local agencies, private sector clients, civil engineering firms, paving contractors, and pavement material producers.

Mr. El Sebaaly’s experience in pavement design and construction includes:
- Pavement Management Plans (PMP) for local Cities and HOAs.
- Budget analysis and Maintenance and Rehabilitation (M&R) planning using PAVER.
- Developing Plans, Specifications, and Engineering Estimates (PS&E) for pavement related projects.
- Field Data Collection using Manual and Semi-Automated surveys.
- Pavement Condition Index (PCI) calculations and analysis.
- Falling Weight Deflectometer (FWD) testing and analysis.
- SuperPave and Marshall Asphalt Mix designs.
- Pavement Design using Caltrans, AASHTO 1993 and Pavement ME methods.
- Slurry Seal observation and testing.
- Parking lot Pavement Rehabilitation.
- Asphalt Binder Testing: Rolling Thin Film Oven (RTFO), Pressure Aging Vessel (PAV), Multiple Stress Creep and Recovery (MSCR), Complex Shear Modulus, and Bending Beam Rheometer (BBR).
Select Pavement Evaluation and Design Projects

- **Groves at Orchard Hills HOA Year 2 Sealcoat Project**
  Performed pavement surface condition assessments of various streets throughout the HOA, prioritized streets for maintenance/repair, recommended maintenance/repair strategies, reviewed/developed pavement-related specifications, oversaw quality assurance observation/testing services during construction phase.

- **Dove Canyon HOA Pavement Improvement Project (year 2)**
  Performed pavement surface condition assessments of various streets throughout the HOA, prioritized streets for maintenance/repair, recommended maintenance/repair strategies, reviewed/developed pavement-related specifications, oversaw quality assurance observation/testing services during construction phase.

Select Pavement Management Projects

- **City of Chino Hills Pavement Management Plan Update (Ongoing)**
  Performing pavement distress surveys, collecting distress data, performing PAVER analysis, and recommending Maintenance and Rehabilitation (M&R) strategies.

- **City of Laguna Niguel Pavement Management Plan Update (Ongoing)**
  Performed pavement distress surveys, collected distress data, performed PAVER analysis, and recommended Maintenance and Rehabilitation (M&R) strategies. Worked the Pavement Management Plan (PMP) report that was submitted to the Orange County Transportation Authority (OCTA) to keep the City eligible for Measure M2 funding.
ROGER W. SCHLIERKAMP, M.Sc., P.E.
Director of Pavement Engineering

PROFESSION
Civil Engineer

REGISTRATION
Registered Civil Engineer C81529 – State of California

EDUCATION
M.S. Civil Engineering (Pavement/Materials Engineering) – University of Nevada, Reno
B.S. Civil Engineering – University of Nevada, Reno

PROFESSIONAL EXPERIENCE
GMU Geotechnical, Inc. (2014 – Present)
Director of Pavement Engineering
Rancho Santa Margarita, California

Twining, Inc. (2011 – 2014)
Pavement Engineer
Long Beach, California

University of Nevada, Reno (2009 – 2011)
Graduate Researcher, Pavement / Materials
Reno, Nevada

PROFESSIONAL AFFILIATIONS
- California Asphalt Pavement Association (CalAPA)
- ASCE Orange County - Engineers without Borders
- American Society of Civil Engineer (ASCE)
- AGC
- American Public Works Association (APWA)
- Santiago Canyon College – Part Time Instruction (Construction Materials)

SUMMARY OF EXPERIENCE & QUALIFICATIONS
Mr. Schlierkamp possesses over 11 years of experience in pavement engineering and construction projects, such as pavement evaluation/design, pavement condition index studies, construction observation/testing, specification development, and mix design development. His experience includes working with local agencies, private sector clients, civil engineering firms, paving contractors, and pavement material producers. He has also served as a Quality Control/Quality Assurance Manager. His engineering experience includes performing pavement evaluations, developing cost-effective pavement repair recommendations, performing pavement mix designs, and managing testing/observation services of pavement-focused construction projects. Mr. Schlierkamp’s experience as a Quality Control Manager provides him a thorough understanding of various pavement construction specifications. His proficiency in both pavement design and construction allows him to support his clients in achieving quality and cost-effective pavement solutions.

Mr. Schlierkamp’s experience in pavement design and construction includes:

- Pavement engineering evaluation, structural analysis, design expert
- Pavement condition index assessments
- Non-destructive testing, including deflection testing & ground-penetrating radar (GPR) testing
- Pavement smoothness testing
- Pavement mix designs, including hot-mix asphalt (HMA), rubberized hot-mix asphalt (RHMA), warm-mix asphalt (WMA) following Marshall, Hveem, and Superpave design methods, soil-stabilization, and cold recycled asphalt
- Pavement preservation strategies, including fog seals, slurry seals, scrub seals, micro-surfacing seals, and chip seals
- Pavement rehabilitation strategies, such as rubberized pavement overlays, cold recycling, full-depth reclamation, cement/lime base, and subgrade stabilization
- In-depth knowledge of various pavement construction specifications, including Caltrans, Greenbook, Airport, and Ports.
- Quality control/assurance laboratory testing expertise, including Hveem Stability, Hamburg Wheel Track, Moisture Susceptibility, Maximum Density, Wet Track Abrasion, and more.
Select Pavement Evaluation and Design Projects – Local Municipalities and Agencies

- **City of Lake Forest – Glenn Ranch Road, January 2021**: Pavement evaluation and design, including deflection testing analysis, coring, lab testing.
- **City of Aliso Viejo – 2020 Pavement Evaluation Project, December 2020 to January 2021**: Performed pavement corings throughout the City to identify pavement structural section information to address concerns regarding lack of aggregate base, perform laboratory testing, and develop conceptual pavement repair recommendations.
- **City of Newport Beach – East Coast Highway (MacArthur Boulevard to Newport Coast Drive), November 2020 to January 2021**: Pavement evaluation, including falling weight deflectometer (FWD or deflection) testing to evaluate the roadway’s current structural capacity and ground-penetrating radar (GPR) testing to evaluate location of underlying PCC pavement.
- **City of Long Beach – Market Street (LA River to Cherry Avenue), December 2020**: Evaluated PCC and AC pavement, developed PCC and AC pavement rehabilitation recommendations.
- **City of Whittier – Colima Road Rehabilitation (Lambert Road to Mar Vista Street), December 2020**: Pavement evaluation and develop pavement reconstruction recommendations to achieve 20-year design life.
- **Orange County Parks – Carbon Canyon Regional Park and Strands Beach Park Parking Lots, January 2021**: Pavement evaluation and design.
- **City of Torrance, Plaza Del Amo at Western Mobility Enhancement Project, April 2019**: Performed pavement evaluation / design of existing roadway as well as widened roadway.
- **City of Dana Point, FY 18-19 Pavement Maintenance/Repair Project, Winter 2018-May 2019**: Performed pavement surface condition assessments of various streets throughout City of Dana Point, prioritized streets for maintenance/repair, recommended maintenance/repair strategies, reviewed/developed pavement-related specifications, oversaw quality assurance observation/testing services during construction phase.
- **City of Newport Beach, Bonita Canyon Drive and Ford Road, March 2019 – June 2019**: Performed pavement evaluation consisting of pavement surface condition assessments, corings, deflection testing, lab testing, analysis, and development of pavement rehabilitation recommendations.
- **City of Newport Beach, Bison Avenue, San Joaquin Hills Road, San Nicolas, November 2018-May 2019**: Performed pavement evaluation consisting of pavement surface condition assessments, corings, deflection testing, lab testing, analysis, and development of pavement rehabilitation recommendations.
- **City of Torrance, Crenshaw Boulevard Rehabilitation Project, April 2019**: Performed pavement evaluation to develop pavement rehabilitation repair recommendations.
- **City of Lake Forest, 2015 to Present**: Performed pavement evaluation for various pavement CIP projects, including Portola Parkway, Dimension Drive, Civic Center Drive, etc.
- **City of Irvine, Jamboree Road (Michelle Drive to RR Tracks) Pavement Evaluation Project, November 2018**: Performed pavement evaluation consisting of deflection testing,
corings, surface condition assessment, laboratory testing, analysis, and development of pavement rehabilitation repair recommendations.

- **City of Santa Fe Springs, Santa Fe Springs and Painter Avenue Pavement Reconstruction Project, October 2018:** Performed pavement evaluation and developed pavement reconstruction repair recommendations, including full-depth reconstruction repair.

- **City of Aliso Viejo, Glenwood Terrace Neighborhood Pavement Evaluation Project, January 2018:** Performed pavement evaluation to develop rehabilitation repair recommendations for the residential neighborhood of Glenwood Terrace.

- **City of Santa Fe Springs, “South Residential 1” Pavement Evaluation Project, October 2017:** Performed pavement evaluation and developed pavement reconstruction repair recommendations, including full-depth reconstruction repair. Provided observation and testing services during construction phase (April 2019).

- **City of San Juan Capistrano 2017 Pavement Evaluation Project, April 2017:** AC pavement evaluation of different streets throughout the City of San Juan Capistrano.

- **City of San Juan Capistrano, Camino Capistrano, March 2017:** AC pavement evaluation and rehabilitation design.

- **City of Stanton Sunshine Village Tract, Concrete Alley, and Cerritos Avenue, February 2017:** AC and PCC pavement evaluation of neighborhood streets and alleys.

- **Trabuco Canyon Water District, 2018 Aliso Creek Trail Pavement Repair Project**

- **Trabuco Canyon Water District, 2018 Mayfair and Raintree Pavement Repair Project**

- **Trabuco Canyon Water District Waste Water Treatment Plant Access Road Pavement Evaluation, April 2017:** Pavement reconstruction design.

- **Los Patrones Parkway, 2015 to Present:** Pavement design of new alignment of Los Patrones Parkway using cement-treated soil.

- **San Gabriel Trench Pavement Value Engineering, Alameda Corridor East Construction Authority, California, August 2016:** Developed alternative pavement recommendations using in-place materials.

- **Ocean Boulevard and Poppy Avenue, Newport Beach, California, June 2016:** PCC and AC pavement evaluation and reconstruction design.

- **Crown Valley Parkway, Laguna Niguel, California, April 2016:** AC pavement evaluation and rehabilitation design.

- **Alicia Parkway Slurry Seal Investigation, Laguna Niguel, California, 2014:** Slurry seal evaluation.

- **Irvine Avenue, Newport Beach, California, November 2014:** AC pavement evaluation and rehabilitation design.

- **Pavement Reflective Cracking Investigation Project, Mission Viejo, California, August 2015.**

- **MacArthur Boulevard Rehabilitation, Newport Beach, California, September 2015:** AC pavement evaluation and rehabilitation design.

- **Palm Avenue Grade Separation Project, San Bernardino, California, July 2015:** Pavement surface distress evaluation.

- **Various Streets and Parking Lots, San Juan Capistrano, California, July 2015:** AC pavement evaluation and reconstruction design of 7 sites.
• Metro Blue Line Artesia Park N Ride Parking Lot, Compton, California, October 2013: AC pavement evaluation and repair recommendations for recently constructed bus parking lot.
• Cherry Avenue and Myrtle Street, Long Beach, California, 2013: AC pavement evaluation and reconstruction design.
• San Antonio Street, Long Beach, California, 2013: PCC pavement evaluation reconstruction design.
• 190th Street, Torrance, California, 2013: AC pavement evaluation and rehabilitation design.
• Pickett Avenue, Garden Grove, California, 2012: AC pavement evaluation and reconstruction design.
• Alondra Boulevard, Norwalk, California, 2011: AC pavement evaluation and rehabilitation design.

Select Quality Assurance Testing and Observation Projects

• City of Dana Point - FY 19-20 Annual Roadway Resurfacing Project, Winter 2020: Pavement construction observation and testing services, including submittal reviews and engineering support during construction.
• City of Buena Park – FY 20-21 Annual Roadway Resurfacing Project, November 2020: Rubberized Emulsion Aggregate Slurry (REAS) slurry seal observation and testing.
• City of Aliso Viejo – Windsong, Carbrook, and Park Avenue, December 2020-January 2021: Project involved use of fiber-reinforced AC mixture.
• City of Aliso Viejo – Pacific Park Drive, November-December 2020: Quality assurance manager. Project involved use of fiber-reinforced rubberized AC mixture.
• City of Rancho Santa Margarita – FY 20-21 Annual Residential Slurry Seal, November 2020: Periodic observation and testing services of crack repairs and rubberized polymer-modified slurry (RPMS) seal.
• City of Mission Viejo – 2020 Residential Slurry Seal and Paving Projects, July-November 2020. Periodic observation and testing services of crack repairs, AC patches, AC overlay, and rubberized polymer-modified slurry (RPMS) seal.
• City of Mission Viejo – Alicia, Jeronimo, and Marguerite Rehab (CIP 20837), September-October 2020: Localized AC repairs & ARHM overlay rehabilitation of arterial streets.
• City of Mission Viejo - FY 2019 Residential Slurry Seal Project (CIP 20838), August-October 2019: Quality assurance manager for pavement-related materials, including localized AC repairs and Type I rubberized polymer modified slurry seal.
• City of Mission Viejo - Felipe Road and Olympiad Road Pavement Rehabilitation Project (CIP 19837), June-July 2018: Localized AC repairs and ARHM overlay quality assurance observation & testing.
• City of Chino Hills - 2018-19 Slurry Seal Project, June-July 2019: Type I emulsion aggregate slurry seal (EAS) quality assurance observation & testing.
• City of Rancho Santa Margarita - Las Flores Slurry Seal Project, June 2019: Type II emulsion aggregate slurry seal (EAS) quality assurance observation & testing.
• City of Buena Park - 2018-19 Residential Slurry Seal Project, June, 2019: Type I Rubberized Emulsion Aggregate Slurry (REAS) quality assurance observation & testing.
• City of Newport Beach, MacArthur Boulevard & University Pavement Rehabilitation Project, April-October 2019.
• City of Dana Point, FY 2018-19 Pavement Maintenance & Repair Project, April 2019.
• City of San Juan Capistrano, Del Obispo & Ortega Parking Lot Project, May-June 2019.
• City of Rancho Santa Margarita, FY 2018-19 Slurry Seal Project, January 2019.
• City of Mission Viejo, On-Call Encroachment Permit Inspection Projects, 2017 to Present: As-needed, various EP projects.
• City of Newport Beach, Marguerite Avenue and Hospital Road Pavement Rehabilitation Project, November 2018.
• City of Mission Viejo, FY 2018 Residential Slurry Seal and Overlay Project, October 2018.
• City of Aliso Viejo, Aliso Creek Road Pavement Rehabilitation Project, October 2018.
• City of Laguna Niguel, FY 2017-18 Arterial Pavement Rehabilitation Project, September 2018.
• City of Mission Viejo, Trabuco Road and Marguerite Parkway Pavement Rehabilitation Project, June 2018: Performed quality assurance observation/testing services to comply with Federally-funded project requirements.
• City of Mission Viejo, FY 2017 Residential Slurry Seal and Overlay Project, October 2017.
• Los Patrones Parkway (New Alignment), Rancho Mission Viejo, August 2017-October 2019.
• City of Rancho Santa Margarita, FY 2017-18 Slurry Seal Project, June 2018.
• 2017 ARAM and ARHM Overlay, Laguna Niguel, California, November 2016.
• Aliso Viejo Parkway Pavement Rehabilitation Project, Aliso Viejo, California, July 2017.
• 2016 AC Repairs Project, Laguna Niguel, California, November 2016.
• Pacific Park Pavement Rehabilitation, Aliso Viejo, California, November 2016.
• Del Obispo Pavement Rehabilitation, Dana Point, California, October 2016.
• Chino Hills Parkway Pavement Repairs, Chino Hills, California October 2016.
• Susana Road Pavement Reconstruction, County of Los Angeles, Compton, California, October 2016: Cement-treated base testing/observation.
• 2016 Various Locations Pavement Repairs Project, San Juan Capistrano, California, October 2016: AC, AB, subgrade, geogrid, cement-treated materials.
• Irvine Avenue Rehabilitation, Newport Beach, California, Fall/Winter 2016-17: AC, base, subgrade, concrete materials.
• 2016 Residential AC Repairs and Slurry Seal Projects, Mission Viejo, California, September 2016: AC, base, subgrade, slurry seal, tack, and pavement interlayer materials testing/observation.
• Califia Neighborhood, Santa Margarita Water District, Mission Viejo, California, Summer 2016: AC trench paving.
• Annual Residential Slurry Seal, Newport Beach, California, Summer 2015.
• Palmia Neighborhood, Santa Margarita Water District, Mission Viejo, California, Summer 2016: AC trench paving.
• Saint Christopher Neighborhood, Laguna Niguel, California, August 2015.
• 2015-16 Annual Overlay, Rancho Santa Margarita, California, July 2016.
Los Serranos Infrastructure Improvements, Chino Hills, California, April 2016.
Peyton Widening, Chino Hills, California, February 2016.
Reagan and Peterson Park Parking Lot Rehabilitation, Diamond Bar, California, October 2015.
Del Prado Phase 2A, Dana Point, California, August, 2015.
2014/15 Annual Overlay, Dana Point, California, April 2015.
2014/15 Annual Residential Overlay and Slurry Seal Projects, Rancho Santa Margarita, California, Summer 2015.
Trabuco/Monroe Intersection Improvements, Irvine, California, February 2015: Federally-funded project, observation/testing of pavement materials.
Antonio Parkway Pavement Rehabilitation, Rancho Santa Margarita, Rancho Santa Margarita, California, July 2014: Observation/testing of pavement materials.
Canwood Street Phase I Pavement Recycling, Agoura Hills, California 2013: Cold recycled AC materials observation/testing.
Main Street, Garfield Avenue, and Springdale Street Pavement Rehabilitation, Huntington Beach, California, 2013.
Escalona Road Pavement Rehabilitation, La Mirada, California, 2012.
Willow Street Rehabilitation, Long Beach, California, 2011.
Wilcox Avenue Pavement Rehabilitation, Cudahy, California, 2011.

Select Private Street/Parking Lot Pavement Engineering and Evaluations

3075 & 3151 Imperial Highway, Brea, California, July 2020: Pavement evaluation and repair recommendations to meet 10- and 20-year design lives, including full-depth reclamation with cement treatment.
Tapatio Foods – Parking Lot Evaluation, July 2020: Evaluation of recently repaved parking lot, including coring and laboratory compaction testing.
Crystal Cove, Irvine Company, Newport Coast, Newport Beach, California, 2016-2018.
UCI Lot 36 Bus Parking Lot, Irvine, California, October 2016.
Covey Project, AC Cap Pavement Evaluation, Buena Park, California, January 2016.
Class I Bike Trail, Rancho Mission Viejo, Orange County, California, 2015.
Pepperdine University Pavement Evaluation, Malibu, California, 2013.
Koll Center Newport Parking Lots, CBRE, Newport Beach, California, 2013.
Select Pavement Mix Designs

- **Dove Canyon Homeowners Association – 2020 Pavement Rehabilitation Project:** Developed cement-treatment mix design consisting of existing asphalt concrete, aggregate base, and subgrade materials.
- **Cement Stabilized Pulverized Base Mix Design Development, Leffingwell Road Street Rehabilitation Project, City of La Mirada:** Developed cement-treatment mix design consisting of existing asphalt concrete, aggregate base, and subgrade materials to satisfy Greenbook CSPB mix design requirements.
- **Cement Stabilized Pulverized Base Mix Design Development, Painter Avenue and Santa Fe Springs Road Pavement Reconstruction Projects, City of Santa Fe Springs:** Developed two cement-treatment mix designs consisting of existing subgrade materials to satisfy Greenbook CSPB mix design requirements.
- **Cement Stabilized Pulverized Base Mix Design Development, “Residential 1” Pavement Reconstruction Projects, City of Santa Fe Springs:** Developed two cement-treatment mix designs consisting of existing subgrade materials to satisfy Greenbook CSPB mix design requirements.
- **2018 Greenbook (2018 spec) All American Asphalt, Corona, California, December 2016:** Developed AC Hveem mix designs for ½” and ¾” mixtures.
- **2016 Greenbook (2015 spec) All American Asphalt, Corona, California, December 2016.**
- **Runway 7L-25R Safety Area Improvements, Soil-Cement Mix Design, LAX October 2016.**
- **Plum Canyon Road Soil-Cement Mix Design, Santa Clarita, California, August 2016.**
- **2014 Greenbook (2012 spec) All American Asphalt, Corona, California, December 2014.**
- **Soil-Cement Mix Design for Corporate Yard Facility, Buena Park, California December 2014.**
- **Cold Recycled Asphalt Concrete and Soil-Cement Mix Designs, County of Los Angeles, California, 2011-2014.**
- **Thermal Club Racetrack Marshall Mix Design, Skanska, La Quinta, California, 2013.**
- **As-Needed Mix Designs, Granite Construction Company, Santa Barbara and Bakersfield, California, 2011-2013.**
- **Greenbook Mix Designs, All American Asphalt, San Fernando, California, 2012.**
- **Caltrans Route 405 RHMA Superpave Mix Design, Torrance, California, 2012.**
- **As-Needed Mix Designs, Griffith Company, Bakersfield, California, 2014.**
- **Pickett Avenue, Garden Grove, California, 2012.**

Select Quality Control Testing/Observation Projects

- **Route 5, CT 12-0F96C4 Widening, Flatiron Corporation, 2015-2016.**
- **Route 405 Sepulveda Pass Widening, Kiewit Construction, Los Angeles, California, 2012-2013.**
- **Route 5 CT 07-121844 and 07-21594, Security Paving, Los Angeles, California, 2014.**
• Route 710 CT 07-202144, Shimmick Construction, Long Beach, California, 2014.
• Route 65 CT 06-0E0604, Granite Construction, Bakersfield, California, 2011.
• Route 405 CT 07-3Y9404, All American Asphalt, Torrance, California, 2012.

Select Airport and Port Pavement Projects

• Runway 7L-25R Safety Area Improvements, LAX, October 2016.
• Port of Long Beach Pier E Wharf Phase 1 Stage 2, Long Beach, California, 2014.
• Taxilane J Improvements, Long Beach Airport, Long Beach, California, 2014.
• Naval Air Weapons Station Runway 14/32, Hal Hays Construction, China Lake, California, 2013.

Select Pavement/Geotechnical Projects

• Phase 1 Trail Improvements, Southern California Edison Corridor, Buena Park, October 2016: Decomposed granite path recommendations for vehicular loads, concrete flatwork, and concrete pavement design.
• UCI Lot 36 Bus Yard, Irvine, California, October 2016: Evaluation of existing parking lot for use as bus parking lot area, retaining wall geotechnical design, pole foundation geotechnical design, and concrete flatwork.
• Jamboree and Main Intersection Widening, Irvine, California, February 2016: Design of new pavements for widening and retaining wall geotechnical design.
• Cerritos Avenue Sidewalk Gap Closure, Anaheim, California, July 2016: Pavement design, concrete flatwork design, and free-standing wall geotechnical design recommendations.

Select Homeowner Association Pavement Projects

• Kite Hill Homeowners Association - Community Center Parking Lot, January 2021: Evaluation and repair recommendations of recent parking lot overlay paving.
• Dove Canyon Homeowners Association – 2020 Pavement Rehabilitation Project: Performed pavement evaluation/design, prepared plans/specs, performed construction management advisory, and managed materials testing/observation during construction. The repair recommendation implemented on this project saved approximately 40% (~$400k) in construction costs.
• Groves at Orchard Hills Homeowners Association – 2019 sealcoat project: Prepared plan/specs.
• Columbus Grove HOA, Tustin/Irvine, August-September 2019: Evaluation of pavement seal coat distresses on recently applied seal coating and developing pavement repair recommendations.
• Rancho Capistrano HOA, July-September 2019: Pavement management plan study of all streets within HOA.
• Newport Coast Community Association - 2019 Coastal Canyon Parking Lot Improvement Projects, 2019: Performed pavement evaluation and prepared plans, specs, and estimates to improve various parking lots managed by Newport Coast Community Association.
• San Joaquin Hills HOA, FY 2019 Pavement Maintenance and Repair Project.
• Ladera Ranch Maintenance Corporation (LARMAC), Orange County, CA 2017 to Present: Providing as-needed pavement engineering and construction support services for streets & parking lots maintained by LARMAC.
• Bay Harbour HOA, 2016 Pavement Rehabilitation Project and 2018 Pavement Reserve Budget Advisory Services, Long Beach, California.
• Crystal Cove HOA Pavement Rehabilitation Project, Newport Coast, California, December 2016 to Present: Providing pavement maintenance/repair budget advisory, maintenance/repair design, and construction support services for each year’s pavement project.
• 2017 Pelican Hill HOA Pavement Rehabilitation Project, Newport Coast, California, January 2017 to Present: Providing pavement maintenance/repair budget advisory, maintenance/repair design, and construction support services for each year’s pavement project.
• 2017 Casta Del Sol HOA Pavement Rehabilitation Project, Mission Viejo, California, July 2017 to Present.
• 2017 Pacifica HOA Pavement Rehabilitation Project, San Clemente, California, Summer 2016.
• Ritz Cove HOA Vehicular Paver Design and Construction Monitoring, Dana Point, California, July 2015.
• 2014 Niguel Shores HOA Seal Coating Project, Dana Point, California, 2014.
• 2015-16 Pavement Rehabilitation Project, Montego HOA, Rancho San Clemente, California, Summer 2016.
• 2016 Pavement Rehabilitation Project, Bay Harbour HOA, Long Beach, California, Summer 2016.
• 2016 Pavement Reconstruction Project, Northridge County Community Association (Porter Ranch), Northridge, California, April 2016.

Select Pavement Management Plan (PMP) Projects

• City of Chino Hills – 2021 Citywide Pavement Management Plan Updates, January 2021 to Present: Helping the City re-establish an up-to-date pavement management system since their last update in 2005. Performing pavement condition index (PCI) assessment of all city-maintained streets consisting of a total of approximately 193 centerline miles of streets.
• City of Laguna Niguel - 2020, 2022, and 2024 Citywide Pavement Management Plan Updates, 2020 to Present: Pavement condition index (PCI) assessment of all city-maintained streets consisting of a total of approximately 141.5 centerline miles of streets.
and budget scenario analysis to help optimize the City’s pavement maintenance and rehabilitation schedule and budget (approximately $2M per year typically).

- **Crystal Cove Community Association – 2016 to Present:** Established a pavement management inventory in 2016 and performing yearly pavement management plan updates since to help the community cost-effectively maintain and optimize their roadway network condition.

- **Groves at Orchard Hills Homeowners Association – 2019 to Present:** Established a pavement management inventory in 2019 and performing pavement management plan updates.

- **Casta Del Sol Community Association – 2017 to Present:** Established a pavement management system in 2017 for approximately 22 centerline miles of streets managed by the HOA with a yearly street improvement budget of approximately $800k to $1.2M per year. Performing periodic reviews and updates to the community’s pavement management plan each year.

- **Lake Forest II Master HOA – 2020 to Present:** Established a pavement management system in 2020 for approximately 12 centerline miles of streets managed by the HOA with a yearly street improvement budget of approximately $1.0M per year. Performing periodic reviews and updates of the community’s pavement management plan each year.

- **Emerald Bay Community Association – 2019 to Present:** Established a pavement management system in 2019 for approximately 6 centerline miles of streets managed by the HOA with a yearly street improvement budget of approximately $300k per year. Performing periodic reviews and updates of the community’s pavement management plan each year.

- **Ocean Ranch HOA – 2014 to Present:** Established a pavement management system in 2014 for approximately 5 centerline miles of streets managed by the HOA with a yearly street improvement budget of approximately $600k per year. Performing periodic reviews and updates of the community’s pavement management plan each year.

**Litigation and Expert Witness Testimony Projects**

- Can be provided on an as-requested basis due to the nature of these types of projects.
Appendix B
Certifications
CERTIFICATE
Of Prequalification

This certificate has been presented to

Ali Zalghout

for successfully meeting the requirements of the OCTA 2019-2020 Pavement Inspector Prequalification Program using MANUAL survey techniques

EXPIRATION DATE:
6.30.2022

www.WestCoastEC.com/OCTA
CERTIFICATE
Of Prequalification

This certificate has been presented to

Rosalie Chavez

for successfully meeting the requirements of the OCTA 2018-2019 Pavement Inspector Prequalification Program using MANUAL survey techniques

EXPIRATION DATE: 6.30.2021

www.WestCoastEC.com/OCTA
CERTIFICATE
Of Prequalification

This certificate has been presented to

Lucie Anderson

for successfully meeting the requirements of the OCTA 2018-2019 Pavement Inspector Prequalification Program using MANUAL survey techniques

EXPIRATION DATE:
6.30.2021

www.WestCoastEC.com/OCTA
SIAD TL-0113: CALTRANS ACCREDITATION LABORATORY INSPECTION REPORT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALTRANS ACCREDITATION LABORATORY INSPECTION REPORT

Expiration Date: 2020-03-06
Inspected By: Ashley Shaw
IA No.: 68
Phone: 949-279-8731
RSP #: 104
File: Material Category 500
Laboratory: GMU Geotechnical Inc.
Address: 23241 Arroyo Vista Rancho Santa Margarita CA, 92688
Lab QC Mgr.: Mike Moscrop
E-mail: mmoscrop@gmugeo.com
Telephone: 949-888-6513
Fax #: 949-888-1380

A certified Independent Assurance (IA) visited this laboratory on (Date) 6 March 2019

Only the equipment to be used on Caltrans Construction projects and/or local construction projects on the National Highway System was checked for qualification. At the time of Caltrans Accreditation, this laboratory had all necessary equipment to perform the test methods indicated below.

Testing personnel shall be Caltrans Qualified and possess a current Caltrans Certification Form TL-0111 or AASHTO Proficiency Form TL-0115 prior to performing any sampling or testing.

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A visual check was performed and documents provided as necessary for the following items:

- Facility Safety Manual
- Laboratory Procedures Manual
- Laboratory Quality Control Manual
- Copies of current applicable test procedures
- Calibration and service documentation
- Calibration stickers affixed to test equipment (dated within the 12 months)

On 3/6/19, this laboratory was Caltrans Qualified by:

Ashley R Shaw
(Printed name of IA person)

Ashley R Shaw
(Signature of IA person)

Please verify lab accreditation by visiting SIAD website: https://sia.dot.ca.gov/
Page 1/1
American Association of State Highway and Transportation Officials

AASHTO Accreditation Program Certificate of Accreditation

This is to signify that

GMU Geotechnical, Inc.

in

Rancho Santa Margarita, California

has demonstrated proficiency for the testing of construction materials and has conformed to the minimum requirements established in AASHTO R 18 set forth by the AASHTO Highway Subcommittee on Materials (HSOM).

The scope of accreditation can be viewed on the AAP Directory of Accredited Laboratories on www.amrl.net.

Bud Wright, Executive Director

Moe Jamshidi, AASHTO HSOM Chair
Instructions

Search By Laboratory Name
Enter the laboratory name in the textbox and click the submit button. If your search does not return the laboratory you are looking for, enter just the first few letter(s) and try again.

Search by Location
Select the appropriate state from the dropdownlist. Select the city in that state, or click 'All Cities' to return all accredited labs in the state.

Search by Scope and Standard
Accredited labs can also be searched by an individual scope and/or by a specific standard within the scope.

To bookmark a single record:
After finding the laboratory you are searching for, click the 'Show this entry only' link under the lab's location. In Internet Explorer, click the star with a green plus sign, or type Alt+Z. In Mozilla Firefox, click the gray star in the location bar, or type Ctrl+D.

Publicizing Your Accreditation
Please follow the AASHTO Accreditation Publicity Policies when displaying the AAP logo.

Search the Directory of AASHTO Accredited Testing and Inspection Agencies

Please Note
The dates displayed beside the field of accreditation correspond to the year of initial accreditation in that field.

Search by either Laboratory Name or Location.

Accreditation listings do not include an expiration date because an accreditation only expires when the laboratory fails to comply with the accreditation requirements. Directory listings are continually updated reflecting changes throughout the day.

If you have a question about the way a standard is listed on the directory, email aap@amrl.net or call 240-436-4900.

Laboratory Name

<table>
<thead>
<tr>
<th>Laboratory Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>gmue</td>
<td></td>
</tr>
</tbody>
</table>

State: All States ▼ City: All Cities ▼

Scope: Select a scope... ▼

Standard: Select a standard... ▼

Search

GMU Geotechnical, Inc.
Rancho Santa Margarita, California
Show This Entry Only
Matthew Farrington
23241 Arroyo Vista
Rancho Santa Margarita, California 92688

Phone: (949) 888-6513
Fax:
mfarrington@gmugeo.com
http://www.gmugeo.com/

Quality Management System - accredited since 7/2/2015
R18

Asphalt Mixture - accredited since 7/2/2015
R30, R35, T30, T166, T209, T246, T247, T269, T275, T308, T312, D1560 (Stability), D1561, D2041, D2726, D3203, D5444, D6307, D6925

SOIL - accredited since 7/2/2015
T88, T89, T90, T100, T134, T176, T180, T190, T208, T216, T224, T236, T310, D422, D558, D1557, D2166, D2419, D2435, D2844, D3080, D4318, D4718, D4829, D6938

Aggregate - accredited since 7/2/2015
T11, T27, T84, T85, T176, T210, T248, T304, T335, C117, C127, C128, C136, C702, C1252, D2419, D3744, D4791, D5821
Appendix C
ADA Review Scope of Work
TO: Roger Schlierkamp  
GMU Geotechnical, Inc.  
23241 Arroyo Vista Rancho  
Santa Margarita, California 92688  

(949) 888-6513  
rschlierkamp@gmugeo.com  

Proposal and Agreement for CASp consulting services to provide accessibility evaluations and consulting for:

Newport Mesa Unified School District

- 22 Elementary schools
- 2 intermediate schools
- 2 grade 7-12 schools
- 2 ea. grade 9-12 schools
- 4 alternate education campuses

Dear Roger,

Martin Brothers Construction Services is pleased to submit a proposal to provide accessibility review of paved sections including the parking lot and approved paths of travel at all Newport Mesa Unified School Districts. Please let us know if this proposal meets with your approval. Should you have any questions regarding the enclosed information, please don’t hesitate to contact Matt Martin at (714) 654-5980.

Sincerely,

Matt Martin – Vice-President  
Martin Brothers Construction Services  
Certified Access Specialists CASp 499

Scope & Fee Proposal  
Consulting Services

Project Scope of Work:  
Martin Brothers Construction Services (MBCS) will provide ADA CASp services including assessments and reports for all paved sections including the parking lots and approved paths of travel for all Newport Mesa Unified School District schools. 22 Elementary schools, 2 intermediate schools, 2 grade 7-12 schools, 2 ea. grade 9-12 schools, and 4 alternate education campuses

Standards  
The accessibility standards we follow reflect the most stringent of Federal and State
accessibility codes and regulations, the 2010 Standards for Accessible Design, the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the 2019 California Building Code (Title 24 CBC) Chapter 11B.

Fee Proposal:

ADA CASp Assessments and Reports $224,000.00

NTE TOTAL: $224,000.00

Additional fees:
Additional consulting $180.00 per hour.
Mileage fee of $0.76 per mile of travel portal to portal, included in cost
Access Inspected Certificate (not required) N/A

Payment:

MBCS will receive payment billed monthly for service provided. Payment is due when invoice is submitted.

Deliverables:

Provide in person consulting and reporting of accessibility issues.

Other Services:

Scoping:
Provide a in depth review of how to remediate the accessibility issues. This includes working with the client to determine the priorities of work to be done. Strategizing what is the best approach. For example, will the work be phased? Will it all be done at once? Is a design professional needed, etc. This work at a minimum, ranges about 8-20 hours, minimum of 4 hours.

Contractor Coordination:
We solicit and recommend contractors as needed for each type of trade. Often in this work there is asphalt paving, concrete folks, handrail and gate folks, door and hardware folks, signs and accessories sub-contractors, Cabinet and casework contractors, Onsite review with contractors is 8 hours minimum.

Quality Assurance Verification:
Review the work of the contractor to verify the work is to the standards we would expect for ourselves. (We are building inspectors as well as CASp inspectors)

Verify Compliance: through a CASP re- inspection

Other accessibility services that can be provided upon request include but are not limited to:
- Quality Assurance Services.
- Detailed plan review for barrier removal projects.
Additional Billing Information

Hourly Billing Rates:
The following rates are effective as of January 1, 2019.
Paul Martin, President CASp - $180.00
Matthew Martin, MBCS Project Manager CASp - $180.00

NMUSD Paving Assessment Representative: Roger Schlierkamp

Signature___________________________ Date____________

Martin Brothers Construction Services Representative; Matt Martin

Signature___________________________ Date____________

PARTIAL LIST OF CLIENTS

Newport Mesa Unified School District
El Camino College
City of Hermosa Beach
City of Chino
CA SVA Architecture for Oxnard Unified School District
Levy Affiliated Holdings, Property Management Santa Monica
The Link
Fix Auto
StorAmerica Storage Facilities
ADA Supreme
Eric Schindler – Kroesche Schindler Law
AEI Consultants
Lee & Associates Inland Empire
HCIDLA
Irvine Company FY 21 Network-Level Pavement Maintenance and Rehabilitation Budget Study

6/13/2020
GMU Project No. 19-205-00

Notes:
(1) GMU re-measured the pavement area to confirm Irvine Company provided areas. Sites with large discrepancies in area should be confirmed.
(2) Pavement condition index (PCI) surveys involve inspecting the pavement for 20 asphalt concrete pavement distress types as defined by ASTM D6433. A rating of 100 represents brand new pavement with no distresses and a score of 40 or less represents pavement in poor or worse condition.
(3) The pavement has deteriorated to a condition where rehabilitation is necessary. Rehabilitation consists of concrete repairs, localized AG repairs (patches), followed by a mill and overlay. Performing less extensive repair (i.e., sealcoating in lieu of mill and overlay) will lead to reduced performance of the lesser repair.
(4) The pavement is generally in “good” overall condition. Maintenance, consisting of crack repairs followed by sealcoating, is recommended to preserve its condition and slow the rate of deterioration.
(5) Please note the recommended estimated budget is based on a “network-level” review of the pavement and concrete conditions. Representative portions of the parking lots were evaluated in detail and then extrapolated for the entire site to develop the recommended estimated budget. Deferring maintenance may result in additional deterioration. Additional deterioration will require more budget to address.

<table>
<thead>
<tr>
<th>Site Info</th>
<th>Pavement Condition Index (PCI)</th>
<th>GMU Recommendations</th>
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<tbody>
<tr>
<td>Project Name</td>
<td>Address</td>
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<tr>
<td>17032 Murphy</td>
<td>17032 Murphy</td>
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<td>Alton Corporate Center</td>
<td>16205 / 16215 / 16225 Alton Pkwy</td>
<td>230,306</td>
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<tr>
<td>2640 Main</td>
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<tr>
<td>17221 Von Karman</td>
<td>17221 Von Karman</td>
<td>61,735</td>
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<td>Discovery Park I, II, III &amp; IV</td>
<td>41, 43, 45 &amp; 49 Discovery &amp; 15420/15440/15460/15480 Laguna Canyon Rd</td>
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<td>Camelback</td>
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<tr>
<td>Jenner I &amp; II</td>
<td>1 / 2 / 3 / 4 / 5 / 6 Jenner</td>
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<tr>
<td>UCI RP V</td>
<td>101 &amp; 111 Theory</td>
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<tr>
<td>1800 E. Dyer</td>
<td>1800 E. Dyer Road</td>
<td>101,760</td>
</tr>
</tbody>
</table>

Notes:
GMU Project No. 19-205-00
1/25/2020

Page 1 of 2
Irvine Company FY 21 Network-Level Pavement Maintenance and Rehabilitation Budget Study

**Notes:**

1. GMU re-measured the pavement area to confirm Irvine Company provided areas. Sites with large discrepancies in area should be confirmed.
2. Pavement condition index (PCI) surveys involve inspecting the pavement for 20 asphalt concrete pavement distress types as defined by ASTM D6433. A rating of 100 represents brand new pavement with no distresses and a score of 40 or less represents pavement in poor or worse condition.
3. The pavement has deteriorated to a condition where rehabilitation is necessary. Rehabilitation consists of concrete repairs, localized AG repairs (patches), followed by a mill-and-overlay. Performing less extensive repair (i.e., sealcoating in lieu of mill-and-overlay) will lead to reduced performance of the lesser repair.
4. The pavement is generally in "good" overall condition. Maintenance, consisting of crack repairs followed by sealcoating, is recommended to preserve its condition and slow the rate of deterioration.
5. Please note the estimated budget is based on a "network-level" review of the pavement and concrete conditions. Representative portions of the parking lots were evaluated in detail and then extrapolated for the entire site to develop the recommended estimated budget. Deferring maintenance may result in additional deterioration. Additional deterioration will require more budget to address.

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<th>GMU Recommendations</th>
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<tbody>
<tr>
<td>Project Name</td>
<td>Address</td>
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<tr>
<td>140 / 142 / 152 Technology</td>
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<td>UCI RP VII &amp; VIII</td>
<td>120 &amp; 130 Theory and 131 / 132 / 141 / 151 Innovation Dr</td>
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<td>14600 Myford</td>
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<td>58 Discovery</td>
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<td>Hubble and Dimension</td>
<td>23 / 25 / 27 / 29 Hubble</td>
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<tr>
<td>2652 McGaw</td>
<td>2652 McGaw</td>
<td>53,000</td>
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</tbody>
</table>

Total estimated budget: $3,877,400

*Total Estimated Budget for Pavement Repairs: $174,800
Total Estimated Budget for Concrete Repairs: $4,052,200

Drainage deficiencies encountered.
NEWPORT-MESA UNIFIED SCHOOL DISTRICT

ADDENDUM NO. 1
Pavement Assessment and Management Plan

RFP No. 103-22

NEWPORT MESA UNIFIED SCHOOL DISTRICT
2985 BEAR ST., BLDG.-A
COSTA MESA, CALIFORNIA 92626

August 10, 2021

The following revisions and/or clarifications shall be made to the RFP documents for the above-named work. All work described in the original RFP documents and all applicable Sections of the original RFP documents shall be included in the contract, except as herein modified: Acknowledgement of this Addendum shall be made below and submitted with the RFP submission. If acknowledgement is not made the proposal may be considered non-responsive.

1. **Add:** Add to Task 3: Proposer will provide a minimum of two core samples for each significant asphalt section such as parking lot or playground. Cores should be taken both on and off of approved fire lanes. Proposer will be responsible to patch/repair their cores. Core samples shall indicate the overall thickness of the asphalt section and related base materials, including all asphalt sections/overlays and full depth of base material down to soil. This is not intended to sample soil or substitute soil sampling as required on a project-by-project basis.

2. **Add:** Add Task 5: Provide separate price for ADA transition plan. Proposer must be CASP certified to provide accessibility review of paved sections including the parking lot and approved paths of travel. Proposer will identify deficiencies in the existing conditions compared to the current ADA code. Deficiencies shall be listed separately from the pavement maintenance assessment.

All other provisions of the RFP remain unchanged.

BELOW, PLEASE ACKNOWLEDGE RECEIPT OF THIS ADDENDUM AND SUBMIT IT WITH YOUR PROPOSAL.

Name: Roger Schlierkamp
Signature: [Signature]
Firm Name: GMU
Address: 23241 Arroyo Vista, Rancho Santa Margarita, CA 92688
Telephone #: 949-888-6513
Fax #: 949-888-1380

(END OF ADDENDUM NO.1)