Yosemite National Park Pavement Preservation Project

FHWA - Western Federal Lands Highway Division

Contract No. 69056718D0000008

2022 ISSA President’s Award for Excellence
During the summer of 2019, VSS International mobilized its resources to one of the most beautiful places on earth to take on one of the largest and most difficult projects in the Company’s long history.

Multiple crews had to overcome start up delays caused by a record 18-year snowfall which did not allow access to some of the work locations until after July 4th. Despite limited access at the higher elevations, steep grades, treacherous curves, the constant threat of fire, small staging areas and extremely limited communication resources, VSS International’s team braved it out living in campsite conditions for over 3 months to complete this project on time and to the satisfaction of the Western Federal Lands Highway Division despite these many challenges.

All work placed approximately two years ago is still in place and performing to the expectations of the owner’s design despite harsh weather conditions and winter maintenance operations.
Project Eligibility Requirements

- VSS International is a member in good standing with the ISSA.
- Project acceptance date was November 12th, 2019.
- Project was completed on time, and within the owner’s budget.
- There were no accidents, injuries or safety issues on this project.
- All pavement preservation techniques represented by ISSA were performed by VSS International, Inc.
- The Western Federal Lands Highway Division of the Federal Highway Administration is very satisfied with the performance, workmanship and aesthetic appearance of the project, even after two harsh seasons of winter maintenance in the park.
Matt Ferguson
Area Manager - California
VSS International, Inc.
3785 Channel Drive
West Sacramento, California 95691

(916)416-6130 – Cellular
(916)373-1500 – Office
Matthew.ferguson@slurry.com
Owner Agency Contact

Mr. Michael Hurst
Construction Operations Engineer (COE)
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661

(360)619-7638 – Office
Owner Agency’s On-site Inspection Contact

Mr. Doug Worley
Project Engineer (PE)
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661

(360)409-3713 – Cellular
Initial Acceptance:

November 27, 2019
{Sent via Electronic Mail}

In Reply Refer To: HFL-17

Matthew Ferguson
Construction Manager
VSS International Inc.
3785 Channel Drive
W. Sacramento, CA  95691

Re:   CA NPS YOSE 2018(1), Pavement Preservation Yosemite
      Contract No. 69056718D000008, Task Order No. 69056719E000009

Dear Mr. Ferguson:

The work performed on the Yosemite National Park Pavement Preservation project has been satisfactorily completed in substantial conformity with plans and specifications. Project work was substantially complete on September 20, 2019, and final acceptance of all the project work is effective November 12, 2019, and as of that date you are relieved of further maintenance obligations.

The final payment voucher in final settlement of the contract will be forwarded to you as soon as final quantities are verified and issues are resolved.

Sincerely yours,

Mike Hurst, P.E.
Construction Operations Engineer

cc: Central Files;
Doug Worley, Project Engineer, WFLHD;
Walter Graham, Construction Management Engineer, WFLHD
Mr. Jeff Roberts  
Senior Vice President  
VSS International, Inc  
3785 Channel Drive  
W. Sacramento, CA 95691

RE: CA NPS YOSE 2018(1) PAVEMENT PRESERVATION YOSEMITE  
ISSA Presidents Award Nomination

To Whom It May Concern,

I am pleased to provide the following letter for VSS International in the ISSA President's award nomination, for their work on the FHWA project CA NPS YOSE 2018(1) Yosemite Pavement Preservation, in Yosemite National Park (YNP). This $7 million contract was awarded in October 2018 and was completed by the contract fixed completion date of September 20, 2019. The project entailed substantial and challenging work consisting of over $10,000 sqyd of Type 2 and 3 micro surfacing; 47 miles of centerline rumble grinding; 13 miles of crack sealing; 10 miles of asphalt milling centerline replacement; 3,600 sqyd of asphalt patching; and over 2 million feet of striping placement. The work was also notable in that it includes 22 miles of the iconic Tioga Road, which is the sole public roadway access to the Park’s high country. In addition to the Park mainline roads, other significant components of the projects work were the pavement preservation of the many Park campgrounds, parking areas, and visitor centers, as well as the logistics needed for construction in the Parks many internal facilities areas to keep Park operations running smoothly during the project.

Yosemite National Park is considered by many to be the crown jewel of the U.S. National Parks system, and the maintenance and preservation of its roads are of the utmost importance to the National Park Service (NPS), being an integral part of the experience of approximately 4 million annual visitors from the U.S. and worldwide.

National park construction projects necessitate a rapid, responsive adaptation and understanding of the nature of the projects. Park projects often include facets that may not be commonly seen in city, county, and commercial work. Over the course the contract work VSSI, has proved its capability and competence to complete this type of work. As one example of adaptiveness needed for performing Park work -there often entails extremely limited communications (no cellular and internet), and large distances and delivery times from suppliers. The distance of the Yosemite project’s work areas from end-to-end consisted of a travel time of 2+ hours, though heavily congested visitor traffic, and deliveries from suppliers of nearly 100 miles away.

In addition to the unique requirements of performing construction work in a National Park; the Contractor was also able to successfully navigate an unknown and unexpected condition of a historic snowfall year, which saw a record high above that of Yosemite’s previous 18 years. VSSI
Project Information
Established in 1890, Yosemite National Park is arguably one of the most beautiful places to visit in all of America.

Located in the western Sierra Nevada Mountain range of Central California and encompassing approximately 750,000 acres, Yosemite is considered to be the “Crown Jewel” of the US National Park System.

Yosemite receives over 4 million visitors annually and is known internationally for its granite cliffs, waterfalls, clean streams, giant sequoia trees, lakes, mountains, meadows, glaciers and wildlife.

Despite its beauty, the park’s roadways are in immediate need of millions of dollars in infrastructure rehabilitation due to heavy traffic demands and the impacts of harsh climatic conditions such as extended sub freezing temperatures in the winter and the extreme heat of hot summer days.
Key Contract Information

- Contract Value Total: $6,422,122.00
- Awarded as part of a Multiple Award Task Order Contract (MATOC) by the Federal Highway Administration.
- Contract Time required completion by fixed date of November 27th, 2019.
- Working Hours: 7 AM until 7 PM (Sunrise to Sunset)
- Contractor Quality Control Plan (CQCP) required.
- Very restrictive project phasing to maintain visitors' traffic flow throughout the park at all times.
- Maintenance of Traffic per MUTCD Standard Specifications.
Project Scope & Terrain

- The base project consisted of placement of a Type III micro surfacing application at large mainline section of State Highway 120 (also known as Big Oak Flat Road and Tioga Road) stretching approximately 50 miles across the width of the massive park located in the western Sierra Nevada mountain range of central California.

- Type III mainline work was performed at elevation 9,074 feet on Tioga Pass Road, and elevation 8,141 at the Olmstead Point Parking Lot.

- An additional 44 parking areas and campgrounds as well as 45 roadway pullouts received a Type II micro surfacing overlay.

- Type II work included several large parking such as the Badger Pass Ski area located at elevation 7,200.
Project Locations

Type 2 Micro surfacing
Type 3 Micro surfacing
VSS International completed all work during peak summer tourist season, requiring completion of over 700,000 square yards of Type III micro surfacing and approximately 150,000 square yards of Type II micro surfacing under intense working conditions.

The Total Type III & Type II micro surfacing placed equaled over 11,000 tons of Black Aggregate supplied by George Reed’s Table Mountain Quarry, and over 1,500 Tons of MSE Emulsion provided by VSS Emultech’s plant located in West Sacramento, CA.

VSS utilized both truck mounted and continuous micro surfacing equipment on this project exhibiting the benefits of both types of equipment on this project.

Project requirements included the masking and protection of dozens of miles of granite curbing and islands throughout the park.
Project Summary

Work Performed by VSS' Subcontractors

- Over two million feet of striping removal and replacement.
- 13 miles of crack sealing treatment to ensure that any significant cracks were sealed to slow the re-emergence of these cracks through the new slurry seal application.
- Patching of the existing asphalt at multiple locations that had deteriorated beyond the point where the slurry seal alone could address the distress. Typically, the repairing of these distressed areas consisted of removing existing asphalt with a milling machine and replacing the existing asphalt to a depth of 3-4 inches. This included 10 miles of asphalt milling and replacement at the roadway centerline.
- Install approximately 50 miles of centerline and edge line rumble strips which were fog sealed prior to final striping.
Other Pay Items:

- Contractor Quality Control
- Contractor Testing
- Construction Schedule
- Mobilization
- Traffic Control System
Prior to mobilizing to the remote project location, VSS held dozens of planning and preparation sessions including a day long orientation session with all project participants to discuss the plan for executing this complex project.
U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
YOSEMITE NATIONAL PARK

PLANS FOR PROPOSED PROJECT
CA NPS YOSE 2018(1)

PAVEMENT PRESERVATION
Yosemite

MARIPOSA AND TUOLUMNE COUNTIES, CALIFORNIA
BASE LENGTH 53.52 MILES & PARKING AREAS
OPTION Z LENGTH 1.39 MILES & PARKING AREAS

INDEX TO SHEETS
A. GENERAL INFORMATION
   A.1 TITLE SHEET & INDEX TO SHEETS
B. SUMMARY OF QUANTITIES
   B.1 D.2 SUMMARY OF QUANTITIES
C. TYPICAL SECTIONS
   C.1 TYPICAL SECTIONS
   C.2 ASPHALT PAVEMENT CRACK SEALING AND FILLING
   C.3 ASPHALT CONCRETE PAVEMENT DETAILS
D. PLANS
   D.1 D.6 TABULATION OF SURFACING QUANTITIES - BASE
   D.6 TABULATION OF SURFACING QUANTITIES - OPTION Z
   D.7 KEY MAP
   D.8 D.18 AREA MAPS
E. TEMPORARY TRAFFIC CONTROL
   E.1 E.2 TABULATION OF TEMPORARY TRAFFIC CONTROL QUANTITIES
   E.3 E.8 TEMPORARY TRAFFIC CONTROLS
F. PERMANENT TRAFFIC CONTROL
   F.1 F.3 TABULATION OF PERMANENT PAVEMENT MARKINGS - BASE
   F.4 TABULATION OF PERMANENT PAVEMENT MARKINGS - OPTION Z
   F.5 RUMBLE STRIP DETAILS
   F.6 F.10 SIGNING AND STRIPING DETAILS

APPROVED:
By Letter
DATE: 01/30/2018

(Stamp)
Key Safety Concerns

- Severe wildfire danger - Red flag alerts
- Limited emergency services due to remote locations
- Environmental issues - Zero tolerance for spills, etc.
- Narrow roadways shared with large Recreational Vehicles
- Heavy bicycle & pedestrian traffic through the work zones
- Operating near cliff edges and shear drop-offs
- Tanker & aggregate delivery routes through steep grades
- Park visitors constantly asking crew personnel for directions
- Limited hydration sources for crews in remote locations
- Encounters with wildlife
Key Safety Solutions

- VSS was required to have fire extinguishers in trucks and equipment at all times; all employees were trained on fire suppression techniques.
- VSS designated a fire watchman on duty at all times who was required to have fire suppression equipment.
- VSS utilized satellite phones, installed cell phone boosters and upgraded short range radios to help overcome communication issues created by nature of terrain.
- VSS installed plastic barriers and containment berms at all materials transfer points to limit potential spills.
- Traffic control was paramount to the daily success of all operations.
- Bicycle traffic was escorted through the work zone separate of regular vehicle traffic.
Other Key Challenges

- Extremely limited communications
- Long materials supply line of deliveries and suppliers over 100 miles away
- Distances between worksites consisted of 2+ hours of drive time through congested visitor traffic
- Historic snowfall levels and summer snowmelt limited VSS’ ability to start work in some areas
- Very limited and small staging areas
- Limited housing for crew personnel
Extreme Elevations

Olmstead Point - Elevation 8,141’

Badger Pass Lot - Elevation 7,200’

Tioga Pass Road - Elevation 9,074’
Historic record 18-year snowfall levels were experienced in 2019

Snow melting & washing across Tioga Pass Road
VSS Base Camp

Due to the remote location, VSS set up a camp for all employees working on the project complete with recreational vehicles (RV), tents and food service to provide 3 meals per day and needed provisions.
QUALITY CONTROL PLAN

Yosemite Pavement Preservation Project

CA NPS YOSE 2018[1]

Prepared For:
VSS International, Inc.
3735 Channel Drive, West Sacramento, CA 95691

Prepared By:
CGI Technical Services, Inc.
10316 Place Ln. #5
Sacramento, CA 95827
3/25/2019

Geotechnical Engineering | Engineering Geology | Materials Testing | Special Inspection
QC Organizational Chart

CA NPS YOSE 2018(1) - PAVEMENT PRESERVATION YOSEMITE

Vikram Kyatham
CGI Technical Services, Inc.
Alternate QCM/ QC Oversight
916-633-2222

Jorge Martinez
VSS INTERNATIONAL
Quality Control Manager

Michael Harrison
VSS INTERNATIONAL
Project Manager
916-206-6551

Contract Officer
WFLHD

On-site QC Lab
VSS INTERNATIONAL
QC on Microsurfacing

Ashton Erickson
CGI Technical Services, Inc.
Aggregate & HMA
550-244-6277/916-633-2222
Lab/Field Technician
550-621-4980

Keith Delancy
VSS INTERNATIONAL
Project Superintendent
916-612-0330

Chad Brandin
Table Mountain
Microsurfacing Agg Supplier
209-765-9137

George Reed
George Reed Inc.
Process Control Lab

Ted Kinsey
CGI Technical Services, Inc.
Lab/Field Technician
550-604-7620

Sallie Houston
VSS MSE
Emulsion Supplier
916-373-2414

Jeff Lehti
CGI Technical Services, Inc.
Lab/Field Technician
550-604-8564

JASON SCHULER
CGI Technical Services, Inc.
Lab/Field Technician
530-510-1974

Tanner Jones
CGI Technical Services, Inc.
Lab/Field Technician
530-605-9748

HMA Material
George Reed, Inc.
HMA Material Supplier
Contact No.

Randy Bibbens
CGI Technical Services, Inc.
Lab/Field Technician
530-722-9858

Randy Eastlick
CGI Technical Services, Inc.
Lab/Field Technician
530-598-4852

IVSN Russ
VSS INTERNATIONAL
Project Superintendent
916-416-8835

VSS INTERNATIONAL
HMA Foreman
QC Tests Requirements

- Aggregate Source – AASHTO T96, T104, T176
- Aggregate Process – AASHTO T11, T27, T255
- Production – AASHTO T30, T308, T166, T209
- Anti-strip – COC
- Asphalt Binder – AASHTO M320
- Tack Coat – AASHTO M208

Location of Sampling:
- Aggregate Source – Stockpile
- Aggregate Process – Conveyor Belt or Stockpile
- Production – On grade
- Asphalt Binder – In line between tank and mixing plant
- Tack Coat – From haul truck discharge

Frequency:
- Aggregate Source – 1 per source
- Aggregate Process – 2 per day per product
- Production – Density testing for HMA at 1 test every 500 feet and 1 per 50,000 sq yds for micro-surfacing
- Polymer Modified Emulsified Asphalt – 1 per day
- Tack Coat – 1 per tanker load

Responsibility:
- QCM – in charge of testing and inspection program
- QC Inspector and sampler on grade – CGI
- QC Density tester on grade - CGI
- QC Tester lab – George Reed/CGI

Facilities:
- VSS mobile lab,
- CGI certified labs in Sacramento & Redding, CA
- Aggregate and HMA Producer lab (George Reed) for process control
VSS' Technical Team prepared mix designs which complied with ISSA A 143 guidelines.

All materials were submitted to the FHWA in advance for quality assurance purposes.

Note: Complete Copies Of both mix designs are Saved on submitted drive.
This project utilized over 11,000 tons of Black Aggregate supplied by George Reed’s Table Mountain Quarry. Not only are these materials exceptionally hard & clean, they also provide an added safety element by retaining the road’s dark color for the life of the surface treatment which helps make the pavement markings more visible for the entire life of the treatment.

These photos were taken over a year after placement and the roadways are still dark in color despite intense sunshine and oxidation.
VSS utilized both truck mounted and continuous loading micro surfacing equipment on this project, capitalizing on the benefits of both types.
Calibrations

All machines were properly calibrated in advance for quality assurance purposes.

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**Aggregate Calibration**

```
**Minimum 100 counts of the Rock Belt counter per Sample (3 Samples Per Gate Setting)**

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<td>Contract #:</td>
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<td>Rock:</td>
<td>GR-T-2</td>
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<th>GATE SETTING (Inches)</th>
<th>Full Weight LBS</th>
<th>Empty Weight LBS</th>
<th>Net Weight LBS (= Full - Empty)</th>
<th>No. of Counts</th>
<th>LBS per Count</th>
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Average Agg. Lbs/Count: 23.33

Moisture Factor: 1.02

By Agg. Lbs/Count: 22.98

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<th>Full Weight LBS</th>
<th>Empty Weight LBS</th>
<th>Net Weight LBS (= Full - Empty)</th>
<th>No. of Counts</th>
<th>LBS per Count</th>
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<td>56,420</td>
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<td>3,200</td>
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<td>59,980</td>
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Average Agg. Lbs/Count: 32.13

Moisture Factor: 1.02

By Agg. Lbs/Count: 31.50

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<th>Net Weight LBS (= Full - Empty)</th>
<th>No. of Counts</th>
<th>LBS per Count</th>
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Average Agg. Lbs/Count: 42.33

Moisture Factor: 1.029

By Agg. Lbs/Count: 41.72

**Notes:**

- Data must be entered in the Full Weight, Empty Weight, and No of Counts Columns. No additional data is needed.
- Gate Settings and the Moisture Factor Must be Adjusted per Calibration.
- Moisture Factor = Percentage of Moisture x 1
```
VSSI’s experienced personnel rose to meet every challenge, every shift and created a favorable legacy for the future use of Pavement Preservation techniques in America’s National Park System.

There were no lost shifts due to equipment downtime or other issues. The project was executed flawlessly as planned.

Excellent planning and communication with all stakeholders, combined with excellent field supervision led to project success.

Routine meetings between the Western Federal Lands team and VSS’ contracting teams to discuss expectations and progress toward project milestones.
Project Photo Gallery
During Construction
During Construction
During Construction
During Construction
Upon Completion
Upon Completion
One Year Later
Two Years Later

Photo taken on 10/30/21
Two Years Later

Photo taken on 10/30/21
Two Years Later
Cost & Green Calculator:

Cost & Green Calculator

*Compare cost savings and environmental impact by treatment*

An approach to pavement management that applies a robust toolbox of pavement preservation and recycling treatments will save time, money, and reduce environmental impact over the long-term.

Use this calculator to see average data comparing the cost and environmental savings of preservation and recycling techniques, compared to conventional reconstruction, mill and fill, or thin overlays.

*Please note that these estimates are approximate and should not be used for emissions inventory or formal carbon footprinting exercises or project cost estimates.*

**How to use this Tool**

**CONVENTIONAL APPROACH**

<table>
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<tr>
<th>TREATMENT:</th>
<th>Minor Mill &amp; Fill</th>
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<tr>
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<tr>
<td>LIFE EXTENSION:</td>
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<td>SQUARE YARDS:</td>
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</table>

Total Cost: **$8,820,000**
Equivalent Annualized Cost: 0.89

**PRESERVATION & RECYCLING APPROACH**

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<thead>
<tr>
<th>TREATMENT:</th>
<th>Micro Surfacing: Single Lift</th>
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<tbody>
<tr>
<td>UNIT COST:</td>
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<tr>
<td>LIFE EXTENSION:</td>
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<tr>
<td>SQUARE YARDS:</td>
<td>900000</td>
</tr>
</tbody>
</table>

Total Cost: **$2,493,000**
Equivalent Annualized Cost: 0.46

*Source: roadresource.org*
Roadresource.org:

By choosing a preservation & recycling approach...

COST SAVINGS

$6,327,000
72% LESS THAN MINOR MILL & FILL

ENVIRONMENTAL SAVINGS

REDUCE GREENHOUSE GAS EMISSIONS BY 94%

That's the green equivalent of removing 951 passenger vehicles from US roadways for a year!

Source: roadresource.org
**Award Winning Project**

**The Yosemite National Park Pavement Preservation Project**

- Extremely unique project met and exceeded all criteria for the 2022 ISSA President’s Award for Excellence nomination.
- Required multiple crews and precision execution in the application of pavement preservation materials and methods.
- Required an exemplary level of professionalism, planning and discipline for project success.
- Exhibited unmatchable appearance and aesthetic value.
- Required regimented safety protocols to keep workers safe.
- Demonstrated the high level of projects that can be suitable for pavement preservation materials.
- Provided owner with substantial cost savings vs. conventional paving techniques while conserving a significant amount of energy and natural resources.
VSS Project Team

- Jeff Roberts, Senior Vice President
- Matt Ferguson, Construction Manager
- Michael Harrison, Project Manager
- Jorge Martinez, Project Engineer
- Jon James, Operations Manager
- Jose Martinez, Project Superintendent
- Rick Cross, Pre-Construction Manager
- Roman Benedyuk, Safety Manager
- Will Cross, Chief Estimator
- Nicholas Corcoran, Project Estimator
- Amie Parks, Emulsion Plant Manager

Many Thanks to the US Department of Transportation, and the Western Federal Lands Highway Division for their partnership on this project!
VSS International dedicates this award nomination to the hard-working men and women who made significant sacrifice during the summer of 2019 to successfully accomplish this amazing project.
Thank You for your consideration of this award nomination!
Safely Maintaining America’s Roadways Since 1919