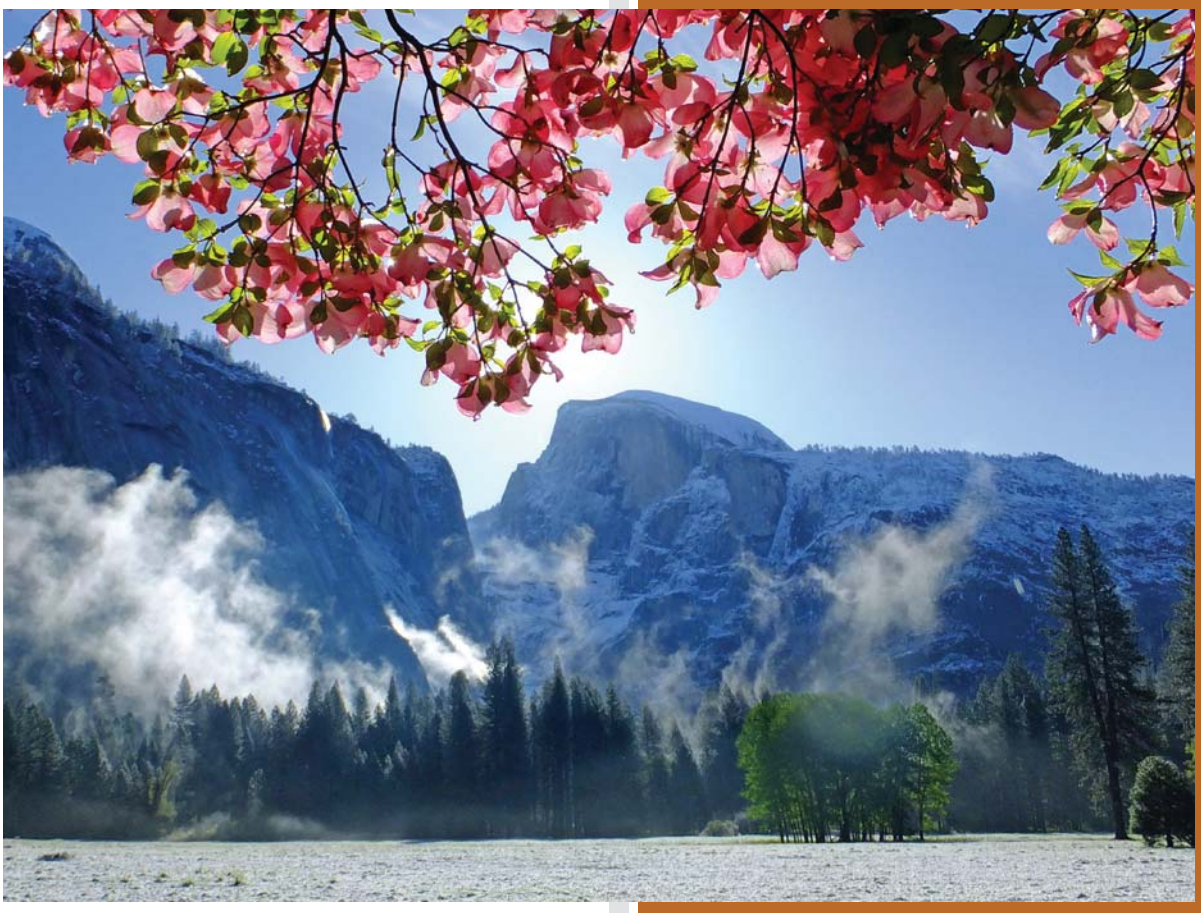
YOSE
WIP Report

NPS Retaining Wall Inventory Program
Yosemite National Park



Federal Lands Highway
Road Inventory Program

Prepared By:
Federal Highway Administration
Eastern Federal Lands Highway Division
Road Inventory Program (RIP)

Data Collection Date: September 2007
Report Date: November 2015

Yosemite National Park
in
California

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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Introduction

Yosemite National Park

Federal Lands Highway
Road Inventory Program

Introduction

The Federal Lands Highway Division (FLH) of the Federal Highway Administration (FHWA), in partnership with the National Park Service (NPS), has conducted a retaining wall inventory and condition assessment as part of the NPS Retaining Wall Inventory Program (WIP). This inventory provides information to the NPS Facility Management Software System (FMSS) regarding such things as type, size and location of retaining structures, as well as the condition of these facilities and consequences of failure. In addition, when wall and/or adjacent element deficiencies are identified, repair recommendations and estimated costs are also provided, suitable for use as FMSS work orders.

The main intent of this effort is to determine the backlog of needs associated with retaining wall assets – equipment features ascribed to the "parent" roadway asset. Inventory and condition assessments (pavement only) for the roads themselves are conducted under the NPS Road Inventory Program (RIP). Prior to development of the WIP, the vast majority of retaining walls were not accounted for in FMSS. Based on WIP inventory work to date, NPS wall assets are valued at well over $400M. A second and equally important intent of this effort is to inform and improve project selection, prioritization, and development activities and processes at NPS regions/parks, FLH Division offices and the NPS Denver Service Center.

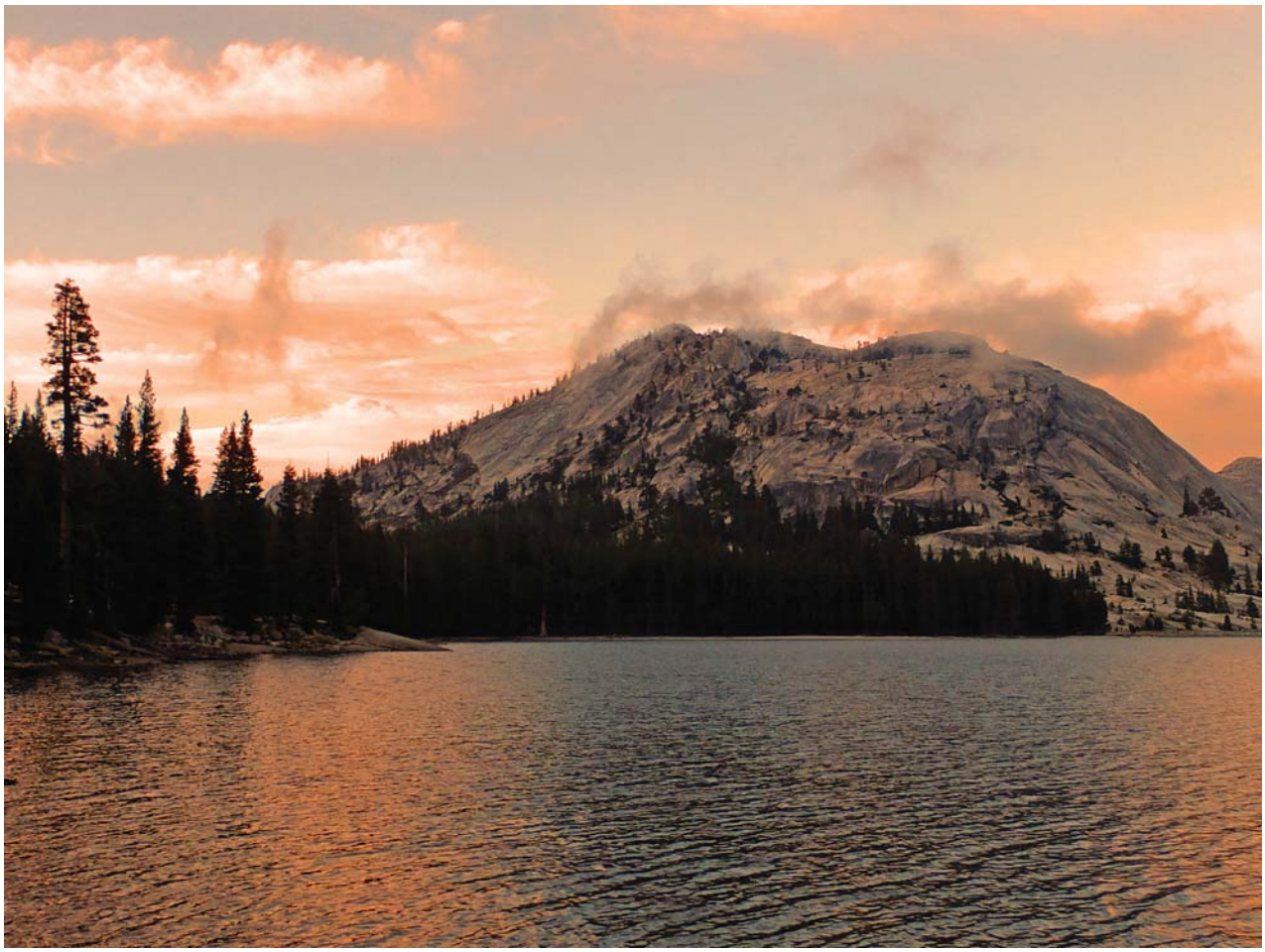
In support of WIP, a comprehensive procedures manual (available at the following link: http://www.cflhd.gov/programs/techDevelopment/geotech/WIP/) was developed to document the data collection and management process, wall attribute and element definitions, and team member responsibilities for conducting retaining wall inventories and condition assessments. This manual was used for nearly 3,500 wall assessments initially conducted between 2007 and 2008 within 34 national parks. WIP is supported by several key components described in the procedures manual, including a comprehensive training program for field inspectors, an Oracle-based database for long-term data management, unique data collection forms, a supporting field guide, and a wall repair/replace cost estimate guide.

Ultimately, condition assessments for retaining wall structures are expressed as deferred maintenance costs, which are then divided by current year replacement costs to arrive at a "Facility Condition Index" (FCI). Coupling this condition prioritization index with an "Asset Priority Index" (API), which measures the feature's importance to the mission of the park, capital asset investments are made more efficiently. This approach appropriately focuses maintenance and construction priorities on value, rather than solely on cost. Wall inventory condition and cost data are transferred from the WIP database to FMSS, the primary asset documentation, management and planning platform maintained at each park. In addition, wall data are also provided to the Road Inventory Program to update equipment assets associated with the parent roadway asset.

Initial inventories were conducted based on RIP Cycle 3 data, but future planning has ensured updates to WIP will occur simultaneously with RIP. For long-term data management purposes, the WIP database will be linked to the larger, parent RIP database and be updated under the responsibility of the RIP Database Administrator.

This report is organized in a tiered approach from the broad park overview perspective (Tier 1) to a route overview perspective (Tier 2), then down to the details of each wall (Tier 3). Tier 1 presents park wall location maps and an overall park-specific summary narrative of the results of the wall inventory program. Tier 2 presents route overview maps with associated wall summary information. Tier 3 presents individual wall information in a three-page detailed format, including a photograph of each wall. Appendix A provides a condensed summary of wall inventory definitions and assessment categories to assist in reading this report.

Park Retaining Wall Location Maps



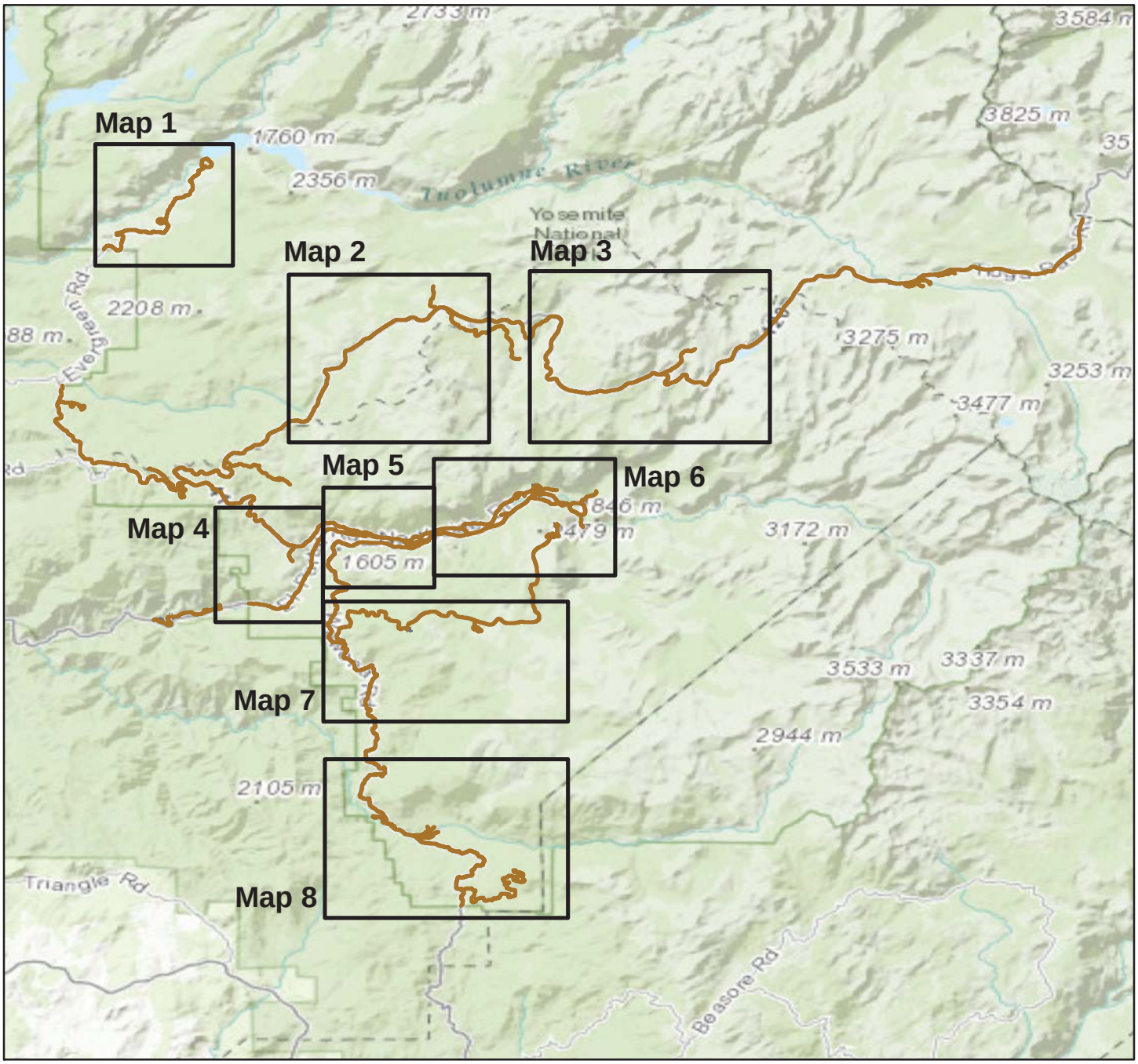
Yosemite National Park

Federal Lands Highway
Road Inventory Program

Yosemite National Park

WALL LOCATION MAP

Key Map



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

RIP Collected Routes

Miles

0 4 8

N

Yosemite National Park

WALL LOCATION MAP

Map 1

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Wall Locations (Not all labeled)

RIP Collected Routes

Miles

0 1 2

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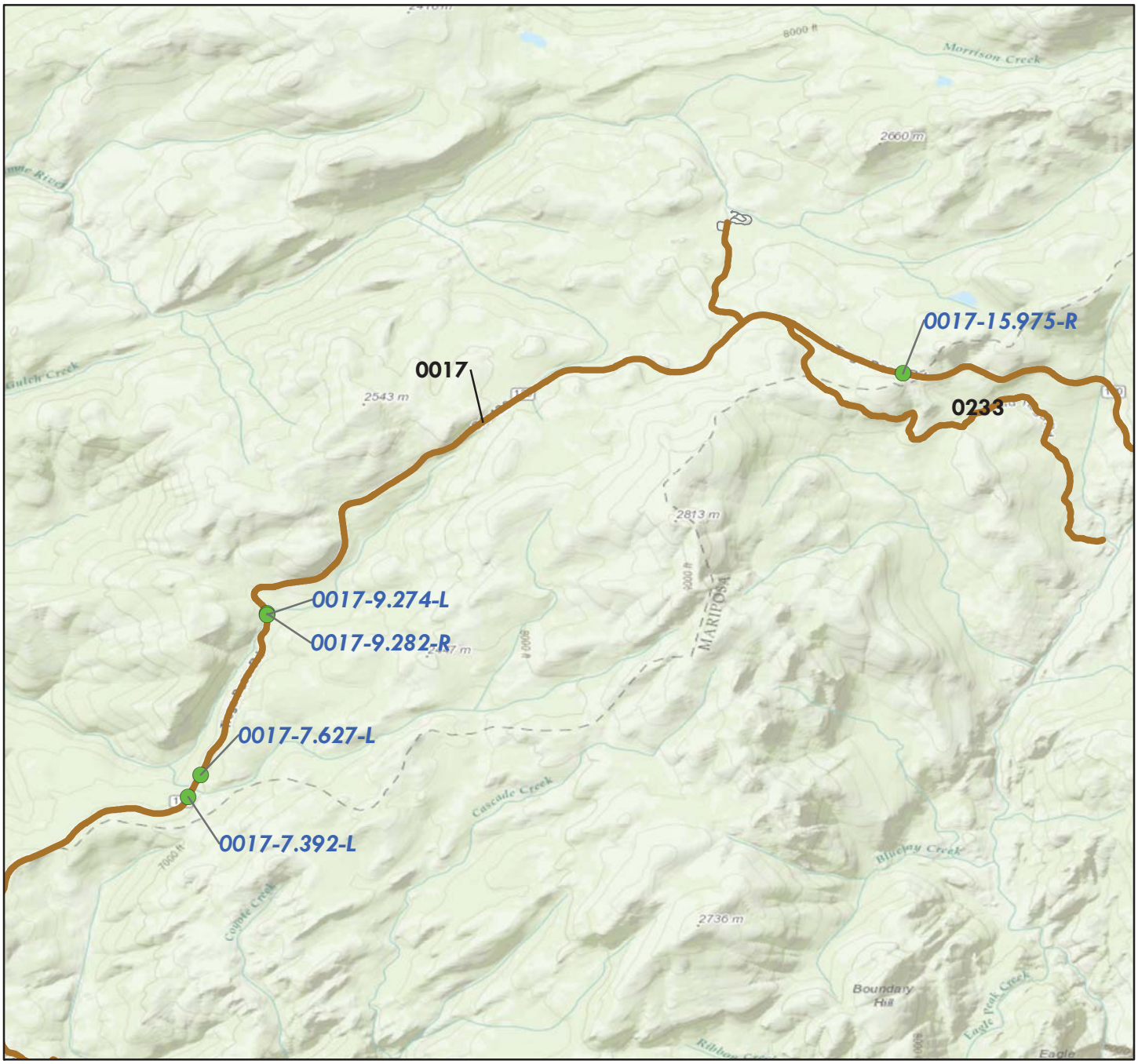
Yosemite National Park

WALL LOCATION MAP

Map 2



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Wall Locations

RIP Collected Routes

Miles

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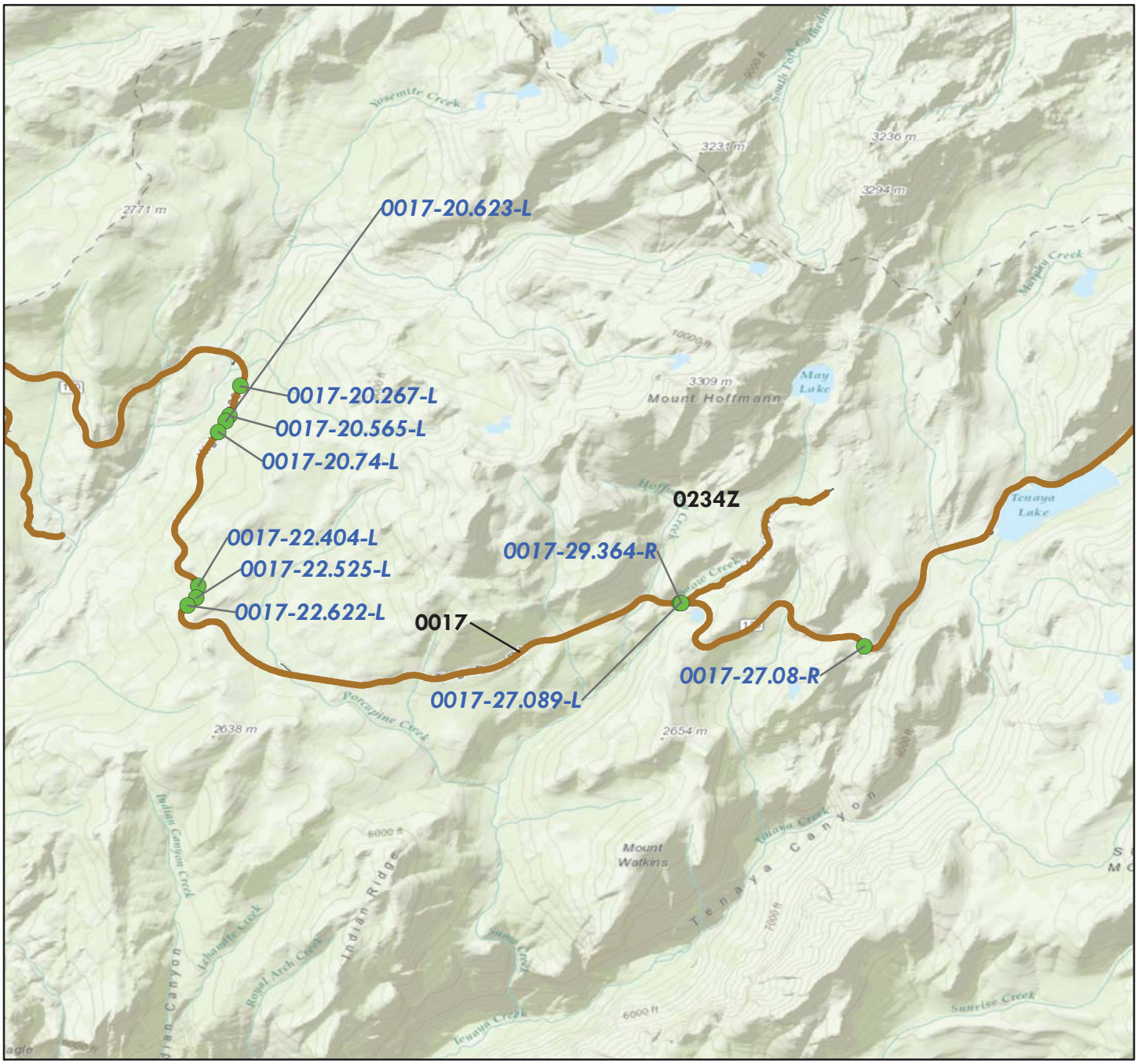
Yosemite National Park

WALL LOCATION MAP

Map 3



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Wall Locations

RIP Collected Routes

Miles

0 1.5 3

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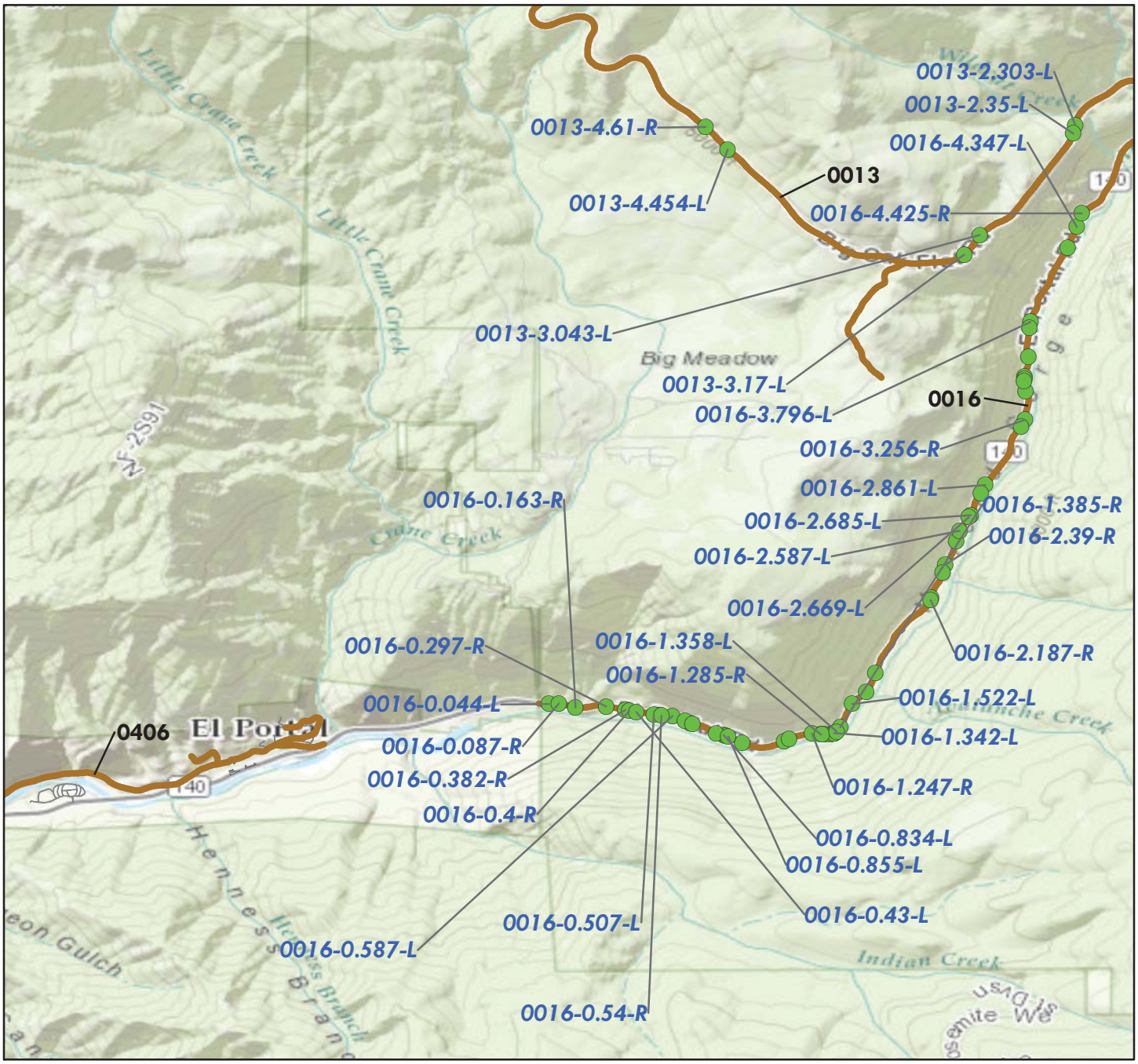
Yosemite National Park

WALL LOCATION MAP

Map 4



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Wall Locations (Not all labeled)

RIP Collected Routes

Miles

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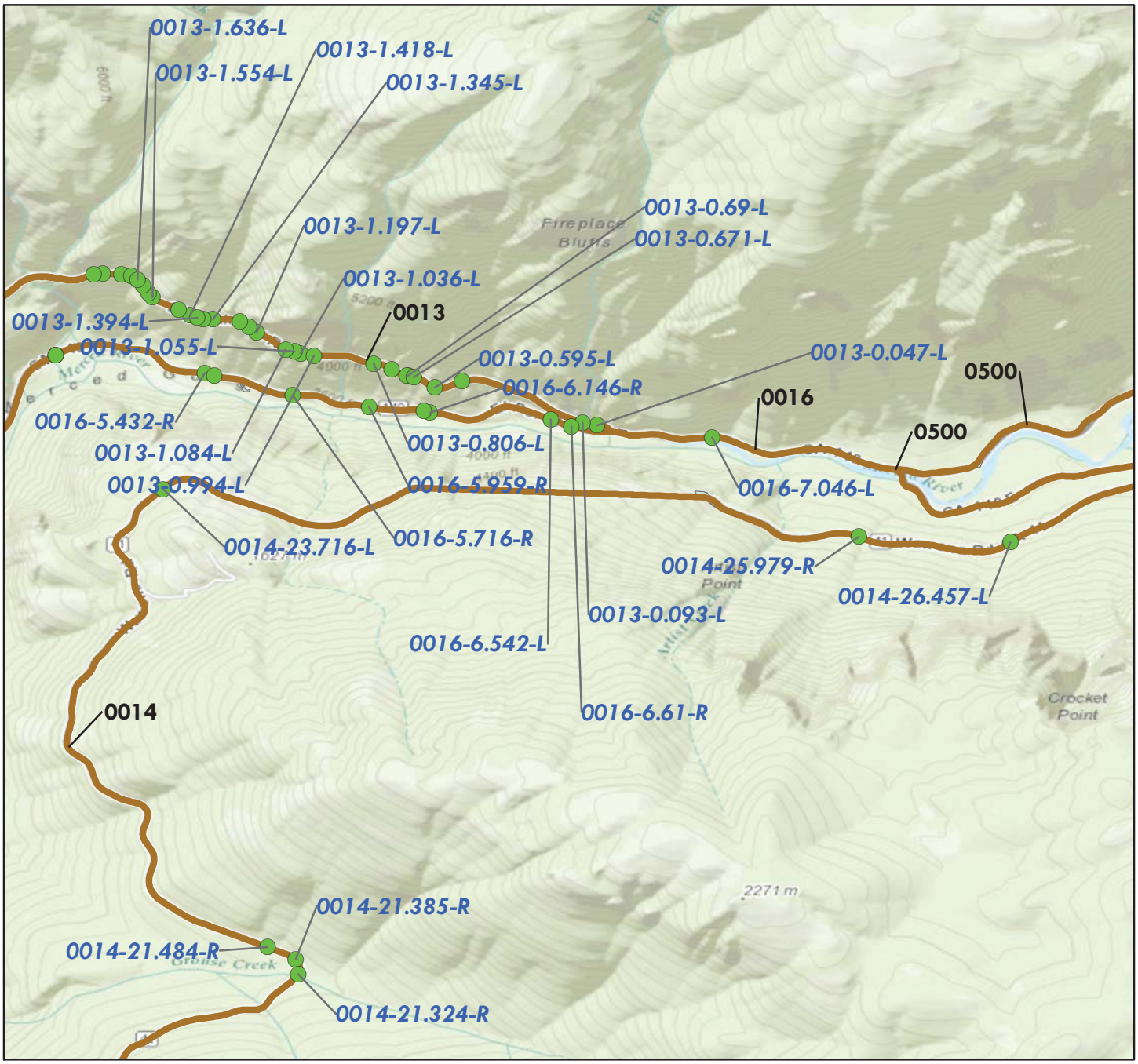
Yosemite National Park

WALL LOCATION MAP

Map 5



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Wall Locations (Not all labeled)

RIP Collected Routes

Miles

0 0.5 1

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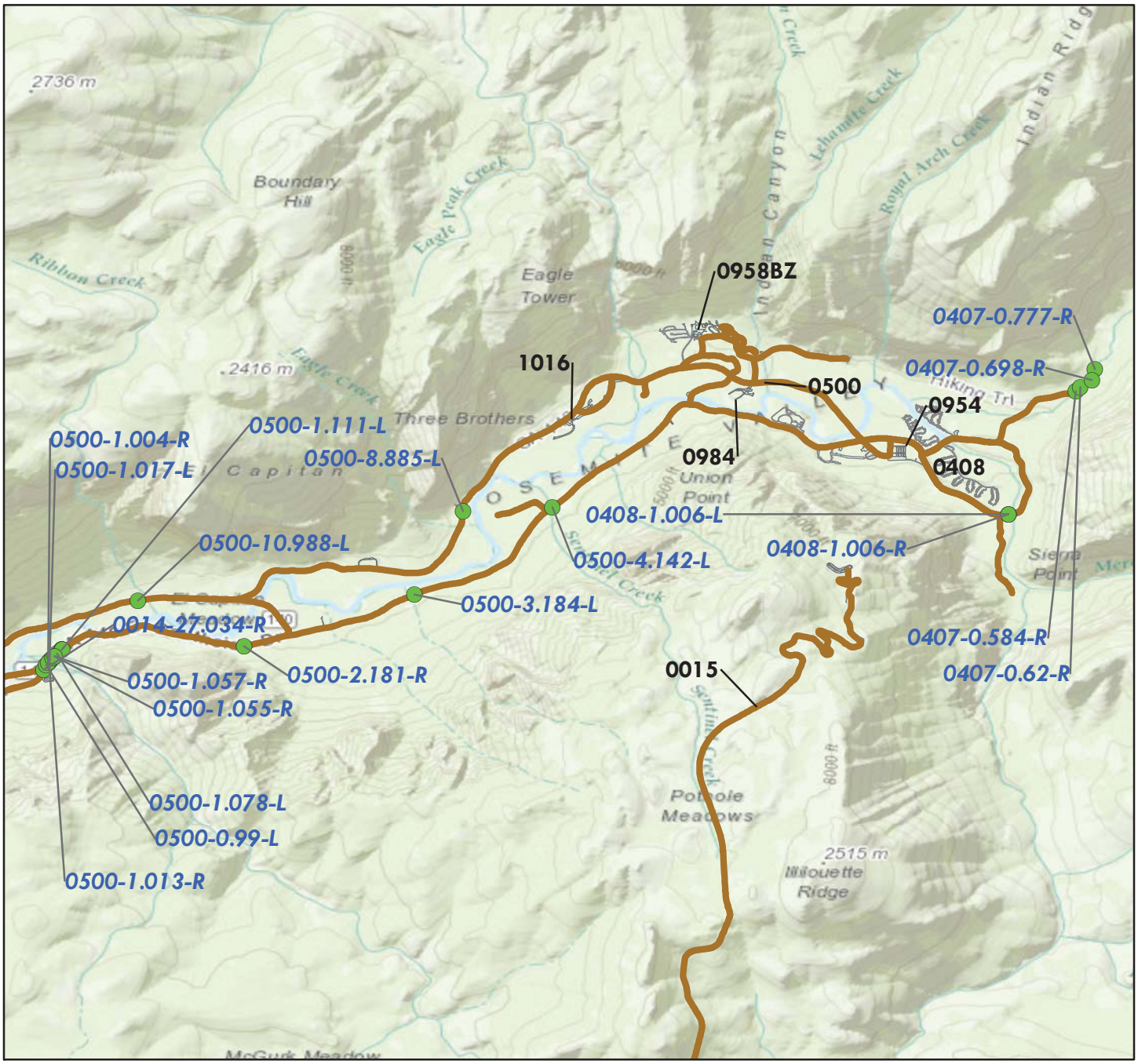
Yosemite National Park

WALL LOCATION MAP

Map 6



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Wall Locations (Not all labeled)

RIP Collected Routes

Miles

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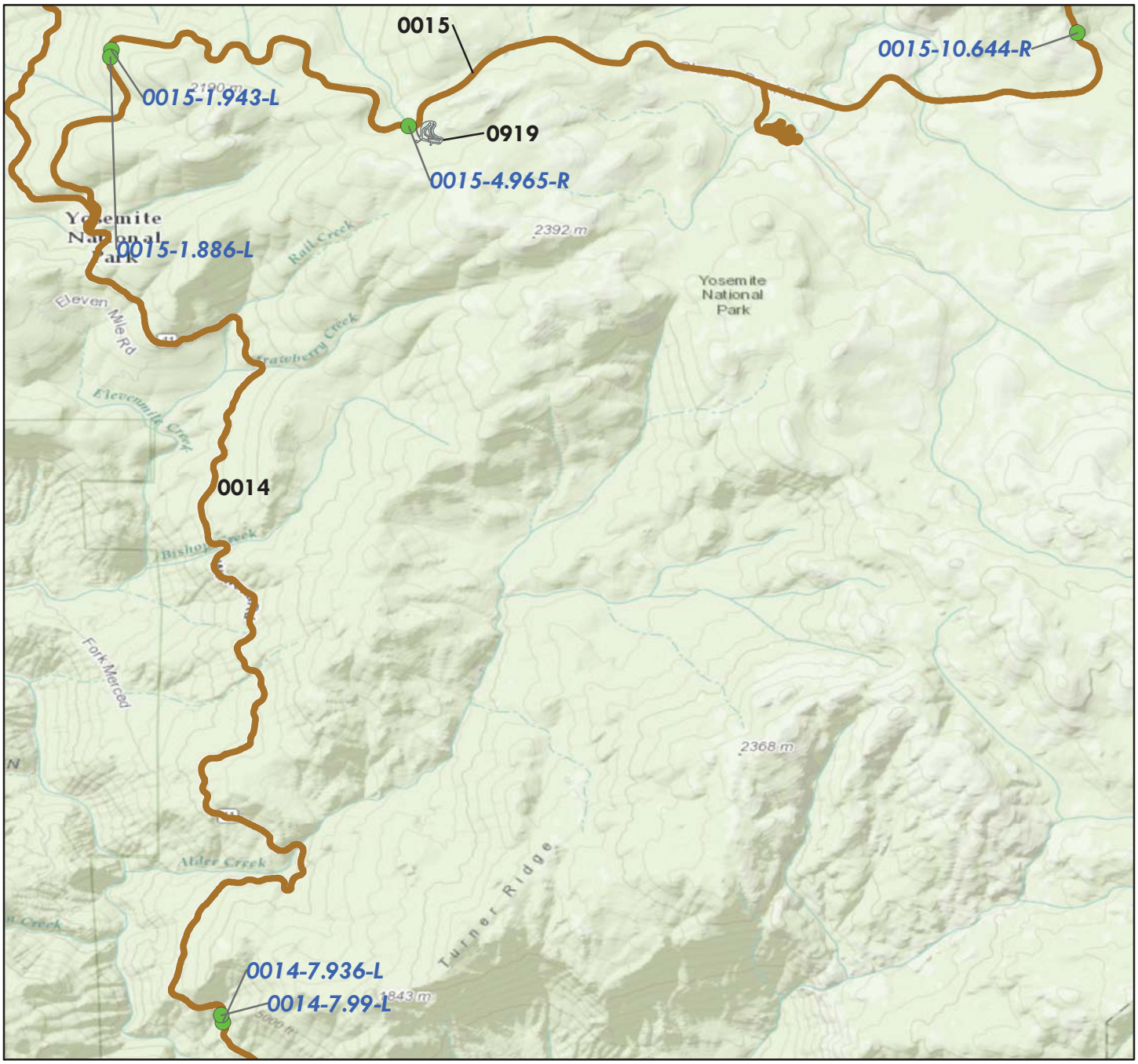
Yosemite National Park

WALL LOCATION MAP

Map 7



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Wall Locations

RIP Collected Routes

Miles

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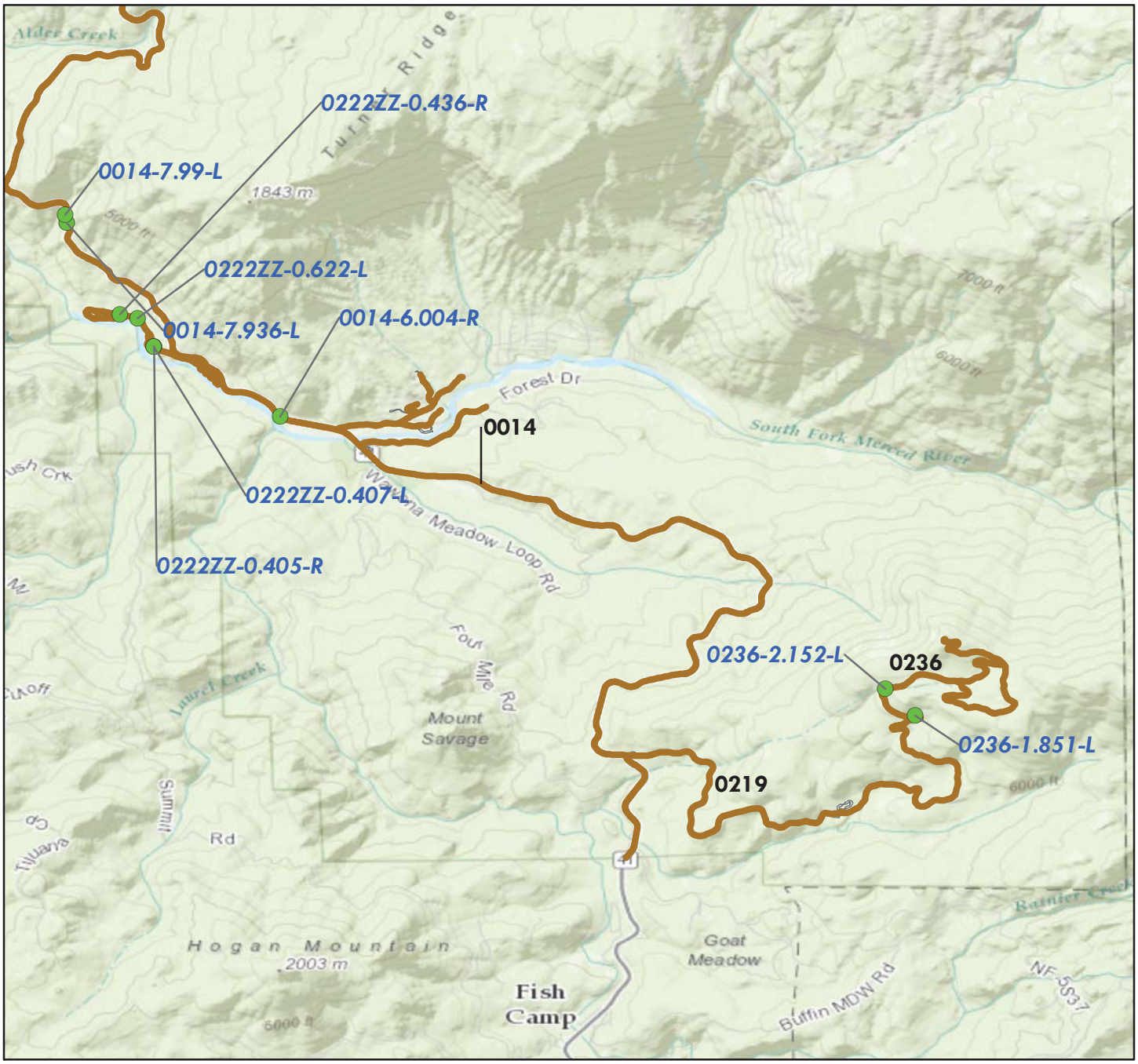
Yosemite National Park

WALL LOCATION MAP

Map 8



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Wall Locations

RIP Collected Routes

Miles

0 1 2

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Tier 1
Park Retaining Wall Overview

Yosemite National Park

Federal Lands Highway
Road Inventory Program

Parkwide Summary: Yosemite National Park

Initial retaining wall inspections were conducted at Yosemite National Park in 2007, and encompassed all known retaining wall structures associated with Park roadways - including structure's retaining cuts and fills, as well as qualifying headwalls at culverts. For the purposes of the assessment, walls must be a minimum of 4 feet in maximum height of retained earth and greater than 6 feet in maximum height for culvert headwalls. This does not include the height of parapet or guardwall above a retaining wall. In general, guardwall or parapets are not included in this assessment, but were inspected for Yosemite National Park in 2009 under a separate effort as part of the Guardwall/Rail Inventory Program (GIP). A report for GIP is available under separate cover.

All paved roadways and parking areas listed in the RIP Route Identification Report were inspected for walls. Occasionally, unpaved routes not in RIP were inventoried due to their future programmatic addition at the park, which was a decision made on site specific to each park.

The following tables provide an overview of the findings of this inspection and assessment effort. In all, 206 walls were inventoried on the routes listed below.

Table 1: Number of Walls by Route

Route Number	Route Name	No. of Walls
0013	BIG OAK FLAT ROAD	35
0014	WAWONA ROAD	10
0015	GLACIER POINT ROAD	4
0016	EL PORTAL ROAD	66
0017	TIOGA ROAD	15
0100	HETCH HETCHY ROAD	40
0222ZZ	WAWONA CAMPGROUND ROADS	4
0236	MARIPOSA GROVE TRAM ROAD	2
0407	MIRROR LAKE ROAD	4
0408	HAPPY ISLES SHUTTLE LOOP	2
0500	VALLEY LOOP ROAD	17
0700	UNKNOWN ROUTE	1
0917A	TUNNEL VIEW PARKING A	1
0917B	TUNNEL VIEW PARKING B	1
0922	GLACIER POINT PARKING	2
0975	HIGHWAY 120/140 INTERSECTION PARKING	2

The following table shows the number of walls broken out by seven possible categories of basic wall function.

Table 2: Number of Walls by Wall Function

Wall Function	No. of Walls
CW - Cut Wall	31
FW - Fill Wall	121
HW - Head Wall	39
SP - Slope Protection	15

The following table shows the primary wall types that were inventoried and assessed. There are 24 possible primary wall types, which are summarized in Appendix A.

Table 3: Number of Walls by Primary Wall Type

Primary Wall Type	No. of Walls
CL, Cantilever - Concrete	10
GD, Gravity - Dry Stone	109
GM, Gravity - Mortared Stone	66
MW, MSE - Welded Wire Face	17
SN, Soil Nail	4

The following table shows the number of walls by one of six categories of recommended action along with associated 2007 costs and the number of walls that are in each recommended action category. The majority of walls have a recommendation of *No Action* or *Monitor*; work orders were created for all other recommended actions.

Table 4: Number of Walls by Recommended Action and Associated 2007 Cost

Recommended Action	2007 Repair Costs*	No. of Walls
No Action	$0	160
Monitor	$0	0
Maintenance	$48,855	21
Repair Elements	$213,989	20
Replace Elements	$56,269	5
Replace Wall	$0	0
Totals	**$319,113**	**206**

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

The following table categorizes the number of walls that fall into one of ten cost ranges, based on the prepared work orders. The locations, work descriptions, and cost of the recommended repairs for these walls are listed by individual wall in Tier 3 of this report.

Table 5: Number of Walls Grouped by Associated 2007 Cost

Cost Range*	No. of Walls
$0	160
$1 - $25,000	43
$25,001 - $50,000	2
$50,001 - $100,000	1
$100,001 - $250,000	0
$250,001 - $500,000	0
$500,001 - $1,000,000	0
$1,000,001 - $2,000,000	0
$2,000,001 - $3,000,000	0
$3,000,001 - $4,000,000	0
Total Number of Walls	**206**

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Routine inspection and performing the noted maintenance will greatly aid in the continued performance of all walls at Yosemite National Park. Work orders for walls needing maintenance generally included items such as replacing missing stones, replacing mortar, filling voids at the top or bottom of fill walls, and clearing vegetation.

Work orders for walls needing localized element repairs generally included items such as adding riprap protection to the wall foundation, replacing missing sections of dry stone walls, replacing culverts, grouting voids in walls, and patching/restoring roadway pavement. While decaying mortor generally does not threaten wall stability in the near term, grout repair will extend the life of these walls.

Work orders for walls needing major repairs (replace elements or replace wall) generally include items such as foundation repair or replacement, fill voids, repair roadway shoulder, replace or extend retaining wall in either height or length, rebuild failed segments of walls, repair elements across 50% or more of the wall, remove and recompact backfill material, add scour protection (typically with riprap, concrete, or rock fill), and remove/reset culvert headwalls. Due to the large unit items associated with major repairs, recommendations vary by specific wall and are presented in Tier 3 of this report.

WIP identified 55 critically deficient walls nationally based on wall ratings less than 49 (poor/critical overall condition). The following table presents the walls in Yosemite National Park that are on this list and have been elevated to the Park Regional Coordinators in a Regional Park Summary Memorandum. Generally, these are walls with major repair element recommendations that may be a priority for repair work in your park.

Table 6: Number of Walls by Route

Wall Identification	Failure Consequence(1)	Wall Rating(2)	Recommended Action(3)	2007 Repair Costs(4)
No critically deficient walls.				

Notes: 1) Low consequence of failure and/or no recommended action may indicate repairs are not needed.
2) Wall ratings listed range from 0-49 (Poor/Critical).
3) Information was prepared for project planning purposes only. Actual repair work order scopes and actual costs will need to be evaluated based on current pay item unit prices for specific locations.
4) 2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Tier 2
Route Retaining Wall Overview

Yosemite National Park

Federal Lands Highway
Road Inventory Program

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0013-0.047-L 9/28/2007	2,218	135	Gravity - Dry Stone	Fill Wall	91	$0.00
YOSE-0013-0.093-L 9/29/2007	25,000	1,330	Gravity - Dry Stone	Fill Wall	82	$0.00
YOSE-0013-0.505-L 9/28/2007	2,188	200	Gravity - Mortared Stone	Fill Wall	85	$0.00
YOSE-0013-0.595-L 9/28/2007	3,429	192	Gravity - Mortared Stone	Fill Wall	84	$7,740.00
YOSE-0013-0.671-L 9/29/2007	1,628	73	Gravity - Mortared Stone	Fill Wall	81	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0013-0.690-L 9/29/2007	5,720	227	Gravity - Dry Stone	Fill Wall	87	$440.00
YOSE-0013-0.695-L 9/29/2007	2,846	222	Gravity - Dry Stone	Fill Wall	72	$0.00
YOSE-0013-0.745-L 9/29/2007	3,721	313	Gravity - Dry Stone	Fill Wall	90	$0.00
YOSE-0013-0.806-L 9/29/2007	1,072	67	Gravity - Dry Stone	Fill Wall	90	$0.00
YOSE-0013-0.994-L 9/29/2007	10,850	310	Gravity - Dry Stone	Fill Wall	70	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

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Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0013-1.036-L 9/29/2007	1,250	95	Gravity - Mortared Stone	Fill Wall	77	$0.00
YOSE-0013-1.055-L 9/29/2007	2,000	140	Gravity - Dry Stone	Fill Wall	76	$0.00
YOSE-0013-1.084-L 9/29/2007	11,250	570	Gravity - Dry Stone	Fill Wall	76	$0.00
YOSE-0013-1.197-L 9/29/2007	2,550	127	Gravity - Mortared Stone	Fill Wall	77	$0.00
YOSE-0013-1.226-L 9/29/2007	1,150	86	Gravity - Dry Stone	Fill Wall	76	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

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Retaining Wall Condition Legend – Wall Condition Rating

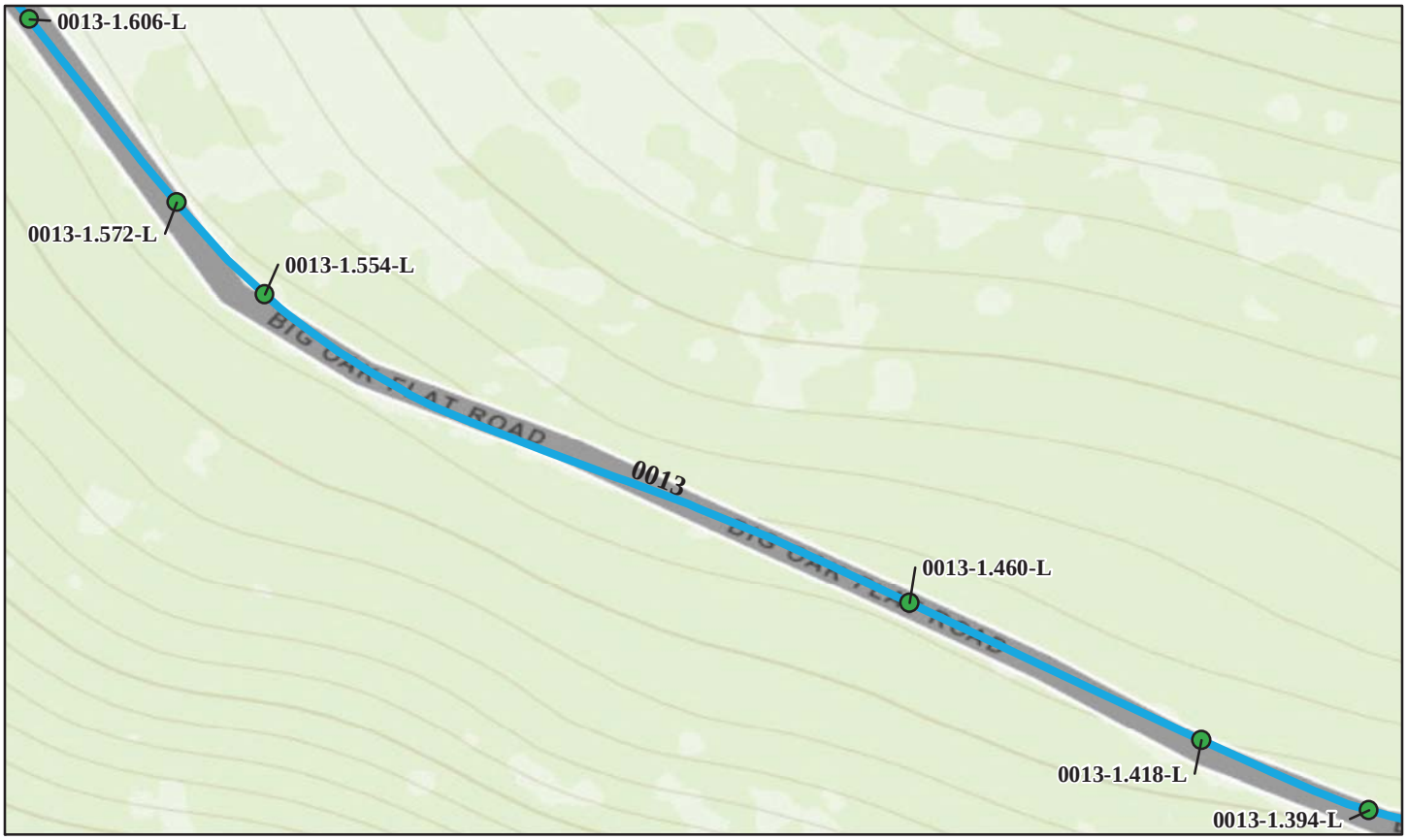
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0013-1.261-R 9/29/2007	95	21	Gravity - Mortared Stone	Cut Wall	78	$0.00
YOSE-0013-1.345-L 9/29/2007	719	52	Gravity - Mortared Stone	Fill Wall	93	$0.00
YOSE-0013-1.374-L 9/29/2007	2,069	172	Gravity - Mortared Stone	Fill Wall	95	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD



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Retaining Wall Condition Legend – Wall Condition Rating

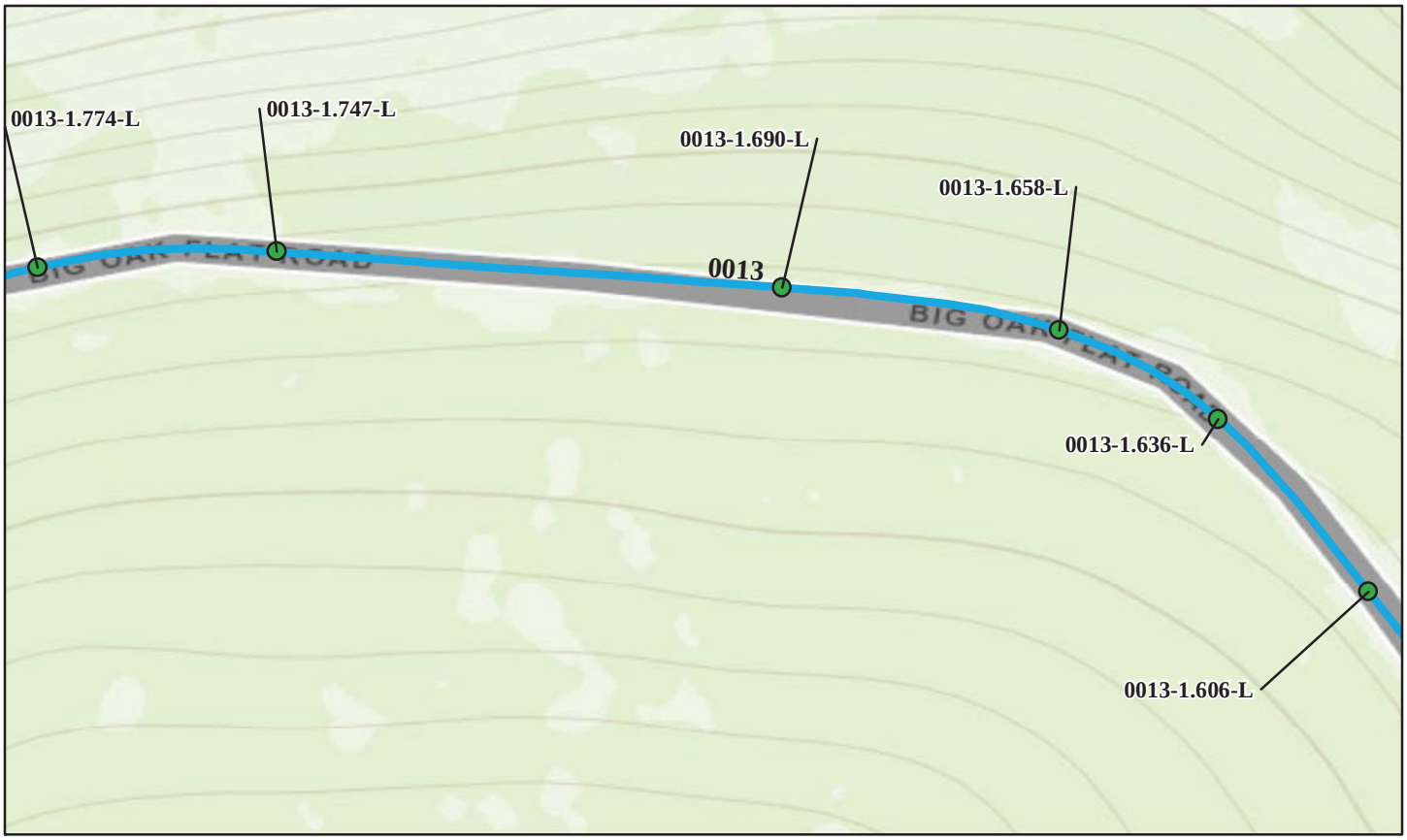
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0013-1.394-L 9/29/2007	913	87	Gravity - Dry Stone	Fill Wall	94	$0.00
YOSE-0013-1.418-L 9/29/2007	5,100	204	Gravity - Dry Stone	Fill Wall	75	$0.00
YOSE-0013-1.460-L 9/29/2007	9,140	480	Gravity - Mortared Stone	Fill Wall	87	$0.00
YOSE-0013-1.554-L 9/29/2007	2,400	95	Gravity - Mortared Stone	Fill Wall	80	$0.00
YOSE-0013-1.572-L 9/26/2007	2,040	172	Gravity - Mortared Stone	Fill Wall	90	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD



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Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0013-1.606-L 9/26/2007	1,845	140	Gravity - Mortared Stone	Fill Wall	90	$0.00
YOSE-0013-1.636-L 9/26/2007	1,440	120	Gravity - Dry Stone	Fill Wall	84	$0.00
YOSE-0013-1.658-L 9/26/2007	2,952	164	Gravity - Mortared Stone	Fill Wall	88	$0.00
YOSE-0013-1.690-L 9/26/2007	7,075	302	Gravity - Dry Stone	Fill Wall	87	$0.00
YOSE-0013-1.747-L 9/26/2007	2,880	143	Gravity - Dry Stone	Fill Wall	93	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

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Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0013-1.774-L 9/26/2007	2,150	200	Gravity - Mortared Stone	Fill Wall	90	$0.00
YOSE-0013-2.303-L 9/29/2007	6,500	250	Gravity - Dry Stone	Fill Wall	85	$0.00
YOSE-0013-2.350-L 9/29/2007	4,496	270	Gravity - Mortared Stone	Fill Wall	93	$0.00
YOSE-0013-3.043-L 9/29/2007	6,021	510	Gravity - Dry Stone	Fill Wall	96	$0.00
YOSE-0013-3.170-L 9/29/2007	2,375	190	Gravity - Dry Stone	Fill Wall	69	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0013-4.454-L 9/28/2007	672	156	Gravity - Mortared Stone	Fill Wall	81	$0.00
YOSE-0013-4.610-R 9/28/2007	84	21	Gravity - Dry Stone	Slope Protection	80	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

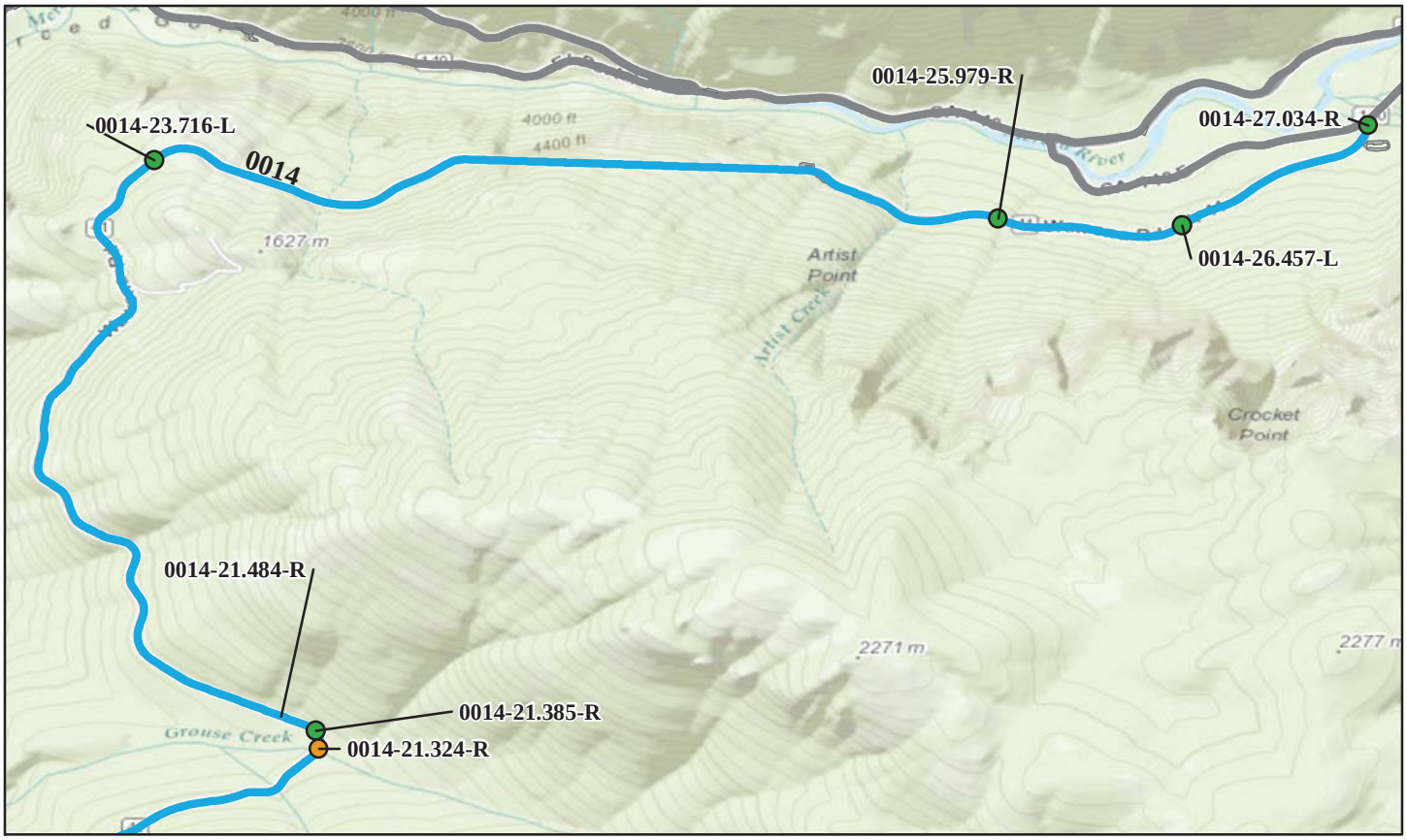
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0014-6.004-R 9/26/2007	1,000	225	Gravity - Dry Stone	Cut Wall	75	$0.00
YOSE-0014-7.936-L 9/26/2007	600	66	Gravity - Mortared Stone	Fill Wall	83	$0.00
YOSE-0014-7.990-L 9/26/2007	550	100	Gravity - Mortared Stone	Fill Wall	71	$0.00
YOSE-0014-21.324-R 9/26/2007	125	22	Gravity - Mortared Stone	Head Wall	63	$0.00
YOSE-0014-21.385-R 9/26/2007	1,000	68	Gravity - Dry Stone	Cut Wall	79	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

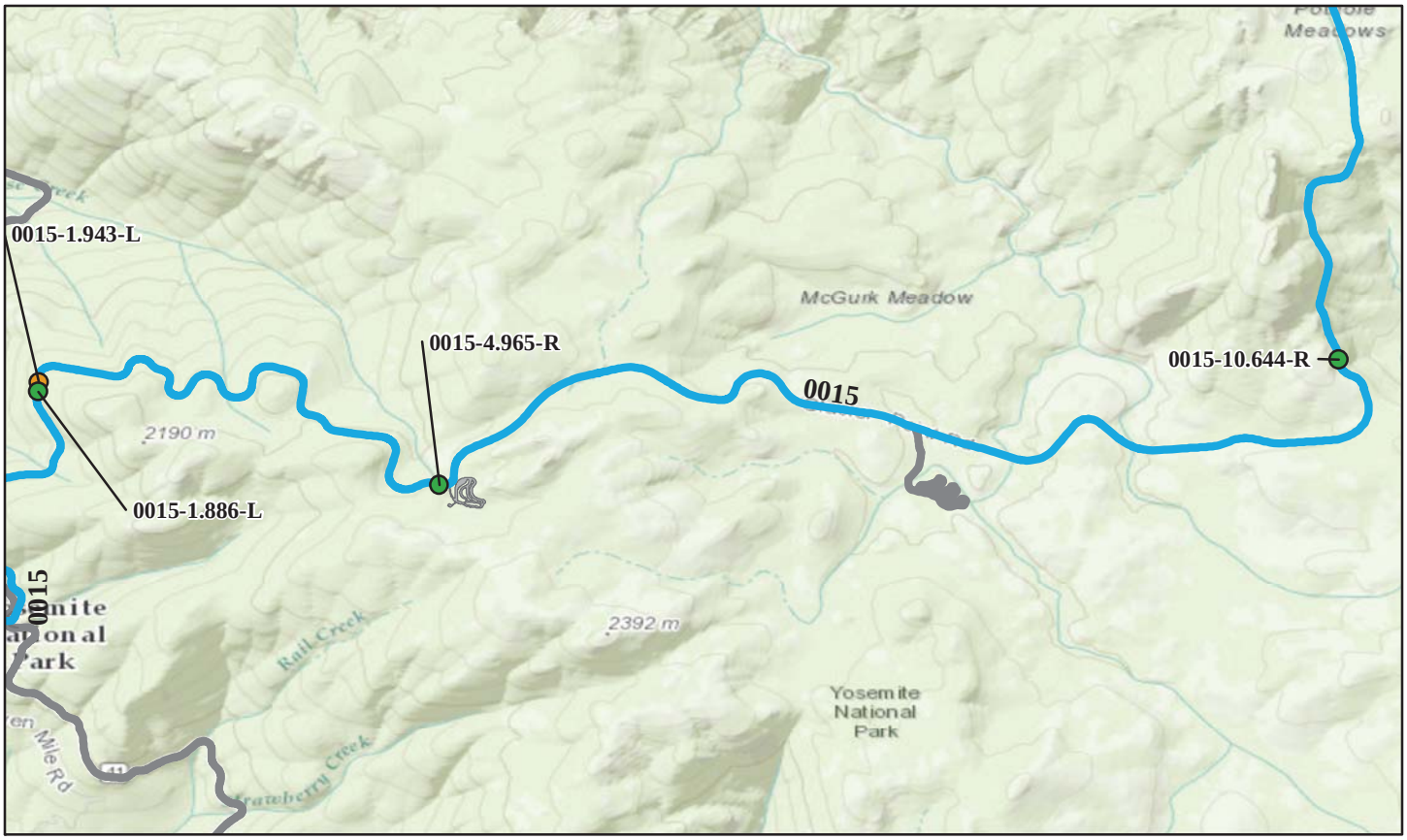
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0014-21.484-R 9/26/2007	2,100	157	Gravity - Dry Stone	Cut Wall	58	$0.00
YOSE-0014-23.716-L 9/26/2007	17,500	1,840	Gravity - Mortared Stone	Fill Wall	85	$0.00
YOSE-0014-25.979-R 9/27/2007	94	22	Gravity - Mortared Stone	Head Wall	90	$0.00
YOSE-0014-26.457-L 9/27/2007	88	29	Gravity - Mortared Stone	Head Wall	79	$6,576.00
YOSE-0014-27.034-R 9/27/2007	84	27	Gravity - Mortared Stone	Head Wall	81	$740.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0015: GLACIER POINT ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0015-1.886-L 9/27/2007	923	107	Gravity - Dry Stone	Fill Wall	74	$1,750.00
YOSE-0015-1.943-L 9/27/2007	807	128	Gravity - Dry Stone	Fill Wall	69	$7,100.00
YOSE-0015-4.965-R 9/27/2007	248	34	Gravity - Mortared Stone	Head Wall	77	$37,330.00
YOSE-0015-10.644-R 9/27/2007	3,740	275	Gravity - Dry Stone	Fill Wall	93	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-0.044-L 9/25/2007	144	36	Gravity - Dry Stone	Cut Wall	65	$2,665.00
YOSE-0016-0.087-R 9/25/2007	330	66	Gravity - Dry Stone	Fill Wall	80	$0.00
YOSE-0016-0.163-R 9/25/2007	1,365	174	MSE - Welded Wire Face	Fill Wall	90	$0.00
YOSE-0016-0.297-R 9/25/2007	2,163	379	MSE - Welded Wire Face	Fill Wall	90	$0.00
YOSE-0016-0.382-R 9/25/2007	592	60	Gravity - Dry Stone	Fill Wall	71	$1,870.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-0.400-R 9/25/2007	6,683	698	MSE - Welded Wire Face	Fill Wall	89	$0.00
YOSE-0016-0.430-L 9/25/2007	140	30	Gravity - Dry Stone	Slope Protection	89	$0.00
YOSE-0016-0.507-L 9/25/2007	158	35	Gravity - Dry Stone	Cut Wall	89	$0.00
YOSE-0016-0.540-R 9/26/2007	1,273	202	MSE - Welded Wire Face	Fill Wall	89	$0.00
YOSE-0016-0.587-L 9/26/2007	326	52	Gravity - Dry Stone	Cut Wall	80	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

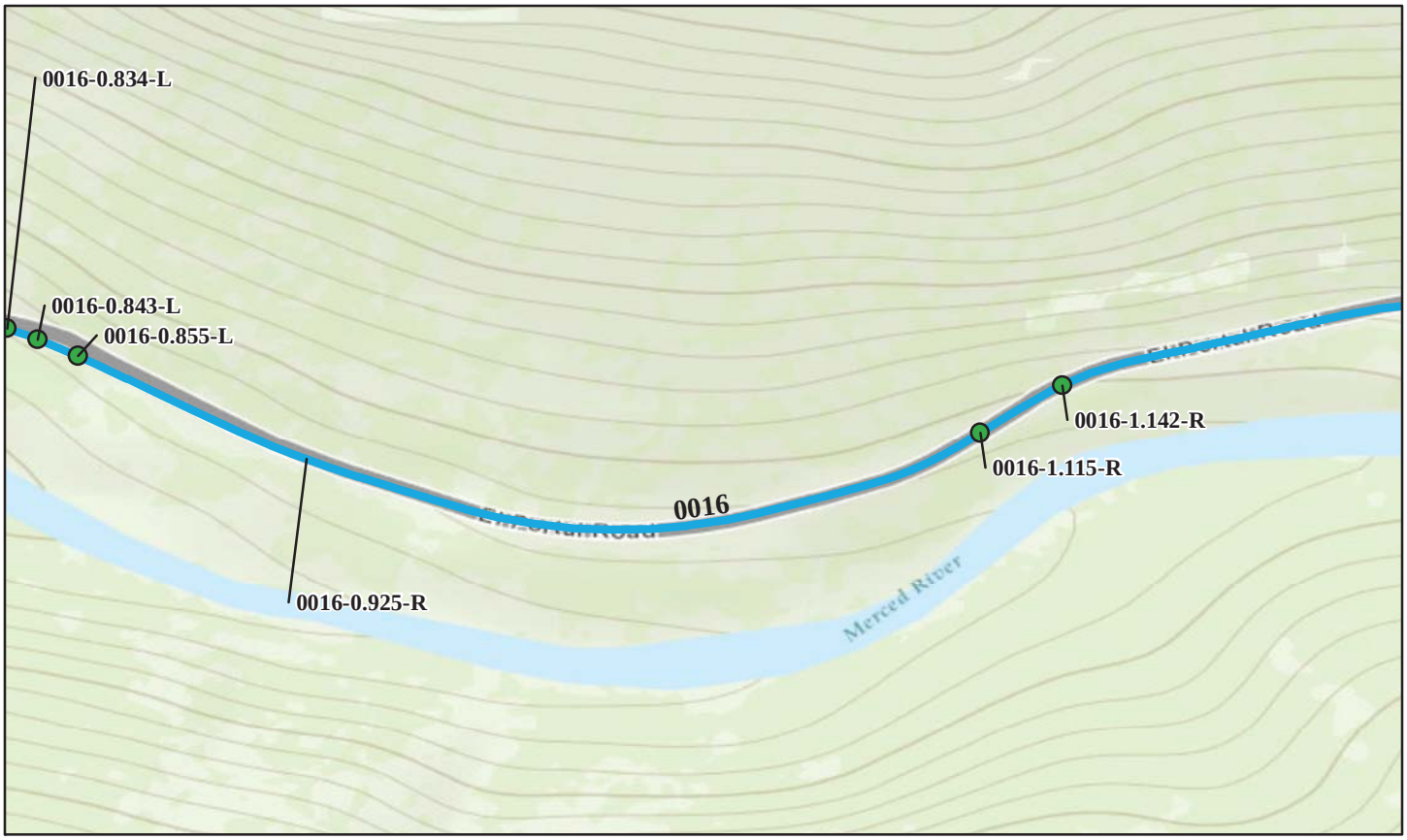
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-0.648-R 9/26/2007	850	75	Gravity - Dry Stone	Slope Protection	75	$0.00
YOSE-0016-0.673-R 9/26/2007	532	40	Gravity - Dry Stone	Fill Wall	73	$0.00
YOSE-0016-0.684-R 9/26/2007	400	95	Gravity - Dry Stone	Fill Wall	66	$770.00
YOSE-0016-0.800-R 9/26/2007	4,538	394	MSE - Welded Wire Face	Fill Wall	90	$0.00
YOSE-0016-0.834-L 9/26/2007	100	25	Gravity - Dry Stone	Slope Protection	74	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-0.843-L 9/26/2007	960	63	Gravity - Mortared Stone	Cut Wall	80	$0.00
YOSE-0016-0.855-L 9/26/2007	530	40	Gravity - Dry Stone	Slope Protection	90	$0.00
YOSE-0016-0.925-R 9/26/2007	1,946	48	Gravity - Dry Stone	Fill Wall	62	$500.00
YOSE-0016-1.115-R 9/26/2007	1,120	105	MSE - Welded Wire Face	Fill Wall	90	$0.00
YOSE-0016-1.142-R 9/26/2007	5,731	456	MSE - Welded Wire Face	Fill Wall	85	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-1.247-R 9/26/2007	3,605	164	Gravity - Dry Stone	Fill Wall	74	$0.00
YOSE-0016-1.285-R 9/26/2007	1,929	213	MSE - Welded Wire Face	Fill Wall	87	$0.00
YOSE-0016-1.289-L 9/29/2007	744	31	Soil Nail	Cut Wall	90	$0.00
YOSE-0016-1.300-L 9/29/2007	308	22	Soil Nail	Cut Wall	90	$0.00
YOSE-0016-1.327-R 9/26/2007	405	30	Gravity - Dry Stone	Fill Wall	80	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

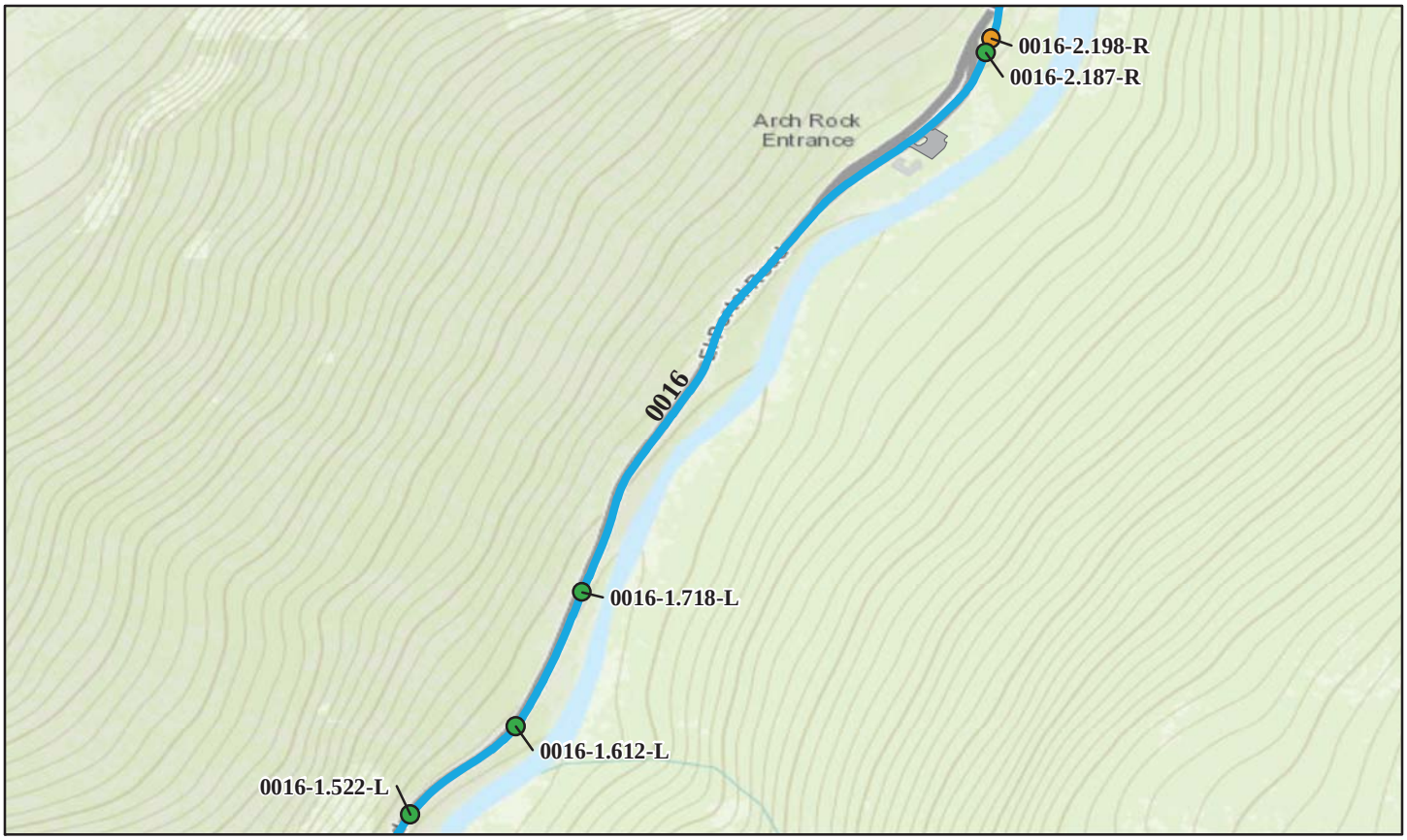
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-1.342-L 9/29/2007	1,000	50	Soil Nail	Cut Wall	90	$0.00
YOSE-0016-1.344-R 9/26/2007	98	14	Gravity - Dry Stone	Fill Wall	83	$0.00
YOSE-0016-1.348-R 9/26/2007	1,723	158	MSE - Welded Wire Face	Fill Wall	87	$0.00
YOSE-0016-1.358-L 9/26/2007	68	27	Gravity - Dry Stone	Cut Wall	80	$0.00
YOSE-0016-1.385-R 9/26/2007	4,994	422	MSE - Welded Wire Face	Fill Wall	87	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-1.522-L 9/26/2007	420	56	Gravity - Dry Stone	Cut Wall	74	$0.00
YOSE-0016-1.612-L 9/26/2007	246	41	Gravity - Dry Stone	Cut Wall	80	$0.00
YOSE-0016-1.718-L 9/27/2007	240	40	Gravity - Dry Stone	Slope Protection	80	$0.00
YOSE-0016-2.187-R 9/27/2007	24	6	Gravity - Mortared Stone	Fill Wall	77	$1,410.00
YOSE-0016-2.198-R 9/27/2007	206	52	Gravity - Dry Stone	Fill Wall	69	$5,273.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-2.344-L 9/27/2007	204	34	Gravity - Dry Stone	Cut Wall	73	$1,690.00
YOSE-0016-2.390-R 9/27/2007	2,148	255	MSE - Welded Wire Face	Fill Wall	89	$0.00
YOSE-0016-2.526-L 9/27/2007	102	22	Gravity - Dry Stone	Slope Protection	73	$1,510.00
YOSE-0016-2.587-L 9/27/2007	60	17	Gravity - Mortared Stone	Cut Wall	90	$0.00
YOSE-0016-2.669-L 9/27/2007	130	21	Gravity - Dry Stone	Slope Protection	73	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-2.685-L 9/27/2007	256	26	Gravity - Dry Stone	Slope Protection	70	$0.00
YOSE-0016-2.812-R 9/27/2007	4,434	571	MSE - Welded Wire Face	Fill Wall	89	$0.00
YOSE-0016-2.861-L 9/27/2007	92	18	Gravity - Mortared Stone	Cut Wall	89	$0.00
YOSE-0016-3.215-L 9/27/2007	94	19	Gravity - Mortared Stone	Cut Wall	90	$0.00
YOSE-0016-3.256-R 9/27/2007	120	49	Gravity - Mortared Stone	Fill Wall	70	$7,744.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-3.414-R 9/27/2007	1,676	315	MSE - Welded Wire Face	Fill Wall	90	$0.00
YOSE-0016-3.473-L 9/27/2007	1,008	63	Gravity - Dry Stone	Slope Protection	70	$0.00
YOSE-0016-3.486-L 9/27/2007	751	76	Soil Nail	Cut Wall	89	$0.00
YOSE-0016-3.496-L 9/27/2007	817	43	Gravity - Dry Stone	Slope Protection	70	$0.00
YOSE-0016-3.605-L 9/27/2007	200	50	Gravity - Dry Stone	Cut Wall	76	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-3.764-L 9/27/2007	392	106	Gravity - Dry Stone	Cut Wall	80	$0.00
YOSE-0016-3.796-L 9/27/2007	180	20	Gravity - Dry Stone	Slope Protection	69	$0.00
YOSE-0016-4.230-R 9/28/2007	3,187	519	MSE - Welded Wire Face	Fill Wall	87	$0.00
YOSE-0016-4.347-L 9/28/2007	65	18	Gravity - Mortared Stone	Cut Wall	90	$0.00
YOSE-0016-4.425-R 9/28/2007	451	120	MSE - Welded Wire Face	Fill Wall	89	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-4.938-L 9/28/2007	458	88	Cantilever - Concrete	Head Wall	80	$0.00
YOSE-0016-4.938-R 9/28/2007	332	60	Cantilever - Concrete	Head Wall	90	$0.00
YOSE-0016-5.432-R 9/28/2007	957	109	Gravity - Dry Stone	Fill Wall	53	$12,080.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-5.463-L 9/28/2007	232	45	Gravity - Dry Stone	Slope Protection	80	$0.00
YOSE-0016-5.716-R 9/28/2007	772	120	MSE - Welded Wire Face	Fill Wall	86	$0.00
YOSE-0016-5.959-R 9/28/2007	4,010	154	Gravity - Dry Stone	Fill Wall	70	$15,820.00
YOSE-0016-6.128-R 9/28/2007	800	50	Gravity - Dry Stone	Fill Wall	70	$3,370.00
YOSE-0016-6.146-R 9/28/2007	625	70	Gravity - Dry Stone	Fill Wall	70	$3,370.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0016-6.542-L 9/28/2007	80	16	Gravity - Dry Stone	Slope Protection	77	$0.00
YOSE-0016-6.610-R 9/28/2007	321	64	Gravity - Dry Stone	Fill Wall	62	$4,500.00
YOSE-0016-7.046-L 9/28/2007	1,275	160	Gravity - Dry Stone	Fill Wall	57	$1,945.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

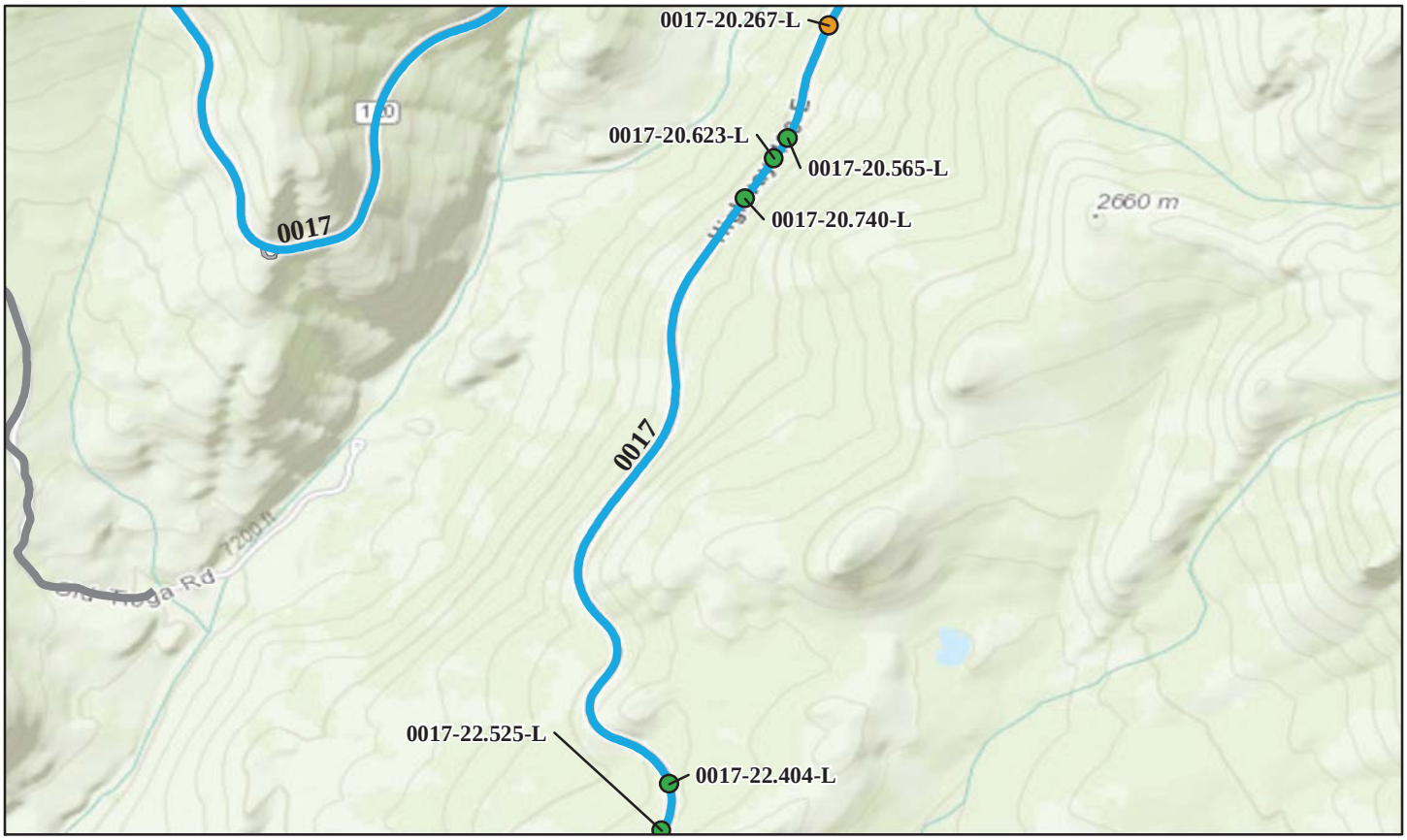
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0017-7.392-L 9/30/2007	4,230	390	Gravity - Dry Stone	Fill Wall	79	$0.00
YOSE-0017-7.627-L 9/27/2007	6,900	500	Gravity - Dry Stone	Fill Wall	78	$63,140.00
YOSE-0017-9.274-L 9/29/2007	286	56	Gravity - Mortared Stone	Head Wall	94	$0.00
YOSE-0017-9.282-R 9/29/2007	232	47	Gravity - Mortared Stone	Head Wall	94	$0.00
YOSE-0017-15.975-R 9/26/2007	1,366	469	Gravity - Dry Stone	Cut Wall	90	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

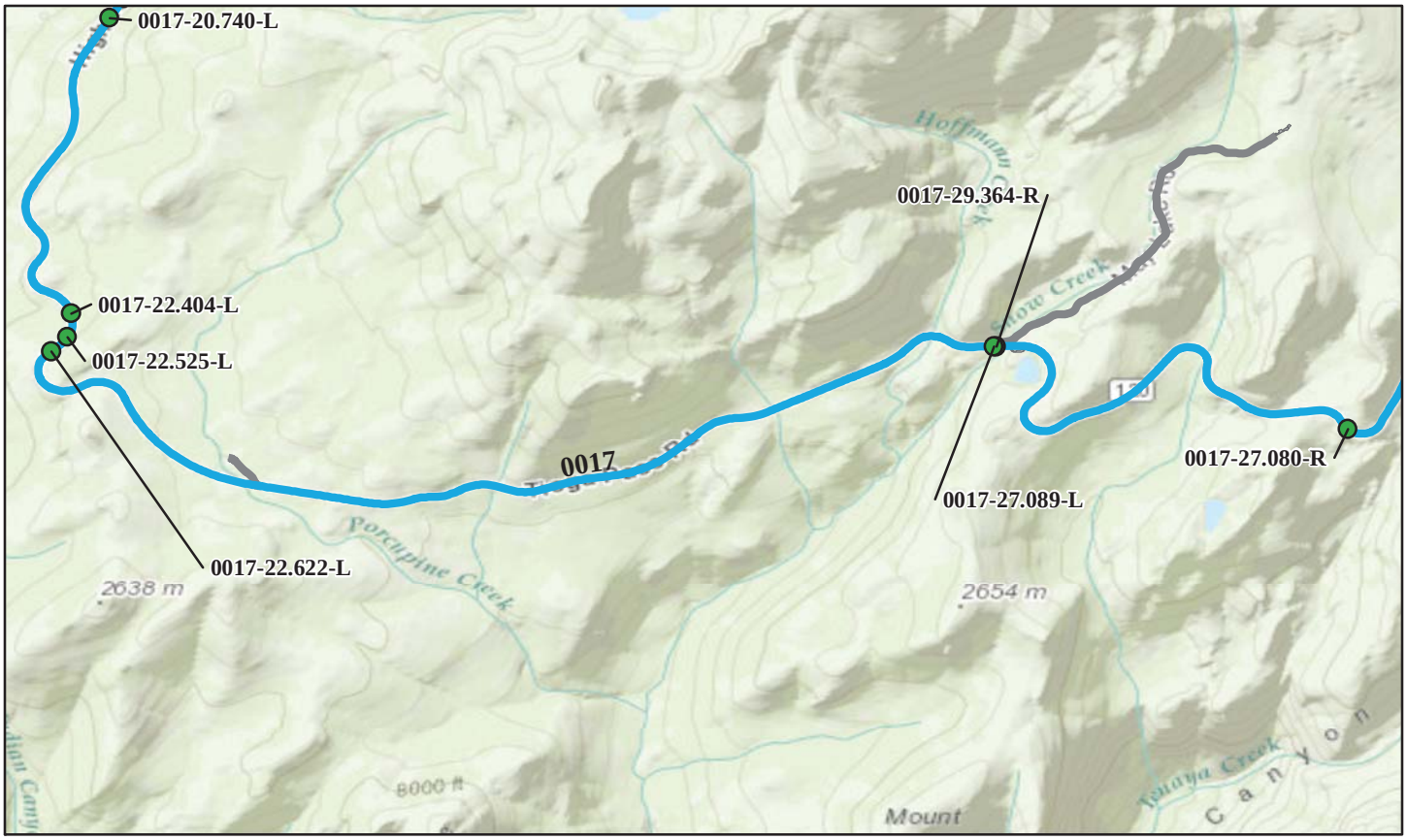
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0017-20.267-L 9/27/2007	333	46	Gravity - Mortared Stone	Head Wall	69	$9,750.00
YOSE-0017-20.565-L 9/27/2007	730	146	Gravity - Dry Stone	Cut Wall	89	$110.00
YOSE-0017-20.623-L 9/26/2007	2,315	463	Gravity - Dry Stone	Cut Wall	85	$39,580.00
YOSE-0017-20.740-L 9/26/2007	1,470	450	Gravity - Dry Stone	Cut Wall	90	$0.00
YOSE-0017-22.404-L 9/27/2007	2,050	410	Gravity - Dry Stone	Cut Wall	90	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

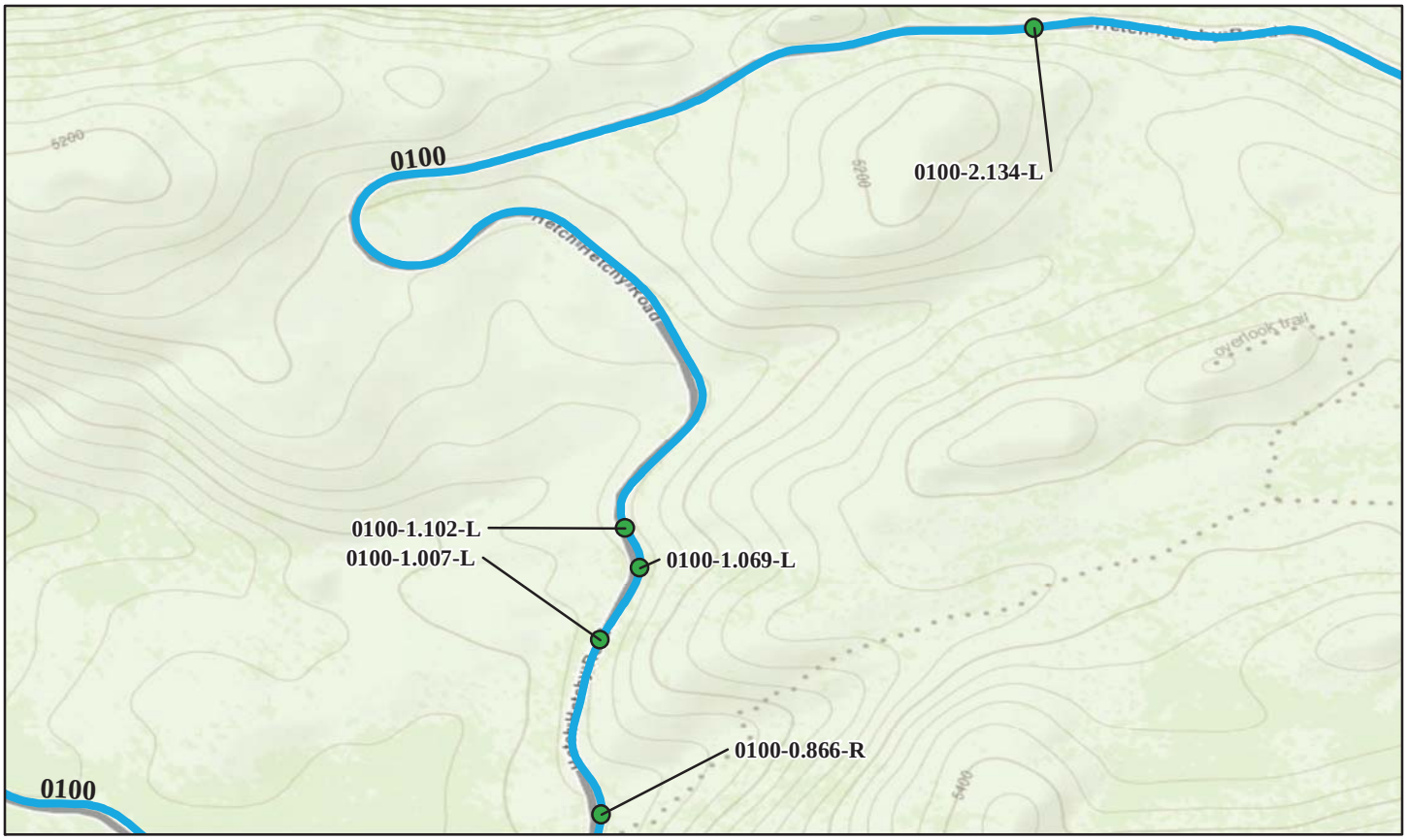
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0017-22.525-L 9/27/2007	1,180	295	Gravity - Dry Stone	Cut Wall	90	$0.00
YOSE-0017-22.622-L 9/27/2007	665	133	Gravity - Dry Stone	Cut Wall	90	$0.00
YOSE-0017-27.080-R 9/27/2007	148	45	Gravity - Mortared Stone	Head Wall	88	$9,010.00
YOSE-0017-27.089-L 9/27/2007	268	46	Gravity - Mortared Stone	Head Wall	78	$15,640.00
YOSE-0017-29.364-R 9/25/2007	6,520	559	Gravity - Dry Stone	Fill Wall	90	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

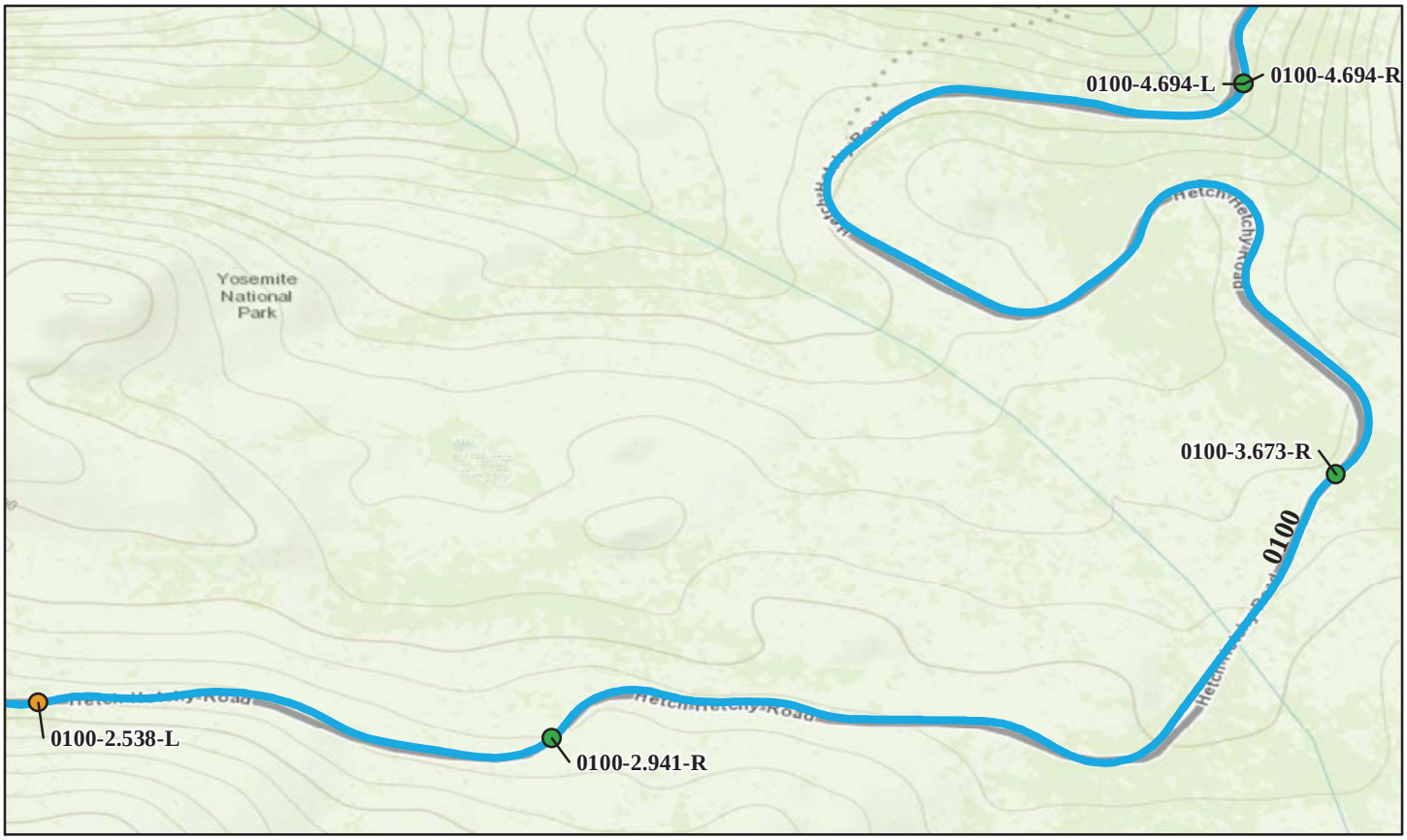
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0100-0.866-R 9/29/2007	144	16	Cantilever - Concrete	Head Wall	84	$0.00
YOSE-0100-1.007-L 9/29/2007	563	130	Gravity - Mortared Stone	Fill Wall	85	$0.00
YOSE-0100-1.069-L 9/29/2007	409	50	Gravity - Dry Stone	Fill Wall	70	$0.00
YOSE-0100-1.102-L 9/29/2007	294	98	Gravity - Dry Stone	Fill Wall	70	$0.00
YOSE-0100-2.134-L 9/29/2007	384	66	Gravity - Dry Stone	Fill Wall	70	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0100-2.538-L 9/29/2007	240	80	Gravity - Dry Stone	Fill Wall	67	$0.00
YOSE-0100-2.941-R 9/29/2007	210	30	Cantilever - Concrete	Head Wall	82	$0.00
YOSE-0100-3.673-R 9/29/2007	126	18	Cantilever - Concrete	Head Wall	83	$0.00
YOSE-0100-4.694-L 9/29/2007	146	34	Gravity - Mortared Stone	Head Wall	83	$0.00
YOSE-0100-4.694-R 9/29/2007	147	21	Gravity - Mortared Stone	Head Wall	90	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0100-4.992-L 9/29/2007	60	15	Gravity - Dry Stone	Head Wall	74	$0.00
YOSE-0100-5.002-L 9/29/2007	202	32	Gravity - Dry Stone	Fill Wall	80	$0.00
YOSE-0100-5.084-L 9/29/2007	252	91	Gravity - Mortared Stone	Fill Wall	75	$0.00
YOSE-0100-5.115-L 9/29/2007	248	97	Gravity - Mortared Stone	Fill Wall	75	$0.00
YOSE-0100-5.170-L 9/29/2007	1,505	140	Gravity - Dry Stone	Fill Wall	80	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0100-5.186-L 9/29/2007	300	20	Gravity - Dry Stone	Fill Wall	77	$0.00
YOSE-0100-5.201-L 9/29/2007	850	52	Gravity - Dry Stone	Fill Wall	84	$0.00
YOSE-0100-5.322-L 9/29/2007	232	60	Gravity - Mortared Stone	Fill Wall	83	$0.00
YOSE-0100-5.351-L 9/29/2007	438	70	Gravity - Dry Stone	Fill Wall	71	$6,890.00
YOSE-0100-5.364-L 9/29/2007	175	59	Gravity - Mortared Stone	Fill Wall	89	$2,500.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0100-5.392-L 9/29/2007	545	242	Gravity - Mortared Stone	Fill Wall	92	$0.00
YOSE-0100-5.614-L 9/29/2007	138	23	Gravity - Dry Stone	Fill Wall	90	$0.00
YOSE-0100-5.618-L 9/29/2007	1,730	123	MSE - Welded Wire Face	Fill Wall	78	$0.00
YOSE-0100-5.624-L 9/29/2007	80	16	Gravity - Dry Stone	Fill Wall	76	$0.00
YOSE-0100-5.652-L 9/29/2007	700	75	Gravity - Dry Stone	Fill Wall	91	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

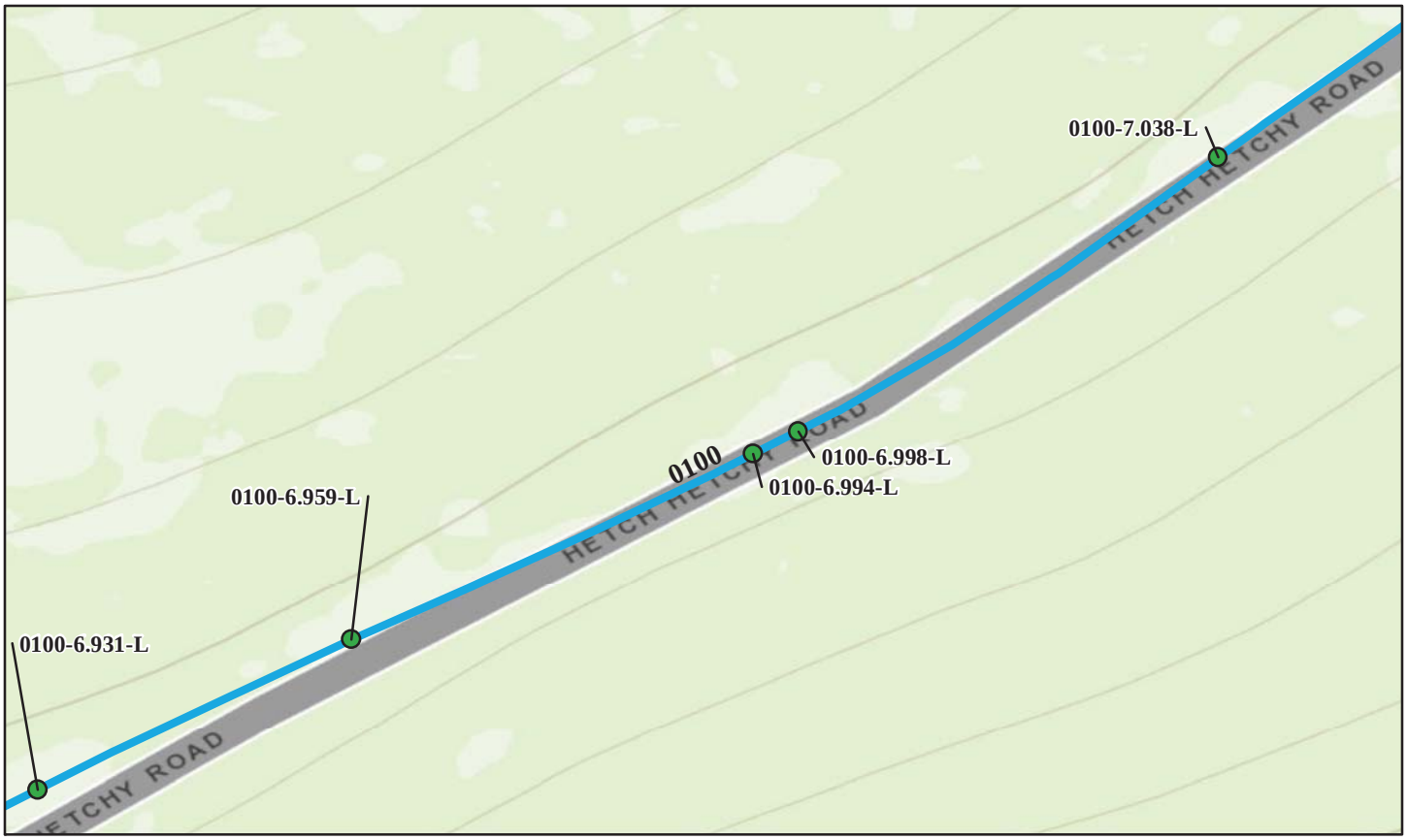
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0100-6.154-L 9/29/2007	50	28	Gravity - Dry Stone	Head Wall	90	$0.00
YOSE-0100-6.154-R 9/29/2007	90	17	Cantilever - Concrete	Head Wall	90	$0.00
YOSE-0100-6.329-R 9/29/2007	208	30	Cantilever - Concrete	Head Wall	90	$0.00
YOSE-0100-6.332-L 9/29/2007	80	16	Cantilever - Concrete	Head Wall	90	$0.00
YOSE-0100-6.903-L 9/28/2007	1,000	120	Gravity - Dry Stone	Fill Wall	87	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0100-6.931-L 9/28/2007	1,250	86	Gravity - Dry Stone	Fill Wall	90	$0.00
YOSE-0100-6.959-L 9/28/2007	400	133	Gravity - Mortared Stone	Fill Wall	90	$0.00
YOSE-0100-6.994-L 9/28/2007	256	16	Gravity - Dry Stone	Fill Wall	83	$0.00
YOSE-0100-6.998-L 9/28/2007	1,285	134	Gravity - Dry Stone	Fill Wall	83	$0.00
YOSE-0100-7.038-L 9/28/2007	720	80	Gravity - Dry Stone	Fill Wall	71	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0100-7.187-L 9/28/2007	552	150	Gravity - Dry Stone	Fill Wall	83	$0.00
YOSE-0100-7.236-L 9/28/2007	1,272	350	Gravity - Mortared Stone	Fill Wall	85	$0.00
YOSE-0100-8.193-R 9/28/2007	2,570	316	Gravity - Mortared Stone	Fill Wall	90	$0.00
YOSE-0100-8.272-L 9/28/2007	875	125	Gravity - Mortared Stone	Cut Wall	93	$0.00
YOSE-0100-8.456-R 9/28/2007	1,048	120	Gravity - Dry Stone	Fill Wall	93	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0222ZZ: WAWONA CAMPGROUND ROADS

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

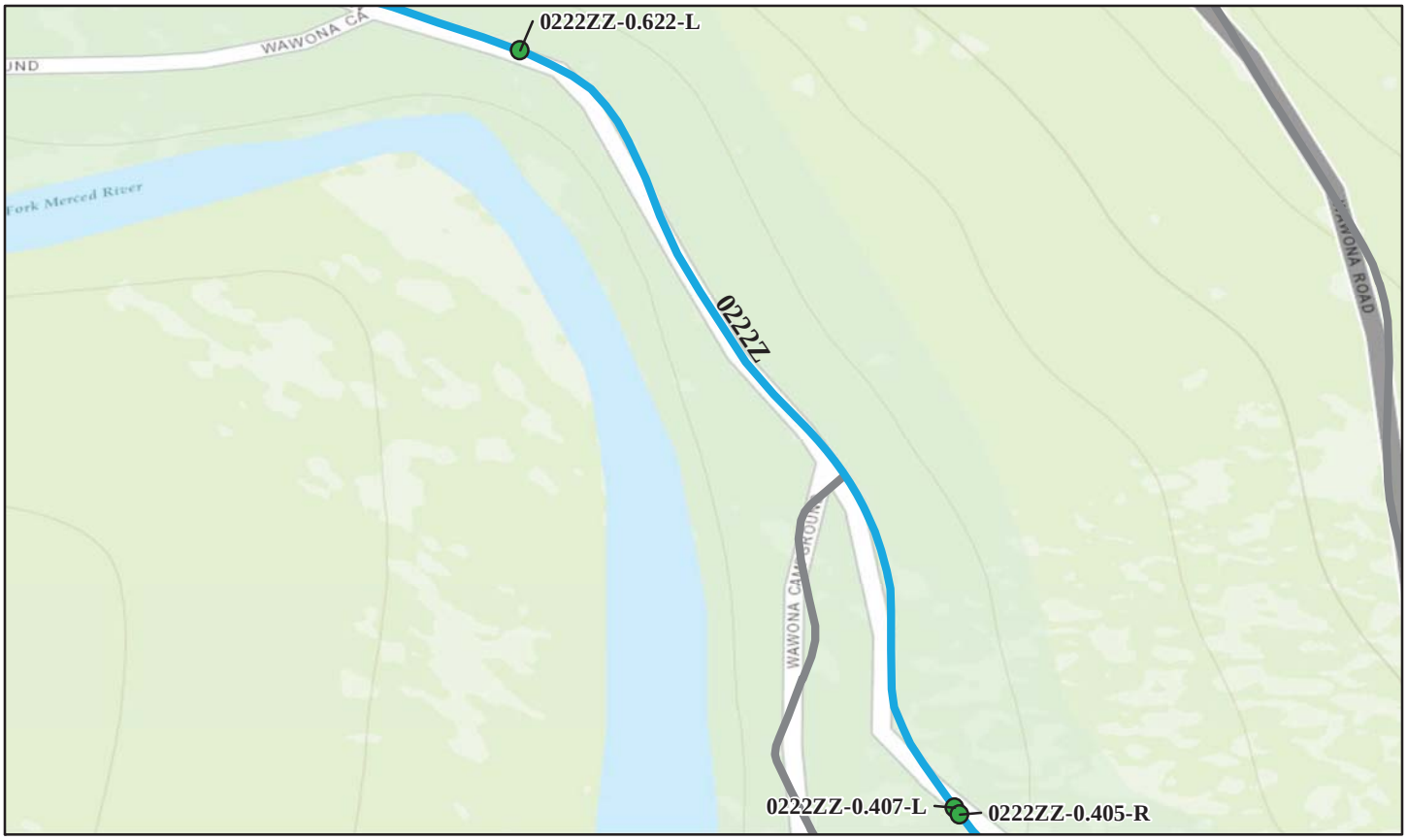
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0222ZZ-0.436-R 9/24/2007	151	30	Gravity - Dry Stone	Head Wall	86	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0222ZZ: WAWONA CAMPGROUND ROADS



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0222ZZ-0.405-R 9/24/2007	302	58	Gravity - Dry Stone	Head Wall	87	$220.00
YOSE-0222ZZ-0.407-L 9/25/2007	456	142	Gravity - Dry Stone	Head Wall	86	$0.00
YOSE-0222ZZ-0.622-L 9/24/2007	624	82	Gravity - Dry Stone	Slope Protection	72	$1,040.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0236: MARIPOSA GROVE TRAM ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

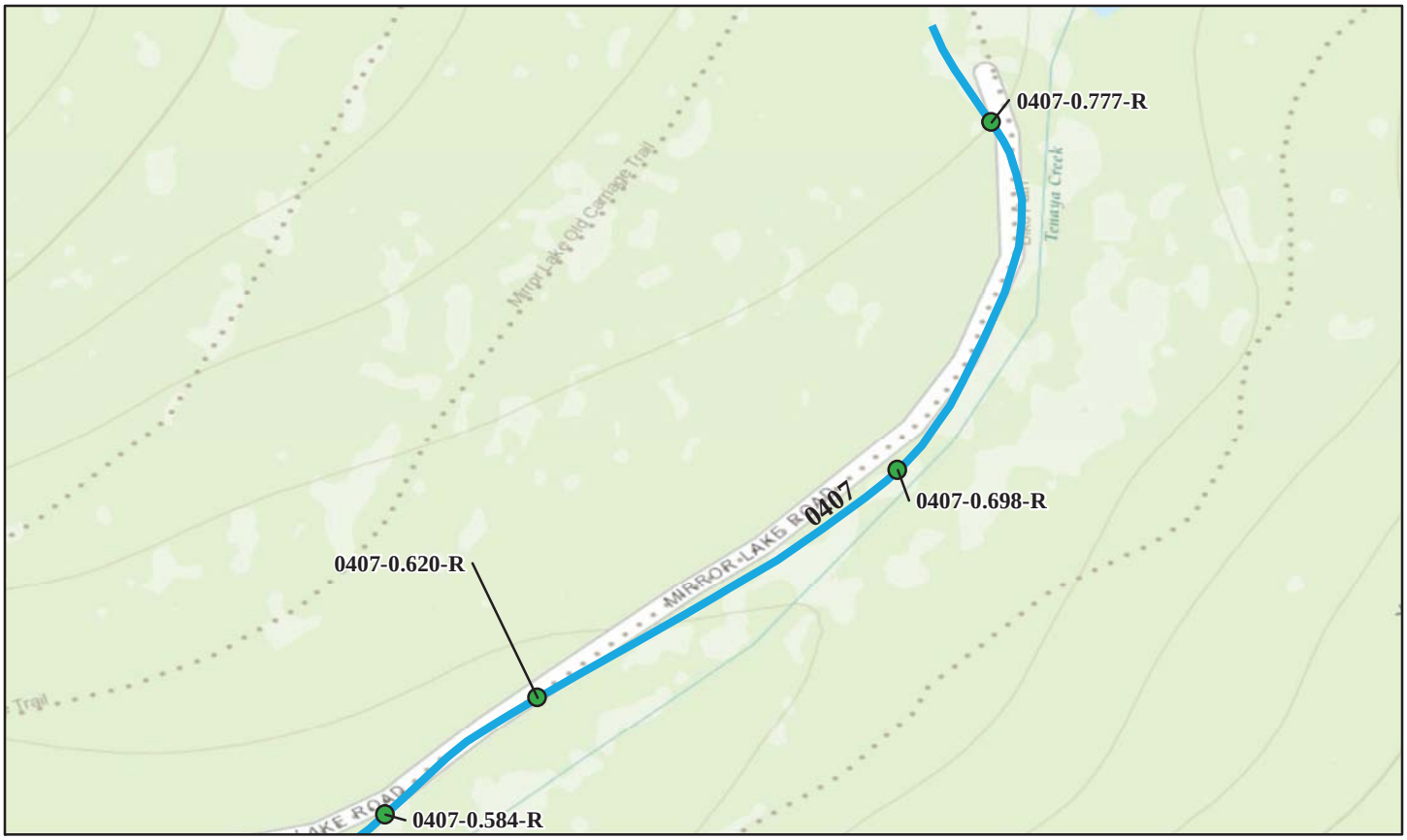
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0236-1.851-L 9/26/2007	512	104	Gravity - Dry Stone	Fill Wall	67	$0.00
YOSE-0236-2.152-L 9/26/2007	950	138	Gravity - Dry Stone	Fill Wall	64	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0407: MIRROR LAKE ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

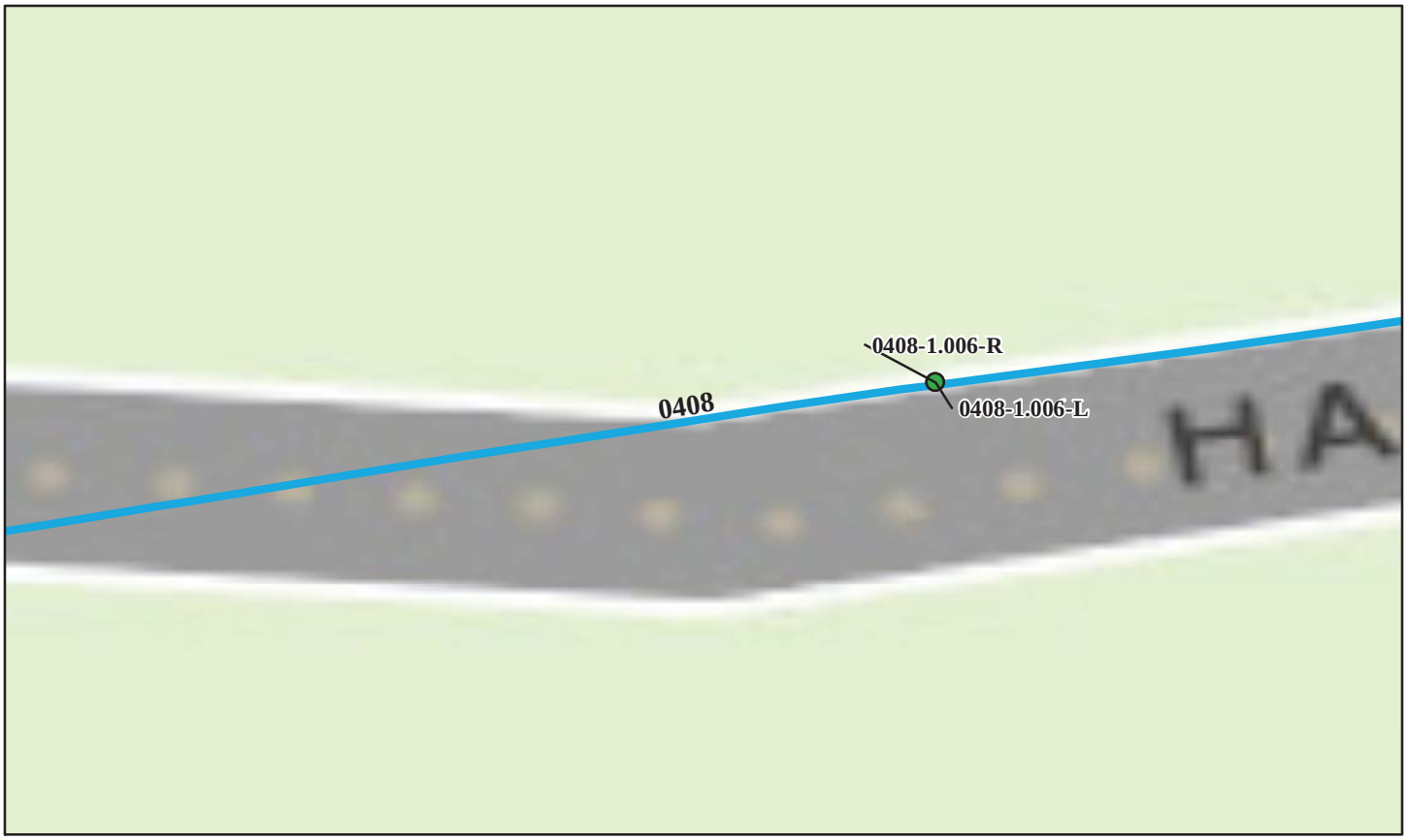
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0407-0.584-R 9/28/2007	399	67	Gravity - Dry Stone	Fill Wall	93	$0.00
YOSE-0407-0.620-R 9/28/2007	1,981	320	Gravity - Dry Stone	Fill Wall	82	$0.00
YOSE-0407-0.698-R 9/28/2007	1,414	202	Gravity - Dry Stone	Fill Wall	97	$0.00
YOSE-0407-0.777-R 9/28/2007	740	135	Gravity - Dry Stone	Fill Wall	73	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0408: HAPPY ISLES SHUTTLE LOOP



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0408-1.006-L 9/28/2007	212	31	Gravity - Mortared Stone	Head Wall	76	$0.00
YOSE-0408-1.006-R 9/28/2007	119	31	Gravity - Mortared Stone	Head Wall	88	$440.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0500-0.990-L 9/27/2007	90	21	Gravity - Mortared Stone	Head Wall	77	$0.00
YOSE-0500-1.004-R 9/27/2007	466	86	Gravity - Dry Stone	Fill Wall	87	$330.00
YOSE-0500-1.013-R 9/27/2007	87	18	Gravity - Mortared Stone	Head Wall	88	$1,959.00
YOSE-0500-1.017-L 9/27/2007	129	27	Gravity - Mortared Stone	Head Wall	79	$2,355.00
YOSE-0500-1.028-R 9/27/2007	385	57	Gravity - Dry Stone	Fill Wall	88	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0500-1.041-R 9/27/2007	1,039	236	Gravity - Dry Stone	Fill Wall	97	$0.00
YOSE-0500-1.055-R 9/27/2007	74	19	Gravity - Mortared Stone	Head Wall	91	$1,666.00
YOSE-0500-1.057-R 9/27/2007	1,228	148	Gravity - Dry Stone	Fill Wall	81	$5,250.00
YOSE-0500-1.078-L 9/27/2007	245	45	Gravity - Mortared Stone	Head Wall	75	$0.00
YOSE-0500-1.111-L 9/27/2007	376	58	Gravity - Mortared Stone	Head Wall	77	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

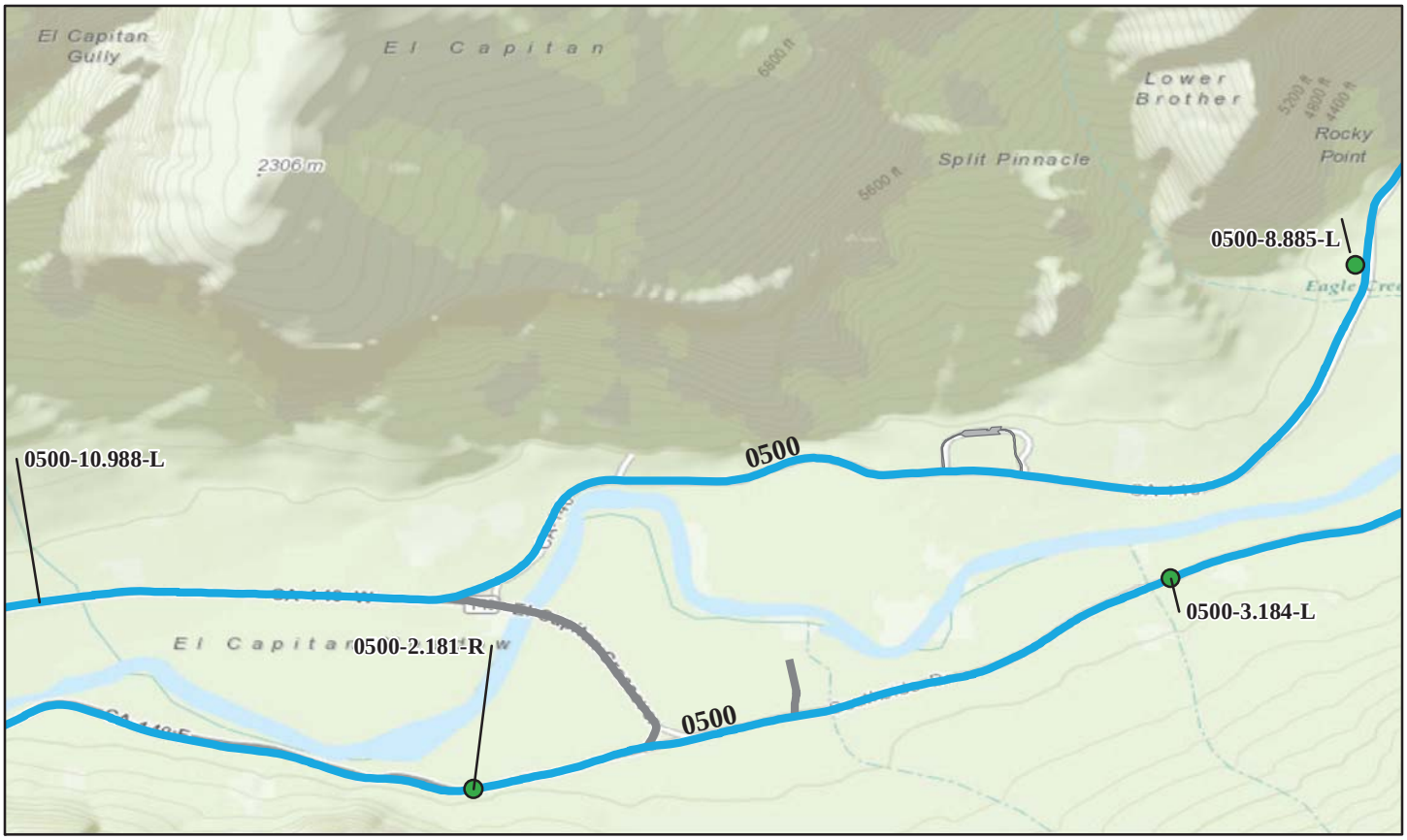
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0500-1.111-R 9/27/2007	78	17	Gravity - Mortared Stone	Head Wall	77	$0.00
YOSE-0500-1.114-R 9/27/2007	748	176	Gravity - Dry Stone	Fill Wall	84	$330.00
YOSE-0500-2.181-R 9/28/2007	50	17	Gravity - Dry Stone	Head Wall	84	$445.00
YOSE-0500-3.184-L 9/28/2007	78	22	Gravity - Mortared Stone	Head Wall	88	$0.00
YOSE-0500-4.142-L 9/28/2007	231	49	Gravity - Mortared Stone	Head Wall	100	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0500-8.885-L 9/28/2007	123	26	Gravity - Mortared Stone	Head Wall	82	$1,489.00
YOSE-0500-10.988-L 9/28/2007	478	93	Gravity - Mortared Stone	Head Wall	58	$7,846.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0700: UNKNOWN ROUTE

Wall location is unknown.

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

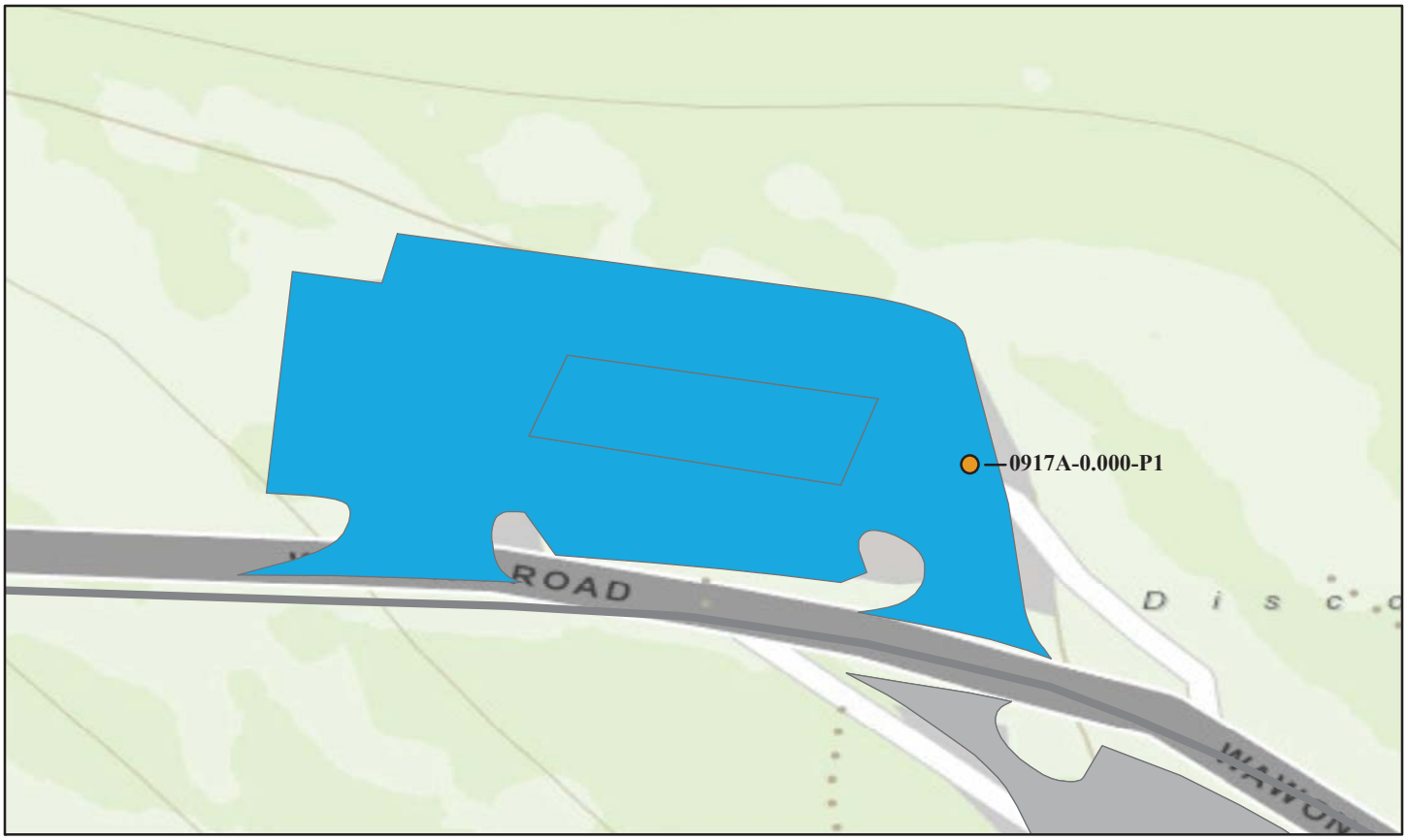
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0700-0.000-P1 9/26/2007	625	176	Gravity - Mortared Stone	Fill Wall	65	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0917A: TUNNEL VIEW PARKING A



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0917A-0.000-P1 9/26/2007	2300	771	Gravity - Mortared Stone	Fill Wall	64	$1,970.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0917B: TUNNEL VIEW PARKING B

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

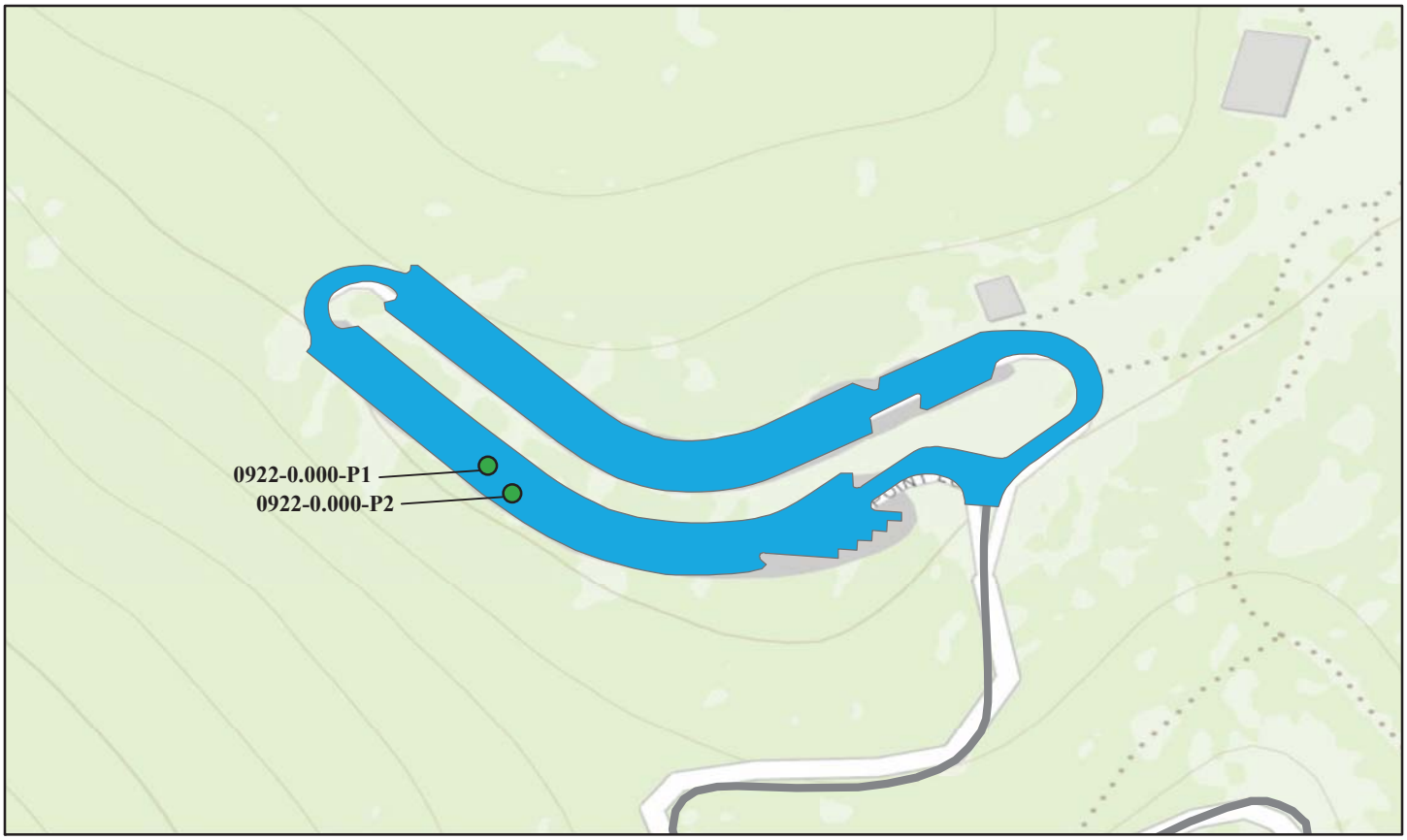
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0917B-0.000-P1 9/26/2007	600	232	Gravity - Mortared Stone	Fill Wall	79	$0.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0922: GLACIER POINT PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

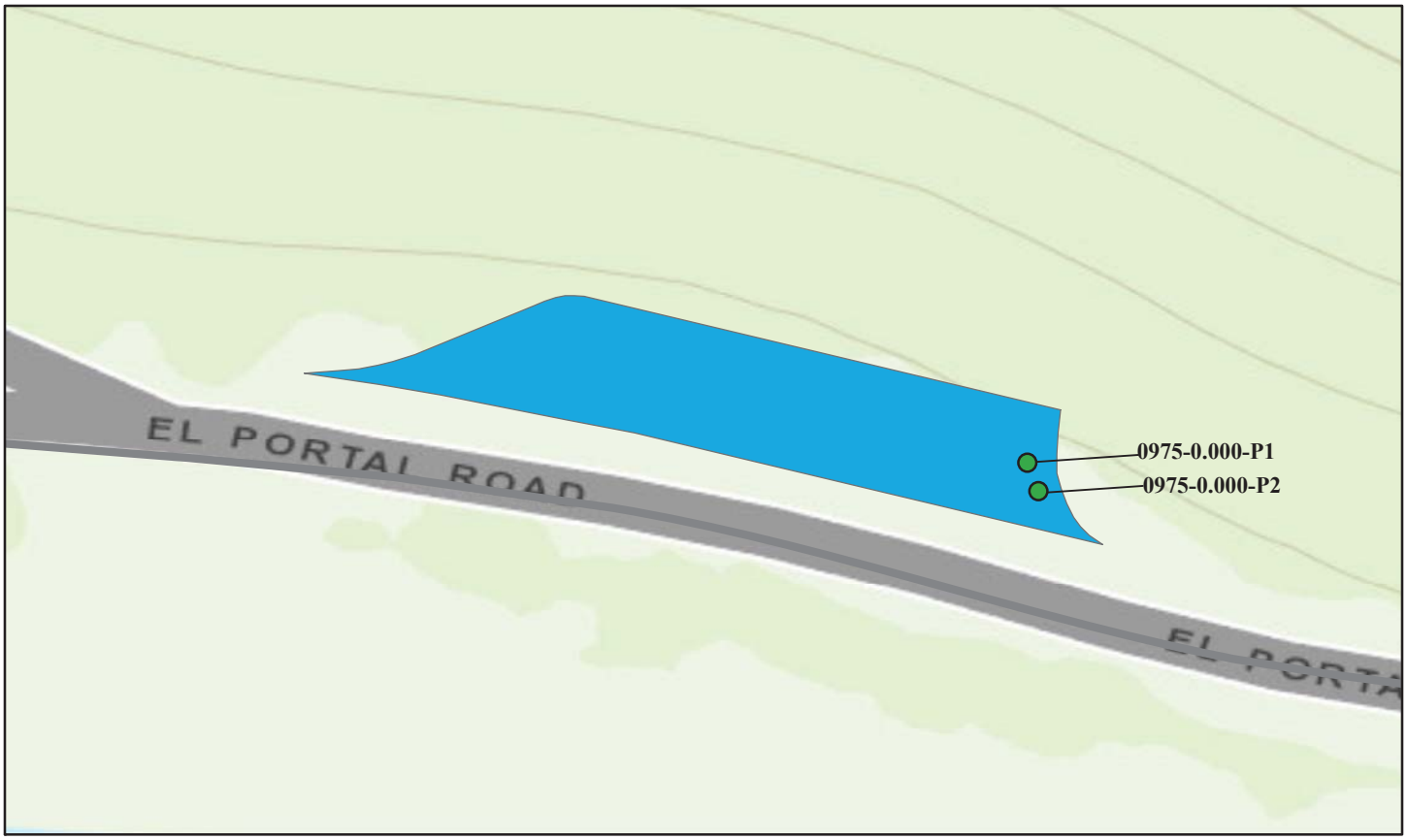
Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0922-0.000-P1 9/27/2007	916	121	Cantilever - Concrete	Cut Wall	94	$0.00
YOSE-0922-0.000-P2 9/27/2007	314	107	Cantilever - Concrete	Fill Wall	91	$3,210.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0975: HIGHWAY 120/140 INTERSECTION PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Retaining Wall Condition Legend – Wall Condition Rating

Critical / Poor (0 - 49)	Fair (50 - 69)	Good to Excellent (70 - 100)	No Data

Wall ID Inspection Date:	Wall Area (Sq. Ft.)	Wall Length (Ft.)	Wall Type	Wall Function	Overall Rating	Repair Cost
YOSE-0975-0.000-P1 9/27/2007	55	11	Gravity - Mortared Stone	Fill Wall	70	$11,370.00
YOSE-0975-0.000-P2 9/27/2007	163	40	Gravity - Mortared Stone	Fill Wall	70	$6,380.00

*2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Tier 3
Retaining Wall Details

Yosemite National Park

Federal Lands Highway
Road Inventory Program

Wall ID:	**YOSE-0013-.047-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	91	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall constructed along left shoulder and directly supports a high ADT roadway above El Portal Road high consequence of failure as debris would impact road below		

Wall Measurements

Wall Length (ft.):	135	**Face Area (sq.):**	2218
Average Wall Height (ft.):	16	**Face Angle (deg.):**	58
Maximum Wall Height (ft.):	23	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition	9
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on bedrock; no evidence of settlement or rotation about the foundation	9
PLACED STONE 8.00	No observed distress to large angular blast rock; good block-to-block contact; stable	9
ROAD/SIDEWALK/SHOULDER 0.50	Minor transverse (thermal) cracking of pavement; cracks have been resealed with no new cracking	8
VEGETATION 0.50	Several large diameter trees growing along base of wall, but not causing or threatening wall stability	9
DOWNSLOPE 0.50	No distress to flat to moderately-sloping rocky slope; moderately-forested	10
LATERAL SLOPE 0.50	No distress; wall is keyed into a large boulder at both ends	10
TRAFFIC BARRIER/FENCE 0.50	No distress to stone masonry guard wall	10
WALL DRAINS 0.50	Self-draining; no evidence of drainage-related distress	10

Repair Recommendations

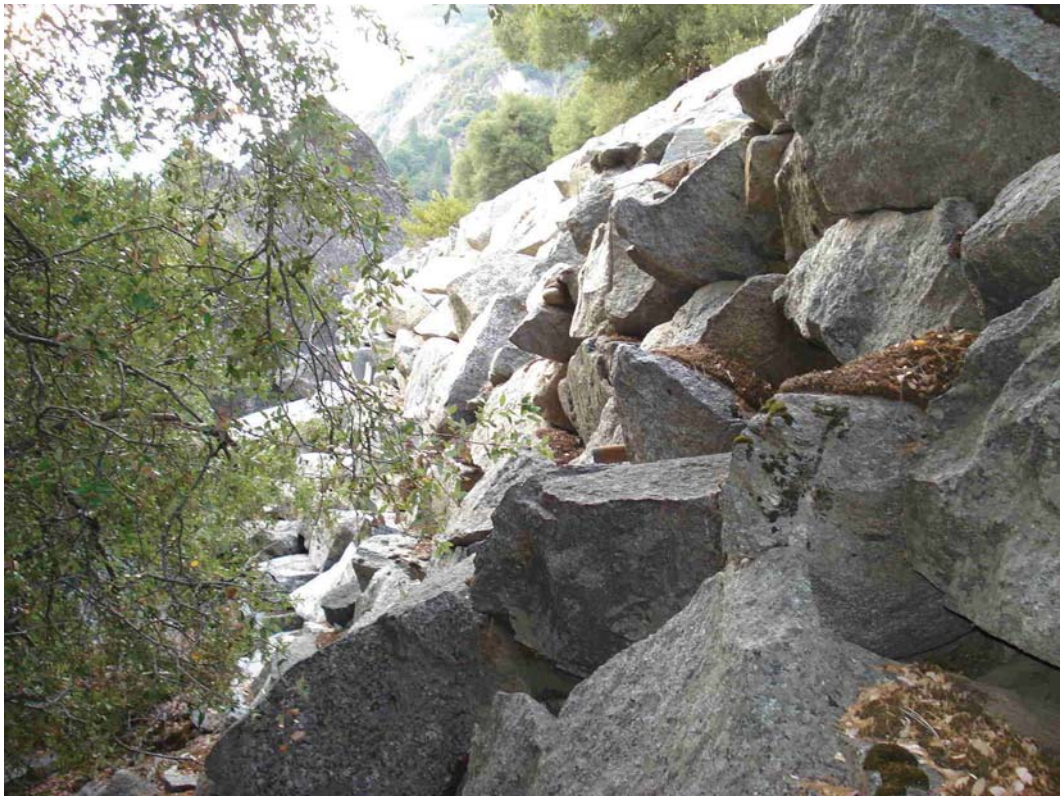
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



YOSE_0013_0.047_L_1.jpg

YOSE_0013_0.047_L_2.jpg

Wall ID:	**YOSE-0013-.093-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	82	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall with stone mortared guardwall.		

Wall Measurements

Wall Length (ft.):	1330	**Face Area (sq.):**	25000
Average Wall Height (ft.):	18	**Face Angle (deg.):**	54
Maximum Wall Height (ft.):	41	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on very large granitic boulders. No sign of settlement.	8
PLACED STONE 8.00	Very hard durable granitic rock, slightly weathered to fresh. Some voids but not affecting wall performance.	9
DOWNSLOPE 0.50	Steep 1:1 slope, very large boulders over shallow bedrock.	8
LATERAL SLOPE 1.00	Ties into soil/rock mix. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_0.093_L_1.jpg

Wall ID:	**YOSE-0013-.505-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	85	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry fill wall with an integral stone masonry guard wall constructed along left shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	200	**Face Area (sq.):**	2188
Average Wall Height (ft.):	10	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	17	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; minor masonry debonding; trees growing along base of wall may impact wall as they grow larger	8
WALL FOUNDATION MATERIAL 8.00	No distress; founded atop a steep slope with occasional bedrock outcrops; no evidence of settlement or rotation	9
MORTAR 8.00	General age-related weathering; minor debonding	8
STONE MASONRY 8.00	No distress to cut blocks	9
ROAD/SIDEWALK/SHOULDER 0.50	Minor localized transverse (thermal) cracking of roadway; cracked have been resealed with no new cracking	8
VEGETATION 0.50	Several small to medium diameter trees growing near wall along base, but not affecting stability	8
DOWNSLOPE 0.50	No distress to steep, well-forested slope	9
LATERAL SLOPE 0.50	No distress; wall transitions to a stone masonry guard wall at south end; no erosion	9
TRAFFIC BARRIER/FENCE 0.50	No distress to stone masonry guard wall	9

Repair Recommendations

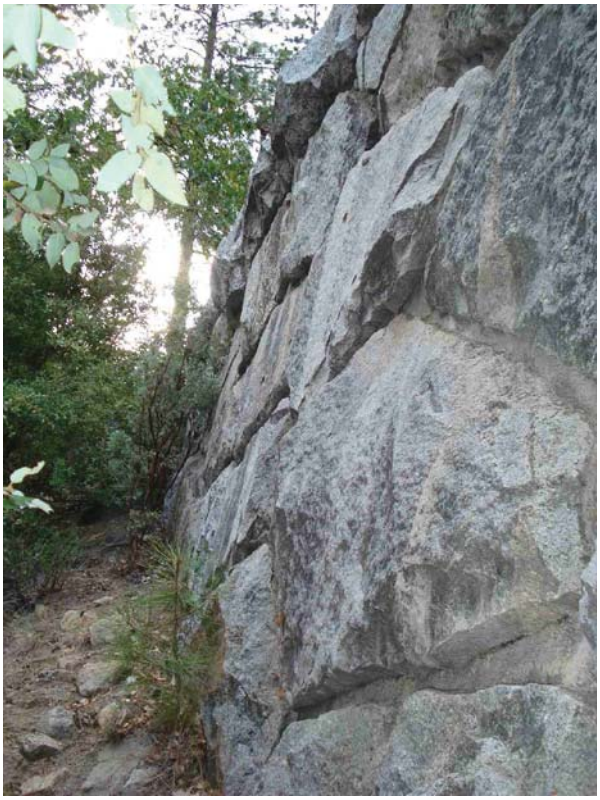
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



YOSE_0013_0.505_L_1.jpg

Wall ID:	**YOSE-0013-.595-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	84	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry fill wall with and integral stone masonry guard wall transitions to a dry stacked fill wall along the north end constructed along left shoulder and directly supports a high ADT roadway		

Wall Measurements

Wall Length (ft.):	192	**Face Area (sq.):**	3429
Average Wall Height (ft.):	17	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	28	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; moderate to severe degradation of mortar along wall/guard wall interface	7
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on bedrock and large boulders; no evidence of settlement or rotation	9
MORTAR 8.00	General age-related weathering with minor cracking; minor debonding	8
PLACED STONE 8.00	Dry stacked fill wall at north end; large angular boulders with no observed distress to wall; good block-to-clock contact; stable	9
STONE MASONRY 8.00	Good condition; no distress to cut blocks	9
DOWNSLOPE 0.50	No observed distress to steep, well-forested slope; some wood debris at south end of wall may cause slope creep and loss of foundation/backfill material	8
VEGETATION 0.50	One large diameter tree growing adjacent to wall at north end, but not causing distress to wall	8
WALL DRAINS 0.50	No weepholes observed in GM wall; GD wall is self-draining; no observed drainage-related distress to either wall	9
LATERAL SLOPE 0.50	No distress; transitions to guard wall at south end; keyed into a dry stacked wall along the north end	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Stone masonry repointing - 0.40(172')(1.5')($75/sqft) = $7,740
Repair Cost:	$7,740

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_0.595_L_1.jpg

YOSE_0013_0.595_L_2.jpg

Wall ID:	**YOSE-0013-.671-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	81	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry fill/toe wall constructed along left shoulder and along base of steep embankment supporting a high ADT roadway high consequence of failure		

Wall Measurements

Wall Length (ft.):	73	**Face Area (sq.):**	1628
Average Wall Height (ft.):	22	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	23	**Vertical Offset (ft.):**	-14

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; moderate debonding along centerline of wall; one block along base of wall at centerline is cracked though	8
WALL FOUNDATION MATERIAL 8.00	Founded atop a bedrock outcrop; no evidence of settlement or rotation	9
MORTAR 8.00	General age-related weathering; moderate debonding at centerline of wall	7
STONE MASONRY 8.00	Large angular cobbles and boulders; generally good condition, but one boulder along base of wall at the approximate centerline is cracked through	8
VEGETATION 0.50	One large diameter tree growing at north end, but not causing distress to wall	8
WALL DRAINS 0.50	No evidence of drainage-related distress; no weepholes	8
CULVERT 0.50	One 30-in. diameter CMP pipe along top of wall at south end; no observed distress	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway	9
TRAFFIC BARRIER/FENCE 0.50	No distress to stone masonry guard wall	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

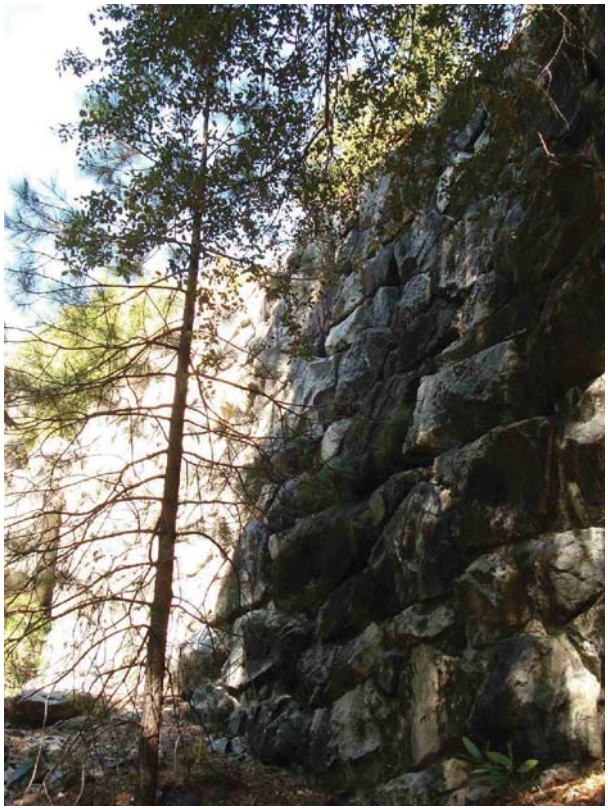
2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_0.671_L_1.jpg



YOSE_0013_0.671_L_2.jpg

Wall ID:	**YOSE-0013-.69-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	87	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall below a stone masonry guard wall constructed along left shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	227	**Face Area (sq.):**	5720
Average Wall Height (ft.):	25	**Face Angle (deg.):**	54
Maximum Wall Height (ft.):	48	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; small brush/tree growing from face of wall threaten its long-term stability	8
WALL FOUNDATION MATERIAL 8.00	Founded atop bedrock; no evidence of settlement or rotation	9
PLACED STONE 8.00	No distress to large angular cobbles and boulders; good block-to-block contact; stable	9
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	9
DOWNSLOPE 0.50	No distress to steep, rocky, moderately-forested slope	10
LATERAL SLOPE 0.50	No distress; keyed into a large boulder at both ends of wall	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway	10
TRAFFIC BARRIER/FENCE 0.50	No observed distress to stone masonry guard wall	10
VEGETATION 1.00	Several small diameter trees are growing along face and along base of wall; trees in the face threatens the wall's long-term stability	7

Repair Recommendations

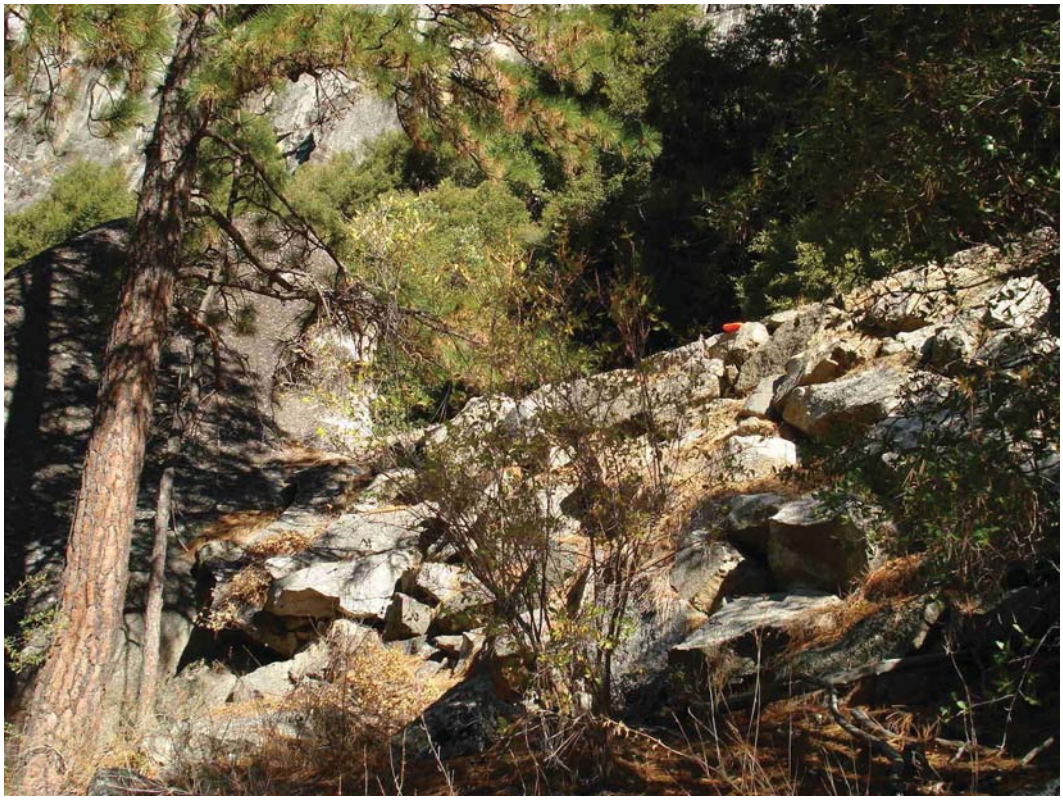
Failure Consequence:	HIGH
Recommendation Narrative:	Clear vegetation - 8 labor hrs ($55/hr) = $440
Repair Cost:	$440

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



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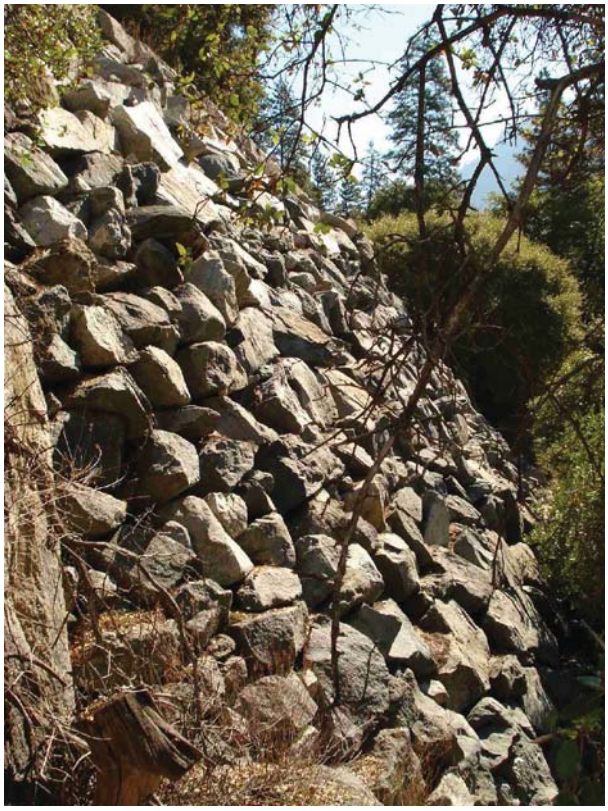


YOSE_0013_0.690_L_2.jpg

Wall ID:	**YOSE-0013-.695-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	72	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall below a stone masonry guard wall constructed along right shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	222	**Face Area (sq.):**	2846
Average Wall Height (ft.):	12	**Face Angle (deg.):**	56
Maximum Wall Height (ft.):	27	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good performance; some isolated areas where the down slope is eroding may pose a near-term threat to wall	7
WALL FOUNDATION MATERIAL 8.00	Founded atop bedrock and blast rock boulders; no evidence of wall settlement	8
PLACED STONE 8.00	Fair to good condition; stacked angular blast rock; loose in some sections; some sections are mortared in place;	6
DOWNSLOPE 0.50	Steep, rocky, well-forested slope; minor erosion; some loose blast rock fill along slope	8
ROAD/SIDEWALK/SHOULDER 0.50	Minor transverse (thermal) cracking of pavement; cracks have been sealed with no additional cracking	8
LATERAL SLOPE 0.50	No distress; keyed into a large boulder at both ends of wall	9
TRAFFIC BARRIER/FENCE 0.50	No distress to stone masonry guard wall	9
WALL DRAINS 0.50	Wall is self-draining with no evidence of drainage-related distress	9
VEGETATION 0.50	No significant vegetation growing near wall	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

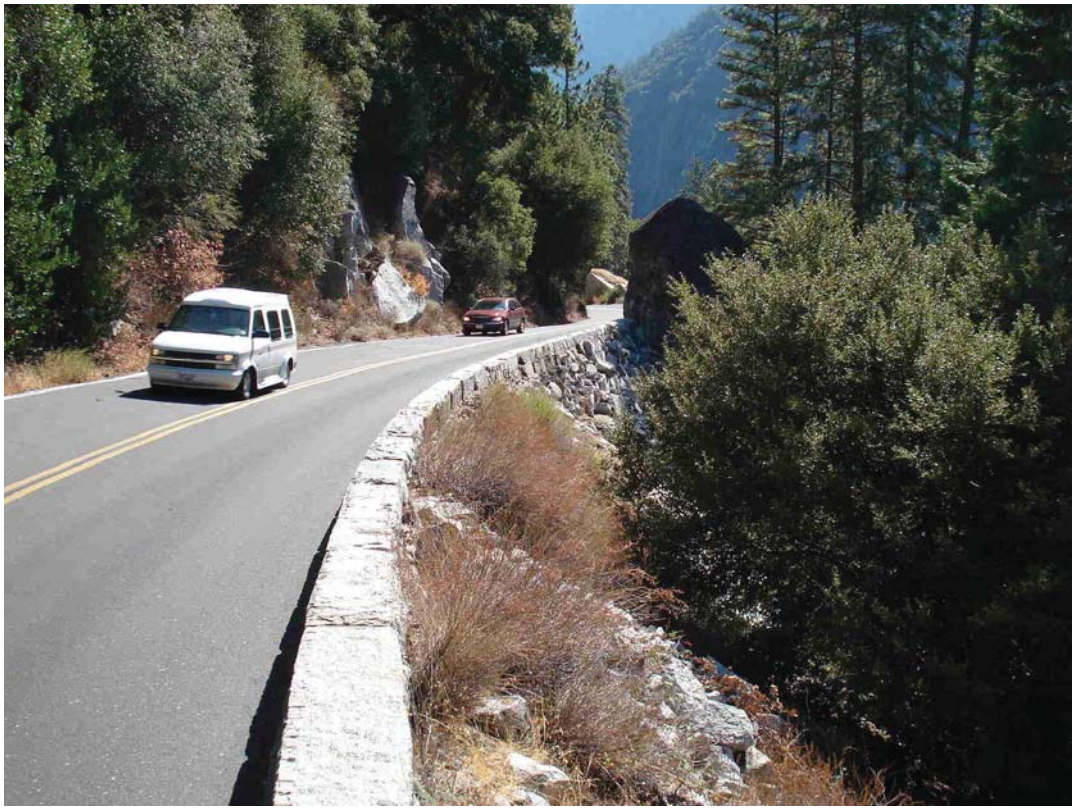
2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_0.695_L_1.jpg



YOSE_0013_0.695_L_2.jpg

Wall ID:	**YOSE-0013-.745-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall below a stone masonry guard wall constructed along right shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	313	**Face Area (sq.):**	3721
Average Wall Height (ft.):	11	**Face Angle (deg.):**	60
Maximum Wall Height (ft.):	38	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; no observed distress to wall elements	8
WALL FOUNDATION MATERIAL 8.00	No distress; founded atop bedrock	10
PLACED STONE 8.00	No distress to angular blast rock; wall appears stable with good block-to-block contact	9
ROAD/SIDEWALK/SHOULDER 0.50	Minor to moderate transverse (thermal) cracking; cracks have been patched with no new cracking; minor subsidence adjacent to wall for approximately 120 lnft of the wall's length	8
TRAFFIC BARRIER/FENCE 0.50	Stone masonry guard wall; moderate impact damage along the north end; wall is stable and functional	8
CULVERT 0.50	No distress to 18-in. diameter CMP pipe	9
DOWNSLOPE 0.50	No observed distress to steep, rocky, well-vegetated slope;	9
VEGETATION 0.50	Several large diameter trees are growing along the base of wall, but are not causing distress to wall	9
LATERAL SLOPE 0.50	No distress; keyed into a bedrock pinnacle at both ends of wall	10

Repair Recommendations

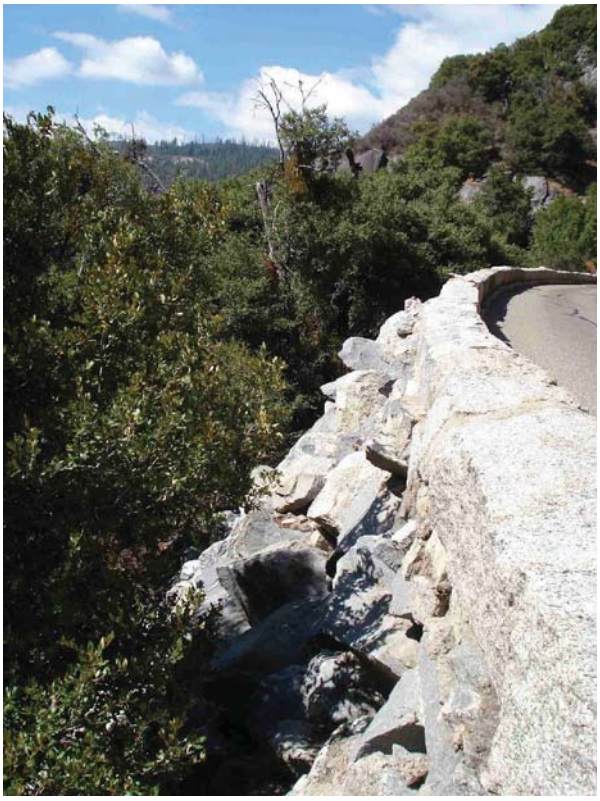
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



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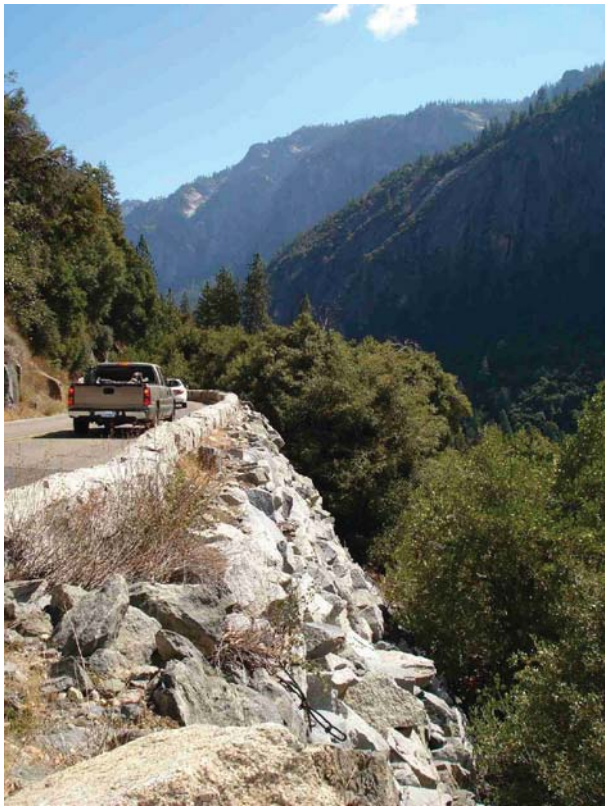


YOSE_0013_0.745_L_2.jpg

Wall ID:	**YOSE-0013-.806-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall below a stone masonry guard wall constructed along left shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	67	**Face Area (sq.):**	1072
Average Wall Height (ft.):	16	**Face Angle (deg.):**	58
Maximum Wall Height (ft.):	21	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor impact damage to guard wall; no distress to wall elements	9
WALL FOUNDATION MATERIAL 8.00	Founded atop bedrock with no evidence of movement about the foundation	9
PLACED STONE 8.00	No distress to angular blast rock; wall appears stable with good block-to-block contact	9
TRAFFIC BARRIER/FENCE 0.50	Minor impact damage to stone masonry guard wall; wall is stable and functional	8
DOWNSLOPE 0.50	No distress to steep, heavily-vegetated slope	9
LATERAL SLOPE 0.50	No distress; transitions to natural slope at north end; keyed into bedrock outcrop at south end	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway	10
VEGETATION 0.50	No significant vegetation in close proximity to wall	10
WALL DRAINS 0.50	Wall is self-draining with no evidence of drainage-related distress	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_0.806_L_1.jpg

Wall ID:	**YOSE-0013-.994-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	70	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall with stoned mortared guardwall. The guardwall is missing 63 linear ft of stones and is in need of repair, but these repairs will be captured under the traffic barrier inventory program, not here in the wall inventory program.		

Wall Measurements

Wall Length (ft.):	310	**Face Area (sq.):**	10850
Average Wall Height (ft.):	35	**Face Angle (deg.):**	52
Maximum Wall Height (ft.):	42	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on colluvium. No sign of settlement.	7
PLACED STONE 8.00	Hard durable granitic rock, slightly weathered.	9
WALL DRAINS 0.50	2' plastic pipe weep holes. No water related problems.	8
DOWNSLOPE 1.00	Steep hillside, oak and scrub. No sign of erosion.	6
LATERAL SLOPE 1.00	Steep 1:1 hillside slope at wall start. Ties into existing at wall end.	7
TRAFFIC BARRIER/FENCE 5.00	Guardwall missing 63' X 2' of rock on outside. Concrete is exposed.	2

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

Condition photos are not available for YOSE-0013-.994-L.

Wall ID:	**YOSE-0013-1.036-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	77	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stoned mortared fill wall.		

Wall Measurements

Wall Length (ft.):	95	**Face Area (sq.):**	1250
Average Wall Height (ft.):	13	**Face Angle (deg.):**	78
Maximum Wall Height (ft.):	22	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on very large boulders and soil/rock mix. No sign of settlement.	8
STONE MASONRY 8.00	Slightly to moderately weathered granitic rock.	7
MORTAR 8.00	Good. No sign of degradation.	8
LATERAL SLOPE 0.50	Ties into existing wall at wall start. Ties into rock fill at wall end. No sign of erosion.	8
DOWNSLOPE 1.00	Steep hillside, 1:1 slope, boulders and soil. No sign of erosion.	6
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.036_L_1.jpg

Wall ID:	**YOSE-0013-1.055-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	76	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall adjacent to pullout.		

Wall Measurements

Wall Length (ft.):	140	**Face Area (sq.):**	2000
Average Wall Height (ft.):	14	**Face Angle (deg.):**	54
Maximum Wall Height (ft.):	22	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on colluvium. No sign of settlement.	7
PLACED STONE 8.00	Hard durable granitic rock, slightly weathered, very large and blocky.	8
DOWNSLOPE 1.00	Steep hillside, colluvium. No sign of erosion.	7
LATERAL SLOPE 1.00	Ties into very large boulders. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.055_L_1.jpg

Wall ID:	**YOSE-0013-1.084-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	76	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	570	**Face Area (sq.):**	11250
Average Wall Height (ft.):	19	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	39	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on colluvium. No sign of settlement.	7
PLACED STONE 8.00	Very large moderately weathered granitic rock.	8
DOWNSLOPE 1.00	Steep hillside, colluvium. No sign of erosion.	7
LATERAL SLOPE 1.00	Steep hillside, very large boulders at wall start. Ties into existing wall at wall end. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.084_L_1.jpg

Wall ID:	**YOSE-0013-1.197-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	77	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stoned mortared fill wall between existing dry stacked wall.		

Wall Measurements

Wall Length (ft.):	127	**Face Area (sq.):**	2550
Average Wall Height (ft.):	20	**Face Angle (deg.):**	79
Maximum Wall Height (ft.):	26	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on colluvium. No sign of settlement.	8
MORTAR 8.00	Fair. Some minor cracks and spalling.	7
STONE MASONRY 8.00	Hard durable granitic rock, moderately weathered.	8
DOWNSLOPE 1.00	Steep hillside, mostly colluvium. No significant erosion.	7
LATERAL SLOPE 1.00	Ties into existing wall at wall start and wall end.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.197_L_1.jpg

Wall ID:	**YOSE-0013-1.226-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	76	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	86	**Face Area (sq.):**	1150
Average Wall Height (ft.):	13	**Face Angle (deg.):**	50
Maximum Wall Height (ft.):	18	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on soil/rock mix. No sign of settlement.	8
PLACED STONE 8.00	Moderately weathered granitic rock, some loose pieces.	7
STONE MASONRY 8.00	Slightly to moderately weathered granitic rock.	7
MORTAR 8.00	Good. No sign of degradation.	8
ROAD/SIDEWALK/SHOULDER 0.50	Minor transverse (thermal) cracking of pavement; cracks have been resealed with no new cracking	8
VEGETATION 0.50	Several large diameter trees growing along base of wall, but not causing or threatening wall stability	9
TRAFFIC BARRIER/FENCE 0.50	No distress to stone masonry guard wall	10
DOWNSLOPE 1.00	Steep hillside, mostly cobbles and very large boulders. No significant erosion.	6

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.226_L_1.jpg

Wall ID:	**YOSE-0013-1.261-R**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	78	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stoned mortared cut wall.		

Wall Measurements

Wall Length (ft.):	21	**Face Area (sq.):**	95
Average Wall Height (ft.):	4	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on compacted soil/rock mix. No sign of settlement.	8
MORTAR 8.00	Good, no cracks or spalling.	8
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	8
UPSLOPE 1.00	Loose colluvium, moderate erosion.	4
LATERAL SLOPE 1.00	Bedrock at wall start. 2:1 soil slope with very minor erosion at wall end.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.261_R_1.jpg

Wall ID:	**YOSE-0013-1.345-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	93	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry fill wall with an integral stone masonry guard wall constructed along left shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	52	**Face Area (sq.):**	719
Average Wall Height (ft.):	13	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	24	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; minor past cracking of pavement	9
WALL FOUNDATION MATERIAL 8.00	Founded atop bedrock with no evidence of movement about the foundation	10
MORTAR 8.00	General age-related weathering	9
STONE MASONRY 8.00	No observed distress to angular blast rocks	9
ROAD/SIDEWALK/SHOULDER 0.50	Minor transverse (thermal) cracking; cracks have been patched with no new cracking	8
WALL DRAINS 0.50	No observed drainage-related distress	9
DOWNSLOPE 0.50	Steep bedrock outcrop	10
LATERAL SLOPE 0.50	No distress; keyed into bedrock outcrop at both ends	10
TRAFFIC BARRIER/FENCE 0.50	No distress to stone masonry guard wall	10

Repair Recommendations

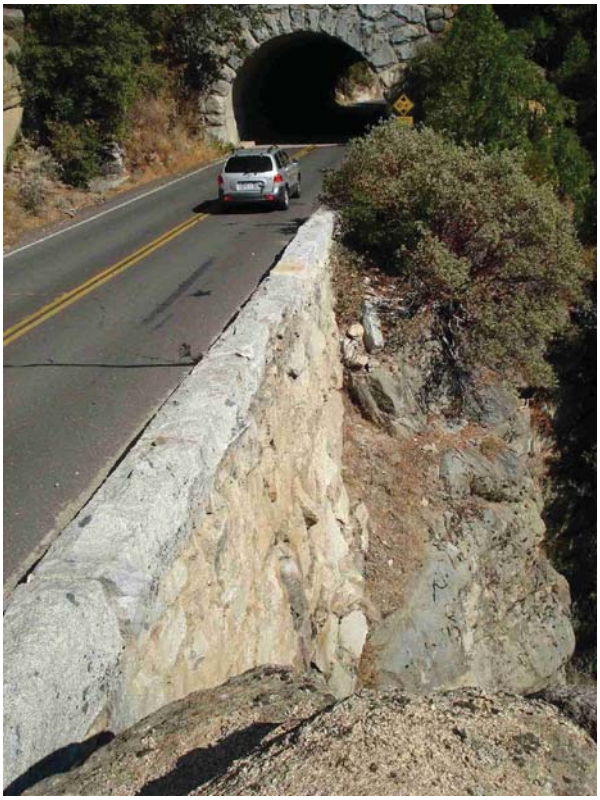
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



YOSE_0013_1.345_L_1.jpg

Wall ID:	**YOSE-0013-1.374-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	95	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry fill wall with an integral stone masonry guard wall constructed along left shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	172	**Face Area (sq.):**	2069
Average Wall Height (ft.):	12	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	30	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; no observed distress to wall	9
WALL FOUNDATION MATERIAL 8.00	Founded atop a bedrock outcrop with no evidence of settlement	10
MORTAR 8.00	General age-related distress	9
STONE MASONRY 8.00	No distress to angular blast rock blocks	10
DOWNSLOPE 0.50	No observed distress to steep bedrock outcrop	10
LATERAL SLOPE 0.50	No distress; transitions to a GM guard wall at north end and is keyed in bedrock at the south end	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway	10
TRAFFIC BARRIER/FENCE 0.50	Stone masonry guard wall with no observed distress	10
VEGETATION 0.50	No significant vegetation growing near wall	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.374_L_1.jpg

Wall ID:	**YOSE-0013-1.394-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	94	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall below a stone masonry guard wall constructed along left shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	87	**Face Area (sq.):**	913
Average Wall Height (ft.):	10	**Face Angle (deg.):**	56
Maximum Wall Height (ft.):	19	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; no observe distress to wall	9
WALL FOUNDATION MATERIAL 8.00	Founded atop bedrock with no evidence of movement about the foundation	10
PLACED STONE 8.00	No distress to angular blast rock; wall appears stable with good block-to-block contact	9
VEGETATION 0.50	No significant vegetation growing near wall	9
DOWNSLOPE 0.50	No distress to steep, moderately-forested slope	10
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway; no shoulder	10
TRAFFIC BARRIER/FENCE 0.50	No distress to stone masonry guard wall	10
WALL DRAINS 0.50	Wall is self-draining with no evidence of drainage-related distress	10

Repair Recommendations

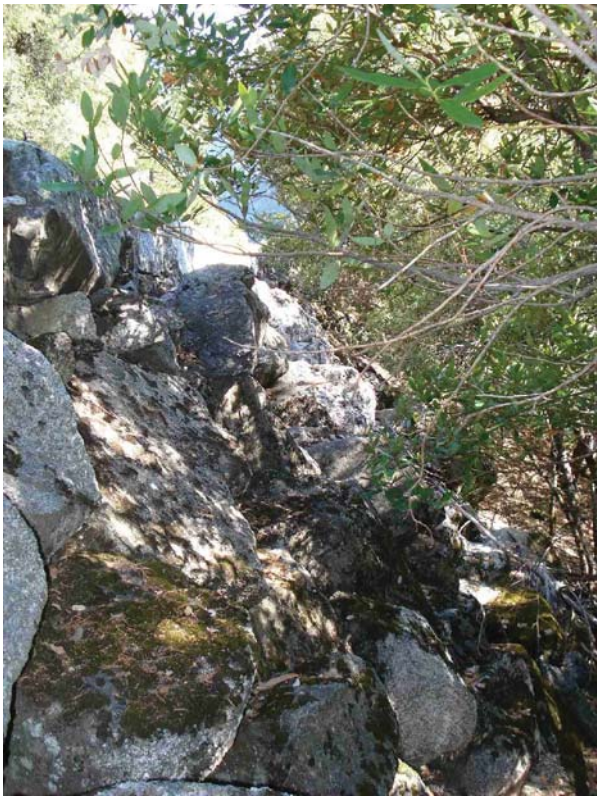
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



YOSE_0013_1.394_L_1.jpg

YOSE_0013_1.394_L_2.jpg

Wall ID:	**YOSE-0013-1.418-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	75	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall with stone mortared guardwall.		

Wall Measurements

Wall Length (ft.):	204	**Face Area (sq.):**	5100
Average Wall Height (ft.):	25	**Face Angle (deg.):**	50
Maximum Wall Height (ft.):	45	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on soil/rock mix. No sign of settlement.	7
PLACED STONE 8.00	Hard durable granitic rock, moderately weathered.	8
DOWNSLOPE 1.00	Very steep slope comprised of colluvium. Moderate erosion.	4
LATERAL SLOPE 1.00	Ties into 1.5:1 soil/boulder slope, no sign of erosion. Well vegetated with oak and scrub.	7
WALL DRAINS 1.00	2" plastic weap holes. No water related problems.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.418_L_1.jpg

Wall ID:	**YOSE-0013-1.46-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	87	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry fill wall with and integral stone masonry guard wall transitions to a dry stacked fill wall along the north end constructed along left shoulder and directly supports a high ADT roadway		

Wall Measurements

Wall Length (ft.):	480	**Face Area (sq.):**	9140
Average Wall Height (ft.):	19	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	26	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor degradation of mortar and minor debonding across face of wall	8
WALL FOUNDATION MATERIAL 8.00	Founded atop bedrock with no evidence of settlement or rotation	9
MORTAR 8.00	Generally in good condition with minor degradation and minor debonding	8
PLACED STONE 8.00	Large angular blast rock with good block-to-block contact; stable	9
STONE MASONRY 8.00	No observed distress to large cut blocks	9
VEGETATION 0.50	Several medium to large diameter trees growing along the base of wall, but causing distress or threatening the stability of wall	9
DOWNSLOPE 0.50	No observed distress to steep, well-forested slope; frequent bedrock outcrops	10
LATERAL SLOPE 0.50	No distress; keyed into bedrock at the south end	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway	10

Repair Recommendations

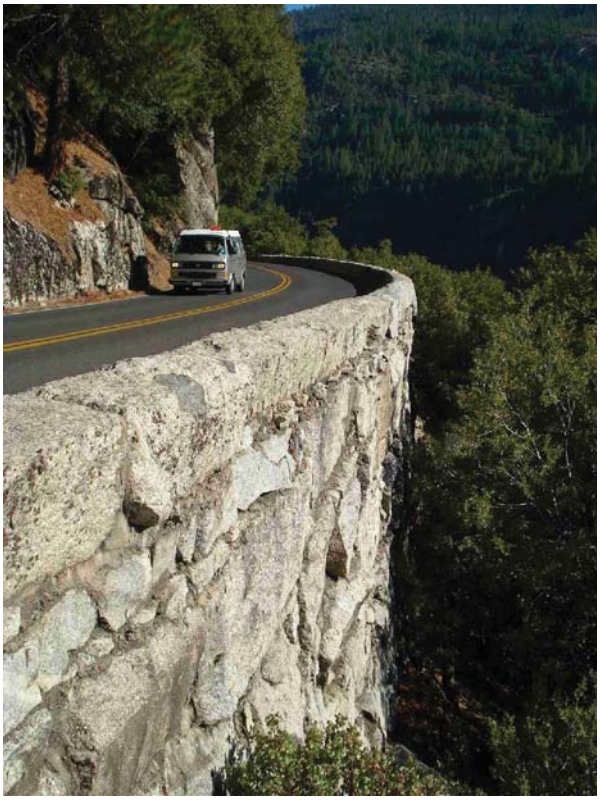
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



YOSE_0013_1.460_L_1.jpg

Wall ID:	**YOSE-0013-1.554-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stoned mortared fill wall.		

Wall Measurements

Wall Length (ft.):	95	**Face Area (sq.):**	2400
Average Wall Height (ft.):	25	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	32	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on bedrock.	9
MORTAR 8.00	Some minor cracks and spalling.	7
STONE MASONRY 8.00	Hard durable granitic rock.	8
DOWNSLOPE 0.50	Very steep bedrock slope.	8
LATERAL SLOPE 0.50	Ties into bedrock.	8
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

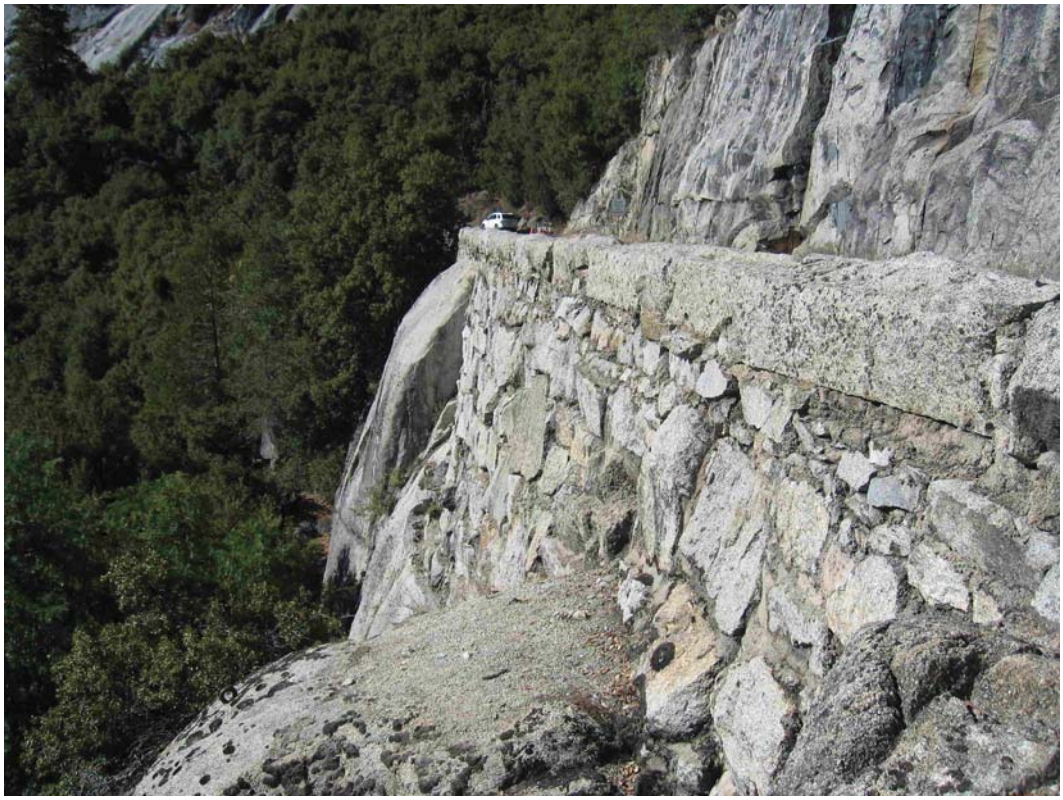
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



YOSE_0013_1.554_L_1.jpg

Wall ID:	**YOSE-0013-1.572-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared natural stone fill wall in good condition. Bedrock foundation has very large rock outcrop on part of wall.		

Wall Measurements

Wall Length (ft.):	172	**Face Area (sq.):**	2040
Average Wall Height (ft.):	11	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	31	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable bedrock.	10
MORTAR 8.00	Very good condition, minor weathering.	8
STONE MASONRY 8.00	Natural durable granite stones in good condition, none missing.	9
DOWNSLOPE 0.50	Steep bedrock, no distress.	9
LATERAL SLOPE 0.50	Bedrock on both sides, stable, no distress.	9
ROAD/SIDEWALK/SHOULDER 0.50	Excellent, no settlement or other distress.	9
TRAFFIC BARRIER/FENCE 0.50	2' high mortared stone guardwall in good condition.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.572_L_1.jpg

Wall ID:	**YOSE-0013-1.606-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared natural stone wall with 2 ft high mortared stone guardwall parapet in good condition.		

Wall Measurements

Wall Length (ft.):	140	**Face Area (sq.):**	1845
Average Wall Height (ft.):	13	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	22	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable bedrock.	9
MORTAR 8.00	Very good condition, no spalls noted, minor voids.	9
PLACED STONE 8.00	Large rectangular mortared stone blocks in lower third to half of most of wall.	9
TRAFFIC BARRIER/FENCE 0.50	Mortared stone guardwall, overall good condition, but has 2 large stones missing.	8
CULVERT 0.50	18" CMP outlet culvert in wall. No issues.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9
DOWNSLOPE 0.50	Bedrock, some trees.	10
LATERAL SLOPE 0.50	Bedrock at both ends.	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.606_L_1.jpg

YOSE_0013_1.606_L_2.jpg

Wall ID:	**YOSE-0013-1.636-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	84	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Gravity dry stack natural stone wall in good condition. At one end there is a horizontal gap for 10 ft at top of wall due to localized settlement.		

Wall Measurements

Wall Length (ft.):	120	**Face Area (sq.):**	1440
Average Wall Height (ft.):	12	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	26	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Probably bedrock, not visible.	8
PLACED STONE 8.00	Variable face angle, moderate voids, no loose or missing stones.	8
DOWNSLOPE 0.50	Well vegetated with trees, steep soil slope, stable.	8
WALL DRAINS 0.50	None visible, no drainage related distress.	8
CULVERT 0.50	One 18" CMP outlet culvert performing as designed.	9
LATERAL SLOPE 0.50	Continuous wall, abuts the next mortared stone fill wall. No concerns	9
ROAD/SIDEWALK/SHOULDER 0.50	Only very minor distress, no signs of settlement.	9
TRAFFIC BARRIER/FENCE 0.50	2' high mortared stone guardwall in good condition.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.636_L_1.jpg

YOSE_0013_1.636_L_2.jpg

Wall ID:	**YOSE-0013-1.658-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	88	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared natural stone wall in good condition with 2 ft high stone guardwall parapet.		

Wall Measurements

Wall Length (ft.):	164	**Face Area (sq.):**	2952
Average Wall Height (ft.):	18	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	27	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Granular soil, no bedrock visible, stable.	9
MORTAR 8.00	Very good condition, minor voids.	8
PLACED STONE 8.00	Very good condition, fresh angular stone blocks.	9
DOWNSLOPE 0.50	Soil, many trees, stable.	8
LATERAL SLOPE 0.50	Stable, rock ridge or adjacent wall.	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress noted in roadway.	9
TRAFFIC BARRIER/FENCE 0.50	2' high mortared stone guardwall in good condition.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.658_L_1.jpg

YOSE_0013_1.658_L_2.jpg

Wall ID:	**YOSE-0013-1.69-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	87	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Gravity dry stack natural stone wall, with stone guardwall parapet, in good condition.		

Wall Measurements

Wall Length (ft.):	302	**Face Area (sq.):**	7075
Average Wall Height (ft.):	23	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	30	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable soil, no bedrock visible.	8
PLACED STONE 8.00	Dry laid granite stones, very large quarried blocks in several base layers, uniform finished slope.	9
DOWNSLOPE 0.50	Stable soil, many trees.	8
LATERAL SLOPE 0.50	Adjacent to other retaining wall on both sides.	9
ROAD/SIDEWALK/SHOULDER 0.50	Minor cracks, intermittent, at fogline.	9
TRAFFIC BARRIER/FENCE 0.50	Mortared stone guardwall in good condition.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.690_L_1.jpg

YOSE_0013_1.690_L_2.jpg

Wall ID:	**YOSE-0013-1.747-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	93	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Gravity dry stack natural stone wall, with stone guardwall parapet, in good condition.		

Wall Measurements

Wall Length (ft.):	143	**Face Area (sq.):**	2880
Average Wall Height (ft.):	20	**Face Angle (deg.):**	60
Maximum Wall Height (ft.):	27	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable bedrock.	10
PLACED STONE 8.00	Very good condition fresh granite stones. 70 degree face locally where buttressed by redwood tree.	9
LATERAL SLOPE 0.50	Adjacent retaining walls at both ends.	9
ROAD/SIDEWALK/SHOULDER 0.50	No pavement or guardwall distress.	9
TRAFFIC BARRIER/FENCE 0.50	Mortared stone guardwall in good condition.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9
DOWNSLOPE 0.50	Bedrock, massive, scattered trees, very stable.	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.747_L_1.jpg

Wall ID:	**YOSE-0013-1.774-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone fill wall with stone guardwall parapet in good condition.		

Wall Measurements

Wall Length (ft.):	200	**Face Area (sq.):**	2150
Average Wall Height (ft.):	10	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable bedrock.	10
MORTAR 8.00	Very good condition, minor voids.	8
PLACED STONE 8.00	Mortared natural stones, very good condition.	9
DOWNSLOPE 0.50	Stable bedrock, scattered trees.	9
ROAD/SIDEWALK/SHOULDER 0.50	No pavement distress.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9
LATERAL SLOPE 0.50	Abuts into next wall at wall start. Bedrock at wall end.	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_1.774_L_1.jpg

Wall ID:	**YOSE-0013-2.303-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	85	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall adjacent to road and pull-out just before 3rd tunnel..		

Wall Measurements

Wall Length (ft.):	250	**Face Area (sq.):**	6500
Average Wall Height (ft.):	26	**Face Angle (deg.):**	54
Maximum Wall Height (ft.):	37	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on bedrock.	9
PLACED STONE 8.00	Hard durable granitic rock, slightly weathered, well placed.	9
LATERAL SLOPE 0.50	Ties into bedrock.	8
DOWNSLOPE 1.00	Steep bedrock slope	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_2.303_L_1.jpg

YOSE_0013_2.303_L_2.jpg

Wall ID:	**YOSE-0013-2.35-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	93	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry fill wall with an integral stone masonry guard wall constructed along the left shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	270	**Face Area (sq.):**	4496
Average Wall Height (ft.):	16	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	19	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; wall is functioning as intended; minor debonding of mortar	9
WALL FOUNDATION MATERIAL 8.00	Founded atop bedrock; no evidence of settlement or rotation	10
MORTAR 8.00	Minor mortar degradation; minor debonding	8
STONE MASONRY 8.00	No observed distress to angular blast rock	10
DOWNSLOPE 0.50	No observed distress to steep, moderately-forested slope	9
LATERAL SLOPE 0.50	Wall abuts up against the tunnel entrance at the north end; no observed distress at either end of wall	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway	10
TRAFFIC BARRIER/FENCE 0.50	No observed distress to stone masonry guard wall	10
VEGETATION 0.50	Several medium diameter trees are growing along the base of wall, but are not causing distress or threatening the wall's long-term stability	10

Repair Recommendations

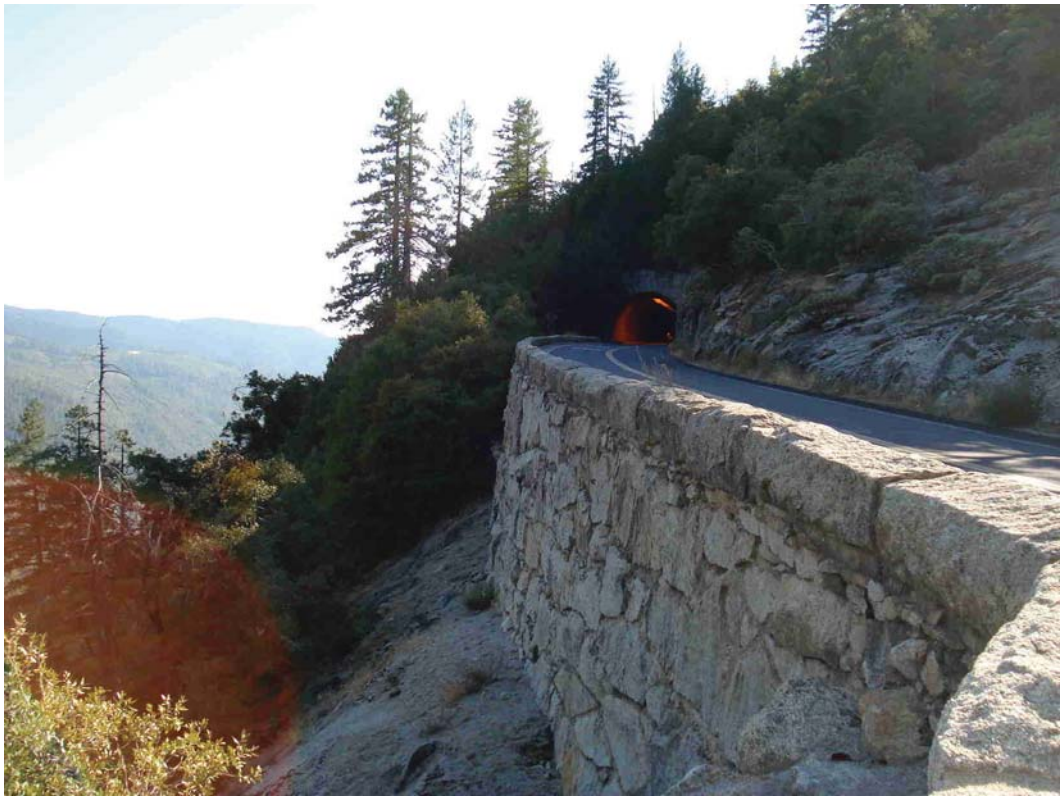
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos



YOSE_0013_2.350_L_1.jpg

Wall ID:	**YOSE-0013-3.043-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	96	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall constructed along the left shoulder and directly supports a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	510	**Face Area (sq.):**	6021
Average Wall Height (ft.):	11	**Face Angle (deg.):**	57
Maximum Wall Height (ft.):	18	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; wall is functioning as intended with no observed distress	9
WALL FOUNDATION MATERIAL 8.00	Founded atop natural soil overlying shallow bedrock; no evidence of wall movement	10
PLACED STONE 8.00	No distress to large angular blast rock; good block-to-block contact	10
ROAD/SIDEWALK/SHOULDER 0.50	Minor transverse (thermal) cracking; cracks have been sealed with no new cracking	8
VEGETATION 0.50	Several medium to large diameter trees are growing along base of wall, but are not affecting or threatening the stability of wall; small brsuh growing in face	8
CULVERT 0.50	One 18-in. diameter CMP culvert at southern end of wall; no observed distress to culvert	9
DOWNSLOPE 0.50	No distress to moderately-sloping; heavily-vegetated slope	10
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10
WALL DRAINS 0.50	Wall is self-draining; no evidence of drainage-related distress	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_3.043_L_1.jpg

Wall ID:	**YOSE-0013-3.17-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	69	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	190	**Face Area (sq.):**	2375
Average Wall Height (ft.):	12	**Face Angle (deg.):**	57
Maximum Wall Height (ft.):	20	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Founded on soil/rock mix. No sign of settlement.	7
PLACED STONE 8.00	Moderately weathered granitic rock, some loose pieces.	7
ROAD/SIDEWALK/SHOULDER 1.00	Soft shoulder, not affecting wall performance.	5
DOWNSLOPE 1.00	2:1 soil/rock slope, minor erosion.	6
LATERAL SLOPE 1.00	Ties into 2:1 soil slope, minor erosion.	6
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_3.170_L_1.jpg

Wall ID:	**YOSE-0013-4.454-L**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1990
***Wall Rating:**	81	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 ft - 2 ft diameter) cut stone gravity mortared wall with stone guardwall parapet.		

Wall Measurements

Wall Length (ft.):	156	**Face Area (sq.):**	672
Average Wall Height (ft.):	4	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Bedrock outcrop; solid foundation at beginning of wall and granular soil at end of wall.	9
MORTAR 8.00	Minor spalling and cracking; minor moss cover; minor oxidation on wall face. No significant impacts to wall performance.	8
STONE MASONRY 8.00	Performing as intended.	8
DOWNSLOPE 0.50	Bedrock outcrop and boulder, erosional channel at 2:1 slope.	8
WALL DRAINS 0.50	None observed; not impacting wall.	9
LATERAL SLOPE 1.00	Moderate surface erosion; riprap added. Surface water drainage from roadway.	6
ROAD/SIDEWALK/SHOULDER 1.00	Roadway has a recent overlay; transverse and longitudinal cracking; minor depression from erosion of backfill or backfill settlement.	7
TRAFFIC BARRIER/FENCE 1.00	The stone guardwall parapet is missing an end piece.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_4.454_L_1.jpg

Wall ID:	**YOSE-0013-4.61-R**		
Route Name:	BIG OAK FLAT ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 ft - 2 ft diameter) dry stacked wall with a drop inlet culvert.		

Wall Measurements

Wall Length (ft.):	21	**Face Area (sq.):**	84
Average Wall Height (ft.):	4	**Face Angle (deg.):**	45
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material; no signs of rotation at base.	8
PLACED STONE 8.00	1' - 2' solid hard granite boulders with minor oxidation on face; minor voids; surface erosion on face.	8
CURB/BERM/DITCH 0.50	Unpaved ditch at wall toe to drop inlet with a 24"CMP. Performing as intended; potential undermining.	8
WALL DRAINS 0.50	None observed; not impacting wall.	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has a new overlay; no impact from wall.	9
VEGETATION 0.50	Minor brush and gneiss; helping stabilize the slope.	9
LATERAL SLOPE 1.00	Moderate surface erosion.	7
UPSLOPE 1.00	Eroding gully; granular material. Moderate surface erosion over wall face.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0013: BIG OAK FLAT ROAD

Retaining Wall Condition Photos

YOSE_0013_4.610_R_1.jpg

Wall ID:	**YOSE-0014-6.004-R**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	75	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked cut wall.		

Wall Measurements

Wall Length (ft.):	225	**Face Area (sq.):**	1000
Average Wall Height (ft.):	4	**Face Angle (deg.):**	65
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Founded on soil adjacent to ditch. No sign of settlement.	8
PLACED STONE 8.00	Very large (2 to 3') angular granitic rock, slightly weathered.	8
UPSLOPE 1.00	1.5:1 soil slope, moderate vegetation with scrub and conifers, soft soils.	6
LATERAL SLOPE 1.00	Ties into 3:1 soil slope at wall start, ties into 1.5:1 soil slope at wall end. No sign of erosion.	7
VEGETATION 1.00	Some willows, not affecting wall performance.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_6.004_R_1.jpg

YOSE_0014_6.004_R_2.jpg

Wall ID:	**YOSE-0014-7.936-L**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	83	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared fill wall with guardwall.		

Wall Measurements

Wall Length (ft.):	66	**Face Area (sq.):**	600
Average Wall Height (ft.):	9	**Face Angle (deg.):**	82
Maximum Wall Height (ft.):	13	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Founded on soil. No sign of settlement.	8
MORTAR 8.00	Old but no spalling or cracking.	8
STONE MASONRY 8.00	Hard durable quartzite and gneiss, slightly weathered, well placed.	9
WALL DRAINS 0.50	None present. No water related problems.	8
LATERAL SLOPE 1.00	Ties into steep soil/rock slope, moderate erosion at wall end.	6
DOWNSLOPE 1.00	Soil/rock mix, loose, very minor erosion.	7
TRAFFIC BARRIER/FENCE 1.00	Guardwall has some loose pieces at wall start but not affecting wall performance.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_7.936_L_1.jpg

Wall ID:	**YOSE-0014-7.99-L**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	71	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared fill wall with stone mortared guardwall.		

Wall Measurements

Wall Length (ft.):	100	**Face Area (sq.):**	550
Average Wall Height (ft.):	5	**Face Angle (deg.):**	84
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Founded on soil. One crackk present at mid wall that extends from the guardwall to the lower portion of the wall.	5
MORTAR 8.00	Old, but no significant cracking or spalling.	8
STONE MASONRY 8.00	Hard durable quartzite and gneiss, slightly weathered.	9
DOWNSLOPE 1.00	Loose small rock fragments, minor erosion.	5
LATERAL SLOPE 1.00	Ties into 1.5:1 soil slope, moderate erosion at wall start.	5
TRAFFIC BARRIER/FENCE 1.00	Missing rock at the start of guardwall, not affecting wall performance.	6
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_7.990_L_1.jpg

Wall ID:	**YOSE-0014-21.324-R**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	63	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared head wall at inlet of Grouse Creek.		

Wall Measurements

Wall Length (ft.):	22	**Face Area (sq.):**	125
Average Wall Height (ft.):	5	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	11

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair, performing as intended, culvert may be undersized.	5
WALL FOUNDATION MATERIAL 8.00	Founded on natural stream channel. No sign of settlement.	8
MORTAR 8.00	Good, some minor cracks and spalling.	7
STONE MASONRY 8.00	Hard durable granitic rock, moderately weathered.	8
CULVERT 1.00	4' CIP concrete, minor spalling.	5
UPSLOPE 1.00	1.5:1 soil slope (fill), moderate erosion, oversteepened.	5
WALL DRAINS 1.00	None present. No water related problems.	7
LATERAL SLOPE 5.00	Recent riprap placement at each end. Culvert shows signs of plugging and washing out wall end.	2

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_21.324_R_1.jpg

Wall ID:	**YOSE-0014-21.385-R**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	79	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked cut wall (buttress/rockery).		

Wall Measurements

Wall Length (ft.):	68	**Face Area (sq.):**	1000
Average Wall Height (ft.):	14	**Face Angle (deg.):**	45
Maximum Wall Height (ft.):	18	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on edge of roadway prism. No sign of settlement.	8
PLACED STONE 8.00	Very large granitic rock, slightly weathered.	8
UPSLOPE 1.00	Recent slump, previously unstable but buttress providing the support.	6
LATERAL SLOPE 1.00	1.5:1 soil slope, good vegetation, no sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_21.385_R_1.jpg

Wall ID:	**YOSE-0014-21.484-R**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	58	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked cut wall (buttress)		

Wall Measurements

Wall Length (ft.):	157	**Face Area (sq.):**	2100
Average Wall Height (ft.):	13	**Face Angle (deg.):**	48
Maximum Wall Height (ft.):	18	**Vertical Offset (ft.):**	1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	6
WALL FOUNDATION MATERIAL 8.00	Founded on wet soils, no sign of settlement.	5
PLACED STONE 8.00	Very large angular granitic rock, slightly weathered, hard, durable.	8
LATERAL SLOPE 0.50	Ties into 1.5:1 soil slope. No sign of erosion.	8
UPSLOPE 1.00	Sloughing soils, buttress appears to have stabilized slope.	6
WALL DRAINS 1.00	None present. No water related problems.A	7
ROAD/SIDEWALK/SHOULDER 5.00	Road shows severe rutting, alligator and longitudinal cracks.	3

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_21.484_R_1.jpg

YOSE_0014_21.484_R_2.jpg

Wall ID:	**YOSE-0014-23.716-L**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	85	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared fill wall with guardwall.		

Wall Measurements

Wall Length (ft.):	1840	**Face Area (sq.):**	17500
Average Wall Height (ft.):	9	**Face Angle (deg.):**	84
Maximum Wall Height (ft.):	18	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Founded on bedrock and shallow bedrock. No sign of erosion.	8
MORTAR 8.00	Good, minor cracking and spalling in isolated locations..	8
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	9
LATERAL SLOPE 0.50	2:1 soil/rock mix, no sign of erosion.	8
DOWNSLOPE 0.50	Bedrock and shallow bedrock. No sign of erosion.	9
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_23.716_L_1.jpg

Wall ID:	**YOSE-0014-25.979-R**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry headwall for a 3.5 ft x 4.25 ft concrete box culvert dry stacked stone slope protection atop headwall constructed along right shoulder and along base of steep embankment supporting a high ADT roadway		

Wall Measurements

Wall Length (ft.):	22	**Face Area (sq.):**	94
Average Wall Height (ft.):	4	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	-16

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; no observed distress to wall	8
WALL FOUNDATION MATERIAL 8.00	No distress; no evidence of settlement, rotation or undermining	10
MORTAR 8.00	General-age related weathering; minor cracking; minor debonding	8
PLACED STONE 8.00	No distress; placed angular blast rock; good block-to-block contact with no evidence of movement	9
STONE MASONRY 8.00	No distress to cut block	10
ROAD/SIDEWALK/SHOULDER 0.50	Minor to moderate transverse (thermal) cracking of roadway	8
CULVERT 0.50	No observed distress to 3.5 ft x 4.25 ft concrete box culvert	9
VEGETATION 0.50	One large bush is growing in close proximity to wall; bush is not causing distress to wall	9
DOWNSLOPE 0.50	No distress to dry creek channel; riprap erosion protection along channel	10

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_25.979_R_1.jpg

Wall ID:	**YOSE-0014-26.457-L**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	79	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry headwall for a 48 in diameter CMP constructed along the left shoulder and directly supports a portion of a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	29	**Face Area (sq.):**	88
Average Wall Height (ft.):	3	**Face Angle (deg.):**	82
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor to moderately degraded mortar requires repointing; minor unraveling of the dry stacked stone portion of wall	7
WALL FOUNDATION MATERIAL 8.00	Founded atop bedrock and blast rock fill; no evidence of settlement, rotation, undermining or seepage	9
MORTAR 8.00	Minor to moderate degradation of mortar; good condition overall	7
PLACED STONE 8.00	Good condition; minor unraveling	7
STONE MASONRY 8.00	No distress to cut blocks	9
ROAD/SIDEWALK/SHOULDER 0.50	Minor to moderate longitudinal cracking; cracks have been sealed with no new cracking	8
CULVERT 0.50	No observed distress to 48-in. diameter CMP	9
DOWNSLOPE 0.50	No distress to riprap-lined dry, dry creek channel	9
LATERAL SLOPE 0.50	No distress; placed boulder and cobbles acting as erosion protection	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Stone masonry repointing (entire wall) - 87.68 sqft ($75/sqft) = $6,576
Repair Cost:	$6,576

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

YOSE_0014_26.457_L_1.jpg

Wall ID:	**YOSE-0014-27.034-R**		
Route Name:	WAWONA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	81	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared headwall at inlet.		

Wall Measurements

Wall Length (ft.):	27	**Face Area (sq.):**	84
Average Wall Height (ft.):	3	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on natural stream bottom comprised of sand and cobbles. No sign of settlement.	8
MORTAR 8.00	Very good, recent, no cracks or spalling..	8
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	9
CULVERT 0.50	CIP concrete arch, no cracking or spalling.	8
LATERAL SLOPE 1.00	Some erosion at wall start, ties into existing wall at wall end.	5
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Place riprap at wall start. 1 cubic yard riprap @ $220/cu.yd = $220. 2 hours backhoe equipment @ $150/hour = $300. 4 hours labor @ $55/hr = $220. Total = $740
Repair Cost:	$740

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0014: WAWONA ROAD

Retaining Wall Condition Photos

Condition photos are not available for YOSE-0014-27.034-R.

Wall ID:	**YOSE-0015-1.886-L**		
Route Name:	GLACIER POINT ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	74	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mortared Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall below a stone masonry guard wall constructed along left shoulder of a high ADT roadway constructed atop and buttresses a steep embankment high consequence of failure		

Wall Measurements

Wall Length (ft.):	107	**Face Area (sq.):**	923
Average Wall Height (ft.):	8	**Face Angle (deg.):**	57
Maximum Wall Height (ft.):	19	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; evidence of past settlement and rotation; voids in dry stacked wall should be grouted; small bushes growing along face of wall should be removed	7
WALL FOUNDATION MATERIAL 8.00	Founded stop blast rock fill wand possibly bedrock; wall appears to have settled slightly and rotated forward as evidence by low spot long the back of wall at roadway level and bowing out of the stone masonry portion of wall	6
MORTAR 8.00	General age-related weathering	8
PLACED STONE 8.00	Good condition of blocks; some voids (up to 6 ft) between blocks; should consider mortaring dry stacked wall in place	8
STONE MASONRY 8.00	Good condition of uncut blocks	8
DOWNSLOPE 0.50	Steep, moderately-vegetated slope; evidence of minor past subsidence; good overall condition	8
TRAFFIC BARRIER/FENCE 0.50	Stone masonry guard wall is in good condition; severe impact damage at start of wall (8 lnft); wall is stable and functional	8
VEGETATION 0.50	Small bush growing from dry stacked wall; one medium diameter trees growing along base of wall	8
WALL DRAINS 0.50	Wall is mostly self-draining with no evidence of internal drainage-related distress; no weepholes in stone masonry portion of wall	8

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Grout GD Wall - 10 cuyd ($175/cuyd) = $1,750
Repair Cost:	$1,750

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0015: GLACIER POINT ROAD

Retaining Wall Condition Photos

YOSE_0015_1.886_L_1.jpg

Wall ID:	**YOSE-0015-1.943-L**		
Route Name:	GLACIER POINT ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	69	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mortared Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall below a stone masonry guard wall constructed along left shoulder and directly supports portion of a high ADT roadway located atop a steep embankment high consequence of failure		

Wall Measurements

Wall Length (ft.):	128	**Face Area (sq.):**	807
Average Wall Height (ft.):	6	**Face Angle (deg.):**	50
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition; ongoing weathering of blocks; some blocks missing long 40% of wall	6
WALL FOUNDATION MATERIAL 8.00	Founded on blast rock fill and possibly bedrock; evidence of past minor settlement and rotation of wall; no evidence of ongoing movement	7
PLACED STONE 8.00	Predominantly decomposed granite with ongoing weathering of blocks; missing blocks for approximately 40% of wall	5
STONE MASONRY 8.00	Minor to moderate weathering of uncut blocks	7
MORTAR 8.00	General age-related distress	9
DOWNSLOPE 0.50	No observed distress to steep, lightly-vegetated slope; very loose fill material along face of slope	8
TRAFFIC BARRIER/FENCE 0.50	Stone masonry guard wall; general age-related weathering of mortar; generally in good condition	9
WALL DRAINS 0.50	Wall is largely self-draining; no evidence of drainage-related distress	9
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Replace missing stones - Placed riprap, Class 3 = 30 cuyd ($120/cuyd) = $3,600. Mortar GD wall (entire wall) - 20 cuyd ($175/cuyd) = $3,500.
Repair Cost:	$7,100

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0015: GLACIER POINT ROAD

Retaining Wall Condition Photos

YOSE_0015_1.943_L_1.jpg

YOSE_0015_1.943_L_2.jpg

Wall ID:	**YOSE-0015-4.965-R**		
Route Name:	GLACIER POINT ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	77	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry inlet headwall for two 36 in diameter CMP culverts constructed along right shoulder and along base of an embankment supporting a high ADT roadway moderate consequence of failure		

Wall Measurements

Wall Length (ft.):	34	**Face Area (sq.):**	248
Average Wall Height (ft.):	7	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	13	**Vertical Offset (ft.):**	-16

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition of wall; both culverts are completely rusted through and need to be replaced to prevent distress to wall; wood debris in channel impede the flow of water	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on soil; no evidence of settlement, rotation, undermining or seepage	9
MORTAR 8.00	General age-related weathering	8
STONE MASONRY 8.00	Good condition; no distress to angular blast rock	9
DOWNSLOPE 0.50	Good drainage towards wall; wood debris in channel may impede flow	8
UPSLOPE 0.50	No distress to moderately-sloping, lightly-forested slope	9
VEGETATION 0.50	No distress from vegetation growing near wall	9
WALL DRAINS 0.50	No evidence of drainage-related distress	9
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Remove two 36-in. diameter CMP culverts - remove pipe culvert = 200 lnft ($20/lnft) = $4,000. Replace 36-in. diameter culverts = 200 lnft ($165/lnft) = $33,000. Clear debris - 6 labor hrs ($55/hr) = $660
Repair Cost:	$37,330

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0015: GLACIER POINT ROAD

Retaining Wall Condition Photos

YOSE_0015_4.965_R_1.jpg

Wall ID:	**YOSE-0015-10.644-R**		
Route Name:	GLACIER POINT ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	93	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall constructed along right shoulder and directly supports a pull-off area along a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	275	**Face Area (sq.):**	3740
Average Wall Height (ft.):	13	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	20	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition	9
WALL FOUNDATION MATERIAL 8.00	Founded on bedrock; no evidence of settlement or rotation	10
PLACED STONE 8.00	No observed distress to medium to large diameter angular blast rock; good block-to-block contact	9
ROAD/SIDEWALK/SHOULDER 0.50	Minor to moderate transverse (thermal) cracking of roadway; no distress to unpaved pull-off area	8
VEGETATION 0.50	No distress from vegetation growing along the base and within face of wall	9
DOWNSLOPE 0.50	No distress to steep, well-forested slope with frequent bedrock outcrops	10
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10
WALL DRAINS 0.50	Wall is self-draining; no evidence of drainage-related distress	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

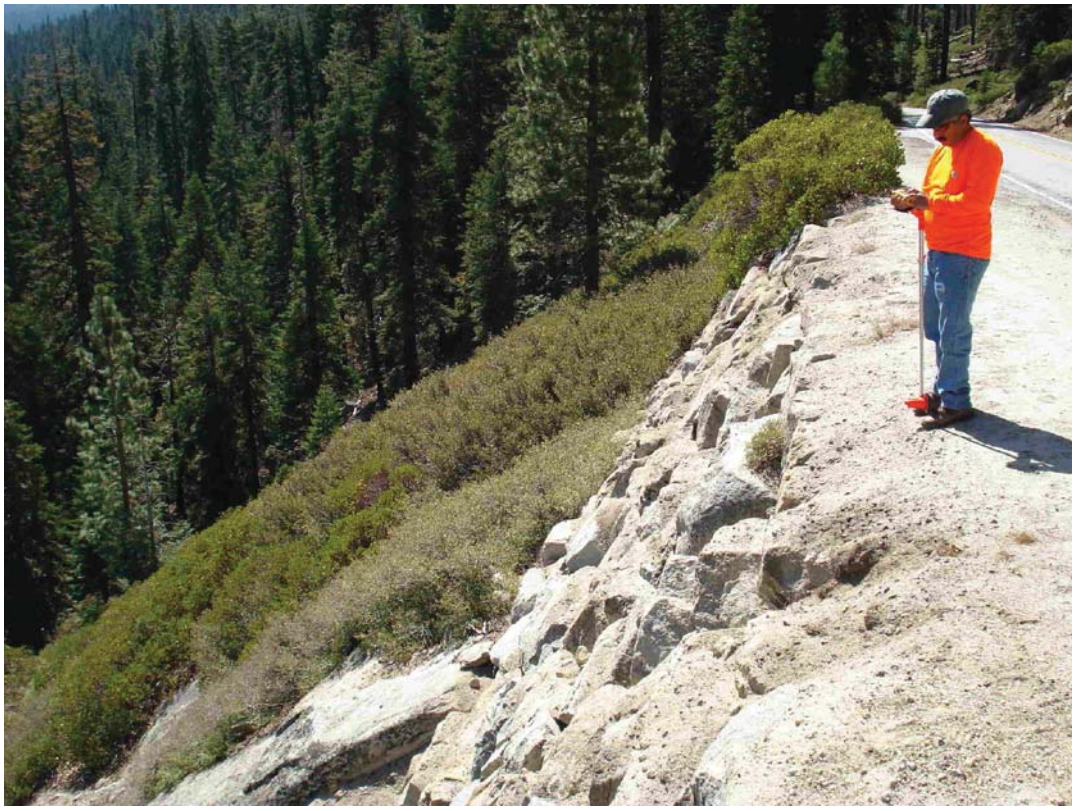
2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0015: GLACIER POINT ROAD

Retaining Wall Condition Photos

YOSE_0015_10.644_R_1.jpg



YOSE_0015_10.644_R_2.jpg

Wall ID:	**YOSE-0016-.044-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	65	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder dry-stacked cut wall at inlet		

Wall Measurements

Wall Length (ft.):	36	**Face Area (sq.):**	144
Average Wall Height (ft.):	4	**Face Angle (deg.):**	65
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, voids and surface erosion may impact wall performance.	6
WALL FOUNDATION MATERIAL 8.00	Sandy gravel road fill material, no indications of settlement or rotation.	8
PLACED STONE 8.00	1-2ft diameter hard granite uncut boulders, slightly oxidized at the face, with small cobbles infilled, occasional missing elements at the face at isolated locations from surface erosion, sediments over the front wall face, wall not fully retaining cut sl	5
CULVERT 0.50	Drop inlet at base of wall, functioning as intended.	8
CURB/BERM/DITCH 0.50	Minor curb at the end of the wall, channeling roadway surface drainage to the inlet, functioning as intended.	8
LATERAL SLOPE 0.50	Boulders at the end of the wall, not impacting wall performance.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has a recent overlay with no signs of distress. Shoulder has no signs of undermining or erosion from water flow into the inlet.	9
UPSLOPE 1.00	Gentle slope, well vegetated, adjacent to channel, occasional voids and surface erosion impacting wall function.	5
VEGETATION 1.00	Minor brush and grass with minor pushing out dry stacked stones at isolated locations, low impact on wall function.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Add about 5 boulders to isolated wall locations to prevent surface water runoff erosion from upslope: Labor= $55/hrx2hrs= $110. Excavator/bobcat@1hr=$200. Dumptruck@1hr=$120. 5 boulders (25125-0000)= $425x5 = $2,125. Traffic Control@2men @$55/hr@1hr=$110
Repair Cost:	$2,665

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.044_L_1.jpg

Wall ID:	**YOSE-0016-.087-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Large-diameter granite dry-stacked wall below guardwall section		

Wall Measurements

Wall Length (ft.):	66	**Face Area (sq.):**	330
Average Wall Height (ft.):	5	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition, performing as intended with minor surface erosion.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material, no signs of rotation or distress.	9
PLACED STONE 8.00	1-2ft diameter uncut granite boulders, minor gravel and cobble infilling, surface erosion@upslope of wall at isolated locations, not impacting wall performance, minor voids at isolated locations.	7
TRAFFIC BARRIER/FENCE 0.50	Guardwall at edge of pavement, no signs of distress.	8
WALL DRAINS 0.50	None observed, not impacting wall.	8
DOWNSLOPE 0.50	Relatively flat slope, not impacting wall.	9
LATERAL SLOPE 0.50	Tapers to slope protection at less than 45-degrees, not impacting wall.	9
ROAD/SIDEWALK/SHOULDER 1.00	Road has new overlay with no signs of distress. Shoulder is about 5-ft wide with soil and grass, occasional soft spot with voids.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.087_R_1.jpg

Wall ID:	**YOSE-0016-.163-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotecrete faced welded wire MSE fill wall below guardwall		

Wall Measurements

Wall Length (ft.):	174	**Face Area (sq.):**	1365
Average Wall Height (ft.):	7	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	13	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, almost new condition.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material, no signs of settlement or distress.	9
WIRE/GEOSYNTHETIC FACING 8.00	Covered, no signs of distress at the face.	9
ARCHITECTURAL FACING 0.50	Sculpted shotcrete face to look like granite stone mortared wall, no cracking or signs of distress	9
DOWNSLOPE 0.50	Heavily vegetated, gentle slope to Merced streambed, not impacting wall.	9
LATERAL SLOPE 0.50	Tapers to gentle slope, no erosion observed, not impacting wall.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder about 5-ft wide, flat, with grass, no signs of distress.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at construction joints.	9
WALL DRAINS 0.50	None observed, but assumed underdrain system, drainage issues not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.163_R_1.jpg

Wall ID:	**YOSE-0016-.297-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded wire MSE fill wall below guardwall and pullout		

Wall Measurements

Wall Length (ft.):	379	**Face Area (sq.):**	2163
Average Wall Height (ft.):	5	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, almost new.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material, no signs of settlement or distress.	9
WIRE/GEOSYNTHETIC FACING 8.00	Covered, no signs of distress at face.	9
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with no signs of distress. Shoulder is about 4-ft wide, flat, grass and shrub covered, minor soft spots.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete simulated stone-mortared facing, no signs of distress.	9
DOWNSLOPE 0.50	About 2H:1V sloe down to Merced River, no undermining of wall.	9
LATERAL SLOPE 0.50	Tapers to edge slopes at about 2H:1V, no erosion observed.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall, minor cracking at construction joints.	9
WALL DRAINS 0.50	None observed (assume underdrain system), occasional surface water outlets (grouted stone) over wall face, not impacting wall.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.297_R_1.jpg

Wall ID:	**YOSE-0016-.382-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	71	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite cobble and boulder dry-stacked fill wall below guardwall		

Wall Measurements

Wall Length (ft.):	60	**Face Area (sq.):**	592
Average Wall Height (ft.):	9	**Face Angle (deg.):**	60
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition overall, with minor missing elements, but performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Minor undermining, minor surface erosion, performing as intended.	7
PLACED STONE 8.00	6-inch to 2-ft diameter granite boulders, slightly weathered at the surface, missing 2-3 stones at the toe at an isolated location pushed out by surface erosion, not yet impacting overall wall performance.	7
DOWNSLOPE 0.50	About 1.5H:1V slope with minor surface erosion, not impacting wall performance, but could develop into undermining of wall foundation with a large storm event.	8
LATERAL SLOPE 0.50	Tapers to adjacent steep slope at begin of wall, but no signs of erosion. Rock outcrop at the end of wall.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has no signs of distress. Shoulder is about 3-ft wide with about 1H:1V gravel slope down to the top of the retaining wall with minor surface erosion.	8
WALL DRAINS 0.50	None observed, minor to moderate surface water drainage issues.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has no signs of distress.	10

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Replace missing stones at isolated location: Class 3 riprap= 5cydx$200/cyd=$1,000. Dump truck @$120/hr x 2hr=$240. Backhoe @$150/hr x2hr=$300. Traffic control @55/hr x2hr =$110. Labor (spotter) @$55/hr x2hr=$110. TOTAL = $1,870
Repair Cost:	$1,870

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.382_R_1.jpg

Wall ID:	**YOSE-0016-.4-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded wire mesh MSE fill wall below guardwall		

Wall Measurements

Wall Length (ft.):	698	**Face Area (sq.):**	6683
Average Wall Height (ft.):	9	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	17	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent overall condition, almost new.	9
WALL FOUNDATION MATERIAL 8.00	No signs of settlement or distress.	9
WIRE/GEOSYNTHETIC FACING 8.00	Covered, no signs of distress at the face.	9
CULVERT 0.50	24-inch CMP outlet at mid-height of wall, performing as intended.	8
DOWNSLOPE 0.50	About 2H:1V at wall beginning to about 1H:1V in places, with steep gullies to Merced River lined with riprap.	8
LATERAL SLOPE 0.50	Riprap protected at steep slopes, not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has no signs of distress. Shoulder about 3-ft wide gravel at about 1H:1V slope down to top of wall, minor brush and grass, minor soft spots not impacting wall performance.	8
ARCHITECTURAL FACING 0.50	Scupted shotcrete facing, no cracking observed.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor openings at the joints, not impacting performance.	9

Repair Recommendations

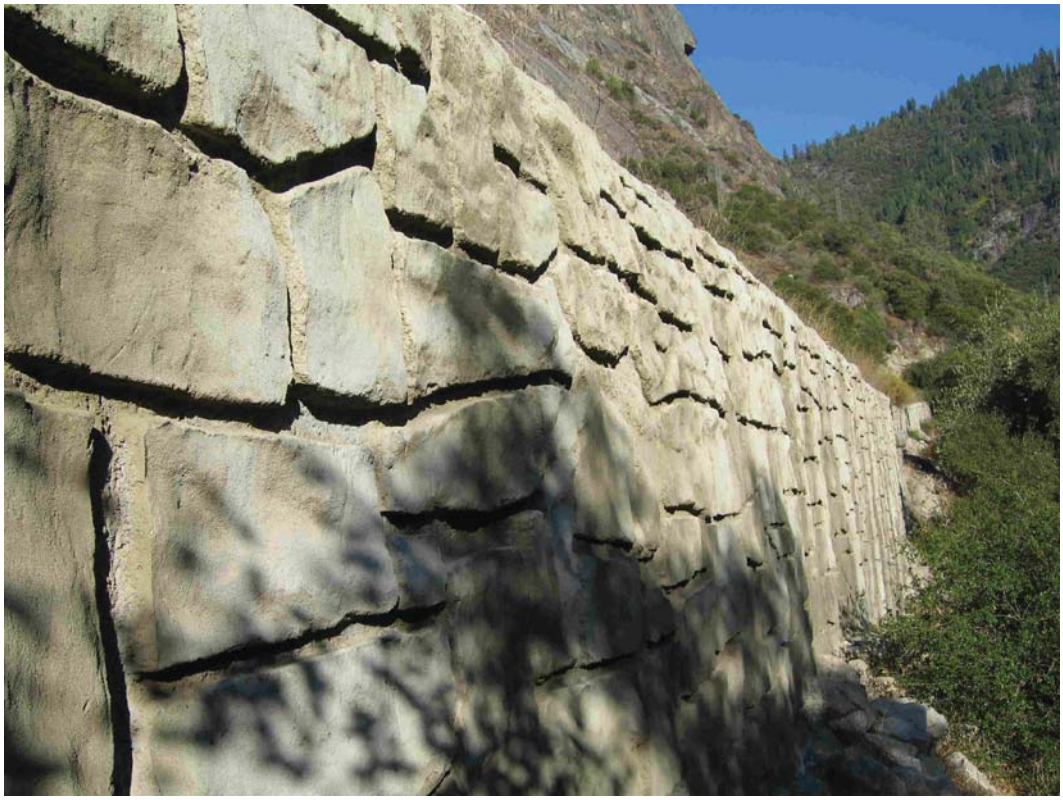
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos



YOSE_0016_0.400_R_1.jpg

Wall ID:	**YOSE-0016-.43-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Uncut granite boulder (1 to 2 ft diameter) gravity, dry-stacked cut wall at culvert inlet		

Wall Measurements

Wall Length (ft.):	30	**Face Area (sq.):**	140
Average Wall Height (ft.):	4	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition overall, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	No signs of settlement, distress, or rotation at the foundation.	9
PLACED STONE 8.00	1-2 ft diameter, hard, uncut granite boulders, slightly weathered at the face, gravel backfill, performing as intended.	9
CURB/BERM/DITCH 0.50	Curb has no signs of distress, but minor surface erosion could occur at the base of the wall.	8
LATERAL SLOPE 0.50	tapers to the edge of the slope at about 1.5H:1V, not impacting wall performance.	8
UPSLOPE 0.50	About 1.5H:1V slope with minor surface erosion.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has a new overlay with no signs of distress. Shoulder is about 3-feet wide with grass, good condition.	9
WALL DRAINS 0.50	None observed, not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.430_L_1.jpg

Wall ID:	**YOSE-0016-.507-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Uncut granite boulder (1 to 2 ft diameter) gravity dry stacked wall at culvert inlet		

Wall Measurements

Wall Length (ft.):	35	**Face Area (sq.):**	158
Average Wall Height (ft.):	4	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition overall, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	No signs of settlement, distress, or rotation.	9
PLACED STONE 8.00	1-2 ft diamter hard, uncut granite stones, slightly weathered at the face, gravel backfill, performing as intended.	9
CURB/BERM/DITCH 0.50	Minor ditch at the front of the wall feeding into the drop inlet, performing as intended.	8
LATERAL SLOPE 0.50	Tapers to adjacent slopes at about 1.5H:1V, not impacting wall performance.	8
UPSLOPE 0.50	Steep slope at about 1.5H:1V with minor surface erosion, not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder is about 5-ft wide with grass, not impacting wall performance.	9
WALL DRAINS 0.50	None observed. Water issues not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.507_L_1.jpg

Wall ID:	**YOSE-0016-.54-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded wire mesh MSE fill wall with guardwall above, adjacent to Merced River.		

Wall Measurements

Wall Length (ft.):	202	**Face Area (sq.):**	1273
Average Wall Height (ft.):	6	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good overall condition, lateral slopes have minor erosion.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material (gravel and boulders), minor erosion, not impacting performance, no signs of settlement or rotation.	9
WIRE/GEOSYNTHETIC FACING 8.00	Not directly observed due to coverage by architectural facing. No signs of distress at the face.	9
DOWNSLOPE 0.50	Steep slope at about 1.5H:1V down to Merced River with riprap eroded down in isolated locations, not impacting wall.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete facing to simulate stone-mortared facing, minor hairline cracking, like new.	9
CULVERT 0.50	30-inch CMP at the middle of the wall, exiting at the base. Performing as intended.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder is about 3-feet wide at about 2H:1V with grass and shrubs in good condition.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has no signs of distress.	9
WALL DRAINS 0.50	None observed, but underdrains are assumed. No signs of distress related to wall drainage issues. Occasional surface water drains at the top of the wall made out of mortared stone outletting to the top of wall, not impacting performance.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.540_R_1.jpg

Wall ID:	**YOSE-0016-.587-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder dry-stacked cut wall above drop inlet.		

Wall Measurements

Wall Length (ft.):	52	**Face Area (sq.):**	326
Average Wall Height (ft.):	6	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition overall, minor settlement but performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Minor undermining, not impacting wall performance, minor settlement at wall start.	8
PLACED STONE 8.00	1-2 ft diameter uncut granite boulders, slightly weathered at the surface, minor isolated voids, minor isolated stone out of place at the top of the wall from surface water erosion, not impacting wall performance.	8
CULVERT 0.50	Drop inlet at base of wall, performing as intended.	8
CURB/BERM/DITCH 0.50	Surface water ditch from road feeds into the drop inlet, performing as intended.	8
LATERAL SLOPE 0.50	About 2H:1V soil slope with grass at begin of wall. Bedrock at the end of wall.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road had a new overly with no signs of distress. Shoulder is 0-3 ft wide with minor grass, good condition.	8
UPSLOPE 0.50	Surface erosion gully at about 1.5H:1V slope.	8
WALL DRAINS 0.50	None observed, not impacting wall.	8

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.587_L_1.jpg

Wall ID:	**YOSE-0016-.648-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	75	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mass Concrete
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder dry-stacked gravity wall below guardwall (about 25 ft length) with a concrete gravity wall extended at the beginning of the wall.		

Wall Measurements

Wall Length (ft.):	75	**Face Area (sq.):**	850
Average Wall Height (ft.):	11	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	20	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition overall, minor end of wall surface erosion that may impact the wall if it progresses.	7
WALL FOUNDATION MATERIAL 8.00	Granular material or possbily bedrock foundation. No signs of distress, minor erosion at base, but no settlement or rotation.	8
PLACED STONE 8.00	Granite 1-foot diameter boulders, slight weathering at the face, minor erosion, minor occasional missing element.	7
CONCRETE 8.00	At the slope protection area, minor cracking, irregular construction with steep upper slope and sag at the bottom, but performing function.	8
DOWNSLOPE 0.50	About 1.5H:1V slope with trees and grassy vegetation, fairly steep down to the Merced River.	8
VEGETATION 0.50	Brush in wall at dry-stacked area, assisting stability.	8
WALL DRAINS 0.50	None observed, not impacting wall performance.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall no signs of distress.	9
LATERAL SLOPE 1.00	Moderate surface erosion, minor gully, perhaps the wall is too short?, not yet impacting roadway, but encroaching.	6

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.648_R_1.jpg

Wall ID:	**YOSE-0016-.673-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	73	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite cobble (6 in to 1 ft diameter) gravity dry-stacked fill wall below guardwall with 2 ft x 1 ft cut granite stone buttress at base		

Wall Measurements

Wall Length (ft.):	40	**Face Area (sq.):**	532
Average Wall Height (ft.):	13	**Face Angle (deg.):**	63
Maximum Wall Height (ft.):	14	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition, minor surface voids in the shoulder and lateral slope erosion, but functioning as intended.	7
WALL FOUNDATION MATERIAL 8.00	Granite boulders or bedrock outcrop foundation. No signs of distress, rotation, or settlement.	8
PLACED STONE 8.00	6" to 1-ft diameter solid granite cobbles with slight weathering at the face, minor surface erosion, granular backfill.	7
DOWNSLOPE 0.50	Boulders on a steep slope down to the Merced River, not impacting wall performance.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at the joints.	8
WALL DRAINS 0.50	None observed, not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 1.00	Road has minor depression and a relatively new overlay. Shoulder is about 3-8 feet wide and relatively flat, occasional voids and soft spots, mionr slumping at the top fo the wall, not impacting the road.	6
LATERAL SLOPE 1.00	Steep slope at begin of wall with moderate surface erosion near trees. Boulder outcrop at the end of the wall.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.673_R_1.jpg

Wall ID:	**YOSE-0016-.684-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	66	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 to 2 foot diameter) dry-stacked fill wall		

Wall Measurements

Wall Length (ft.):	95	**Face Area (sq.):**	400
Average Wall Height (ft.):	4	**Face Angle (deg.):**	65
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, need to repair missing elements, but functioning as intended.	7
WALL FOUNDATION MATERIAL 8.00	Granite bouldersor outcrop at the foundation. No signs of distress, settlement, or rotation.	8
PLACED STONE 8.00	1-2 foot diameter granite boulders, slightly weathered at the surface, about 10-foot wide section at the top of the wall missing stones, not impacting road, but needs maintenance.	5
DOWNSLOPE 0.50	Granite boulders, not impacting wall performance.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has no signs of distress.	8
WALL DRAINS 0.50	None observed, not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 1.00	Road has new overlay with minor transverse cracking and minor depression. Shoulder is 3-6 feet wide with grass and relatively flat, minor depressions and voids, missing top of wall from surface erosion.	5
VEGETATION 1.00	Brush on wall at missing stone location may have caused erosion or pullout of stones.	5
LATERAL SLOPE 1.00	At the wall begin, adjacent to gd wall, at end tapert to 1.5H:1V	7

Repair Recommendations

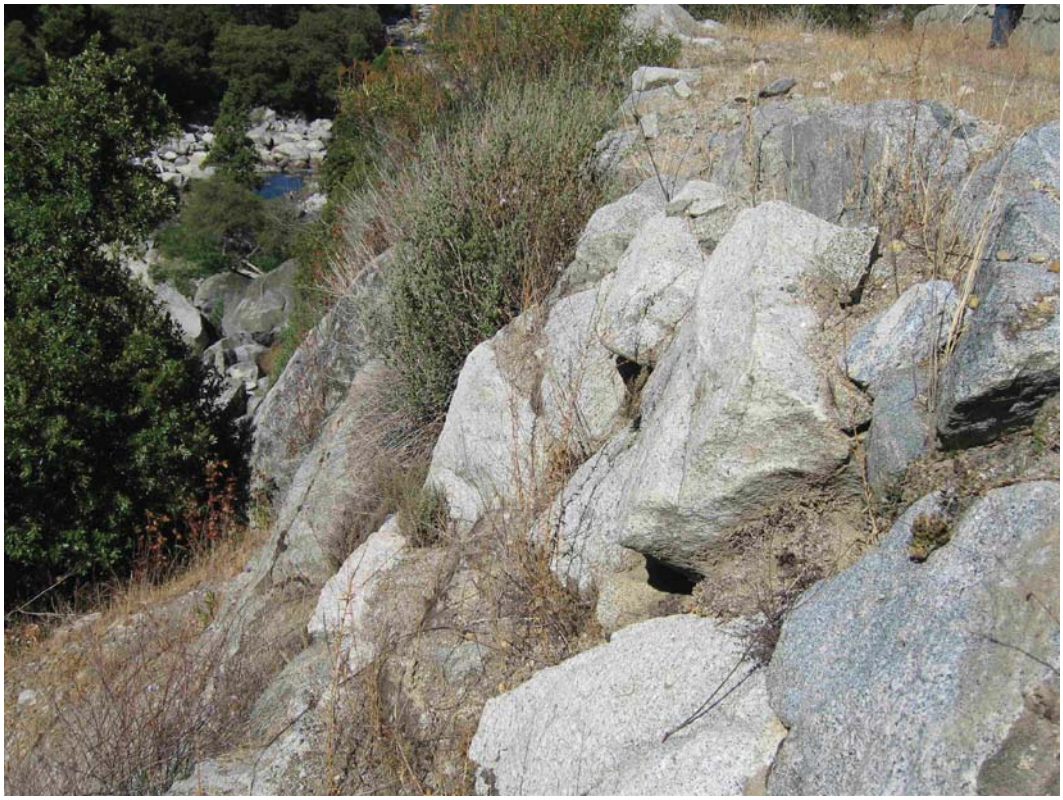
Failure Consequence:	MODERATE
Recommendation Narrative:	10 foot wide by 3 feet high section x 2-feet deep = 60ft3=2cyd, replace granite 1-2'foot diameter boulders. Remove brush from wall @ $100. 2hrs @ $55/hr Labor = $110. Excavator @1hr @$200/hr = $150. Dump Truck @1hr @ $120/hr = $100
Repair Cost:	$770

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos



YOSE_0016_0.684_R_1.jpg

Wall ID:	**YOSE-0016-.8-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete welded-wire faced mse wall below guardwall		

Wall Measurements

Wall Length (ft.):	394	**Face Area (sq.):**	4538
Average Wall Height (ft.):	11	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	16	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition.	9
WALL FOUNDATION MATERIAL 8.00	Embankment fill or boulders, solid granular material. No signs of rotation or settlement.	9
WIRE/GEOSYNTHETIC FACING 8.00	No signs of distress at the surface. Covered with sculpted shotcrete facing.	9
ROAD/SIDEWALK/SHOULDER 0.50	Roadway new overlay with no signs of distress. Shoulder about 3-feet wide with soil and grass cover with minor erosion and depressions that do not impact wall performance.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete facing to look like mortared stone with no cracking observed. Like new.	9
CULVERT 0.50	About 24-inch CMP at midwall, performing as intended.	9
DOWNSLOPE 0.50	Riprap immediately below at about 1.5H:1V slope, not impacting wall performance.	9
LATERAL SLOPE 0.50	Granite boulder at begin of wall and riprap at end of wall, not impacting wall performance.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall above with no signs of distress.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.800_R_1.jpg

Wall ID:	**YOSE-0016-.834-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	74	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder dry-stacked cut wall above inlet		

Wall Measurements

Wall Length (ft.):	25	**Face Area (sq.):**	100
Average Wall Height (ft.):	4	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition, performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material at drainage inlet. No signs of distress, settlement, or rotation.	8
PLACED STONE 8.00	About 1-2-foot diameter boulders with moderate surface erosion. Upslope has minor voids.	7
CURB/BERM/DITCH 0.50	About 1/2 curb with ditch to drop inlet with no erosion at the toe, performing as intended.	8
LATERAL SLOPE 0.50	Minor surface erosion, not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with no signs of distress. Shoulder is about 3-5-feet wide with grass ditch that is performing as intended.	8
WALL DRAINS 0.50	None observed, but not impacting wall performance.	8
UPSLOPE 1.00	About 1.5H:1V slope with soil and rock above and moderate surface erosion.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.834_L_1.jpg

Wall ID:	**YOSE-0016-.843-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mortared Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder mortared stone cutwall below large granite boulders above roadway constructed in two phases, one with small and another with large stones.		

Wall Measurements

Wall Length (ft.):	63	**Face Area (sq.):**	960
Average Wall Height (ft.):	15	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	21	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition with minor mortar missing, but performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material with no signs of settlement or rotation.	9
MORTAR 8.00	Missing mortar in places, decomposed and soft occasionally, but holding together and serving function.	7
STONE MASONRY 8.00	About 6-inch diameter granite boulders in First Generation wall (smaller stones) and about 1-2-foot diameter granite boulders in Second Generation wall (larger stones). First Generation wall is located higher in slope and has one void at an isolated loca	8
CURB/BERM/DITCH 0.50	Ditch and curb about 1/2 way for water flow off roadway, performing as intended.	8
LATERAL SLOPE 0.50	Tapers to stable slopes at begina and end of wall	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with no signs of distress.	8
UPSLOPE 0.50	Large 20-foot + boulder, not impacting wall.	9
WALL DRAINS 0.50	About 2-inch metal pipe at base of Second Generation wall, performing as intended.	9

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.843_L_1.jpg

Wall ID:	**YOSE-0016-.855-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite 3-foot diameter boulder dry-stacked cutwall.		

Wall Measurements

Wall Length (ft.):	40	**Face Area (sq.):**	530
Average Wall Height (ft.):	13	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	26	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good Condition, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material or bedrock. No signs of settlement or rotation.	9
PLACED STONE 8.00	About 3-foot diameter solid granite boulders, well interlocked, good placement.	9
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has minor cracking not associated with wall.	8
UPSLOPE 0.50	Old large slide area with no signs of active movement. Steep slope, well vegetated, not impacting wall performance.	8
CURB/BERM/DITCH 0.50	Curb at base of wall for roadway drainage, performing as intended.	9
LATERAL SLOPE 0.50	Large boulders and solid granular material, no signs of distress.	9
WALL DRAINS 0.50	None observed. Not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.855_L_1.jpg

Wall ID:	**YOSE-0016-.925-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	62	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder gravity dry-stacked wall below guardwall		

Wall Measurements

Wall Length (ft.):	48	**Face Area (sq.):**	1946
Average Wall Height (ft.):	40	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to poor condition, voids throughout, but performing as intended.	6
WALL FOUNDATION MATERIAL 8.00	Fine granular material in ephemeral stream channel. Minor bulging at an isolated location, but performing as intended.	7
PLACED STONE 8.00	About 6-inch to 2-foot diameter granite boulders with primative construction. Many voids throughout and bulging at one isolated location, but still performing as intended. Should be repaired at two locations (see work order) with stones at top or wall w	5
DOWNSLOPE 0.50	Boulders and large trees on about 2H:1V slope.	8
LATERAL SLOPE 0.50	Terminates at large granite boulders, not impacting wall.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall, no signs of distress.	9
ROAD/SIDEWALK/SHOULDER 1.00	Roadway has new overlay with no signs of distress. Shoulder is about 3-5-feet wide with grass, soft in locations.	7
WALL DRAINS 1.00	None observed. Erosion appears to be occuring internally in the wall.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	At two locations, top stones downslope: Use existing material to repair, Traffic control (close 1 latne for 1 hour) = $240. 1 person 2 hrs @ $55/hr = $110. Excavator- move rocks downslope = $150
Repair Cost:	$500

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_0.925_R_1.jpg

Wall ID:	**YOSE-0016-1.115-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced wire-faced MSE wall		

Wall Measurements

Wall Length (ft.):	105	**Face Area (sq.):**	1120
Average Wall Height (ft.):	10	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	14	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material. No signs of bulging, rotation, or settlement.	9
WIRE/GEOSYNTHETIC FACING 8.00	No signs of distress at the face. Covered with facing.	9
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has minor rutting, not associated with wall. Shoulder is about 2-feet wide with grass and shrubs, minor soft spots at isolated locations.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete to simulate stone mortared wall, no cracking or signs of distress. Like new.	9
DOWNSLOPE 0.50	Steep with boulders and large trees, not impacting wall performance.	9
LATERAL SLOPE 0.50	Terminates at granite boulder at begin of wall and granite outcrop at end of wall.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has no signs of distress.	9
WALL DRAINS 0.50	None observed, but assumed internal. Surface water runnoff at top of wall.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.115_R_1.jpg

Wall ID:	**YOSE-0016-1.142-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	85	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded wire MSE wall below gaurdwall.		

Wall Measurements

Wall Length (ft.):	456	**Face Area (sq.):**	5731
Average Wall Height (ft.):	12	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	17	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, minor surface erosion, but performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material and boulders at steep gully down ot Merced River. Minor surface erosion causing minor voids at isolated locations.	8
WIRE/GEOSYNTHETIC FACING 8.00	Covered with sculpted shotcrete facing. No signs of distress.	9
ARCHITECTURAL FACING 0.50	Sculpted shotcrete facing simulating mortared stone wall, minor oxidation at face, no cracking.	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with minor cracking not related to wall. Shoulder about 2-3 feet wide with grass, minor soft spots.	8
CULVERT 0.50	30-inch CMP at middle of wall, functioning as intended.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at joints.	9
WALL DRAINS 0.50	4-inch PVC at base of wall, no signs of distress. Surface water drains from roadway.	9
DOWNSLOPE 1.00	Steep embankment fill boulders down to riverbed. Minor surface erosion with minor impact at base and side of wall.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.142_R_1.jpg

Wall ID:	**YOSE-0016-1.247-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	74	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder gravity fill wall		

Wall Measurements

Wall Length (ft.):	164	**Face Area (sq.):**	3605
Average Wall Height (ft.):	21	**Face Angle (deg.):**	51
Maximum Wall Height (ft.):	25	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition with minor to moderate surface erosion issues.	7
WALL FOUNDATION MATERIAL 8.00	Granular embankment boulder material, minor toe erosion, no impacting wall performance yet.	8
PLACED STONE 8.00	Granite boulder 1-foot diameter hard stone with moderate surface erosion and mnor weathering on the surface. No observed voids or buldging. Perhaps placed as embankment fill, not as a true retaining wall.	7
DOWNSLOPE 0.50	Boulders and granular material on steep slope to riverbed at about 1.5H:1V withminor to moderate gully erosion.	8
LATERAL SLOPE 0.50	tapers to adjacent slopes at lower angles at about 2H:1V.	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with minor cracking not associated with wall. Sholder about 3-7 feet wide with graass, minor soft spots.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at joints.	8
WALL DRAINS 0.50	None observed, not impacting wall performance.	8

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.247_R_1.jpg

Wall ID:	**YOSE-0016-1.285-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	87	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded wire MSE wall below guardwall.		

Wall Measurements

Wall Length (ft.):	213	**Face Area (sq.):**	1929
Average Wall Height (ft.):	9	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	17	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, minor surface erosion.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material and boulders with minor surface erosion and voids at the base, but not impacting performance.	8
WIRE/GEOSYNTHETIC FACING 8.00	Covered with facing. No signs of distress at face.	9
DOWNSLOPE 0.50	Large boulders, erosional channel down to riverbed, not impacting wall.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete simulated moratared stone facing, minor oxidation.	9
LATERAL SLOPE 0.50	Tapers to native slope at begin of wall, end of wall has dry stacked boulders for slope protection.	9
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has minor cracking not associated with wall.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracks at joints.	9
WALL DRAINS 0.50	None observed, not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.285_R_1.jpg

Wall ID:	**YOSE-0016-1.289-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Soil Nail
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced soil nail wall.		

Wall Measurements

Wall Length (ft.):	31	**Face Area (sq.):**	744
Average Wall Height (ft.):	24	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	26	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent condition, hard to identify as a wall.	9
WALL FOUNDATION MATERIAL 8.00	Below roadway fill material, no signs of distress at the surface.	9
SHOTCRETE 8.00	Sculpted shotcrete to look like granite boulders, natural stone coloring, minor cracks and spalling.	9
ARCHITECTURAL FACING 0.50	Sculpted shotcrete to look like granite boulders, natural stone coloring, minor cracks and spalling.	9
CURB/BERM/DITCH 0.50	Curb is like new.	9
LATERAL SLOPE 0.50	Large granite boulders, like bedrock.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has no signs of distress.	9
UPSLOPE 0.50	Granite boulders and soil slope, very steep.	9
WALL DRAINS 0.50	2-inch PVC outlets at the base, open.	9

Repair Recommendations

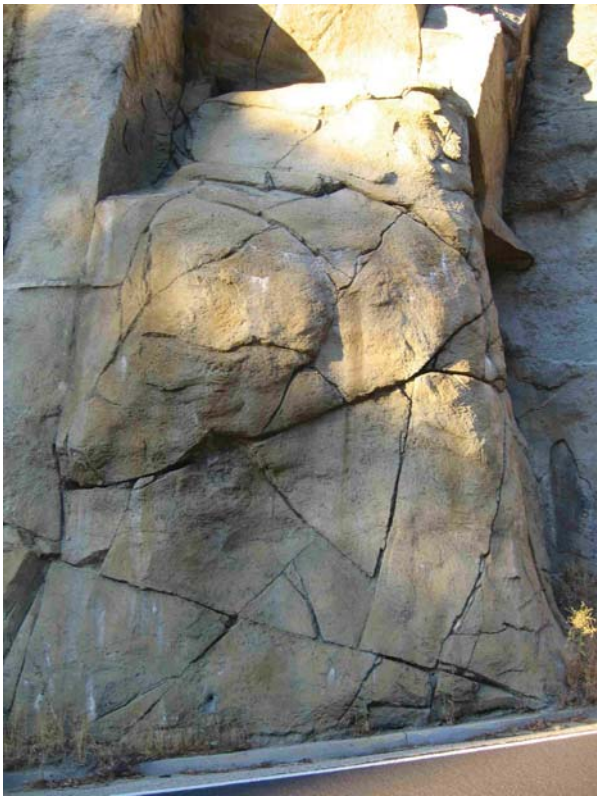
Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos



YOSE_0016_1.289_L_1.jpg

Wall ID:	**YOSE-0016-1.3-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Soil Nail
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete soil nail wall.		

Wall Measurements

Wall Length (ft.):	22	**Face Area (sq.):**	308
Average Wall Height (ft.):	14	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	14	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent condition.	9
WALL FOUNDATION MATERIAL 8.00	Below roadway fill, no signs of distress at the surface.	9
SHOTCRETE 8.00	Sculpted shotcrete to look like granite boulders, natural stone coloring, minor cracks and spalling.	9
ARCHITECTURAL FACING 0.50	Sculpted shotcrete to look like granite boulders, natural stone coloring, minor cracks and spalling.	9
CURB/BERM/DITCH 0.50	Curb is like new.	9
LATERAL SLOPE 0.50	Large granite boulders, like bedrock.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has no signs of distress.	9
UPSLOPE 0.50	Granite boulders and soil slope.	9
WALL DRAINS 0.50	2-inch PVC outlets at the base of the wall, open.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.300_L_1.jpg

Wall ID:	**YOSE-0016-1.327-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder dry-stacked gravity wall below guardwall.		

Wall Measurements

Wall Length (ft.):	30	**Face Area (sq.):**	405
Average Wall Height (ft.):	13	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	17	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, occasional missing stones at the top of the wall, but performing as intended	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material and boulders and/or solid bedrock.	9
PLACED STONE 8.00	About 1-2-foot diameter solid granite boulders, occasional missing element at top of wall and minor surface erosion throughout.	7
DOWNSLOPE 0.50	Bedrock outcrop or boulders, not impacting wall.	9
LATERAL SLOPE 0.50	Begin of wall at end of previous wall. End of wall at boulders and granite outcrop.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracks at joints.	9
WALL DRAINS 0.50	None observed, not impacting wall performance.	9
ROAD/SIDEWALK/SHOULDER 1.00	Roadway has new overlay with minor cracking not associated with wall. Shoulder is soft in isolated locations at the top of the wall.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.327_R_1.jpg

Wall ID:	**YOSE-0016-1.342-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Soil Nail
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete soil nail wall.		

Wall Measurements

Wall Length (ft.):	50	**Face Area (sq.):**	1000
Average Wall Height (ft.):	20	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	20	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent condition.	9
WALL FOUNDATION MATERIAL 8.00	Below roadway fill, no signs of distress at surface.	9
SHOTCRETE 8.00	Sculpted shotcrete to look like granite boulders, natural stone coloring, minor cracks and spalling.	9
CURB/BERM/DITCH 0.50	Curb is like new.	9
LATERAL SLOPE 0.50	Large granite boulders, like bedrock.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has no signs of distress.	9
UPSLOPE 0.50	Granite bouldes and sand slope.	9
WALL DRAINS 0.50	2-inch PVC outlets at base.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.342_L_1.jpg

Wall ID:	**YOSE-0016-1.344-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	83	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite 6 in diamter boulder dry-stacked gravity wall below guardwall.		

Wall Measurements

Wall Length (ft.):	14	**Face Area (sq.):**	98
Average Wall Height (ft.):	7	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid bedrock or boulder, no signs of distress.	9
PLACED STONE 8.00	About 6-inch granite boulder, clean lines, oxidation and moss at the face of stones. Good performance, but minor surface depression at top of wall.	8
DOWNSLOPE 0.50	Gully down to Merced River, no signs of distress.	8
LATERAL SLOPE 0.50	Granite boulder and about 1.5H:1V slope, good performance.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at joints.	9
WALL DRAINS 0.50	None observed, not impacting wall performance.	9
ROAD/SIDEWALK/SHOULDER 1.00	Roadway has new overlay with no signs of distress. Shoulder has about 3-foot wide flat bench with grass, occasionally soft.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.344_R_1.jpg

Wall ID:	**YOSE-0016-1.348-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	87	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced wire mesh MSE wall below guardwall.		

Wall Measurements

Wall Length (ft.):	158	**Face Area (sq.):**	1723
Average Wall Height (ft.):	10	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	15	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material and boulders, riprap embankment slope below. Minor surface erosion, not impacting wall performance.	8
WIRE/GEOSYNTHETIC FACING 8.00	Covered by facing. No signs of distress at face.	9
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay and reflective cracking. Shoulder is about 3-feet wide wih grass and occasional soft spot.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete simulated mortared stone facing, slight oxidation at the face, no signs of distress or cracking.	9
CULVERT 0.50	30-inch CMP at middle of wall, performing as intended.	9
DOWNSLOPE 0.50	Riprap slope protection below with solid granular material and boulders, not impacting wall performance.	9
LATERAL SLOPE 0.50	Tapers to riprap slope at end of wall, begin of wall near end of previous dry-stacked gravity wall. Good condition.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at joints.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.348_R_1.jpg

Wall ID:	**YOSE-0016-1.358-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder 1 to 2-foot diameter dry stacked gravity wall.		

Wall Measurements

Wall Length (ft.):	27	**Face Area (sq.):**	68
Average Wall Height (ft.):	2	**Face Angle (deg.):**	45
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material at drop inlet. No signs of settlement, rotation, or bulging. Occasional isolated voids at base of wall, indicating water erosion behind wall.	8
PLACED STONE 8.00	About 1-2-foot diameter granite boulders, slight oxidation at face, minor surface erosion, isolated void, not impacting wall performance.	8
CURB/BERM/DITCH 0.50	Ditch at toe of the wall for inlet, but performing as intended.	8
LATERAL SLOPE 0.50	Tapers to edges, minor surface erosion not impacting wall.	8
UPSLOPE 0.50	About 1.5H:1V steep slope, well vegetated and minor surface erosion.	8
WALL DRAINS 0.50	None observed, not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distresss.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.358_L_1.jpg

Wall ID:	**YOSE-0016-1.385-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	87	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded wire MSE wall at pullout.		

Wall Measurements

Wall Length (ft.):	422	**Face Area (sq.):**	4994
Average Wall Height (ft.):	11	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	21	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Riprap embankment below, minor undermining with voids, but not impacting performance.	8
WIRE/GEOSYNTHETIC FACING 8.00	Covered by facing. No signs of distress at the face.	9
DOWNSLOPE 0.50	Riprap embankment material with minor erosion.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete simulated mortared stone facing. Minor oxidation and minor cracking. Like new.	9
CULVERT 0.50	30-inch CMP at middle of wall, performing as intended.	9
LATERAL SLOPE 0.50	Tapers to gentle slope with good performance.	9
ROAD/SIDEWALK/SHOULDER 0.50	Pullout and roadway have new overlay with no signs of distress. Shoulder is about 3 feet wide with grass and shrubs.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at joints.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.385_R_1.jpg

Wall ID:	**YOSE-0016-1.522-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	74	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder 1 to 2-foot diameter gravity dry-stacked wall with manhole at end of wall.		

Wall Measurements

Wall Length (ft.):	56	**Face Area (sq.):**	420
Average Wall Height (ft.):	7	**Face Angle (deg.):**	53
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition, voids throughout, but performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material, minor erosion at the toe. No signs of displacement or rotation at the base of the wall.	8
PLACED STONE 8.00	1-2-foot diameter granite boulders, voids throughout (up to 2.5 feet deep). Moderate surface erosion, with loss of elements at end of wall? Perhaps constructed too short with surface erosion undermining the end of the wall.	7
LATERAL SLOPE 0.50	Tapers to 2H:1V slope, minor surface erosion.	8
WALL DRAINS 0.50	None observed, indications of interior wall erosion.	8
CURB/BERM/DITCH 0.50	Curb is like new with no signs of distress.	9
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with no signs of distress.	9
UPSLOPE 1.00	Granular material at about 2H:1V slope, minor to moderate surface erosion.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.522_L_1.jpg

Wall ID:	**YOSE-0016-1.612-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder 1 to 2-foot diameter dry stacked wall above drop inlet (stream protection).		

Wall Measurements

Wall Length (ft.):	41	**Face Area (sq.):**	246
Average Wall Height (ft.):	6	**Face Angle (deg.):**	50
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, minor surface erosion, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material at double drop inlet (embedment assumed). No signs of settlement or rotation.	8
PLACED STONE 8.00	1-2-foot diameter granite boulders, slightly weathered at the face. Fine granular material appears to move through the wall, but the boulders stay in place. Minor isolated voids, not impacting wall performance.	8
CURB/BERM/DITCH 0.50	Ditch feeds to the drop inlets, performing as intended.	8
LATERAL SLOPE 0.50	Tapers to lower slope angles at about 2H:1V with minor surface erosion.	8
UPSLOPE 0.50	About 2H:1V slope with granular material and boulders at ephemeral stream channel. Minor surface erosion.	8
WALL DRAINS 0.50	None observed, not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with no signs of distress.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.612_L_1.jpg

Wall ID:	**YOSE-0016-1.718-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder 1 to 2-foot diameter dry-stacked gravity slope protection at slump/erosion area.		

Wall Measurements

Wall Length (ft.):	40	**Face Area (sq.):**	240
Average Wall Height (ft.):	6	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material (assumed embedment). No signs of distress, displacement, settlement or rotation.	8
PLACED STONE 8.00	1-2-foot diameter granite boulders with occasional cobble infilling. Minor oxidation at the face of the boulders, minor voids, but functioning as intended.	8
LATERAL SLOPE 0.50	Tapers to side slopes out of gully at good location.	8
WALL DRAINS 0.50	None observed, indications of internal erosion.	8
CURB/BERM/DITCH 0.50	Curb is like new with no signs of distress.	9
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with no signs of distress.	9
UPSLOPE 1.00	Gully in an eroded channel at about 60-degree slope. Moderate erosion evident.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_1.718_L_1.jpg

Wall ID:	**YOSE-0016-2.187-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	77	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite stone mortared fill wall at start of Entrance Rock with 2.5-foot parapet guardwall at top.		

Wall Measurements

Wall Length (ft.):	6	**Face Area (sq.):**	24
Average Wall Height (ft.):	4	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	4	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, minor foundation undermining and voids at the top of the wall (needs granular fill)	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material in active stream channel. Undermining at the Merced River bed, exposing the base of the wall.	7
MORTAR 8.00	Minor debonding, overall good performance.	8
STONE MASONRY 8.00	Rounded and cut granite stones ranging from 6-inches to 1-foot diameter. Minor oxidation at the surface, none missing.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall is in good condition, performing as intended.	8
LATERAL SLOPE 0.50	Large boulders to 20-feet+ diameter, not going to move.	9
WALL DRAINS 0.50	None observed, not impacting wall performance.	9
DOWNSLOPE 1.00	Large boulders in active stream channel. Erosion from stream, undermining the wall foundation, but not impacting it's performance yet.	7
ROAD/SIDEWALK/SHOULDER 1.00	Roadway has a new overlay with no signs of distress. Shoulder has boulders with soft spots and voids above, filled with rock.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Fill voids at shoulder with gravel: 6ft lengthx2ft deep 3ft wide= 36ft3=1.3yd3 - say 2cyd. Select borrow @$60/cyd x2cyd = $120. Dump truck @$120/hr x2hr = $240. Labor @ 2hrs @ $55/hr = $110. Fill foundation void at base of wall (exposed footer)
Repair Cost:	$1,410

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.187_R_1.jpg

Wall ID:	**YOSE-0016-2.198-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	69	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder dry-stacked fill wall at end of Entrance Rock with stairs down to the Merced River in the middle with at least two generations of added stones.		

Wall Measurements

Wall Length (ft.):	52	**Face Area (sq.):**	206
Average Wall Height (ft.):	3	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, missing boulders in places and undermining of foundation by river, but performing function and not impacting roadway due to large setback.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material and boulders in the stream channel with moderate undermining of elements.	7
PLACED STONE 8.00	Solid granite boulders with first generation (1930's?) 6-inches to 1-foot diameter stones, voids throughout, bulging, settlement and rotation. Newer generation (1960's) 1-2-foot diameter granite boulders at the stairs with voids, but functional.	7
ROAD/SIDEWALK/SHOULDER 0.50	Roadway has new overlay with no signs of distress and far from the wall. Shoulder at the pullout is unpaved composed of granular material.	8
VEGETATION 1.00	Brush and grass, perhaps built around a tree, all pushing out some of the granite boulder wall elements.	6
WALL DRAINS 1.00	None observed, water eroding materials in the interior of the wall.	6
DOWNSLOPE 1.00	Large granite boulders or bedrock at Merced River bed at about 2H:1V slope.	7
LATERAL SLOPE 1.00	Large boulders, minor to moderate erosion. Some additional rocks may erode into the Merced River over time.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Replace missing boulders in dry-stacked section: 5 boulders @$425/each = $2,125. Lean grout to fill the void under the foundation from stream undercutting: 25 ftx2ftx2ft= 100ft3 = 4cyd. $175/cyd x 4cyd = $648. Dump truck @$120/hr x 4hr = $480. Backhoe @ $150
Repair Cost:	$5,273

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.198_R_1.jpg

Wall ID:	**YOSE-0016-2.344-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	73	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 to 2-foot diameter) gravity dry-stacked wall above drop inlet		

Wall Measurements

Wall Length (ft.):	34	**Face Area (sq.):**	204
Average Wall Height (ft.):	6	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition, missing one stone at top from surface erosion, but performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material at drop inlet, no signs of setttlement or bulging.	8
PLACED STONE 8.00	1-2-foot diamteter boulders, missing 1 block at top from surface erosion. Voids throughout, but performing as intended.	7
LATERAL SLOPE 0.50	Tapers into adjacent slopes at about 2H:1V with minor surface erosion.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
CURB/BERM/DITCH 1.00	Ditch is unpaved with minor undermining, but not impacting wall performance.	7
UPSLOPE 1.00	About 2H:1V with granular maerial and moderate surface erosion at a small gully.	7
WALL DRAINS 1.00	None observed, surface drainage issues and voids from internal erosion.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Replace boulders at the top of the wall: 34ftx2ftx2ft = 136ft3 = 5cyd. Riprap class 6 @ $120/cyd x 5cyd = $600. Dump truck@$120/hr x 2hr = $240. Backhoe at $150/hr x 2hr = $300. Labor @$55/hr x 3 people x 2 hrs = $330. Traffic control (stop 1 lane of traffic)
Repair Cost:	$1,690

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.344_L_1.jpg

Wall ID:	**YOSE-0016-2.39-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Welded-wire mesh faced MSE wall with sculpted shotcrete facing simulating mortared stone below guardwall.		

Wall Measurements

Wall Length (ft.):	255	**Face Area (sq.):**	2148
Average Wall Height (ft.):	8	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	14	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material and granite boulders, no erosion or settlement.	9
WIRE/GEOSYNTHETIC FACING 8.00	Covered with sculpted shotcrete facing, no signs of distress at the surface.	9
DOWNSLOPE 0.50	About 1H:1V steep slope below with granite boulders to the Merced River. No signs of foundation erosion.	8
LATERAL SLOPE 0.50	Bedrock at end of wall and good condition with minor surface erosion at begin of wall.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder is about 3-feet wide flat grassy bench at the top of the wall with occasional soft spots.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor signs of distress with minor cracking at joints.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete facing simulating mortared stone, minor oxidation at the face, minor isolated cracking.	9
WALL DRAINS 0.50	None observed, but underdrains assumed.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.390_R_1.jpg

Wall ID:	**YOSE-0016-2.526-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	73	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder dry-stacked cut wall at inlet.		

Wall Measurements

Wall Length (ft.):	22	**Face Area (sq.):**	102
Average Wall Height (ft.):	4	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition, voids and surface erosion should be monitored, but performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material, no signs of rotation or settlement.	8
PLACED STONE 8.00	1-2-foot diameter rounded solide granite (uncut) stones with granular backfill , minor to moderae voids at base, not impacting performance, isolated missing elements (loose at the top) due to surface erosion.	7
CURB/BERM/DITCH 0.50	Unpaved ditch, not impacting wall.	8
WALL DRAINS 0.50	None observed, drainage issues impacting wall.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new ovelay with no signs of distress. Shoulder is a minor grassy bench, not impacting wall performance.	9
LATERAL SLOPE 1.00	Tapers to the edge of the slope, moderate surface erosion, may impact the wall and should be monitored.	6
UPSLOPE 1.00	About 1.5H:1V slope, very steep with granular materials and granite boulders. Surface erosion throughout above the culvert.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Replace boulders at the top of the wall: 22ftx2ftx2ft = 88ft3 = 3.5cyd. Riprap class 6 @ $120/cyd x 3.5cyd = $420. Dump truck@$120/hr x 2hr = $240. Backhoe at $150/hr x 2hr = $300. Labor @$55/hr x 3 people x 2 hrs = $330. Traffic control (stop 1 lane of traffic)
Repair Cost:	$1,510

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.526_L_1.jpg

Wall ID:	**YOSE-0016-2.587-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared cut granite stones (6 ines x 1 foot) at inlet.		

Wall Measurements

Wall Length (ft.):	17	**Face Area (sq.):**	60
Average Wall Height (ft.):	3	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	4	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent condition, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Covered (below asphalt), but assume solid granular material as in adjacent slopes, no signs of distress at the surface.	9
MORTAR 8.00	Minor oxidation, like new.	9
STONE MASONRY 8.00	About 6-inches x 1-foot cut granite stones, minor oxidation, like new.	9
LATERAL SLOPE 0.50	About 2H:1V to 1.5H:1V slope, minor surface erosion, not impacting wall.	8
UPSLOPE 0.50	Riprap protection on granular 2H:1V slope above, performing as intended.	8
CURB/BERM/DITCH 0.50	Asphalt ditch to drop inlet, no signs of distress.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
WALL DRAINS 0.50	1-inch weep holes, open and functioning, performing as intended.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.587_L_1.jpg

Wall ID:	**YOSE-0016-2.669-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	73	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 to 2-foot diameter) gravity dry-stacked wall at drop inlet (ephemerial stream protection).		

Wall Measurements

Wall Length (ft.):	21	**Face Area (sq.):**	130
Average Wall Height (ft.):	6	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, voids and loose stones at top and edges.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material, so signs of settlement a drop inlet (assumed embedment).	8
PLACED STONE 8.00	1-2-foot diameter solid granite boulders with minor oxidation at the face, occasional missing stones at the top, voids throughout, loose stones at the top at edges.	7
CURB/BERM/DITCH 0.50	Unpaved ditch to drop inlet, performing as intended.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
LATERAL SLOPE 1.00	Steep slope, moderate surface erosion, missing elements at the end of the wall.	5
UPSLOPE 1.00	Steep ephemeral stream channel with eroded slopes of granular material and boulders.	7
WALL DRAINS 1.00	None observed, surface drainage and internal erosion throught the wall is apparent.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.669_L_1.jpg

Wall ID:	**YOSE-0016-2.685-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	70	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 to 2-foot diameter) cut stone wall at drop inlet (ephemeral stream channel).		

Wall Measurements

Wall Length (ft.):	26	**Face Area (sq.):**	256
Average Wall Height (ft.):	9	**Face Angle (deg.):**	45
Maximum Wall Height (ft.):	15	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, voids and isolated movement of elements, performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular fill (assumed embedment) at double drop inlet, minor rotation at isolated locations, performing as intended.	7
PLACED STONE 8.00	1-2-foot diameter boulders and cut 1-foot block granite boulders, minor oxidation at the surface, voids throughout, openings 4-5-inches wide, surface erosion has moved some stones.	7
CURB/BERM/DITCH 0.50	Unpaved ditch to double drop inlet, performing as intended.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
LATERAL SLOPE 1.00	Moderate surface erosion, moving elements at the end of the wall.	6
WALL DRAINS 1.00	None observed, surface drainage and internal erosion apparent.	6
UPSLOPE 1.00	Steep ephemeral stream channel, granular slope.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.685_L_1.jpg

Wall ID:	**YOSE-0016-2.812-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Welded wire mesh MSE wall with sculpted shotcrete facing below guardwall.		

Wall Measurements

Wall Length (ft.):	571	**Face Area (sq.):**	4434
Average Wall Height (ft.):	7	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	13	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material and boulders, no signs of distress. Riprap slope protection below to Merced River, which may indicate it is also at the wall foundation area.	9
WIRE/GEOSYNTHETIC FACING 8.00	Covered with sculpted shotcrete facing, no signs of distress at the face.	9
DOWNSLOPE 0.50	About 1H:1V boulder slope down to Merced River, no undermining observed.	8
LATERAL SLOPE 0.50	Riprap slope protection at begin and end of walls successfully protecting the edges of the walls, not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder is about 3-feet wide grassy flat bench wih occasional soft spots, occasional brush.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall had minor cracking at the joints.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete facing simulating mortared stone, minor cracking, good condition.	9
CULVERT 0.50	About 30-inch CMP in the middle of the wall, performing as intended.	9

Repair Recommendations

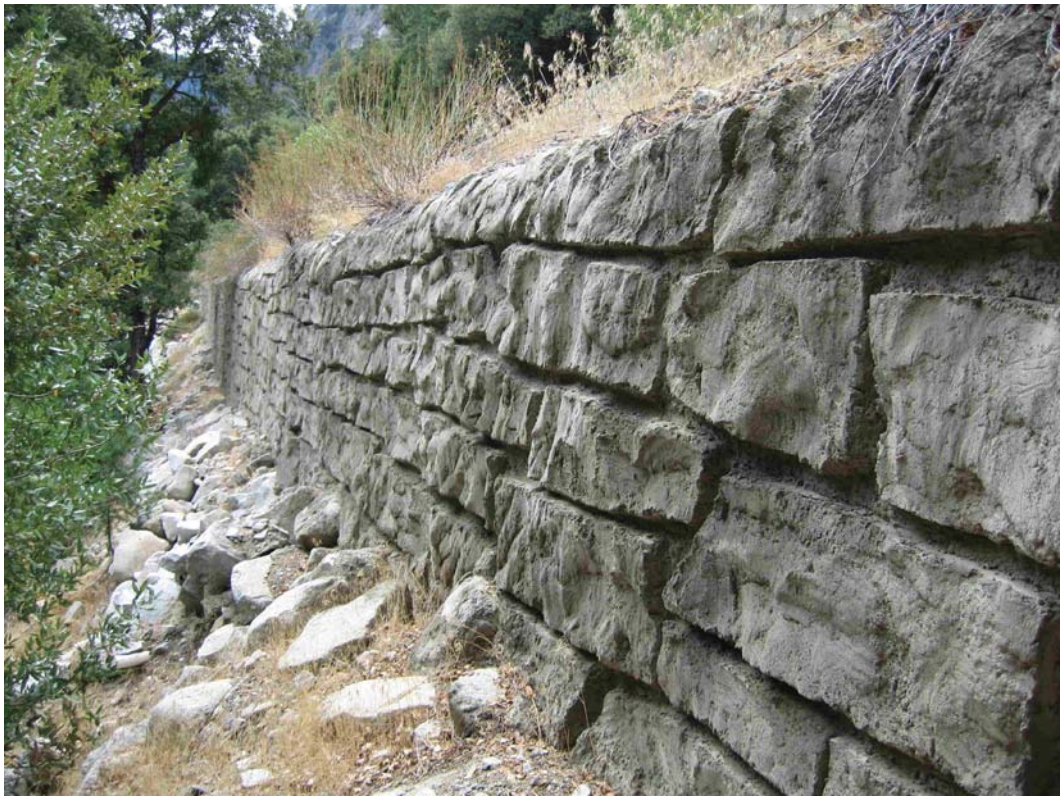
Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos



YOSE_0016_2.812_R_1.jpg

Wall ID:	**YOSE-0016-2.861-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite cutstone (6 ines to 1-foot) block wall at drop inlet (channel protection).		

Wall Measurements

Wall Length (ft.):	18	**Face Area (sq.):**	92
Average Wall Height (ft.):	5	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Covered at drop inlet, no signs of distress at the surface.	9
MORTAR 8.00	Like new, minor cracking.	9
STONE MASONRY 8.00	6-inches to 1-foot blocks of cut granite, like new.	9
CURB/BERM/DITCH 0.50	Paved ditch to drop inlet, good condition.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
WALL DRAINS 0.50	2-inch PVC at base, open and performing as intended.	9
LATERAL SLOPE 1.00	Moderate surface erosion, small riprap protection performing as intended.	7
UPSLOPE 1.00	Eroded channel composed of granular material and boulders, moderate surface erosion.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_2.861_L_1.jpg

Wall ID:	**YOSE-0016-3.215-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite cut stone (6 ines to 1-foot) mortared gravity wall above drop inlet.		

Wall Measurements

Wall Length (ft.):	19	**Face Area (sq.):**	94
Average Wall Height (ft.):	4	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition.	9
WALL FOUNDATION MATERIAL 8.00	Covered at roadway surface, assumed solid granular material and embedment, no signs of distress at the surface.	9
MORTAR 8.00	Like new, minor cracking.	9
STONE MASONRY 8.00	6-inches to 1-foot cut granite stones, minor oxidation on the surface.	9
LATERAL SLOPE 0.50	About 2H:1V slope, minor surface erosion, good performance.	8
UPSLOPE 0.50	Ephemeral stream channel, about 1H:1V steep slope, good performance, minor surface erosion.	8
CURB/BERM/DITCH 0.50	Paved ditch, no signs of distress, performing as intended.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
WALL DRAINS 0.50	2-inch PVC outlets at the bottom of wall, good performance.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_3.215_L_1.jpg

Wall ID:	**YOSE-0016-3.256-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1930
***Wall Rating:**	70	**Maintenance Action:**	Replace Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite stone mortared fill wall.		

Wall Measurements

Wall Length (ft.):	49	**Face Area (sq.):**	120
Average Wall Height (ft.):	2	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	4	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, missing elements but performing as intended, not yet impacting road above, but should be monitored.	7
WALL FOUNDATION MATERIAL 8.00	Large boulder riprap at about 1H:1V slope to Merced River below, very steep, minor rotation observed at isolated locations.	7
STONE MASONRY 8.00	Solid granite boulders 6-inches to 1-foot diameter, possibly removed and replaced?, missing 11-foot wide section at begin of wall, possible repaired during the 2000 construction, but not sufficient.	6
MORTAR 8.00	Minor cracking and debonding, moss in places.	8
WALL DRAINS 0.50	None observed, but lack of drainage could be negatively impacting wall performance.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall above, minor cracks at joints.	9
DOWNSLOPE 1.00	Steep grade to Merced River with large 4-foot diameter boulders, possible undermining of embankment riprap adjacent to river and occasional loose elements.	7
LATERAL SLOPE 1.00	Large granite boulders at wall termination, riprap slope protection, minor surface erosion.	7
ROAD/SIDEWALK/SHOULDER 1.00	Road has new overlay with no signs of distress. Shoulder is about 2-3 feet wide flat bench at the top of the wall with occasional voids and soft spots.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Replace begin of wall section with mortared stone - 11 feet long x 4 feet high = 44 ft2 @ $160/ft2 = $7040. Possible historic issue with replacement, therefore add 10% to cost = $704. Total = $7,744
Repair Cost:	$7,744

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_3.256_R_1.jpg

Wall ID:	**YOSE-0016-3.414-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Welded wire MSE wall with sculpted shotcrete facing below guardwall.		

Wall Measurements

Wall Length (ft.):	315	**Face Area (sq.):**	1676
Average Wall Height (ft.):	5	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, functioning as intended.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material with boulders, no signs of distress, no rotation or settlement observed.	9
WIRE/GEOSYNTHETIC FACING 8.00	Covered with sculpted shotcrete facing, no signs of distress at the face.	9
LATERAL SLOPE 0.50	Riprap at edges with minor surface erosion, performing as intended.	8
ARCHITECTURAL FACING 0.50	Sculpted shotecrete facing simulating mortared stone, minor cracking.	9
CULVERT 0.50	About 48-inch CMP at middle of wall, functioning as intended.	9
DOWNSLOPE 0.50	Riprap slope protection to Merced River, not impacting wall performance.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at the joints.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_3.414_R_1.jpg

Wall ID:	**YOSE-0016-3.473-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	70	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	2-3-foot diameter granite boulders, dry stacked, slope protection above inlet.		

Wall Measurements

Wall Length (ft.):	63	**Face Area (sq.):**	1008
Average Wall Height (ft.):	16	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	26	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition overall, voids with surface erosion.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material and granite boulders.	7
PLACED STONE 8.00	2-3-foot diameter, durable granite boulders, large voids throughout, functioning as intended.	7
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	8
WALL DRAINS 0.50	None observed, no drainage issues.	8
UPSLOPE 1.00	Vegetated with large trees, large boulders, signs of erosion, sediment deposited on wall.	5
CURB/BERM/DITCH 1.00	Paved ditch along base of the wall to inlet, not adversely affecting wall performance.	7
LATERAL SLOPE 1.00	Ties into large boulders and previous wall.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_3.473_L_1.jpg

Wall ID:	**YOSE-0016-3.486-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Soil Nail
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced soil nail wall.		

Wall Measurements

Wall Length (ft.):	76	**Face Area (sq.):**	751
Average Wall Height (ft.):	9	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	16	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition.	9
WALL FOUNDATION MATERIAL 8.00	No signs of distress at the surface.	9
SHOTCRETE 8.00	Sculpted shotcrete facing simulating granite outcrop, like new.	9
CURB/BERM/DITCH 0.50	New curb, no signs of distress.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road had new overlay with no signs of distress.	9
WALL DRAINS 0.50	None observed, no drainag issues impacting wall performance.	9
LATERAL SLOPE 1.00	Tapers to embankment fill with boulders, minor surface erosion at edges.	7
UPSLOPE 1.00	Large granite boulder, stabilized granular material.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_3.486_L_1.jpg

Wall ID:	**YOSE-0016-3.496-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	70	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	2-3-foot diameter granite boulder dry-stacked, slope protection above inlet.		

Wall Measurements

Wall Length (ft.):	43	**Face Area (sq.):**	817
Average Wall Height (ft.):	19	**Face Angle (deg.):**	45
Maximum Wall Height (ft.):	20	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition overall, voids and surface erosion.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material and granite boulders.	7
PLACED STONE 8.00	2-3-foot diameter, durable granite boulders, large voids throughout, functioning as intended.	7
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	8
WALL DRAINS 0.50	None observed, no drainage issues associated with wall.	8
UPSLOPE 1.00	Vegetated with large trees, large boulders, signs of erosion, sediment deposited on wall.	5
CURB/BERM/DITCH 1.00	Paved ditch along base of wall to inlet, not adversely affecting wall performance.	7
LATERAL SLOPE 1.00	Ties into large boulders and stable, vegetated slope.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_3.496_L_1.jpg

Wall ID:	**YOSE-0016-3.605-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	76	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 to 2 foot diameter) dry-stacked cut wall.		

Wall Measurements

Wall Length (ft.):	50	**Face Area (sq.):**	200
Average Wall Height (ft.):	4	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, performing as intended with minor surface drainage issues.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material (embedment assumed), no signs of distress, rotation or settlement.	8
PLACED STONE 8.00	1-2-foot diameter granite boulders with cobble infilling, occasinal voids.	7
CURB/BERM/DITCH 0.50	New curb, no signs of distress.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
LATERAL SLOPE 1.00	Moderate surface erosion.	7
UPSLOPE 1.00	Moderate surface erosion, not impacting wall performance.	7
WALL DRAINS 1.00	None observed, surface drainage issues and internal erosion apparent.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_3.605_L_1.jpg

Wall ID:	**YOSE-0016-3.764-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 to 2-foot diameter) dry-stacked wall (left in place during 2000 construction).		

Wall Measurements

Wall Length (ft.):	106	**Face Area (sq.):**	392
Average Wall Height (ft.):	3	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material, no signs of rotation or distress.	8
PLACED STONE 8.00	1-2-foot diameter granite rounded boulders as slope protection, occasional voids, isolated location with backfill erosion, performing as intended.	8
LATERAL SLOPE 0.50	Minor surface erosion, granite boulders, grassy vegetation, about 1.5H:1V steep slope.	8
UPSLOPE 0.50	Minor surface erosion, granite boulders, grassy vegetation, about 1.5H:1V steep slope.	8
WALL DRAINS 0.50	None observed, surface water drainage off slope not completely contained, may eventually impact performance.	8
CURB/BERM/DITCH 0.50	New curb, no signs of distress.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_3.764_L_1.jpg

Wall ID:	**YOSE-0016-3.796-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	69	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	2-3-foot diameter granite boulder dry-stacked slope protection above inlet.		

Wall Measurements

Wall Length (ft.):	20	**Face Area (sq.):**	180
Average Wall Height (ft.):	9	**Face Angle (deg.):**	52
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition overall, voids and surface erosion.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material and granite boulders.	7
PLACED STONE 8.00	2-3-foot diameter durable granite boulders, large voids throughout, functioning as intended.	7
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	8
UPSLOPE 1.00	Vegetated with large trees, large boulders, signs of erosion, sediment deposited on wall.	4
WALL DRAINS 0.50	None observed, no drainage issues observed.	8
CURB/BERM/DITCH 1.00	Paved ditch along base of wall to inlet, not adversely affecting wall performance.	7
LATERAL SLOPE 1.00	Ties into large boulders and stable, vegetated slope.	7

Repair Recommendations

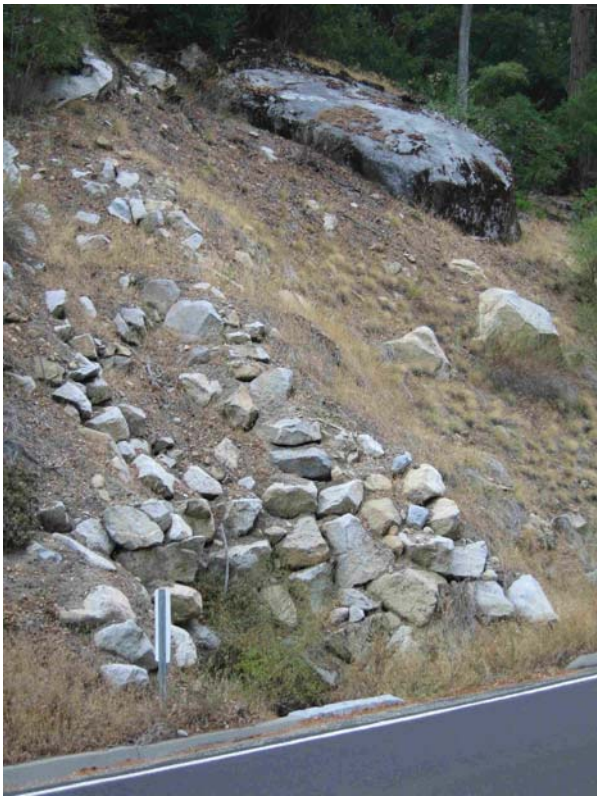
Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos



YOSE_0016_3.796_L_1.jpg

Wall ID:	**YOSE-0016-4.23-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	87	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded-wire mesh MSE wall below guardwall.		

Wall Measurements

Wall Length (ft.):	519	**Face Area (sq.):**	3187
Average Wall Height (ft.):	6	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Granular materials, minor undermining (voids) at surface water outlets, no signs of settlement or rotation, performing as intended.	8
WIRE/GEOSYNTHETIC FACING 8.00	Covered with sculpted shotcrete facing, no signs of distress at the surface.	9
DOWNSLOPE 0.50	About 2H:1V slope moderately steep, riprap slope protection down to the Merced River.	8
LATERAL SLOPE 0.50	Riprap slope protection with minor to moderate surface erosion.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder is about 3-foot wide flat bench with cobbles and gravel, minor grass and brush, minor isolated soft spots no impacting wall performance.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete facing simulating mortared stone, minor cracking at surface water flow areas at isolated locations, performing as intended.	9
CULVERT 0.50	About 30-inch CMP at the middle of the wall, performing as intended.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracks at the joints, no signs of distress or wall movement.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_4.230_R_1.jpg

Wall ID:	**YOSE-0016-4.347-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Cut stone masonry cut wall (6 ines to 1-foot granite blocks) at drop inlet.		

Wall Measurements

Wall Length (ft.):	18	**Face Area (sq.):**	65
Average Wall Height (ft.):	3	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition, like new.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material, no signs of distress.	9
MORTAR 8.00	Like new, no signs of distress.	9
STONE MASONRY 8.00	Solid 6-inches to 1-foot cut granite stone, minor oxidation at the face, like new.	9
LATERAL SLOPE 0.50	Minor to moderate surface erosion, not impacting wall performance.	8
UPSLOPE 0.50	Granular material at about 1.5H:1V slope, minor to moderate surface erosion.	8
CURB/BERM/DITCH 0.50	Paved ditch in front of drop inlet, good condition.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
WALL DRAINS 0.50	2-inch PVC drains, performing as intended.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_4.347_L_1.jpg

Wall ID:	**YOSE-0016-4.425-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	89	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded wire MSE wall below guardwall.		

Wall Measurements

Wall Length (ft.):	120	**Face Area (sq.):**	451
Average Wall Height (ft.):	3	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition.	9
WALL FOUNDATION MATERIAL 8.00	Solid granular material and riprap, minor voids and undermining at surface water and culvert outlet, not impacting wall performance.	9
WIRE/GEOSYNTHETIC FACING 8.00	Covered with sculpted shotcrete facing, no signs of distress at the surface.	9
CULVERT 0.50	About 30-inch CMP at the middle of the wall, minor erosion at the outlet, performing as intended.	8
LATERAL SLOPE 0.50	Riprap slope protection with minor surface erosion, performing as intended.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder is about 5-6-feet wide with gravel and grass, occasional brush cover on about 1H:1V slope to top of wall.	8
ARCHITECTURAL FACING 0.50	Sculpted shotcrete simulating mortared stone, minor cracking at the top of the wall, not impacting wall performance.	9
DOWNSLOPE 0.50	Riprap material at about 2H:1V slope to Merced River with trees and mature growth.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at the joints, not associated with wall movement.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_4.425_R_1.jpg

Wall ID:	**YOSE-0016-4.938-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mortared Stone
Secondary Surface Treatment:		**Architectural Facing:**	Stone Veneer
General Description:	Concrete cantilever headwall on double box culvert with rounded granite stone mortared veneer (constructed about 2000) with 1960 fts era wingwalls made of stone-mortared granite stream rocks (upstream inlet).		

Wall Measurements

Wall Length (ft.):	88	**Face Area (sq.):**	458
Average Wall Height (ft.):	5	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material, no signs of distress or movement, about 20-foot wide stone-mortared apron in front of wall, performing as intended.	8
MORTAR 8.00	1960's wall- moderate cracking and spalling throughout, moss covered, isolated location at the end of the wall with voids and movement of rocks, but performing as intended.	7
STONE MASONRY 8.00	1960's wall- rounded granite cobbles, minor oxidation at the surface, moss covered, performing as intended.	8
CONCRETE 8.00	Covered by stone veneer, no signs of distress at the surface (2000 wall)	9
CULVERT 0.50	2- 12'x11' double box culvert, performing as intended.	8
DOWNSLOPE 0.50	Active alluvial stream channel, minor surface erosion.	8
LATERAL SLOPE 0.50	Begin of wall has gentle slope and end of wall has minor surface erosion. Surface water erosion effecting the dry stacked stones.	8
ARCHITECTURAL FACING 0.50	Stone mortared 3-6-inch diameter rounded cobbles, no cracking, none missing.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_4.938_L_1.jpg

Wall ID:	**YOSE-0016-4.938-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Stone Veneer
General Description:	Concrete cantilever headwall on double-box culvert under roadway with rounded cobble granite stone-mortared veneer with 20-foot wide apron at the downstream outlet of the stream channel.6		

Wall Measurements

Wall Length (ft.):	60	**Face Area (sq.):**	332
Average Wall Height (ft.):	5	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent.	9
WALL FOUNDATION MATERIAL 8.00	Active stream channel with solid granular material, 20-foot wide stone mortared apron at outlet.	9
CONCRETE 8.00	Covered with stone veneer facing, no signs of distress at the surface.	9
CULVERT 0.50	12' x 11' double box culvert, minor oxidation, 2-foot drop designed at the interior functioning as intended, minor separation of embankment material, performing as intended.	8
LATERAL SLOPE 0.50	Riprap slope protection at wingwalls, minor voids filled with gravel at the top of the wall at isolated locations.	8
ARCHITECTURAL FACING 0.50	Stone mortared facing, rounded granite stone cobbles 3-6-inches diameter, no cracking, minor oxidation at surface of some of the stones, performing as intended.	9
DOWNSLOPE 0.50	Active alluvial channel,minor erosion at the end of wall not impacting wall performance.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder is about 2-feet wide with granular material at about 2H:1V slope.	9
WALL DRAINS 0.50	None observed, not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_4.938_R_1.jpg

Wall ID:	**YOSE-0016-5.432-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	53	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	6 ines to 1-foot diameter granite gravity dry-stacked wall.		

Wall Measurements

Wall Length (ft.):	109	**Face Area (sq.):**	957
Average Wall Height (ft.):	8	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	14	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Poor condition, monitoring recommended, may need riprap at base to protect from surface erosion.	5
WALL FOUNDATION MATERIAL 8.00	Solid granular material and granite boulders at stream channel, eroded at high water mark at the base of the wall, riprap repairs at the base appear to be effective in protecting the base of the wall.	5
PLACED STONE 8.00	Granite stones cut and uncut 6-inches to 1-foot diameter, moss covered, missing elements at 2 locations from surface erosion, internal erosion and voids throughout, rotation and buldging at 3 isolated locations, but performing as intended, recommend monit	5
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at joints.	8
WALL DRAINS 1.00	None observed, drains through and over the wall impacting performance.	5
DOWNSLOPE 1.00	Riprap and soft soil at the Merced River, erosion possible without more riprap protection.	7
LATERAL SLOPE 1.00	Culvert at begin of wall, slope about 1.5H:1V at end of wall with moderate surface erosion.	7
ROAD/SIDEWALK/SHOULDER 1.00	Road has new overlay with no signs of distress. Shoulder is about 1-3-feet wide with soft spots and voids.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Add riprap at wall foundation adjacent to stream channel: 109'x2' highx5' wide = 1090 ft3 = 40 yd3. Riprap class 2 @$220/yd3 = $8,800. Equipment = 16 hrs @$150/hr = $2,400. Labor = 16 hrs @ $55/hr = $880. Total = $12,080
Repair Cost:	$12,080

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_5.432_R_1.jpg

Wall ID:	**YOSE-0016-5.463-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite stone dry stacked slope protection below large granite boulder (20 ft ht by 10 ft wide).		

Wall Measurements

Wall Length (ft.):	45	**Face Area (sq.):**	232
Average Wall Height (ft.):	5	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, with some voids and surface erosion depositing granular material at the face of the wall.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material below roadway, no signs of rotation or settlement.	8
PLACED STONE 8.00	Granite stone (1-2foot diameter) uncut stone, moderate oxidation at the face, with granular soils throughout, voids throughout about half of the wall, no missing elements, granular material deposited at the face of the wall, but performing as intended.	8
LATERAL SLOPE 0.50	Moderate surface erosion, not impacting wall performance.	8
CURB/BERM/DITCH 0.50	Paved curb, like new.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress.	9
UPSLOPE 1.00	Large 20-foot high by 10-foot wide granite boulder and loose granular material, moderate surface erosion over the surface.	7
WALL DRAINS 1.00	None observed, surface drainage issues are apparent.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_5.463_L_1.jpg

Wall ID:	**YOSE-0016-5.716-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	86	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Sculpted Shotcrete
General Description:	Sculpted shotcrete faced welded wire mesh MSE wall below guardwall.		

Wall Measurements

Wall Length (ft.):	120	**Face Area (sq.):**	772
Average Wall Height (ft.):	6	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Riprap stream protection adjacent to the Merced River, at steep slope angle of about 1H:1V, minor undermining at the high water mark, not impacting wall performance.	8
WIRE/GEOSYNTHETIC FACING 8.00	Covered with shotcrete facing, no signs of distress at the surface.	9
ARCHITECTURAL FACING 0.50	Scuplted shotcrete facing simulating mortared stone, minor cracking, minor oxidation.	8
DOWNSLOPE 0.50	Granite boulders, on steep slope about 1H:1V to stream channel, grouted riprap at channel, not impacting wall yet.	8
LATERAL SLOPE 0.50	Steep slope about 1H:1V, riprap granite boulders about 2-3-foot diamter to streambed, minor surface erosion.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at the joints.	9
WALL DRAINS 0.50	None observed, underdrains assumed, surface drainage over top of wall from roadway.	9
ROAD/SIDEWALK/SHOULDER 1.00	Road has new overlay, minor rutting, slight vertical depression at the top of the wall and continues beyond the wall area across the entire embankment section, indicating possible settlement of the entire embankment section. Shoulder is about 2-foot wide	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_5.716_R_1.jpg

Wall ID:	**YOSE-0016-5.959-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	70	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 to 2-foot diamter, up to 4-foot) gravity wall above Merced River at pullout with grouted riprap at base of wall at the active stream channel.		

Wall Measurements

Wall Length (ft.):	154	**Face Area (sq.):**	4010
Average Wall Height (ft.):	26	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	32	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, surface drainage issues and some internal erosoin, not impacting roadway performance yet, but should be monitored for undermining at stream channel.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material and granite boulders, undermining below grouted riprap at the active stream channel.	7
PLACED STONE 8.00	1-2-foot diamter solid granite boulders, up to 4-foot diameter occasionally, moss covered, moderate oxidation at the face, voids throughout, occasional missing element at isolated locations, not impacting wall performance.	7
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay with no signs of distress. Shoulder is about 10-feet wide with minor depressions and low areas, not impacting travel lanes, occasional voids at the top of the wall.	8
WALL DRAINS 0.50	None observed, drainage issues at the surface and internally.	8
DOWNSLOPE 1.00	Riprap stream channel at steep slope about 1H:1V with granite boulders above Merced River.	7
LATERAL SLOPE 1.00	Moderate surface erosion at begin and end of wall, large trees.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Prevent undermining/streambed erosion: 154'x2' hightx5' wide = 1540 ft3 = 57 cyd. Riprap class 2 @$220/cyd = $12,540. Equipment = 16 hrs @ $150/hr = $2,400. Labor = 16 hrs @ $55/hr = $880. Total = $15,820
Repair Cost:	$15,820

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_5.959_R_1.jpg

Wall ID:	**YOSE-0016-6.128-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	70	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder dry-stacked fill wall adjacent to the Merced River below guardwall (old 1960 fts age and newer 2000 construction of the same wall type).		

Wall Measurements

Wall Length (ft.):	50	**Face Area (sq.):**	800
Average Wall Height (ft.):	16	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	28	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condiion, with occasional missing top stones, performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Large granite boulders at the streambed, occasional undermining and loss of support, but not impacting wall performance.	7
PLACED STONE 8.00	Granite stone (1-2-foot diameter) boulders, moss covered, internal erosion, surface erosion with missing elements at top of wall at 3 locations, but wall is performing function.	7
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at the joints.	9
ROAD/SIDEWALK/SHOULDER 1.00	Road has new overlay, depressions, settlement about 2-inches vertical with longitudinal cracking. Shoulder is about 2-5 feet wide flat with soft spots and voids, at end of wall a large depression is infilled, temporarily effecive repair.	5
DOWNSLOPE 1.00	Active river channel with large granite boulders, minor undemining impacting wall.	7
LATERAL SLOPE 1.00	Moderate surface erosion, riprap protection added with 2000 construction effectively preventing severe erosion.	7
VEGETATION 1.00	Tree at the base of the wall at the middle and the end, holding up sections of the wall.	7
WALL DRAINS 1.00	None observed, surface water and interior wall erosion issues.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Replace missing stones at the top of the wall at 3 locations: About 6 boulders @$425/each = $2,550. Equipment @ 4 hrs @$150/hr = $600. Labor @ 4 hrs @ $55/hr = $220. Total = $3,370
Repair Cost:	$3,370

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_6.128_R_1.jpg

Wall ID:	**YOSE-0016-6.146-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	70	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder 6 ines to 1-foot diamter dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	70	**Face Area (sq.):**	625
Average Wall Height (ft.):	8	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, surface erosion and missing stones, not yet impacting roadway.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material and large boulders, occasional isolated undermining with voids.	7
PLACED STONE 8.00	6-inches ot 1-foot diameter solid granite boulders, moss covered, surface erosion throughout, voids and missing elements at 3 locations, surface water runoff, but wall is performing as intended.	7
VEGETATION 0.50	Brush and small trees in wall, improving stability of the slope.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has minor cracking at joint.	9
LATERAL SLOPE 1.00	High surface erosion impacting wall.	5
DOWNSLOPE 1.00	About 1.5H:1V vegetated slope down to river with large trees.	7
ROAD/SIDEWALK/SHOULDER 1.00	Road has new overlay with minor rutting and longitudinal cracks, isolated deep rut in right lane above wall. Shoulder is about 3-5-feet wide bench, occasional soft spot.	7
WALL DRAINS 1.00	None observed, surface drain at end of wall, surface erosion throughout.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Replace missing stones at the top of the wall at 3 locations: About 6 boulders @$425/each = $2,550. Equipment @ 4 hrs @$150/hr = $600. Labor @ 4 hrs @ $55/hr = $220. Total = $3,370
Repair Cost:	$3,370

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_6.146_R_1.jpg

Wall ID:	**YOSE-0016-6.542-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	77	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 to 2-foot diameter) dry stacked wall slope protection above drop inlet.		

Wall Measurements

Wall Length (ft.):	16	**Face Area (sq.):**	80
Average Wall Height (ft.):	5	**Face Angle (deg.):**	55
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material, above drop inlet, minor undermining, performing as intended.	8
PLACED STONE 8.00	1-2-foot diameter solid granite boulders, minor voids not impacting performance.	7
CURB/BERM/DITCH 0.50	Paved asphalt ditch has no signs of distress.	9
LATERAL SLOPE 0.50	Large stable granite boulders, not going to move.	9
ROAD/SIDEWALK/SHOULDER 0.50	Road has new overlay and no signs of distress.	9
UPSLOPE 1.00	About 2H:1V slope of granular material and boulder drainage channel, moderate surface erosion.	7
WALL DRAINS 1.00	None observed, surface drainage minor impact on wall.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_6.542_L_1.jpg

Wall ID:	**YOSE-0016-6.61-R**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	62	**Maintenance Action:**	Replace Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite stone 1 to 2-foot diameter gravity dry-stacked wall below guardwall.		

Wall Measurements

Wall Length (ft.):	64	**Face Area (sq.):**	321
Average Wall Height (ft.):	5	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	-4

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Poor to fair condition, distress present threatens element function.	6
WALL FOUNDATION MATERIAL 8.00	Granular material and large boulders, occasional undermining and loss of stones, rotation of isolated elements.	6
PLACED STONE 8.00	1-2-foot diamter solid granite boulders, moss covered, missing elements at two isolated section in the middle of the wall probably due to surface erosion, top stones added over time, voids throughout, rotating elements, poor condition with distress threat	6
VEGETATION 0.50	Trees stabilizing wall.	8
TRAFFIC BARRIER/FENCE 0.50	Guardwall has no signs of distress.	9
LATERAL SLOPE 1.00	Severe surface erosoin with riprap channel added at begin of wall, possibly associated with 2000 construction.	6
WALL DRAINS 1.00	None observed, surface and internal drainage issues impacting wall.	6
DOWNSLOPE 1.00	Large granite boulders to Merced River at steep slope about 1H:1V.	7
ROAD/SIDEWALK/SHOULDER 1.00	Road has minor wheel ruts. Shoulder is about 2-3-feet wide with soft spots, riprap added to top of wall, moderately effective in preventing continued erosion.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	At two locations, there are 9-foot long sections with missing stones: 9' long x 5' high'2 locations = 90ft2. Gravity dry stack replacement cost @ $50/ft 2 = $4,500
Repair Cost:	$4,500

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

YOSE_0016_6.610_R_1.jpg

Wall ID:	**YOSE-0016-7.046-L**		
Route Name:	EL PORTAL ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	57	**Maintenance Action:**	Replace Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Gravity dry stack stone wall.		

Wall Measurements

Wall Length (ft.):	160	**Face Area (sq.):**	1275
Average Wall Height (ft.):	8	**Face Angle (deg.):**	79
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition except the one area of repair.	6
WALL FOUNDATION MATERIAL 8.00	Loose sand, mixed with large boulders. Minor but visible settlement in one location.	5
PLACED STONE 8.00	Hard, durable weathered granite rock. Many loose pieces and voids; one section needs repair.	6
CULVERT 0.50	12" CMP, not affecting wall performance.	8
LATERAL SLOPE 1.00	Ties into large boulders/sand mix at start, 7:1 soil/rock slope at end. No erosion.	6
DOWNSLOPE 1.00	Merced River with very large boulders.	7
WALL DRAINS 1.00	None present, no water related problems.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Repair wall by replacing missing stones. Replace 22.5 sq.ft. of stones @ $50/sf = $1,125. Labor, 4 hours @ $55/hour = $220. Equipment, 4 hours @ $150/hour = $600. Total = $1,945
Repair Cost:	$1,945

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0016: EL PORTAL ROAD

Retaining Wall Condition Photos

Condition photos are not available for YOSE-0016-7.046-L.

Wall ID:	**YOSE-0017-7.392-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 30, 2007	**Approximate Year Built:**	1961
***Wall Rating:**	79	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid rock fill wall in good condition.		

Wall Measurements

Wall Length (ft.):	390	**Face Area (sq.):**	4230
Average Wall Height (ft.):	10	**Face Angle (deg.):**	60
Maximum Wall Height (ft.):	16	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good overall, wall is performing as intended. Poor curb condition is not affecting wall stability.	8
WALL FOUNDATION MATERIAL 8.00	Granular rocky soil, stable.	9
PLACED STONE 8.00	Hard, fresh granite rocks.	10
WALL DRAINS 0.50	None visible, no drainage related distress.	8
DOWNSLOPE 0.50	Stable, some large trees, some brush.	9
LATERAL SLOPE 1.00	Granular soil and rocks at wall end. A 5' high hand-laid rock slope protection area, about 4' along the roadway at wall beginning.	7
ROAD/SIDEWALK/SHOULDER 1.00	Road has some patching and some small sections near fog line with minor distress due to settlement of embankment close to the face of the wall.	7
CURB/BERM/DITCH 5.00	3"x12" asphalt curb in poor condition.	3

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

Condition photos are not available for YOSE-0017-7.392-L.

Wall ID:	**YOSE-0017-7.627-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	78	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid natural stone fill wall. 3 in asphalt curb by 6 in wide. North of bridge at South Fork Tuolumne River.		

Wall Measurements

Wall Length (ft.):	500	**Face Area (sq.):**	6900
Average Wall Height (ft.):	13	**Face Angle (deg.):**	53
Maximum Wall Height (ft.):	24	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Wall is performing well, piping of backfill has caused distress of pavement in left lane. Repairs are recommended.	7
WALL FOUNDATION MATERIAL 8.00	Sandy soil, stable, some areas overgrown with thick brush.	8
PLACED STONE 8.00	Well constructed, uniform face angle, stones in good condition.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	8
DOWNSLOPE 0.50	Well vegetated, some large Red Fir trees.	9
LATERAL SLOPE 0.50	Stable, vegetated rocky soil.	9
CURB/BERM/DITCH 1.00	2" x 6" wide asphalt curb in poor condition. Some voids from piping in fill at shoulder and behind wall face at the top.	5
ROAD/SIDEWALK/SHOULDER 1.00	Arcuate tension cracks suggest some minor settlement of wall and some piping of fill.	6
VEGETATION 1.00	Considerable vegetation at toe of wall and some on face and also near top of wall.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Clear brush, replace asphalt curb, grout voids in wall, patch/restore roadway: Remove brush: 2 laborers, 8 hours @ $55.00 hr = $880.00. Dump Truck: 8 hours @ $120.00 hr = $960.00. Traffic control: 3 days @ $600.0 per day = $1,800.00. Asphalt curb: 500 lin
Repair Cost:	$63,140

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_7.627_L_1.jpg

YOSE_0017_7.627_L_2.jpg

Wall ID:	**YOSE-0017-9.274-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	94	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone headwall, with 12 ft wide by 7.5 ft high box culvert on outlet side, in excellent condition. Excellent workmanship.		

Wall Measurements

Wall Length (ft.):	56	**Face Area (sq.):**	286
Average Wall Height (ft.):	5	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	-5

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable bedrock.	10
MORTAR 8.00	Excellent condition, no shrinkage or cracks observed.	9
STONE MASONRY 8.00	Excellent condition, hard fresh granite stones, excellent workmanship.	10
LATERAL SLOPE 0.50	Granular soil, some small trees, stable slope.	8
ROAD/SIDEWALK/SHOULDER 0.50	Narrow shoulder, pavement in good condition.	8
WALL DRAINS 0.50	None visible, no drainage related distress.	9
UPSLOPE 1.00	Loose granular soil, some erosion on beginning of wall side.	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_9.274_L_1.jpg

Wall ID:	**YOSE-0017-9.282-R**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	94	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone headwall on inlet side with 12 ft wide by 7.5 ft high box culvert in excellent condition. Excellent workmanship.		

Wall Measurements

Wall Length (ft.):	47	**Face Area (sq.):**	232
Average Wall Height (ft.):	4	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	-7

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable bedrock.	10
MORTAR 8.00	Excellent condition, no shrinkage or cracks noted.	9
STONE MASONRY 8.00	Excellent condition and workmanship. Fresh hard granite.	10
LATERAL SLOPE 0.50	Loose granular soil, some trees.	8
ROAD/SIDEWALK/SHOULDER 0.50	Narrow shoulder, road in good condition.	8
UPSLOPE 0.50	Loose granular soil, stable.	8
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_9.282_R_1.jpg

Wall ID:	**YOSE-0017-15.975-R**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid natural stone wall in good condition, near a turnout.		

Wall Measurements

Wall Length (ft.):	469	**Face Area (sq.):**	1366
Average Wall Height (ft.):	2	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable granular soil.	9
PLACED STONE 8.00	Durable granite, no weathering, none missing.	9
LATERAL SLOPE 0.50	Stable soil, no issues.	9
UPSLOPE 0.50	Moderate slope, well vegetated with big trees, very stable.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_15.975_R_1.jpg

Wall ID:	**YOSE-0017-20.267-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	69	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone culvert head wall on inlet side, a 48 in CMP plus a 2 ft high mortared stone guardwall. Near the T16 marker.		

Wall Measurements

Wall Length (ft.):	46	**Face Area (sq.):**	333
Average Wall Height (ft.):	7	**Face Angle (deg.):**	45
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, needs maintenance to repair mortar.	6
WALL FOUNDATION MATERIAL 8.00	Stream bed material at, or close to bedrock.	8
MORTAR 8.00	Broken, partially eroded in many areas.	4
STONE MASONRY 8.00	Very good condition.	9
LATERAL SLOPE 0.50	Well vegetated soil on bedrock.	9
TRAFFIC BARRIER/FENCE 0.50	Stone guardwall is in good condition.	9
UPSLOPE 0.50	Stable bedrock.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9
CULVERT 1.00	48" CMP culvert in good condition,minor rusting, but draining well.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Clean and replace 50% of mortar on sloping face of wall (130 s.f.): 130 sq. ft. of mortar work @ $75.00 per s.f. = $9750.00
Repair Cost:	$9,750

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_20.267_L_1.jpg

Wall ID:	**YOSE-0017-20.565-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	89	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid stone cut wall in good condition.		

Wall Measurements

Wall Length (ft.):	146	**Face Area (sq.):**	730
Average Wall Height (ft.):	5	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable granular soil.	9
PLACED STONE 8.00	Fresh, hard granite.	9
LATERAL SLOPE 0.50	Moderately vegetated, stable gentle slope.	8
UPSLOPE 0.50	Moderately vegetated, stable gentle slope.	8
VEGETATION 0.50	Brushes in wall affecting wall performance in a few places.	8
WALL DRAINS 0.50	None visible, no signs of drainage related distress.	8

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Remove brush from wall face and wall top to prevent future wall failure. Labor (2 hours) @ $55.00 per hour = $110.00
Repair Cost:	$110

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_20.565_L_1.jpg

Wall ID:	**YOSE-0017-20.623-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	85	**Maintenance Action:**	Replace Elements

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid natural stone cut wall in need of repairs and replacements of a 25 ft section messing near middle of wall, due to a shallow slide.		

Wall Measurements

Wall Length (ft.):	463	**Face Area (sq.):**	2315
Average Wall Height (ft.):	5	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good as is, but recommend rebuilding higher by 2 feet to effectively stabilize the upslope.	8
WALL FOUNDATION MATERIAL 8.00	Stable granular soil.	9
PLACED STONE 8.00	Fresh, hard granite.	9
WALL DRAINS 0.50	None visible, no signs of drainage related distress.	8
CURB/BERM/DITCH 0.50	Paved ditch, performing as designed.	9
LATERAL SLOPE 1.00	Marginally stable to ravelling granular soil and gravel. Poorly vegetated especially at end of wall.	6
UPSLOPE 1.00	Shallow unconsolidated/loose granular soil and gravel/cobbles over bedrock. Shallow surficial failures.	6

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Replace a 25' x 5' section of rockery wall = 125 sq.ft. Add 2' rockery face for approximately 2/3rds of wall @ 300' by 2' = 600 sq.ft. Total 725 sq.ft. @ $50 per sq.ft. for construction of a gravity, dry stone wall = $36,250. Traffic control (3 days)
Repair Cost:	$39,580

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_20.623_L_1.jpg

YOSE_0017_20.623_L_2.jpg

Wall ID:	**YOSE-0017-20.74-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid natural stone cut wall in good condition.		

Wall Measurements

Wall Length (ft.):	450	**Face Area (sq.):**	1470
Average Wall Height (ft.):	3	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Granular soil, stable.	9
PLACED STONE 8.00	Fresh durable granite, no weathering, none missing.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	8
CURB/BERM/DITCH 0.50	Paved ditch in good condition.	9
LATERAL SLOPE 0.50	Moderately vegetated stable slope.	9
UPSLOPE 0.50	Moderately vegetated. 2:1 slope, stable.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_20.740_L_1.jpg

Wall ID:	**YOSE-0017-22.404-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid stone cut wall in good condition. Stacked boulders for toe stability at base of wall.		

Wall Measurements

Wall Length (ft.):	410	**Face Area (sq.):**	2050
Average Wall Height (ft.):	5	**Face Angle (deg.):**	60
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable granular soil.	9
PLACED STONE 8.00	Fresh, hard granite boulders.	9
LATERAL SLOPE 0.50	Loose sandy, rocky stable soil.	8
WALL DRAINS 0.50	None visible, internally drained. No signs of drainage related distress.	8
CURB/BERM/DITCH 0.50	Paved ditch, performing as intended.	9
UPSLOPE 0.50	Mostly well vegetated with small trees; stable slope.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_22.404_L_1.jpg

Wall ID:	**YOSE-0017-22.525-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid natural stone cut wall in good condition.		

Wall Measurements

Wall Length (ft.):	295	**Face Area (sq.):**	1180
Average Wall Height (ft.):	4	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	4	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable granular soil.	9
PLACED STONE 8.00	Fresh, hard granite boulders.	9
LATERAL SLOPE 0.50	Loose granular, rocky soil, some small trees.	8
UPSLOPE 0.50	Partially vegetated with small trees. A 30' section has produced a minor amount of slope wash into ditch.	8
CULVERT 0.50	Paved ditch performing as intended.	9
WALL DRAINS 0.50	None visible, internally drained, no signs of drainage related distress.	9

Repair Recommendations

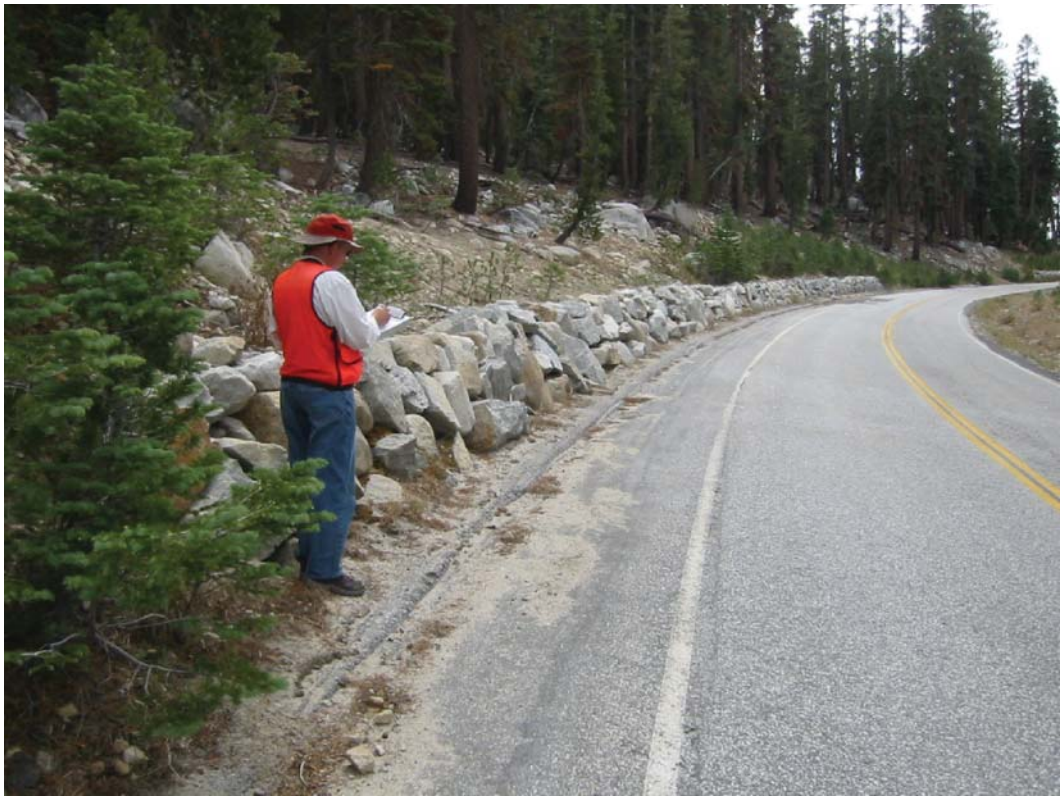
Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos



YOSE_0017_22.525_L_1.jpg

Wall ID:	**YOSE-0017-22.622-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid natural stone cut wall in good condition.		

Wall Measurements

Wall Length (ft.):	133	**Face Area (sq.):**	665
Average Wall Height (ft.):	5	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Granular soils, stable.	9
PLACED STONE 8.00	Fresh, hard granite.	9
LATERAL SLOPE 0.50	Rocky granular soil, some small trees, stable.	8
CURB/BERM/DITCH 0.50	Paved ditch performing as intended.	9
UPSLOPE 0.50	Partially covered with small trees; stable slope.	9
WALL DRAINS 0.50	Internally drained, no visible outlets. No issues.	9

Repair Recommendations

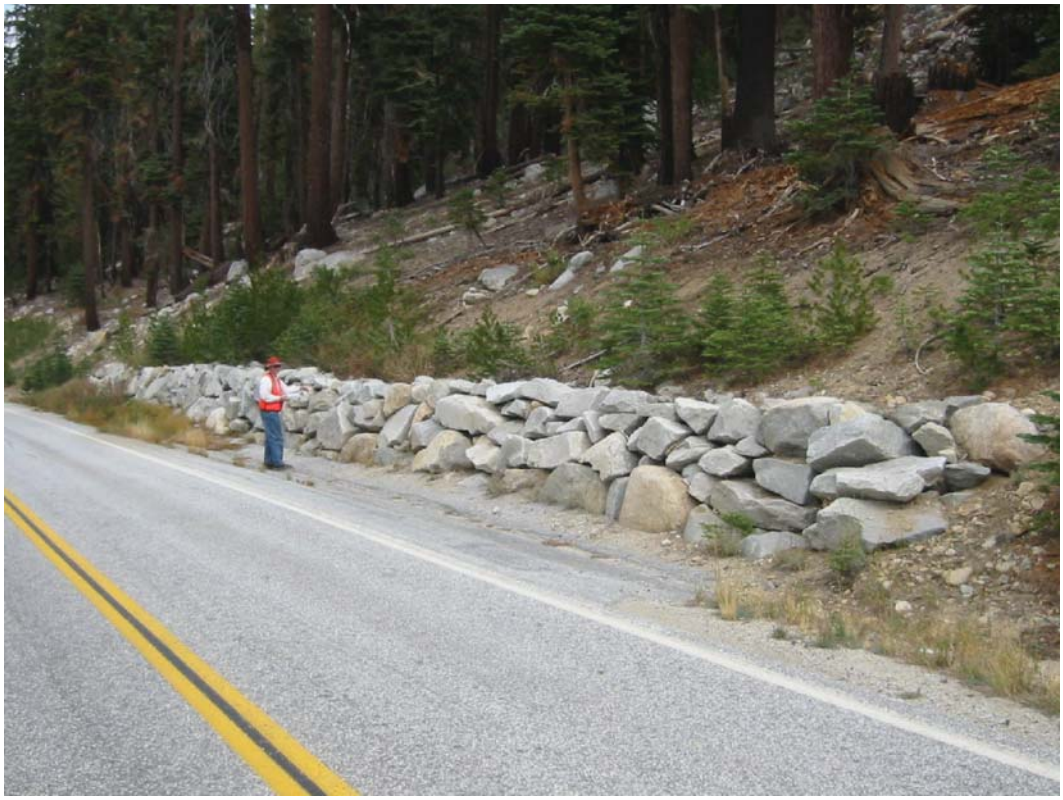
Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos



YOSE_0017_22.622_L_1.jpg

Wall ID:	**YOSE-0017-27.08-R**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	88	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared natural stone culvert headwall, outlet side, at entrance to Mary Lake Road.		

Wall Measurements

Wall Length (ft.):	45	**Face Area (sq.):**	148
Average Wall Height (ft.):	3	**Face Angle (deg.):**	30
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	-3

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended. Needs some repairs at the base.	8
WALL FOUNDATION MATERIAL 8.00	Bedrock with streambed material at inlet and outlet.	9
MORTAR 8.00	Mostly very good, minor re-mortaring needed.	9
PLACED STONE 8.00	Fresh, hard granite.	9
CULVERT 0.50	8 foot CMP drain in good condition; draining as intended.	8
LATERAL SLOPE 0.50	Granular soil and rocks, some trees.	9
WALL DRAINS 0.50	Internally drained, no visible outlets. No issues.	9
DOWNSLOPE 0.50	Bedrock in plunge pool.	10

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Remortar 15% of headwall face. Place reinforced concrete in plunge pool and shotcrete under the outlet. Embed natural stone in concrete around outlet to replace stones eroded by flow. Repoint wall face, 22 sq.ft. @ $75.00 per s.f. = $1,650.
Repair Cost:	$9,010

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_27.080_R_1.jpg

Wall ID:	**YOSE-0017-27.089-L**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	78	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared natural stone culvert headwall on inlet side at May Lake Road entrance. Variable angle wall face to fit the skew of the 9 foot CMP drainage pipe.		

Wall Measurements

Wall Length (ft.):	46	**Face Area (sq.):**	268
Average Wall Height (ft.):	5	**Face Angle (deg.):**	53
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-5

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good overall, but some repairs are recommended.	7
WALL FOUNDATION MATERIAL 8.00	Bedrock, with less than a foot of streambed material over bedrock at inlet.	9
MORTAR 8.00	Some shrinkage and patching of mortar is present.	6
STONE MASONRY 8.00	Hard, fresh granite stones.	9
CURB/BERM/DITCH 0.50	9' CMP in good condition. Draining well as intended.	8
LATERAL SLOPE 0.50	Stable soil and boulders.	8
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Remortar about 50% of wall face area. Replace stones at CMP entrance, especially on right side (facing inlet), and set in concrete to bridge and fill in depression and scour at inlet. Repointing of wall 130 s.f. @ $75.00 per s.f. = $9,750.
Repair Cost:	$15,640

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_27.089_L_1.jpg

Wall ID:	**YOSE-0017-29.364-R**		
Route Name:	TIOGA ROAD		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid stone wall at Olmsted Point pullout with guardwall parapet in good condition.		

Wall Measurements

Wall Length (ft.):	559	**Face Area (sq.):**	6520
Average Wall Height (ft.):	11	**Face Angle (deg.):**	50
Maximum Wall Height (ft.):	20	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable bedrock.	10
PLACED STONE 8.00	Irregular angle slope, durable granite, unweathered stones. Large voids, some stones haphazardly placed.	8
DOWNSLOPE 0.50	Stable bedrock, gentle slope.	9
LATERAL SLOPE 0.50	Solid bedrock at western end, rubble embankment on eastern end. No issues.	9
TRAFFIC BARRIER/FENCE 0.50	Stone guardwall connects to sidewalk which joins the parking area.	9
WALL DRAINS 0.50	Mostly self-draining. No water related distress.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0017: TIOGA ROAD

Retaining Wall Condition Photos

YOSE_0017_29.364_R_1.jpg

YOSE_0017_29.364_R_2.jpg

Wall ID:	**YOSE-0100-.866-R**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	84	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Stone Veneer
General Description:	Concrete cantilever headwall with mortared granite cut stone at top of wall, on inlet side.		

Wall Measurements

Wall Length (ft.):	16	**Face Area (sq.):**	144
Average Wall Height (ft.):	9	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Riprap protection at stream inlet; solid granular material. No signs of distress or settlement or bulging.	9
CONCRETE 8.00	Minor spalling throughout; no impacting wall performance. Minor staining at surface. No cracking; performing as intended. Minor surface patching is improving wall performance.	8
ARCHITECTURAL FACING 0.50	Stone, mortared at top (visually seen from road). Minor cracks and oxidation.	8
CULVERT 0.50	36" CMP, minor oxidation, performing as intended.	8
LATERAL SLOPE 0.50	Ripap protection (beginning of wall with mortar). Minor surface erosion.	9
UPSLOPE 0.50	Active stream channel; large boulders. Not impacting wall.	9
WALL DRAINS 0.50	None observed; not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_0.866_R_1.jpg

Wall ID:	**YOSE-0100-1.007-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	85	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite stone mortared fill wall with culvert.		

Wall Measurements

Wall Length (ft.):	130	**Face Area (sq.):**	563
Average Wall Height (ft.):	4	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular materials, no signs of distress or settlement.	9
MORTAR 8.00	Minor cracking at stones; not impacting wall function.	8
STONE MASONRY 8.00	1' - 2' cut granite stones, minor weathering. Performing as intended.	9
CULVERT 0.50	24" CMP at 30' from wall start. Performing as intended.	8
DOWNSLOPE 0.50	~2:1 to 1.5:1 slope. Minor surface erosion; not impacting wall.	8
LATERAL SLOPE 0.50	Not impacting wall.	9
ROAD/SIDEWALK/SHOULDER 0.50	Minor edge cracking; minor surface erosion.	9
WALL DRAINS 0.50	None observed; no water related impacts to wall..	9

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_1.007_L_1.jpg

Wall ID:	**YOSE-0100-1.069-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	70	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Gneiss and granite stone gravity fill wall (1960 fts) with cut granite section at end of wall.		

Wall Measurements

Wall Length (ft.):	50	**Face Area (sq.):**	409
Average Wall Height (ft.):	8	**Face Angle (deg.):**	65
Maximum Wall Height (ft.):	15	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, rotating elements, but performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material/boulders/minor erosion; not impacting performance.	8
PLACED STONE 8.00	1960's style, gneiss 1' blocks, stones, voids throughout. Minor to moderate movement of elements from surface water erosion, rotated out at the top of the wall in the middle section. Year 2000 construction addition with 1-foot cut granite stones at the e	6
DOWNSLOPE 1.00	2:1 slope, boulders and embankment fill downslope/surface erosion, minor impacts to wall.	7
LATERAL SLOPE 1.00	Riprap and embankment fill; minor surface erosion.	7
ROAD/SIDEWALK/SHOULDER 1.00	Minor depression, not active, ~ 1' wide.	7
WALL DRAINS 1.00	None observed; no water related impacts to wall.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_1.069_L_1.jpg

Wall ID:	**YOSE-0100-1.102-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	70	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite and gneiss (6 in) stone dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	98	**Face Area (sq.):**	294
Average Wall Height (ft.):	3	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition; missing some elements at a few places, not impacting roadway.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material/boulders; minor loss of base at isolated locations; performing as intended.	8
PLACED STONE 8.00	6" diameter granite/gneiss stones; minor rotation at top of wall. One section has a loss of some elements impacting the shoulder, not the roadway.	6
DOWNSLOPE 0.50	Large boulders (2' to 5' diameter) at 45 degrees; (embankment fill).	8
LATERAL SLOPE 0.50	Large boulders (2' to 5' diameter) at 45 degrees; (embankment fill).	8
ROAD/SIDEWALK/SHOULDER 1.00	No signs of distress. A 1' TO 2' wide gravel; oversteepend above loss of stone area.	7
WALL DRAINS 1.00	None observed; no surface drainage issues.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_1.102_L_1.jpg

Wall ID:	**YOSE-0100-2.134-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	70	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite and gneiss (6 in diameter) dry stacked fill wall with recent repairs with 1 ft cut granite stones.		

Wall Measurements

Wall Length (ft.):	66	**Face Area (sq.):**	384
Average Wall Height (ft.):	5	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition; performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Solid granular material; embankment fill (rocks)/loss of some material, but repaired, from surface erosion.	7
PLACED STONE 8.00	6" sound granite and gneiss stones; moderate surface oxidation. Year 2000 repairs in one section with 1' cut block granite stones in good condition.	7
ROAD/SIDEWALK/SHOULDER 1.00	Large cracking and depression in roadway at top of wall. At the shoulder, 2' to 5' wide soft sports and voids at top of wall.	6
DOWNSLOPE 1.00	1:1 slope, embankment rock slope with boulders. Surface erosion channel.	7
LATERAL SLOPE 1.00	1:1 slope, embankment rock slope with boulders. Moderate surface erosion impacting wall elements at edges.	7
WALL DRAINS 1.00	None observed; no surface drainage issues.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_2.134_L_1.jpg

Wall ID:	**YOSE-0100-2.538-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	67	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite and gneiss stone (6 in - 1 in diameter) dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	80	**Face Area (sq.):**	240
Average Wall Height (ft.):	3	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	4	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition; performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Minor undermined; some wall rotation at isolated locations.	7
PLACED STONE 8.00	6" to 2' diameter granite and gneiss stones; missing elements, a few missing stones at top of wall; repaired at various places with newer stones/good interlocking/voids throughout; performing as intended.	6
ROAD/SIDEWALK/SHOULDER 1.00	Minor depression in roadway, but not cracking. Shoulder is low at middle of wall.	6
VEGETATION 1.00	Minor grass and small shrubs pushing out elements.	6
DOWNSLOPE 1.00	Boulder embankment material on a 1:1 slope at drainage channel.	7
LATERAL SLOPE 1.00	Boulder embankment material on a 1:1 slope. Moderate surface drainage.	7
WALL DRAINS 1.00	None observed; no surface drainage issues.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_2.538_L_1.jpg

Wall ID:	**YOSE-0100-2.941-R**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	82	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	Stone Veneer
General Description:	Concreter cantilever headwall, on inlet side, with mortared stone cut granite at top of wall and gravity dry stacked section at beginning of wall.		

Wall Measurements

Wall Length (ft.):	30	**Face Area (sq.):**	210
Average Wall Height (ft.):	7	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material at stream inlet. No signs of distress or bulging.	9
CONCRETE 8.00	Minor spalling throughout; not impacting wall performance. Minor staining at surface, minor surface patching, no cracking.	8
PLACED STONE 8.00	1' to 3' diameter granite rocks; voids throughout, but not impacting performance.	8
ARCHITECTURAL FACING 0.50	Stone, mortared at top of wall (visual from roadway). Minor cracks and oxidation.	8
CULVERT 0.50	24" CMP, minor oxidation; performing as intended.	8
LATERAL SLOPE 0.50	Drystacked riprap protection a start and end of wall. Minor surface erosion.	8
ROAD/SIDEWALK/SHOULDER 0.50	No signs of distress on roadway. Shoulder has minor low areas. Not impacting roadway.	8
UPSLOPE 0.50	Active stream channel; relatively flat, grassy, some boulders, at 4:1 slope.	8

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_2.941_R_1.jpg

Wall ID:	**YOSE-0100-3.673-R**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	83	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	Stone Veneer
General Description:	Concrete cantilever headwall (inlet side) with stone guardwall at top.		

Wall Measurements

Wall Length (ft.):	18	**Face Area (sq.):**	126
Average Wall Height (ft.):	7	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	4

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material at stream inlet and well vegetated. No signs of distress or bulging/rotation.	9
CONCRETE 8.00	Minor cracking at surface, not impact wall. Minor staining at surface.	8
ARCHITECTURAL FACING 0.50	Stone mortared at top of wall; minor cracks and oxidation.	8
CULVERT 0.50	2- 36" CMPs in good condition; performing as intended.	8
LATERAL SLOPE 0.50	Tapers to adjacent slopes; granular material, minor surface erosion.	8
UPSLOPE 0.50	Active stream channel; relatively flat and grassy.	8
ROAD/SIDEWALK/SHOULDER 0.50	No signs of distress on roadway. 5 foot wide shoulder, slopes down at about 1:1 slope, composed of granular material, minor surface erosion.	9
WALL DRAINS 1.00	None observed; not impacting wall performance.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_3.673_R_1.jpg

Wall ID:	**YOSE-0100-4.694-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	83	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared granite stone (6 in - 1 ft diameter) headwall, outlet side, with stone guardwall parapet added year 2000.		

Wall Measurements

Wall Length (ft.):	34	**Face Area (sq.):**	146
Average Wall Height (ft.):	4	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Granite outcrop; sound, no movement.	9
MORTAR 8.00	Moss covered; moderate cracking and spalling; no missing elements.	8
STONE MASONRY 8.00	6" to 1' diameter rounded granite stones with moderate oxidation on face; no missing elements. Performing as intended.	8
CULVERT 0.50	(3)- 36' CMPs; performing as intended.	9
DOWNSLOPE 0.50	Active stream channels; not impacting wall.	9
LATERAL SLOPE 0.50	Large boulders as riprap at end of wall; not impacting wall; performing as intended.	9
ROAD/SIDEWALK/SHOULDER 0.50	No signs of distress, patching not due to wall displacement.	9
TRAFFIC BARRIER/FENCE 0.50	Guardwall (newer generation) over top of older wall, granite cut stones, good to excellent condition.	9

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_4.694_L_1.jpg

Wall ID:	**YOSE-0100-4.694-R**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared granite cut stone headwall, inlet side, (1 ft - 2 ft blocks).		

Wall Measurements

Wall Length (ft.):	21	**Face Area (sq.):**	147
Average Wall Height (ft.):	7	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Solid, granite outcrop.	9
MORTAR 8.00	Good condition; minor oxidation and minor cracking.	9
STONE MASONRY 8.00	6" to 1' cut granite stones (some old blocks); good condition.	9
LATERAL SLOPE 0.50	Minor surface erosion at end of wall. Riprap and dry stacked boulders at beginning of wall.	8
CULVERT 0.50	3 - 36" CMPs; performing as intended.	9
ROAD/SIDEWALK/SHOULDER 0.50	No signs of distress.	9
UPSLOPE 0.50	Active stream with riprap; no erosion.	9
WALL DRAINS 0.50	None observed; not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_4.694_R_1.jpg

Wall ID:	**YOSE-0100-4.992-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	74	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite block (1 ft - 2 ft diameter) dry stacked headwall, outlet side.		

Wall Measurements

Wall Length (ft.):	15	**Face Area (sq.):**	60
Average Wall Height (ft.):	4	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; with minor undermining and lateral slope erosion.	8
WALL FOUNDATION MATERIAL 8.00	Granular material; moderate undermining under CMP outlet.	7
PLACED STONE 8.00	1' to 2' diameter granite boulders; minor cracking; no missing elements; moderate weathering.	8
CULVERT 0.50	24" CMP outlet; performing as intended.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has no signs of distress.	9
DOWNSLOPE 1.00	Drainage channel, 1:1 steep embankment fill. Granular fill and boulders; undermining downslope.	6
LATERAL SLOPE 1.00	Beginning of wall - granite boulders, no movement. End of wall - moderate surface erosion.	7
WALL DRAINS 1.00	None observed; surface water drainage issues.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_4.992_L_1.jpg

Wall ID:	**YOSE-0100-5.002-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (1 ft - 2 ft diameter) dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	32	**Face Area (sq.):**	202
Average Wall Height (ft.):	6	**Face Angle (deg.):**	65
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material; good performance. Vegetation helping with keeping the stones stable.	8
PLACED STONE 8.00	Good interlocking; solid granite (gneiss stones), minor oxidation at the faces. Some voids, not impacting wall.	8
DOWNSLOPE 0.50	1:1 slope, steep with boulders, could develop undermining at wall foundation.	8
WALL DRAINS 0.50	None observed; not impacting wall performance.	8
ROAD/SIDEWALK/SHOULDER 0.50	Road has no signs of distress.	9
LATERAL SLOPE 1.00	Beginning of wall - boulders (embankment fill) moderate surface erosion. End of wall - granite boulders, solid.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.002_L_1.jpg

Wall ID:	**YOSE-0100-5.084-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	75	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite block (cut 1 ft - 2 ft widths) mortared stone fill wall with guardwall parapet. There is a dry stack section in front at the end of wall @ 56 ft.		

Wall Measurements

Wall Length (ft.):	91	**Face Area (sq.):**	252
Average Wall Height (ft.):	2	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	4	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Granular material/boulders - old embankment fill. Possible undermine at foundation where dry stacked stones were added, possibly due to exposed footing.	7
MORTAR 8.00	Minor cracking at stones and occasional missing section; performing as intended.	7
PLACED STONE 8.00	25' length at end of wall (stacked in front) - cut granite stones, minor surface erosion(63 sq.ft. area)	8
STONE MASONRY 8.00	Granite cut stone blocks - minor oxidation and moss cover at the face.	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway shows minor erosion ~ 2" at top of wall; no cracking.	8
WALL DRAINS 0.50	None observed; not impacting wall performance.	8
DOWNSLOPE 1.00	Granite boulders at 1:1 steep slope; eroding foundation.	7
LATERAL SLOPE 1.00	Moderate surface erosion of granular material.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.084_L_1.jpg

Wall ID:	**YOSE-0100-5.115-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	75	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite boulder (cut 1 ft - 2 ft widths) mortared stone fill wall with guardwall parapet.		

Wall Measurements

Wall Length (ft.):	97	**Face Area (sq.):**	248
Average Wall Height (ft.):	2	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Cut granite stone blocks; minor oxidation and moss. Undermining at isolated locations; exposed footing.	7
MORTAR 8.00	Minor cracks at stones, indicting minor debonding, occasional missing section. Performing as intended.	7
STONE MASONRY 8.00	Cut granite stone blocks; minor oxidation and moss.	8
CULVERT 0.50	24" CMP at end of wall; performing as intended, but rusty.	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway shows slight depression above wall, but only minor cracking.	8
WALL DRAINS 0.50	None observed; not impacting wall performance.	8
DOWNSLOPE 1.00	Granite boulders at 1:1 steep slope; eroding foundation.	7
LATERAL SLOPE 1.00	Beginning of wall - granite boulders End of wall - additional riprap protection.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.115_L_1.jpg

Wall ID:	**YOSE-0100-5.17-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	80	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mortared Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite dry stacked fill wall with granite stone mortared fill wall and an added guardwall across entire section.		

Wall Measurements

Wall Length (ft.):	140	**Face Area (sq.):**	1505
Average Wall Height (ft.):	10	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	23	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Large granite boulders or outcrop; sound base. Good granular material with no surface erosion.	8
MORTAR 8.00	Missing at top at isolated locations; but wall interior is ok. Performing as intended.	8
PLACED STONE 8.00	Good contact. Performing as intended. Minor buldging at an isolated location.	8
STONE MASONRY 8.00	Good condition; solid granite cut stones.	8
DOWNSLOPE 0.50	Steep boulders and riprap-sized embankment fill.	8
LATERAL SLOPE 0.50	Granite boulders at end of wall, riprap at begin of wall.	8
ROAD/SIDEWALK/SHOULDER 0.50	Roadway shows minor depressions at top of wall; minor cracking.	8
WALL DRAINS 0.50	None observed; not impacting wall.	8

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.170_L_1.jpg

Wall ID:	**YOSE-0100-5.186-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	77	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite stone dry stacked fill wall with mortared stone guardwall parapet which was added later.		

Wall Measurements

Wall Length (ft.):	20	**Face Area (sq.):**	300
Average Wall Height (ft.):	15	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	16	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Solid granular material / undermining of foundation; trees are helping keep the wall in place.	7
PLACED STONE 8.00	Granite stones (6" - 1' diameter), moderate oxidation at surface. Good performance.	8
DOWNSLOPE 0.50	Almost vertical drop to channel below / upward erosion.	8
ROAD/SIDEWALK/SHOULDER 0.50	Minor depression in roadway above wall.	8
WALL DRAINS 0.50	None observed; not impacting wall.	8
LATERAL SLOPE 0.50	Large granite boulders at wall beginning and wall end; not impacting wall performance.	9

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.186_L_1.jpg

Wall ID:	**YOSE-0100-5.201-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	84	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stack granite stone fill wall.		

Wall Measurements

Wall Length (ft.):	52	**Face Area (sq.):**	850
Average Wall Height (ft.):	16	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	24	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Bedrock, stable.	9
PLACED STONE 8.00	Hard granite, moderately weathered, but stale placement, none loose or missing. Moss covered; minor displaced elements.	8
DOWNSLOPE 0.50	Bedrock, stable slope.	9
LATERAL SLOPE 0.50	Bedrock on both wall ends.	9
ROAD/SIDEWALK/SHOULDER 0.50	No signs of distress in roadway.	9
WALL DRAINS 0.50	None observed; not impacting wall.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.201_L_1.jpg

Wall ID:	**YOSE-0100-5.322-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	83	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone fill wall with 2 ft high stone guardwall parapet, in good condition.		

Wall Measurements

Wall Length (ft.):	60	**Face Area (sq.):**	232
Average Wall Height (ft.):	3	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Stable granular soil, no signs of distress.	8
MORTAR 8.00	Minor chinking and weathering.	8
STONE MASONRY 8.00	Durable, hard granite, minor weathering.	8
DOWNSLOPE 0.50	Moderately steep, with sparse vegetation and talus, some large boulders, stable.	8
WALL DRAINS 0.50	None visible, no drainage related distress.	8
LATERAL SLOPE 0.50	Bedrock on one end, stable soil and talus on the other wall end.	9
ROAD/SIDEWALK/SHOULDER 0.50	No wall related distress to the roadway.	9
TRAFFIC BARRIER/FENCE 0.50	Stone guardwall is in good condition.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.322_L_1.jpg

Wall ID:	**YOSE-0100-5.351-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	71	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mortared Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stack stone fill wall, partially failed, with mortared stone guardwall.		

Wall Measurements

Wall Length (ft.):	70	**Face Area (sq.):**	438
Average Wall Height (ft.):	6	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair. Failed portion has not yet impacted roadway, but has had a minor impact on a short section of the guardwall.	6
WALL FOUNDATION MATERIAL 8.00	Failed at highest portion of wall.	5
PLACED STONE 8.00	Fresh, hard granite.	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to pavement, roadway.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9
DOWNSLOPE 1.00	Boulder talus, blocky bedrock.	7
LATERAL SLOPE 1.00	Bedrock, solid to blocky.	7
TRAFFIC BARRIER/FENCE 1.00	2' high stone guardwall with compromised foundation for 7 feet overlying the dry stack stone wall failure area.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Grout base of wall at corner of base failure and failed rock mass. Inject grout, 50 sq. ft. @ $105.00 per sq.ft. = $5,250.00. Rebuild top portion of failure adjacent to guardwall with rocks imbedded in grout. 1 day labor @ $55.00 per hour = $440.00.
Repair Cost:	$6,890

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.351_L_1.jpg

YOSE_0100_5.351_L_2.jpg

Wall ID:	**YOSE-0100-5.364-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	89	**Maintenance Action:**	Replace Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone fill wall with a 2 ft high stone guardwall. Needs foundation repairs.		

Wall Measurements

Wall Length (ft.):	59	**Face Area (sq.):**	175
Average Wall Height (ft.):	2	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	4	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent except for short failed foundation section that needs repairs.	8
WALL FOUNDATION MATERIAL 8.00	Granular soil and talus, some bedrock, stable.	9
MORTAR 8.00	Very good condition, minor shrinkage cracks.	9
STONE MASONRY 8.00	Unmasoned hard, fresh granite stones.	10
DOWNSLOPE 0.50	Boulder talus and bedrock, stable.	9
ROAD/SIDEWALK/SHOULDER 0.50	Excellent	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9
LATERAL SLOPE 0.50	Stable bedrock.	10
TRAFFIC BARRIER/FENCE 1.00	Guardwall in good condition with 7' long section of partially failed foundation.	6

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Fill failed foundation section using rocks and concrete. 1 cubic yard of concrete = $1,470.00. Labor (8 hours) at $55.00 per hour = $440.00. Traffic control (1 day) at $600.00 per day = $600.00. Total = $2,500.00
Repair Cost:	$2,500

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.364_L_1.jpg

YOSE_0100_5.364_L_2.jpg

Wall ID:	**YOSE-0100-5.392-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	92	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone fill wall with stone guardwall parapet, in good condition.		

Wall Measurements

Wall Length (ft.):	242	**Face Area (sq.):**	545
Average Wall Height (ft.):	2	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Bedrock and boulder talus.	9
MORTAR 8.00	Very good condition, very minor shrinkage cracks, no spalls noted.	9
STONE MASONRY 8.00	Hard, fresh granite non-masoned stones.	10
DOWNSLOPE 0.50	Bedrock and boulder talus, stable.	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress.	9
TRAFFIC BARRIER/FENCE 0.50	2' high stone guardwall is in very good condition.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9
LATERAL SLOPE 0.50	Bedrock.	10

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.392_L_1.jpg

Wall ID:	**YOSE-0100-5.614-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stack stone fill wall in good condition.		

Wall Measurements

Wall Length (ft.):	23	**Face Area (sq.):**	138
Average Wall Height (ft.):	6	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, no signs of distress noted.	9
WALL FOUNDATION MATERIAL 8.00	Granular soil and talus, stable.	9
PLACED STONE 8.00	Hard, granite rocks, well constructed, no large voids. Substantial moss growth on stones.	9
DOWNSLOPE 0.50	Moderately vegetated, granular soil, appears stable.	8
VEGETATION 0.50	Moderate vegetation on wall face, but no signs of distress.	8
LATERAL SLOPE 0.50	Bedrock at wall end. Granular soil and talus at wall beginning. Stable.	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress on paved road; shelf between wall face and guardwall is flat, stable.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.614_L_1.jpg

Wall ID:	**YOSE-0100-5.618-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	78	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	MSE - Welded Wire Face
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mortared Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Fill wall with 3.5 ft high concrete foundation under a 15.5 ft high MSE welded wire wall.		

Wall Measurements

Wall Length (ft.):	123	**Face Area (sq.):**	1730
Average Wall Height (ft.):	14	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	19	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, minor variation in face angle. Functioning as intended.	8
WALL FOUNDATION MATERIAL 8.00	Concrete sitting on bedrock on both wall ends, on granular soil and talus at toe of wall. Stable.	8
WIRE/GEOSYNTHETIC FACING 8.00	All wire surfaces are rust covered, no galvanization visible.	7
DOWNSLOPE 0.50	Moderately steep, well vegetated.	9
ROAD/SIDEWALK/SHOULDER 0.50	No signs of wall related stress on roadway.	9
TRAFFIC BARRIER/FENCE 0.50	Mortared stone guardwall in good condition.	9
VEGETATION 0.50	Sparse vegetation in wall face, not affecting performance.	9
WALL DRAINS 0.50	2 4" flexible drain outlets. No drainage related distress.	9
LATERAL SLOPE 0.50	Bedrock on wall start and wall end.	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.618_L_1.jpg

YOSE_0100_5.618_L_2.jpg

Wall ID:	**YOSE-0100-5.624-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	2000
***Wall Rating:**	76	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite dry stacked fill wall with 1 ft - 2 ft diameter stones.		

Wall Measurements

Wall Length (ft.):	16	**Face Area (sq.):**	80
Average Wall Height (ft.):	5	**Face Angle (deg.):**	81
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Granular fill; active drainage channel; moderate undermining at toe.	7
PLACED STONE 8.00	1' to 2' solid granite cut stones at top beginning of wall. Recent repairs at top. Moderate oxidation on face; performing as intended.	8
LATERAL SLOPE 0.50	Moderate surface erosion; vegetation helping stabilize slope; not impacting wall elements.	8
DOWNSLOPE 1.00	1:1 slope, active drainage channel (no culvert).	7
ROAD/SIDEWALK/SHOULDER 1.00	Roadway shows minor edge cracking and depression.	7
WALL DRAINS 1.00	None observed; not impacting wall performance.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.624_L_1.jpg

Wall ID:	**YOSE-0100-5.652-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1980
***Wall Rating:**	91	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	Other - Concrete footing 3.5 inch h
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid stone fill wall with uniaxial geogrid reinforcement. Wall has stone guardwall parapet and a failed section was recently replaced.		

Wall Measurements

Wall Length (ft.):	75	**Face Area (sq.):**	700
Average Wall Height (ft.):	9	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, recent construction (less than 30 years estimated).	9
WALL FOUNDATION MATERIAL 8.00	Bedrock and boulder talus.	9
CONCRETE 8.00	Hard, intact, unweathered, no spalls.	9
MORTAR 8.00	Guardwall mortar is fresh/new compared with adjacent guardwall mortar.	9
WIRE/GEOSYNTHETIC FACING 8.00	Uniaxial geogrid in good condition.	9
PLACED STONE 8.00	Fresh hard granite.	10
DOWNSLOPE 0.50	Boulder talus at angle of repose.	8
OTHER SECONDARY ELEMENT 0.50	Two layers of uniaxial geogrid reinforcement noted, discontinuously visible, assume layers are continuous.	8
WALL DRAINS 0.50	None visible, internally drained.	8

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_5.652_L_1.jpg

Wall ID:	**YOSE-0100-6.154-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1980
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stack stone culvert head wall, outlet side with 60 in CMP, in good condition.		

Wall Measurements

Wall Length (ft.):	28	**Face Area (sq.):**	50
Average Wall Height (ft.):	1	**Face Angle (deg.):**	50
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-4

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Granular soil, stable.	8
PLACED STONE 8.00	Fresh, hard granite stones.	10
DOWNSLOPE 0.50	Steep boulder streambed, stable.	8
LATERAL SLOPE 0.50	Native granular soil, stable, lightly vegetated.	8
ROAD/SIDEWALK/SHOULDER 0.50	Sloping gravel and native soil shoulder, stable, some grass and shrubs.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.154_L_1.jpg

Wall ID:	**YOSE-0100-6.154-R**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1980
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Cantilever concrete headwall, inlet side, with .5 ft stone guardwall parapet, in good condition.		

Wall Measurements

Wall Length (ft.):	17	**Face Area (sq.):**	90
Average Wall Height (ft.):	5	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Streambed material, sandy gravel.	9
CONCRETE 8.00	Excellent condition.	9
STONE MASONRY 8.00	8 inch granite capstone, excellent condition.	9
LATERAL SLOPE 0.50	Minor riprap and native granular soil, stable.	9
ROAD/SIDEWALK/SHOULDER 0.50	Gravel road shoulder, no signs of distress.	9
UPSLOPE 0.50	Streambed gravel and bedrock, trees and brush, stable.	9
WALL DRAINS 0.50	None visible, no drainage related distress.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.154_R_1.jpg

Wall ID:	**YOSE-0100-6.329-R**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1980
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	Gravity - Mortared Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Cantilever concrete head wall, inlet side, good condition with secondary mortared stone section, plus a .5 foot stone guardwall.		

Wall Measurements

Wall Length (ft.):	30	**Face Area (sq.):**	208
Average Wall Height (ft.):	6	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Streambed material, stable.	9
CONCRETE 8.00	Excellent condition, looks new.	9
STONE MASONRY 8.00	3 inch architectural capstone.	9
WALL DRAINS 0.50	None visible, drains through granular soil.	8
CULVERT 0.50	48" CMP inlet working as intended.	9
LATERAL SLOPE 0.50	Riprap (minor) and native granular soil.	9
ROAD/SIDEWALK/SHOULDER 0.50	Gravel shoulder, stable.	9
UPSLOPE 0.50	Streambed material, stable.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.329_R_1.jpg

YOSE_0100_6.329_R_2.jpg

Wall ID:	**YOSE-0100-6.332-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 29, 2007	**Approximate Year Built:**	1980
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Double culvert, concrete headwall, outlet side, with .5 ft stone guardwall parapet. Wall is in very good condition.		

Wall Measurements

Wall Length (ft.):	16	**Face Area (sq.):**	80
Average Wall Height (ft.):	5	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, functioning as designed.	9
WALL FOUNDATION MATERIAL 8.00	Streambed, sand, gravel, cobbles.	9
CONCRETE 8.00	Excellent condition, looks new.	9
STONE MASONRY 8.00	3 inch capstone, architectural only.	9
LATERAL SLOPE 0.50	Riprap (minor) and native granular soil, stable.	8
WALL DRAINS 0.50	None visible, no drainage related distress.	8
CULVERT 0.50	Two CMP culverts, performing as designed.	9
DOWNSLOPE 0.50	Streambed material and native granular soil, stable.	9
ROAD/SIDEWALK/SHOULDER 0.50	Gravel shoulder, stable.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.332_L_1.jpg

Wall ID:	**YOSE-0100-6.903-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	87	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid rock fill wall. A 25 ft section appears to have failed and was repaired with machine-placed and side-cast rock fill at about 50 degree fill slope.		

Wall Measurements

Wall Length (ft.):	120	**Face Area (sq.):**	1000
Average Wall Height (ft.):	8	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	25	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good condition for poorly placed rock wall. Repaired area is marginally stable.	7
WALL FOUNDATION MATERIAL 8.00	Stable bedrock and boulder talus.	9
PLACED STONE 8.00	Hard, fresh granite rocks in excellent condition.	10
DOWNSLOPE 0.50	Stable bedrock and boulder talus.	9
LATERAL SLOPE 0.50	Bedrock and boulder, talus, some tree, stable.	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress in pavement.	9
WALL DRAINS 0.50	None visible, no signs of drainage related distress.	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.903_L_1.jpg

YOSE_0100_6.903_L_2.jpg

Wall ID:	**YOSE-0100-6.931-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid rock fill wall in good condition. A 32 foot long failed section has been repaired with machine placed stone at a 45 degree slope.		

Wall Measurements

Wall Length (ft.):	86	**Face Area (sq.):**	1250
Average Wall Height (ft.):	14	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	22	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, well constructed, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Rocky granular soil, bedrock, boulder talus, all stable.	9
PLACED STONE 8.00	Well built with hard, fresh granite stones.	9
WALL DRAINS 0.50	None visible, granular backfill and foundation are well drained internally.	8
DOWNSLOPE 0.50	Granular soil and talus, some trees, stable.	9
LATERAL SLOPE 0.50	Bedrock.	9
ROAD/SIDEWALK/SHOULDER 0.50	Paved road is in excellent condition, no distress.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.931_L_1.jpg

YOSE_0100_6.931_L_2.jpg

Wall ID:	**YOSE-0100-6.959-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Gravity mortared stone fill wall with stone guardwall parapet.		

Wall Measurements

Wall Length (ft.):	133	**Face Area (sq.):**	400
Average Wall Height (ft.):	3	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Boulder, talus and granular soil, stable.	8
MORTAR 8.00	Very good condition, no flaking, very minor shrinkage.	9
STONE MASONRY 8.00	Non-masoned hard, fresh granite rocks in excellent condition.	10
DOWNSLOPE 0.50	Boulder talus and granular soil, stable.	8
WALL DRAINS 0.50	None visible, no signs of drainage related distress.	8
LATERAL SLOPE 0.50	Stable bedrock and boulder talus.	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress in pavement.	9
TRAFFIC BARRIER/FENCE 0.50	Mortared, native stone 1.5' high guardwall in excellent condition.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.959_L_1.jpg

Wall ID:	**YOSE-0100-6.994-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	83	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Well constructed dry laid stone fill wall.		

Wall Measurements

Wall Length (ft.):	16	**Face Area (sq.):**	256
Average Wall Height (ft.):	16	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	16	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
WALL FOUNDATION MATERIAL 8.00	Bedrock, stable.	9
PLACED STONE 8.00	Hard, fresh granite stones, some moss growth, slight irregularity in face angle.	9
WALL DRAINS 0.50	None visible. No drainage related distress.	8
LATERAL SLOPE 0.50	Bedrock, stable.	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress on roadway due to wall.	9

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.994_L_1.jpg

Wall ID:	**YOSE-0100-6.998-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	83	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid rock fill wall, poorly constructed.		

Wall Measurements

Wall Length (ft.):	134	**Face Area (sq.):**	1285
Average Wall Height (ft.):	10	**Face Angle (deg.):**	65
Maximum Wall Height (ft.):	18	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, stable for over 70 years!	9
WALL FOUNDATION MATERIAL 8.00	Boulder, talus, marginal stability at angle of repose.	8
PLACED STONE 8.00	Hard, fresh granite rock.	10
DOWNSLOPE 0.50	Boulder, talus at angle of repose.	8
LATERAL SLOPE 0.50	Stable bedrock at wall start. Stable boulder and talus at wall end.	8
WALL DRAINS 0.50	Internally drained via backfill and voids.	8
ROAD/SIDEWALK/SHOULDER 1.00	No distress on road. Significant voids in outer 1'-2' of the 2'-3' shoulder in some places. No impact on pavement or adjacent 1'-2' of gravel shoulder.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_6.998_L_1.jpg

YOSE_0100_6.998_L_2.jpg

Wall ID:	**YOSE-0100-7.038-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	71	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid stone fill wall, poorly constructed. Wall failure in one section about 10 ft long. Roadway not impacted.		

Wall Measurements

Wall Length (ft.):	80	**Face Area (sq.):**	720
Average Wall Height (ft.):	9	**Face Angle (deg.):**	60
Maximum Wall Height (ft.):	16	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good performance for poor rock placement.	7
WALL FOUNDATION MATERIAL 8.00	Large talus and boulders. Stable.	8
PLACED STONE 8.00	Erratic placement of stones, excessive voids, variable slope, several marginally stable rocks.	6
LATERAL SLOPE 0.50	Soil and rocky slope at wall begin. Bedrock at wall end.	8
WALL DRAINS 0.50	Internally drained.	8
ROAD/SIDEWALK/SHOULDER 0.50	No distress.	9
DOWNSLOPE 1.00	Boulders, talus, marginal stability.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_7.038_L_1.jpg

Wall ID:	**YOSE-0100-7.187-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	83	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry laid stone wall, poorly constructed.		

Wall Measurements

Wall Length (ft.):	150	**Face Area (sq.):**	552
Average Wall Height (ft.):	3	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair, 28 foot long failed section at begin of wall. Failed section estimated 3' high, but does not impact road/shoulder.	7
WALL FOUNDATION MATERIAL 8.00	Mostly stable large talus.	8
PLACED STONE 8.00	Hard, fresh granite stones.	10
DOWNSLOPE 0.50	Large talus, mostly stable.	8
LATERAL SLOPE 0.50	Talus at both wall ends.	8
ROAD/SIDEWALK/SHOULDER 0.50	No distress.	9
WALL DRAINS 0.50	None visible. No signs of drainage related distress.	9

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_7.187_L_1.jpg

Wall ID:	**YOSE-0100-7.236-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	85	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone fill wall with stone guardwall parapet.		

Wall Measurements

Wall Length (ft.):	350	**Face Area (sq.):**	1272
Average Wall Height (ft.):	3	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Very good, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Mostly large, Class 4+, talus. Estimate 10% of foundation visibly on bedrock.	8
MORTAR 8.00	Very good condition, only minor shrinkage and spalls.	8
PLACED STONE 8.00	Fresh, hard granite stones.	9
ROAD/SIDEWALK/SHOULDER 0.50	Excellent, no distress related to wall, except one void 1.5" by 5" at stone curb toe.	8
TRAFFIC BARRIER/FENCE 0.50	1.5 foot tall guardwall, minor shrinkage of mortar in places.	8
WALL DRAINS 0.50	None visible, no signs of drainage related distress.	8
DOWNSLOPE 0.50	Large talus, some bedrock.	9
LATERAL SLOPE 0.50	Talus and bedrock, stable.	10

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_7.236_L_1.jpg

Wall ID:	**YOSE-0100-8.193-R**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	90	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone wall with 2 ft high mortared stone guardwall parapet, located at Oshaughnessey Dam. Monitor partial failure of localized mortared stone foundation under area in outlet bout 250 ft along wall. See photos.		

Wall Measurements

Wall Length (ft.):	316	**Face Area (sq.):**	2570
Average Wall Height (ft.):	8	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	24	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, possibly one very localized fractured/weathered zone around the drain outlet pipe.	9
WALL FOUNDATION MATERIAL 8.00	Bedrock, stable gneiss.	10
MORTAR 8.00	Very good condition, a few very minor voids. Some moss growth.	8
STONE MASONRY 8.00	Mortared natural stone, hard fresh granite.	9
WALL DRAINS 0.50	4 or 5 4" steel outlet pipes, drainage appears to be functioning as intended.	9
DOWNSLOPE 0.50	Bedrock, stable.	10
LATERAL SLOPE 0.50	Bedrock, stable.	10
ROAD/SIDEWALK/SHOULDER 0.50	No signs of distress.	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_8.193_R_1.jpg

YOSE_0100_8.193_R_2.jpg

Wall ID:	**YOSE-0100-8.272-L**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	93	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Mortared stone cut wall supporting road below parking area at Oshaughnessy Dam.		

Wall Measurements

Wall Length (ft.):	125	**Face Area (sq.):**	875
Average Wall Height (ft.):	7	**Face Angle (deg.):**	66
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, performing as intended.	9
WALL FOUNDATION MATERIAL 8.00	Granular soil visible in one place, probably on, or close to bedrock.	9
MORTAR 8.00	Very good condition, some moss growth.	9
STONE MASONRY 8.00	Fresh, hard granite natural stones, not masoned.	10
UPSLOPE 0.50	Rocky granular soil with cobbles and boulders. Some vegetation, brush and grasses.	9
WALL DRAINS 0.50	5 4-inch steel drain pipes, functioning as intended.	9
LATERAL SLOPE 0.50	Bedrock, stable.	10

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_8.272_L_1.jpg

Wall ID:	**YOSE-0100-8.456-R**		
Route Name:	HETCH HETCHY ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1938
***Wall Rating:**	93	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stack stone fill wall on loop road beyond Oshaughnessy Dam.		

Wall Measurements

Wall Length (ft.):	120	**Face Area (sq.):**	1048
Average Wall Height (ft.):	8	**Face Angle (deg.):**	75
Maximum Wall Height (ft.):	15	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent, uniform face angle, stable.	9
WALL FOUNDATION MATERIAL 8.00	Bedrock in part, talus in part, stable.	9
PLACED STONE 8.00	Angular, hard, fresh granite stones.	10
DOWNSLOPE 0.50	Stable bedrock and talus.	8
LATERAL SLOPE 0.50	Stable talus.	8
ROAD/SIDEWALK/SHOULDER 0.50	No distress, stable.	9
WALL DRAINS 0.50	None visible, no signs of drainage related distress.	9

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0100: HETCH HETCHY ROAD

Retaining Wall Condition Photos

YOSE_0100_8.456_R_1.jpg

Wall ID:	**YOSE-0222ZZ-.405-R**		
Route Name:	WAWONA CAMPGROUND ROADS		
Inspection Date:	September 24, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	87	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone inlet headwall for a 24 in diameter CMP culvert constructed along right shoulder and directly supports a very low ADT roadway moderate consequence of failure		

Wall Measurements

Wall Length (ft.):	58	**Face Area (sq.):**	302
Average Wall Height (ft.):	5	**Face Angle (deg.):**	48
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor unraveling due to settlement of blocks; downed tree in channel may impede the flow of water	8
WALL FOUNDATION MATERIAL 8.00	No distress; no evidence of settlement, rotation, undermining or seepage	10
PLACED STONE 8.00	Medium to large diameter angular last rock; minor settlement/rearrangement of blocks; good block-to-block contact; stable	8
DOWNSLOPE 0.50	Good drainage towards wall; downed tree in channel may impede flow of water	8
ROAD/SIDEWALK/SHOULDER 0.50	Moderate to severe cracking of pavement; pavement distress does not appear to be related to wall movement, nor does it affect the walls performance	8
VEGETATION 0.50	Three medium diameter trees growing in channel, but not affecting performance of the wall	8
CULVERT 0.50	No observed distress to 24-in. diameter CMP	9
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	9
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	10

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Clear debris - 4 labor hrs ($55/hr) = $220
Repair Cost:	$220

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0222ZZ: WAWONA CAMPGROUND ROADS

Retaining Wall Condition Photos

YOSE_0222ZZ_0.405_R_1.jpg

Wall ID:	**YOSE-0222ZZ-.407-L**		
Route Name:	WAWONA CAMPGROUND ROADS		
Inspection Date:	September 25, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	86	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone outlet headwall for a 24 in diameter CMP culvert constructed along left shoulder an directly supports a very low ADT roadway moderate consequence of failure		

Wall Measurements

Wall Length (ft.):	142	**Face Area (sq.):**	456
Average Wall Height (ft.):	3	**Face Angle (deg.):**	63
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; three large diameter trees growing near wall	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on bedrock; no evidence of settlement, rotation, undermining or seepage	10
PLACED STONE 8.00	Medium to large diameter angular blast rock; good condition, but requires some chinking stones to aid with the block-to-block contact	8
ROAD/SIDEWALK/SHOULDER 0.50	Minor to moderate cracking of pavement; pavement distress does not appear to have been caused by movement of the wall, nor is the distress to pavement affecting the wall's performance	8
CULVERT 0.50	No observed distress to 24-in. diameter CMP	9
DOWNSLOPE 0.50	Good drainage away from wall;	9
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	9
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	9
VEGETATION 1.00	Three large diameter trees are growing adjacent to wall; tree at north end of wall is growing out of the wall, but is appears to be beneficial to the wall's stability	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0222ZZ: WAWONA CAMPGROUND ROADS

Retaining Wall Condition Photos

YOSE_0222ZZ_0.407_L_1.jpg

Wall ID:	**YOSE-0222ZZ-.436-R**		
Route Name:	WAWONA CAMPGROUND ROADS		
Inspection Date:	September 24, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	86	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone outlet headwall for a 24 in diameter CMP culvert constructed along right shoulder and directly supports a very low ADT roadway low consequence of failure		

Wall Measurements

Wall Length (ft.):	30	**Face Area (sq.):**	151
Average Wall Height (ft.):	5	**Face Angle (deg.):**	82
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; no observed distress to wall elements	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on bedrock with no evidence of settlement or rotation	9
PLACED STONE 8.00	Good condition; No observed distress to blocks	9
CULVERT 0.50	24-in. diameter CMP; minor rusting along invert	8
ROAD/SIDEWALK/SHOULDER 0.50	Moderate to severe cracking of roadway; pavement distress not appear to be related to the wall, nor is it affecting the wall	8
VEGETATION 0.50	One large diameter tree is growing near wall, but is not affecting or threatening performance of the wall	8
DOWNSLOPE 0.50	Good drainage away from wall	9
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	9
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	9

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0222ZZ: WAWONA CAMPGROUND ROADS

Retaining Wall Condition Photos

YOSE_0222ZZ_0.436_R_1.jpg

Wall ID:	**YOSE-0222ZZ-.622-L**		
Route Name:	WAWONA CAMPGROUND ROADS		
Inspection Date:	September 24, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	72	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Slope Protection	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone slope protection constructed along left shoulder of a very low ADT roadway along outside bank of a curve in the river low consequence of failure		

Wall Measurements

Wall Length (ft.):	82	**Face Area (sq.):**	624
Average Wall Height (ft.):	7	**Face Angle (deg.):**	45
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair to good condition; evidence of settlement/rearrangement of blocks along the northern half of wall; rearrangement of blocks possibly due to sheet flow across the top of wall	6
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on bedrock; no evidence of settlement	9
PLACED STONE 8.00	Medium to large diameter angular blast rock; evidence of settlement/rearrangement of blocks along the northern half of wall; distress may be related to sheet flow across the roadway and top of wall	6
DOWNSLOPE 0.50	Good drainage away from wall; no distress to relatively-flat, moderately-vegetated slope that extends down to the river	8
ROAD/SIDEWALK/SHOULDER 0.50	Minor cracking of pavement	8
VEGETATION 0.50	Several medium diameter trees are growing along the base of wall, but not affecting or threatening performance of the wall	8
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	9
WALL DRAINS 0.50	Wall is self-draining with no evidence of drainage-related distress	10

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Place additional stone) - placed riprap, Class 4 = 8 cuyd ($130/cuyd) = $1,040
Repair Cost:	$1,040

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0222ZZ: WAWONA CAMPGROUND ROADS

Retaining Wall Condition Photos

YOSE_0222ZZ_0.622_L_1.jpg

Wall ID:	**YOSE-0236-1.851-L**		
Route Name:	MARIPOSA GROVE TRAM ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	67	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	104	**Face Area (sq.):**	512
Average Wall Height (ft.):	4	**Face Angle (deg.):**	62
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	loose soil. No sign of settlement.	6
PLACED STONE 8.00	Some loose pieces, moderately weathered granitic rock.	7
DOWNSLOPE 0.50	Soil/rock mix, gentle 4:1 and flatter slope, no sign of erosion.	8
LATERAL SLOPE 1.00	2:1 soil, scattered trees at wall end, no sign of erosion.	7
VEGETATION 1.00	One 8' dia. Pine growing out of wall. Not affecting wall performance.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0236: MARIPOSA GROVE TRAM ROAD

Retaining Wall Condition Photos

YOSE_0236_1.851_L_1.jpg

YOSE_0236_1.851_L_2.jpg

Wall ID:	**YOSE-0236-2.152-L**		
Route Name:	MARIPOSA GROVE TRAM ROAD		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	64	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	138	**Face Area (sq.):**	950
Average Wall Height (ft.):	6	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	6
WALL FOUNDATION MATERIAL 8.00	Loose soil, minor settlement.	6
PLACED STONE 8.00	Hard durable granitic rock, moderately weathered, some voids.	7
ROAD/SIDEWALK/SHOULDER 1.00	Shoulder has some edge ravelling, does not appear to be affecting wal performance.	6
DOWNSLOPE 1.00	2:1 soil/rock mix, no sign of erosion.	7
LATERAL SLOPE 1.00	2:1 soil/rock mix, no sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0236: MARIPOSA GROVE TRAM ROAD

Retaining Wall Condition Photos

YOSE_0236_2.152_L_1.jpg

Wall ID:	**YOSE-0407-.584-R**		
Route Name:	MIRROR LAKE ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	93	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone fill wall constructed along right shoulder and directly supports the shoulder along a very low ADT roadway low consequence of failure		

Wall Measurements

Wall Length (ft.):	67	**Face Area (sq.):**	399
Average Wall Height (ft.):	5	**Face Angle (deg.):**	70
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; no observed distress to wall elements	9
WALL FOUNDATION MATERIAL 8.00	Founded atop angular and sub-rounded boulders; no evidence of settlement or rotation	9
PLACED STONE 8.00	Angular to sub-rounded cobbles and boulders; good block-to-block contact with no observed distress; stable	10
VEGETATION 0.50	Five large diameter trees are growing within 3 ft of wall, but are not causing distress to the wall	8
DOWNSLOPE 0.50	No distress to dry river channel	9
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or unpaved shoulder	10
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	10

Repair Recommendations

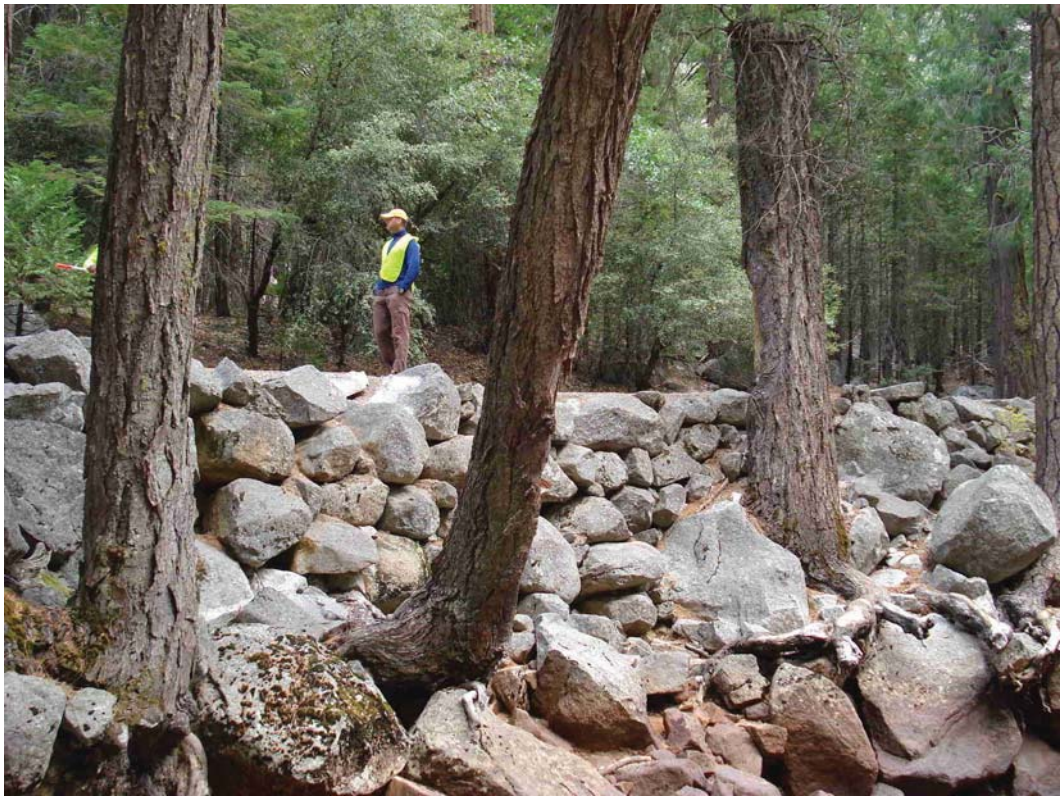
Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0407: MIRROR LAKE ROAD

Retaining Wall Condition Photos



YOSE_0407_0.584_R_1.jpg

Wall ID:	**YOSE-0407-.62-R**		
Route Name:	MIRROR LAKE ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	82	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone fill wall constructed along the right shoulder and directly supports the pull-off area along a very low ADT roadway low consequence of failure		

Wall Measurements

Wall Length (ft.):	320	**Face Area (sq.):**	1981
Average Wall Height (ft.):	6	**Face Angle (deg.):**	64
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; no distress to wall elements; culvert at north end of wall is crushed and non-functional	8
WALL FOUNDATION MATERIAL 8.00	Founded atop angular to sub-rounded cobbles and boulders; no evidence of wall movement	10
PLACED STONE 8.00	Angular to sub-rounded cobbles and boulders; good block-to-block contact	10
VEGETATION 0.50	Three medium to large diameter trees are growing adjacent to the wall, but are not affecting the wall's performance	8
DOWNSLOPE 0.50	No distress to dry river channel	10
LATERAL SLOPE 0.50	No distress; transitions to riprap bank protection at both ends	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or unpaved shoulder	10
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	10
CULVERT 5.00	12-in. diameter CMP at north end of wall; culvert is crushed and is non-functional	2

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0407: MIRROR LAKE ROAD

Retaining Wall Condition Photos

YOSE_0407_0.620_R_1.jpg

Wall ID:	**YOSE-0407-.698-R**		
Route Name:	MIRROR LAKE ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	97	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone fill wall constructed along right shoulder and directly supports pull-off area along a very low ADT roadway low consequence of failure		

Wall Measurements

Wall Length (ft.):	202	**Face Area (sq.):**	1414
Average Wall Height (ft.):	7	**Face Angle (deg.):**	64
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; no observed distress to wall elements	9
WALL FOUNDATION MATERIAL 8.00	Founded atop angular to sub-rounded boulders; no evidence of wall movement	10
PLACED STONE 8.00	No distress to angular to sub-rounded cobbles and boulders; good block-to-clock contact	10
VEGETATION 0.50	Several large and medium diameter trees are growing along the base of wall; trees pose no threat to the long-term stability of wall	9
DOWNSLOPE 0.50	No distress to dry river channel	10
LATERAL SLOPE 0.50	No distress; wall is keyed into large boulder at both ends	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or gravel shoulder	10
WALL DRAINS 0.50	Wall is self-draining; no observed drainage-related distress	10

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0407: MIRROR LAKE ROAD

Retaining Wall Condition Photos

YOSE_0407_0.698_R_1.jpg

Wall ID:	**YOSE-0407-.777-R**		
Route Name:	MIRROR LAKE ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	73	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked fill wall.		

Wall Measurements

Wall Length (ft.):	135	**Face Area (sq.):**	740
Average Wall Height (ft.):	5	**Face Angle (deg.):**	76
Maximum Wall Height (ft.):	11	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Founded on sand and large boulders. No sign of settlement.	8
PLACED STONE 8.00	Hard durable granitic rock, slightly weathered.	7
LATERAL SLOPE 1.00	Ties into 2:1 soil and rock slope. No sign of erosion.	7
VEGETATION 1.00	Some small willows but not affecting wall performance.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0407: MIRROR LAKE ROAD

Retaining Wall Condition Photos

YOSE_0407_0.777_R_1.jpg

YOSE_0407_0.777_R_2.jpg

Wall ID:	**YOSE-0408-1.006-L**		
Route Name:	HAPPY ISLES SHUTTLE LOOP		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	76	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared headwall.		

Wall Measurements

Wall Length (ft.):	31	**Face Area (sq.):**	212
Average Wall Height (ft.):	7	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	12	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on natural stream bottom comprised of sand and cobbles. No sign of settlement.	8
MORTAR 8.00	Good, slight degradation.	7
STONE MASONRY 8.00	Moderately weathered rounded rock and slightly weathered granite.	8
CULVERT 1.00	6' X 6.5' CIP concrete, minor spalling.	6
DOWNSLOPE 1.00	Cobbles and boulders. No sign of erosion	7
LATERAL SLOPE 1.00	Ties into 3:1 soil/rock slope. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0408: HAPPY ISLES SHUTTLE LOOP

Retaining Wall Condition Photos

YOSE_0408_1.006_L_1.jpg

Wall ID:	**YOSE-0408-1.006-R**		
Route Name:	HAPPY ISLES SHUTTLE LOOP		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	88	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry inlet headwall for a 6 ft x 6.5 ft concrete arch culvert constructed along right shoulder of a very low ADT roadway low consequence of failure		

Wall Measurements

Wall Length (ft.):	31	**Face Area (sq.):**	119
Average Wall Height (ft.):	3	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; wood debris in channel and inside culvert will impede the flow of water	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on a natural soil subgrade; no evidence of settlement, rotation or undermining	9
MORTAR 8.00	General age-related weathering; minor cracking; minor debonding	8
STONE MASONRY 8.00	No distress to rounded river rock	10
CULVERT 0.50	No observed distress to 6 ft x 6.5 ft concrete arch culvert; there is a large piece of wood inside the culvert	8
DOWNSLOPE 0.50	No distress to dry creek bed; wood debris in channel will impede the flow of water	8
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or unpaved shoulder	10
TRAFFIC BARRIER/FENCE 0.50	No distress to timber fence	10
VEGETATION 0.50	No significant vegetation growing near wall	10

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Clear debris - 8 labor hrs ($55/hr) = $440
Repair Cost:	$440

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0408: HAPPY ISLES SHUTTLE LOOP

Retaining Wall Condition Photos

Condition photos are not available for YOSE-0408-1.006-R.

Wall ID:	**YOSE-0500-.99-L**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	77	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared headwall at outlet.		

Wall Measurements

Wall Length (ft.):	21	**Face Area (sq.):**	90
Average Wall Height (ft.):	4	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	7
WALL FOUNDATION MATERIAL 8.00	Founded on natural stream bottom comprised of sand and cobbles. No sign of settlement. Currently under construction	7
MORTAR 8.00	Good, fresh, no spalling or cracking.	8
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	9
CULVERT 1.00	CIP concrete arch, no spalling and cracking.	7
LATERAL SLOPE 1.00	Ties into soil/rock fill at both wall start and end. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_0.990_L_1.jpg

Wall ID:	**YOSE-0500-1.004-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	87	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone fill wall constructed along right shoulder and directly supports the shoulder along a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	86	**Face Area (sq.):**	466
Average Wall Height (ft.):	5	**Face Angle (deg.):**	58
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor unraveling at north end of wall; several small diameter trees are growing from face of wall	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded atop natural glacier deposits; no evidence of settlement or rotation	10
PLACED STONE 8.00	Minor unraveling adjacent to headwall; good condition overall	8
LATERAL SLOPE 0.50	No observed distress; no evidence of movement or erosion; stone masonry guard wall at the north end of wall	9
DOWNSLOPE 0.50	No distress to relatively flat, lightly-forested ground	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to pavement or unpaved shoulder	10
WALL DRAINS 0.50	Wall is self-darning with no evidence of drainage-related distress	10
VEGETATION 1.00	Several small diameter trees are growing along face of wall; trees threaten the long-term stability of wall	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Remove small diameter trees - 6 labor hrs ($55/hr) = $330
Repair Cost:	$330

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.004_R_1.jpg

Wall ID:	**YOSE-0500-1.013-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	88	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry inlet headwall for a 6 ft x ft concrete arch culvert constructed along right shoulder and directly supports the shoulder of a high ADT roadway high consequence of failure		

Wall Measurements

Wall Length (ft.):	18	**Face Area (sq.):**	87
Average Wall Height (ft.):	4	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor to moderate cracking along joints	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on natural glacial deposits; no evidence of wall movement	10
MORTAR 8.00	Minor to moderate cracking along joints; evidence of recent repointing across 25% of wall	8
STONE MASONRY 8.00	Good condition; no distress to cut blocks	9
LATERAL SLOPE 0.50	Dry stacked stone wall at both ends of wall; minor unraveling of the dry stacked stone walls	8
CULVERT 0.50	No distress to 6 ft x 6 ft concrete arch culvert	9
DOWNSLOPE 0.50	No distress to dry channel; good drainage towards headwall	9
OTHER SECONDARY ELEMENT 0.50	No observed distress to stone masonry apron; apron extends from the face of wall out approximately 7 ft.	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to pavement or paved shoulder	10

Repair Recommendations

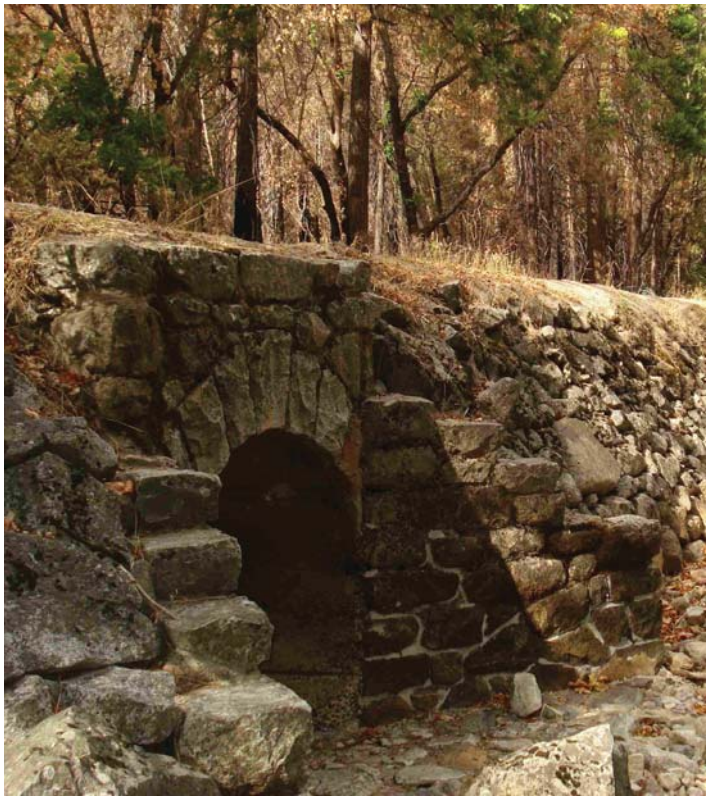
Failure Consequence:	HIGH
Recommendation Narrative:	Stone masonry repointing - 26 sqft ($75/sqft) = $1,958.85
Repair Cost:	$1,959

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos



YOSE_0500_1.013_R_1.jpg

Wall ID:	**YOSE-0500-1.017-L**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	79	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry outlet headwall for a 6 ft x 6 ft concrete arch culvert constructed along left shoulder and directly supports the pull-off area along a high ADT roadway		

Wall Measurements

Wall Length (ft.):	27	**Face Area (sq.):**	129
Average Wall Height (ft.):	4	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; a section of the north wingwall is not in undermined and not in contact with the ground; tree at north end threatens the stability of the wall	7
WALL FOUNDATION MATERIAL 8.00	A section of the north wingwall is not in contact with the ground; no evidence of wall settlement or rotation	7
MORTAR 8.00	General age-related weathering with minor cracking along the joints	8
STONE MASONRY 8.00	No distress to cut blocks	9
CULVERT 0.50	No observed distress to 6 ft x 6ft concrete arch culvert; evidence of recent concrete repair along the invert	9
DOWNSLOPE 0.50	Ongoing construction work to construct a stone masonry apron along the face of wall	10
LATERAL SLOPE 0.50	No distress; no evidence of movement or erosion	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or pull-off area	10
WALL DRAINS 0.50	No evidence of drainage-related distress	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Backfill undermined section - placed riprap, Class 3 = 7 cuyd ($200/cuyd) = $1,400. Cut large diameter tree - 1 tree ($955/tree) = $955.
Repair Cost:	$2,355

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.017_L_1.jpg

YOSE_0500_1.017_L_2.jpg

Wall ID:	**YOSE-0500-1.028-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	88	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone fill wall constructed along the right shoulder and directly supports the shoulder along a high ADT roadway high consequence of failure		

Wall Measurements

Wall Length (ft.):	57	**Face Area (sq.):**	385
Average Wall Height (ft.):	6	**Face Angle (deg.):**	58
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor unraveling at south end of wall	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on natural glacial deposits; no evidence of movement	10
PLACED STONE 8.00	Good condition; minor localized unraveling along the south end of wall	8
DOWNSLOPE 0.50	No distress to relatively flat, lightly-vegetated ground	10
LATERAL SLOPE 0.50	No distress; stone masonry headwall at the south end of wall; riprap erosion protection at north end	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to pavement or unpaved shoulder	10
VEGETATION 0.50	No significant vegetation growing near wall	10
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.028_R_1.jpg

Wall ID:	**YOSE-0500-1.041-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	97	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone fill wall constructed along right shoulder and directly supports a high ADT roadway moderate consequence of failure		

Wall Measurements

Wall Length (ft.):	236	**Face Area (sq.):**	1039
Average Wall Height (ft.):	4	**Face Angle (deg.):**	58
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; no observed distress	9
WALL FOUNDATION MATERIAL 8.00	Founded atop natural glacial deposits; no evidence of wall movement	10
PLACED STONE 8.00	Good condition; no observed movement or wall elements; no distress to blocks	10
VEGETATION 0.50	Several large diameter trees are growing long base of wall; trees do not threaten the stability of the wall as the wall appears to be built around several of the trees	9
DOWNSLOPE 0.50	No distress to relatively flat, lightly-forested area	10
LATERAL SLOPE 0.50	No distress; riprap erosion protection at south end; stone masonry headwall at north end of wall	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to relatively new pavement; no distress to unpaved shoulder	10
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.041_R_1.jpg

Wall ID:	**YOSE-0500-1.055-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	91	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry inlet headwall for a 6 ft x 6 ft concrete arch culvert constructed along the right shoulder and directly supports the shoulder along a high ADT roadway high consequence of failure		

Wall Measurements

Wall Length (ft.):	19	**Face Area (sq.):**	74
Average Wall Height (ft.):	3	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor mortar degradation with minor cracking and spalling	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on natural glacial deposits; no evidence of wall movement	10
MORTAR 8.00	Minor cracking; minor debonding with minor localized spalling; good condition overall	8
STONE MASONRY 8.00	No distress to cut blocks	10
CULVERT 0.50	No observed distress to 6 ft x 6 ft concrete arch culvert	9
VEGETATION 0.50	No significant vegetation growing near wall	9
DOWNSLOPE 0.50	No distress; good drainage towards the wall	10
LATERAL SLOPE 0.50	No distress; dry stacked stone fill wall along both ends of wall	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to pavement or unpaved shoulder	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Stone masonry repointing - 0.30(74.05 sqft)($75/sqft) = $1,666
Repair Cost:	$1,666

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.055_R_1.jpg

Wall ID:	**YOSE-0500-1.057-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	81	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone fill wall constructed along the right shoulder and directly supports the shoulder along a high ADT roadway moderate consequence of failure		

Wall Measurements

Wall Length (ft.):	148	**Face Area (sq.):**	1228
Average Wall Height (ft.):	8	**Face Angle (deg.):**	58
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; localized unraveling of wall; unraveling is caused by a tree growing at that location	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on natural glacial deposits; no observed movement of wall	9
PLACED STONE 8.00	No distress to blocks; minor localized unraveling along north headwall (approx. 50 sqft)	7
DOWNSLOPE 0.50	No distress to relatively flat, lightly-forested ground	10
LATERAL SLOPE 0.50	No distress; stone masonry headwall at both ends of wall	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to pavement or unpaved shoulder	10
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	10
VEGETATION 1.00	Large diameter tree growing at north end of wall; tree has caused localized unraveling of wall	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Injection grout - 50 sqft($105/sqft) = $5,250
Repair Cost:	$5,250

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.057_R_1.jpg

YOSE_0500_1.057_R_2.jpg

Wall ID:	**YOSE-0500-1.078-L**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	75	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared headwall with dry stacked rock at each end.		

Wall Measurements

Wall Length (ft.):	45	**Face Area (sq.):**	245
Average Wall Height (ft.):	5	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on natural stream bottom comprised of sand and cobbles. No sign of settlement.	7
MORTAR 8.00	Good some minor cracks.	7
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	8
DOWNSLOPE 0.50	Currently under construction.	8
CULVERT 1.00	CIP concrete arch, minor spalling and cracking. Not affecting wall performance.	7
LATERAL SLOPE 1.00	Ties into 2:1 soil/rock mix slope at both start and end. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.078_L_1.jpg

Wall ID:	**YOSE-0500-1.111-L**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	77	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared headwall at outlet with dry stacked rock protection at each end		

Wall Measurements

Wall Length (ft.):	58	**Face Area (sq.):**	376
Average Wall Height (ft.):	6	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good. Performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on natural stream bottom comprised of sand and cobbles. No sign of settlement.	7
MORTAR 8.00	Good, minor cracking and spalling.	8
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	8
CULVERT 1.00	Good, CIP concrete, no distress.	7
DOWNSLOPE 1.00	Under construction.	7
LATERAL SLOPE 1.00	Ties into 2:1 soil/rock slope at each end. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.111_L_1.jpg

YOSE_0500_1.111_L_2.jpg

Wall ID:	**YOSE-0500-1.111-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	77	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared headwall.		

Wall Measurements

Wall Length (ft.):	17	**Face Area (sq.):**	78
Average Wall Height (ft.):	4	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on natural stream bottom comprised of sand and cobbles. No sign of settlement.	8
MORTAR 8.00	Good, minor degradation.	7
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	8
CULVERT 1.00	CIP concrete arch, minor spalling and cracking. Not affecting wall performance.	6
LATERAL SLOPE 1.00	Ties into existing wall at both ends. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.111_R_1.jpg

Wall ID:	**YOSE-0500-1.114-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	84	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone fill wall constructed along right shoulder and directly supports the shoulder along a high ADT roadway moderate consequence of failure		

Wall Measurements

Wall Length (ft.):	176	**Face Area (sq.):**	748
Average Wall Height (ft.):	4	**Face Angle (deg.):**	56
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	-1

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; several small diameter trees growing from the face of wall; tree threaten the wall's long-term stability and should be removed	7
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on natural glacial deposits	9
PLACED STONE 8.00	No distress to angular blocks; good block-to-block contact	9
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	9
DOWNSLOPE 0.50	No distress to relatively flat, lightly-forested slope	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or unpaved shoulder	10
WALL DRAINS 0.50	Wall is self-draining with no observed drainage-related distress	10
VEGETATION 1.00	Several small diameter trees are growing from the face of wall; trees threaten the long-term stability of wall and shoulder be removed	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Remove small diameter trees - 6 labor hrs ($55/hr) = $330
Repair Cost:	$330

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_1.114_R_1.jpg

Wall ID:	**YOSE-0500-2.181-R**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	84	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Dry Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Dry stacked stone inlet headwall for a 30 in diameter CMP culvert constructed along right shoulder of a high ADT roadway high consequence of failure due to proximity to roadway		

Wall Measurements

Wall Length (ft.):	17	**Face Area (sq.):**	50
Average Wall Height (ft.):	2	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; evidence of past movement, but wall is currently stable and functioning as intended	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on natural soil or compacted fill material; no evidence of settlement, rotation or undermining	9
PLACED STONE 8.00	Good condition; evidence of past movement of the blocks; wall is stable with good block-to-block contact	8
CULVERT 0.50	30-in. diameter CMP; approximately 6-in. of debris has accumulated along the invert and extends approximately 15 ft inside the culvert	8
DOWNSLOPE 0.50	Good drainage towards the wall; debris in inlet may impede the flow of water and promote the accumulation of water within the channel	8
LATERAL SLOPE 0.50	Minor erosion along north end of wall; good condition overall	8
VEGETATION 0.50	One large diameter tree growing at north end of wall; tree is not currently affecting the wall's performance	8
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or to gravel shoulder	10
WALL DRAINS 0.50	Wall is self-draining with no evidence of drainage-related distress	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Clean culvert in-place - 15 lnft ($15/lnft) = $225. Clear debris from channel - 4 labor hrs ($55/hr) = $220.
Repair Cost:	$445

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_2.181_R_1.jpg

Wall ID:	**YOSE-0500-3.184-L**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	88	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry inlet headwall for a 30 in diameter CMP culvert constructed along left shoulder of a high ADT roadway high consequence of failure due to proximity to roadway		

Wall Measurements

Wall Length (ft.):	22	**Face Area (sq.):**	78
Average Wall Height (ft.):	3	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; minor debonding of mortar; poor drainage away from wall will promote the accumulation of water at outlet	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on a soil subgrade; no evidence of settlement, rotation or undermining	10
MORTAR 8.00	General age-related weathering; minor debonding	8
STONE MASONRY 8.00	No distress to uncut blocks	9
CULVERT 0.50	No observed distress to 30-in. diameter CMP	10
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or shoulder	10
VEGETATION 0.50	No significant vegetation growing near wall	10
WALL DRAINS 0.50	No evidence of drainage-related distress	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_3.184_L_1.jpg

Wall ID:	**YOSE-0500-4.142-L**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	100	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Relatively new stone masonry outlet headwall for two 42 in diameter CMP culverts constructed along left shoulder of a high ADT roadway moderate consequence of failure		

Wall Measurements

Wall Length (ft.):	49	**Face Area (sq.):**	231
Average Wall Height (ft.):	4	**Face Angle (deg.):**	80
Maximum Wall Height (ft.):	10	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Excellent condition; relatively new construction	10
WALL FOUNDATION MATERIAL 8.00	No evidence of settlement, rotation or undermining	10
MORTAR 8.00	Newly placed; excellent condition	10
STONE MASONRY 8.00	New construction; no observed distress to uncut blocks	10
CULVERT 0.50	No observed distress to two 42-in. diameter CMP's	10
DOWNSLOPE 0.50	Dry riprap-lined channel; good drainage away from wall	10
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or unpaved shoulder	10
VEGETATION 0.50	No vegetation growing near wall	10

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_4.142_L_1.jpg

Wall ID:	**YOSE-0500-8.885-L**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	82	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry outlet headwall for a 48 in diameter CMP culvert constructed along left shoulder and directly supports the shoulder of a high ADT roadway high consequence of failure due to size and proximity to roadway		

Wall Measurements

Wall Length (ft.):	26	**Face Area (sq.):**	123
Average Wall Height (ft.):	4	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good condition; scour hole and medium diameter tree growing near wall threaten its long-term stability	7
WALL FOUNDATION MATERIAL 8.00	No evidence of settlement, rotation or seepage; scour hole threatens to undermine the wall	8
MORTAR 8.00	General age-related weathering; minor debonding	8
STONE MASONRY 8.00	No distress to round river rock	10
CULVERT 0.50	No observed distress to 48-in. diameter CMP	9
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	9
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or unpaved shoulder	10
WALL DRAINS 0.50	No evidence of drainage-related distress	10
DOWNSLOPE 1.00	Scour hole forming at outlet (10 ft x 16 ft x 1.0 ft); scour hole threatens the wall's long-term stability	7

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	Backfill scour hole - earthwork geotextile = 17.8 sqyd ($5/sqyd) = $89. Placed riprap, Class 3 = 6 cuyd ($200/cuyd) = $1,200. Cut medium diameter tree- 1 medium tree ($200/tree) = $200
Repair Cost:	$1,489

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_8.885_L_1.jpg

Wall ID:	**YOSE-0500-10.988-L**		
Route Name:	VALLEY LOOP ROAD		
Inspection Date:	September 28, 2007	**Approximate Year Built:**	1933
***Wall Rating:**	58	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Head Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	Gravity - Dry Stone
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone masonry outlet headwall for a 36 in diameter CMP culvert constructed along left shoulder and locally supports the shoulder along a high ADT roadway moderate consequence of failure		

Wall Measurements

Wall Length (ft.):	93	**Face Area (sq.):**	478
Average Wall Height (ft.):	5	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	9	**Vertical Offset (ft.):**	-2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Poor condition; moderate degradation of the mortar; partially collapsed wingwalls; severely undermined foundation; ongoing bank erosion	4
WALL FOUNDATION MATERIAL 8.00	Founded atop alluvial deposits; foundation is severely undermined creating a void (6 ft x 1.5 ft x 1 ft) below the wall	6
PLACED STONE 8.00	Sections of the wingwall has collapsed; other sections are in poor to fair condition	5
MORTAR 8.00	Moderate weathering with minor to moderate debonding and minor spalling	6
STONE MASONRY 8.00	Good condition; no observed distress to blocks	9
CULVERT 0.50	36-in. diameter CMP; minor rusting along the invert	8
WALL DRAINS 0.50	No evidence of drainage-related distress	9
LATERAL SLOPE 1.00	Severe erosion at south end of wall; erosion has encroached to within 5 ft of the roadway; ongoing unraveling of the north slope	5
ROAD/SIDEWALK/SHOULDER 0.50	No distress to roadway or gravel shoulder	10

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Backfill scour hole - placed riprap, Class 3 = 4.7 cuyd ($200/cuyd) = $933. Backfill lateral slope - 6.2 cuyd ($60/cuyd) = $373. Injection grout foundation - 12 sqft ($105/sqft) = $1,260. Remove/reset GD wingwalls - 11.7 cuyd ($150/cuyd) = $1
Repair Cost:	$7,846

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0500: VALLEY LOOP ROAD

Retaining Wall Condition Photos

YOSE_0500_10.988_L_1.jpg

YOSE_0500_10.988_L_2.jpg

Wall ID:	**YOSE-0700-0.000**		
Route Name:	**UNKNOWN ROUTE**		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	65	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared fill wall below helipad and above exsting viewing path.		

Wall Measurements

Wall Length (ft.):	176	**Face Area (sq.):**	625
Average Wall Height (ft.):	3	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	7	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on lower asphalt walkway and natural ground. No sign of settlement.	7
MORTAR 8.00	Good some minor cracks and spalling.	7
STONE MASONRY 8.00	Hard durable granitic rock, moderately weathered, no loose or missing pieces.	7
DOWNSLOPE 0.50	moderate vegetataion with manzanita and conifers. No erosion	8
LATERAL SLOPE 0.50	Ties into 2:1 slope, moderately vegetated. No sign of erosion.	8
ROAD/SIDEWALK/SHOULDER 5.00	Severe alligator cracking and shoving, potholes present, standing water.	1
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0700: UNKNOWN ROUTE

Retaining Wall Condition Photos

Condition photos are not available for YOSE-0700-0.000.

Wall ID:	**YOSE-0917A-0-P1**		
Route Name:	TUNNEL VIEW PARKING A		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	64	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared fill wall with guardwall at parking lot.		

Wall Measurements

Wall Length (ft.):	771	**Face Area (sq.):**	2300
Average Wall Height (ft.):	2	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	6	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended except for 100' section of undermined foundation.	7
WALL FOUNDATION MATERIAL 8.00	Founded on rock fill from tunnel excavation. 100' of wall undermined and in need of repair.	3
MORTAR 8.00	Good some minor cracks and spalling.	8
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	8
DOWNSLOPE 1.00	Rock fill below wall, loose, some minor ravelling but very minor erosion.	4
LATERAL SLOPE 0.50	Ties into bedrock and shallow bedrock. No sign of erosion.	8
TRAFFIC BARRIER/FENCE 1.00	Guardwall damaged (by vehicle?) in 2 locations.	4
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

Failure Consequence:	MODERATE
Recommendation Narrative:	Repair wall foundation. 10 cubic yards of lean concrete @ $175/c.y. = $1,750. Labor 4 hours @ $55/hour = $220. Total = $1,970
Repair Cost:	$1,970

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0917A: TUNNEL VIEW PARKING A

Retaining Wall Condition Photos

YOSE_0917A_0.000_P1_1.jpg

YOSE_0917A_0.000_P1_2.jpg

Wall ID:	**YOSE-0917B-0-P1**		
Route Name:	TUNNEL VIEW PARKING B		
Inspection Date:	September 26, 2007	**Approximate Year Built:**	Unknown
***Wall Rating:**	79	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Stone mortared headwall with dry stacked rock at each end.		

Wall Measurements

Wall Length (ft.):	232	**Face Area (sq.):**	600
Average Wall Height (ft.):	2	**Face Angle (deg.):**	82
Maximum Wall Height (ft.):	4	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good, performing as intended.	8
WALL FOUNDATION MATERIAL 8.00	Founded on walkway above road, no sign of settlement.	8
MORTAR 8.00	Some minor cracks and spalling.	7
STONE MASONRY 8.00	Hard durable granitic rock, slightly weathered.	9
TRAFFIC BARRIER/FENCE 1.00	Guardwall damaged (by vehicle?) at wall end. Some loose pieces.	5
LATERAL SLOPE 1.00	Very gentle at wall start and wall end. No sign of erosion.	7
WALL DRAINS 1.00	None present. No water related problems.	7

Repair Recommendations

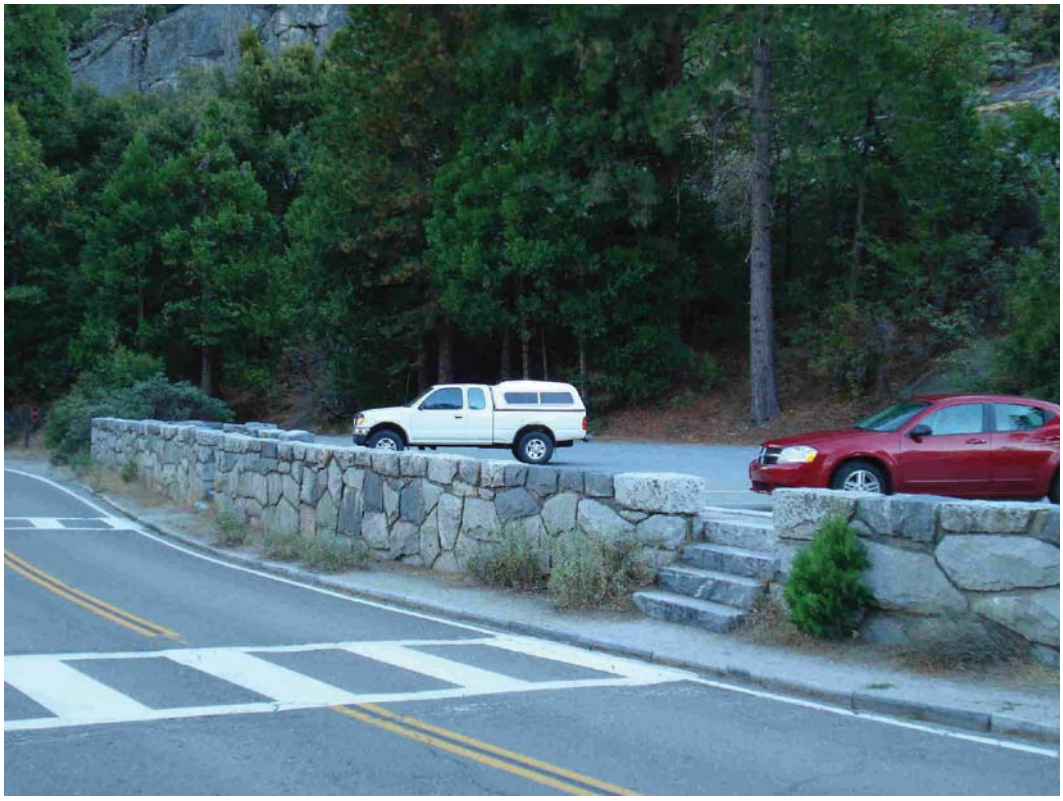
Failure Consequence:	LOW
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0917B: TUNNEL VIEW PARKING B

Retaining Wall Condition Photos



YOSE_0917B_0.000_P1_1.jpg

Wall ID:	**YOSE-0922-0-P1**		
Route Name:	GLACIER POINT PARKING		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1988
***Wall Rating:**	94	**Maintenance Action:**	No Action

Wall Description

Wall Function:	Cut Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Cantilevered concrete cut wall with stone veneer facing constructed directly above a high volume parking area high consequence of failure		

Wall Measurements

Wall Length (ft.):	121	**Face Area (sq.):**	916
Average Wall Height (ft.):	7	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	2

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; minor cracking and debonding of stone veneer	9
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on a bedrock or compacted fill material over shallow bedrock; no evidence of wall movement	10
CONCRETE 8.00	Unable to observe, but is likely to be in good condition	9
ARCHITECTURAL FACING 0.50	No distress blocks; minor cracking and debonding of mortar	8
CURB/BERM/DITCH 0.50	No distress to concrete curb	10
DOWNSLOPE 0.50	No distress to relatively narrow and flat slope	10
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to pavement; no shoulder	10
UPSLOPE 0.50	No distress to gently-sloping, lightly-vegetated slope	10

Repair Recommendations

Failure Consequence:	HIGH
Recommendation Narrative:	None
Repair Cost:	$0

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0922: GLACIER POINT PARKING

Retaining Wall Condition Photos

YOSE_0922_0.000_P1_1.jpg

Wall ID:	**YOSE-0922-0-P2**		
Route Name:	GLACIER POINT PARKING		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1988
***Wall Rating:**	91	**Maintenance Action:**	Maintenance

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Cantilever - Concrete
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Cantilevered concrete fill wall with a stone veneer facing wall directly supports the exit roadway from the parking area high consequence of failure		

Wall Measurements

Wall Length (ft.):	107	**Face Area (sq.):**	314
Average Wall Height (ft.):	2	**Face Angle (deg.):**	90
Maximum Wall Height (ft.):	8	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Good to excellent condition; minor cracking and debonding along joints; joint compound needs to be repaired to prevent distress to wall	8
WALL FOUNDATION MATERIAL 8.00	Appears to be founded on bedrock or compacted fill overlying shallow bedrock; no evidence of settlement or rotation	10
CONCRETE 8.00	Unable to observe; likely good to excellent condition	9
ARCHITECTURAL FACING 0.50	No observed distress to blocks; minor cracking along joints resulting in minor debonding	8
TRAFFIC BARRIER/FENCE 0.50	Integral concrete guard wall with a stone veneer facing; no observed distress; 75% of joint compound is severely degraded	8
CURB/BERM/DITCH 0.50	No distress to concrete curb or gutter	10
DOWNSLOPE 0.50	No distress to relatively flat, lightly-vegetated slope	10
LATERAL SLOPE 0.50	No distress; no evidence of movement; no erosion	10
ROAD/SIDEWALK/SHOULDER 0.50	No distress to pavement; no shoulder	10

Repair Recommendations

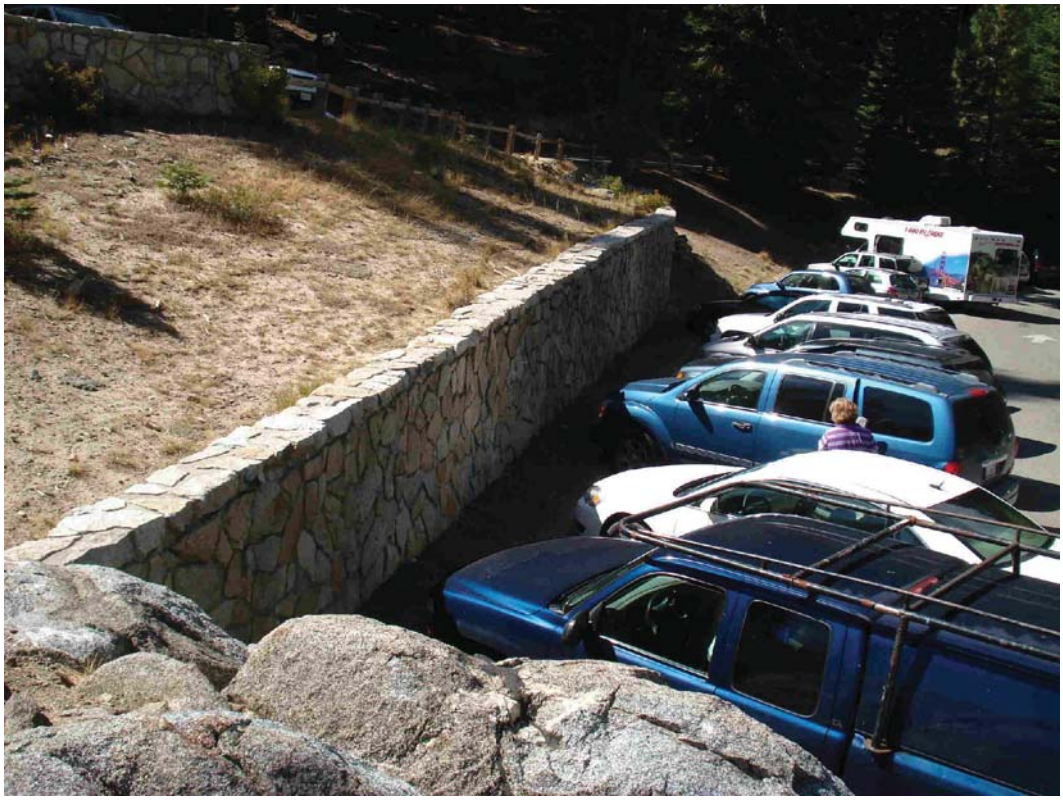
Failure Consequence:	HIGH
Recommendation Narrative:	Repair joint compound - 0.75(107 lnft)($40/lnft) = $3,210
Repair Cost:	$3,210

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0922: GLACIER POINT PARKING

Retaining Wall Condition Photos



YOSE_0922_0.000_P2_1.jpg

Wall ID:	**YOSE-0975-0-P1**		
Route Name:	HIGHWAY 120/140 INTERSECTION PARKING		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	70	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite stone mortared fill wall with 12-foot parapet at Contact Station Parking Lot.		

Wall Measurements

Wall Length (ft.):	11	**Face Area (sq.):**	55
Average Wall Height (ft.):	5	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, severe foundation undermining, put performing as intended in non-critical area.	7
WALL FOUNDATION MATERIAL 8.00	Severe undermining of footing, about 2-feet in height exposed below the toe of the wall, but "hanging" in there, bridged between two boulders, scoured from stream erosion, but offset from parking at a non-critical location.	5
MORTAR 8.00	Cracking at rocks, moderate debonding, 6-8inches wide, occasional spalling and missing pieces, holding at the top of the wall, performing as intended. Minor patching, improving wall performance.	8
STONE MASONRY 8.00	Rounded granite cobbles, moderate surface weathering, missing section at foundation undermining area.	8
WALL DRAINS 0.50	None observed, surface erosion affecting wall performance.	8
LATERAL SLOPE 0.50	Two large boulders at the ends of the wall, very stable.	9
ROAD/SIDEWALK/SHOULDER 1.00	Shoulder is unpaved above the wall, boulders protecting erosion at the top of the wall.	6
DOWNSLOPE 1.00	Stream channel, eroding foundation, appears to overtop wall during floods and normal high water mark near the top of the wall.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Repair at the same time as P02 (similar repairs). Fill foundation voids with lean concrete backfill (61401-0000): 2'x5'x3'=30 ft2 x$175/cyd= $5,250. Riprap protection in front at the edge of the stream- class 6 (25101-6000)= 11ftx3ftx1ftx$120/cyd=$3960.
Repair Cost:	$11,370

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0975: HIGHWAY 120/140 INTERSECTION PARKING

Retaining Wall Condition Photos

YOSE_0975_0.000_P1_1.jpg

Wall ID:	**YOSE-0975-0-P2**		
Route Name:	HIGHWAY 120/140 INTERSECTION PARKING		
Inspection Date:	September 27, 2007	**Approximate Year Built:**	1960
***Wall Rating:**	70	**Maintenance Action:**	Repair Elements

Wall Description

Wall Function:	Fill Wall	**Primary Wall Type:**	Gravity - Mortared Stone
Surface Treatment:		**Secondary Wall Type:**	
Secondary Surface Treatment:		**Architectural Facing:**	
General Description:	Granite mortared fill wall with 12-foot parapet at Contact Station Parking Lot.		

Wall Measurements

Wall Length (ft.):	40	**Face Area (sq.):**	163
Average Wall Height (ft.):	4	**Face Angle (deg.):**	85
Maximum Wall Height (ft.):	5	**Vertical Offset (ft.):**	0

Assessed Elements

Element (Weighting Factor)	Narrative	Condition Rating (0 - 10)
PERFORMANCE 8.00	Fair condition, severe foundation undermining, but performing as intended in non-critical area.	7
WALL FOUNDATION MATERIAL 8.00	Severe undermining of footing, about 2-foot height exposed below toe of wall, but bridging between boulders and side slope, scoured from stream erosion, but offset from parking at a non-critical location.	5
MORTAR 8.00	Cracking at rocks, moderate debonding, 6-8-inches wide, occasional spalling and missing pieces, holding at the top of the wall, performing as intended, minor patching improving wall performance.	8
STONE MASONRY 8.00	Rounded granite cobbles, moderate surface weathering, missing stones at the foundation undermining location.	8
WALL DRAINS 0.50	None observed, surface erosion issues.	8
LATERAL SLOPE 0.50	Large boulder at the begin of wall and granular slope at the end of the wall, not impacting wall performance.	9
DOWNSLOPE 1.00	Stream channel, eroding foundation of wall, high water marks look like overtopping occurs during floods, normal high water mark is near the top of the wall.	7
ROAD/SIDEWALK/SHOULDER 1.00	Shoulder is unpaved above wall with boulders protecting the wall from erosion at the top of the wall.	7

Repair Recommendations

Failure Consequence:	LOW
Recommendation Narrative:	Repair at the same time as P02 (similar repairs). Fill foundation voids with concrete: 2'x10'x3'=30 ft2 = $2,500. Riprap protection in front at the edge of the stream= $2,000. Excavator @ 4 hrs @ $150/hr = $600. Dump truck @4hrs@$100/hr = $400. Labor @4hrs@$55
Repair Cost:	$6,380

2007 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Yosemite National Park

ROUTE 0975: HIGHWAY 120/140 INTERSECTION PARKING

Retaining Wall Condition Photos

YOSE_0975_0.000_P2_1.jpg

Appendix A
Summary of WIP Definitions

Yosemite National Park

Federal Lands Highway
Road Inventory Program

Appendix A

Summary of WIP Definitions and Assessment Categories

Wall Naming Convention

Unique "Wall Identification" names were assigned to the retaining walls that were inventoried. The Wall Identification includes the Park Name, the RIP Route Number (e.g., **0013**), the beginning milepoint of a wall (e.g., **0.622**) and the side of the road the wall is located on (e.g., **L**.) relative to the primary direction of travel (direction of increasing mileposts). Thus, a typical wall identified would have the following format: **YOSE-0013-0.622-L.**

For roadways not in RIP, park-supplied route numbers were used or the convention RRR#. Similarly, for parking areas not in RIP, the park-supplied parking area number or the convention PPP# was used. Also for parking areas, walls are numbered in ascending order as they are encountered when traveling counterclockwise around the parking area (most common direction of traffic flow). Parking area walls are designated P1, P2, P3, etc. as new walls are encountered.

- NPS Retaining Wall Inventory Program Field Guide (WIFG)-

Retaining Wall Acceptance Criteria

*All classes of paved roadways and parking areas included in the RIP Route Investigation Report and/or identified by park staff.
*Walls must reside within the constructed roadway/parking area prism.
*Maximum wall height, including only that portion actively retaining soil and/or rock, must be ≥ 4 ft. (>6ft for culvert headwalls).
*Consider known/verifiable wall embedment in determining maximum retaining wall height. Include fully buried retaining structures.
*Walls have an internal wall face angle ≥ 45˚ (≥ 1H:1V face slope ratio).
*Include all walls where the intent is to support/protect the travelway, and where failure would require replacement with a retaining wall.

Definitions

Design Criteria	Measure of how well current design criteria are satisfied: **None** - Does not meet any known standards. **Non-AASHTO** - Does not meet AASHTO, but is consistent with other structures of its type/period with good performance. **AASHTO** - Apparently meets current AASHTO Geometric, Design, Materials, and Construction Standards.
Consequence of Failure	**Low** - No loss of roadway, no to low public risk, no impact to traffic during wall repair/replacement **Moderate**- Hourly to short-term closure of roadway, low-to-moderate public risk, multiple alternate routes available **High**- Seasonal to long-term loss of roadway, substantial loss-of-life risk, no alternate routes available
Action	Select from: **No Action, Monitor, Maintenance, Repair Elements, Replace Elements,** and **Replace Wall**
Weighting Factor	Weighting Factor to be applied to the Condition Rating (CR). When indicated on the Condition Assessment Input Form: WF=**0.5** for CR=8-10; WF=**1.0** for CR=4-7; and WF=**5** for CR=1-3.
Data Reliability	Estimate of how well observed conditions represent wall performance, and if additional investigations may be warranted. **1-Poor** Conditions cannot be sufficiently observed to rate element(s), warranting additional investigations to better define element performance and/or to determine the cause(s) or poor performance. **2-Good** Observed conditions are sufficient to rate the conditions of wall element(s); however, additional investigations would be useful to better understand element performance. **3-Very Good** Observed conditions clearly describe wall performance. Additional investigations are not needed.

Wall Function Codes

[**FW**] Fill Wall	[**BW**] Bridge Wall	[**SW**] Switchback Wall
[**CW**] Cut Wall	[**HW**] Head Wall	[**SP**] Slope Protection **[FL]** Flood Wall

Wall Type Codes

[**AH**] Anchor, Tieback H-Pile	[**CC**] Crib, Concrete	[**MG**] MSE, Geosynthetic Wrapped Face
[**AM**] Anchor, Micropile	[**CM**] Crib, Metal	[**MP**] MSE, Precast Panel
[**AS**] Anchor, Tieback Sheet Pile	[**CT**] Crib, Timber	[**MS**] MSE, Segmental Block
[**BC**] Bin, Concrete	[**GB**] Gravity, Concrete Block/ Brick	[**MW**] MSE, Welded Wire Face
[**BM**] Bin, Metal	[**GC**] Gravity, Mass Concrete	[**SN**] Soil Nail
[**CL**] Cantilever, Concrete	[**GD**] Gravity, Dry Stone	[**TP**] Tangent/ Secant Pile
[**CP**] Cantilever, Soldier Pile	[**GG**] Gravity, Gabion	[**OT**] Other, User Defined
[**CS**] Cantilever, Sheet Pile	[**GM**] Gravity, Mortared Stone	[**NO**] None

Architectural Facing Type Codes

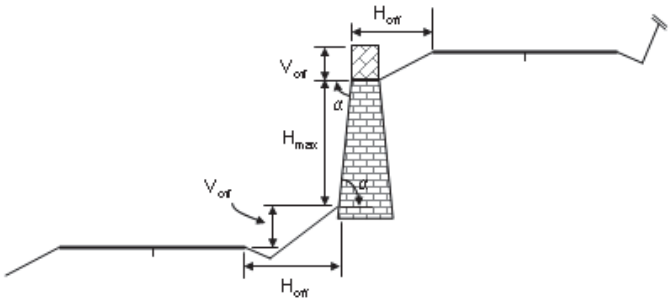
[**BV**] Brick Veneer	[**PF**] Planted Face	[**SS**] Simulated Stone
[**CO**] Cementitious Overlay	[**SC**] Sculpted Shotcrete	[**SV**] Stone Veneer
[**FF**] Fractured Fin Concrete	[**SH**] Shotcrete (nozzle finish)	[**TI**] Timber
[**FL**] Formlined Concrete	[**SM**] Steel/Metal	[**OT**] Other, User Defined
[**PC**] Plain Concrete (float finish or light texture)	[**SO**] Stone	[**NO**] None

Surface Treatment Codes

[**BG**] Bush Gun (tool-textured concrete)	[**PS**] Preservative	[**WS**] Weathering Steel
[**CA**] Color Additive	[**SE**] Silane Sealer	[**OT**] Other, User Defined
[**GL**] Galvanized	[**ST**] Stain	[**NO**] None
[**PA**] Painted	[**TR**] Tar Coated	

Condition Ratings	
Condition Ratings apply to all Primary and Secondary Wall Elements, and are intended to assist in consistently defining element **severity**, **extent**, and **repair/replace urgency** of wall element distresses.	
9-10 (Excellent)	-Any defects are minor and are within normal range for *newly constructed or fabricated* elements. -Defects may include those typically caused from fabrication or construction.
7-8 (Good)	-Low-to-moderate extent of low severity distress. -Distress present does not significantly compromise the element function, nor is there significantly severe distress to major structural components of an element.
5-6 (Fair)	-High extent of low severity distress and/or low-to-medium extent of medium to high severity distress. -Distress present does not compromise element function, but lack of treatment may lead to impaired function/elevated risk of element failure in the near term.
3-4 (Poor)	-Medium-to-high extent of medium-to-high severity distress. -Distress present threatens element function, and strength is obviously compromised and/or structural analysis is warranted. -The element condition does not pose an immediate threat to wall stability and road closure is not necessary.
1-2 (Critical)	-Medium-to-high extent of high severity distress. -Element is no longer serving intended function. Element performance threatening overall stability of the wall at the time of inspection.

Wall Performance Condition Ratings		
Performance	Evaluation of overall wall performance as indicated by observations not necessarily captured by observed distresses for specific elements, including global wall distresses (rotation, settlement, translation, displacement, etc.) and/or evidence of prior repairs that may further indicate component problems.	**Good to Excellent** - No observation of distresses not already captured by individual element condition assessment. No combination of element distresses indicating unseen problems or creating significant performance problems. No history of remediation or repair to wall or adjacent elements.
		Fair - Some observed global distress is not associated with specific elements. Some observation of element distress combinations that indicate wall component problems. Minor work on primary elements or major work on secondary elements has occurred improving overall wall function.
		Poor to Critical - Global wall rotation, settlement, and/or overturning is readily apparent. Combined element distresses clearly indicate serious stability problems with components or global wall stability. Major repairs have occurred to wall structural elements, though functionality has not improved significantly.



H_{max}	Maximum exposed wall height, ft
V_{off}	Average vertical distance from pavement to cut wall toe or groundline at top of fill wall (+ above/ - below roadway), ft
H_{off}	Horizontal distance to wall face from edge of roadway, ft
α	Wall face angle measured from the horizontal, degrees
L	Maximum earth retaining length of the wall (excluding guardwalls). Wall length is the actual length of the structure, not simply the projected length along the roadway, ft