Mn/DOT

Historic Roadside Property and Safety Rest Area

Preservation and Restoration Report

Spruce Creek Culvert

CS 1602 (Bridge 8292)

SHPO INV# CK-UOG-045

December 2001

FINAL

SMSQ Architects 205 S. Water◆ Street Northfield, MN 55057 ◆ 507-645-4461

Comments on SMSQ Architects Preservation and Restoration Report of December 2001

This document is intended to accompany the treatment report prepared by SMSQ Architects (December 2001) for Spruce Creek Culvert (Bridge 8292).

A.2. Recommendations [Overall]

Stabilization: SMSQ states that repointing should follow "preservation standards." Although it is probably implied in this phrase, we would like to emphasize that all repair work should use carefully chosen replacement stones, appropriate mortar type and color, and correct joint treatment (width, raking, etc.) so that the modern work does not detract from the bridge's original craftsmanship.

Restoration: Given the high traffic volume, we disagree that the original pedestrian path over the bridge should be restored. Banning pedestrians and bicycles from the bridge and thereby allowing all available space to be used by vehicles may reduce the need to widen or replace the bridge. (Alternative pedestrian and bike crossing of Spruce Creek would have to be created elsewhere. A local road crosses the creek about 250' downstream.) See also comments regarding the original design of the stone piers and wood rails under Plans and Sketches below.

Enhancement: We agree that the current steel and wood guardrail should be replaced with an FHWA-approved guardrail that is sensitive to the historic design. Even though most motorists may be passing by too fast to see the bridge, the bridge will continue to be seen and appreciated by park visitors who are on foot. We disagree that the guardrail should be positioned so that a path over the bridge is reestablished. (See Restoration Recommendations above.)

3. Plans and Sketches

No original plans for the Spruce Creek Culvert had been located at the time of the original December 1998 Historic Roadside Development Inventory. Since then, we have found one early plan sheet, dated June 19, 1935.

(Note: The 1935 plan does not provide conclusive evidence as to the name the bridge designer. The only name that appears on the sheet is "Barber" in a box labeled "Checked by." Edward W. Barber was a landscape architect with the Minnesota Central Design Office of the National Park Service. He was a member of the team that designed the federal relief-built structures in Cascade River Wayside, as well as those at Gooseberry Falls State Park, Whitewater State Park, Flandrau State Park, and elsewhere.)

The 1935 plan sheet does not appear to be a final drawing. It shows a bridge railing different than the railing seen on the historical photo of the bridge in the Nichols photo album (vol. 5, pg. 22). The plan shows bridge railings that are about 130' long and have 20 stone piers linked by log rails. In the plan, the railings extend outward from the ends of the bridge to form highway guardrails. In the historical photo, however, each railing has only four stone piers for a total of 8 piers. It is likely that the other 12 stone piers shown in the drawing were never built. SMSQ notes in its report, however, that there are metal brackets on the ends of the railings that may once have attached to some kind of guardrail. SMSQ also notes that a 1973 Mn/DOT plan for guardrail changes contains the phrase "remove 20 stone pillars." (It is possible that the 1973 Mn/DOT directive to remove 20 stone pillars was made using the June 19, 1935, plan sheet, rather than final or as-built plans or field observations, and that Mn/DOT therefore thought

there were 20 piers to remove at the time the 1973 work plan was drawn.) As SMSQ indicates, further photo and plan research is needed before treatment is undertaken.

4.1. Spatial Organization and Land Patterns

See comments about 1) pedestrian and bicycle use; and 2) the fact that the current guardrail blocks the view of the bridge, under Enhancement Recommendations above.

SMSQ indicates that the bridge can best be seen only from the creek bed "requiring a walk along the highway edge from some distance." It may be that state park trails already bring hikers within view of the bridge, or that such trails could be created in the future.

4.4. Circulation

Sidewalks and Paths: See comments about pedestrian and bicycle use under Enhancement Recommendations above. We disagree that a park trail should bring hikers across the bridge. However, a park trail could bring hikers to a place where they could view the bridge.

4.6. Structures

4.6.1. North Shoulder and Path: See comments about 1) pedestrian and bicycle use; and 2) the fact that the current guardrail blocks the view of the bridge, under Enhancement Recommendations above. Unlike some Historic Roadside Development stone bridges such as those near Mille Lacs Lake (T.H. 169), the Spruce Creek Culvert was not designed to have a stone curb on the inside (toward the roadway). Therefore the elevation of the paving material on the bridge deck is not as critical as it is on the Mille Lacs bridges -- the paving and associated gravel should not, however, obscure the stonework.

4.6.2. South Shoulder and Path: See comments about 1) pedestrian and bicycle use; and 2) the fact that the current guardrail blocks the view of the bridge, under Enhancement Recommendations above.

4.6.3. North Wall Piers and Wood Railing: See comments regarding the original design of the stone piers and wood rails under Plans and Sketches above.

4.6.5. South Wall Piers and Wood Railing: See comments regarding the original design of the stone piers and wood rails under Plans and Sketches above.

4.7. Furnishings and Objects

Recommendations: The bridge merits a sensitively-designed interpretive marker describing the designers, builders, and significance. The interpretive marker should be carefully designed and sited so that it intrudes as little as possible on the landscape. The marker should probably be placed along a park trail that brings hikers within view of the bridge.

4.9. Additional Verifications Required

See comments regarding the original design of the stone piers and wood rails under Plans and Sketches above. We agree that further research is needed before treatment is undertaken.

4.10. Site Enhancements
See comments about 1) pedestrian and bicycle use; and 2) the fact that the current guardrail blocks the view of the bridge, under Enhancement Recommendations above.

6. Summary

We would add that the bridge dates from the original MHD, CCC, and National Park Service development of Cascade River Wayside (predecessor to Cascade River State Park) and is an excellent example of the National Park Service Rustic Style. While it is no longer viable for motorists to view the bridge, it could be viewed by hikers (and interpreted to them). This is a Rustic Style state park asset that should not be under-valued.

For further information on the development of Cascade River Wayside, including construction of the Spruce Creek Culvert, see the National Register nomination of Cascade River Wayside prepared by Gemini Research in 2003. Copies are available from the Mn/DOT Site Development Unit.

A. Introduction

SPRUCE CREEK CULVERT
STABILIZATION / PRESERVATION / RESTORATION

1. GENERAL SITE DESCRIPTION

Location, History
Conditions affecting stabilization / preservation / restoration potential

Located within the Cascade State Park and Superior National Forest, this stone masonry culvert structure often goes unnoticed, screened from view by modern highway guardrails that have been placed immediately in front of the historic railings. Unfortunately, the best scenic vantage point is from the creek banks, with no provision for off-roadway access or parking nearby. The culvert bridge with stone masonry and timber rails was constructed in 1932-35 by the Civilian Conservation Corps (CCC). Located along a narrow section of two lane roadway on Trunk Highway 61 south of Grand Marais, the most likely condition affecting restoration potential is pressure to update / widen the highway. The existing structure with guardrails does not adequately provide room for full roadway shoulders, and pedestrian and bicycle pathways are not safely accommodated. Yet, much of the original historic fabric is intact, with high potential for restoration of the historic elements without roadway changes.

Field Survey Date(s): October 2, 1999, February 17, 2000, and May 28, 2000

2. RECOMMENDATIONS: *Stabilization, Preservation, Restoration (and Enhancements)*

- **Stabilization** (immediate need intended to prevent loss of historic fabric):

  Summer 2002: Remove vegetation growing immediately adjacent to walls. Remove and store existing wood rails.
  Summer 2003: Repair stone curb / cap at wall between piers at north and south. Repair and repoint existing masonry piers. Replace repaired existing and missing wood rails. Selectively repoint masonry stonework, following preservation standards. Verify structural stability of galvanized culverts and condition of rubble fill below roadway.

- **Preservation** (Recommended in near future to preserve historic features):

  2 to 4 years: Provide roadway shoulder drainage away from stone walls. Verify needs for stream erosion controls. Provide safety warning signs for narrowed shoulders.

- **Restoration** (restore historic materials to a specific date--typically original era):

  2 to 4 years: Reconstruct gravel pathway. Reconstruct missing rail and stone piers at north and south ends of walls. Repoint all masonry to full raked depth (1" typical) and clean masonry surfaces. Restore all wood railings and attachments.

- **Enhancement** (pragmatic improvement important to current use of the site that is consistent with the preservation and restoration work, but not strictly historical work)

  2 to 4 years: Replace the existing guardrail with one that permits a more open view of the historic stone and wood culvert rail. This guardrail should be placed such that it permits a minimal walking path between the guardrail and culvert rail. Remove downed vegetation and add indigenous site landscape materials. Introduce "Spruce Creek" signage.

3. PLANS AND SKETCHES

Property analysis with organizational elements and character-defining features

4. DEFINING CHARACTERISTICS

Character-defining features, existing or missing
Current condition & noncontributing features

4.1 Spatial Organization and Land Patterns

The Spruce Creek Culvert bridges the Spruce Creek within a heavily forested area near Lake Superior, located on a heavily traveled two-lane section of Trunk Highway 61. A number of small culverts were constructed in the area, completed within a few years of the Spruce Creek Culvert. Of these, the Spruce Creek Culvert remains and provides an “introduction” to the Cascade River, initiating the rustic roadside theme for the Cascade State Park.

This section of roadway lacks a full roadway shoulder and has sloping roadway edges, making for unsafe pedestrian use. Today we find non-historic guardrails placed immediately in front of the historic stone and wood rails. This creates a condition without adequate room for a pedestrian pathway behind the guardrail, requiring pedestrians and bicyclists to cross the culvert on the roadway edge. There is no nearby parking, and pedestrian access near the culvert is further inadvisable given the roadway traffic volume and speed. The guardrail also blocks the view of the historic stone and wood railing. The picturesque character of the culvert bridge is seen only from the creek bed, requiring a walk along the highway edge from some distance. Views include wooded upstream areas adjoining the creek, with the view of Lake Superior concealed by forest.

Recommendations:
None.

4.2 Topography

The roadway is located roughly 8-10 feet above the adjacent grassy ditch with slopes beginning at the roadway and continuing down to the banks of the Spruce Creek (see photographs). There is a lower, level area adjacent to the water from which to view the culvert and access the creek from either lakeside or upstream sides.

Recommendations:
None.

4.3 Vegetation & Landscape Features

Assessment: Dense vegetation dominates the visual character of the site, screening views of Lake Superior. The site’s vegetation is of an informal nature, typical of its location in the Superior National Forest. Birch, balsam, cedar, and spruce timber are found, with no evident landscape planting scheme. A number of felled or downed trees were seen adjacent to the culvert structure at the time of field survey, with some vegetation growing adjacent to the

culvert's stone walls. The natural landscape provides a picturesque setting for the rustic stone masonry and timber structure of the culvert.

Recommendations:
(S) Remove vegetation immediately adjacent to stone walls (other than ground cover).
(P) None.
(R) None.
(E) Remove downed vegetation and add indigenous site landscape materials.

4.4 Circulation

Assessment--Vehicle Circulation: Trunk Highway 61 at the Spruce Creek Culvert site is relatively narrow, with two undivided traffic lanes and a paved road edge that constricts still more at the culvert bridge (see photograph K), where the shoulder / road edge is only a few feet wide. Galvanized metal guardrails with timber posts are placed near the edge of the roadway, immediately in front of the historic culvert rail. The roadway shoulder is not wide enough for vehicles to stop at the culvert, although it widens on either end (even stopping at this point seems unsafe with sloping narrow shoulders and significant traffic volume).

Assessment--Sidewalks & Paths: The space between the historic posts and rails and the galvanized guardrail is not usable as a pedestrian or bicycle pathway. It may be possible to extend an existing park trail (or create new) to reach this site.

Recommendations:
(E) Install signage to encourage lower traffic speeds near the culvert. Investigate pedestrian trail extension from park (also see 4.6.1 and 4.6.2 NORTH/SOUTH SHOULDER AND PATH).

4.5 Water Features

Assessment: Spruce Creek flows into Lake Superior, some 900+ feet away, running through the Culvert from northwest to southeast. Flooding concerns were not noted at the time(s) of field survey. Historic records indicate original installation of riprap (not seen during survey), presumably for erosion control on the upstream side of the culvert. Erosion is evident on the downstream side, from water flowing against the lowest edge of the embankment at the northeast abutment,

Recommendations (also see 4.6 *Structures*)**:**
(S) Verify stream bank erosion controls.
(P) Install naturalistic rock erosion control embankment.

4.6 Structures

4.6.1 NORTH SHOULDER AND PATH:

Assessment: The roadway shoulder narrows significantly at the culvert, due to the placement of the newer guardrail immediately in front of the historic railing (roadway side). This guardrail obscures the view of the historic rail, placed such that pedestrian or bicycle traffic is restricted to the point of awkward or unsafe use. A different design for the guardrail may permit a minimal pathway behind the guardrail, also allowing a more open view of the historic rail from the roadway.

Recommendations:
(S) Repair stone curb / cap between piers along edge of the roadway shoulder.
(P) Provide roadway gutter drainage away from stone walls (indirect filtration of runoff enroute to creek).
(R) Reconstruct pathway behind guardrail adjacent to timber rail, (E) replacing standard guardrail with design permitting better view of the historic rail.

4.6.2 SOUTH SHOULDER AND PATH:

Assessment: See *North Shoulder and Path* (4.6.1).

Recommendations:
(S) Repair stone curb / cap between piers.
(P) Provide roadway gutter drainage away from stone walls (indirect filtration of runoff enroute to creek).
(R) Reconstruct pathway behind guardrail adjacent to timber rail, (E) replacing standard guardrail with design permitting better view of the historic rail.

4.6.3 NORTH WALL PIERS AND WOOD RAILING:

Assessment: The stone masonry culvert has a top rail constructed of stone piers extending above the top of the culvert / bridge wall. The stone piers of the culvert top hold timber rails, a highly significant feature of the wall. The masonry piers have a number of areas with damaged masonry and mortar. The connections to the railings appear to be rusted, and a number of the wood railings have fallen down, are missing or in disrepair. The metal hook connections at the end piers, and historic reference to stone pillar removal provides strong evidence that at least one additional bay originally existed at each end of each bridge rail (although there could have been more than one bay). Documentation from a 1973 construction project indicates that a 150 foot long guardrail was previously constructed at this site: Demolition notes include “remove 20 stone pillars.” One historic photo of the site shows a guardrail extending beyond the ends of the stone and wood culvert rail. Additional historic documentation is needed to determine the original design.

Recommendations:
(S) Repair and repoint existing stone masonry piers. Replace rotted or missing wood rails and repair and paint metal hook connectors.
(P) None.
(R) Reconstruct missing stone piers and railings.

4.6.4 NORTH WALL STONEWORK:

Assessment: Previous masonry mortar repairs do not match the original rustic masonry joints in style or color. The quarry source for the original stone is not identified in the historic documents that we reviewed.

Recommendations:
(S) Repair areas of missing mortar with selective repointing.
(P) None.
(R) Repair broken or missing masonry. Repoint all mortar joints to full raked depth of original. Clean all masonry surfaces.

4.6.5 SOUTH WALL PIERS AND WOOD RAILING:

Assessment: See *North Wall Piers and Wood Railing* (4.6.3).

Recommendations:
(S) Repair and repoint existing stone masonry piers. Repair and replace selected wood rails.
(P) None.
(R) Reconstruct missing end railings and stone piers.

4.6.6 SOUTH WALL STONEWORK:

Assessment: See *North Wall Stonework* (4.6.4).

Recommendations:
(S) Repair with selective repointing.
(P) None.
(R) Repair broken or missing masonry. Repoint all mortar joints to full raked depth of original. Clean all masonry surfaces.

4.6.7 CULVERT STRUCTURE:

Assessment: The culvert structure did not present any obvious signs of disrepair during cursory examination on the dates of field survey.

Recommendations:

(S) Examine and test galvanized culvert structure. Verify condition of drainage at culvert structure. Verify condition of rubble fill below roadway.
(P) None.
(R) None.

4.7 Furnishings and Objects

Assessment: (Signpost) A modern highway sign for "Spruce Creek" is found on the site. No evidence suggests that a culvert plaque was present originally, nor any other identifying signage.

Recommendations:
(S) None.
(P) None.
(E) Introduce "Spruce Creek" signage.

4.8 Accessibility Considerations

Assessment: This site is primarily used by vehicles (with some bicycle usage), but without safe pedestrian pathways or adjacent parking. Therefore, wheelchair accessibility to the culvert area or lower area of the river is currently not an achievable goal.

Recommendations:
Permit trail access to the site from adjacent properties for off-highway enjoyment of this historic structure (also see 4.4 Circulation).

4.9 Additional Verifications Required

The "Traffic Barrier-Structural Plate Beam Guardrail" construction document dated 1973, includes a note to "Remove 20 Stone Pillars," included in specifications for installation of a new guardrail. The one historic photo of the culvert from the A.R. Nichols photo album shows a rail extending from each end of the masonry piers, but it is unclear what this original design entailed, or what materials were used. The presence of distinctive metal brackets at each culvert end pier indicates that wood rails once further extended an undetermined distance with unknown end attachment. Historic site plans or elevations for the culvert are not available, so it cannot be determined how or what distance the end piers were extended. The site diagram indicates at least one additional bay at each end, but this may actually have extended into a guardrail of significant additional length. Additional historic research must be conducted in order to determine the original design detail.

The culvert structure does not display obvious signs of deterioration, nor are deficiencies noted in previous structural surveys that were reviewed. However, this cursory evaluation does not evaluate fully its structural integrity, and requires further investigation.

4.10 Site Enhancements

Recommendations:

(E-1) Replace the existing guardrail with one that permits a more open view of the historic stone and wood culvert rail. This guardrail should be placed such that it permits a minimal walking path between the guardrail and culvert rail.
(E-2) Remove downed vegetation and add indigenous site landscape materials.
(E-3) Introduce “Spruce Creek” signage.

4.11 Health & Safety Issues

Pedestrians who walk along this site from the nearby resort (or bicyclists) must cross the culvert on the roadway side of the guardrail, adjacent to traffic. It appears that the roadway width between the north and south culvert railings may not permit room for two traffic lanes plus adequate shoulder or path. Pedestrian safety along the culvert area is therefore not ensured, and wheelchair accessibility is not currently possible. Traffic signs should indicate the need to slow for safety reasons. The addition of roadway gutters will provide vegetative filtration of roadway runoff at the culvert.

5. COST ISSUES

See Section E “Site Condition Recommended Action and Cost Analysis Summary.

6. SUMMARY

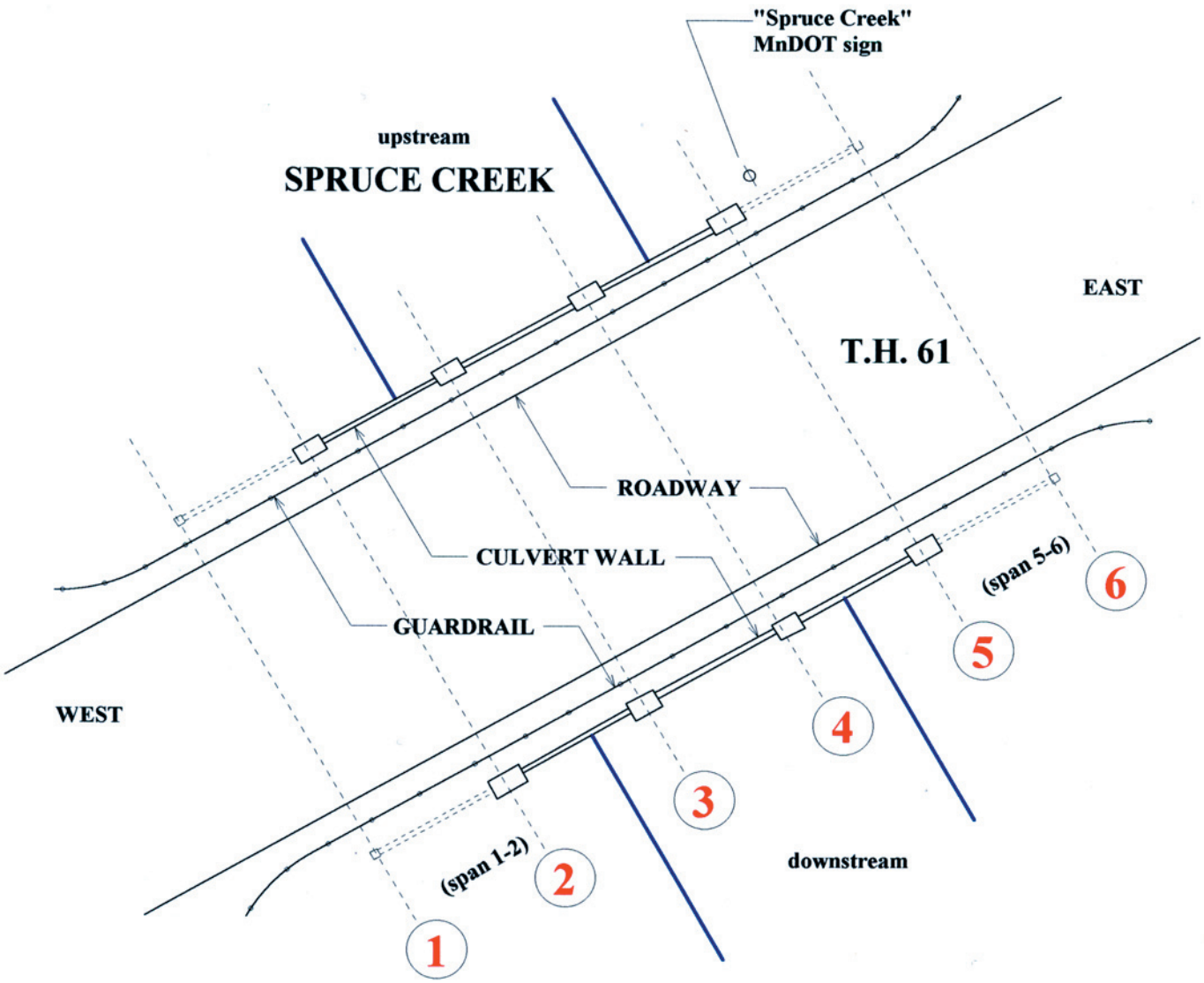
The Spruce Creek Culvert is one of only a few remaining smaller scale historic masonry culvert bridges along Trunk Highway 61. It is remarkable for its remaining intact timber railing elements. The stone faced culvert is an almost unnoticed beginning of the scenic highway’s Cascade area aesthetic, culminating at the Cascade River Overlook.

Efforts should be taken to incorporate this historic structure into future roadway plans in a respectful manner such that it could be enjoyed by future highway visitors. If this section of roadway were widened at a future date, the roadway should be sufficiently relocated to permit the existing historic culvert bridge to remain as a fishing bridge and historic amenity, accessible from adjacent properties for both residents and visitors.

Safety is a primary concern at this site with its narrow shoulders, now utilized by North Shore bicyclists, walkers, and joggers. We suggest slowing traffic through signage, and also defining a usable shoulder pathway with improved guardrails. More appropriately guardrails would permit

B. Plans and Sketches

1. SITE DIAGRAM



SPRUCE CREEK CULVERT
SITE DIAGRAM

2. FEATURES INVENTORY

Elements	Currently Present? (Y/N)	Is it Historic? (Y/N)	Historic Feature Missing? (Y)	Comments	Ranking
Spatial Organization and Land Patterns					
off site impacts (adjacent uses)				(1)	
functional relationships				(2)	
visual relationships				(3)	
cultural landscape limits (land acquisition)					
Topography					
character -defining feature				(4)	
non-contributing corrective work					
Vegetation					
trees	Y			(5)	**
other vegetation	Y				
Circulation					
access road and internal roadway	N				
highway	Y			(6)	*
parking areas	N				
pedestrian walks	N				
paths and trails	N				
Water Features					
river / lake	Y			(7)	
Structures					
bath house	N				
bridge/culvert	Y	Y		(8)	***
cave	N				
dam	N				
dock	N				
embankment	N				
fireplace(s), other	N				
fireplace(s), stone	N				
footbridge	N				
foundation of building	N				
guardrail, stone	N				
guardrail, other	Y	N		(9)	
info booth	N				
other structure	N				
overlook wall	N				
paving, concrete	N				
paving, flagstone	N				
paving, stone curb	N				
paving, concrete curb	N				
picnic shelter(s)	N				
privies	N				
railing, metal	N				
railing, stone	Y	Y	Y	(10)	*****
railing, wood	Y	Y	Y	(11)	*****

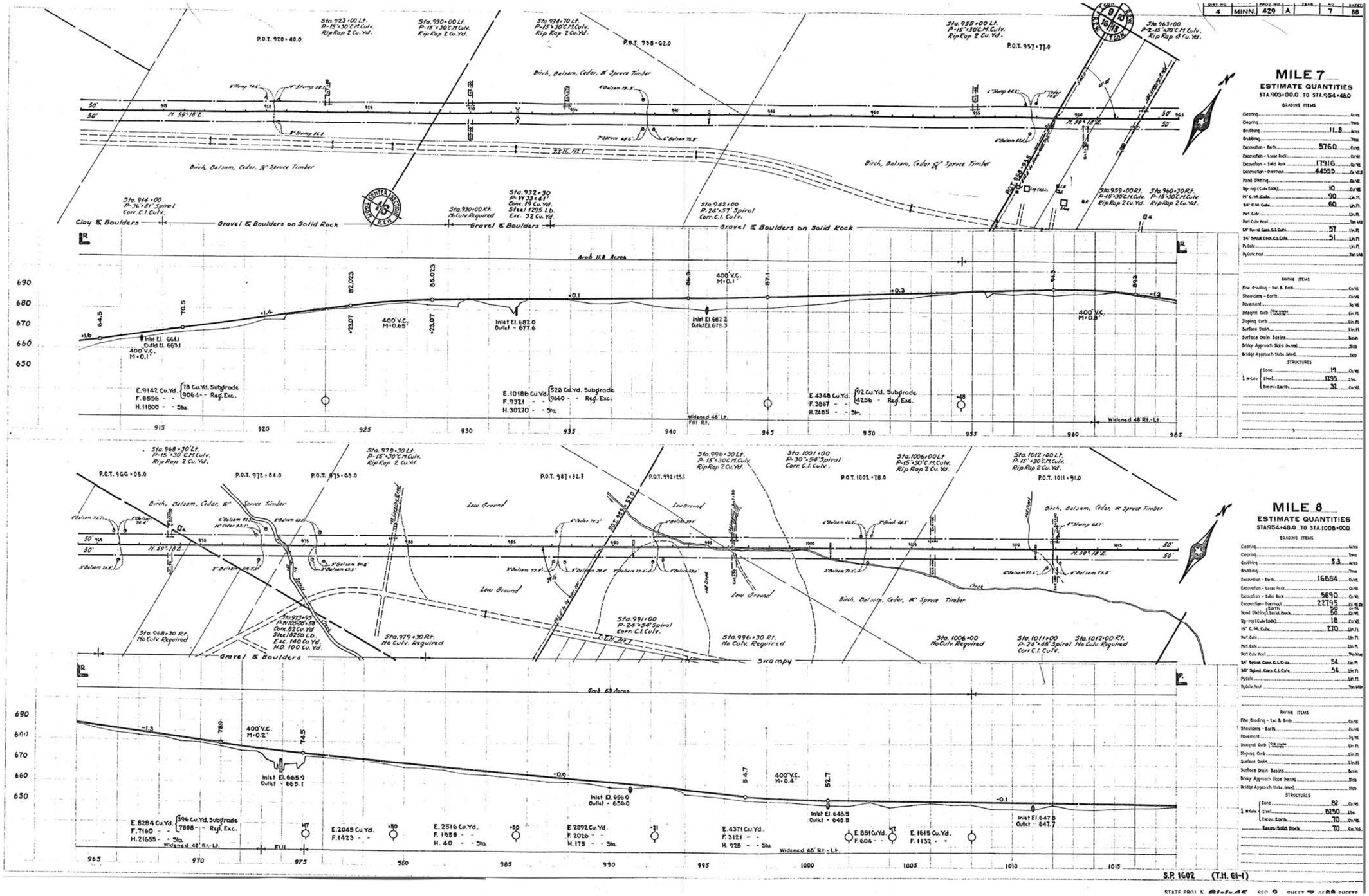
2. FEATURES INVENTORY, *continued*

Elements	Currently Present? (Y/N)	Is it Historic? (Y/N)	Historic Feature Missing? (Y)	Comments	Ranking
refuse container(s), stone	N				
restroom building	N				
rock garden	N				
sea wall	N				
sidewalk, concrete	N				
sidewalk, brick pavers	N				
sidewalk, stone	N				
sidewalk, stone pavers (flagstone)	N				
spring water outlet	N				
storage building	N				
trail steps	N				
wall, stone	N				
wall, retaining	N				
Furnishings and Objects					
bench(es), stone	N				
bench(es), other	N				
council ring	N				
drinking fountain(s)	N				
flagpole(s), other	N				
flagpole, stone	N				
gravestone	N				
info board	N				
marker or plaque	N				
other feature	N				
picnic tables(s), other	N				
picnic tables(s), stone	N				
signpost, other	Y	N	Y	(12)	
signpost, stone	N				
statue (sculpture)	N				
well/pump	N				
Accessibility Considerations					
Not applicable without pedestrian pathway				(13)	
Health and Safety Considerations					
No pedestrian access behind guardrail				(14)	
Environmental Considerations					
Roadway gutters will permit vegetation filtration of run-off from roadway.					
Other considerations					
Historic Plans not available				(15)	
Historic Features Ranking					
* Feature not immediately threatened					
** Feature currently requiring maintenance.					
*** Character defining feature currently requiring repair.					
**** Significant feature in danger of loss in near future.					
***** Highly significant feature is severely compromised or threatened by immediate loss.					

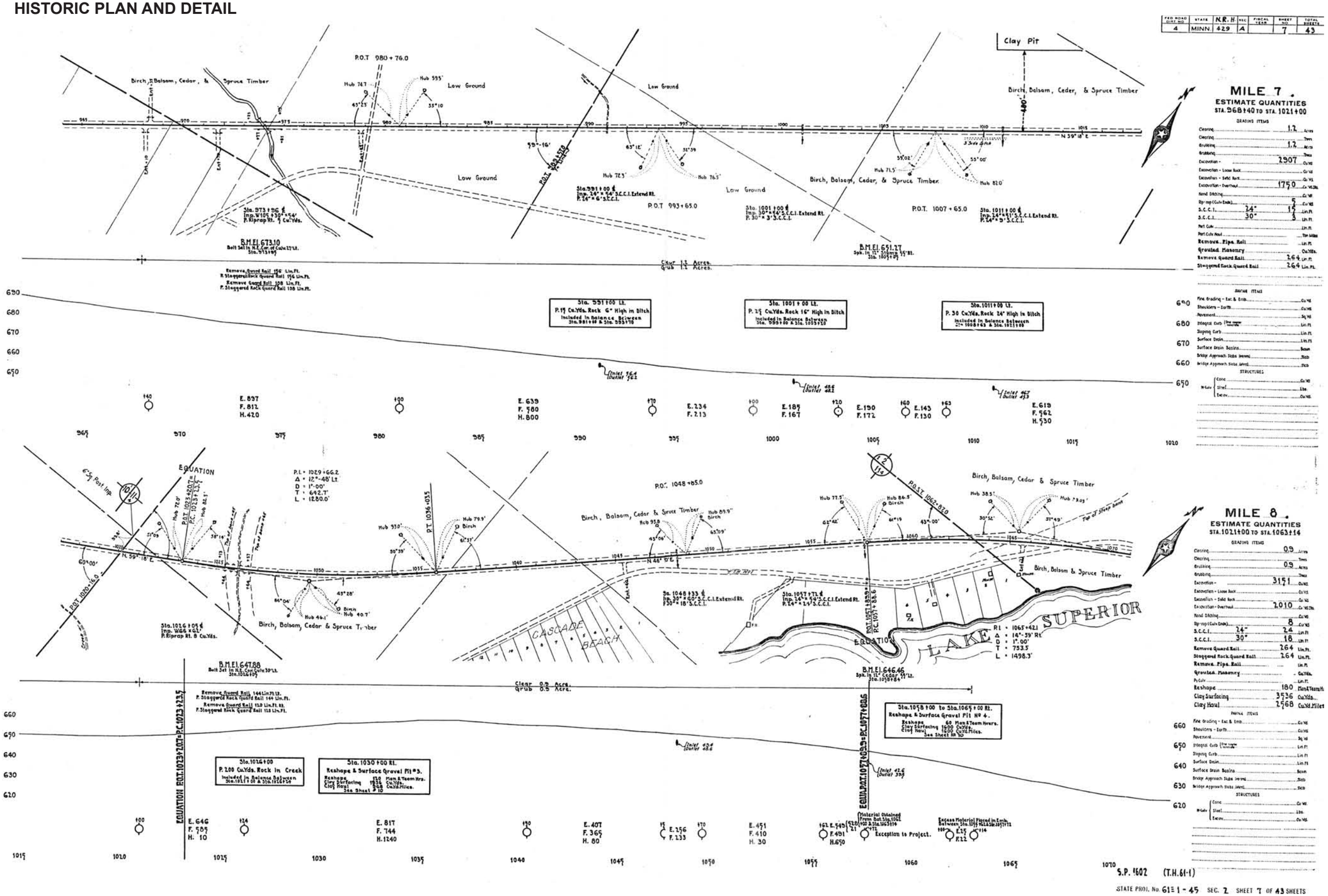
2. FEATURES INVENTORY, *continued*

Comments
(1) Traffic volume along the North Shore on Trunk Highway 61 is very high.
(2) The guardrail is placed immediately adjacent to and in from of the historic culvert rail. This creates a situation where there is no pedestrian pathway behind the guardrail, and the guardrail blocks the view of the historic stone / wood railing. No parking exists nearby, and pedestrian access the roadway at the area of the culvert seems inadvisable given the traffic volume and speed.
(3) The guardrail blocks any practical view of the historic stone / wood railing.
(4) The sloping topography adjacent to the Spruce Creek provides a lower platform from which to view the culvert and to access the creek.
(5) Trees are typical of the Culvert's location in the Superior National Forest. Birch, balsam, cedar, and spruce timber were originally noted on the plans, and continue today. A number of downed trees were seen adjacent to the culvert at the time of field survey, and other vegetation appears to be in need of maintenance.
(6) Trunk Highway 61 at the Culvert site is two lanes wide with shoulder/road edge of only a few feet wide.
(7) Spruce Creek flows through the Culvert at the site from northwest to southeast, eventually flowing into Lake Superior.
(8) There are a number of small culverts in the area that were constructed within a few years of Spruce Creek Culvert.
(9) Documentation from 1973 indicates a 150 foot long guardrail was constructed at this site. Construction notes refer to "remove 20 stone pillars." The one historic photo of the site shows some type of guardrail extending from the ends of the stone / wood culvert rail. Additional historic documentation would be useful to determine the original design. Replacing the existing guardrail with one that permits a better view of the historic rail behind would enhance the enjoyment of the historic culvert rail.
(10) The stone masonry culvert has a top rail constructed of stone piers extending above the top of the culvert / bridge wall.
(11) The stone piers of the culvert top hold timber rails. Some of the timber rails were on the ground at the time of field survey. All are in poor condition and should be replaced. The existence of the wood rails is a highly significant feature.
(12) A modern highway sign for "Spruce Creek" is found on the site (see photographs).
(13) Wheelchair accessibility at a site without practical pedestrian access would be of little use. Pedestrian access to this site is currently impractical without a pathway behind the guardrail, or any nearby parking.
(14) Pedestrians who walk along this site from the nearby resort (or even bicyclists) must cross the culvert on the roadway side of the guardrail. It appears that the roadway width between the north and south culvert railings do not permit room for two traffic, plus shoulder or path.
(15) Historic plans or elevations for the culvert are not available, so it cannot be determined how the end piers were extended, or how far. The site diagram indicates at least one additional bay at each end, but this may have been extended into a guardrail of significant distance.

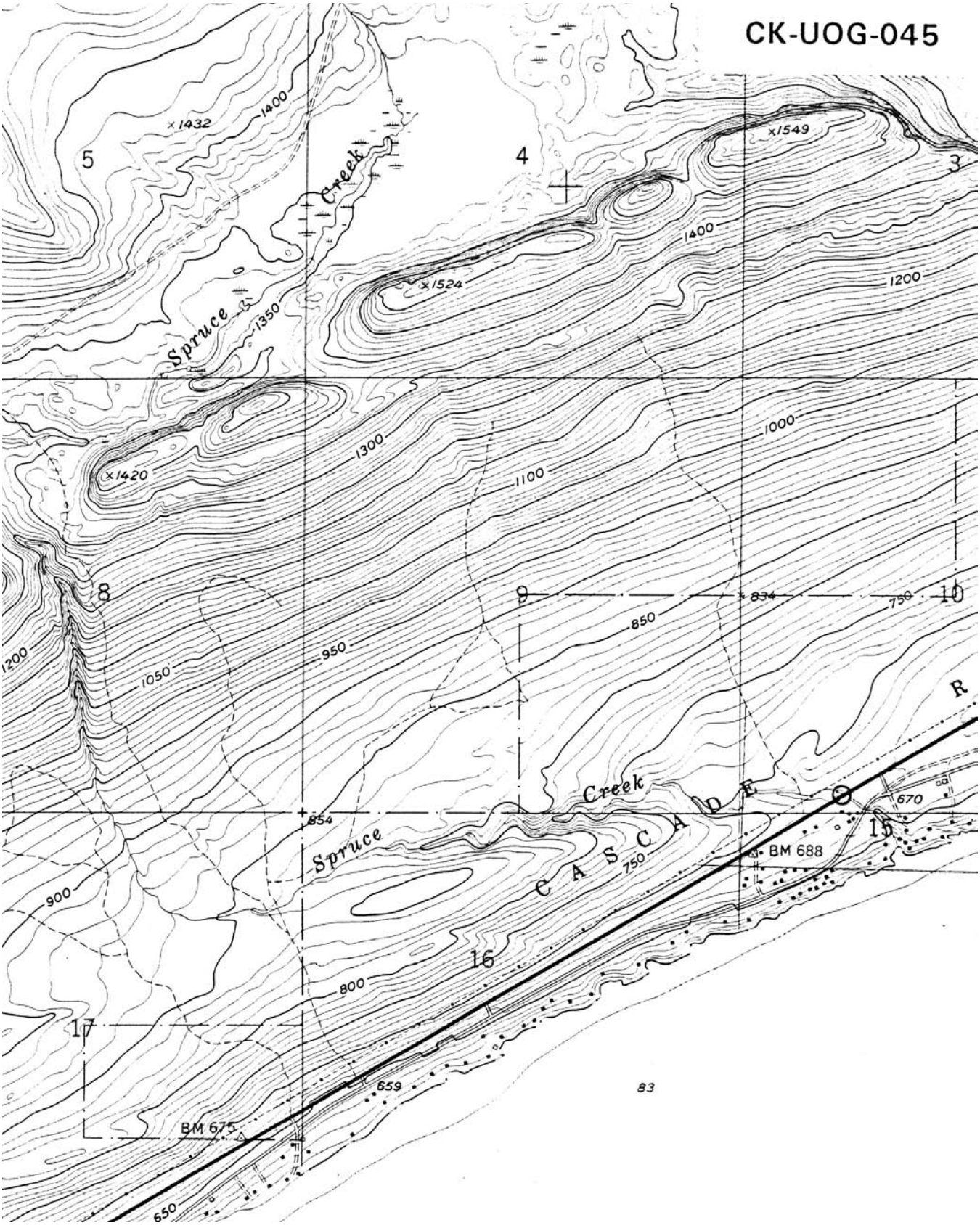
3. HISTORIC PLAN AND DETAIL



4. HISTORIC PLAN AND DETAIL



4. LOCATION MAP



Spruce Creek Culvert CS 1602 SHPO INV# CK-UOG-045

C. Structures Inventory

Historic Name **Other Name**	Spruce Creek Culvert (Bridge 8292)
Location	TH 61 at Spruce Creek
City/Township	Unorganized Territory
County	Cook
Twp Rng Sec	60N 2W Sec 10
USGS Quad	Deer Yard Lake
UTM	Z15 E682360 N5284270
Designer	Nichols, A R, Consult Land Arch
Builder	Civilian Conservation Corps (CCC) Minn Dept of Highways (MHD)
Historic Use	Bridge/ Culvert/ Dam
Present Use	Bridge/ Culvert/ Dam
Yr of Landscape Design	1935
Overall Site Integrity	Intact/Slightly Altered
Review Required	Yes
National Register Status	Eligible, see Statement of Significance
Historic Context	Roadside Development on Minnesota Trunk Highways, 1920-1960

CS # **SHPO Inv #**	1602 CK-UOG-045
Hwy **District** **Reference Point**	TH 61 1A 97
Acres **Rest Area Class**	 NA
SP #	61-1-45-2
SHPO Review #	
MHS Photo #	013543.18-25 013544.01-03
MnDot Historic Photo Album	Nic 5.22

Table of Site Structures

Feat #	Type	Year Built
01	Bridge/Culvert	1932-35

NOTE: Landscape features are not listed in this table

Fieldwork Date
10-11-97

Prep by
Gemini Research
Dec. 98 G1. 71

Prep for
Site Development Unit
Cultural Resources Unit
Environmental Studies Unit

Final Report Historic Roadside Development Structures on Minnesota Trunk Highways (1998)

Spruce Creek Culvert CS 1602 SHPO INV# CK-UOG-045

6/17/1999

Mn/DOT BRINFO System

User:

Bridge Number: 8292

Bridge Inspection Report

Inspected:5/25/1999

County: COOK
Control Section:
City:
Township: T-60 R-2
Maint Area: District 1A Duluth
Sec: 10 Twp: 060 Rge: 02W
Bridge Type: Box Culvert
NBI: Deck: N Super: N Sub: N Chan: 8 Culv: 6

Road System: Minnesota Trunk Highway
Road Number: 61
Reference Point: 097+00.498
Local Bridge Number:
Crew Number: 1
Inspection Class:

Crosses: SPRUCE CREEK
Location: 7.3 MI NE OF LUTSEN
Load Posting: 0
Length: 11.3 Width:
Min. Vert. (Under):
Min. Vert. (Over):
Deck Area(sq.ft.):633.0 %Unsd:
Paint Area(sq.ft.): %Unsd:

Elem No.	Element Name	Env	Date	Rtg 1	Rtg 2	Rtg 3	Rtg 4	Rtg 5	Comments
072	Culvert Wing/Headwal		08/1997	0	0	2	0		Both walls need pointing. East side has 50% of the grout gone.
	2 EA		05/1999	0	0	2	0		
074	Concrete Culvert		08/1997	51	5	0	0		A LIGHT CRACK RUNS THROUGH THE WALLS AND THE ROOF AT C/L. THE WEST 1/2 OF THE FLOOR IS SCALED HEAVILY.
	56 LF		05/1999	51	5	0	0		
104	Other Bridge Railing		08/1997	0	0	72			Wood and rock rail is falling down.
	72 LF		05/1999	0	0	72			

ID	Smart Flags	08/1997	05/1999	Comments
156	Steel Fatigue	N	N	
157	Pack Rust	N	N	
158	Deck Cracking	N	N	
159	Under surface-deck	N	N	
160	Settlement	N	N	
161	Section Loss	N	N	
162	Scour	N	N	
163	Traffic Impact	N	N	

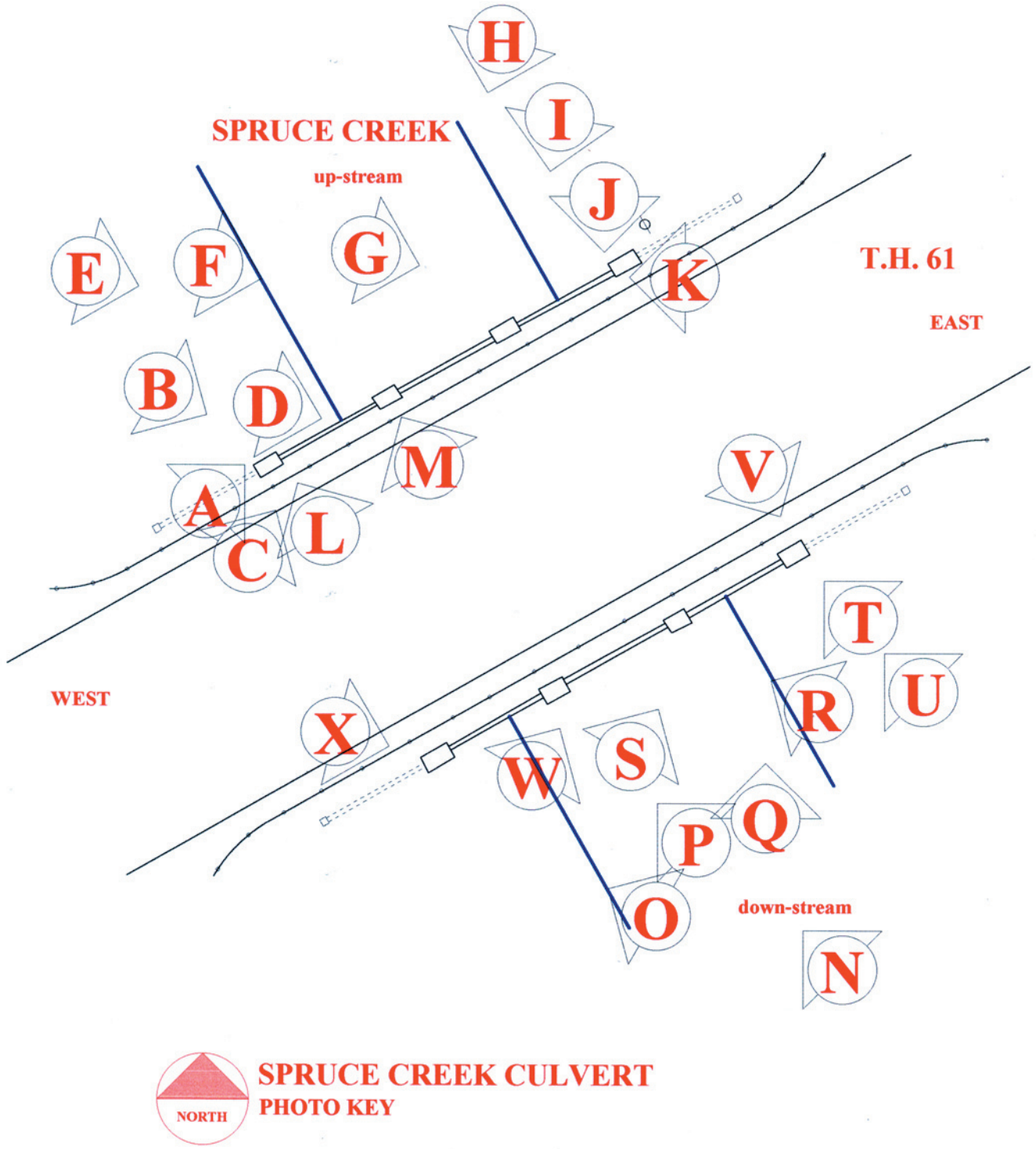
ID	Other Items	08/1997	05/1999	Comments
181	Signing	1	1	THE SW GUARDRAIL MARKER IS GONE.
182	Guardrail	1	1	
183	Plowstraps	N	N	
184	Drainage	N	N	
185	Slope Protection	N	N	
186	Curb & Walk	N	N	
187	Roadway Over Culvert	1	1	
188	Miscellaneous	N	1	East shoulder has a hole between the guard rail and old rail.

Comments:

1602-39, 5/28/04

D. L. Daniel
10/6/99

Photograph Key Map



Spruce Creek Culvert CS 1602 SHPO INV# CK-UOG-045

A **Looking east along north rail**
Note missing stonework and proximity to guardrail.

C **Looking east on road side of north rail**
Note condition of wood rails & space taken by guardrail

B **North pier #2 from NW**
Note metal brackets at #2 and #5 piers.

D **Looking east along north wall of rail**
Note vegetation adjacent to masonry walls.

Spruce Creek Culvert CS 1602 SHPO INV# CK-UOG-045

E **North of upstream wall, looking from NW**
Note random coursing of masonry.

H **North wall looking from NE**

F **Upstream entrance to culvert**
Note re-pointing work under culvert arch.

I **North wall railing**
Note missing masonry & deteriorated rails.

G **North wall face**
Note stone masonry coursing.

J **North wall looking SW**
Note missing cap stones and repair efforts with light mortar.

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K **North railings looking west**

Note minimal distance between guard rail, culvert rail, and roadway.

M **North pier # 3**

Note deteriorated top of masonry pier.

L **North side of Pier # 2 (see 'B')**

N **South wall with piers 2,3,4 and 5**

Spruce Creek Culvert CS 1602 SHPO INV# CK-UOG-045

O **West section of south wall**
Span 2-3

R **Masonry of south face**
Note random pattern of stone masonry.

P **Center section of south wall**
Span 3-4

Q **North section of south wall**

S **Erosion under south wall arch**
Note masonry mortar joints.

Spruce Creek Culvert CS 1602 SHPO INV# CK-UOG-045

T **South wall pier # 5**
Note condition of mortar joints and railing ends.

U **Stone masonry pier**
Note missing mortar.

V **South pier # 5**
Note masonry pier and timber railing condition and detail.

W **South pier # 2**
Note metal brackets designed to carry timber rails.

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X **South wall pier # 2**

Note metal brackets typical at end piers #2 and #5 at both west and east ends without existing rails. It is assumed that the wood rail once extended beyond each end of the stone pier for an unknown distance.

E. Site Condition, Recommended Action, and Cost Analysis Summary

Ln ID	L	TYPE	ITEM & DESCRIPTION OF WORK	ITEM QTY	QTY UNIT	UNIT COST	ITEM TOTAL	SUBTOTAL: STABILIZATION	SUBTOTAL: PRESERVATION	SUBTOTAL: RESTORATION
1			**VEGETATION AND LANDSCAPE FEATURES (4.3)**							
1	S		Remove vegetation at walls	1	allow	$ 1,000	sum $ 1,000	$ 1,000		
2	E		Replace / add site landscape materials	1000	SF @	$ 10	/SF $ 10,000	**see Enhancements below**		
			SUBTOTAL					**$ 1,000**	**$ 0**	**$ 0**
2			**WATER FEATURES (4.5)**							
1	P		North embankment erosion control with rock	500	SF @	$ 25	/SF $ 12,500		$ 12,500	
2	P		South embankment erosion control with rock	500	SF @	$ 25	/SF $ 12,500		$ 12,500	
			SUBTOTAL					**$ 0**	**$ 25,000**	**$ 0**
3			**NORTH SHOULDER/PATH (4.6.1)**							
1	S		Repair stone wall caps between piers	42	LF @	$ 25	/LF $ 1,050	$ 1,050		
2	P		Provide drainage gutter along walls / piers	1	allow	$ 5,000	sum $ 5,000	$ 5,000		
3	R		Reconstruct gravel pathway	50	LF @	$ 10	/LF $ 500			$ 500
4	E		New metal guardrail for walking path space				see Enhancements below			TBD
			SUBTOTAL					**$ 6,050**	**$ 0**	**$ 500**
4			**SOUTH SHOULDER/PATH (4.6.2)**							
1	S		Repair stone cap to wall between piers	42	LF @	$ 20	/LF $ 840	$ 840		
2	P		Provide drainage gutter along walls / piers	1	allow	$ 5,000	sum $ 5,000	$ 5,000		
3	R		Reconstruct gravel pathway	50	LF @	$ 10	/LF $ 500			$ 500
4	E		New metal guardrail for walking path space					see Enhancements below		TBD
			SUBTOTAL					**$ 5,840**	**$ 0**	**$ 500**
5			**NORTH WALL PIERS & RAILING (4.6.3)**							
1	S		Repair & repoint existing Piers 2, 3, 4, 5	84	SF @	$ 20	/SF $ 1,680	$ 1,680		
2	S		Remove, repair and replace selected wood rails	6	allow	$ 400	sum $ 2,400	$ 2,400		
3	R		Reconstruct missing Piers 1 and 6	2	allow	$ 2,500	sum $ 5,000			$ 5,000
4	R		Reconstruct wood railings: 1/2 and 5/6	4	allow	$ 400	sum $ 1,600			$ 1,600
			SUBTOTAL					**$ 4,080**	**$ 0**	**$ 6,600**
6			**NORTH WALL STONEWORK (4.6.4)**							
1	S		Repair with selective repointing	300	SF @	$ 10	/SF $ 3,000	$ 3,000		
2	R		Remove prior repointing work	300	SF @	$ 10	/SF $ 3,000			$ 3,000
3	R		Repair broken, missing stones	1	allow	$ 5,000	sum $ 5,000			$ 5,000
4	R		Repoint to full depth raked (Rustic) joint	300	SF @	$ 40	/SF $ 12,000			$ 12,000
5	R		Water washing and masonry cleaning	1	allow	$ 2,000	sum $ 2,000			$ 2,000
6	R		Staging and scaffolding allowance factor	1	allow	$ 500	sum $ 500			$ 500
			SUBTOTAL					**$ 3,000**	**$ 0**	**$ 22,500**
7			**SOUTH WALL PIERS & RAILING (4.6.5)**							
1	S		Repair & repoint existing Piers 2, 3, 4, 5	84	SF @	$ 20	/SF $ 1,680	$ 1,680		
2	S		Remove, repair and replace selected wood rails	6	allow	$ 400	sum $ 2,400	$ 2,400		
3	R		Reconstruct missing Piers 1 and 6	2	allow	$ 2,500	sum $ 5,000			$ 5,000
4	R		Reconstruct wood railings: 1/2 and 5/6	4	allow	$ 400	sum $ 1,600			$ 1,600
			SUBTOTAL					**$ 4,080**	**$ 0**	**$ 6,600**

Spruce Creek Culvert CS 1602 SHPO INV# CK-UOG-045

Ln ID	L	ITEM & DESCRIPTION OF WORK TYPE	ITEM QTY	QTY UNIT	UNIT COST	ITEM TOTAL	SUBTOTAL: STABILIZATION	SUBTOTAL: PRESERVATION	SUBTOTAL: RESTORATION
8		**SOUTH WALL STONEWORK (4.6.6)**							
1	S	Repair with selective repointing	300	SF @	$ 10 /SF	$ 3,000	$ 3,000		
2	R	Remove prior repointing work	300	SF @	$ 10 /SF	$ 3,000			$ 3,000
3	R	Repair broken, missing stones	1	allow	$ 5,000 sum	$ 5,000			$ 5,000
4	R	Repoint to full depth raked (rustic) joint	300	SF @	$ 40 /SF	$ 12,000			$ 12,000
5	R	Water washing and masonry cleaning	1	allow	$ 2,000 sum	$ 2,000			$ 2,000
6	R	Staging and scaffolding allowance factor	1	allow	$ 500 sum	$ 500			$ 500
		SUBTOTAL					**$ 3,000**	**$ 0**	**$ 22,500**
9		**CULVERT STRUCTURE (4.6.7)**							
1	S	Galvanized culverts: examine and test	assumed to be MnDOT engineering and maintenance work						
2	S	Verify condition of drainage at culvert structure	assumed to be MnDOT engineering and maintenance work						
3	S	Verify condition of rubble fill below roadway	assumed to be MnDOT engineering and maintenance work						
		SUBTOTAL					**$ 3,000**	**$ 0**	**$ 0**
10		**FURNISHINGS AND OBJECTS (4.7)**							
1	R	Reintroduce “Spruce Creek” historic sign(s)	2	allow	$ 2,500 sum	$ 2,500			$ 2,500
		SUBTOTAL					**$ 0**	**$ 0**	**$ 2,500**
11		**SUBTOTALS OF CONSTRUCTION WORK**					**$ 30,050**	**$ 25,000**	**$ 61,700**
		CONTINGENCY ALLOWANCE	15% of Construction				**$ 4,508**	**$ 3,750**	**$ 9,255**
12		**TOTAL: CONSTRUCTION WORK**					**$ 34,558**	**$ 28,750**	**$ 70,955**
13		**FEES AND PROJECT EXPENSES**							
1		special tests allowance	2.0% of Construction				**$ 691**	**$ 575**	**$ 1,419**
2		architectural / engineering services thru Bid / Neg	15.0% of Construction				**$ 5,184**	**$ 4,313**	**$ 10,643**
3		architectural/engineering services: CA	5.0% of Construction				**$ 1,728**	**$ 1,438**	**$ 3,548**
4		reimbursables, documents, inspection travel	2.5% of Construction				**$ 864**	**$ 719**	**$ 1,774**
5		agency review factor	1.0% of Construction				**$ 346**	**$ 288**	**$ 710**
6		other allowances and factors							
		SUBTOTAL					**$ 8,812**	**$ 7,331**	**$ 1 8,094**
14		**TOTAL: CONSTRUCTION and FEES**					**$ 43,370**	**$ 36,081**	**$ 89,049**
15		**SITE ENHANCEMENTS (4.10)**							
2	E	Replace / add site landscape materials	1000	SF @	$ 10 /SF	$ 10,000	$ 10,000		
4	E	New metal guardrails for walking path space	200	LF @	$ 150 /LF	$ 30,000	$ 30,000		
		SUBTOTAL FOR ENHANCEMENTS					**$ 40,000**		
16		**ACCUMMULATIVE TOTAL COSTS (S, P, R and E)**							
1		Stabilization Alone					**$ 43,370**	**$ ___**	**$ ____**
2		Stabilization plus Preservation					**$ -------**	**$ 79,451**	**$ ---------**
3		Stabilization, Preservation, plus Restoration					**$ -------**	**$ --------**	**$ 168,500**
4		**ALL OF THE ABOVE, plus ENHANCEMENTS**					**$**	**$**	**$ 208,500**

SITE BOUNDARIES

■ RECOMMENDED BOUNDARY OF NATIONAL REGISTER-ELIGIBLE PROPERTY

The recommended boundary of the National Register-eligible property is shown by the dashed line on the accompanying sheets entitled "Spruce Creek Culvert (Bridge 8292) Site Boundaries." The base maps for these sheets are a Minnesota Department of Transportation (Mn/DOT) Right-of-way Map and a Mn/DOT aerial photo.

The boundary of the National Register-eligible property forms a rectangle that measures 100' by 200'. The northeastern and southwestern boundaries are drawn 100' northeast and 100' southwest of the midpoint of the bridge. The northwestern and southeastern boundaries are drawn 50' on either side of the T.H. 61 centerline as the highway crosses the bridge.

The property is located within Cascade River State Park.

Boundary Justification

The National Register-eligible property is comprised of the parcel of land historically associated with the Spruce Creek Culvert.

■ RECOMMENDED BOUNDARY OF MN/DOT HISTORIC SITE CONSERVATION ZONE

The recommended boundary of the Mn/DOT Historic Site Conservation Zone is also shown on the accompanying sheets. The Conservation Zone encompasses both the National Register-eligible property, marked by the dashed line, and adjacent areas marked by the solid line.

Boundary Justification

The Mn/DOT Historic Site Conservation Zone is recommended to provide a special management zone that includes both the National Register-eligible site and a larger area that encompasses part of the historic property's early physical and visual "context" or setting.

Preserving the property's physical and visual setting will help protect its historic integrity and enhance the public's understanding of, and appreciation for, the historic site design. The Conservation Zone will help buffer the site from elements that may detract from its historic character.

It is recommended that the Conservation Zone boundaries include the National Register-eligible property and additional land described as follows:

Northeast and southwest of the National Register-eligible property, it is recommended that the Conservation Zone include Mn/DOT right-of-way extending approximately 300' northeast and 300' southwest along the trunk highway, as shown. Northwest and southeast of the National Register-eligible property, it is recommended that the Conservation Zone extend to the Mn/DOT right-of-way lines, as shown.

It is recommended that Mn/DOT retain all current right-of-way within the Conservation Zone. It is further recommended that Mn/DOT preserve the Conservation Zone by taking such actions as special right-of-way planting and maintenance, acquiring additional property or scenic easements, and/or creating partnership agreements with individuals or groups interested in preserving the historic property and its setting. The Mn/DOT Cultural Resources Unit should be consulted regarding these activities.

In particular, it is recommended that Mn/DOT and the MnDNR work together closely to preserve and maintain the bridge, the Conservation Zone, and the larger setting in a manner consistent with original design intent. Historic plans and photos should be used to guide treatment activities.

■ MORE INFORMATION

For detailed information on the Spruce Creek Culvert's structures, landscape, and significance, refer to:

Mn/DOT Historic Roadside Development Structures Inventory form for Spruce Creek Culvert (Gemini Research, Dec. 1998).

Preservation and Restoration Report for Spruce Creek Culvert (SMSQ Architects, Dec. 2001).

Comments on SMSQ Architects Preservation and Restoration Report of December 2001 (Gemini Research, Nov. 14, 2003).

Prepared by Gemini Research May 1, 2004.

Spruce Creek Culvert (Bridge 8292)
Site Boundaries

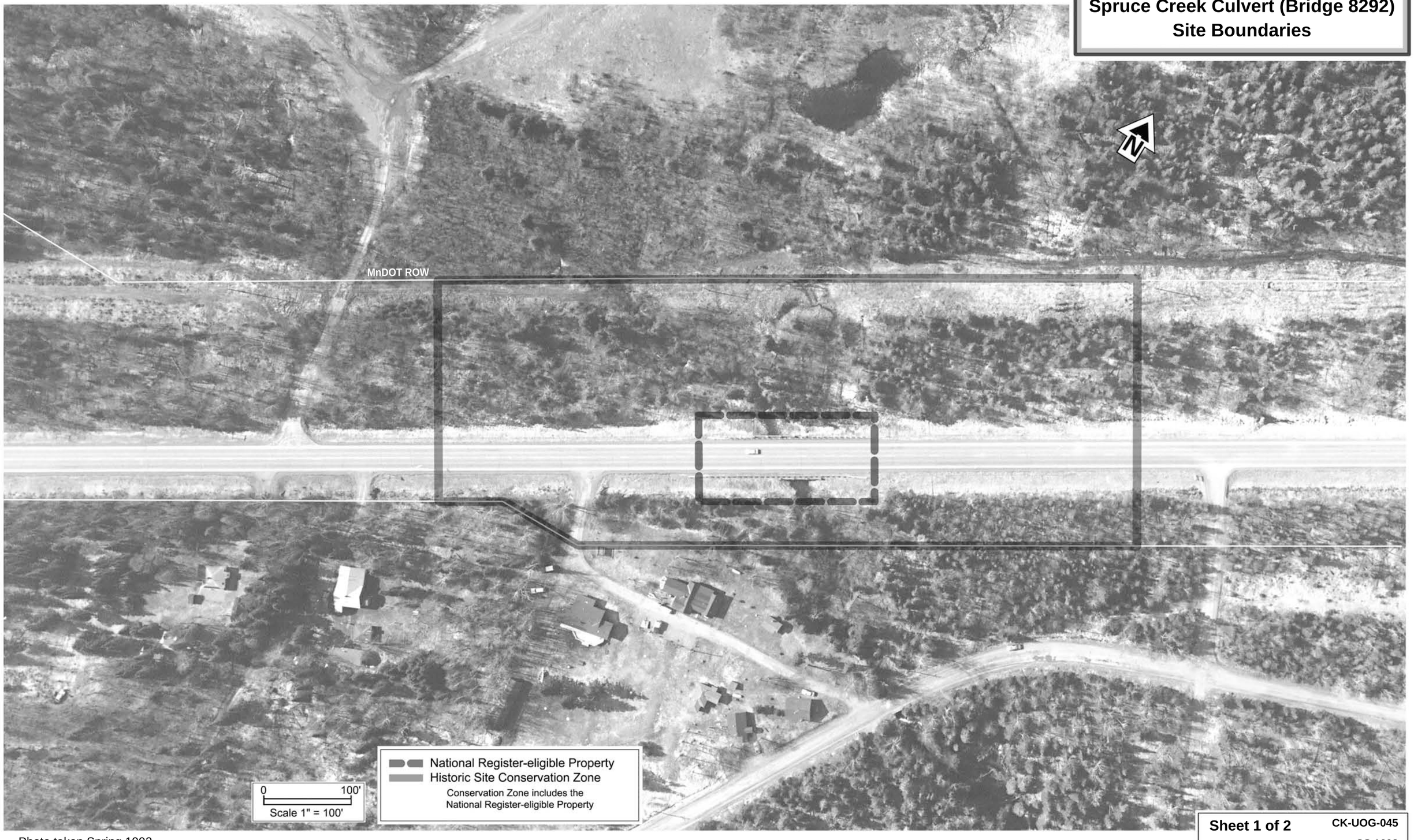

Photo taken Spring 1992

Sheet 1 of 2

Prep by Gemini 2003

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CS 1602

Spruce Creek Culvert (Bridge 8292)
Site Boundaries

OTTO JONVIK
PART LOT 1 SEC. 15-60-2
0.48 AC.
76X = 1.38 AC

P.O.T. 966+05.0
P.O.T. 972+84.0
P.O.T. 975+63.0
78
Birch, Balsam, Cedar & Spruce Timber
6" Balsam 82.3'
14" Cedar 53.1'
+83 W. Edge Creek
+0 E. Edge Creek
+27 Logging Road
200'
78
5" Balsam 66.0
5" Balsam 74.4
75
100'
50'
970
975
980
50'
N 59°18'E
100'
50'
75
77
77
Sta. 966+45
SPRUCE CREEK
5" Balsam 68.6
Reconveyed
Q.C.D. 4-4-55
G.P. 78AX-3
B.C.C.
TB
Beg. Amend Width Order N° 8276
PARK BOUN
10' Conc. Culv. Inp.
CREEK
GOV. LOT

National Register-eligible Property
Historic Site Conservation Zone
Conservation Zone includes the National Register-eligible Property

0 100'
Scale 1" = 100'

Sheet 2 of 2 **CK-UOG-045**
Prep by Gemini 2003 **CS 1602**