

Memorandum Date: July 7, 2008
Order Date: July 23, 2008

W. S. A.

TO: Board of County Commissioners

DEPARTMENT: Public Works

PRESENTED BY: Frank Simas, Right-of-Way Manager

AGENDA ITEM TITLE: IN THE MATTER OF APPROVING THE DESIGN
RECOMMENDATION FOR REPLACEMENT OF THE WEST
FORK COYOTE CREEK BRIDGE ON BIGGS ROAD (A LOCAL
ACCESS ROAD)

I. MOTION

Move approval of the Order.

II. AGENDA ITEM SUMMARY

At the Board meeting of February 20, 2008, the Board directed staff to develop a proposed concept for replacement of the West Fork Coyote Creek Bridge on Biggs Road and report back as to the costs and design of the proposed new bridge.

III. BACKGROUND/IMPLICATIONS OF ACTION

A. Board Action and Other History

By a letter dated November 20, 2007, Lane County was informed that the State Bridge Engineer had recommended the West Fork Coyote Creek Bridge (Bridge No. 18752) on Biggs Road (also known as Perkins Creek Bridge) be posted for load limits of 4 tons, 7 tons and 6 tons, based on the results of an inspection which indicated decreased load-carrying capacity due to deterioration in the bridge decking and pile caps. The State Bridge Engineer recommended that the signage indicating the recommended posting be in place no later than January 1, 2008.

Public Works staff met with the Board on December 12, 2007, to inform it of the receipt of the recommendation and to ask direction from the Board with regard to what action it might want staff to take with regard to this potential hazard in accordance with the Board's previous direction to staff concerning expenditure of Road Funds on Local Access Roads.

Pursuant to the direction from the Board, the signs informing of the recommended posting were installed on December 13, 2007. The Public Works Director's action in posting the bridge was confirmed by Order 08-1-2-13 on January 2, 2008.

The Board also directed staff to investigate means to assist the residents of Biggs Road in determining potential cost of the needed repairs or replacement, what permit(s) will be needed, potential material sources, how many property owners will be directly affected by the reduced posting and potential closure of the bridge in the future if it is not repaired or replaced, and what funding sources may be available to pay for the cost of the work. The board directed staff to investigate and prepare an analysis with regard to these issues and report back as soon as the investigation and analysis has been completed.

The County Engineer reported to the Board on February 13, 2008, as to the results of the initial analysis of options and associated costs with regard to rehabilitation or replacement of the existing bridge, and the direction of the Board was to pursue Option 4, that of removal of the existing bridge and installation of a new flatcar bridge crossing at an estimated cost of approximately \$120,000. The Board further directed staff to meet with the affected residents to determine their willingness to share in the cost of the proposed work, prior to the Board committing to the expenditure of County Road Funds for this project.

On February 19th, 2008, Commissioners Fleenor and Dwyer attended a meeting with the local residents and interested parties at the Lane County Public Works Delta Administration Complex to further discuss the options and means of financing the proposed bridge replacement. At the meeting, one additional option (Option 5) was explored involving the use of surplus precast concrete bridge decking sections that were originally used for temporary bridges associated with the construction of OTIA bridge replacement projects along the I-5 corridor. These components are readily available in the immediate area of Eugene/Springfield and would provide greater load carrying capacity and much greater useful life than a railroad flatcar bridge at a very comparable cost.

It was also discussed at this meeting that the residents' share of the project costs could be financed through assessments to the benefiting properties pursuant to Lane Code 15.636, which provides that when the Board determines the public interest requires improvement to bridges on Local Access Roads, the direct cost shall be assessed to the specially benefiting property owners on a uniform basis as determined by the Board.

At the Board Meeting on February 20, 2008, the County Engineer again reported to the Board regarding a proposed process for initiating this bridge replacement project consisting of:

1. Obtaining signed Irrevocable Petition for Public Improvements from each benefiting property owner, prior to proceeding with permitting and design process.
2. Proceeding with environmental and/or land use permit application processes, if applicable, and contracting with a consultant for engineering and geotechnical services in connection with the proposed bridge project.
3. Returning to the Board when foundation and other design details are determined and plans are substantially complete with a report, including a detailed estimate of total project costs.
4. Obtain approval of the design recommendation approval provided that detailed estimate is within parameters established by the Board based on 50% County participation in total project costs.
5. Obtain Board direction to proceed with preparation of a Director's Report as outlined in ORS 371.625, and proceed with the recommendation for the acceptance of the Director's Report, the recordation of the pending liens against the benefiting properties, and the levying of liens against the benefiting properties in accordance with the terms of the Irrevocable Petitions and pursuant to Lane Code.

The direction to staff given at the meeting of February 20, 2008, was that the County was to share in the cost of the replacement bridge on a 50%-50% basis, and that before proceeding with design and permitting, the benefiting property owners were to commit in writing in the form of Irrevocable Petitions for Public Improvement to share the cost with Lane County up to a maximum of \$15,000 per property owner for the 5 property owners, *based on an initial estimated cost for the replacement bridge of no more than \$150,000.*

B. Policy Issues

Pursuant to Order 06-1-18-8, expenditures of Road funds on Local Access Roads are not authorized unless the Board adopts an Order or Resolution authorizing the work and designating the work to be either a single project or a continuing program.

Lane Code 15.636(3) provides that when the Board determines the public interest requires improvement to bridges on Local Access Roads, the direct cost shall be assessed to the specially benefiting property owners on a uniform basis as determined by the Board. In this case, the County has agreed to share in the cost of the replacement bridge on a 50%-50% basis, and residents have signed an Irrevocable Petition for Public Improvements assuming a maximum bridge cost of \$150,000.

C. Board Goals

This project is related to the County Goal of "Protection of the public's assets by maintaining, replacing or upgrading investments in systems and capital infrastructure," and contributing to appropriate community development in the areas of transportation and telecommunications infrastructure, housing, growth management and land development. Although not a written policy, the Board has assumed a 50%-50% cost share with the local residents on this Local Access Road bridge.

D. Financial and/or Resource Considerations

The County is not required to take any action with regard to improvement, repair or maintenance of Local Access Roads, but may exercise jurisdiction over them through Board Action. The funds thus far expended have come from the Road Fund.

Based on the plans as currently developed, the revised Engineer's Estimate for the construction of the replacement bridge ranges from \$145,870 to \$180,000, and both estimates assume zero construction contingency. If the Board determines to proceed with the project, the County portion of the cost, after applying a 50%-50% cost share to be levied in the form of improvement assessments (initially assumed \$75,000 per the signed Improvement Petitions) will range from approximately \$ 73,000 to \$90,000. The Board will be asked by separate order to approve assessments based on a 50% - 50% cost share, regardless of the actual bid and costs.

E. Analysis

Since February, the County's consultant for this project, OTAK, has substantially completed the Type, Size & Location (TS&L) Memorandum for Option 5 (precast concrete deck slabs on new piling). The summary of this TS&L Memorandum is shown as Attachment 1 to this memo. Based on all new construction for the bridge, it has an estimated cost of \$180,000. These costs are shown in Attachment 2 to this memo.

Knowing that it was the intent of the Board to try and keep the total "out of pocket" construction cost to a maximum of \$150,000, County staff has further reviewed the preliminary plans and cost estimate, and have performed a "Value Engineering Process" to try and reduce the estimated construction cost to at or below the \$150,000 amount. Some of the value engineering reductions will shift the burden/cost to the County Road Maintenance staff, but these costs are typically included in the annual operations budget (ie, staff hours and equipment).

Attachment 3 to this memo shows an estimated construction cost of around \$146,000. Staff can not guarantee that this will be the final cost, since the project will need to be publically bid and we can not predict the bidding environment. However, some of the estimated cost savings are as follows:

1. Used pre-stress slabs purchased and delivered to site will save an estimated \$27,000.
2. Used bridge rail, guardrail, and end treatments provided and installed by County will save an estimated \$7,000, assuming they can meet minimum safety standards for material type and installation.
3. In both estimates, we are proposing to use a temporary railroad flatcar bridge provided by Douglas County at a minimum cost to project of \$5,000. This cost will pay direct transportation and personnel costs to and from Douglas County. The bridge will provide emergency and medical access during construction along with savings to the contractor during construction, since contractor will not need to design and construct a more expensive by-pass bridge.
4. Both cost estimates assume a driven steel piling depth of 40 feet. The actual piling depth will only be known during construction, and there is no contingency if pile depths exceed 40 feet.

Engineering plans and specifications for the bridge are now at the 90% completion stage, and if the Board approves the Order, the project is scheduled for an August 29, 2008 bid opening. Irrevocable Petitions for Public Improvement has been signed by each benefiting property owner and upon approval of the Order authorizing the improvements, they will be recorded in the Office of Deeds and Records.

Pursuant to 15.580, approval of a formal Design Concept is not required for bridge reconstruction projects. However, staff is bringing this information back to the Board for final concurrence. This proposed project involves expenditure of County Road Funds on a Local Access Road, and compliance with the provisions of Lane Code and ORS 368.031, requires that the county governing body determine that the work is an emergency or if:

- a) The county road official recommends the expenditure;
- b) The public use of the road justifies the expenditure proposed; and
- c) The county governing body enacts an order or resolution authorizing the work and designating the work to be either a single project or a continuing program.

The existing bridge has been posted with load limits of 4 tons, 7 tons and 6 tons, which is inadequate to accommodate fire and life safety vehicles, and further deterioration of the structure of the bridge could likely result in the State Bridge Engineer ordering a closure of the bridge following the next inspection of the bridge, scheduled for early 2009. The existing situation likely represents an emergency due to the inability to access the dwellings for fire and life safety

purposes.

County staff and Commissioner Fleenor met on July 2nd with the five property owners. There was unanimous agreement to proceed with the project, by applying all cost saving ideas in order to get the final construction cost close to \$150,000. They were also informed that final assessments may exceed the previously identified \$15,000 each, since final costs are unknown at this time. They understand that the cost sharing by the County will be 50% - 50%, and that the County will continue to pay for all design, permits, and other in-house costs as identified in this memo.

The County Engineer has reviewed the TS&L Memorandum and the Value Engineering items suggested by staff, and recommends the expenditure as outlined in Attachment 3, subject to Board Approval. The final plans and specifications will assume used pre-stress bridge beams, and installation of bridge rail and guard rail by the County, with a savings to the property owners. The road and bridge will also remain open to the public during construction, including emergency medical and public utility providers.

The attached Order, if approved, will:

1. Approve the proposed design recommendation as outlined in the costs identified in Attachment 3.
2. Direct that the County Engineer proceed to assess 50% of the final costs as generally outlined in Attachment 3 to the specially benefiting owners on the equal basis of 1/5 for each of the 5 specially benefiting properties as provided in Lane Code Chapter 15 and ORS 371.625 and 371.640. Final assessments could be higher if bid costs come in higher than \$150,000 for the project.
3. Order that the Director of the Public Works Department investigate the proposed improvement and present and report to the Board of County Commissioners as specified in ORS 371.625

F. Alternatives/Options

1. Adopt the Order authorizing staff to proceed with the project as described above.
2. Decline to adopt the Order and direct staff otherwise.

IV. TIMING/IMPLEMENTATION

N. A.

V. RECOMMENDATION

Approve the Order.

VI. FOLLOW-UP

Upon approval, staff will direct that plans and specifications be completed, that the project be advertised for a scheduled August 29, 2008 bid opening. Staff will also prepare the Director's Report as specified in ORS 371.625 and return at a subsequent Board meeting.

VII. ATTACHMENTS

Attachment 1 – TS&L Memorandum Summary

Attachment 2 - All New Material Cost Estimate

Attachment 3 - Used and County Provided Material Cost Estimate

**IN THE BOARD OF COUNTY COMMISSIONERS
OF LANE COUNTY, OREGON**

ORDER NO.

(**IN THE MATTER OF APPROVING THE
(DESIGN RECOMMENDATION FOR
(REPLACEMENT OF THE WEST FORK
(COYOTE CREEK BRIDGE ON BIGGS ROAD
((A LOCAL ACCESS ROAD)**

WHEREAS, the Oregon State Bridge Engineer recommended by letter dated November 20, 2007, the West Fork Coyote Creek Bridge (Bridge No. 18752), also known as the Perkins Creek Bridge be posted for a reduced load limit of 4 tons, 7 tons and 6 tons, based on the results of an inspection with indicated decreased load carrying due to deterioration in the bridge decking and pile caps, and

WHEREAS, the Public Works Director ordered that the bridge be posted in accordance with the State Bridge Engineer's recommendation, and by Order 08-1-2-13 on January 2, 2008, the Public Works Director's action in posting the Bridge was confirmed by the Board, and

WHEREAS, the bridge serves as the only access for 5 residential properties, and in its present condition, it is unable to carry fire and life safety vehicles, utility company vehicles, and delivery trucks; and

WHEREAS, the Board has expressed a willingness to assist the affected residents by means of a 50% share of the final construction cost of a new bridge using Road funds, provided that the specially benefiting residents consent to the levying of assessments per benefiting property for each of the 5 benefiting properties based on a total construction cost estimated not to exceed \$150,000; and

WHEREAS, each of the 5 benefiting owners has signed Irrevocable Petitions for Public Improvement indicating willingness to be assessed at a maximum of \$15,000; and

WHEREAS, if final construction costs are higher than \$150,000, then the County will share in the cost of a replacement bridge on a 50% - 50% basis, and the benefiting property owners may have final assessments greater than the previously assumed \$15,000 each should the Board approve those assessments by a subsequent Board Order; **NOW THEREFORE, BE IT**

ORDERED, that the design report for the bridge replacement as shown on the summary at Exhibit A is hereby approved, and said project is hereby authorized as a single project and not a continuing program; **AND, BE IT**

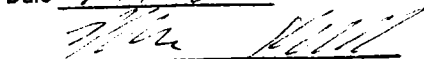
FURTHER ORDERED that the Director of the Public Works Department investigate the proposed improvements and present a report containing the estimated cost of said improvements to the Board as specified in ORS 371.625.

DATED this _____ day of _____, 2008.

Chair,
Board of County Commissioners

APPROVED AS TO FORM

Date 7-14-08 lane county.


OFFICE OF LEGAL COUNSEL

**IN THE MATTER OF APPROVING THE DESIGN RECOMMENDATION FOR REPLACEMENT OF
THE WEST FORK COYOTE CREEK BRIDGE ON BIGGS ROAD (A LOCAL ACCESS ROAD)**

Draft Type, Size & Location (TS&L) Memorandum

To: Kerry Werner, PE, SIT — *Lane County*
Bill Morgan, PE — *Lane County*

From: In-Tae Lee, PE, SE — *Otak Inc.*
Ae-young Lee, EIT — *Otak Inc.*

Copies: File

Date: May 30, 2008

Subject: Perkins Creek (Biggs Road) Bridge #18752 Replacement:
Design Criteria
30% Plans
Estimate
Geotechnical Report



17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

Project #: 14914

Summary

This memorandum serves to formally explain the proposed bridge type, size, and location and to outline constraining requirements as design and material acquisition proceeds. A timely progression is necessary in order to complete the replacement of Perkins Creek Bridge at Biggs Road this year while taking full advantage of the permitted in-water work period. The intent of this submission is to allow sufficient time for review by Lane County and obtain approval in order to continue with the design to completion.

Project Justification & Development

The bridge in question crosses Perkins Creek on Biggs Road, a rural local access road, and is approximately one half mile southeast of Veneta's Urban Growth Boundary (UGB) and city limits. Built in 1988, the all-timber bridge has deteriorated to a point where it is in critical condition with a 14.9 Sufficiency Rating and a National Bridge Inventory (NBI) rating of 2 for the substructure. The bridge is load posted for 4, 7, and 6 tons for Type 3, 3S2, and 3-3 trucks, respectively, and appears to serve as the sole access to a handful of residences. The existing structure is to be replaced.

Otak, Inc., is the lead consultant for the project and is responsible for the bridge design; Shannon & Wilson, Inc., has performed a foundation report. The Lane County Department of Public Works,

Engineering Division, is performing the remaining engineering tasks including but not limited to the roadway, roadway drainage, right-of-way acquisition, public involvement, surveying, utility coordination, and environmental compliance documentation.

Design Standards & Bridge Criteria

Design is based on the 2002 American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges, 17th ed.; the ODOT Bridge Design and Drafting Manual (BDDM); the 2007 ODOT Geotechnical Design Manual; the 2002 Oregon Standard Specifications for Construction; and Oregon Standard Drawings.

Type

Precast prestressed slab beams were selected for quick placement. The slabs will be overlaid with asphalt concrete for a smooth wearing surface. Both steel and reinforced concrete cap was considered; however, steel cap was selected to accelerate the construction and minimize the inconvenience of the road closure to local residences. The ends of the pier caps may be extended beyond the edges of the bridge to hold back embankment in place of wingwalls

Size

The bridge will be widened from 14 feet to 16 feet. Lane County has expressed the possibility of obtaining used slabs for further cost savings. Special design may be required to attach the bridge rail if the existing slabs do not have inserts to connect the bridge rail. Since the reuse of slabs depends on what is currently available, some general size requirements should be kept in mind as inquiries are made:

- The slabs should be a minimum of **61 feet long**.
- For a span of this length and assuming the slabs have sufficient strand, the slabs should be a minimum of **26 inches deep**.

Location

The new bridge will keep the existing alignment. The new bent caps will be placed outside the existing end bent caps to allow continued use of the existing bridge while a portion of the foundation work is completed. To eliminate the need for a hydraulic/hydrology evaluation, the new bridge will provide greater than or equal to the bridge opening and soffit elevation of the existing bridge. Assuming the existing timber superstructure depth is 21 inches, the elevation of the bridge will need to be raised a minimum of 7 inches.

Miscellaneous

- The new bridge will have side-mounted three-beam bridge rail with steel angle drainage curbs to lower cost and remove the need for additional slabs for a top-mounted bridge rail.
- There will be no end panels.
- The temporary steel support at one of the interior bents is to be salvaged and returned to Lane County.

- A telephone utility attached to the bridge is to be relocated by others.
- An existing wire fence across the creek, observed to obstruct creek flow by catching and holding debris, is to be removed.

Geotechnical Investigation

The geotechnical subconsultant drilled one boring, evaluated the collected samples, and provided preliminary recommendations summarized here:

- Closed-end steel pipe piles are preferred due to relatively shorter lengths compared to other types of piles and soil conditions precluding conventional spread footings.
- The pile size should be either PP 12.75x0.375 or PP 16x0.50.
- The estimated driven length is 20 to 30 feet. This is to be further evaluated due to probable soft or loose subsoils.
- Do not drive piles closer than 3 times the pile diameter.

Based on initial assumptions, 5-PP 16x0.50 piles may be required. These will be cut to the necessary elevations and welded to bearing plates that will then be bolted to the steel H-pile caps.

Construction Sequence

Because of the substructure deterioration, the existing structure may require additional shoring if the pile driving equipment must cross the bridge or the contractor must acquire sufficiently large pile-driving equipment so that the piles can be driven from the north side of the creek for both bents. To minimize the closure period, the foundation will be excavated and the piles driven and covered with steel plate until the slabs have been delivered to the site. Once the slabs are available, the piles will be cut, the bearing plates and pile caps placed, and the existing bridge removed. The superstructure will then be assembled including the slabs, wearing surface, and bridge rail. The county is responsible for addressing approach guard rail and grading of the approach roadway.

Conclusion

- The all-timber Perkins Creek Bridge at Biggs Road is to be replaced while minimizing cost and road closure period.
- The bridge will consist of precast concrete slabs, preferably salvaged, resting on steel H-pile end bent caps and steel pipe piles. The salvaged slabs must be 26 inches deep minimum and span 61 feet minimum.
- To match the existing bridge opening underneath, the bridge grade must be raised a minimum of 7 inches.
- Drive the piles and cover until the slabs are delivered.

Attachment 2

**COST ESTIMATE - A All new materials
Biggs Road Bridge MP 0.22**

Item No.	Item Description	Unit	QTY	Unit Cost	Estimated Cost
1	Mobilization	Lump Sum	1	\$3,500.00	\$3,500.00
2	Bridge Removal	Lump Sum	1	\$5,000.00	\$5,000.00
3	Temporary Bridge	Lump Sum	1	\$5,000.00	\$5,000.00
4	Detour Road	Lump Sum	1	\$1,000.00	\$1,000.00
5	Structural Excavation	Lump Sum	1	\$520.00	\$520.00
6	Granular Wall Backfill	Cu. Yd.	7	\$70.00	\$490.00
7	Furnish Pile Driving Equipment	Lump Sum	1	\$30,000.00	\$30,000.00
8	Furnish HP 14 X 73 Pile Caps	Foot	36	\$60.00	\$2,160.00
9	Furnish PP 16 X 0.5 Steel Piles	Foot	400	\$80.00	\$32,000.00
10	Drive PP 16 X 0.5 Steel Piles	Each	10	\$800.00	\$8,000.00
11	Reinforced Pile Tips	Each	10	\$300.00	\$3,000.00
12	Prestress Slabs	Each	4	\$14,295.00	\$57,180.00
13	Crane	Day	2	\$7,500.00	\$15,000.00
14	"W Beam" Bridge Rail	Foot	124	\$75.00	\$9,300.00
15	Aggregate Base	Ton	100	\$16.00	\$1,600.00
16	Paving (30 Tons)	Lump sum	1	\$4,600.00	\$4,600.00
17	Guardrail, Type 2A	Foot	50	\$25.00	\$1,250.00
18	Guardrail End Pieces, Type C	Each	4	\$100.00	\$400.00
TOTAL ESTIMATE					\$180,000.00

Attachment 3

COST ESTIMATE - B Used slabs & County Provided/Installed Guardrail
Biggs Road Bridge MP 0.22

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11	Reinforced Pile Tips	Each	10	\$300.00	\$3,000.00
12	Prestress Slabs Slabs purchased & delivered by County (\$6200 ea). Allowance for placing, attachment, bearing pads and tie rods (\$1300 ea).	Each	4	\$7,500.00	\$30,000.00
13	Crane	Day	2	\$7,500.00	\$15,000.00
14	Bridge Rail - Posts	Each	20	\$200.00	\$4,000.00
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17	Guardrail, Type 2A (by County)	Foot	50	\$0.00	\$0.00
18	Type-C End Pc (by County)	Each	4	\$0.00	\$0.00
TOTAL ESTIMATE					\$145,870.00

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- The slabs should be a minimum of **61 feet long**.
- For a span of this length and assuming the slabs have sufficient strand, the slabs should be a minimum of **26 inches deep**.

Location

The new bridge will keep the existing alignment. The new bent caps will be placed outside the existing end bent caps to allow continued use of the existing bridge while a portion of the foundation work is completed. To eliminate the need for a hydraulic/hydrology evaluation, the new bridge will provide greater than or equal to the bridge opening and soffit elevation of the existing bridge. Assuming the existing timber superstructure depth is 21 inches, the elevation of the bridge will need to be raised a minimum of 7 inches.

Miscellaneous

- The new bridge will have side-mounted thrie-beam bridge rail with steel angle drainage curbs to lower cost and remove the need for additional slabs for a top-mounted bridge rail.
- There will be no end panels.
- The temporary steel support at one of the interior bents is to be salvaged and returned to Lane County.

- A telephone utility attached to the bridge is to be relocated by others.
- An existing wire fence across the creek, observed to obstruct creek flow by catching and holding debris, is to be removed.

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- To match the existing bridge opening underneath, the bridge grade must be raised a minimum of 7 inches.
- Drive the piles and cover until the slabs are delivered.