
BRIDGE SECTION
Continue Diligent Efforts

January 1994



Gary Blackmer
Multnomah County Auditor



GARY BLACKMER

COUNTY AUDITOR
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MULTNOMAH COUNTY OREGON

MEMORANDUM

DATE: January 19, 1993

TO: Beverly Stein, Multnomah County Chair
Dan Saltzman, Commissioner, District 1
Gary Hansen, Commissioner, District 2
Tanya Collier, Commissioner, District 3
Sharron Kelley, Commissioner, District 4

SUBJECT: Audit of County Bridge Section

The attached report covers our audit of the Bridge Section, which was included on the FY92-93 Audit Schedule. By design, audits focus on problems or areas needing improvement. Although our audit work reviewed all the significant operations of the Bridge Section, we could not find any clear opportunities for improvement. We believe that the conclusion speaks well of the efforts of the Bridge Section. However, we also want to emphasize that the Bridge Section continues to face challenges, in the short-term and the long-term, which will require that they persist in their efforts to improve, so that they can extend the lives of the bridges.

We have discussed these findings and recommendations with the County Chair, the Director of the Department of Environmental Services, the Transportation Director, and the Bridge Section Manager. Written responses are the last section of the report.

We would appreciate receiving a written status report from the County Chair, or a designee, in six months indicating what further progress has been made regarding the recommendations identified in this report. This response should be circulated to the Commissioners.

We appreciate the cooperation and assistance provided by the personnel in the Bridge Section.



GARY BLACKMER
Multnomah County Auditor

Auditor: Stephen J. March
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SUMMARY

This report covers our review of the County's maintenance, improvement, and operation of the Willamette River bridges. In general, the Bridge Section appears to be efficiently and effectively performing its duties. The Bridge Section is addressing important problems which will continue to challenge its ability to maintain and operate these structures. Responses to the audit are included in the back of the report.

The Bridge Section of the County's Transportation Division is responsible for the operation, maintenance and improvement of the Sellwood, Hawthorne, Morrison, Burnside, Broadway and Sauvie Island bridges. The 36 budgeted personnel in the Bridge Section provide routine maintenance, open the bridges for river traffic, and plan for and manage contracts for major repairs and improvements. The Bridge Section is budgeted at \$5.9 million in FY93-94 to perform these duties. These activities are funded with gasoline taxes, and State and Federal highway sources on a project-by-project basis. The Bridge Section estimates the replacement value of the bridges at over \$750 million.

The Bridge Section appears to be responsive to the needs of the bridges as well as the public, which relies upon the structures. It has the characteristics of an organization striving to provide efficient and effective services for the public. The personnel seem to share a clear understanding of the organization's mission, and they possess the professional skills to accomplish their duties. They work to anticipate and detect problems, and develop appropriate responses to discovered deficiencies.

In 1986 the Bridge Section developed a comprehensive list of routine preventive maintenance tasks which were generally completed on schedule. They also identified maintenance repair needs and began addressing the highest priority repair needs first. The Bridge Section recently made improvements to its computer-generated schedule of preventive maintenance tasks to ensure their timely performance. The Bridge Section is also updating bridge repair needs to establish a new list of priorities.

In July 1993, the Bridge Section updated its 20-year capital improvement program (CIP) plan for the Willamette River bridges. They estimate total CIP costs of more

than \$193 million for mechanical, electrical, structural and painting projects over the next 20 years. The plan includes over \$77 million for painting, and about \$50 million for replacement of the Sellwood Bridge. CIP funding for the bridges does not appear to be sufficient. To adequately respond to the needs identified for the next 20 years, an average of nearly \$10 million per year is necessary. Currently, only \$1.5 million is allocated to bridge capital improvements under a gasoline tax sharing agreement between Multnomah County and the City of Portland.

The Bridge Section provides 24-hour staffing to open the Broadway and Hawthorne Bridges for river traffic while the Morrison and Burnside bridges are staffed by on-call operators. Although the Broadway Bridge averages less than one opening per day, the U.S. Coast Guard requires 24-hour staffing. For a number of reasons the Bridge Section is currently considering scheduling bridge operators for the Morrison and Burnside bridges. The Bridge Section should also consider on-call operators for the Broadway Bridge, which could save up to \$90,000 annually.

The Bridge Section appears to have adequate procedures for handling emergency situations, and responded quickly to the March 1993 earthquake. Its crews have a means of reporting accidents and operating deficiencies in a timely manner. The Bridge Section has also improved its safety practices and significantly reduced its losses since a 1989 Auditor's Report. In a four-year period prior to the audit, there were 29 claims, costing about \$140,000. In the past four years claims have dropped to 18 with a total cost of about \$22,000. However, the Bridge Section was recently cited for safety risks by the Oregon Occupation Safety and Health Division. Some problems have already been addressed, but others will require additional time to resolve.

All major bridge construction projects are contracted out. Because of the age and distinct design of each bridge, contracting for repairs can be difficult. To evaluate how well the Bridge Section was controlling its contract costs, we reviewed changes to the construction contracts. The changes added only 5% in additional costs to the original bid amount. In many cases the changes were necessary when more complex or extensive work was needed which would have been difficult to foresee. We found a similar pattern when we reviewed personal services contracts with engineering firms.

We recommend that the Bridge Section continue to update and improve its inspections program, maintenance repair priorities, and tracking systems. The Bridge Section should continue to seek additional capital improvement funds from all possible sources. The Bridge Section should also study bridge operator staffing practices for opportunities to reduce costs.

INTRODUCTION

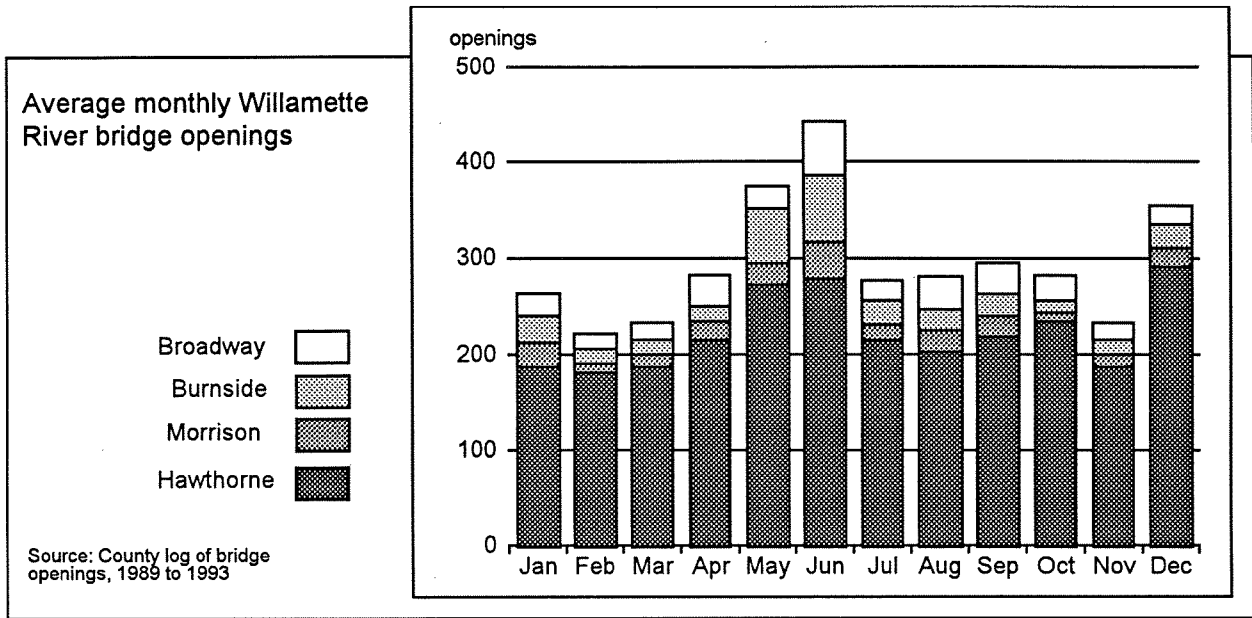
Background

The Willamette River carries vessels and their cargo to and from the Portland metropolitan area, while its bridges span the river for automobiles, buses, trucks, pedestrians, and bicyclists. The U.S. Coast Guard enforces regulations which generally grant river vessels priority over other traffic. Within the Department of Environmental Services, the Transportation Division's Bridge Section is responsible for the operation, maintenance, and improvement of the Willamette River bridges. The Bridge Section is responsible for six major river bridges: the Sellwood, Hawthorne, Morrison, Burnside, and Broadway Bridges over the Willamette River; and the Sauvie Island Bridge over the Multnomah Channel. The Bridge Section also maintains about 16 associated structures, such as ramps and viaducts leading to the main bridges, and works with the Transportation Division's Engineering Services and Road Maintenance Sections to design and maintain the County's other 22 bridges. The bridges maintained by the Transportation Division include viaducts and bridges over the Sandy River, Gordon Creek and Johnson Creek.

Four of the Willamette bridges are movable, or drawbridges, which can be opened to allow for passage of ships, boats and other river traffic. The Hawthorne is a vertical lift bridge, and the Morrison, Burnside, and Broadway are bascule bridges (a design in which the weight of the deck, or leaf, is balanced by a counterweight). The oldest of the four bridges is the Hawthorne, built in 1910, followed by the Broadway in 1913, the Burnside in 1926, and the newest of the Willamette bridges, the Morrison, built in 1958. The Hawthorne and Broadway bridges are federally-listed historic structures, a designation which limits alterations to their appearance. The two non-movable bridges are the Sellwood, built in 1925, and the Sauvie Island, built in 1948. These bridges are high enough to allow river traffic to pass without an opening span.

A number of bridge openings are performed for maintenance work, but over 75% of the openings of the four bridges are for river traffic. In total, there are an average of over 3,500 openings per year, with seasonal fluctuations caused by high river levels in the winter and the Rose Festival in the spring. Exhibit 1 below shows the average monthly openings for all of the four movable bridges between January 1989 and September 1993.

Exhibit 1



Most maintenance work is scheduled during non-peak traffic hours, generally between about 9 a.m. and 3:30 p.m. While working, the maintenance crews keep at least one lane open in both directions and try to reduce traffic delays. Work requiring closure of a bridge generally is done on the weekends, and is only done after a public notification process.

Organization and budget 48.5

The Bridge Section is budgeted for 36 full-time personnel in four units: Maintenance, Electricians, Engineering and Operations. The Bridge Maintenance staff and two electricians are responsible for emergency response, routine maintenance tasks, and repairs. Bridge Operations staff (one supervisor, eleven full-time and seven part-time positions) open the bridges and perform light maintenance duties such as greasing bridge components and responding to accidents or emergencies. A Bridge Services Manager, with the administrative assistance of two clerical staff, manages the Bridge Section. All staff except the operators are located in the Bridge Section Shop at the east end of the Hawthorne Bridge.

Bridge Engineering is responsible for bridge improvement projects which include planning, design, preparation of contract documents, and administering the construction contracts. The seven Bridge Engineering staff also assist with other Transportation Division engineering projects to fully utilize staff resources. These costs are reimbursed to the Willamette River Bridges Fund. Personnel from the Transportation Division may also provide assistance to the Bridge Section, with their costs charged to the Bridges Fund.

The combined budget for the Bridge Section is about \$5.9 million for FY93-94. Approximately \$2.5 million of this amount was beginning working capital carried over for multi-year projects, including tower painting and illumination on the Burnside and work on the Broadway deck and mechanical components. New projects budgeted for FY93-94 include improved warning signs for the Broadway, and widening of the approach to the Sauvie Island Bridge. A total of \$527,000 will be carried forward for deck rehabilitation on the Morrison and painting of the Broadway. Exhibit 2 below shows expenditures for Willamette River Bridges over the past ten years.

Exhibit 2	Fiscal Year	Expenditures
Bridge Section expenditures *budgeted, includes funds to be carried forward for future projects Source: County financial records and budgets	FY84-85	\$2,217,499
	FY85-86	3,000,124
	FY86-87	1,497,553
	FY87-88	1,898,793
	FY88-89	2,385,042
	FY89-90	2,818,677
	FY90-91	4,400,265
	FY91-92	2,954,588
	FY92-93*	6,169,021
	FY93-94*	5,937,583

7.7 mil

The County's Willamette River Bridges Fund received \$3.2 million from the County Road Fund in FY93-94, as specified in an Intergovernmental Agreement with the City of Portland. Of this amount, the Bridge Section received \$1.7 million for maintenance, electrical, and operating needs. The amount has increased each year with inflation according to provisions in the agreement. The amount for capital improvements, including engineering, has been fixed at \$1.5 million since the original 1984 agreement was renegotiated in 1989.

A limited amount of Federal and State funds are also available for some bridge repairs. For example, construction of the Hawthorne Bridge Transition Structure (replacing the wooden structure leading to the east end of the bridge) totalled over \$5 million, but the Bridge Section was able to obtain between 85% and 90% of the funding from State and Federal sources.

Audit Scope

The purpose of this audit was to evaluate the efficiency of operations of the Bridge Section and to follow up on a previous report to management (Bridge Maintenance Survey; RTM #1-89). We conducted a general review of management controls and reviewed budgets, expenditures, contracts, and procedures. We also reviewed records maintained by both the Bridge Section and the Transportation Division, which provides fiscal and administrative support and oversight. We reviewed selected personal service and construction contracts of the Bridge Section for periods dating back to 1985. We observed the maintenance crews and bridge operators at work and toured the bridges. We did not conduct structural inspections of the bridges as part of this audit. Under federal law bridges must have structural inspections every two years, a task performed by the Oregon Department of Transportation.

We reviewed Federal and State laws applicable to the operation and maintenance of the Willamette River Bridges. We interviewed personnel from the Bridge Section as well as the Transportation Division and Multnomah County's Purchasing, Budget, and Risk Management Offices. We also interviewed personnel from the Oregon Department of Transportation and the City of Portland, as well as the United States Coast Guard and a contractor.

The review was included in our FY92-93 audit schedule, and was conducted according to generally accepted government auditing standards, except for the new requirement for periodic external quality control. At the request of the County Auditor, audit managers from three other jurisdictions are currently reviewing this office's policies and procedures manual for compliance with Government Auditing Standards.

AUDIT RESULTS

We reviewed the Bridge Section activities to identify opportunities for improved services, reduced costs, or better safeguarding of County assets. We did not identify any significant problem areas of which management was not aware. We found management to have a clear vision of the Section's mission and the staff possessed the requisite professional skills to accomplish their duties. In addition, when management discovered potential problems they responded promptly to correct any deficiencies and were working to better anticipate, detect and respond to bridge needs.

While our audit surveyed a number of areas, we chose seven areas to review in greater detail. In any audit there is the possibility that problems are not detected, however our evidence indicates that the Bridge Section was generally performing its responsibilities in an efficient and timely manner. As we have noted below, a few areas need continued attention by the Bridge Section and the County.

Maintenance and repair needs

In 1985 the Bridge Section contracted with bridge engineering consultants to identify immediate and short-term repair needs, routine maintenance tasks, and capital project needs for each of the Willamette River bridges. Following this investigation, the Bridge Section performed a number of the maintenance repairs and initiated several capital improvement projects. They also established a computerized, routine maintenance program and developed a twenty-year capital improvement program. These two programs received a National Association of Counties Achievement Award in 1990.

Subsequent inspections of the bridges have increased the number of needed repairs. One objective in the 1992-94 Transportation Division's Strategic Plan for the Bridge Section was to prioritize both long- and short-term bridge repair needs. As a result, the Bridge Section has been reviewing the 1986 survey, information from the biennial federally required inspections, and other reports of bridge deficiencies, to maintain a complete list of maintenance repair needs. The Bridge Section has also scheduled periodic maintenance inspections to monitor the condition of bridge systems and to identify other repair needs in a timely manner.

Some maintenance repairs yet to be completed

The 1986 consultant report listed structural, mechanical, and electrical maintenance repairs which were recommended to be completed within two years. The list of repairs included

painting machinery rooms, changing oil in traffic gates, replacing broken bolts, re-balancing a bridge leaf, rebuilding bearings, and sealing cracks.

Many of the identified repairs were completed within a short time after the 1986 report was issued. Other repairs are presently under way. A number of the repairs involve paint removal and repainting. In recent years these kinds of projects have fallen under more stringent containment regulations than those existing in 1986. As a result, the painting projects will probably be deferred until the entire bridge is scheduled for painting. However, a number of non-painting repairs identified in 1986 have not been completed.

Some repairs involve the mechanics of the bridges, such as bearings and shims, while others relate to cleaning and sealing deck joints. Some of these items may also have been completed during other maintenance tasks. However, they had not been checked off as having been completed. Bridge Section personnel are currently inspecting, re-assessing and establishing a prioritized list from which management will decide which repairs can be completed within a reasonable time-frame by the Section's own maintenance crews and which will need to be contracted out.

Tracking routine maintenance needs and activities

The comprehensive routine maintenance program for the Willamette River Bridges is computerized. This program establishes the necessary maintenance activities, the tasks associated with each activity, and the appropriate frequency with which each task is to be performed. These maintenance tasks are scheduled using the computer to produce monthly lists of specific actions to be taken by Bridge Section personnel. The computer software also tracks their completion and maintains a history of tasks performed.

During the course of the audit, Bridge Section staff identified and corrected a procedural flaw in their maintenance tracking system. They discovered that in some cases the maintenance crews failed to properly complete and turn in cards ("T-cards") that describe scheduled maintenance tasks. As a result, the computer program failed to notify them of the next scheduled time for the task. Bridge Section staff were generally able to update task completion data with information that maintenance workers also tracked on their time-cards. Crews performed maintenance activities that had been missed. In addition, management discussed with staff the need for accurate recording of maintenance tasks. We observed renewed efforts in capturing completion data during the period of our audit. Our review of current maintenance records indicated that most routine maintenance occurred on or near schedule.

CIP planning

In July 1993, the Bridge Section updated their 20-year capital improvement program (CIP) plan for the Willamette River Bridges. This plan uses five factors to rate construction projects: sufficiency ratings for the bridges, historical significance, availability of outside funding, evaluation of type and critical nature of the bridge component, and the recommended repair or replacement schedule. The sufficiency ratings are taken from the Oregon Department of Transportation Sufficiency Ratings which includes factors such as structural adequacy and safety, number of lanes, average daily traffic, roadway alignment and width, condition, and detour length. The factors used are similar to those recommended by the U.S. General Accounting Office to the U.S. Department of Transportation. Painting needs are similarly rated on the basis of corrosion damage, rust, paint condition, weather exposure, and public visibility. The CIP plan also groups projects into five year periods, which enables the Bridge Section to better match the project to available staff and funding, as well as coordinate with related projects of other jurisdictions.

The 20-year capital plan for the Willamette River bridges calls for improvements to mechanical, electrical and structural systems estimated to cost over \$193 million, or an average yearly cost of about \$9.6 million. The CIP plan includes seismic evaluation inspection and fortification of at least one bridge and its ramps to withstand a moderate earthquake. Seismic retro-fitting of additional structures is expected to occur after the 20 year time-frame of the CIP plan. The \$193 million CIP costs include replacement of the Sellwood Bridge, which is estimated at about \$50 million. The Bridge Section estimates the replacement value of the Willamette River Bridges at over \$750 million.

Excluding the Sellwood replacement, painting accounts for more than half the CIP plan costs, estimated at \$77.5 million over the next 20 years. Recent restrictions on removal, containment and disposal of all hazardous materials related to painting materials resulted in a fivefold increase in estimated painting costs between the 1989 and 1993. No major painting projects have been done in the last few years, even though painting prevents corrosion which can weaken the structures and require earlier replacement.

CIP Plan appears under-funded

Even excluding the Sellwood replacement, which the County and City of Portland will be working together to finance, the \$7 million in annual capital needs is significantly more than the \$1.5 million of current capital funding. The Bridge Section has indicated that few of these capital improvement projects are likely to receive State or Federal assistance. While we did not attempt to verify the accuracy of the estimated CIP costs, if they are

correct, the CIP Plan is under-funded. The Bridge Section and Transportation is continuing to work with both federal and state agencies and expects to receive additional funding based on the County's proportion of bridge needs. Historically, the level of federal and state funding has not been sufficient to meet the capital needs of the bridges. Because of the increased painting costs, the allocation of gasoline taxes may need to be reviewed. Other potential sources of revenue necessary to keep the Willamette River Bridges operating may also have to be explored.

Operations

The Hawthorne Bridge opens most frequently because it is the lowest of the four movable spans (53 feet above the average low water levels). At 90 feet, the Broadway is the highest of the movable spans. However it is staffed twenty-four hours a day because large, ocean-going ships regularly pass through to reach a nearby dock. Exhibit 3 below shows the vertical clearance, average daily openings, and average vehicle traffic for the Willamette's bridges.

Exhibit 3

Bridge clearance and usage	Bridge	Clearance at low water	Average daily openings	Daily vehicle crossings
		Broadway	90 feet	0.8
	Burnside	64 feet	0.9	43,350
	Morrison	69 feet	0.6	49,610
	Hawthorne	53 feet	7.4	26,850
	Sellwood	75 feet	not applicable	28,430
Source: Bridge Section records	Sauvie Island	80 feet	not applicable	2,800

Federal law requires the County to continuously staff the movable bridges most likely to interfere with river traffic and commerce. As a result, the Bridge Section is required to have operators on both the Hawthorne and Broadway so that they may be opened on signal from river traffic too tall to pass underneath the structures. According to U.S. Coast Guard personnel, the County's bridges have a good record of responding to river traffic. Prior to 1982, all of the movable bridges had full-time operators. At that time, the

County requested and received permission from the Coast Guard to operate two bridges, the Morrison and Burnside, on an on-call basis. This change reduced full-time operations staff from 18 to 12. The Burnside and Morrison Bridges are allowed to have on-call operators except during Rose Festival week or high water when they too are required to have full-time operators. According to the Bridge Section, full-time operators are required from 45 to 60 days a year.

Maintenance crews work on the bridges during the day, and operators are often called in to staff the Burnside and Morrison during these times. The Bridge Section manager indicated they are considering the feasibility of hiring more full-time operators to staff these two bridges, at least during regular maintenance hours, instead of relying on part-time operators. One benefit of increasing the number of full-time operators, cited by management, is that full-time operators would be better trained and more familiar with the bridges and their operations. Another cited benefit is that the presence of staff on the bridges provides added security to the facilities and to the public, as well as immediate response to emergencies. They indicated that additional scheduled operators could reduce the possibility of damage to the bridges and increase the frequency of the light maintenance work which operators perform. Management has also indicated that, if much of the workforce is part-time, it is sometimes difficult to maintain an adequate number of qualified operators during times when all of the bridges need to be staffed 24 hours a day.

Possible operational changes could improve efficiency

We did not attempt to analyze all the factors affecting the scheduling of bridge operators and maintenance staff. However, the Bridge Section should review the necessity of full-time staffing on the Broadway Bridge. Like the Burnside and Morrison Bridges, the Broadway averages less than one opening a day. By operating the Broadway on an on-call basis, the Bridge Section may be able to provide a full-time operator to assist maintenance crews during regular maintenance hours and still reduce operating costs.

Coast Guard approval would be required to change the operational status of the Broadway, but it may be possible to work with the grain elevator and dock owner adjacent to the bridge to ensure there are no delays to shipping. If qualified operators could be moved into maintenance positions, they could assist when more operators were needed. An alternative would be to train maintenance workers to operate the bridges at those times. If the number of full-time operators could be reduced, by having more part-time operators or by cross-training, the Section could realize up to \$90,000 in operational savings which could be directed toward maintenance needs. The Bridge Section has indicated they will study

the feasibility of implementing on-call status for the Broadway Bridge and analyze possible staff reductions.

Emergency Response

The Bridge Section has established emergency procedures for the bridge operators to follow, including the persons to be contacted, the time of day and circumstances under which they should be contacted, and the methods for contacting them. The Bridge Section responded quickly to the March 1993 earthquake. General site reviews of the major bridges were completed within two hours of the earthquake and in-depth inspections were completed within approximately six hours. None of the bridges were found to have suffered damages.

In addition to a major emergency like the earthquake, bridge operators routinely notify their supervisor and maintenance crews of other problems, such as operational difficulties or accidents which occur on the bridges. They also keep logs of the bridge openings and have forms for reporting bridge deficiencies.

Safety

The Bridge Section has improved its safety practices and reduced its losses since the issue was raised in the 1989 Auditor's Office Report. In the four years since the report, the total number of claims was 18, compared to 29 in the preceding four years. Similarly, the monetary value of all worker's compensation claims during the period has also been reduced by approximately 85%, from \$140,000 to \$22,000.

However, the Bridge Section was recently cited by the Oregon Occupational Safety and Health Division (OR-OSHA) for a number of problems. Some problems have already been corrected, such as replacing guards on machinery, while others require more extensive corrective action by the Bridge Section. Some of the identified problems are caused by the design of the bridges and their machinery which were built as far back as 1910. The Bridge Section Manager is working to resolve the remaining issues.

Contracting for services

As a public agency, the County is required by law to contract out all its major construction activities. Approximately \$8.7 million in contracted services have been completed in the past 5 years. The Bridge Section prepares a detailed description of the project, occasionally assisted by consultants. The bids are evaluated and a contract is awarded. The State generally handles the bids for large projects using federal assistance. All projects have a

County construction manager and inspectors to ensure that the work is appropriately performed.

Contracting for repairs can be particularly difficult because of the age and distinct design of each of the County's bridges. When a contractor encounters unexpected problems during the course of construction the County may approve a "change order" which authorizes additional work for an agreed amount of money in excess of the original bid. Change orders can significantly increase the cost of projects. In some cases, change orders can be avoided with good construction planning and management.

We compared the final contract costs to the original contract bid amount to determine the affect of change orders on Willamette River Bridge construction projects for the years from 1988 to the present. Change orders added a total of only 5% to the total amount of the original contracts. We also reviewed individual change orders for 9 construction contracts dating back to FY89-90. The change orders appeared to be appropriate. In many cases, change orders occurred when more complex or extensive work was needed which would have been difficult to foresee. Other change orders resulted from a variety of reasons, such as additional construction requirements and a difference between national and state electrical codes. We found no evidence of change orders that were improperly approved by the Bridge Section or Transportation personnel.

The Bridge Section also contracts some design work to engineering firms. We reviewed the personal service agreements with engineering firms and the invoices associated with them. When we reviewed the change orders associated with these contracts, it appeared that they were caused by factors outside the control of the consultant or the County. One contract was extended when the engineering firm discovered structural deficiencies that required immediate action to maintain the safety and operability of a bridge. Another instance involved changes required by the City of Portland in a structure's design.

While we did not test contract invoices, the Bridge Section and Transportation Division have established controls which appear to be adequate. We noted several occasions where the Bridge Section identified discrepancies on invoices and withheld approval until the issues were resolved.

RECOMMENDATIONS

While our audit detected few significant operational problems, improvements can be expected of any organization. Continued vigilance and effort by the Bridge Section will ensure the vital links provided by the Willamette River bridges will continue to serve the public for years to come.

- A. To ensure routine maintenance tasks and maintenance repairs are done in a timely manner, the Bridge Section should:
 - 1. Complete its assessment and prioritization of maintenance repair needs;
 - 2. Continue improvements made in tracking routine maintenance tasks;
 - 3. Continue yearly inspections of mechanical and electrical systems.

- B. To meet the identified capital improvement needs of the next twenty years:
 - 1. Continue to work with State and Federal officials to obtain funding for CIP projects;
 - 2. Continue to work with the City of Portland to identify and secure financing for the replacement of the Sellwood Bridge;
 - 3. Evaluate the adequacy of current Willamette River bridge capital funding and explore methods of re-allocating gasoline taxes.

- C. To allow for greater flexibility and possible savings in staffing for the operation of the four movable bridges, the Bridge Section should study current staffing practices to determine if:
 - 1. Staffing the Broadway Bridge with on-call operators is feasible and practical;
 - 2. Cross-training of personnel is feasible and would provide for better preparation for both operational and maintenance emergencies.

RESPONSES TO THE AUDIT



Beverly Stein, Multnomah County Chair

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P.O. Box 14700
Portland, Oregon 97204
(503) 248-3308

January 13, 1994

Gary Blackmer, Auditor
1021 SW 4th, Room 136
Portland, Oregon 97204

Dear Gary,

Thank you for your thorough work in reviewing the County's maintenance, improvement, and operation of the Willamette River Bridges. I was pleased to learn that your assessment of the bridge operation was that it was responsive, efficient, and staffed by personnel with a clear commitment to safety and efficient operations.

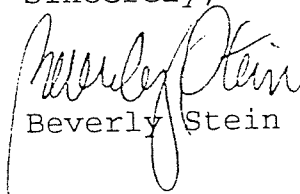
The major finding in the audit appears to be the chronic underfunding for capital improvements. As you identify in your recommendations, there are several possible routes to take for increasing that needed funding.

I have already asked the Director of County's Department of Environmental Services to present me with options within the County's budget for how we could redirect more of our resources to the bridges and the tradeoffs that poses.

In addition, the Director is working with the Transportation Division to explore the other suggestions in the audit related to on call operators and cross training personnel. I have asked her to respond to me with her suggestions by March 15, 1994.

Again I appreciate the continuing professionalism and quality work from you and your staff. I look forward to working on solutions to the long term funding problems identified.

Sincerely,


Beverly Stein



MULTNOMAH COUNTY OREGON

DEPARTMENT OF ENVIRONMENTAL SERVICES
2115 S.E. MORRISON
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BOARD OF COUNTY COMMISSIONERS
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TANYA COLLIER • DISTRICT 3 COMMISSIONER
SHARRON KELLEY • DISTRICT 4 COMMISSIONER

MEMORANDUM

TO: BEVERLY STEIN, MULTNOMAH COUNTY CHAIR

FROM: BETSY WILLIAMS, DIRECTOR *BHW*
DEPARTMENT OF ENVIRONMENTAL SERVICES

LARRY F. NICHOLAS, DIRECTOR/COUNTY ENGINEER *LFN*
DIVISION OF TRANSPORTATION

DATE: JANUARY 12, 1994

RE: RESPONSE TO THE AUDIT OF THE BRIDGE SECTION
WITH THE TRANSPORTATION DIVISION.

RECEIVED
JAN 12 1994
Multnomah County Auditor

The audit provides a good overview of the operations of Bridge Section in its effort to effectively operate and preserve the County's \$750 million bridge investments and maintain public safety.

One area requiring additional discussion is the Operations and Maintenance Manual specifically developed for the County's four Willamette River moveable bridges. The manual was not mentioned in the audit. The manual, completed in January of 1987 by county staff with the assistance of specialized consultants, provides for specific operating and maintenance procedures for the Hawthorne, Morrison, Burnside and Broadway Bridges. The document contains requirements to navigation law, operator duties, operating procedures, reporting procedures internally and external to the County, navigational criteria, and detailed descriptions of maintenance procedures, lubrication schedules for mechanical and electrical equipment and systems, and general structural maintenance areas. This guiding document is a training tool for bridge operators as well as a detailed reference for maintenance personal. The document is the foundation for the Bridge Section's computerized preventative maintenance program.

In response to the recommendation made by the audit, except for those addressed below, all items of work are identified in the Division's current FY92-94 Strategic Plan and Section's Work Plan. Listed below is a response to specific audit

recommendations requiring further discussion. Audit recommendations appear in bold type; responses follow each recommendation.

A.1 Complete its assessment and prioritization of maintenance repair needs.

Identification and prioritization of maintenance repair needs including determination of repairs to be contracted out as capital project will be completed by June 30, 1994. Similar to and coinciding with the Willamette River CIP, the prioritized listing of maintenance repairs will receive major updating every two years with minor modification every other year.

B.3 Evaluate the adequacy of current Willamette River bridge capital funding and explore methods of re-allocating gasoline taxes.

We have evaluated the adequacy of capital funding for the bridge program and acknowledge that there is a serious shortfall over the next 20 years.

State and county gas taxes are the current principle source of revenue which fund Multnomah County and supplements the City of Portland transportation programs under a revenue sharing formula. There is a shortfall in all transportation programs, so more money is needed. Re-allocation of current revenues is a complex issue and no simple answers are evident.

Another resource is state/federal Highway Bridge Replacement (HBR) money designated for specific projects on a competitive basis. Although the Willamette River Bridges have been successful competing for funding for specific projects in the past, it has not been sufficient to meet the capital needs. HBR money has increased under the new ISTEA Federal Highway Program, but it is not expanding in proportion to the cost of bridge repair or replacement.

The larger issue with respect to capital funding of the Willamette River Bridges is that these bridges serve a regional rather than local citizenry, and additional revenue is needed to maintain the safety and integrity of these bridges. Whether a new revenue source is developed or existing revenues are increased, funding should be directly related to who benefits from the bridges. Oregon Department of Transportation, our regional partners and the public should be involved in the solution.

Efforts to increase revenues for transportation are being made at the Federal level, state level, and the local level. At the state level, the Oregon Transportation Finance Plan is being updated and legislative proposals will be prepared for the next session. Specific funding for bridges is included. At the local level, discussions are underway to develop a regional funding approach for transportation needs. The Willamette River Bridges are included as a separate funding category.

C.1 Staffing the Broadway Bridge with on-call operators is feasible and practical; In review of the audits recommendation, we will investigate the feasibility and practicality of on-call versus full-time operators with emphasis on the Broadway Bridge. Our finding and recommendations will be provided in a report by April 30, 1994.

C.2 Cross-training of personnel is feasible and would provide for better preparation for both operational and maintenance emergencies. Cross-training of bridge operators and maintenance personnel will be investigated along with our examination of on-call versus full-time operators. The concept will be reconciled within the context of existing union agreements. Our findings and recommendation will be discussed in the April 30, 1994 report.

The Department of Environmental Services and the Transportation Division, Bridge Section, would like to take this opportunity to thank the Auditor's Office, in particular Steve March, for their excellent work on this audit project. We appreciate their recommendations and also appreciate their acknowledgement of the excellent management of our Bridge program. Past audits in this department have been very beneficial and have resulted in positive changes. We are certain that this audit will be no exception.

✓c: Gary Blackmer, County Auditor



