



Kennedy & Associates
CONSULTING CIVIL ENGINEERS

*Project Management
Construction Management
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Engineering Services*

Memorandum

Date: October 27, 2011
To: Pat Cashman
From: Frank Kennedy
Subject: OAB Infrastructure Status

The current state of the infrastructure at the Oakland Army Base (OAB) can be characterized as being in varying states of its useful lifespan. As the useful lifespan for the water, sewer and roadway systems is nearly expired and redevelopment has been anticipated, only minimal maintenance has been performed to allow for access at a minimized level of service. Field visits by staff as well as reports from the consultants confirm that these conditions exist across the site.

A summary of the infrastructure has been presented by category –Roads, Wet Utilities, Sanitary Sewer and Storm Drain systems –with costs in current dollars.

Roadways

Maritime Street

Maritime Street is a route servicing thousands of trucks and vehicles on a daily basis. In addition to providing access to all four City development areas, Maritime Street is also used to access some of the Port's land available for development.

Maritime Street's pavement is already showing significant signs of deterioration due to constant and heavy truck loading. In order to preserve Maritime's infrastructure, the recommended course of action would include a reconstruction of Maritime Street. A proper reconstruct would reduce any future maintenance, and put Maritime on a 20-year maintenance cycle for minimal surface restoration. Needed improvements would include new pavement, curb, gutter, sidewalk, curb ramps, adjustment of existing castings to grade, traffic signage and lane striping, and other miscellaneous details. These improvements could also include a slight widening of Maritime Street to accommodate one additional traffic lane and one additional left turn lane (for storage capacity).

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If a reconstruct of Maritime Street is not performed, it will need significant maintenance followed by a series of preventive maintenance treatments in order to keep it in serviceable condition. At a minimum Maritime Street would need dig-out and replacement of failed pavement, full-depth asphalt repair as well as a small amount of leveling each year. A reconstruction would have to be performed on some length of Maritime every year in order to keep the street in a viable condition.

Estimated Annual Maintenance Cost

An estimated cost of the annual maintenance work is \$1,024,346 to keep the existing Maritime viable.

Note, installation or repair of the failing wet utilities are not considered in the evaluation of Maritime Street, Burma Road or Wake Avenue. Any proposed trench work would also need proper trench repair.

Burma Road

Burma Road is the only connector road between Maritime Street to the proposed West Gateway Area. Burma Road is in critical need of pavement reconstruction and is considered failed due to settlement, broken pavement, base failures and other indications of pavement failure. Improvements would include roadway reconstruction, including new sidewalk, curb and gutter, parking, bike lanes and travel lanes, curb ramps, adjustment of existing castings to grade, traffic signage and lane striping, and other miscellaneous details.

Estimated Annual Maintenance Cost

To keep the existing Burma passable will require patchwork maintenance reconstruction costing \$725,718 annually.

Wake Avenue

Wake Avenue is also in critical need of complete pavement reconstruction. From a pavement management perspective, Wake Ave. can be considered failed. Improvements would include new pavement, curb, gutter, sidewalk, curb ramps, adjustment of existing castings to grade, traffic signage and lane striping, and other miscellaneous details.

Estimated Annual Maintenance Cost

To keep the existing Wake passable will cost \$222,943 annually.

Wet Utilities

Water System

The existing water mains are in a state of disrepair. A comparison of the “utility main” meter volumes and the “sub-meter” volumes of tenants, estimate losses due to leakage between 62% and 83% of the water delivered to the site. The gallons leaked per year are increasing at a rate of 15%. The cost of the leakage in gallons to the City in 2008 was

\$116,964 and the estimated cost based on leakage in 2011 is \$199,526. The average cost over this four-year span to the City is \$153,886.

Cost per year in leakage

| | | |
|------|---------------------|------------------------|
| 2008 | \$116,963.90 | |
| 2009 | \$130,836.30 | 11% increase from 2008 |
| 2010 | \$168,214.58 | 23% increase from 2009 |
| 2011 | \$199,525.89 (est.) | 16% increase from 2010 |

Typical water main maintenance activities would include dig-out and replacement of failing sections of pipe or connections. However, it is widely believed that this proposed maintenance would quickly turn into an extended replacement project. Typically, a system that is assessed and found to have this level of leakage requires a complete replacement.

Estimated Annual “As-Is” Operating Cost

To continue to use the system “as is” results in an ongoing average increase in operating cost annually of 15% for leakage as shown above. Currently the City is projecting for 2011 a cost of \$199,525. The 15% annual increase is expected to continue and possibly increase as the system deteriorates in coming years.

Sanitary Sewer System

Background

The existing sanitary sewer system in the OAB Area is debilitated and in need of an overhaul. The Kimley-Horn and Associates (KHA) report used the Oakland Army Base Utility Study prepared by EarthTech in December 2000 to assess the existing conditions of the sanitary sewer. This report references a Radian, Inc. study, which performed extensive videotaping and cataloging of both the storm and sanitary sewer systems. It was determined from this report that some portions of the sanitary sewer and manholes had “defects of concern” which is defined as either moderate damage (pipeline sags, points of groundwater infiltration, and separated, misaligned or offset joints) or severe damage (broken, collapsed or series of cracks and holes).

At the time of the Oakland Army Base Utility Study, the North Gateway region appeared to not have any “defects of concern” that would necessitate replacing the existing sanitary sewer. If the East Gateway is to be included in the sanitary sewer design, the condition of Lift Station 18 station should be determined. If Lift Station 18 is going to be used, it must be verified that it is working properly and that it can handle additional flows produced from the East Gateway.

Current Conditions

The City’s sewer fee is based on water usage. The fee equates to 32.5% of the treated water provided. Based on the condition of the sewer (noted above as having either moderate or severe damage), the system may not be carrying the flows that the water

system usage would indicate it is. Reports of assessed infiltration rates typical at the site, found that infiltration rates could be significantly affected by flows from the broken water system. The broken water system is affecting the wastewater treatment rates based on the above noted leakage. The average increase in leakage of 15% from the water system is contributing to an annual increase in the wastewater operating cost of 15%. The City is paying for water it is not able to distribute as well as paying for wastewater treatment on water never received that is lost in leakage.

Financial cost of water leakage to the wastewater operating cost

| | | |
|------|--------------------|------------------------|
| 2008 | \$38,034.01 | |
| 2009 | \$42,545.65 | 11% increase from 2008 |
| 2010 | \$54,699.56 | 23% increase from 2009 |
| 2011 | \$64,881.29 (est.) | 16% increase from 2010 |

Estimated Annual Operating Cost

This is resulting in an annual projected operating cost of \$64,881 in 2011. As shown above, we expect this to increase on an annual basis as the system deteriorates.

Additionally, City crews perform hydro-cleaning of sanitary sewer to prevent or eliminate blockages. Hydro-cleaning is done every two years on lines in good condition. Lines that are in the condition of those on the Army Base require quarterly cleaning, or eight times more often.

Estimated Annual Maintenance Cost

The rate of cleaning required for the Base results in an incremental cost of \$96,896 annually.

Storm Drain System

Background

Kimley-Horn and Associates used the Oakland Army Base Utility Study prepared by EarthTech in December 2000 to assess the existing conditions of the storm sewer. This report references a Radian, Inc. study, which performed extensive videotaping and cataloging of both the storm and sanitary sewer systems. It was determined from this report that 45% of the storm sewer had “defects of concern” which is defined as either moderate damage (pipeline sags, points of groundwater infiltration, and separated, misaligned, or offset joints) or severe damage (broken, collapsed, or a series of cracks and holes). Updated condition assessment of existing pipelines would be necessary to determine existing capacity and condition.

Current Maintenance Practices

The storm sewers, other than the inlet inspection required by the NPDES Permit, are responded to on a "problems reported" basis similar to the sanitary sewer.

Estimated Annual Maintenance Cost

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The rate of blockage on the base is three times higher than the sewers in good condition at a cost of \$21,905 annually.

Conclusion

For the City to continue to operate the OAB “as is” and attempt the function “as is” considering the deficiencies in the existing systems the City would suffer unacceptable annual extra maintenance costs of:

| | |
|----------------------------|-------------------------|
| Roads | \$1,973,008 |
| Domestic Water | \$ 199,525 |
| Sanitary Sewer Operation | \$ 64,881 |
| Sanitary Sewer Maintenance | \$ 96,896 |
| Storm Sewer Maintenance | <u>\$ 21,905</u> |
| Total | \$2,356,215D/yr. |

References:

City of Oakland Pavement Management Program – Pavement Condition Map, April 2007

City of Oakland Public Works Agency – Oakland Streets Fact Sheet

Gateway Development Areas – Opinion of Probable Construction Costs Discussion Memo, May 19, 2009, prepared by Kimley-Horn and Associates, Inc.

Oakland Army Base Auto Mall Project Sanitary Sewer and Storm Sewer Pre-Design Report, July 28, 2006, prepared by Kimley-Horn and Associates, Inc.

Oakland Army Base (OAB) Gateway Development Area – Sanitary Sewer Alternatives Assessment, September 2009, prepared by Kimley-Horn and Associates, Inc.