MEMORANDUM

TO: Programs, Project and Operations Subcommittee

SUBJECT: West Branch Channel Project (84th to 96th Street)
Low Water Crossing Site WW7

DATE: February 3, 2009

FROM: Martin P. Cleveland, Construction Engineer

In 2006, Ehrhart Griffin and Associates prepared the design for seven low water crossings on seven tributaries to West Branch Channel in 84th Street to Giles Road reach. The low water crossings (box culverts) carry the 2 year frequency flood flows and were designed to handle over topping by larger storm events via articulated concrete block slope paving. The low water crossings were constructed by M.E. Collins in 2007 at a cost of $525,000.

In 2008, the West Branch Channel Project and the associated tributaries experienced multiple high water events in the May-June period. The low water crossings were over topped by West Branch flows and tributary flows. The seven low water crossings performed well over all, with the only exception being Low Water Crossing WW7 (see enclosed location map. WW7 experienced some erosion on the downstream slope of the structure (see enclosed photos). The erosion led to some undermining of the concrete blocks and the loss of a few blocks.

Ehrhart Griffin has prepared two repair options (see enclosed plan sheets). The first option involves adding rock filled gabion at the base of the low water crossing downstream slope and resetting some blocks. The second option involved installing sheet piling at the base of the low water crossing downstream slope and installing a poured in place concrete slab on the lower slope. Enclosed is a bid summary for the January 30, 2009 bid opening. Five bids were received and the apparent low bid of $22,295 is from Jochim Precast Concrete.

This work will be funded via West Branch Channel Project Contract Work account (Account 0103044479) and as of January 6, 2009, there is $72,000 left in this account.

- It is Management's recommendation that the Subcommittee recommend to the Board of Directors that the General Manager be authorized to execute a contract for construction of West Branch Channel Project – Low Water Crossing WW7 Repair Project with Jochim Precast Concrete, for their total base bid of $22,295 for repair option #2.
West Branch Channel Project – 84th to Giles Road – Low Water Crossing WW7

Looking Downstream (July 2008)
<table>
<thead>
<tr>
<th>No.</th>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Estimated Unit Price</th>
<th>Total</th>
<th>Unit Price</th>
<th>Total</th>
<th>Unit Price</th>
<th>Total</th>
<th>Unit Price</th>
<th>Total</th>
<th>Unit Price</th>
<th>Total</th>
<th>General Excavating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EARTHWORK (EXCAVATION)</td>
<td>61</td>
<td>CY</td>
<td>$25.00</td>
<td>$1,525.00</td>
<td>$26.20</td>
<td>$1,600.20</td>
<td>$35.00</td>
<td>$2,135.00</td>
<td>$9.27</td>
<td>$50.00</td>
<td>$3,050.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>TOPSOIL PLACEMENT</td>
<td>33</td>
<td>SY</td>
<td>$10.00</td>
<td>$330.00</td>
<td>$28.80</td>
<td>$950.40</td>
<td>$50.00</td>
<td>$1,650.00</td>
<td>$26.19</td>
<td>$60.00</td>
<td>$1,980.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SUBGRADE PREPARATION</td>
<td>69</td>
<td>SY</td>
<td>$20.00</td>
<td>$1,360.00</td>
<td>$3.91</td>
<td>$666.86</td>
<td>$40.00</td>
<td>$2,720.00</td>
<td>$21.80</td>
<td>$1,452.40</td>
<td>$30.00</td>
<td>$2,040.00</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>GABION BASKET W GEOTEXTILE FABRIC</td>
<td>38</td>
<td>CY</td>
<td>$500.00</td>
<td>$19,000.00</td>
<td>$954.00</td>
<td>$36,252.00</td>
<td>$500.00</td>
<td>$19,000.00</td>
<td>$724.64</td>
<td>$27,543.92</td>
<td>$350.00</td>
<td>$13,300.00</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>REVET MATTRESS W GEOTEXTILE FABRIC</td>
<td>6</td>
<td>CY</td>
<td>$300.00</td>
<td>$1,800.00</td>
<td>$1,000.00</td>
<td>$6,000.00</td>
<td>$500.00</td>
<td>$3,000.00</td>
<td>$1,300.10</td>
<td>$7,801.08</td>
<td>$390.00</td>
<td>$2,340.00</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>ARTICULATING CONCRETE BLOCK REVETMENT</td>
<td>216</td>
<td>SF</td>
<td>$25.00</td>
<td>$5,400.00</td>
<td>$21.50</td>
<td>$4,644.00</td>
<td>$20.00</td>
<td>$4,320.00</td>
<td>$66.68</td>
<td>$12,242.00</td>
<td>$330.00</td>
<td>$7,776.00</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>GROUT</td>
<td>3</td>
<td>CY</td>
<td>$250.00</td>
<td>$750.00</td>
<td>$385.00</td>
<td>$1,155.00</td>
<td>$300.00</td>
<td>$900.00</td>
<td>$201.65</td>
<td>$604.95</td>
<td>$580.00</td>
<td>$1,740.00</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>SEEDING WITH MULCHING AND CRIMPING</td>
<td>0</td>
<td>AC</td>
<td>$5,000.00</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
<td>$15,000.00</td>
<td>$150.00</td>
<td>$54,500.00</td>
<td>$545.00</td>
<td>$20,000.00</td>
<td>$260.00</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>REBAR ANCHOR WITH ADHESIVE</td>
<td>7</td>
<td>EA</td>
<td>$100.00</td>
<td>$700.00</td>
<td>$86.00</td>
<td>$616.00</td>
<td>$75.00</td>
<td>$525.00</td>
<td>$130.80</td>
<td>$915.60</td>
<td>$110.00</td>
<td>$770.00</td>
<td></td>
</tr>
</tbody>
</table>

Total Bid - Option 1

- Jochim Precast: $39,915.00
- Swain Construction, Inc.: $51,881.48
- Thompson Construction, Inc.: $34,403.00
- Helmes Corp.: $52,564.58
- General Excavating: $33,256.00
<table>
<thead>
<tr>
<th>No.</th>
<th>Item Description</th>
<th>Estimated Quantity</th>
<th>Jochim Precast</th>
<th>Swain Construction, Inc.</th>
<th>Thompson Construction, Inc.</th>
<th>Helmes Corp.</th>
<th>General Excavating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unit Price</td>
<td>Total</td>
<td>Unit Price</td>
<td>Total</td>
<td>Unit Price</td>
</tr>
<tr>
<td>1</td>
<td>EARTHWORK (EXCAVATION)</td>
<td>61 CY</td>
<td>$25.00</td>
<td>$1,525.00</td>
<td>$23.00</td>
<td>$1,403.00</td>
<td>$35.00</td>
</tr>
<tr>
<td>2</td>
<td>TOPSOIL PLACEMENT</td>
<td>33 SY</td>
<td>$10.00</td>
<td>$330.00</td>
<td>$25.00</td>
<td>$825.00</td>
<td>$50.00</td>
</tr>
<tr>
<td>3</td>
<td>SUBGRADE PREPARATION</td>
<td>51 SY</td>
<td>$10.00</td>
<td>$510.00</td>
<td>$3.00</td>
<td>$153.00</td>
<td>$40.00</td>
</tr>
<tr>
<td>4</td>
<td>SHEET PILE</td>
<td>1 LS</td>
<td>$10,000.00</td>
<td>$10,000.00</td>
<td>$31,350.00</td>
<td>$31,350.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>5</td>
<td>6&quot; REINFORCED CONCRETE SLAB</td>
<td>43 SY</td>
<td>$8.00</td>
<td>$344.00</td>
<td>$153.00</td>
<td>$6,570.00</td>
<td>$125.00</td>
</tr>
<tr>
<td>6</td>
<td>CONSTRUCT GROUTED RIP RAP, D10=18&quot;</td>
<td>24 CY</td>
<td>$60.00</td>
<td>$1,440.00</td>
<td>$105.00</td>
<td>$2,520.00</td>
<td>$150.00</td>
</tr>
<tr>
<td>7</td>
<td>SEEDING WITH MULCHING AND CRIMPING</td>
<td>0.01 AC</td>
<td>$5,000.00</td>
<td>$50.00</td>
<td>$50,000.00</td>
<td>$500.00</td>
<td>$150.00</td>
</tr>
<tr>
<td>8</td>
<td>MOBILIZATION</td>
<td>1 LS</td>
<td>$5,000.00</td>
<td>$5,000.00</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
<td>$3,000.00</td>
</tr>
</tbody>
</table>

**Total Bid - Option 2**

- $22,235.00
- $44,830.00
- $32,860.00
- $46,791.04
- $32,720.00
January 30, 2009

Martin Cleveland
Papio-Missouri River Natural Resources District
8901 S. 154th Street
Omaha, NE 68138

RE: Papio-Missouri River Natural Resources District
    Repair West Branch Channel Project
    EGA Project No. 081228

Martin,

We had a successful bid opening for the Repair West Branch Channel Project. There were a total of five bidders. The lowest bid was by Jochim Precast Concrete Company for Option 2 which came in at $22,295.00. It is our recommendation that you accept their bid for the work on this project.

Sincerely,

[Signature]

Terry Morrison
Ehrhart Griffin & Associates
LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
G = GRADE
GB = GABION BASKET (TOP)
GM = GABION MATTRESS (TOP)
* = FIELD VERIFY ELEVATION

GRADING NOTES:
1) FILM SHALL BE AS COMPACTED
2) GRADE SHALL GRADUALLY TAPER
3) ELEVATIONS SHOWN ARE
4) ALL DISTURBED AREAS SHALL BE
5) TRANSITION SOIL TIE-IN FROM
6) THE SURVEY FOR THIS
7) THE PAHO-MISSOURI

BENCHMARK:
THE SURVEY FOR THIS
PROJECT WAS SUPPLIED
BY THE PAPIO-MISSOURI
RIVER NATURAL
RESOURCES DEPARTMENT.
LEGEND

- PROPOSED RIP RAP
- PROPOSED 6" REINFORCED CONCRETE SLAB

NOTES:
1) SEE DETAIL SHEET DT01 FOR REINFORCED CONCRETE SLAB, SHEET PILING, RIP RAP AND LOW FLOW CHANNEL DETAILS.

2) A LOW FLOW CHANNEL SHALL BE BUILT IN THE SHEET PILING BETWEEN THE WING WALLS. SEE DETAIL SHEET DT01.
CONSTRUCT 6" THICK REINFORCED CONCRETE SLAB. (#4 REBAR, 12" O.C. BOTH DIRECTIONS)

MANUFACTURERS RECOMMENDED GEOTEXTILE FABRIC

CONSTRUCT 6" THICK TOE WALL, 12" MIN. DEPTH BELOW BOTTOM OF SLAB

CONSTRUCT 5' TALL SHEET PILING COMPLETELY BURIED

ELEVATION VIEW
6" CONCRETE SLAB DETAIL

SEED MIXTURE SHALL BE AS FOLLOWS:

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>LBS. OF PURE LIVE SEED PER ACRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LITTLE BLUESTEM</td>
<td>2.50</td>
</tr>
<tr>
<td>SIDEATS GRAMA</td>
<td>3.30</td>
</tr>
<tr>
<td>BLUE GRAMA</td>
<td>0.80</td>
</tr>
<tr>
<td>WESTERN WHEATGRASS</td>
<td>4.00</td>
</tr>
<tr>
<td>VIRGINIA WILDRYE</td>
<td>1.70</td>
</tr>
<tr>
<td>CANADA WILDRYE</td>
<td>5.70</td>
</tr>
<tr>
<td>SWITCH GRASS</td>
<td>1.50</td>
</tr>
<tr>
<td>TALL FESCUE</td>
<td>10.0</td>
</tr>
<tr>
<td>OATS</td>
<td>50.0 (NOT PURE LIVE SEED)</td>
</tr>
</tbody>
</table>

ALL SEED SPECIFIED FOR THIS PROJECT SHALL BE THOROUGHLY MIXED PRIOR TO PLACING THE SEED IN THE SEED HOPPER. ALL SEED SHALL BE MIXED AT THE PROJECT SITE.

ELEVATION VIEW
CULVERT OUTLET DETAIL

LOW FLOW CHANNEL
DETAIL

WING WALL
BOX CULVERT
LOW FLOW CHANNEL
1' DEEP, 2' V MIN.

SHEET PILING