

MEMORANDUM

TO: Programs, Projects and Operations Subcommittee

FROM: Martin P. Cleveland

SUBJECT: Big Papio Channel Gabion Repair Project (105th and Pacific Street)

DATE: April 5, 2011

In summer 2010, the referenced area experienced a number of high water events that overtopped the gabion wall system that serves as a channel erosion resistant boundary. These gabions were installed in 2002 as part of the Big Papio Channel Project, to ensure that possible channel erosion did not destabilize an adjacent steep slope that is 50 ft. above creek level and contains a row of houses.

Thiele Geotech Inc. was hired by Management to evaluate the gabion system and provide recommendations for a possible solution and their March 23, 2011 report is enclosed. As a result of the Thiele report, it has been concluded that the repair project may be fairly extensive and require some specialized structural design for possible sheet pile wall.

Enclosed is a proposal from Lamp Rynearson and Associates, (with Thiele as a sub-consultant) to provide engineering services for the referenced project.

Management recommends that the District waive its consultant selection procedures and hire Lamp Rynearson and Associates for these engineering services due to the time sensitive nature of the gabion failure, upcoming high water season and need of design to secure FEMA cost share funding. FEMA has verbally indicated that this repair may be eligible for 75% construction cost share, if the project design meets their expectations of a permanent solution.

- **It is Management's recommendation that the Subcommittee recommend to the Board that the District waive its consultant selection procedures and the General Manager be authorized to execute a professional engineering services agreement for the Big Papio Channel Gabion Repair Project with Lamp Rynearson and Associates with a maximum not to exceed cost of \$85,000 subject to charges deemed necessary the General Manager, and approval as to form by District legal counsel.**



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SHEET: R1	
DATE: 3/23/11	JOB NO: 10548.00
DB: MDS	CB: DJT

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GEO TECHNICAL • MATERIAL • ENVIRONMENTAL • ENGINEERING

**BIG PAPIO CHANNEL
105th & PACIFIC STREET**
OMAHA, NEBRASKA

REVISIONS:		SITE PLAN	
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SHORT FORM OF AGREEMENT BETWEEN OWNER AND ENGINEER FOR PROFESSIONAL SERVICES

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



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**SHORT FORM OF AGREEMENT
BETWEEN OWNER AND ENGINEER
FOR
PROFESSIONAL SERVICES**

THIS IS AN AGREEMENT effective as of April 5, 2011 ("Effective Date") between
Papio-Missouri River Natural Resources District (P-MRNRD) ("Owner")
and Lamp, Rynearson & Associates, Inc. ("Engineer")
Engineer agrees to provide the services described below to Owner for 105th and Pacific Creek
Stabilization ("Project").
Description of Engineer's Services: See Attached Exhibit A

Owner and Engineer further agree as follows:

1.01 Basic Agreement

A. Engineer shall provide, or cause to be provided, the services set forth in this Agreement, and Owner shall pay Engineer for such Services as set forth in Paragraph 9.01.

2.01 Payment Procedures

A. *Preparation of Invoices.* Engineer will prepare a monthly invoice in accordance with Engineer's standard invoicing practices and submit the invoice to Owner.

B. *Payment of Invoices.* Invoices are due ~~and payable within 30 days of~~ upon receipt. If Owner fails to make any payment due Engineer for services and expenses within ~~30~~ 60 days after receipt of Engineer's invoice, the amounts due Engineer will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) ~~computed from said the~~ thirtieth day after the date of Engineer's invoice. In addition, Engineer may, without liability, after giving seven days written notice to Owner, suspend services under this Agreement until Engineer has been paid in full all amounts due for services, expenses, and other related charges. Payments will be credited first to interest and then to principal.

3.01 Additional Services

A. If authorized by Owner, or if required because of changes in the Project, Engineer shall furnish services in addition to those set forth above.

B. Owner shall pay Engineer for such additional services as follows: For additional services of Engineer's employees engaged directly on the Project an amount equal to the cumulative hours charged to the Project by each class of Engineer's employees times standard hourly rates for each applicable billing class; plus reimbursable expenses and Engineer's consultants' charges, if any.

4.01 Termination

A. The obligation to provide further services under this Agreement may be terminated:

1. For cause,

a. By either party upon 30 days written notice in the event of substantial failure by the other party to perform in accordance with the Agreement's terms through no fault of the terminating party.

b. By Engineer:

1) upon seven days written notice if Engineer believes that Engineer is being requested by Owner to furnish or perform services contrary to Engineer's responsibilities as a licensed professional; or

2) upon seven days written notice if the Engineer's services for the Project are delayed or suspended for more than 90 days for reasons beyond Engineer's control.

3) Engineer shall have no liability to Owner on account of such termination.

c. Notwithstanding the foregoing, this Agreement will not terminate as a result of a substantial failure under paragraph 4.01.A.1.a if the party receiving such notice begins, within seven days of receipt of such notice, to correct its failure and proceeds diligently to cure such failure within no more than 30 days of receipt of notice; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 30 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but in no case more than, 60 days after the date of receipt of the notice.

2. For convenience, by Owner effective upon the receipt of notice by Engineer.

B. The terminating party under paragraphs 4.01.A.1 or 4.01.A.2 may set the effective date of termination at a time up to 30 days later than otherwise provided to allow Engineer to demobilize personnel and equipment from the Project site, to complete tasks whose value would otherwise be lost, to prepare notes as to the status of completed and uncompleted tasks, and to assemble Project materials in orderly files.

5.01 Controlling Law

A. This Agreement is to be governed by the law of the state in which the Project is located.

6.01 Successors, Assigns, and Beneficiaries

A. Owner and Engineer each is hereby bound and the partners, successors, executors, administrators, and legal representatives of Owner and Engineer (and to the extent permitted by paragraph 6.01.B the assigns of Owner and Engineer) are hereby bound to the other party to this Agreement and to the partners, successors, executors, administrators, and legal representatives (and

said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.

B. Neither Owner nor Engineer may assign, sublet, or transfer any rights under or interest (including, but without limitation, moneys that are due or may become due) in this Agreement without the written consent of the other, except to the extent that any assignment, subletting, or transfer is mandated or restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement.

7.01 General Considerations

A. The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Engineer makes no warranties, express or implied, under this Agreement or otherwise, in connection with Engineer's services. Engineer and its consultants may use or rely upon the design services of others, including, but not limited to, contractors, manufacturers, and suppliers.

B. Engineer shall not at any time supervise, direct, or have control over any contractor's work, nor shall Engineer have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, for safety precautions and programs incident to a contractor's work progress, nor for any failure of any contractor to comply with laws and regulations applicable to contractor's work.

C. Engineer neither guarantees the performance of any contractor nor assumes responsibility for any contractor's failure to furnish and perform its work in accordance with the contract between Owner and such contractor.

D. Engineer shall not be responsible for the acts or omissions of any contractor, subcontractor, or supplier, or of any contractor's agents or employees or any other persons (except Engineer's own employees) at the Project site or otherwise furnishing or performing any of construction work; or for any decision made on interpretations or clarifications of the construction contract given by Owner without consultation and advice of Engineer.

E. The general conditions for any construction contract documents prepared hereunder are to be the "Standard General Conditions of the Construction Contract" as prepared by the Engineers Joint Contract Documents Committee (No. C-700, 2002-2007 Edition),

with revisions by the Engineer. Copies of the Engineer revised document are available for review.

F. All design documents prepared or furnished by Engineer are instruments of service, and Engineer retains an ownership and property interest (including the copyright and the right of reuse) in such documents, whether or not the Project is completed.

G. To the fullest extent permitted by law, Owner and Engineer (1) waive against each other, and the other's employees, officers, directors, agents, insurers, partners, and consultants, any and all claims for or entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to the Project, and (2) agree that Engineer's total liability to Owner under this Agreement shall be limited to \$50,000 or the total amount of compensation received by Engineer, whichever is greater.

H. The parties acknowledge that Engineer's scope of services does not include any services related to a Hazardous Environmental Condition (the presence of asbestos, PCBs, petroleum, hazardous substances or waste, and radioactive materials). If Engineer or any other party encounters a Hazardous Environmental Condition, Engineer may, at its option and without liability for consequential or any other damages, suspend performance of services on the portion of the Project affected thereby until Owner: (i) retains appropriate specialist consultants or contractors to identify and, as appropriate, abate, remediate, or remove the Hazardous Environmental Condition; and (ii) warrants that the Site is in full compliance with applicable Laws and Regulations.

I. The parties acknowledge that this design does not include a global stability analysis; therefore, the Engineer is not liable for any problems or damages related to global stability.

8.01 Total Agreement

A. This Agreement (consisting of pages 1 to 4 inclusive together with any expressly incorporated appendix), constitutes the entire agreement between Owner and Engineer and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified, or canceled by a duly executed written instrument.

9.01 Payment (~~Lump-Sum-Basis~~)

A. Using the procedures set forth in paragraph 2.01, Owner shall pay Engineer as follows:

I. ~~A Lump-Sum amount of \$~~ As described in Exhibit A

B. ~~The Engineer's compensation is conditioned on the time to complete construction not exceeding _____ months. Should the time to complete construction be extended beyond this period, total compensation to Engineer shall be appropriately adjusted.~~

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

OWNER: Papio-Missouri River Natural Resources
District (P-MRNRD)

ENGINEER: Lamp, Rynearson & Associates, Inc.

By: _____

By: _____

Title: _____

Title: _____

Date Signed: _____

Date Signed: _____

License or Certificate No. and State CA0130E Nebraska

Address for giving notices:

Address for giving notices:

Lamp, Rynearson & Associates, Inc.

14710 W Dodge Road, Ste 100

Omaha, NE 68154-2027

EXHIBIT "A"
Description of Services and Payment Provisions

Scope of Services

1. **Stream Stabilization Design**

- A. Coordinate and facilitate a design kick-off meeting with the P-MRNRD.
- B. Review existing information and reports.
- C. Perform an Initial field investigation.
- D. Develop design concept using sheet piling stabilization methods.
- E. Develop cost estimates based on linear feet of stabilization. Coordinate with the Owner to determine extents of stream stabilization.
- F. Coordinate with the US Army Corp of Engineers and Nebraska Department of Environmental Quality. Develop and submit a 404 Nationwide Permit and 401 Water Quality Permit.
- G. Prepare final construction plans and technical specifications.
- H. Prepare Contract Documents.
- I. Prepare engineer's estimate of probable costs for construction.
- J. Perform a plan-in-hand walk-through with the P-MRNRD.
- K. Coordinate with the P-MRNRD. It is assumed that we will attend three coordination meetings with P-MRNRD.
- L. Develop a Project Management Plan and provide project management services.

2. **Bid Administration**

- A. Coordinate and facilitate a pre-bid meeting.
- B. Respond to contractor questions during the bid process.
- C. Develop addendums as necessary.
- D. Attend the bid opening.
- E. Provide a recommendation of award letter.

3. **Construction Administration**

- A. Provide construction administration services, including contract administration, and as necessary, full-time construction observation. We have assumed full time Construction Observation for 30 days of work.
- B. We have assumed a total of five Requests for Information (RFI's) during the course of the construction. If the number of RFI's exceeds the assumed amount, additional responses will be considered additional services, and will be billed as such.

- C. Review shop drawings requested in the Contractor Documents. Shop drawings not requested in the Contract Documents will not be reviewed and will be returned to the Contractor.
4. Construction Staking
- A. Construction staking is included in the scope of services. We have assumed a total of four trips for our survey crew. Re-staking required as a result of contractor actions will be considered additional services.

Assumptions/Exclusions

1. This design is for stabilization of the toe of the slope and creek edges only. This design is not intended to help global slope stability; therefore, it not be analyzed as part of the design.
2. LRA will retain Thiele Geotechnical Services to provide geotechnical recommendations during design and construction.
3. The scope of services includes design of a sheet pile stabilization structure. If the P-MNRD decides to use another method such as replacing the gabion baskets, the scope and fees will be renegotiated.
4. The scope of services assumes repair of the full length of the existing gabions.
5. The P-MNRD will provide the topographic survey. All design will be based on this topographic survey. If additional survey is needed it will be provided by the P-MNRD.
6. The P-MNRD will provide front end information for incorporation into the Contract Documents. LRA will assemble the Contract Documents.
7. LRA will provide one original copy the Plans and Contract Documents to the P-MNRD. The P-MNRD will provide the necessary copies.
8. The P-MNRD will be responsible for all work and submittals required to obtain the FEMA grant.
9. The P-MNRD will be responsible for all advertising and plan distribution for the bidding phase.
10. The project will be completed in accordance with the scope outlined above and assumes a "one time design". Any modifications to the design concept after work has been completed will be considered as additional services.
11. It is assumed that a wetland delineation will not be required as part of the 404 Nationwide Permit. If wetland delineation is required, the P-MNRD will contract directly with a wetland consultant.
12. Analysis of channel hydrology and hydraulics are not included in these services. If hydrology and hydraulic analysis is required it will be considered additional services.
13. We anticipate that the City of Omaha will not require a Post Construction Stormwater Management Plan permit.
14. It is anticipated that the total area disturbed by grading and construction of site improvements will be less than one acre and will not require Papillion Creek Watershed Partnership OR City of Omaha and NPDES grading permits.

15. Fees for any applications, filings or permitting, fees required by governing agencies, or any other fees not specifically defined herein are not included in our fees and, if required, will be paid by the P-MRNRD.

Schedule

We are prepared to begin work on the project immediately upon receipt of a signed copy of this proposal. We understand that time is of the essence and will coordinate the project schedule with the P-MRNRD.

Fees

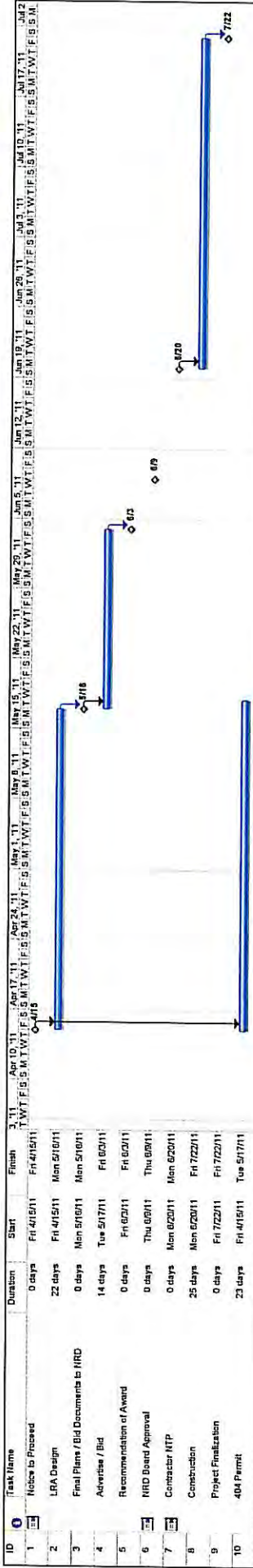
We propose to bill for our services on the basis of hourly charge rates plus reimbursable expenses incurred. For the tasks listed above, our fees will not exceed the amounts listed below.

Engineering and Design	\$38,000
Bid Administration	\$ 4,000
Construction Administration	\$38,500
Construction Staking	\$ 4,500

A copy of our current charge rate schedule is attached. This schedule is updated on approximately April 1 of each year.

Additional services beyond the scope of services outlined above will be billed on the basis of hourly charge rates plus reimbursable expenses incurred.

Estimated Project Schedule by LRA





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Omaha, Nebraska 68138-3716
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www.thielegeotech.com

March 23, 2011

Mr. Martin Cleveland
Papio Missouri River NRD
8901 South 154th Street
Omaha, Nebraska 68138-3621

**RE: BIG PAPILLION CREEK CHANNEL, 105TH & PACIFIC STREET
TG# 10548.00**

Dear Martin:

This letter presents our review and recommendations related to the apparent slope movements along the Big Papillion Creek channel between Pacific Street and 105th Street. This study is based on previous work in the area, review of construction drawings for a 2002 flood control project, a survey provided by the NRD, and on observations of the site and surrounding area. Station references in this study refer to the 2002 construction drawings. Note that the baseline for these drawings is on a bench on the north bank of the creek, and the lengths along the south bank are somewhat longer than the actual stations due to the offset on the outside of the bend.

The area of concern is along the south bank of the creek and is located roughly 300 feet downstream from Pacific Street (see Photo #1). The general vicinity is depicted on the Site Plan (sheet R1). The south bank slopes up approximately 50 feet above the creek level to a row of residential lots. The slope in this area has a history of instability, with a series of failures occurring between 1986 and 1993. The slope has been relatively stable since 1993, and a large stand of trees currently anchors the slope. The grade of the slope varies from 3H:1V to limited areas as steep as 1H:1V, with an overall average slope estimated at 2½H:1V. Previous evaluation of this slope determined that some sloughing was likely in the steeper areas, but that the overall slope would remain stable as long as the creek did not cut back into the bank and steepen the grade.

In 2002, improvements were made to the channel in this general area. As part of that work, gabions were installed along the south creek bank in this area to control erosion. This effort was not intended to increase the stability of the adjacent slope, but to avoid a change in the channel location that would destabilize the slope. The configuration of the gabions is shown on the attached Miscellaneous Details (sheet D-6) from the 2002 record drawings. The gabions were stacked 2 high, or roughly 6 feet from top to bottom. The bottom layer was installed perpendicular to the channel to create a base width of 9 feet. The top layer was set back 2 feet from the edge of the bottom layer and was installed parallel to the channel. The top of the gabions were set at roughly elevation 1014. The bottom of the gabions were set at the approximate water line, or elevation 1008, and were set on a 12 inch thick layer of crushed aggregate wrapped in a geotextile filter.

Some movements were noted by the adjacent property owner at the toe of the embankment during the summer of 2010. The condition worsened through the fall, and it appears that some ongoing movement

has occurred into the spring of 2011. Observations of the site indicate that the creek bank is slipping toward the creek. A significant fissure has opened in the area south of the bank at the base of the steep slope. This fissure or gap in the soil is 8 to 10 feet at the widest point (see Photo #2). The slope above the slip does not appear to have shifted. Consequently, we conclude that the slip mechanism is localized to the creek bank, and is not caused by a larger slope failure. However, based on previous investigation, failure and erosion of the channel bank will likely affect the stability of the slope.

Based on our observations, it appears that the mechanism causing the bank failure is erosion of the foundation below the gabions (see Photo #3). It is apparent that the gabions in the affected area have rotated and tipped downward into the channel (see Photo #4). We plotted the survey data along the creek bank to profile the upper and lower gabion baskets. The attached Gabion Profile (sheet R2) depicts the current profile of the outside edge of the top and bottom gabions. The original design elevation of the gabions is also depicted. The outside edge of the baskets have dropped roughly 3 feet from the downstream end at Sta 524+60 to approximately Sta 525+80, a distance of 130 feet or so. The Cross Sections (sheet R3) depict the approximate current configuration of the gabions in the vicinity of the slip.

The bank slide was ultimately caused by erosion on the outside bend of the channel. Repair of this area will need to improve the erosion protection to prevent recurrence. The least costly option would be to excavate the slip area and to anchor the bank with rip-rap. We are concerned over the long-term effectiveness of this solution, and it is likely that frequent repairs will be necessary with this type of solution. An improved gabion structure would likely be more durable. A reconfigured gabion system would need to extend deeper, at least to the current bottom of the channel at elevation 1004. This would likely require installing a cofferdam and dewatering the work area during installation. A more effective but more costly solution would involve installing steel sheet piles along the affected area. We would expect some scour to occur along a vertical structure on the outside of a bend, so it is likely that the free-standing height of the sheets would exceed the current 10 feet from bottom of channel to top of bank. A height of 12 to 14 feet may not be possible to stand in a cantilever configuration, so a tied back bulkhead system may be necessary. This type of sheeted wall can be configured using helical anchors extending under the slope. If the sheet piles can be protected with an effective rip-rap buttress to minimize future undercutting, it may be possible to eliminate the tiebacks and install the sheets in a cantilever configuration. Although a sheet pile retention system is the most costly, it would be the most effective long-term solution to control erosion and eventual instability of the slope.

Note that similar erosion has been occurring upstream from the area that has slipped, and some additional failures are likely over the coming years. The solution to the current bank failure should consider extending the repair upstream for some distance.

Please contact me if you have any questions.

Respectfully,
Thiele Geotech, Inc.



Daniel J. Thiele, P.E.

Enclosures

P:\10548.00\LETTER.DOCX



PHOTO NUMBER 1

Overview of slide at base of slope
10552 Forest Drive residence visible at top of slope (center)



PHOTO NUMBER 2

Fissure behind slide area
roughly 8 to 10 feet wide

T h i e l e G e o t e c h I n c

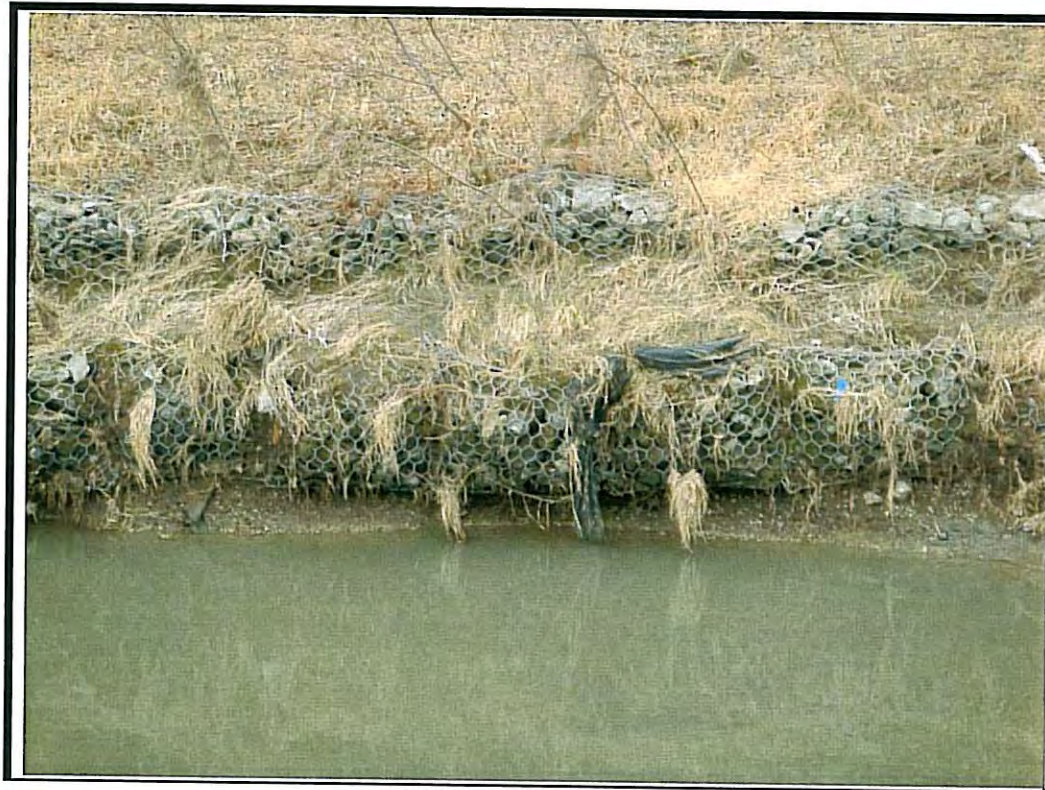


PHOTO NUMBER 3
View showing bank exposed below gabions
(upstream of slide)



PHOTO NUMBER 4
Upstream end where tipping begins
approximate Sta 525+65 (left side) to Sta 526+00 (right side)



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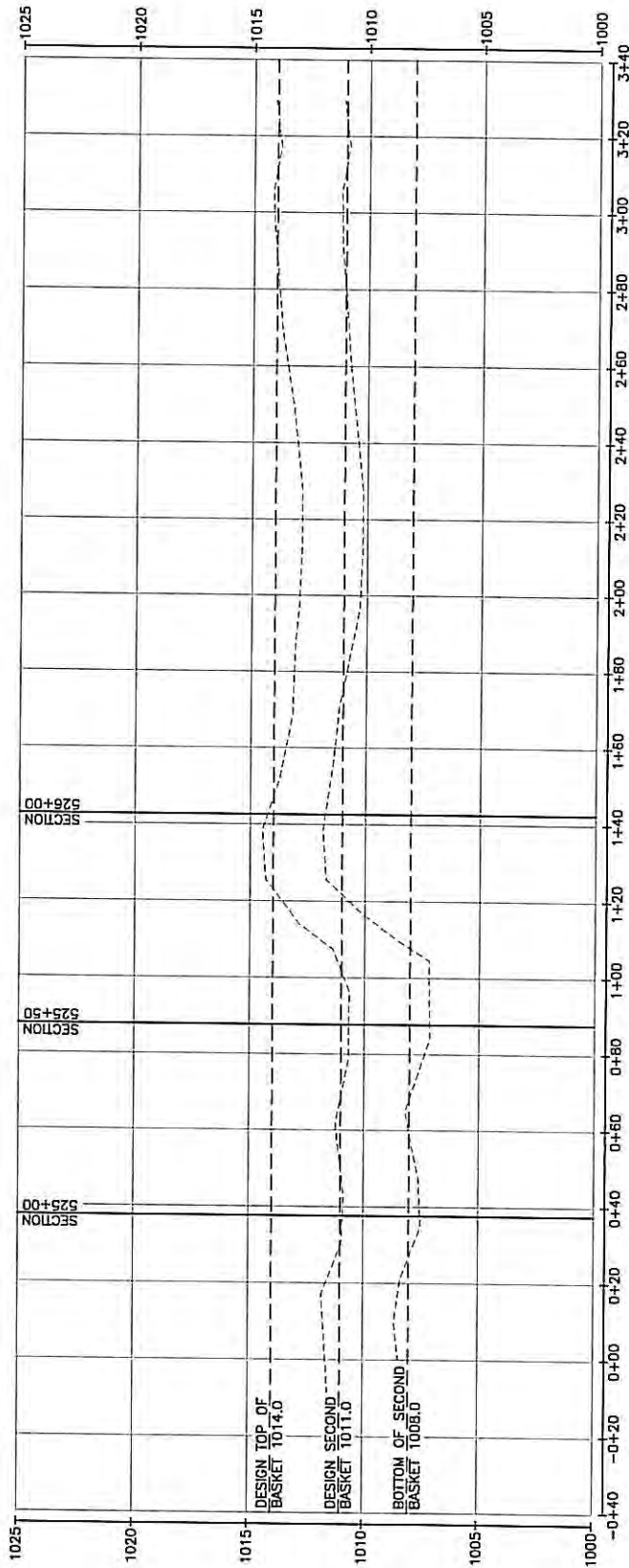
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**BIG PAPIO CHANNEL
105th & PACIFIC STREET**
OMAHA, NEBRASKA

SITE PLAN

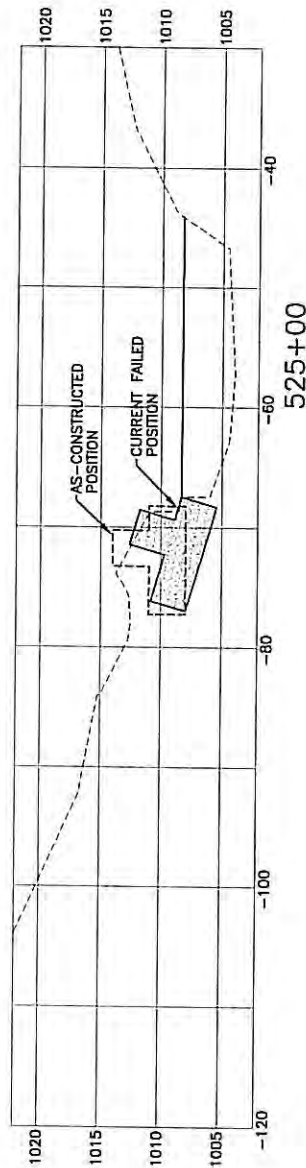
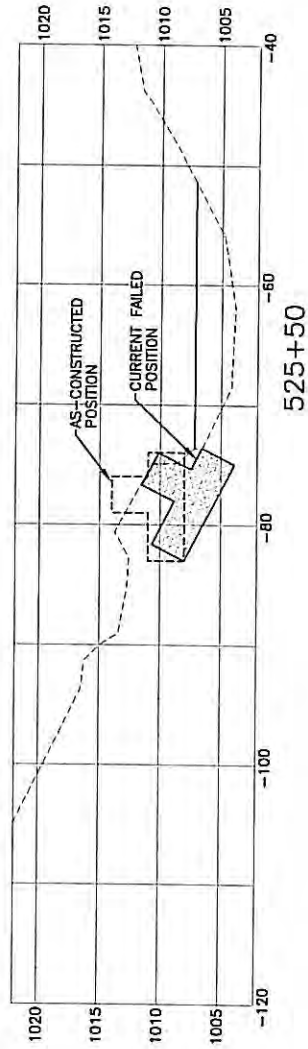
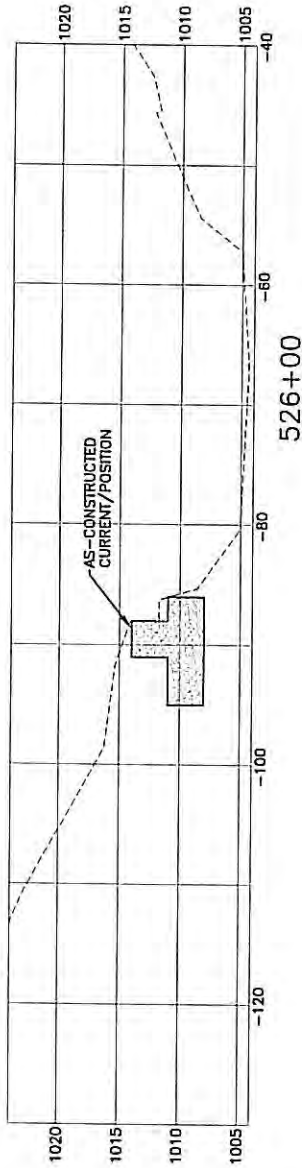
REVISIONS:	
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ELEVATION SCALES:
HORIZ. - 1"=30'
VERT. - 1"=5'

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REVISIONS:	GABION PROFILE	BIG PAPIO CHANNEL 105th & PACIFIC STREET OMAHA, NEBRASKA	 Thiele Geotech Inc GEOTECHNICAL • MATERIAL • ENVIRONMENTAL • ENGINEERING	SHEET: R2
				DATE: 3/23/11 JOB NO: 10548.00 DB: MDS CB: DUT

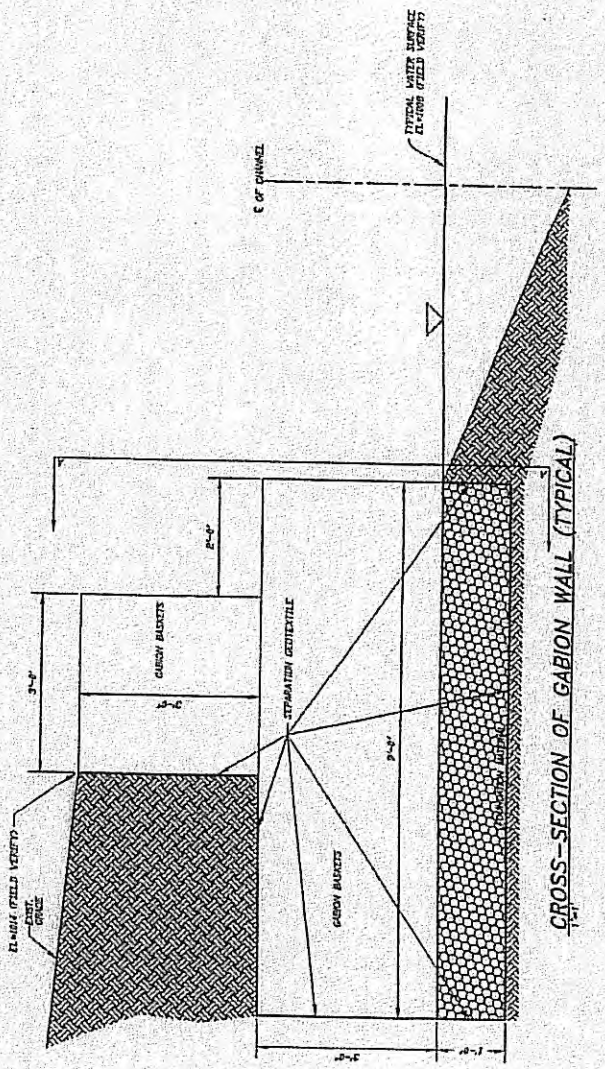
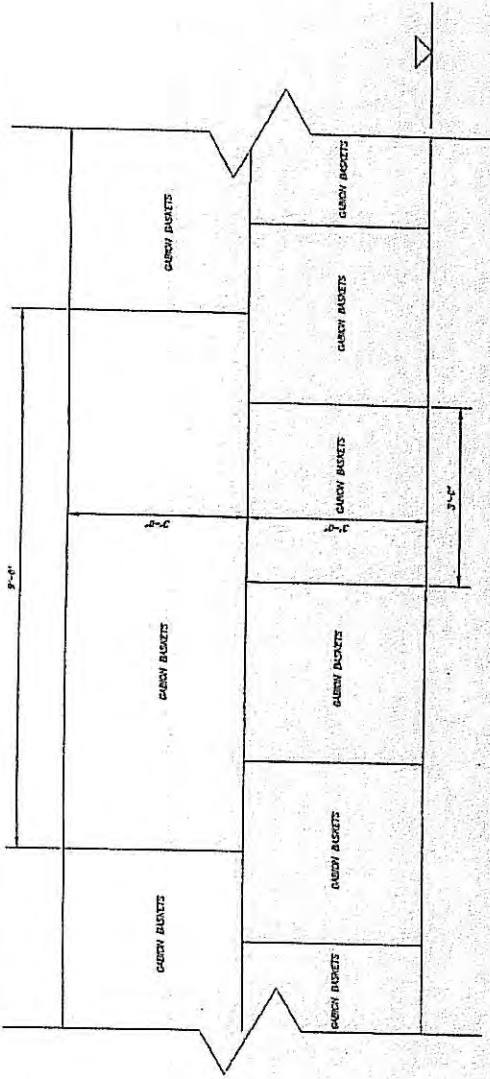


ELEVATION SCALES:
HORIZ. - 1" = 10'
VERT. - 1" = 10'

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REVISIONS:	CROSS SECTIONS	BIG PAPIO CHANNEL 105th & PACIFIC STREET OMAHA, NEBRASKA	 Thiele Geotech Inc. GEOTECHNICAL • MATERIAL • ENVIRONMENTAL • ENGINEERING	SHEET: R3
				DATE: 3/23/11 JOB NO: 10548.00 DB: MDS CB: DJT

- NOTES:**
1. STANDARD GEOTEXTILE SHIMS ARE NON-MOVING WITH THE FOLLOWING PROPERTIES:
A. STRENGTH CLASS 1
B. MAJOR AID - C-41
C. MINOR PERMEABILITY - 0.05
D. APPROVED BY THE ENGINEER
 2. GEOTEXTILE SHALL BE USED ONLY WHERE INDICATED ON DRAWING AND SHALL BE APPROVED BY THE ENGINEER.
 3. STANDARD GEOTEXTILE SHALL BE USED FOR CURBS AND APPROVED BY THE ENGINEER.
 4. GABION BASKETS SHALL BE FILLED WITH STONE AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
- * BULKES OBTAINED FROM AUSTIN AGGREGATE



NOTES:

1. THESE DETAILS ARE FOR INFORMATION ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION. THE ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT. THE ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT. THE ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT.