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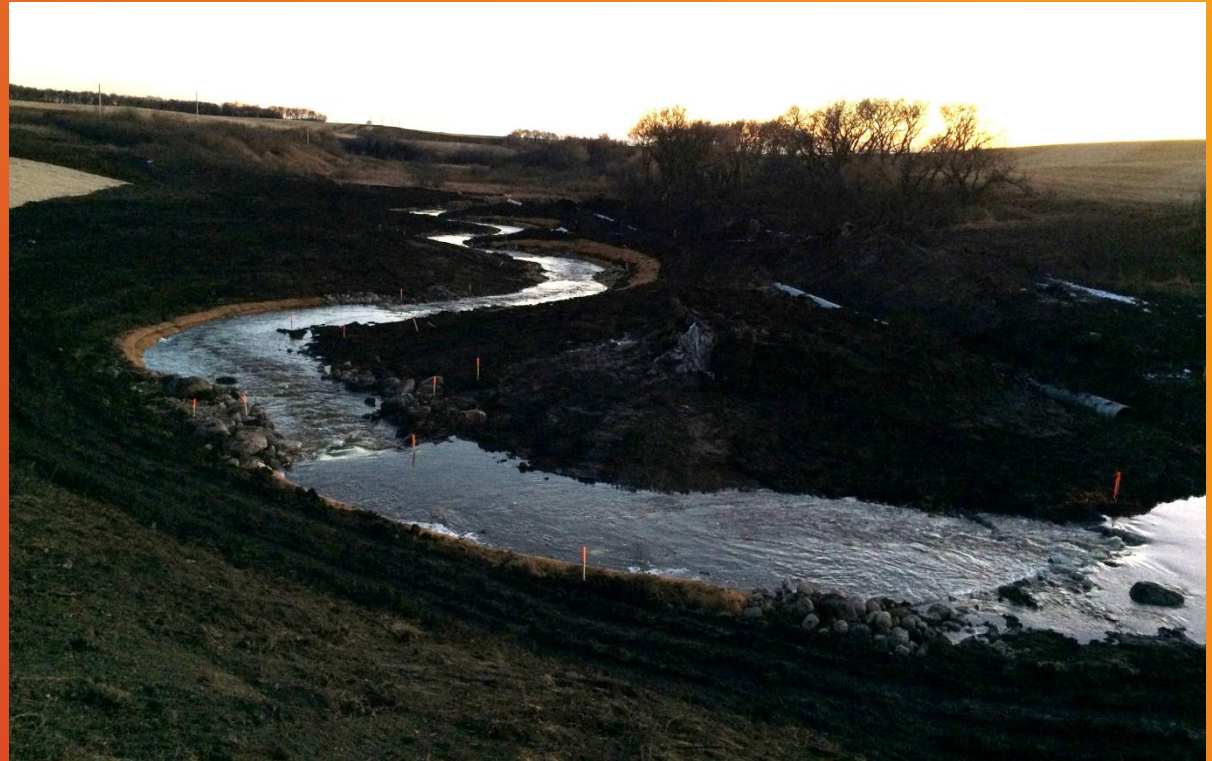
Hosts



Lessons Learned: Stream Restoration with Contractors New to Natural Channel Design

TRIECA 2017
Pearson Convention Centre
Brampton, ON

Jeff Muirhead
Stantec Consulting, Ltd.



March 23, 2017

Outline

1 Project Background

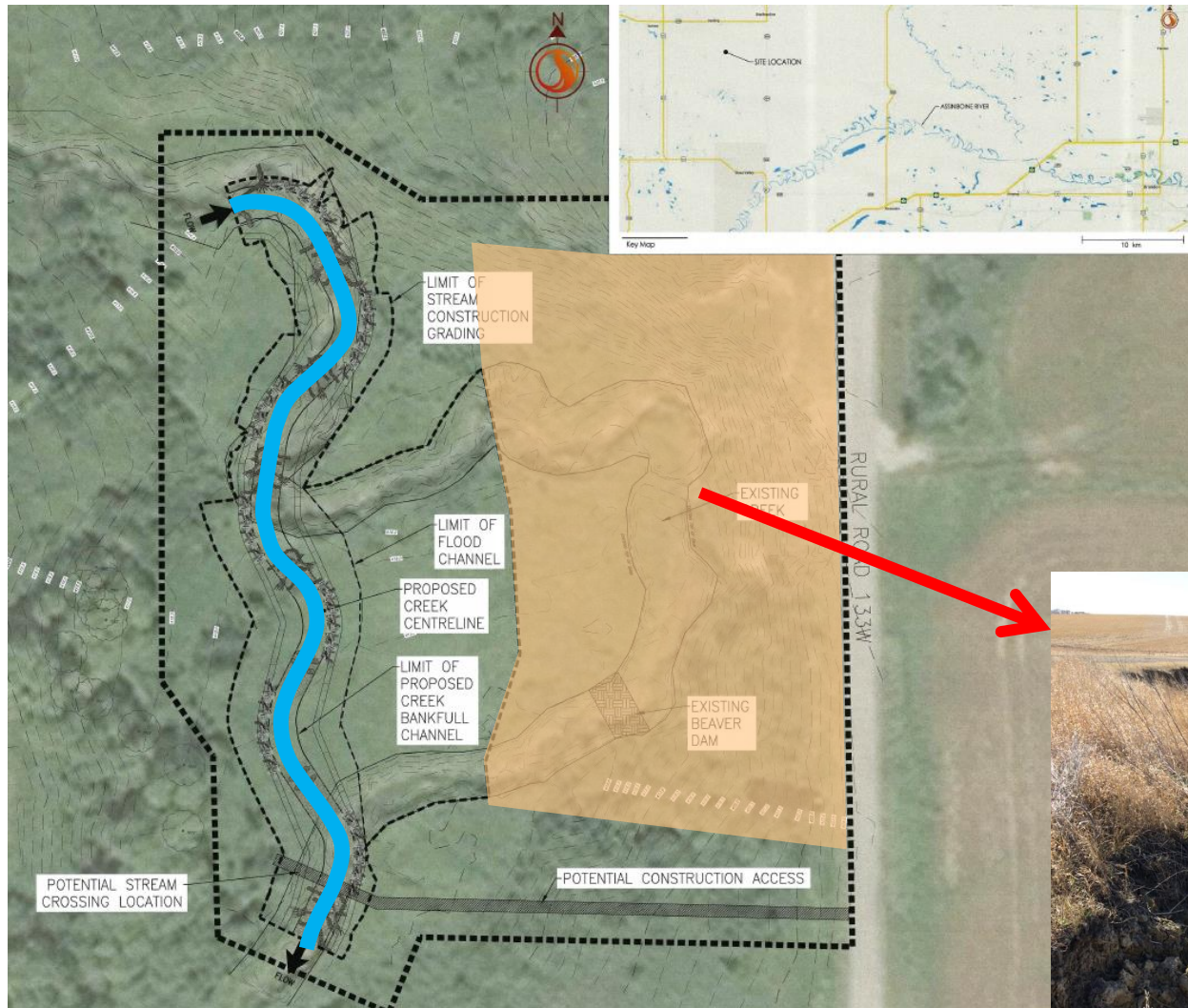
2 Lessons Learned

3 Summary

Brierwood Creek Realignment



The Project



Erosion on outer meander bend threatening rural road

1. Stabilize embankment
2. Realign creek



The Players

Owner: Rural Municipality of
Wallace-Woodworth

Designer: Stantec Consulting Ltd.
Geotechnical: Winnipeg,
MB office
Stream Restoration:
Waterloo, ON office

General Contractor:
Tri-Wave Construction,
Brandon, MB

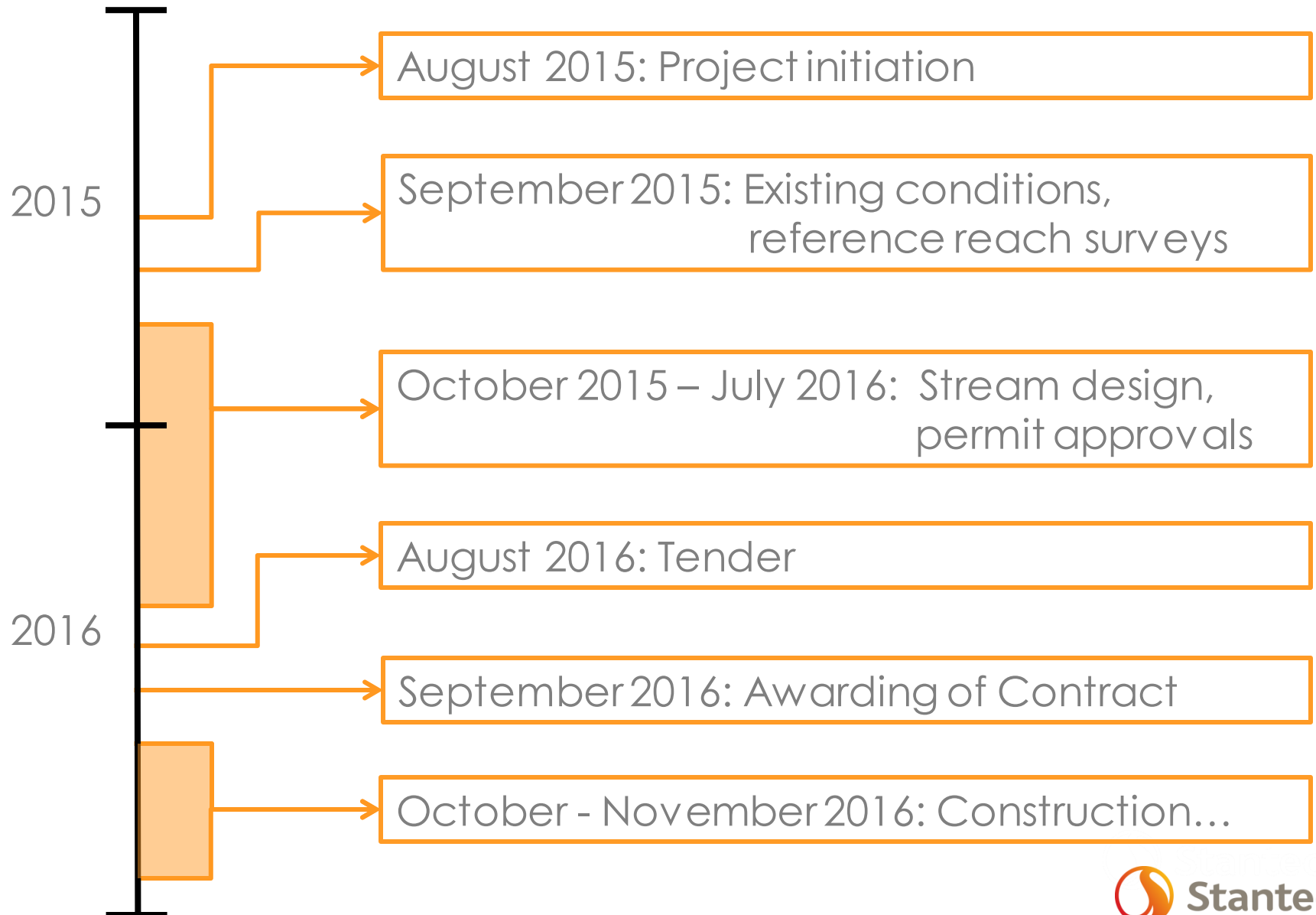
Sub-Contractor (stream works):
Livingstone Landscaping,
Brandon, MB



Tri-Wave Construction



The Timeframe

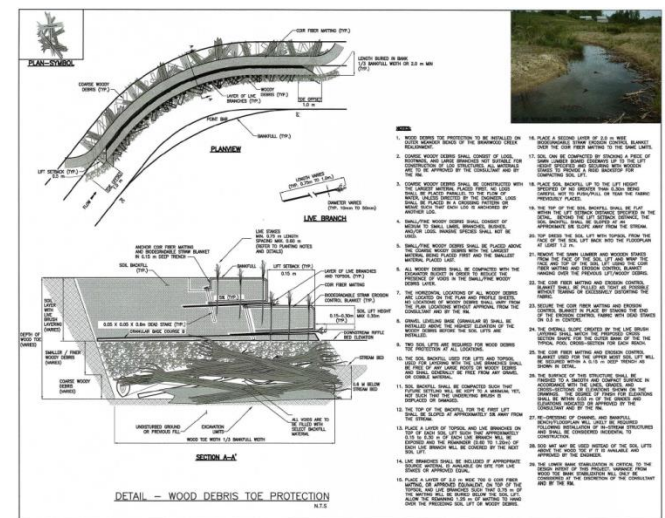
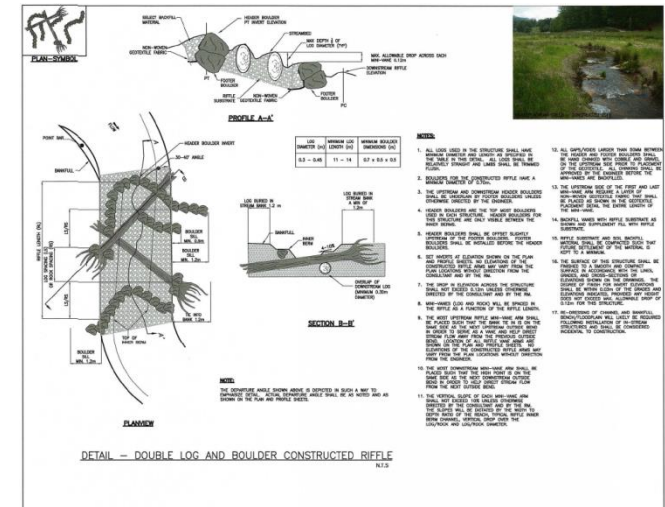
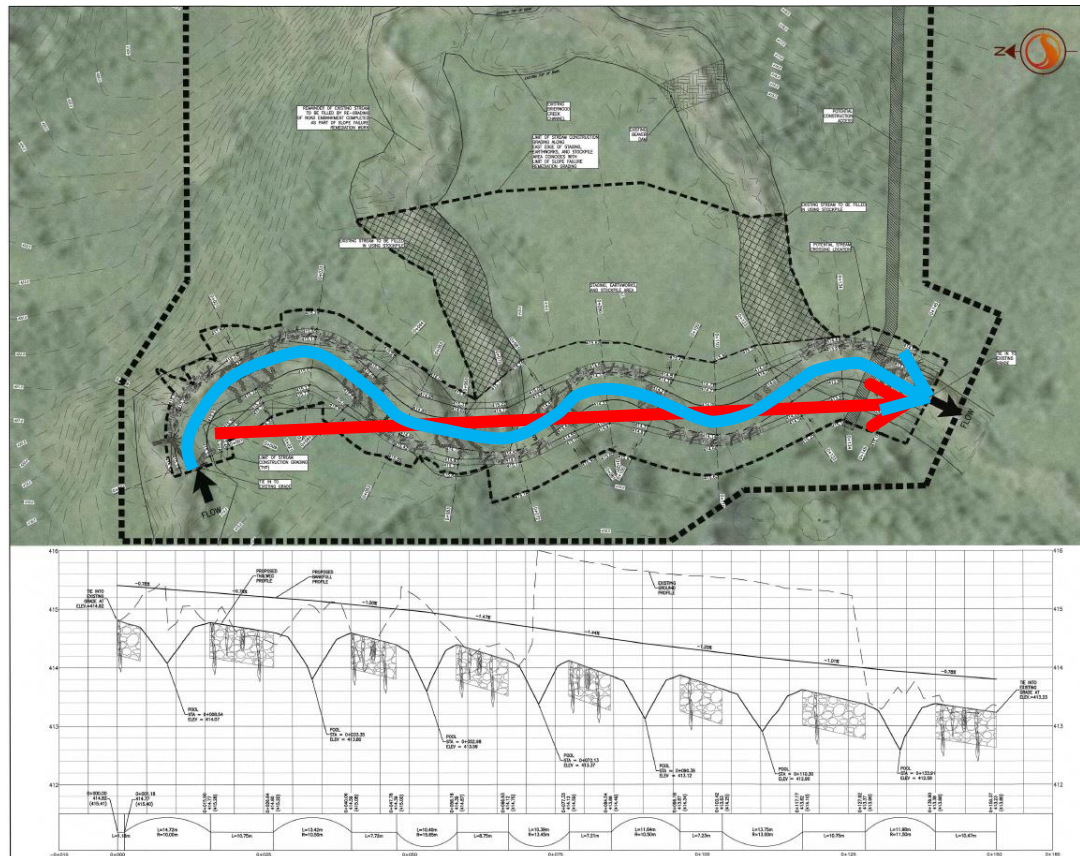


Lessons Learned



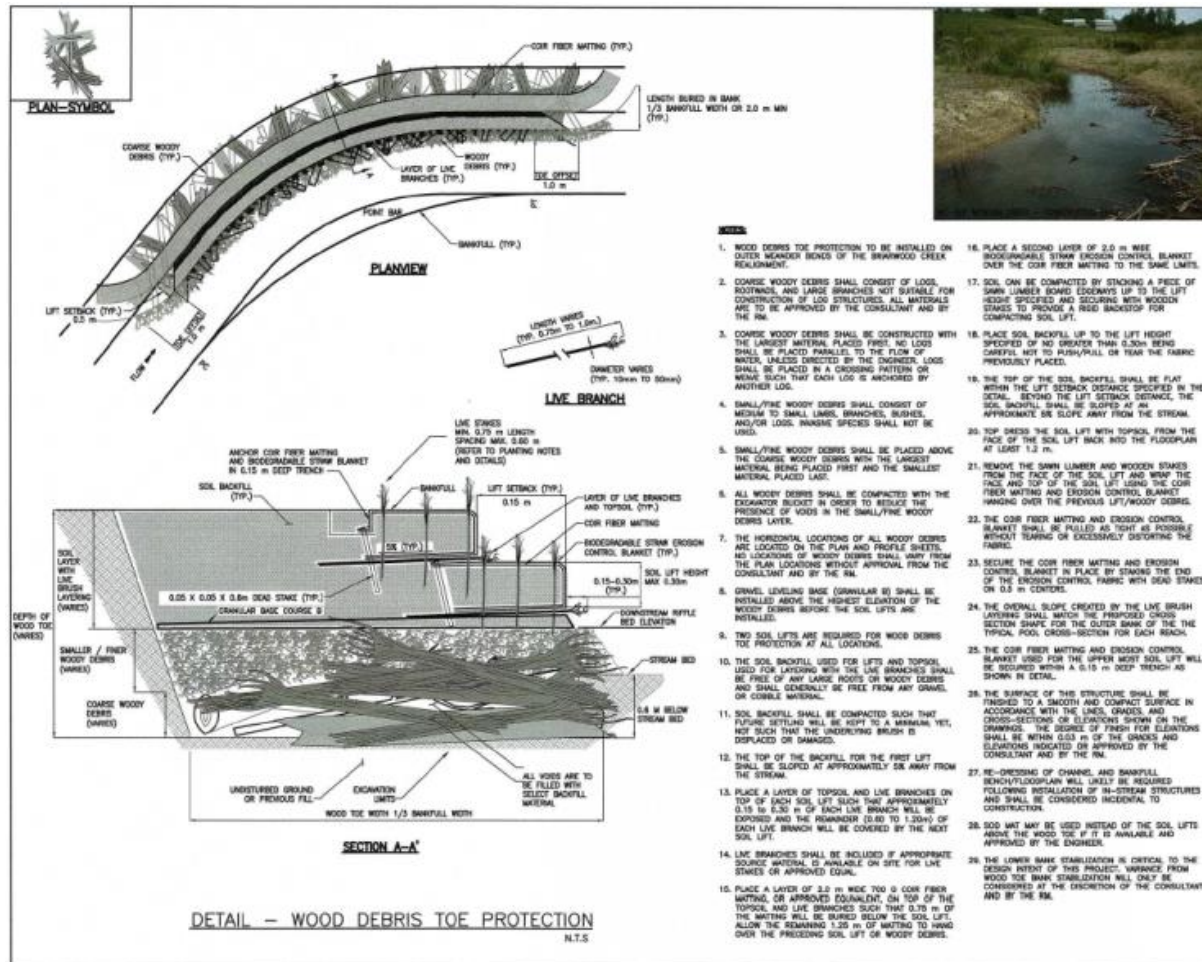
Theme: Understanding of Scope of Work

"Why do you 'bree' just dig it straight, you've be kicking it out of the wiffles and waffles of your response before had?"
 -Contractor PM on day 1



1. Low Bids...Not on Purpose

Difficult for new contractors to fully comprehend the material and installation requirements of installing a stream



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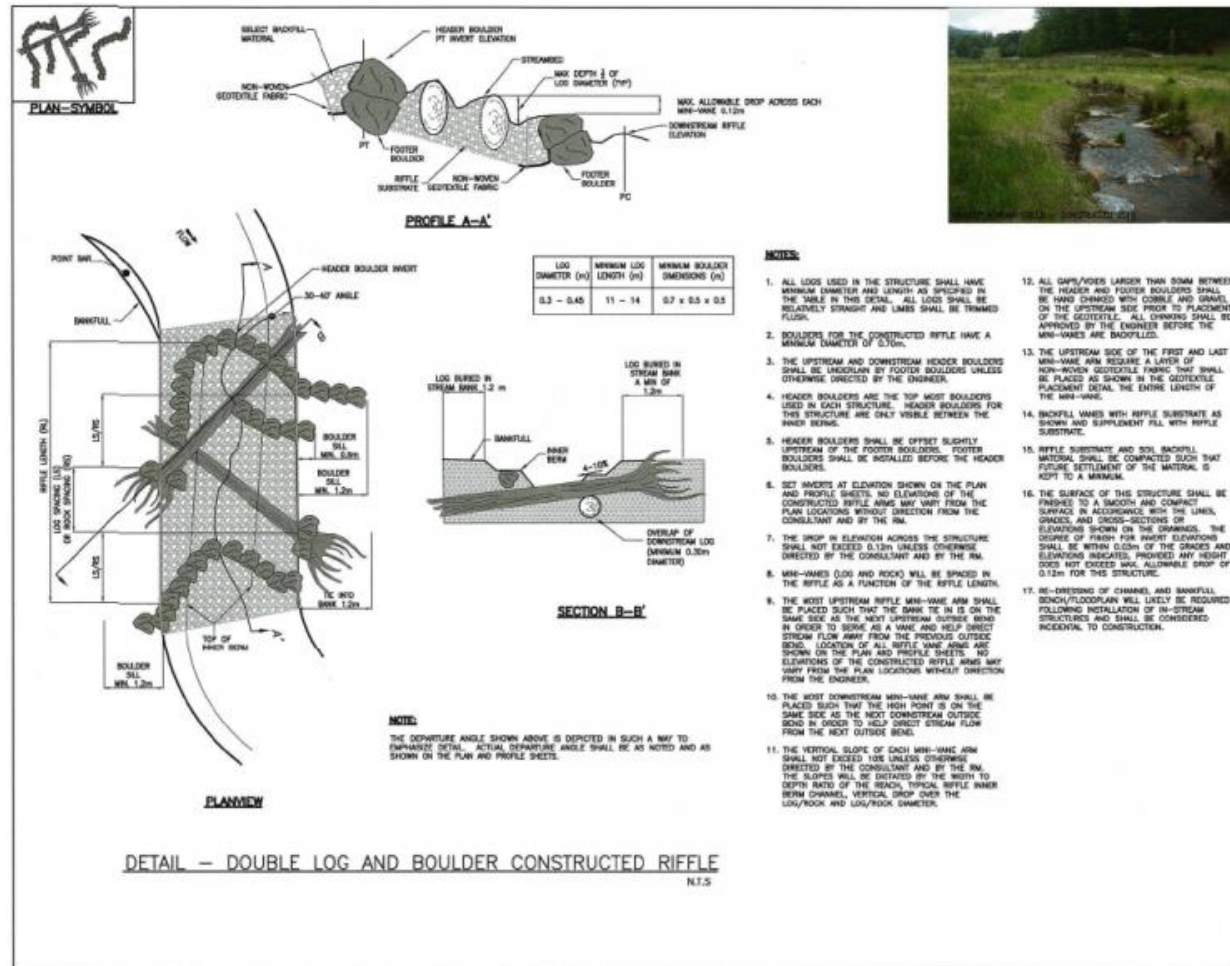
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Difficult for new contractors to fully comprehend the material and installation requirements of installing a stream



2. Complex Installation

Construction oversight by designer or fluvial geomorphologist familiar with stream construction = crucial



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familiar with stream construction = crucial



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3. Bring the Proper Equipment

Stream restoration requires significant earthworks...



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Stream restoration requires significant earthworks...



3. Bring the Proper Equipment

...and handling of large materials.



3. Bring the Proper Equipment



3. Bring the Proper Equipment



3. Bring the Proper Equipment



4. Construction Phasing/Water Management

Who is doing what? Where? When? How?

- Haul roads, stockpiling, division of labour, equipment...



4. Construction Phasing/Water Management

“An ounce of prevention is worth a pound of cure...”



4. Construction Phasing/Water Management

You never know when 100 mm of rain will fall...



November 1, 2016

4. Construction Phasing/Water Management



Prepare for the worst!



4. Construction Phasing/Water Management

October 24, 2016



November 7, 2016



5. Do It Right

"Harvey, let's just do it right the first time and we don't have to re-do it."
-Operator, to fellow worker



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November 27, 2016 – done!



Summary



Summary

All relates to **understanding the scope of work**:

1. Unintentionally low bids are not uncommon
 - Scope of work must be made clear during pre-bid meeting
2. Installation of stream features is complex
 - Construction oversight by stream practitioner
3. Proper equipment is important
 - Discuss size of materials, earthworks, channel size during pre-bid meeting
4. Carefully plan construction phasing and water management
 - Pre-mobilization meeting with designer, contractor, surveyor
5. Doing it right the first time saves time, money, and headaches
 - Patience and technique first; speed will come

How Does the Story End?

November 28, 2016...



- Overall, successful project
 - Patient contractor wanting to learn and do it right
 - Full-time construction oversight by designer
 - Communication and on-site problem solving



Questions?