#### **Stream Restoration Symposium 2019**

**Lessons Learned from Stream Restoration in Other Jurisdictions** 

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# LESSONS LEARNED

RILEY LECKA

### STREAM

S- STEWARDSHIP
T- TEAMWORK
R- RESOURCES
E- ECOSYSTEM
A- ACKNOWLEDGE
M- MANAGE



## TEAMWORK

- MAKING SURE THE TEAM MEMBERS ARE ALL INVOLVED.
- Step by step management.
- DESIGNER AND CONTRACTOR RELATIONSHIPS.
- ABILITY TO WORK TOGETHER
   TOWARD THE COMMON VISION
- BEGINNING-MIDDLE-END



# TURN KEY

- LOAD MANAGEMENT
- OWNERSHIP
- Full-service operations
- WARRANTY
- VALUE





#### DESIGN BUILD IS THE WAY TO GO

- BUILDING A LONG-TERM TRUST WITH THE DESIGN TEAM
- Less time in the office more time for the Stream!!
- OPPORTUNITY FOR TEACHING AND LEARNING
- THE VISION OF A SKILLED CONTRACTOR
- CREATIVE LEARNING TO WHAT THE STREAM NEEDS
- 60% is it enough can we get started



# 

## **REAL-TIME DATA**

Saving time and money with detailed plans at your fingertips.

## GPS GRADE CONTROL SYSTEM

#### MACHINE GUIDANCE





TABLET

#### GPS SURFACE GUIDANCE

CROSS SECTION

- CUT-FILL
- BOUNDARY'S
- Speed & precision
- ALIGNMENTS
- CONTROL POINTS



#### PLAN VIEW

#### • SITE LOCATION

- EASY ACCESS FOR STREAM
   STRUCTURE LOCATION
- Stations for lengths
- BILLING AND DATA TRACKING



#### GPS IS FAST

• The profit gains are fast tracked

• COST EFFECTIVE

- TRAINING AND USER FRIENDLY
- NO QUESTIONS ON PRECISION



# SURFACE

- FloodplainContours
- Shaping
- TIE-IN
- BLENDING





#### WHAT IS CHANNEL?

- Shape, Depth, width
- Sinuosity, slope, bankfull
- SUB-STRAIGHT MATERIALS
- BASIC CHANNEL GOALS
- END RESULTS



#### TOE WOOD

- Outside meander protection
- AQUATIC HABITAT
- Hydraulic Dissipation
- DIRECTIONAL VELOCITY
- NATURAL MATERIALS



#### TOE WOOD DETAIL

#### • STEP BY STEP INSTRUCTIONS

- MANAGE YOUR PRODUCTION
- IS IT ENOUGH?
- IS IT TOO MUCH?



#### Finished Product

Base Layer

P

Brush Second Layer









Beginning-Project

Middle of Project- Grading

Toe-Wood and Fabric

# TIMBER STRUCTURES

- RENEWABLE RESOURCES
- NATURAL ENVIRONMENTAL PRODUCT
- CUT TO FIT ALL THE SYSTEMS NEEDS
- Reduces Near bank stress
- AVAILABILITY TO BOUNCE YOUR THALWAG PATTERN AROUND
- STABILITY FOR THE RIFFLE SLOPES.









#### MORE WOOD IS BETTER

- ALWAYS AVAILABLE OR EASY TO GAIN
- Cut and shape for the stream your working on
- CREATING NEW IDEAS AND WAYS TO ENHANCE YOUR PROJECT
- ADDS VALUE TO THE EARTH AFTER IT BREAKS DOWN

#### HAY BALES

- СНЕАР СНЕАР СНЕАР
- FAST TO INSTALL
- CAN GROW AND HOLD WATER FOR GRASS AND YOUNG VEGETATION
- DURABLE IN SMALL LOW STRESS
   STREAMS



#### ROCK GRADE CONTROL

• GRADE CONTROL (HEAD CUT PREVENTION).

• ARM SLOPES HELP TIE THE CHANNEL TO THE FLOODPLAIN.

• FLOODPLAIN ACCESS.

• HABITAT- CREATES OXYGEN, VELOCITY FOR SEDIMENT TRANSPORT, COOL DEEP WATER.

• CENTERS THE THALWAG, DECREASE'S NEAR BANK STRESS.



#### WORK IN THE DRY OR PUMP AROUND

#### PROS AND CONS TO THIS IMPLEMENTATION

- PUMP AROUND ADDS TIME MONEY AND ENERGY TO THE TASK
- PUMPS CAN FAIL AT ANY TIME, CAUSING MORE DELAYS
- PUMP AROUND OPERATIONS CAN HELP BY REDUCING THE MUD IN YOUR WORK AREA, CAN MAKE YOUR STRUCTURE OPERATION MORE EFFICIENT BUILD STRUCTURES FASTER.

This scope of work to me is always in the opinion of the work area your working in.



#### WORK IN THE WET

• MONEY TIME RESOURCES BACK INTO THE PROJECT

• Time: spend less time on pumps and more time on the river!

• THE MONEY THAT IS SPENT ON PLANNING AND PAPERWORK FOR PUMP AROUNDS COULD BE VALUABLE STREAM STRUCTURE OR MATERIALS.

• HAVE ALL YOUR RESOURCES WHERE YOU NEED THEM



# **VEGETATION PREP**





Site Plan and Development. Team Goals and Achievements. Time during The Year. Best Season to Achieve Sustainable Project Goals. Knowing your Climate.





# BAD DAYS

#### VEGETATION GOALS

THICK AND GREENHEALTHY, STRONG



# WHAT'S NEXT

New innovations, new ideas, new teams, new beginnings.

Learning from are old missions, to develop new ones.

Believing in the stream and what we stand for.





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