

HREP Construction Lessons Learned in MVP

**Presented at the UMRR HREP Team Meeting
September 28, 2016**

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- Purpose: Share a big picture of lessons learned on our recent HREP Projects that might be of interest to others.
- Method: Use a Case Study to Review project challenges encountered, and some strategies implemented to improve outcomes on our HREP Projects.
- Question: As an UMRR Partner, Agency, or Corps team member, are you getting the best outcomes on your HREP Projects?



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Case History From a Recent Project:

- Project was transferred to me from another project engineer in our office.
- Questions I Asked To Get Familiar with the Project:
 - ▶ How are things going?
 - ▶ What will be my role on this project?
 - ▶ Are there any unique circumstances or challenges that need to be addressed?

Pool 8 Project near Brownsville, MN \$5.5 Million; Complete Date – July, 2011
5 large Islands – 1500-4000 lf (150 ft w) & 3 small islands – 200 lf (60 ft wide)



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FINDINGS:

- We had a good contractor who was capable of performing the work.
- Experienced agency staff who supported the project.
- Experienced construction staff who had done similar projects.
- The work was similar to previous HREP Projects.
- Good sources of materials (Granular, Fines, and Rock).



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- **CHALLENGES:** Despite the positives there were some red flags:
- Contractor: They were determined to build the project their own way and had some significant trust issues with agencies and the Corps.
- Agencies: Had trust issues with the Contractor, Corps, & perhaps each other.
- Corps: Design/PM Team didn't fully understand construction challenges.
- Technical: Contract documents were inconsistent with agency permits..



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The following are some of the steps we took that year:

- Weekly Meeting & Site Visit: An agenda, site visit, and a commitment by all parties to represent their agency and make timely decisions.
- Work Plans: Required Detailed Work Plans that addressed the permit (and key concerns) of the agencies for review before work started.
- Surveys: Enforced the survey requirements, worked with new surveyor, and used the payment process to assure that progress of work was well documented.
- Trust: COR undertook steps to re-establish trust.
- Lessons Learned: Made commitment to capture good and the bad for next project.



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#1 - The Weekly Meeting



1. Same Time Each Week.
2. Need an agenda. Take meeting Minutes and send out to attendees and other interested parties.
3. Each Agency sends a representative able to make a decision at the meeting, or work within their agency to get a timely decision.
4. Issue Escalation Chart can be used if needed. (Developed at Precon Meeting)



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#1 – The Weekly Meeting - Agenda Example



HARPERS SLOUGH

September 27th 2016 - 10:00 AM

Progress Meeting 27

W912ES-14-C-0015

Overall Project Progress / Activities in progress:

Island W2

- Stopped granular placement at STA 6+00
- Placed temporary end protection around STA 6+00 (577 ton)
- Sand from 20+00 to 32+00 to rough grade
- Placed Groins G9-G16 and Vanes V29-32
- Center 50' of island from STA 6+00 to 20+00 at 622.5 (1' high) due to high water

Island W3

- Final graded granular and finished rock berm last week
- Placement of fines started yesterday.

Island L6

- Placed fines Tuesday – Thursday last week. Had to shut down Thursday due to high water

Ellicott 1270

- Removing pipeline and preparing for demob

Project Completion

ITEMS TO FINISH FROM 2015: Island M5, L1 and L3 final grading; Island M5, L1, and L3 seeding and willows

SEASON 2 (2016)

BASE BID:

ISLAND M2

Granular: 79,431 CY Placed, 79,057 CY Estimated
Wetland Berm: 6349 CY Placed, 4,855 CY Est.
Sand Tip Granular: 5470 CY Placed, 5650 CY Est.
Fines: 13606 CY wet Placed, 11,000 CY Estimated
Rip Rap: 4193 Ton Placed, 4,170 Ton Estimated

WETLAND #2

Fines: XX CY Placed, 10,400 CY Estimated

OPTION 2:

ISLAND L6 – Updated

Granular: 93665 CY Placed, 90,210 CY Estimated
Sand Tip Granular: 4000 CY Placed, 4,117 CY Estimated
Fines: 13375 CY Placed, 19,000 CY Estimated
Rip Rap: 4460 Ton

ROCK MOUND L5

Rip Rap: 2994.185 Ton Placed - Complete

OPTION 1:

ISLAND W2

Granular: 64,000 CY Placed, 79,574 CY Estimated
Fines: XX CY Placed, 16,300 CY Estimated
Rip Rap: 1993 Ton Placed, 5300 Ton Estimated

ISLAND W3

Granular: 37000 CY Placed, 36,768 CY Estimated
Fines: 750 CY Placed, 7,200 CY Estimated
Rip Rap: 12,252 Ton Placed, 10,200 Ton Estimated
Chinking: XX Ton Placed, ?? Ton Estimated

WETLAND #3

Fines: 24,400 CY Placed - Complete

ROCK SILL M4

Rip Rap: 943 CY Placed, 2,000 CY Estimated
Bedding: XX CY Placed, 100 CY Estimated
Chinking: XX CY Placed, 150 CY Estimated

ISLAND M5

Fines: 18,000 CY Placed, 16,882 CY Estimated

Wet #1 berm: 4000 CY 16,612 Estimated

WETLAND #1

Fines: XX CY Placed, 53,000 CY Estimated

ROCK SILL W1

Rip Rap: 4941 TN Placed, 5500 TN Estimated
Bedding: 320.93 TN Placed, 300 TN Estimated
Chinking: XX TN Placed, 200 TN Estimated

ROCK SILL W2

Rip Rap: 2428.31 Ton Placed - Complete



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#1 – Weekly Site Visit



Go Look at what is happening;
Agencies, Corps & Contractor.

Opportunities to Build Trust.

See if there are punchlist items.

Agencies voice concerns to the
COR; not to the Contractor.



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HREP Construction - #2 Work Plans

- Site Plan
- Access Dredging
- Granular and Fines Dredging
- Placement Plan
- Survey Plan



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HREP Construction - #3 Surveys

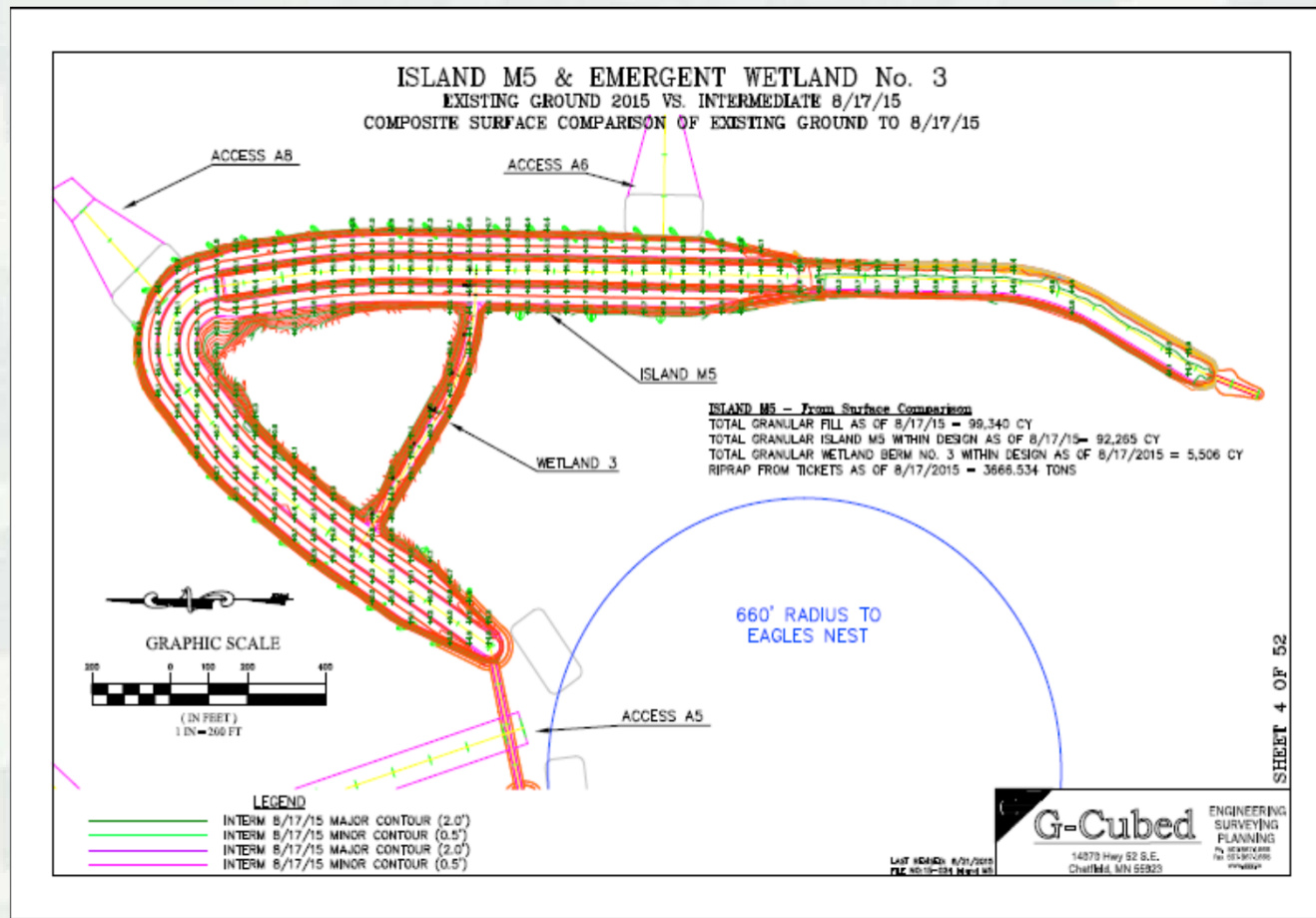


1. Capable Surveyor – Under Supervision of a Registered Surveyor.
2. On Site Full Time – We changed our Specifications to assure compliance.
3. Define Deliverables – Use Survey Plan to Define.
4. Control – Verify Control at Beginning of Project. Use NGS or Corps monuments and establish a series of daily checks.
5. Use Interim Surveys for Payment.



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#3 Survey (Deliverables)



1. Three Stages – Pre-construction Survey; Interim Surveys (w/Pay Estimates), and Final – As-Built Surveys

2. Left is example of typical Interim Survey - Plan View with Quantity Summary.



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#4 - Building Trust



1. Get to Know Your contractor.
The better he performs, the better the project works.
2. Do the QA to verify Contractor is doing the QC.
3. When agencies know the Corps is managing the contractor, it builds trust in the project success, and Corps.



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#5 Lessons Learned

Steps Taken to Improve the Next Project:

- 1. Capture Useful Information
 - ▶ Talked with the contractor, agencies, and Corps to get their input on how to improve future projects.
 - ▶ Took frequent construction photos to *document* work performed and shared photos with the team.
- 2. Implement Changes
- Reviewed the dredging specifications and revised them to be consistent with the agency permits. Site restrictions and placement requirements were also reviewed and revised.
 - ▶ Improved work plan requirements in specs. Plans submitted for Corps and Agency reviews and acceptance before work commenced.
 - ▶ Reviewed the survey requirements and payment process to assure that we right tools to assure work built to contract and progress was well documented. (On the following project, survey specs were revised.)



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Get the Team Together



Here is a meeting with our planners, designers, and agency staff on site to look at Pool 9 Projects



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HREP Construction – The Team..



Meeting at Pool 8 after islands had been overtopped during construction.

Project Managers – Get them out on the job as well.



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Questions

- What are the biggest challenges on your HREP Projects?
- What steps have you taken to improve the outcome?
- Do you have resources in your organization that could be used better?
 - ▶ Surveying – Bathymetry checks, Feature Layouts, QA during construction.
 - ▶ GIS....
 - ▶ As-Built Documentation



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