MDOT Bathymetric Boat Survey Research Project

October 5, 2017

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MDOT Bathymetric Boat
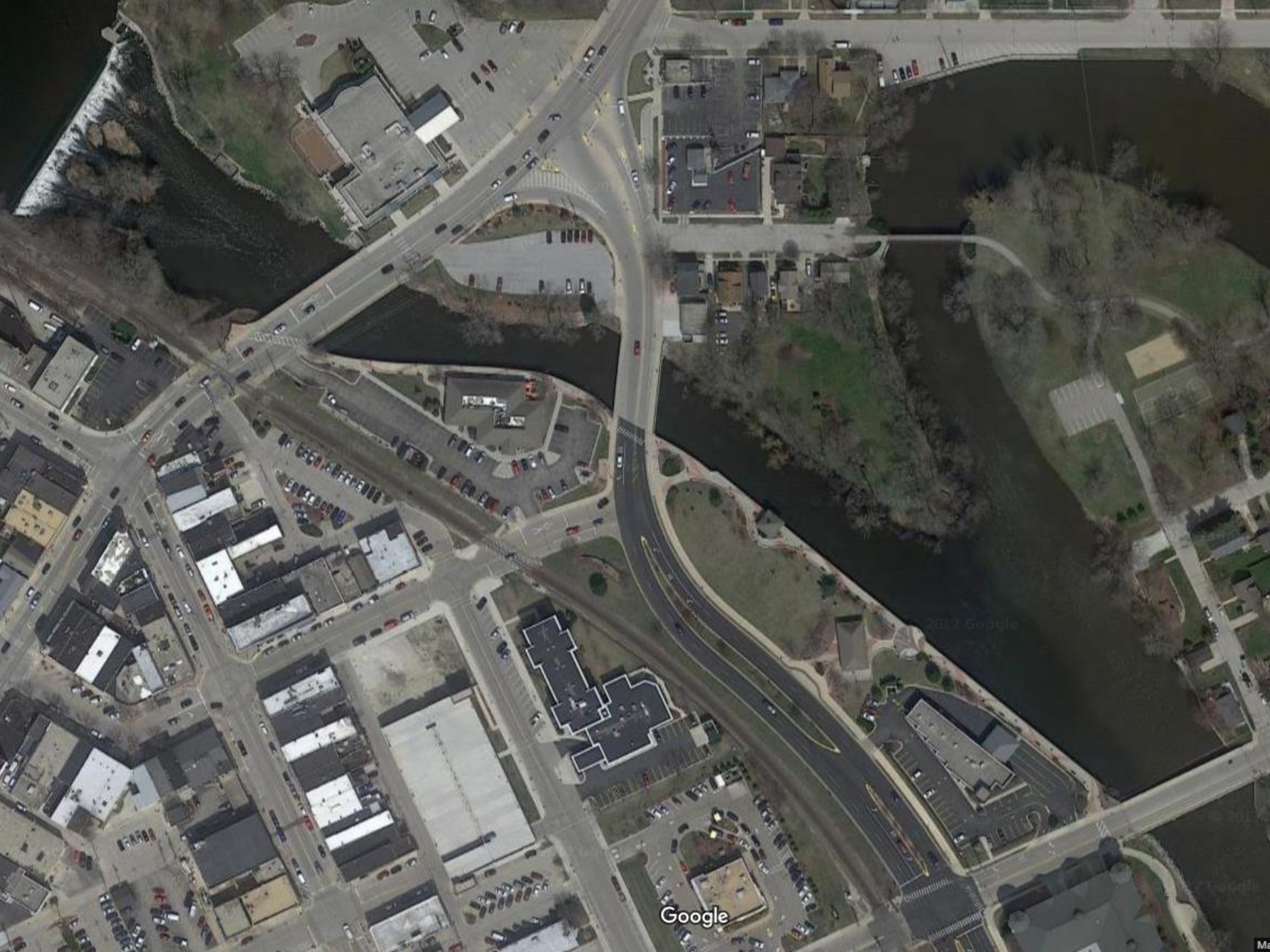
- Definitions

    – Boat = Unmanned surface vehicle (USV)

    – Approximate size = 5.5 feet long by 2.5 feet wide

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- Why boat is needed
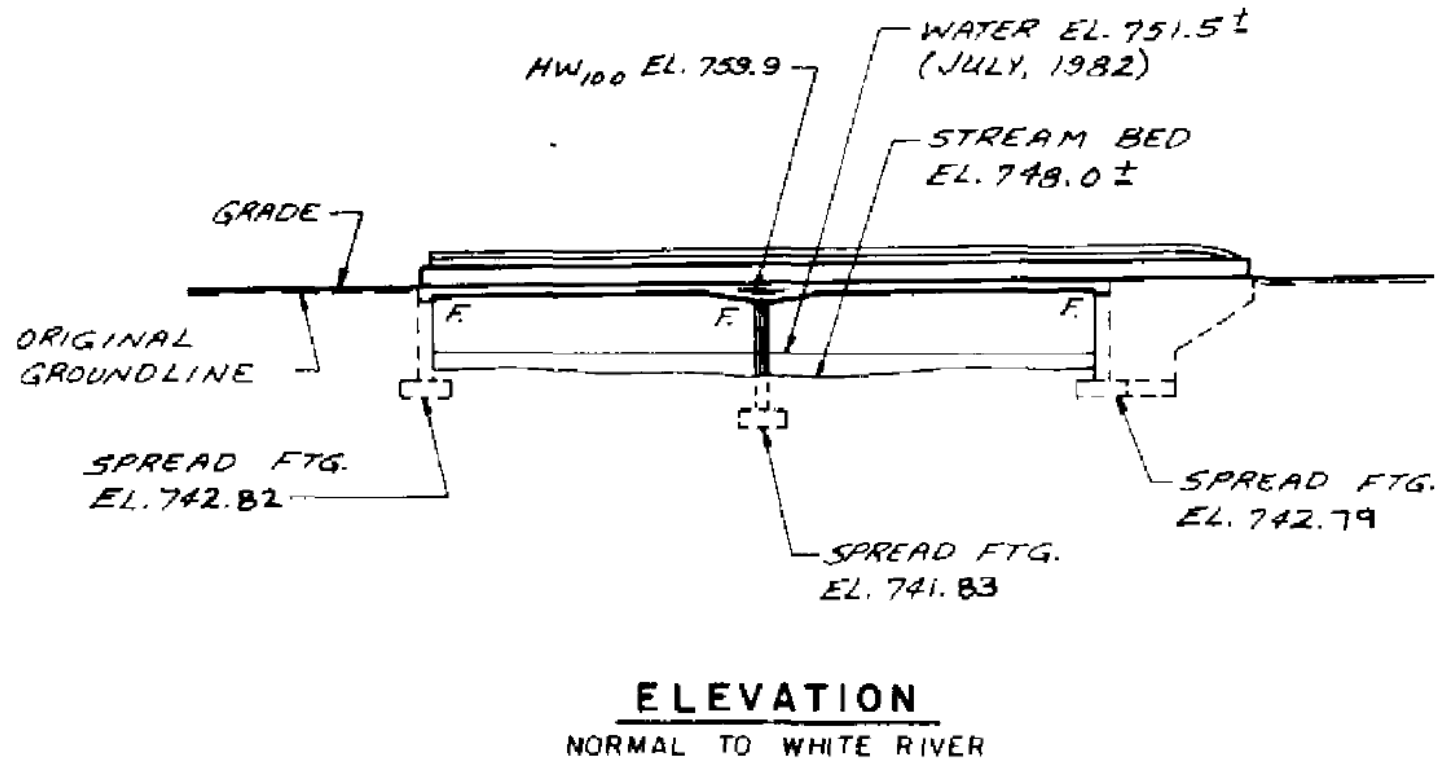
- How boat will be selected

- What boat will do

MDOT Bathymetric Boat

- Why

WATER EL. 751.5±
(JULY, 1982)

HW₁₀₀ EL. 759.9

STREAM BED
EL. 748.0±

GRADE

ORIGINAL
GROUNDLINE

F.   F.   F.

SPREAD FTG.
EL. 742.82

SPREAD FTG.
EL. 742.79

SPREAD FTG.
EL. 741.83

ELEVATION
NORMAL TO WHITE RIVER

MDOT Bathymetric Boat

- Why

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- Why boat is needed

  - Tool

    - Data collection

    - Post processing data

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- How boat will be selected

  – What others have done

  – MDOT's requirements

  – What is available

MDOT Bathymetric Boat

- ## What others have done with USVs
  - ### Florida DOT
    - Effective tool in sheltered water

  - ### U of Michigan / Michigan Tech
    - Can build an autonomous boat

  - ### Ayres Associates
    - Tethered USV has limited scope

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- Tethered from snooper

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- Selection

  - MDOT's requirements

    - Quick deployment

    - Efficient measurements

    - Long term support

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- Selection

    – Prominent vendors

        - Clearpath Robotics
        - Deep Ocean
        - Seafloor Systems
        - Ocean Science
        - Marine Robotics

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- Selection
  - Rating system
    - Hull shape

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- Selection
  - Rating system
    - Hull shape

MDOT Bathymetric Boat

- Selection
  - Rating system
    - Hull shape

5 =	Catamaran
4 =	Light weight catamaran or heavy mono hull
3 =	Mono hull
2 =	Light mono hull
1 =	Another hull design
0 =	Wood Plank

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MDOT Bathymetric Boat

- Selection
  - Summary or criteria
    - Hull shape
    - Speed
    - Battery
    - Weight
    - Payload capacity
    - Boat size
    - Instrumentation available
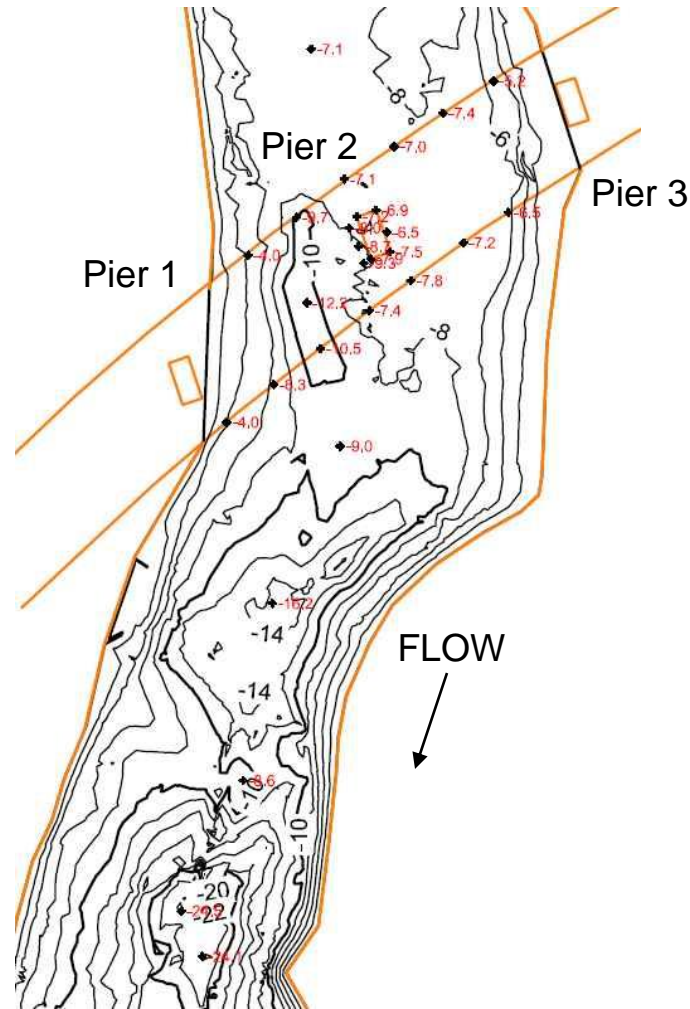   - Cost
    - Vendor reputation and service

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- What boat will do

    - Look down

    - Look up

    - Provide coverage

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- Looking down

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- Looking down

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- Looking up

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- Provide coverage

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- Inspector safety

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- Why boat is needed

- How boat will be selected

- What boat will do

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- Any questions?

- Some answers