FLOOD CONTROL SYSTEM
TRIP REPORT

TO: Flood Control System Committee

FROM: Sandy Pumphrey, Project Engineer II – Flood Mitigation

DATE: June 4th, 2015

RE: Trip to view Flood Control Systems in Grand Forks and Fargo, North Dakota

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General

In early May 2015, four (4) staff members and a City Council member visited the communities of Grand Forks and Fargo, North Dakota to view the flood control systems and interview representatives regarding their experiences with flood fighting and flood control system implementation efforts. The following summary of the trip provides referential information for use during the implementation of the Cedar Rapids Flood Control System.

The Red River routes in a northerly direction through two pairs of cities along the North Dakota and Minnesota borders: Grand Forks/East Grand Forks and Fargo/Moorhead. River level changes over the flat topography take place over extended periods of time, allowing floods to be predicted well in advance of the event. Flood fighting efforts typically take weeks or months and typically coincide with late winter storms which can complicate the execution of flood fighting plans.

Information specific to each system and photographs are below.

Cities of Grand Forks, ND and East Grand Forks, MN

- Both cities collaborated on the project. The focus of the visit was on Grand Forks, ND which has a complete FEMA certified Flood Control System.
- This project was triggered by a record flood within the downtown area that occurred in 1997 and took 10 years to complete.
    - Federal project appropriations had strong congressional support and utilized earmarks.
- The Greenway is now considered a tourist attraction, but also draws significant recreational interest locally.
    - Trails are 14' wide for recreational use and maintenance access.
- The system allows pedestrian and/or vehicular access to the river at least every ¼ mile
- Most of the system is levee; however, floodwalls are used in areas that are structurally insufficient to support the weight of a levee. Levees were designed to account for settlement and maintain the proper elevation.
- East Grand Forks has approximately 900' of removable floodwall.
- The entire system is operated by a public entity.

- Costs
    - Total cost of $243.4m (Grand Forks only).
    - Federal - $117.7m
    - State - $52.0m
    - City - $73.7m – special assessments, GOB's and sales tax.
- System overview
    - 12 pump stations
    - 14 miles of levee
    - 1.25 miles of floodwall
    - Tallest floodwall 17'

Cities of Fargo, ND and Moorhead, MN

- Both cities are collaborating on the project; the focus of the visit was on Fargo.
- The project was triggered by floods that occurred in 1997, 2009 and 2011. The 2009 flood was the largest on record. During these events, Fargo incurred less damage than Grand Forks.
- Flood fighting on a significant scale is typically an annual event in Fargo.
- Similar to Cedar Rapids, the project is federally approved, but not yet appropriated.
- The project is about 45% complete.
- Fargo's project includes a large diversion channel around the City, which was selected after a federal feasibility study of all alternatives. The diversion channel provides risk reduction for the 100-year flood event. More extreme events need additional flood-fighting efforts.
- In addition to the diversion channel, the overall project includes a system of levees, floodwalls and pump stations.
- The City has made strides with non-structural methods to reduce flood risk to residents and businesses (i.e. floodplain management policy changes).
- Public Outreach and communication regarding the project has played a large part in the process.
- The City will likely have multiple vendors, rather than one dedicated vendor for removable flood walls.
- Fargo is pursuing a Public Private Partnership (P3) model to assist in financing the project as allowed by North Dakota law.
    - Design – Build – Finance – Operate – Maintain
- Sales tax is a major contributor toward the funding of this project. Projected construction expenses significantly outpace receipt of sales taxes. Special assessments are being used to make up the difference, but are predicted to save the region money overall.

Photographs - City of Grand Forks, ND

Typical floodwall/levee tie-in point with retaining wall on dry side of levee section

Removable floodwall system incorporated into aesthetics of the system

A permanent floodwall section routed around a historic structure in order to save the building.

A memorial within a park that was formally a neighborhood, showing where streets were located in the area.

Pumps for one of the many pumpstations

A memorial within a park that was formally a neighborhood, showing where streets were located in the area.

A break in the wall for a railroad track

Pump stations were designed architecturally to fit into their local context

Assembly of full-height removable floodwall

Minimal seepage occurs through a removable wall system deployed during high water.

Photographs - City of Fargo, ND

Ongoing flood fighting efforts have caused private property damage.

Levees and floodwalls were integrated into neighborhoods with recreational trails.

Flood-fighting efforts near residences.

Stormwater storage integrated into their Flood Control System plan.