“A Tale of Two Floods”

Association of State Floodplain Managers
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Cedar Rapids

- Population 130,000
- Second largest city in Iowa
- Industrial roots: Quaker Oats, General Mills, Cargill, ADM
- Vibrant urban town – All America City Award 2014
- Cedar River has 6,000 square mile upstream watershed at Cedar Rapids
The Historic 2008 Flood

Floodwaters spread across more than 10 square miles of the city, 14% of the land
Over 1,000 blocks in the heart of the community were flooded. More than 300 public buildings and 900 businesses were damaged.
5,390 homes belonging to more than 18,000 citizens were affected, and 10,000 residents were displaced by the disaster.
The Central Fire Station, Police Station, City Hall, County Courthouse, County Administrative offices, and County Jail all required immediate relocation. Public services continued without interruption.
Rebuilding
Flood Risk Reduction | Progression of Protection

- Interim flood control plan and concept for permanent protection (2008)
- Voluntary Property Acquisition Program (1300+) 2009-2014
- Adoption of New Flood Insurance Rate Maps (2010)
- Updated Floodplain Management Ordinance (2010)
- Retrofitted buildings flooded in 2008 and Raised Building Equipment
- Raised two bridges over Prairie Creek (2009 and 2011)
- McGrath Amphitheatre / Levee protection (2012)
- Waste Pollution Control Plant Upgrades / Levee System (2013)
- Water System Improvements / Wells Raised (2012)
- Interim Berm (Levee) Repairs
- Sanitary Sewer Improvements and Watershed Management (ongoing)
- Secure GRI state funding (2014)
- NewBo/Czech Village projects 2016 - 2018
- FCS 5 – 20 years
- Remaining Risk
Flood Control System

Master Plan for Permanent System was adopted on June 23, 2015
Fast Facts

• Will convey the 2008 flood volume
• Approximately 7 miles long
• Protects both sides of the river with
  – permanent and removable walls, levees and gates
• Incorporates new parks and aesthetic elements
• Dry side includes pump stations to handle 5-year “thunderstorm” event ($$).
Entire System
Permanent System Budget

Expense:
$750 Million including inflation over 20 years

Revenue from Federal, State, and Local Sources:
• $12.5M CDBG Disaster Recovery Grant
• $78M U.S. Army Corps (approved, not appropriated)
• $267M State Sales Tax Fund over 20 years
• $110M City Match Required
System Challenges and Considerations:

• Reliability - high percentage of openings
• Logistics
  • Erect moving pieces in enough time?
  • Storage and Annual Testing of Equipment
• Drainage areas overwhelm Pump Stations
• Buyout of Remaining Properties
• Differing City project versus US Army Corps
• Cohesiveness of ala cart projects
• Public awareness & support wanes over time
Continuous Master Plan Improvements

Technology Enhancements | Gate Considerations | Revised Alignment
Value Engineering | Aesthetic Improvements

https://www.youtube.com/watch?v=6J_VO6gKBXc
Related Project:

Replacing & Elevating Cedar River Bridge
Benefits of Replacing/Elevating 8th Avenue

• Preserve emergency flood preparation and response
• Preserve access to hospitals, police department, and interstate
• Life expectancy of bridge aligned with that of protection system
• Save $$ by eliminating flood gate at 8th Avenue
• Signature Bridge / Development opportunities
Aesthetics – Community Input

Most preferred to least preferred: 1,221 total votes

# 1
Short tower with cables
437 1st place votes
3,208 points

# 2
Arch above travelway
285 1st place votes
2,721 points

# 3
Arch below travelway
242 1st place votes
1,796 points

# 4
Steel arch
139 1st place votes
1,629 points

# 5
Concrete
106 1st place votes
1,238 points

Point Methodology:
Five points given for a 1st place vote, three points for 2nd place, one point for 3rd place
September 2016 Flood
4 Days to Prepare:

• 19.5’ predicted 9/22
• 25.3’ predicted 9/24

Action Stage = 10’
Minor Flooding = 12’
Major Flooding = 16’
2008 Flood = 31.12’
Immediate Actions

• Enact Flood Response Plan
• Erect Interim Flood Protection
• Open Incident Command Center
• Establish Core Operation Teams
  – Flood barriers (Hescos, Clay Berms etc.)
  – Underground gates and plugs
  – Public Safety / Traffic Control / Evacuations
  – Communications / Daily Press Conferences
• Outreach to Elected Officials & Public
Evacuation

- Safety / Room to work
- Evacuation area set at the 26-ft flood inundation area
- Curfew observed
- Evacuation area revised to 24-ft flood inundation area
- National Guard assisted with checkpoints and security of area
Above Ground Barriers
Contractors Built 9 miles of HESCO Barriers
Redundancies Built In
HESCO Barrier Wall Required Solid Foundation
Contractors Partnered on 1.2 miles of Clay Berms
Community Professionals Helped Inspect Above Ground System 24/7
Underground & Pumping

City Crews Fortified 300 Manholes
Private Citizenry Response
End Result: Minimal Water Impact
Community Pride
Lessons Learned

- **Underground fight is hard**
- Regular communication with media/public
  - Daily Press Conferences
  - Webpage depository
  - USGS text alerts
- Be ready – drills, test runs, preparation, communication
- Ask for help from private sector

- Emergency procurement procedures in advance
- Organize shifts w/ backups to allow for rest/sleep like PD
- 24/7 Monitoring up to and after the peak
- Have post flood cleanup plan (esp. sandbags)
- Need business impact plan (to address business losses)
- $$$ spent on flood fight don’t help case for permanent flood funding
Questions?