INNOVATIVE DELIVERY OF THE SUPPLEMENTAL PROGRAM

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BLUF

For USACE to remain RELEVANT we must adopt INNOVATIVE processes, tools, and techniques to expedite project execution and improve project, community, and national infrastructure resilience.
Background

• 2017 - Hurricanes Harvey, Irma and Maria damage alone were responsible for approximately $265 B of the $306 B of damage.

• Each of these hurricanes now joins Katrina and Sandy, in the new top 5 costliest U.S. hurricanes on record.

• As a response to these events, in Feb 2018, Public Law 115-123, the Bipartisan Budget Act of 2018 signed. Includes $17.4B for 38 studies, 58 construction projects, and 159 misc. activities.
Long-Term Disaster Recovery investment plan (LDRIP)
Background


Purpose

- Promote a cultural change by embracing the use of innovative practices on Supplemental and all Civil Work Projects to achieve “World Class Delivery”

Key Actions

- Drive Quality Project Delivery
- Adopt Risk Informed Decision Making
- Incorporate Innovation in all WE do!

It is not about making ideas. It is about making ideas happen.

Mr. Dalton, USACE Director of Civil Works
USACE Directors Policy Memorandum (DPM) 2018-11-14
“Innovative Delivery of 2018 Emergency Supplemental Projects”

Definition / Outcome

**NEW**
- Application
- Approach
- Material
- Practice
- Process
- Product
- Strategy

**OPTIMIZE DELIVERY**
- Acquisition strategies
- Contract administration
- Construction materials
- Integrated project delivery
- O&M practices
- Planning/Design methods
- VE / PM techniques

**GOAL**
- Must be:
  - Legal
  - Code/Policy Compliant
  - Within Existing Authority
Supplemental Program Innovation Initiative

**Time Line**

- **SEP 2018**
  - DPM Released

- **OCT-NOV 2018**
  - Fact Sheets Submitted to HQ by Districts via DDE-PM and MSC

- **DEC-FEB 2019**
  - Fact Sheets Shortlisted

- **MAR-AUG 2019**
  - Fact Sheets Finalized

- **SEP 2019**
  - Innovation Report Completed

**The Corps Innovation Team (CIT) – SME’s from HQ, ERDC, and Districts that engaged with the field to screen /validate all fact sheets**

**Count of MSC Submissions**

**Type of Innovation**

- **149 Submissions**
- **15 Emerging Innovations**
- **36 Emerging Best Practices**
## Innovative Practices Maturity – Emerging Innovations vs. Emerging Best Practices

<table>
<thead>
<tr>
<th>Category</th>
<th>General Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emerging Innovation</td>
<td>- Not a common USACE practice</td>
</tr>
<tr>
<td></td>
<td>- Not fully proven or validated at USACE</td>
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<tr>
<td></td>
<td>- Pilot projects</td>
</tr>
<tr>
<td>Emerging Best Practice</td>
<td>- Becoming more commonly-used at USACE</td>
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<tr>
<td></td>
<td>- Used multiple times at USACE and optimizing</td>
</tr>
<tr>
<td></td>
<td>- Exemplifying potential future best practice</td>
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</tbody>
</table>
Example Emerging Best Practices

Best practices should see increased use across USACE

• UAS and LIDAR data to inform early planning
• Conduct consolidated industry days for all construction in geographic areas
• Leverage expertise and capabilities across enterprise
• Consistent review teams (ATR, IEPR, BCOES)
• Incorporate relevant SMEs (MCX, ERDC, etc) on PDT
• Contract incentives based on project requirements
• AE support for spec development
• Use of alternative materials (e.g., recycled concrete, fly ash, etc.)
Example Emerging Innovations

**Technology**

- Corrosion-resistant materials for coastal structures
- State-of-the-art modeling and simulation tools supporting design
- Soil enhancement materials such as biopolymers
- Concrete admixtures
- High performance turf reinforcement mats

**Process**

- High capacity MATOCs that support rapid project delivery
- Prequal of contractors
- Integrated design and construction (early contracting)
- Non-federal sponsor acquisition of fill
- Work in kind by local sponsor
Project Specific Examples and Tech

**INNOVATIVE DESIGN**

**San Francisco District (Bay Shoreline)**
**Problem:** Coastal storm surge hazard events
**Solutions:** Ecotone approach for low-slope levee system using natural and nature-based features for flood risk management

**New Orleans District (Lake Pontchartrain)**
**Problem:** Tropical/hurricane storm surge events
**Solutions:** Geotechnical design approaches to accelerate construction schedules. Bio-polymer materials for soil enhancement. HP reinforced turf mat systems to prevent erosion. Geofoam blocks / lightweight fill materials enable innovations and save money

**INNOVATIVE MATERIALS**

**Galveston District (Sabine Pass)**
**Problem:** Durable and resilient infrastructure for flood risk management
**Solutions:** Composites and corrosive-resistant steels to achieve 100+ service life with reduced life cycle O&M costs

**Jacksonville District (Rio Grande Arecibo)**
**Problem:** Durable marine structure for coastal storm hazard mitigation
**Solutions:** Corrosive-resistant materials concrete reinforced structure systems in marine structures. Rapid underwater concrete placement for dense-urban construction footprints
Path Forward - Implementation

- Knowledge management presence for initiative
- Oct 2019 – Commence Quarterly progress monitoring to assure implementation.

CIT Sharepoint for Implementation Updates

Fact Sheets

2018 ES Innovation Website (KM Portal)
Overarching Needs?

• **Novel geotechnical investigation techniques** in dense urban areas with existing infrastructure to minimize impacts to existing community.

• **Accelerated construction techniques** to optimize project delivery.

• Design for **combined flood and coastal storm hazards**.

• **Improved material durability** to meet 100yr design life in severe coastal environments.

• **Beneficially use marginal local materials** to meet project design specifications.

• **Improved remote sensing** methodologies for early-planning and design.

• Understanding the **long-term benefits** (cost, time, and performance) and **associated risks** of innovative approaches in design, use of materials, and working with natural and nature-based features.
INNOVATION
"RIGHT TIME, RIGHT NOW"