HANA HIGHWAY BRIDGE IMPROVEMENTS

Virtual Public Meeting | September 21, 2021 | 5:30 PM HST
PROJECT TEAM
FHWA-CFLHD AND HDOT PARTNERSHIP

Entered into a formal partnership in 2013.

Memorandum of Agreement for delivery of a Program of Projects. Includes projects across Oahu, Kauai, Big Island, and Maui.

Peer-to-Peer Exchange Agreement
AGENDA

≡ Project overview
≡ Alternatives study results
  − Rehabilitation vs Replacement/New Bridge
  − Proposed Solution (bridge-by-bridge)
≡ Constructability and traffic control
≡ Schedule
≡ Questions & Answers
PROJECT OVERVIEW
The Hana Highway Bridge Improvements Project is evaluating six bridges along the Hana Highway for improvements to maintain a safe and functional roadway system.
WHY ARE THE HANA HIGHWAY BRIDGES UNIQUE?

≡ Significance
  – Contributes to the historic district
  – Highly intact belt road system
  – Unique bridge engineering and construction

≡ Character Defining Features
  – Abutments
  – Approach walls
  – Railings
PROJECT PURPOSE & NEED
- Improve six bridges, in a context sensitive manner, so they remain functional
- Address existing substandard structural conditions through upgrades to address project needs
  - Reliability of transportation network
  - Structural conditions
  - Load capacity and safety
WHAT WE HEARD FROM YOU

- Reduce overall construction schedule
- Minimize traffic impacts
- Retain historic character
- Keep bridges single-lane
- Provide long-lasting solution
EVALUATION CRITERIA

- Constructability & maintenance of traffic
- Historic character
- Environmental resources & right-of-way
- Construction & maintenance costs
- Design standards & service life
ALTERNATIVES STUDY RESULTS
ALTERNATIVES CONSIDERED

≡ Rehabilitation
  - Start with the 2015 Preservation Plan
  - Maintain as many existing character defining features as practicable
  - Design improvements to meet project goals

≡ Replacement/New Bridge
  - Maintain as many existing character defining features as practicable
  - Replace to best match existing character as practicable
  - Design concepts to meet project goals
SUMMARY OF RESULTS

Rehabilitation
≡ Longer construction duration & greater traffic impacts
≡ Existing structure is either concealed or rebuilt
≡ High risk – Greater stream impacts
≡ Higher cost
≡ Shorter design life

Replacement/New Bridge
≡ Shorter construction duration & less traffic impacts
≡ Existing substructure elements retained
≡ Lower risk – Less stream impacts
≡ Lower cost
≡ Longer design life
Kailua Stream (#2)
Makanali Stream (#5)
Puohokamoa Stream (#8)
Ulaino Stream (#39)
Mokulehua Stream (#40)
KAILUA STREAM BRIDGE (#2)
KAILUA STREAM BRIDGE (#2)

Alternative #1 - Rehabilitation

Alternative #2 – Replacement/New Bridge
KAILUA STREAM BRIDGE (#2)

Proposed Bridge Rendering: Single-span concrete girders spanning over existing supports
MAKANALI STREAM BRIDGE (#5)
MAKANALI STREAM BRIDGE (#5)

Alternative #1 - Rehabilitation

Alternative #2 – Replacement/New Bridge
MAKANALI STREAM BRIDGE (#5)

Proposed Bridge Rendering: Single-span concrete girders slab spanning over existing supports
PUOHOKAMOA STREAM BRIDGE (#8)
PUOHOKAMOA STREAM BRIDGE (#8)

Alternative #1 - Rehabilitation

Alternative #2 – Replacement/New Bridge
PUOHOKAMOA STREAM BRIDGE (#8)

Proposed Bridge Rendering: Single-span concrete girders spanning over existing supports
ULAINO STREAM BRIDGE (#39)
ULAINO STREAM BRIDGE (#39)

Alternative #1 - Rehabilitation

Alternative #2 – Replacement/New Bridge
ULAINO STREAM BRIDGE (#39)

Proposed Bridge Rendering: Single-span concrete girders spanning over existing supports
MOKULEHUA STREAM BRIDGE (#40)
MOKULEHUA STREAM BRIDGE (#40)

Alternative #1 - Rehabilitation

Alternative #2 – Replacement/New Bridge
MOKULEHUA STREAM BRIDGE (#40)

Proposed Bridge Rendering: Single-span concrete slab spanning over existing supports
KOPILIULA STREAM BRIDGE (#19)
KOPILIULA STREAM BRIDGE (#19)

Alternative #1 - Rehabilitation

Alternative #2 – Retain Existing Bridge/New Off-Alignment Bridge
KOPILIULA STREAM BRIDGE (#19)

Proposed Bridge Location: New two-span, concrete bridge adjacent to existing
KOPILIULA STREAM BRIDGE (#19)

Proposed Bridge Rendering: New two-span, concrete bridge adjacent to existing
CONSTRUCTABILITY & TRAFFIC CONTROL
Constructability Considerations

- Roadway
- Curves
- Safety
- Retain historic character
- Access
- Weight Limits
- Protect Existing Bridge Elements
- Material Availability
- Challenging Terrain
- Narrow Road
- Cost
- Road Closures
- Steep
- Flash Flooding
- Limited Work Area
- Equipment Limitations
- Rocksides
Mokulehua Stream Bridge example
Mokulehua Stream Bridge example
Mokulehua Stream Bridge example
TEMPORARY BYPASS BRIDGE

Not Proposed

≡ Safety concerns
   ≡ New alignment
   ≡ Poor site distance
≡ Challenging to install
≡ Requires overnight closures & possible day closures
≡ 15% - 35% Higher costs
≡ Risk for adjacent property owners
≡ Increased impacts to adjacent property owners’ access

Sources: americancityandcounty.com and acrow.com
BRIDGE SLIDE CONSTRUCTION

Proposed

- Increased safety
  - Maintain alignment
  - Better sight distance compared to bypass bridge
- Proven off-line construction method
- Lower costs
- Requires overnight closures & multi-day full closure
- Low risk for adjacent property owners
- Better maintains adjacent property owners’ access
- Accurate and up-to-date notifications mitigate closure impacts
- Specifics regarding emergency services & access will be presented next public mtg

Source: youtube.com & Enerpac.com
BRIDGE SLIDE

STEP ONE

≡ Temporary traffic signals installed each side of bridge
≡ Temporary supports for construction of new bridge built to side of existing bridge
≡ Existing bridge remains open to traffic
**BRIDGE SLIDE STEP TWO**

- New bridge built on temporary supports to side of existing bridge
- New bridge supports built behind existing bridge supports
- Existing bridge remains open to traffic with plates covering work installed during limited nighttime closures
BRIDGE SLIDE
STEP THREE

- Remove the existing bridge, but preserve the existing bridge supports
- Roadway and bridge are temporarily closed to traffic
BRIDGE SLIDE
STEP FOUR

- New bridge slid into place
- Roadway and bridge are temporarily closed to traffic
BRIDGE SLIDE
STEP FIVE

- New bridge and roadway reopened to traffic
- New construction along edges of new bridge outside of traffic lane
- Roadway and bridge open to traffic
BRIDGE SLIDE
STEP SIX

- New bridge complete
- Construction area and surrounding environment restored
- Roadway and bridge open to traffic and temporary barriers and temporary traffic signals removed
SCHEDULE
CONSTRUCTION SCHEDULE

- Finalize design late 2022
- Anticipate Spring 2023 construction start
- Construction duration per bridge ~ 1 year
- Multiple bridges concurrent possible
NEXT STEPS

≡ Obtain public feedback on information presented tonight
≡ Finalize environmental analysis
≡ Progress bridge final designs
≡ Continue public, agency, and stakeholder outreach and input
≡ Additional public meetings in 2022
STAY ENGAGED
STAY ENGAGED - QUESTIONS?

There are multiple opportunities to stay engaged during the duration of the project:

**SIGN-UP**
You can sign up to be placed on our email distribution list to be informed about project progress.

**QUESTIONS?**
Email us questions, drop us a line and we will find the right person on the project team to answer your question.
hanabridgeimprovements@hdrinc.com

**PUBLIC MEETINGS**
Attend a public meeting. We will host two virtual public meetings
Tuesday, September 21 and
Wednesday, September 22 at 5:30 PM HST

Visit the project website: https://www.hanabridgeimprovements.com/