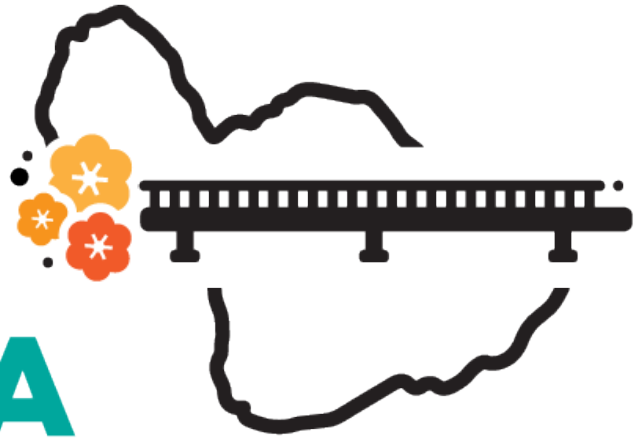


HANA HIGHWAY BRIDGE IMPROVEMENTS

Virtual Public Meeting | September 21, 2021 | 5:30 PM HST

PROJECT TEAM

FHWA-CFLHD AND HDOT PARTNERSHIP

Entered into a formal partnership in 2013.

Multi YR

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

Peer-to-Peer Exchange Agreement


Source: HDOT


Source: lovingthebigisland.wordpress.com


Source: USFWS

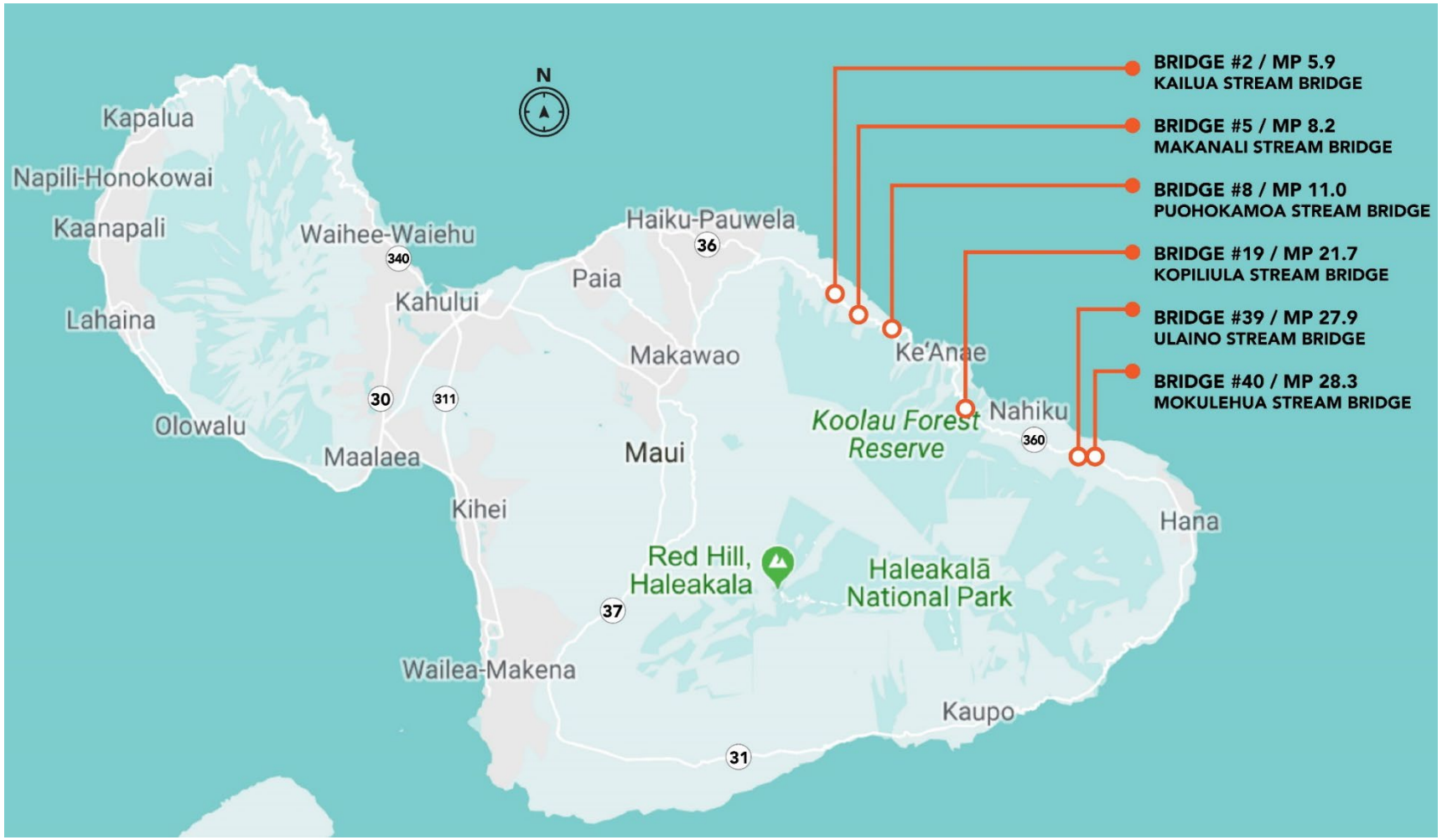
AGENDA

- Project overview
- Alternatives study results
  - Rehabilitation vs Replacement/New Bridge
  - Proposed Solution (bridge-by-bridge)
- Constructability and traffic control
- Schedule
- Questions & Answers

PROJECT OVERVIEW

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

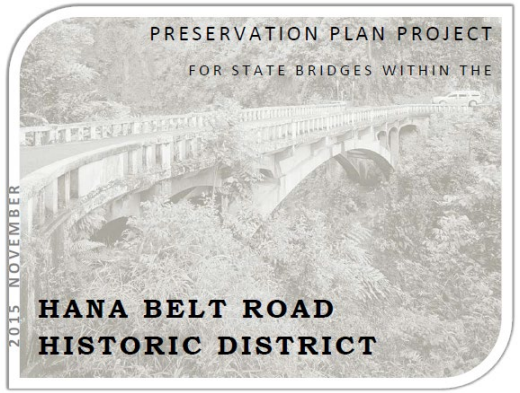
- Constructability & maintenance of traffic
- Historic character
- Environmental resources & right-of-way
- Construction & maintenance costs
- Design standards & service life

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

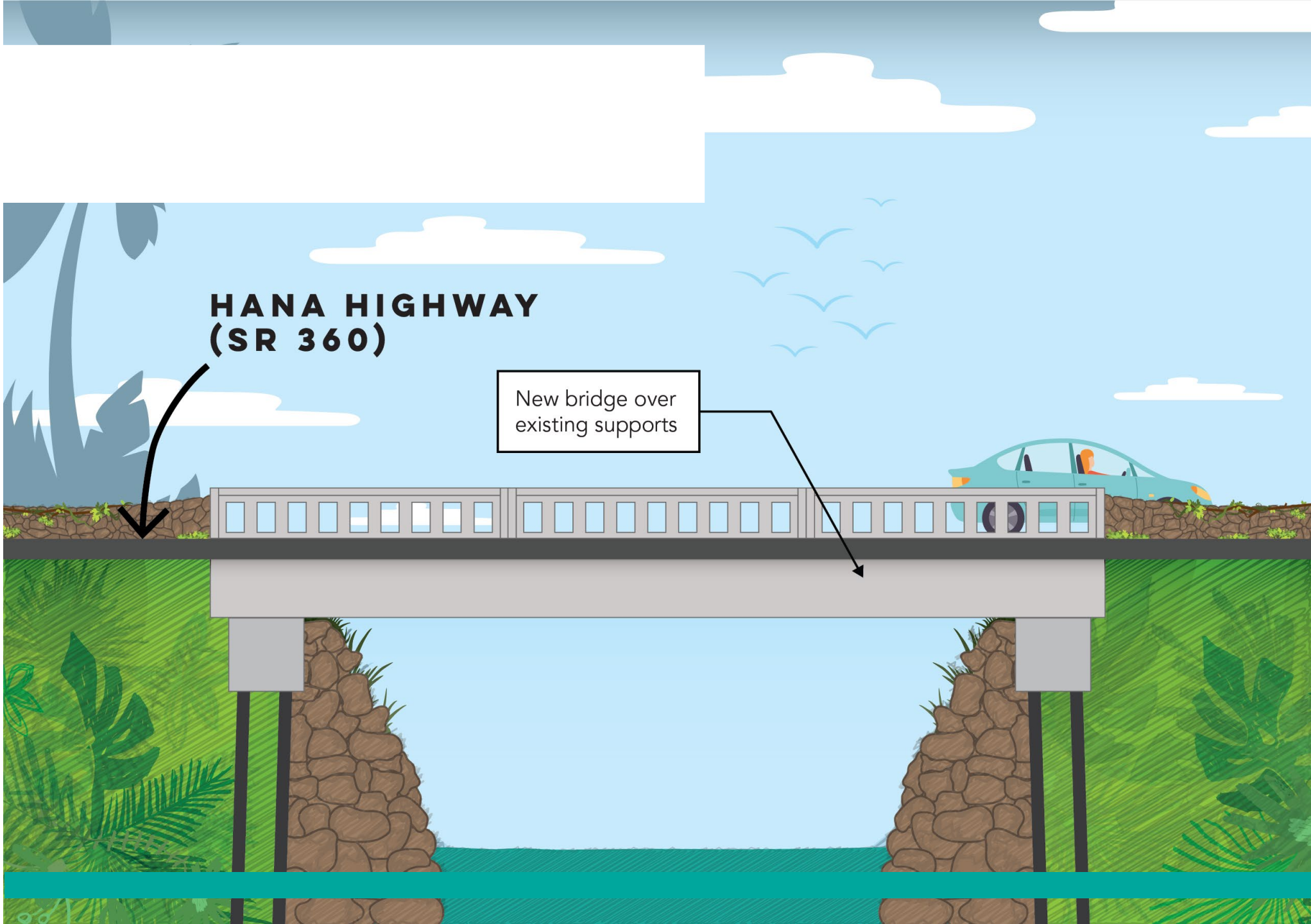
Rehabilitation

- 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

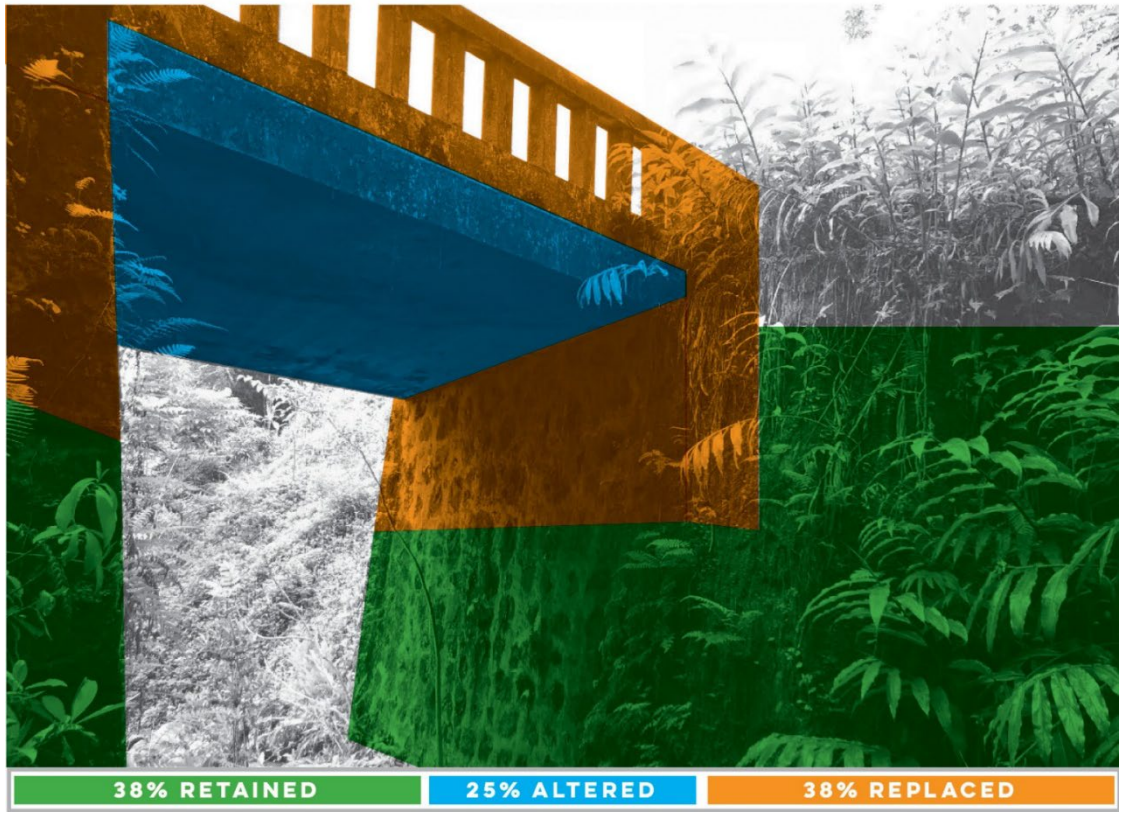
KAILUA STREAM BRIDGE (#2)

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

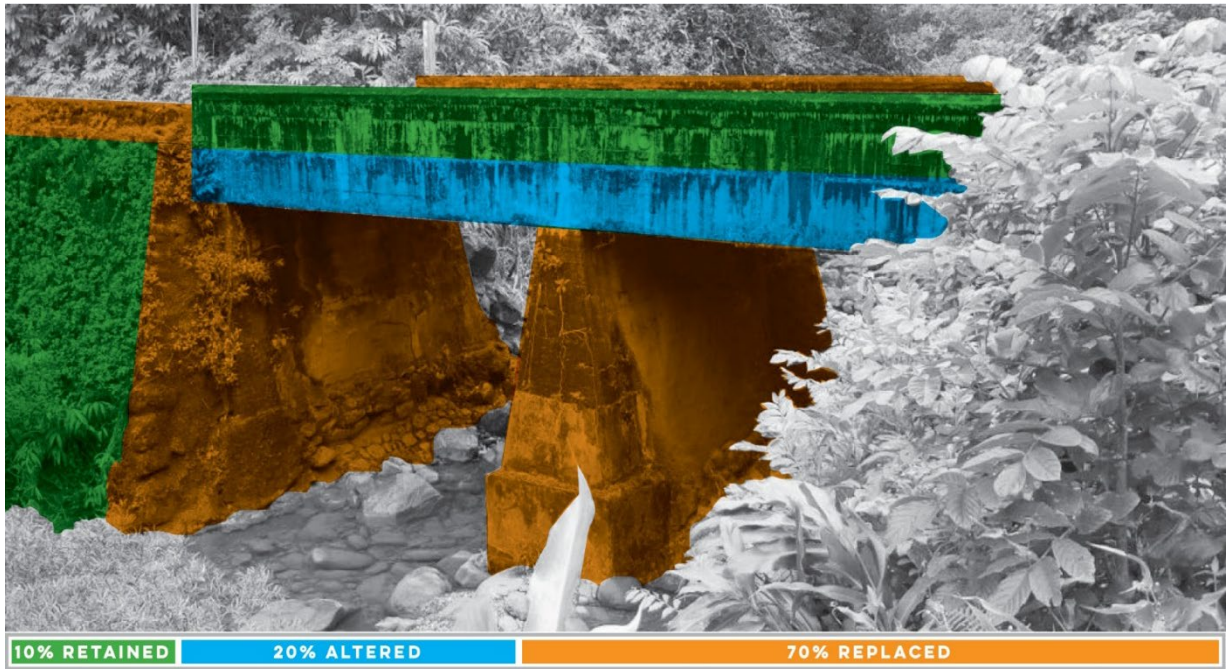
MAKANALI STREAM BRIDGE (#5)

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

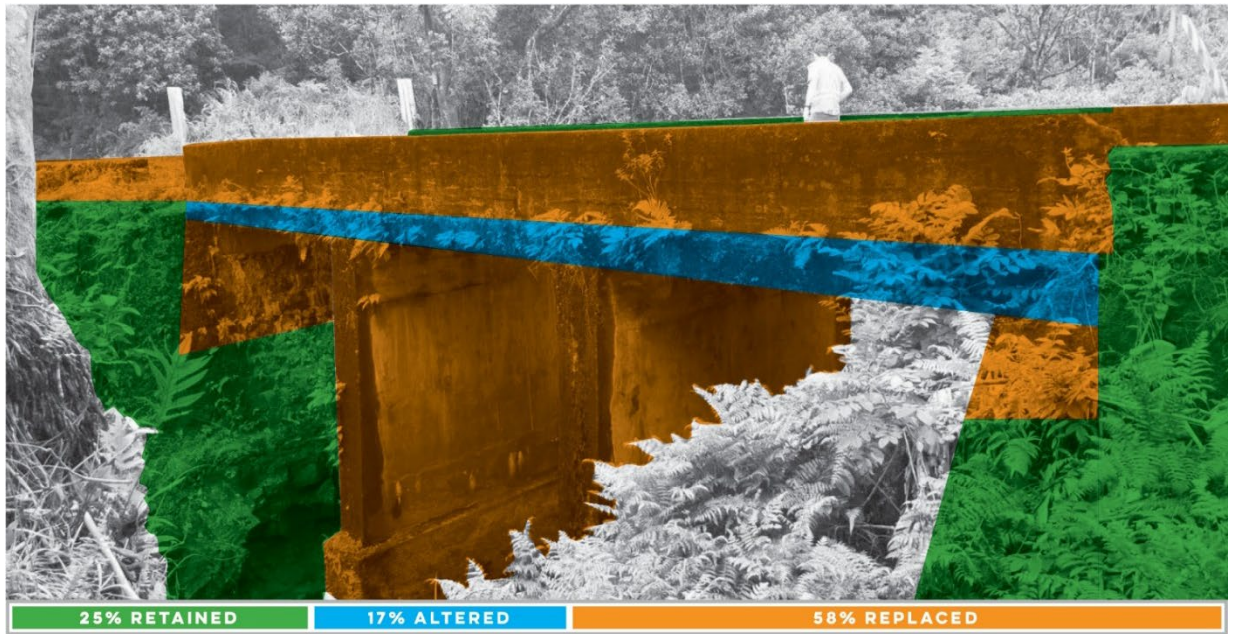
ULAINO STREAM BRIDGE (#39)

Proposed Bridge Rendering: Single-span concrete girders spanning over existing supports

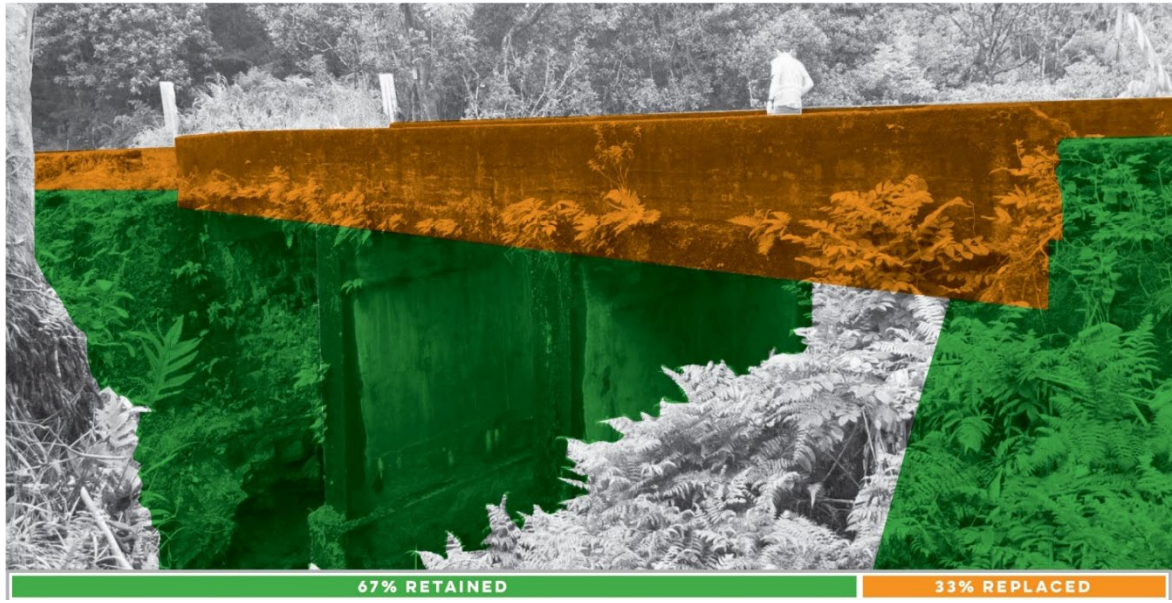
MOKULEHUA STREAM BRIDGE (#40)

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

photo credit:
https://www.trailingaway.com/maui-drives/

KOPILIULA STREAM BRIDGE (#19)

Proposed Bridge Rendering: New two-span, concrete bridge adjacent to existing

CONSTRUCTABLITY & TRAFFIC CONTROL

Constructability Considerations

Roadway

Protect Existing Bridge Elements

Curves

Cost

Material Availability

Narrow Road

Safety

Challenging Terrain

Retain historic character

Rockslides

Limited Work Area

Access

Steep

Road Closures

Weight Limits

Flash Flooding

Equipment Limitations

Mokulehua Stream Bridge example

Mokulehua Stream Bridge example

Mokulehua Stream Bridge example

TEMPORARY BYPASS BRIDGE

Not Proposed

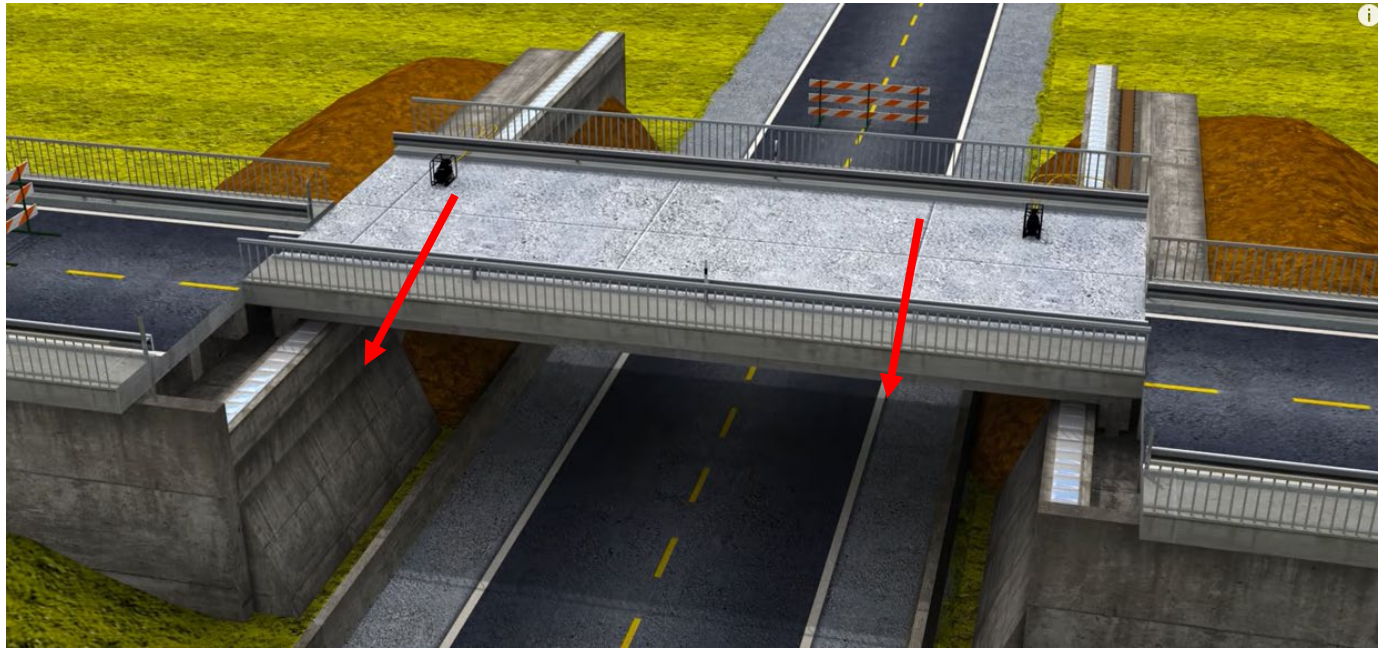
- Safety concerns
  - New alignment
  - Poor site distance
- Challenging to install
- Requires overnight closures & possible day closures
- 15% - 35% Higher costs
- Risk for adjacent property owners
- Increased impacts to adjacent property owners' access

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

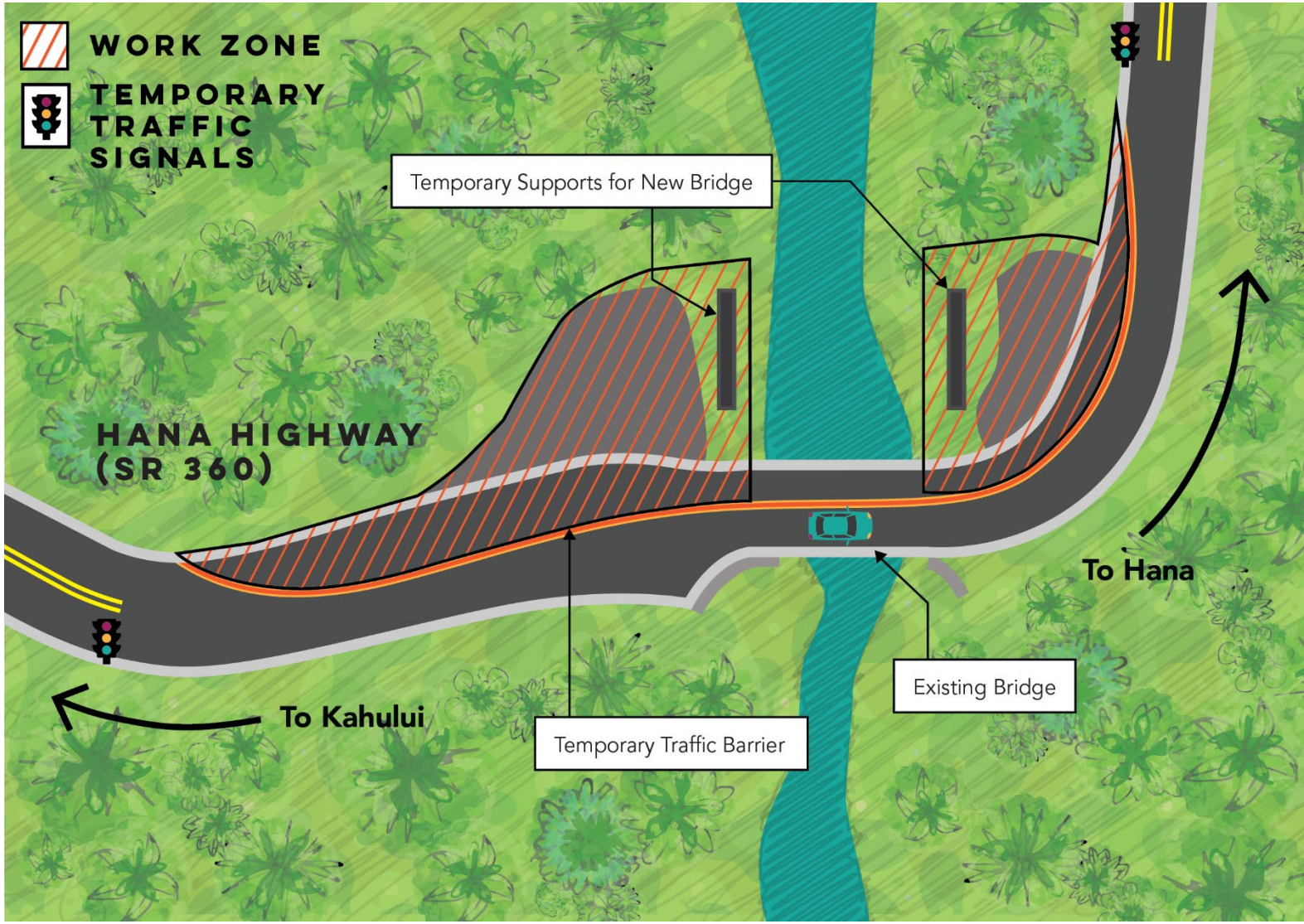


Source: youtube.com & Enerpac.com

Source: youtube.com & Enerpac.com

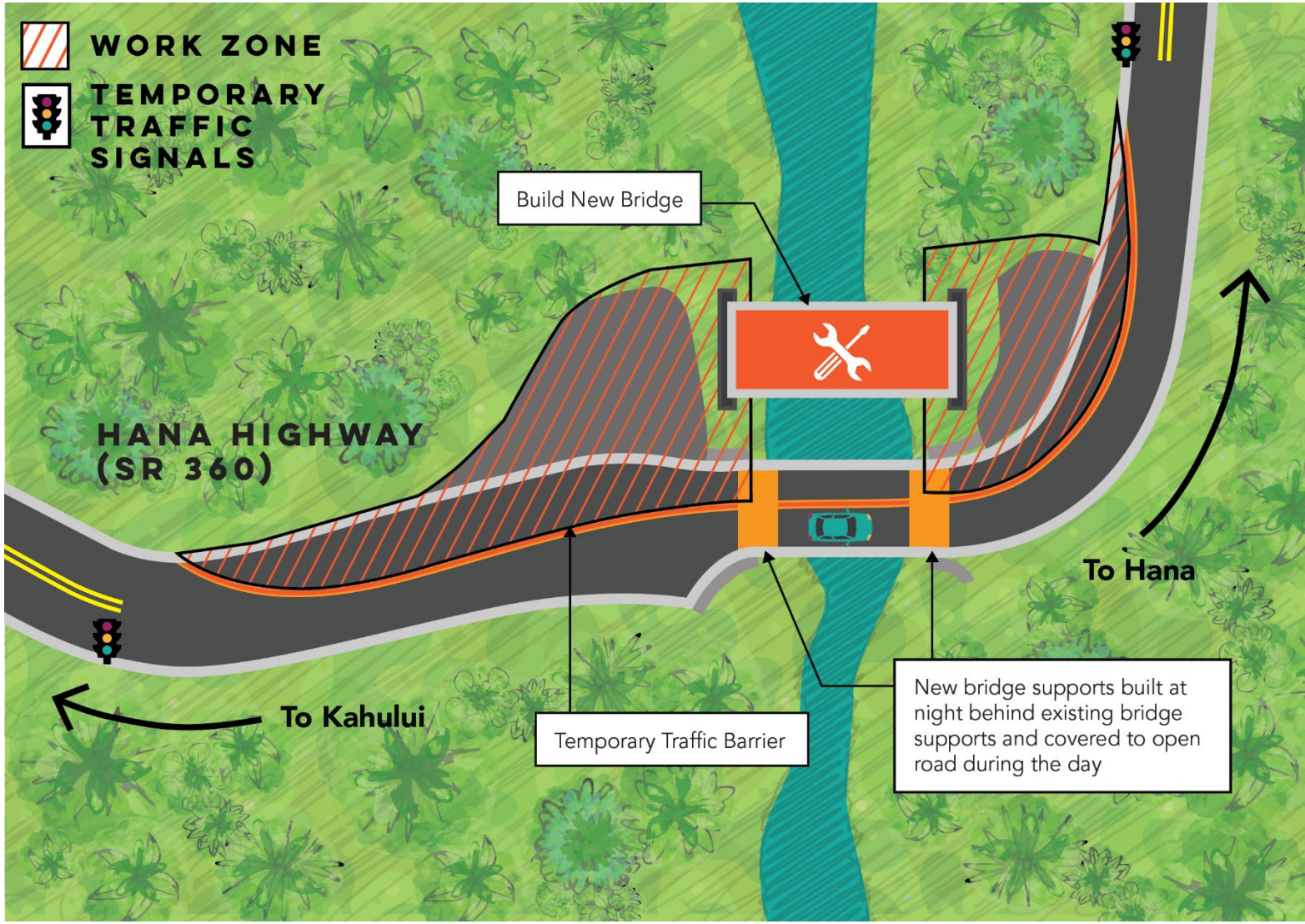
BRIDGE SLIDE
STEP ONE

- 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



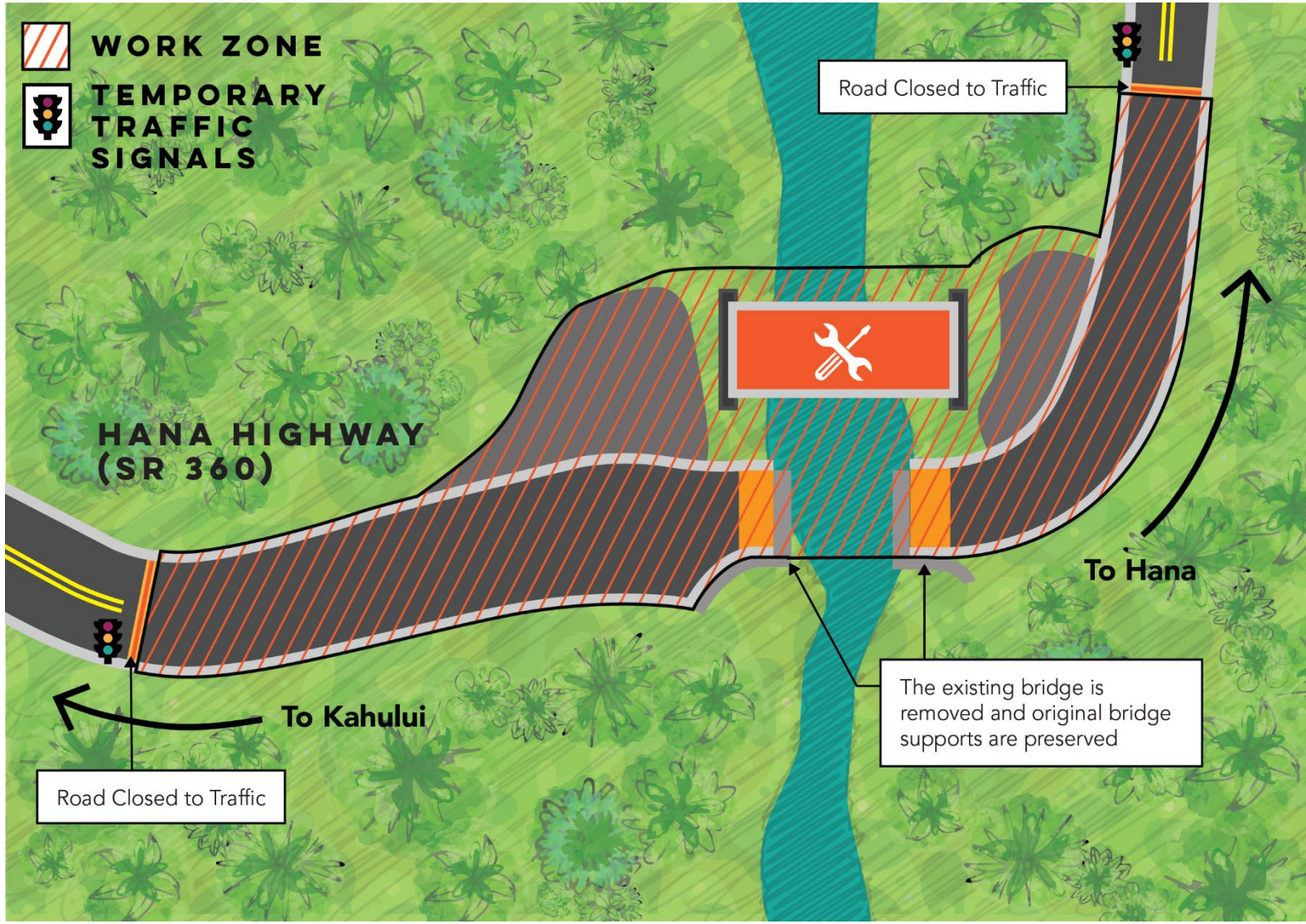
BRIDGE SLIDE
STEP TWO

- 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



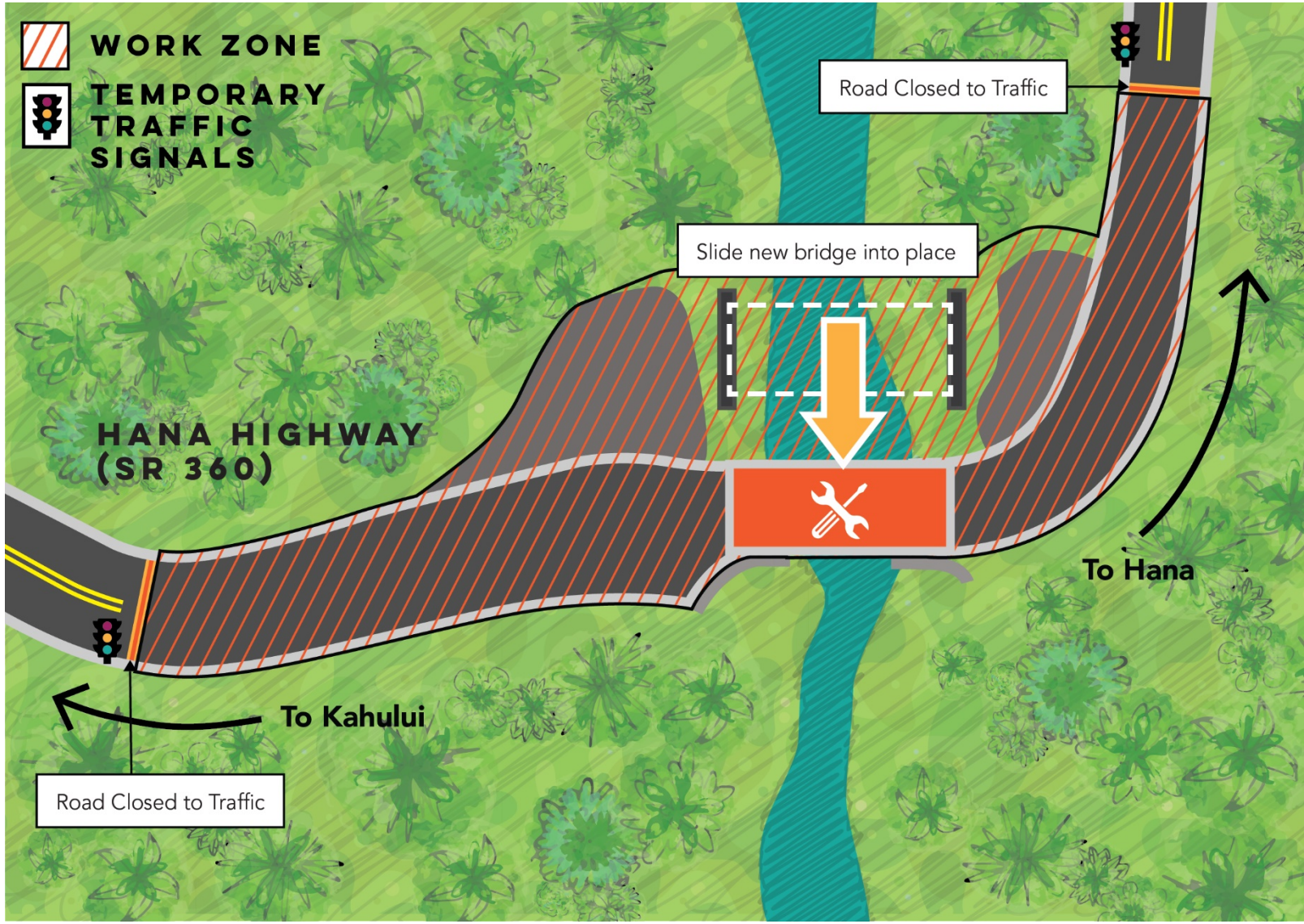
BRIDGE SLIDE
STEP THREE

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



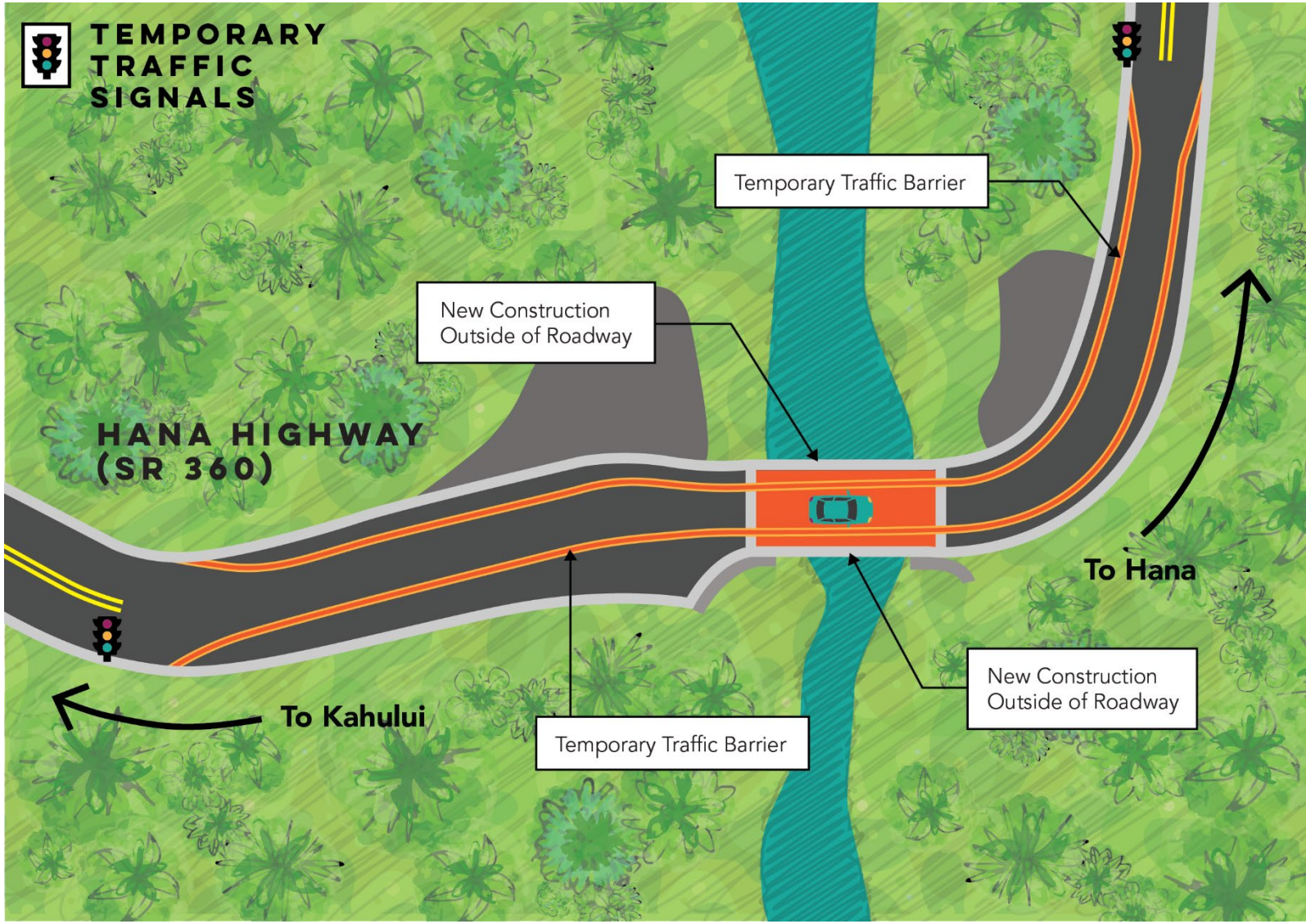
BRIDGE SLIDE
STEP FOUR

- New bridge slid into place
- Roadway and bridge are temporarily closed to traffic



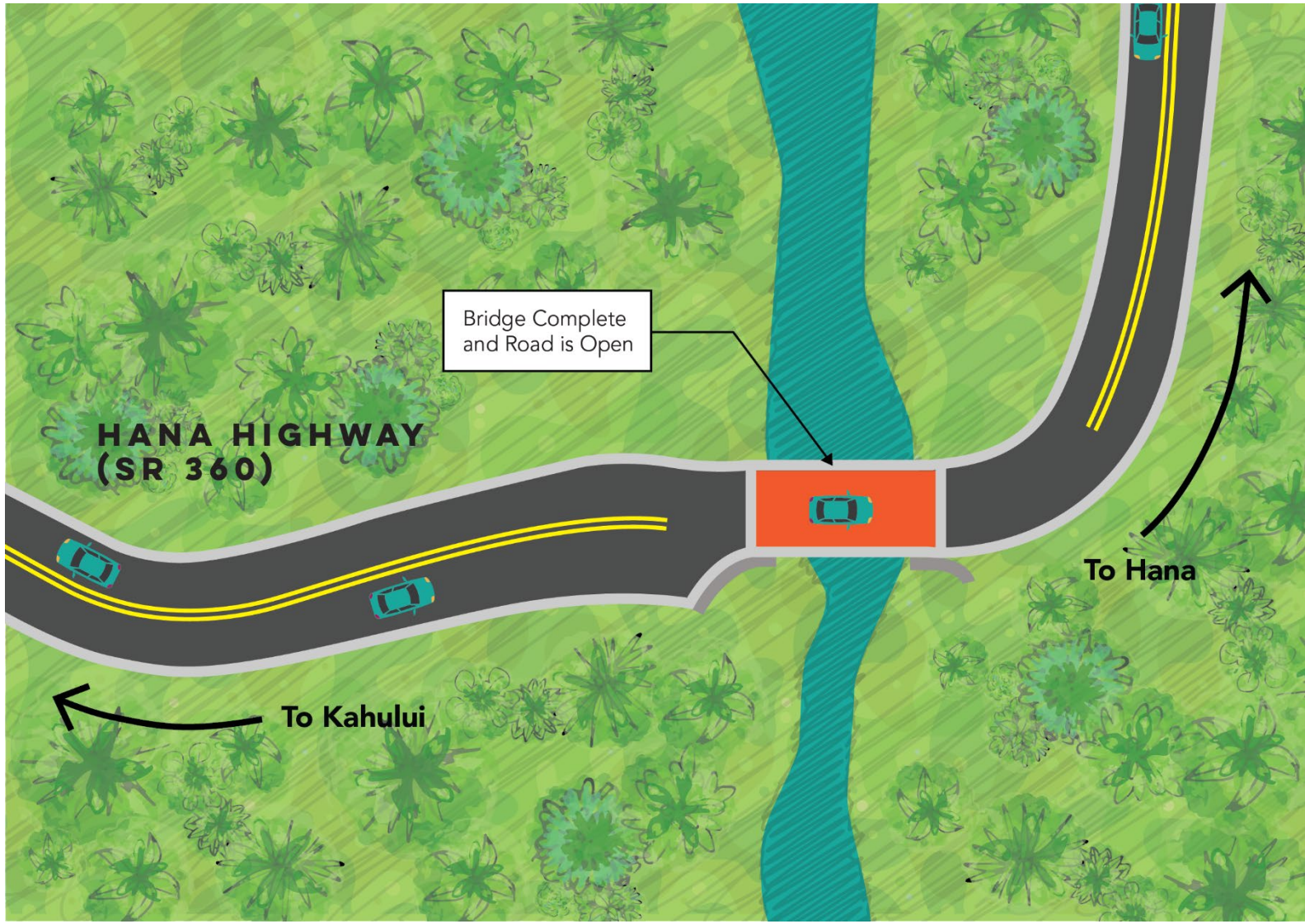
BRIDGE SLIDE
STEP FIVE

- 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/