Appendix C – Design Criteria Memorandum

J-U-B ENGINEERS, INC. | THE LANGDON GROUP | GATEWAY MAPPING INC.
J-U-B FAMILY OF COMPANIES

MEMORANDUM

DATE: June 19, 2025

TO: George Robison, Ph. D., P.E., Truckee River Flow Management Authority

CC:

FROM: Shane K. Dyer, P.E., Jeff Weagel, P.E., J-U-B Engineers, Inc.

SUBJECT: 30% Design Criteria & Scope Clarifications Memorandum

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This memorandum is intended to clarify the design criteria and project objectives for the Truckee River Flood Management Authority (TRFMA) Rock to McCarran Reach Project for the 30% design effort. The criteria listed below are based on the information obtained in the alternatives analysis process.

Project Priorities:

1. Flood Risk Mitigation
2. Ecosystem Restoration and Enhancement
3. Recreation Improvements

30% Design Criteria and Scope Clarification:

1. Integration of Public Comments from Alternatives Analysis.
    a. Public comment period from 3/12/25 to 4/3/25 for inclusion in Alternatives Analysis study. Public comments will be summarized, not interpreted, in the Alternatives Analysis.
    b. New Comments received after 4/3/25 during 30% design will be noted in the 30% design public meeting documents.
    c. TRFMA will interpret public and stakeholder comments and input and provide subsequent project direction to J-U-B.

2. Survey
    a. Supplemental topographic survey will be collected throughout the 30% design effort as needed, for areas that will undergo design, such as levee footprints, and roads.
    b. Supplemental survey will be tied to the Washoe County lidar.

3. Geomorphology, Ecosystem Restoration, and Enhancement
    a. Refine river realignment based on selected alternative and geomorphological design considerations. Geomorphologic design will further progress from Alternatives Analysis study recommendations and include the following:

i. Develop a naturalistic channel and floodplain design that minimizes erosion risk to the levee, as well as expected short and long-term maintenance, while allowing natural channel processes to occur (e.g. erosion, deposition, vegetation growth).
ii. Limit potential for impacts to upstream and downstream channel reaches due to the project.
iii. Large woody material are to be incorporated into the design.
iv. The details for riffles and pools will be included post 30% design.

b. Consult and use the design recommendations from the environmental scan document that provides guidance on river treatments.
    i. Create a healthy, functional river and riparian ecosystem that supports fish and wildlife and increases biodiversity.
c. Create a rehabilitated river within the designed meander belt.
    i. Designed river movement within the meander belt.

4. Roads and Access Design
    a. Preliminary Traffic Study will occur after a park is selected. Selection of the park will provide traffic demand for planning.
    b. Site access over levees
        i. Traffic assumptions
            1. Personal vehicles, bike traffic, and pedestrians. Consider both site access and usage for commuters as well as recreation.
            2. Public transit accommodation exterior to levee.
                a. Bus stops to remain off the property with pedestrian access paths to the facility.
            3. Coordination with City of Reno, Washoe County, City of Sparks, RTC, and NDOT as appropriate Mill Street will require coordination with RTC and City of Reno.
            4. Refer to RTC Bicycle and Pedestrian Master Plan (2017)
                a. Path
            5. Refer to Truckee Meadows Trails 'Truckee Meadows Trail Plan and Report' 2021
                a. path

5. Recreation Improvements: Provide recreational amenities that are complementary to Flood Risk Mitigation and Ecosystem Restoration and Enhancement features.
    a. The Habitat and Restoration Area will include recreation features such as trails, river access points.
    b. The recreation area will include:
        i. Restrooms
        ii. Trash Cans

c. The team will design two park concepts to 15% design level with Opinions of Probable Construction Cost.
    i. Passive nature-based park
    ii. Active sports complex
        1. Maintenance and operations costs and expenses will not be estimated in this 15% concept scope.
    iii. Parks Concepts:
        1. Nature Park with lower intensity development
            a. Multiple uses, which may include
                i. Nature study area
                ii. Not-tournament style athletic fields
            b. Examples include Oxbow, Dorostkar, Mayberry, Rancho San Rafael Parks
        2. Sports fields emphasis
            a. Ranging from Sports Complex Park with strong/exclusive emphasis on flood-compatible organized sports fields, possibly to facilitate regional sports tournaments to Regional Park with strong emphasis on flood-compatible organized sports fields and supporting infrastructure.
            b. Needed parking for a layout with 8-10 fields
            c. Estimated peak traffic volumes of 345-417 trips per hour
        3. Berm requirements in terms of erodibility, height, dimensions etc. Berm will have a nature path and potentially be vegetated.
        4. River & Terrance excavation will be used for fill on the proposed recreation area, minimal export is anticipated.
    iv. Trails
        1. Paved levee crests that tie into existing trails where possible
        2. Engineered natural paths for nature and passive recreation trails
            a. Trail head area
        3. Path under south side of McCarran Bridge that tie into the McCarran pedestrian Bridge.
            a. Evaluate this path connection with and without access under the bridge.
    v. Gathering area
        1. Picnic area - Compatibility with flooding/flood damage resistance
        2. Restroom Facilities – One Truckee River Portland Loo restrooms as a potential option.

6. Flood Risk Mitigation:
    a. <u>Exterior Levees</u>

i. Contain flooding of 117-year (23,680 cfs) in the Rock to McCarran Reach Project area.
    1. The design level of protection is 117-year WSE plus 3 ft.
        a. The 117-year hydrograph is the 100-year hydrograph shape developed by USACE, with each ordinate scaled by the ratio of 117-year peak flow to 100-year peak flow.
    2. The levees will be FEMA certified for the 100-year flood flow.

ii. Levee will follow USACE design guidelines and standards.
    1. Drilling and Testing Per USACE for levees and borrow site with some reasonable modifications due to access.
    2. Encroachment permits will be required and obtained for access in public ROW.
    3. No ROW will be needed outside of the public ROW, however some level of coordination with existing tenants will be required.
    4. Geotechnical analyses and design will follow USACE design guidelines and standards.
    5. Permeability values for design will be based on lab testing and regional accepted values for encountered soil types (no large-scale permeability tests will be required in the field).

iii. Levee tie-in to roadway embankments:
    1. Use of existing road abutments for rock and McCarran with potential treatment as needed for levee compliance.
    2. Coordinate levee tie-in locations to roadway embankments with roadway owners.
    3. Geotechnical design to follow design standards, as applicable, including Orange Book and NDOT.

iv. New pathway under McCarran Blvd
    1. Assume retaining wall and grading required between south abutment and the river channel.
    2. Geotechnical design to follow design standards, as applicable, including Orange Book and NDOT.

b. <u>Hydraulic Design</u>

i. Design the Levees improvements for the 117-year peak flow.
ii. Limit the allowable increase in peak flow at Vista Narrows during the 100-year storm to 2,400 cfs.

iii. Design the recommended alternative from the alternatives analysis in terms of channel alignment, floodplain and berm positioning (horizontally and vertically), along with treatment types for erodibility and roughness.
iv. Ditches will be filled and removed.

c. Bridges:
    i. Criteria for 100-year flow
        1. Desired (greater than 0) freeboard from low cord.
            a. Reran models with new 2D pressurized engine (equations in beta).
            b. 0.1 feet of freeboard with updated 2D bridge Methodology with no modification.
            c. We assume this will be acceptable to NDOT.

    ii. A modification to the existing floodwall near and under McCarran Bridge will be preliminarily evaluated. Modifying the area under the bridge may be beneficial to recreation access and circulation, and may provide more capacity for flood flow. This modification may provide more flexibility to the flood mitigation alternatives.
        a. Review connectivity for the trails.
        b. Evaluate the connection to the Tahoe Pyramid Bikeway
            i. Restrooms planned as described in Recreation section will be a benefit to the Tahoe Pyramid Bikeway and other trails onsite. Access to restroom is a priority from One Truckee River Plan.
        c. Construction mitigation for the bats.
            i. Native Species - Tadarida brasiliensis (Mexican/Brazilian free-tailed bat)
            ii. Additional study needed to ensure compliance with this state protected bat.

7. 30% Scour Analysis for 100-year Flood flow.
    a. Bridges
        i. Rock and McCarran
        ii. 100-year scour

    b. Levee scour
        i. 117-year

    c. Berm scour

i. Main Wier Spilling flows up to 100-year
ii. Entire Berm up to 100-year

d. Recreation Area Scour
    i. Scour up to 100-year

8. Cost
    a. 30% Engineers Opinion of Probable Cost (OPC)
    b. Preliminary maintenance cost memo for park maintenance.
    c. Other cost analyses are not anticipated.

9. Public Outreach & Stakeholder Coordination
    a. Public Outreach Meetings
        i. Assume ~Five stakeholder meetings
        ii. One public outreach meeting to present 30% design

    b. Stakeholder Coordination
        i. Monthly Design Coordination Meetings with TAC
            1. Washoe County, Sparks, Reno, Storey County, State of Nevada, PLPT
        ii. Weekly meeting with Reno Staff until directed by TRFMA.
        iii. Three outside stakeholder meetings such as meetings with USFWS or NDOW.