## **Project: Ozark National Scenic Riverways** Name: Repair or Replacement of Big Spring Bridge CHOOSING BY ADVANTAGES (CBA) WORKSHEET Alternative 1 Alternative 3 Alternative 4 Alternative 5 Rehabilitation of existing structure Two span pre-cast concrete box Reconstruction: 6 span timber Single Span - PT flat slab (120 ft length) - upgrade rail bridge. Increase sidewalk width beam/steel bridge (70', 70') single Steel arch truss single span Value Value Value **FACTORS** rebuild abutment - ABA accessable timber piles, glulam beams, glulam pier with bent cap - steel backed concrete/steel plate girder - 140 ft concrete slab deck - 140 ft length rehabilitate timber piles - replace deck, SBT guardrail - 140 ft length timber guard rail. - sidewalk length deck widened Criterion: Protect Public & Employee Health, Safety & Welfare Factor: Better accommodate 0 95 95 95 95 different users Attributes Poor Best Best Best Best (2) 14 ft. lanes, 10 ft. walkway, 38 ft (2) 14 ft. lanes, 10 ft. walkway, 38 ft Advantages - Less congested (2) 13 ft. lanes, 6 ft. walkway, 32 ft. (2) 14 ft. lanes, 10 ft. walkway, 38 ft (2) 14 ft. lanes, 10 ft. walkway, 38 ft wider lane/pedestrian access total total total total total Criterion: Protect Natural & Cultural Resources Factor: Minimize resource impact 0 0 80 80 80 aquatic Attributes Poor Poor Best Best Best Full cntainment Advantages: Contain bridge runoff No containment No containment Full containment Full containment Factor: Minimize resource impact -0 65 70 80 80 aquatic Attributes Poor Better Better Best Best Advantages: Inert substructure Existing treated timber pier Non-treated timber pier Inert pier No pier No pier materia Factor: Minimize resource impact -0 60 60 75 80 aquatic/archeological Poor Good Good Driving piles with pile cap (single Better Best Advantages: Construction impact | Jacketing piers - dewatering/water Driving piles (multiple piers) monolithic pier) - causeway/riprap Causeway (falsework) Causeway (falsework) (bridge supports) activity - causeway causeway/riprap and/or coffer dam Factor: Minimize resource impact -100 95 0 70 65 geologic/bedrock Attributes Best Better Fair Fair Fair 2 abutments & center pier Advantages: Number/depth of Replace timber piles to top of Existing piles 2 abutments - higher loads 2 abutments - higher loads medium loads driven piles bedrock Factor: Accommodate surrounding 95 95 90 0 80 cultural context Attributes Best Best Better Poor Good Retain horizontal profile - Increase Retains low horizontal Advantages: Structure Approximate current form/similar depth - approximate 2x -Current form/material profile/architectural on New form/arch depth/profile/form/material material architectural detail on superstructure superstructure Criterion: Provide for Visitor **Enjoyment Through Improved Educational & Recreational** Opportunities Factor: Accoustic experience 0 5 5 0 Attributes Best Best Poor Poor Poor Advantages: Sounds like wood Timber deck Timber deck Concrete deck Concrete deck Concrete deck Criterion: Improve Operational Efficiency, Reliability & Sustainability Factor: Life cycle cost (75 year) 40 85 65 75 0 Attributes Poor Fair Better Good Advantages: Lower total cost \$11.6M \$9.4M \$3.5M \$5.3M \$4.6M (includes LCC Factor: Operational efficiency 75 65 80 0 0 (debris removal) Poor Poor Better Good Best Advantages: Collect less debris 5 bents 5 bents Single pier No pier - top arch No pier Factor: Inspection costs - 2 year 0 5 10 0 10 Attributes Good Good Best Best Routine structure Routine structure Advantages: Lower costs Additional members Additional members Complex structure 30 40 35 40 Factor: Flood survivability 0 Attributes Good Good Best Better Best Advantages: Construction Timber 5 bents Timber 5 bents Single pier Over structure No pier material/shape of structure Criterion: Provide Other Advantages to the National Park System Factor: Impact visitor access 35 35 35 35 0 Best Best Better Advantages: Construction duration 6 months 6 months 6 months 6 months 6/9 months TOTAL IMPORTANCE = 525 685 235 640 600 \$ 2,100,000 \$ 3,100,000 \$ 2,800,000 \$ 3,800,000 \$ 4,200,000