★ **Roll Call Number**

Agenda Item Number
25

Date August 25, 2014

APPROVAL OF A MODIFIED DESIGN FOR REPAIR OF MEREDITH MULTI-USE RECREATIONAL TRAIL- SOUTHWEST 5TH (JACKSON) STREET BRIDGE AND AUTHORIZING CITY MANAGER TO NEGOTIATE AND EXECUTE ANY NECESSARY ENGINEERING DESIGN FUNDING AGREEMENT

WHEREAS, on December 23, 2013 by Roll Call No. 13-2017, the City Council approved recommendations of the Park and Recreation staff regarding budgeting for repairs of the Meredith Multi-Use Recreational Trail Southwest 1st Street Bridge and the Meredith Multi-Use Recreational Trail Southwest 5th (Jackson) Street Bridge; and

WHEREAS, such recommendations were based upon a proposal by Shuck-Britson, Inc. for historic rehabilitation of the bridge, including the full bridge width of a 22 foot wide trail; and

WHEREAS, Meredith Corporation worked with Jensen Construction and Genesis Structures, Inc. to develop a non-historic restoration with 14 foot width path consisting of a 10 foot wide trail and two 2 foot wide shoulders, meeting the minimum standards for multi-use recreational trails, with such plans more fully detailed in the attached August 20, 2014 letter from Meredith Corporation; and

WHEREAS, Meredith Corporation has offered to fund the engineering design for this alternative proposal and to donate such design to the City.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Des Moines, Iowa, that development of the alternative design proposed in the attached letter from Meredith Corporation is approved and the City Manager is authorized to negotiate and execute any necessary funding agreements relating to such engineering design, subject to approval as to form by the Legal Department.

(Council Communication 14-411) Moved by _____ to adopt.

August 20, 2014 Meredith Corporation letter attached.

Approved as to Form:
Ann DiDonato
Ann DiDonato, Assistant City Attorney

COUNCIL ACTION	YEAS	NAYS	PASS	ABSENT
COWNIE				
COLEMAN				
GATTO				
GRAY				
HENSLEY				
MAHAFFEY				
MOORE				
TOTAL				

MOTION CARRIED APPROVED

_____ Mayor

CERTIFICATE

I, DIANE RAUH, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.

_____ City Clerk

25

meredith

Michael D. Rehm
Vice President
Real Estate/Construction
Meredith Corporation
1716 Locust Street
Des Moines, IA 50309
T 515-284-2941
Cell 515-360-2941
mike.rehm@meredith.com

August 20, 2014

Larry Hulse
Interim City Manager
City of Des Moines
400 Robert D. Ray Drive
Des Moines, IA 50309

Dear Mr. Hulse:

Meredith Corporation proposes hiring Genesis Structures during September 2014 to design structural and other repairs to the Jackson Avenue Bridge. A two party agreement between Meredith and Genesis is contemplated dependent on confirmation of an appropriate level of state funding. Meredith will provide complete funding of about $85,000 for this design work through a donation to Community Foundation of Greater Des Moines – Jackson Avenue Bridge Restoration.

Attached is a Design Criteria Summary that outlines the scope of the repairs and items that differ from a previous engineering analysis done by Shuck-Britson for City Engineering. Genesis's design concept is based on maintaining the present aesthetics of the bridge superstructure, complying with codes and regulations and public safety, while substantially lowering the costs of rehabilitation. The plan includes preparation and painting of the bridge which should substantially enhance the bridge's appearance.

Please feel free to contact myself or Jerry Hadenfeldt with any questions. Contact information is enclosed.

Sincerely,

Mike Rehm
Vice President
Real Estate/Construction

DESIGN CRITERIA

REHABILITATION OF RACCOON RIVER PEDESTRIAN BRIDGE

August 14, 2014

A preliminary study was performed as the request of Meredith Corporation to evaluate alternative rehabilitation options for the existing truss spans. Based on field reconnaissance, review of past inspection reports and results of preliminary calculations, it was determined that two rehabilitation option (philosophies) exist for the truss:

Option 1: Complete a full rehabilitation of the existing structure to bring all members, connections and details up to current codes with the intent to extend the structure life for 30-50 years with proper inspection and maintenance.

Option 2: Complete a partial rehabilitation and "self-shoring" of the existing structure where members, connections and details are checked for proposed design loads taking advantage of the inherent redundancy that will exist with lower load demands.

The Option 1 Rehabilitation would follow the more traditional approach to extend the life of the structure however are predicted to be quite extensive and cost prohibitive to perform. The Option 2 Rehabilitation will provide a safe structure by repairing or replacing all secondary members while providing additional redundancy for the primary members to prevent collapse. The Option 2 rehabilitation does not guarantee that future repairs to the original truss to extend the life of the bridge would be eliminated.

The following design criteria is developed based on proceeding with the Option 2 Rehabilitation. Note that removal of the existing paint (potentially lead-based) and application of new primer and paint coatings will be included with the Option 2 Rehabilitation.

Design Codes:

AASHTO Guide Specifications for Design of Pedestrian Bridges (for design loads)
AASHTO Standard Specifications for Highway Bridges, 17th Edition (for member design checks)
AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals
ANSI/AWC National Design Specification (NDS) for Wood Construction
AISC Manual of Steel Construction
ASCE07 Minimum Design Loads for Buildings and Other Structures

Design Loads:

Dead Loads:	Steel:	490 pcf
	Wood:	55 pcf
	Conc:	145 pcf (un-reinforced)
	Conc:	155 pcf (moderately reinforced)
Live Loads:	Uniform – 90 psf	
	Truck – HS10 (4.0 kip front axle and 16.0 kip rear axle spaced at 14ft)	

Wind Loads: 30 psf (90 mph, Kz = 1.0, Cd = 1.2, G = 1.14, I = 1.0)

Original Design Loads: Uniform LL - 3360 lbs/ft for the main span
Truck - 24,400 lb street car
Wind Load - 300 lbs/ft on bottom chord / 150 lbs/ft of top chord

Minimum Design Intent of Rehabilitation:

Timber Floor System

1) Reduce the current deck width to the minimum 14ft width.
2) Provide look-outs over the piers (+/-24ft width).
3) Current timber deck will be inspected closely when removed. Based on inspections in May 2014, the timber deck members look to be in good condition and are planned to be sorted for best material and re-used.
4) Current timber stringers will be inspected closely when removed. Based on inspections in May 2014, the timber deck planks look to be in good condition and are planned to be sorted for best material and re-used.

Guardrail System

1) Inspect, repair any defects (and/or replace in kind) and repaint the existing guardrail system components.
2) Update the connection of the guardrail verticals to the deck to meet current code requirements.

Floorbeams

1) Replace the existing top flanges which are essentially unusable.
2) Existing repairs/strengthening of web connections to the vertical truss members will be evaluated for excess capacity and sudden failure (web tearing) potential and will be either be strengthened or abandoned.
3) Repair the bottom flanges near the bottom lateral connections.

Pin Connections

1) The truss tension members do not appear to have significant section loss away from the pins
2) No repairs are planned for the tension members
3) Tension members will be "self-shored" with cabling that will prevent loss of support

Bottom Lateral Bracing

1) Provide new gusset plates for the bottom chord bracing.
2) Remove/re-use or replace existing lateral bracing.
   Note: Note that as an option, if found to be more efficient and economical, new lateral bracing bars will be installed and welded to the new gusset plates

Portal Diagonal at Bearings

1) Expose bearings at the abutments to allow evaluation.
2) Lower portion of the portal diagonals will be evaluated for excess capacity and sudden failure (web to flange tearing and/or bearing) potential and will be strengthened or rehabilitated with an alternate load path.
3) Add water shields to minimize future water exposure problems.

Top Chords

1) At this time, there are no plans for repairs except near the U1 panel points.

Top Lateral Bracing

1) At this time, there are no plans for repairs or replacement.