

CONSULTANT PROPOSAL / STATEMENT OF WORK
Dated April 3, 2019

A. PROJECT DESCRIPTION

The project is described as follows:

The project consists of an infrared thermographic (IR) inspection to locate and quantify delaminations in the concrete deck of the following bridges:

1. Broadway Street over the Manitowoc River (B-36-0124)
2. 21st Street Bridge over the Manitowoc River - Southbound (B-36-0122)
3. 21st Street Bridge over the Manitowoc River - Northbound (B-36-0140)

The IR portion of the project shall include inspection of the driving lanes, shoulders, sidewalks and medians of the bridges. The deck area of the bridges totals approximately 42,400 square feet.

B. SCOPE

Services to be provided for the Project are as follows:

INFRARED THERMOGRAPHIC SURVEY

1. ATS will use a high-resolution infrared scanner capable of detecting a minimum of 0.025-degree C temperature differential to collect the thermal infrared data. The infrared data will be recorded for analysis in our office.
2. ATS will use a digital color video camera and digital recorder to observe and record features on the bridge decks. The live video scan will assist in the analysis of the infrared data.

Both the infrared scanner and the color video camera will be mounted and elevated to a height sufficient to allow scanning of a complete driving/shoulder lane (12 to 14 feet wide).

Data will be collected at a speed not to exceed five miles per hour. The bridges will be inspected between the hours of 9:00 a.m. and 4:00 p.m. Horizontal position on the deck will be constantly monitored and recorded with a digital footage measuring device connected to the vehicle drive train and referenced to a known starting point on the deck.

REPORT

1. ATS will provide a report documenting the techniques and equipment used and summarizing the survey results. The report will include plan views of the bridge decks identifying the following:
 - a. Total deck area inspected
 - b. Surface material (AC overlay, PCC, etc.)
 - c. Delamination - area and percentage
 - d. Asphalt patching - area and percentage
 - e. Concrete patching - area and percentage
 - f. Spalling - area and percentage
 - g. Proposed partial depth rehabilitation areas - area and percentage

Data analysis shall consist of a computer assisted interpretation of the infrared data. During the analysis of the infrared data, the color video image will be simultaneously monitored to identify and locate areas of patching, debris, oil spots, discoloration, etc. that can produce thermal anomalies similar to those occurring at delaminations. The plan view of the deck will be a computer-generated plot (MicroStation), to scale, with the deck dimensions and the defect location and size rectified to compensate for lateral vehicle movement and speed changes during data collection.

The proposed partial depth rehabilitation areas will be based solely on the infrared inspection results. These rehabilitation areas are classified as repair areas of removal of unsound concrete to a depth that exposes 1/2 of the peripheral area of the top or bottom bar steel in the top mat of reinforcement.

The report shall also include a description of the environmental conditions on the days of data collection including the time of day and weather (air temperature, cloud cover, wind velocity, humidity).

Infrared data will be collected only when proper environmental conditions are experienced such that a 1.0-degree F temperature differential is established between the sound and delaminated areas. These conditions include mostly clear skies, dry pavement and a wind speed of less than 30 mph. Additionally, the bridge deck must be reasonably free of sand and other debris.

SERVICES PROVIDED BY CITY OF MANITOWOC

1. Provide traffic control during the IR data collection portion of the project. Traffic control will need to meet moving lane closure standards in accordance with City of Manitowoc requirements. IR data collection will be performed between the hours of 9:00 a.m. and 4:00 p.m. weekdays. It is anticipated that the IR scan will take approximately 1 day.
2. Provide sweeping (if needed) of the bridge deck prior to the data collection.

C. SCHEDULE

It is anticipated that a Notice to Proceed will be in summer of 2019. The data collection can start within two weeks of a notice to proceed. The inspection results will be submitted to the City of Manitowoc within four weeks after the completion of the data collection. This schedule is based on the weather being acceptable to complete the data collection.

D. FEE SCHEDULE

	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>
Infrared Thermographic Survey	42,400 S.F.	\$0.20/S.F.	\$ <u>8,480.00</u>
TOTAL			\$ 8,480.00