



Memorandum

To: Honorable Mayor and Members of the City Council
Administration and Public Works Committee

From: David Stoneback, Public Works Agency Director
Lara Biggs, Bureau Chief – Capital Planning / City Engineer
Stefanie Levine, Senior Project Manager
Shane Cary, Architect/Project Manager

Subject: Service Center Emergency Repair – Structural Consulting Services

Date: August 14, 2017

Recommended Action:

Staff recommends City Council authorize the City Manager to execute a contract for engineering services related to the Service Center Emergency Repair Project with Wiss, Janney, Elstner Associates (330 Pfingsten Road, Northbrook, IL) in the amount of \$44,300.00.

Funding Source:

Funding will be provided from the Capital Improvement Program 2017 General Obligation Bonds. There is no FY 2017 budget allocation for this project, but funding is available through the delay of the Church Street Harbor South Pier Reconstruction, which has \$241,763 in uncommitted funds. The account number for this project is 415.40.4117.62145 – 617023.

Livability Benefits:

Built Environment: Enhance public spaces
Health & Safety: Enhance resiliency to natural & human hazards

Background Information:

On the morning of May 11, 2017, Forestry noticed large pieces of concrete had fallen from a beam supporting the parking deck above the Forestry storage bay at the Service Center's parking structure. Engineering staff immediately contacted a structural engineer to evaluate the situation and a contractor installed temporary shoring to stabilize the area. The City Council approved these awards via Resolution 53-R-17 on June 12, 2017.

Subsequently, staff contacted three structural engineering firms to provide firm pricing to conduct a full building analysis of the structure and estimated pricing to provide design, documentation, and construction administration services. The costs received for this work were as follows:

Firm	Address	Assessment Cost (Already Completed by WJE)	Estimated Design, Bidding and Construction Admin Cost	Total Estimated Engineering Fees
Wiss Janney Elstner Associates (WJE)	330 Pfingsten Rd. Northbrook, Illinois	\$13,200.00	\$28,500.00	\$41,700.00
KPFF Consulting Engineers	630 Davis Street, 5 th Floor Evanston, Illinois	\$43,300.00	\$18,500.00	\$61,800.00
Moshe Calamaro & Associates	930 Pitner Ave, Suite #7 Evanston, Illinois	\$34,655.00	\$41,125.00	\$75,780.00

Please note, costs for design services were estimated at the time as the full extent of required repairs could not be determined until after the assessment. The City Manager authorized the award of the initial assessment contract to WJE at a total cost of \$13,200.00 on 06/22/2017 in order to expedite the project.

During the assessment, several additional locations were identified that required temporary shoring, and a probable cause for the failures – improperly placed reinforcement within precast beams – was identified. Additional shoring was therefore installed at the newly identified locations. In light of the new information and a better understanding of the work required, staff requested that WJE provide an updated proposal to perform the remaining engineering and include non-destructive testing to identify other potential failures before they occur. In particular, this non-destructive testing was not included in the previous estimate of engineering fees. WJE’s revised proposal includes the following:

Fee Summary	
Assessment Cost	\$13,200.00*
Non-Destructive Testing Cost	\$9,500.00
Design, Bidding, and Construction Administration Cost	\$34,800.00
Additional Engineering Fees	\$44,300.00
Total Project engineering Fees	\$57,500.00

*Assessment Cost already under contract.

Staff recommends continuing to work with WJE for the remaining engineering services as they are both highly qualified and have the best current understanding of the building's structural issues. The cost for this work will be \$44,300.00.

A breakdown of funding for this project is as follows:

Account Summary	
Project funding budgeted in 2017	\$0.00
Estimated Encumbrances / expenditures to date	\$67,042.47
Recommended award	\$44,300.00
Total project funding needed	\$111,342.47
Funding available from 2017 Facilities Contingency	\$67,042.47
Funding available from the delay of other projects	\$44,300.00
Total project funding available	\$111,342.47

Costs for the construction of the permanent repair will be provided as soon as the evaluation and repair solutions are completed and contractor pricing is secured.

Legislative History:

On June 12, 2017, City Council approved Resolution 53-R-17

On June 22, 2017, the City Manager authorized approval of the detailed structural assessment

Attachments:

Revised proposal by Wiss, Janney, Elstner Associates, dated 07/19/2017

VIA E-MAIL
scary@cityofevanston.org

July 19, 2017

Mr. Shane Cary
Architect/Project Manager
City of Evanston
Public Works Agency
2100 Ridge Avenue
Evanston, IL 60201

Re: Engineering Services Proposal
Assistance with Shoring and Repairs
Service Center Parking Deck and Garage
Evanston, Illinois
WJE No. 2017.3531

Dear Mr. Cary:

The firm of Wiss, Janney, Elstner Associates, Inc. (WJE) has performed a condition assessment of the Service Center Parking Deck and Garage in Evanston, Illinois, which is located at 2020 Asbury Avenue. This study identified three additional locations where ledge failure had occurred, necessitating the installation of shoring. Based on our conversations, it is our understanding that the City of Evanston would like to proceed with the repair of this precast concrete structure in a manner slightly different that was presented in our initial proposal. Therefore, we have prepared this letter to serve as our updated proposal to provide the professional services required to assist with the shoring and the implementation of repairs to this structure.

Background / Description of Structure

The Service Center Parking Deck and Garage is a two-story precast concrete structure with parking for City of Evanston employees on the upper level of the structure and an enclosed garage housing maintenance vehicles and equipment for The City of Evanston on the lower level. The floor of the lower level consists of a concrete slab-on-grade. Based on the drawings provided, the Service Center structure was constructed around 1980, and has approximate overall dimensions of 377 feet by 153 feet. The structure is composed of three main bays that extend the length of the structure, including the 60 foot wide east and west bays and the 30 foot wide middle bay where the ramp to the upper level is located at the north end of the structure. The structurally supported upper level is typically constructed with a series of 8 foot wide precast, prestressed concrete double-tee beams with a cast-in-place topping. The double-tee beams span in an east-west direction across the bays and are supported by precast, prestressed concrete inverted-tee ledger beams, spandrel beams, and columns located along the north-south column lines.

During our recent condition assessment of the Service Center garage structure, we performed a visual survey of all exposed surfaces of the structure, a delamination survey of the top surface of the structurally supported deck, and a detailed review of the locations where significant ledge distress was noted in the inverted-tee beams. A total of six locations were identified with significant ledge distress and were reviewed in detail, including the one ledge that had failed in an area supporting two stems of double-tee

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beams, where supplemental shoring had already been installed. Detailed examination of these areas of distress, including the use of ground-penetrating radar to non-destructively locate the ledge reinforcing, indicated that the distress generally occurred where the ledge reinforcing was set back further from the face of the ledge than would otherwise be appropriate. Based on the findings from the detailed review, WJE recommended that shoring be installed at three additional ledges where the observed distress compromised the bearing for a stem of a double-tee beam.

Our observations also included several items of deterioration of the structure for the upper level, including corrosion staining and moisture staining on the underside of the upper level deck adjacent to joints between double-tee beams indicative of leakage through these joints, regularly-spaced cracking of the bottom portion of some ledger beams, unsound concrete in isolated areas, and localized wear of the waterproofing membrane on the top surface of the upper level deck. The delamination survey found very few locations of delaminated concrete on the top surface of the upper level deck, although a couple of locations were noted where the joint sealant was tearing over locations of distressed ledges.

Proposed Scope of Work

Based on our conversation with you during and after our inspections, it is our understanding that the City of Evanston requires engineering assistance with the design and implementation of repairs to address the distressed and failed ledger beams and the other conditions warranting repair that were identified during the overall condition assessment. In addition, the concern was raised that there may be other locations where the ledge reinforcing was positioned further back from the face of the ledge than is necessary to resist the bearing reactions from the double-tee beam stems. Therefore, we have developed this proposal for the four next phases of engineering services in the evaluation and repair of this structure. The first phase involves providing engineering assistance with the installation of additional shoring to support the double-tee beams at the severely distressed ledges, while the second work task involves developing drawings and specifications for repair of the Service Center garage structure. The third task is for providing construction period services during the implementation of the repairs. A fourth task has also been included to non-destructively locate the positioning of the ledge reinforcing in the interior ledger beams. Further description of the tasks in the proposed scope of work is provided below.

Phase I - Engineering Assistance with Emergency Shoring

WJE will provide engineering assistance with the installation of emergency shoring for the locations where a loss of bearing support has been identified in the Service Center structure. This will include providing the City of Evanston with a diagram of the locations to be shored based on the findings from the detailed review of the ledger beam distress, performing limited structural analyses to determine the loads imposed on the ledger beams, reviewing the installed shoring to confirm its adequacy, and providing a letter summarizing our observations and recommendations.

Phase II - Develop Repair Contract Documents

For this phase of work, WJE will meet with you to discuss the items identified for repair and to select a scope of work for the repair construction. Then we will develop a set of repair contract documents in the form of drawings and specifications which will describe the repair work in detail for the selected scope of work. Once drafted, the project manual and drawings will be submitted for your review, and your comments will be incorporated into the final set of documents.

Project Manual - The project manual will contain all of the necessary contract and general requirements, the requirements for competitive bidding including a bid form itemizing the work items and anticipated repair quantities, and technical specifications for the various work items, including quality assurance

procedures, material testing for quality control, referenced standards and codes to be adhered to, specified materials and products, and construction execution requirements.

Drawings - WJE will prepare a set of drawings that will include a cover sheet, a plan view, and multiple sheets containing details of the ledger beam repairs, concrete repairs, and the expansion joint and waterproofing work. Overall, we anticipate producing eight to ten 11"x17" sheets in the set of drawings.

Phase III - Construction Period Services

Once the bidding process is completed and a contractor is selected for the repair project, the implementation of the repairs to the Service Center structure can begin. During the repair construction, WJE will assist the City by providing limited construction observation and administration services. We anticipate that this will consist of reviewing the ongoing work to help assure that it is performed in accordance with the intent of the project documents, reviewing submittals, and miscellaneous project communications and coordination with you and the selected contractor. The following engineering tasks are included in this phase:

1. **Periodic Construction Observation** – The work in progress will be observed on an as-needed basis to verify its conformance with project requirements, to address Contractor questions, and to resolve problems associated with unanticipated conditions. It is anticipated that a total of twelve site visits will be made during the repair work at critical times of the work process.
2. **Site Visit Reports** – A report documenting our observations during each site visit and the status of the work will be prepared and submitted subsequent to each site visit.
3. **Review of Submittals** - We will review and approve contractor submittals as required.
4. **Miscellaneous Project Communications** - We will participate in miscellaneous project communications for coordination of the work performed on an as-needed basis.

Phase IV - Determine Positioning of Ledger Beam Reinforcing

For this phase of work, ground-penetrating radar equipment will be used to non-destructively locate the positioning of the ledge reinforcing. This work will be performed on the vertical face of the ledge, and will focus on the depth of the vertical leg of the top reinforcing bar from the ledge face. These reinforcing bars provide the main resistance to the forces introduced by the double-tee beam bearings. All ledges of the interior ledger beams will be examined in this manner, excluding those being repaired. This testing will be performed from a personnel lift. Significant findings will be recorded on a beam-by-beam basis. Our findings will be summarized in a brief letter report.

Fees and Schedule

We propose to perform the engineering services for Phases I, II, and IV described in the above scope of work for lump sum amounts of \$2,300, \$14,500, and \$9,500, respectively, as shown in the itemized breakdown below. For Phase III, we propose to perform the engineering services described above on a time and expense basis for an amount not to exceed \$18,000, considering the potential variability in the scope of work for Phase III. For all four phases, all time charges would incurred at our standard hourly rates currently in effect for our work to date on the Service Center garage structure. The proposed costs include all time charges and related travel, reproduction, equipment, testing, and other expenses associated with our work. Additionally, the proposed cost for Phase IV is based on two days on site for a two-man team of engineers, with a two-day rental of a personnel lift and the use of ground-penetrating radar equipment. These amounts will not be exceeded without your prior written approval. All of our work will be performed in accordance with the signed Contract for this work prepared by the City of Evanston and reviewed by our in-house counsel.

Phase I	Engineering Assistance with Emergency Shoring	\$2,300
Phase II	Develop Repair Contract Documents	\$14,500
Phase III	Construction Period Services	\$18,000
Phase IV	Determine Positioning of Ledger Beam Reinforcing	\$9,500
Total		\$44,300

The level of effort required for Phase III - Construction Period Services will depend on the duration and relative intensity of the repair work, the project schedule and phasing, the experience of the repair contractor, and whether any problems are encountered during the work. Overall, we can provide whatever level of service is desired by the City of Evanston for this phase of the project. We have based the above budget for Phase III on the assumptions that WJE will need to make a total of 12 site visits during the repair construction, that the repair construction will be performed over a two month period, that no more than six submittals will need to be reviewed, and that no more than 24 man-hours will be needed for miscellaneous project communications and coordination. Please note that, if the scope of engineering services desired by the City of Evanston for Phase III differs noticeably from that anticipated, the projected cost for Phase III services may differ somewhat from that shown above. Because all of our services for Phase III are billed on a time and expense basis, we will only bill for actual work performed. Any additional construction period services will only be performed as requested by you and the City of Evanston.

Our work for Phase I - Engineering Assistance with Emergency Shoring has already begun, and will continue until completed. In the meantime, we are also working on completing the condition assessment report, which we should have to you in the next week. Once you and your associates have had a chance to review our findings, we anticipate that the scope of work can be finalized and our work on the project documents begun. We anticipate that it will take approximately 3 weeks to prepare the repair contract documents for your review prior to bidding. The work for Phase IV - Determine Positioning of Ledger Beam Reinforcing is essentially independent of the other three phases of work presented in this proposal, and as such can be performed at any time during the course of this project, including after the repair construction is completed. If the Phase IV work is performed earlier in the process, any additional repair recommendations that come out of the Phase IV work may be able to be included in the repair project.

Closure

We appreciate the opportunity to submit this proposal for our services, and look forward to continuing to work with you on this interesting project. If this proposal meets with your approval, please sign at the space below and return a copy of this proposal to our office at your earliest convenience. If you have any questions about this proposal, or require any additional information, please do not hesitate to contact us.

Very truly yours,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.



James P. Donnelly, P.E., S.E.
Principal

Please indicate your acceptance of this proposal by signing below and return a copy as authorization to proceed.

Accepted by: _____

Title: _____

Company: _____

Date: _____