

MINUTES**REGULAR MEETING**

Honorable Bernard C. "Jack" Young, President
Honorable Catherine E. Pugh, Mayor
Honorable Joan M. Pratt, Comptroller and Secretary
Rudolph S. Chow, Director of Public Works
David E. Ralph, Interim City Solicitor
S. Dale Thompson, Deputy Director of Public Works
Bernice H. Taylor, Deputy Comptroller and Clerk

President: "Good morning. The May 31, 2017 meeting of the Board of Estimates is now called to order. In the interest of promoting the order and efficiencies of these hearings, persons who are disruptive to the hearing will be asked to leave the hearing room immediately. Meetings of the Board of Estimates are open to the public for the duration of the meeting. The hearing room must be vacated at the conclusion of the meeting. Failure to comply may result in a charge of trespassing. I will direct the Board members attention to the memorandum from my office dated May 29, 2017, identifying matters to be considered as routine agenda items together with any corrections and additions that have been noted by the Deputy Comptroller. I will entertain a Motion to approve all of the items contained on the routine agenda."

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Interim City Solicitor: "I move the approval of the items on the routine agenda."

Comptroller: "Second."

President: "All those in favor, say Aye. All opposed, Nay. The Motion carries. The routine agenda has been adopted."

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MINUTES

BOARDS AND COMMISSIONS1. Prequalification of Contractors

In accordance with the Rules for Prequalification of Contractors, as amended by the Board on October 30, 1991, the following contractors are recommended:

Abel Recon, LLC	\$ 8,950,000.00
American Contracting & Environmental Services, Inc.	\$ 55,560,000.00
C.B. Structures, Inc.	\$ 258,229.00
Work Capacity Rating Underwritten by Blanket Guarantee of \$258,229.00 from the Parent Corporation, American Contracting & Environmental Services, Inc.	
Commercial Construction, LLC	\$ 8,000,000.00
GC Jones Elevator Company, Inc.	\$ 640,000.00
Iacoboni Site Specialists, Inc.	\$ 42,140,000.00
Innovative Electrical Testing & Construction, LLC	\$ 1,500,000.00
J. Villa Construction, Inc.	\$ 8,000,000.00
Layne Inliner, LLC	\$1,672,050,000.00
Lee Foundation Co., Inc.	\$ 8,000,000.00
Midasco, LLC	\$ 154,548,000.00

2. Prequalification of Architects and Engineers

In accordance with the Resolution Relating to Architectural and Engineering Services, as amended by the Board on June 29, 1994, the Office of Boards and Commissions recommends the approval of the prequalification for the following firms:

ARM Group, Inc.	Engineer
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MINUTES

BOARDS AND COMMISSIONS - cont'd

Brudis & Associates, Inc.	Engineer
CityScape Engineering, LLC	Engineer
EBA Engineering, Inc.	Engineer
EBL Engineers, LLC	Landscape Survey Engineer
Harris-Kupfer Architects, Inc.	Architect
Johnson Consulting Engineers, Inc.	Engineer
Leo Matanguihan Architect	Engineer
Phoenix Engineering, Inc.	Engineer
Raudenbush Engineering, Inc.	Landscape Architect Engineer Land Survey
Weigand Associates, Inc.	Engineer

There being no objections, the Board, UPON MOTION duly made and seconded, approved the prequalification of contractors and architects and engineers for the foregoing firms.

MINUTES

Department of Law - Settlement

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the Settlement of a lawsuit against the City by Joseph Robinson, Jr., arising out of an auto-related accident that occurred on Washington Blvd. on October 8, 2015.

AMOUNT OF MONEY AND SOURCE:

\$50,000.00 - 2036-000000-1752-175200-603070

BACKGROUND/EXPLANATION:

The Plaintiff, Joseph Robinson, injured his right ankle and back after he collided broadside with a DPW pickup truck that was pulling out of a parking lot and failed to yield the right-of-way. The liability of the City driver is clear. The Plaintiff reported to Medstar Harbor Hospital. He thereafter underwent several weeks of physical therapy for ankle and back sprain. After the Plaintiff's ankle did not improve, it was determined that he needed surgical correction. An independent medical examination confirmed the Plaintiff's diagnosis and recommendation. The proposed settlement covers past medical expenses and estimated future medical expenses, while recognizing accompanying pain and suffering.

The Law Department's Settlement Committee reviewed the legal and factual issues of this lawsuit, and recommends that the Board of Estimates approve the settlement of this claim.

APPROVED FOR FUNDS BY FINANCE

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Department of Law - cont'd

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Settlement of the lawsuit against the City by Joseph Robinson, Jr., arising out of an auto-related accident that occurred on Washington Blvd. on October 8, 2015.

MINUTES

Law Department - Settlement Agreement and Release

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the Settlement Agreement and Release of the action brought by Albert Smith against Officer Paul Thompson for alleged assault, battery, false arrest, false imprisonment, and violations of provisions of the Maryland Declaration of Rights arising out of an incident in which Mr. Smith was arrested by the Defendant.

AMOUNT OF MONEY AND SOURCE:

\$60,000.00 - 1001-000000-2041-716700-603070

BACKGROUND/EXPLANATION:

On October 21, 2014, Officer Thompson was working with other officers in an unmarked vehicle in the Patapsco Avenue and St. Margaret Street area. Officer Thompson observed an individual known to him to be a drug dealer engaging in a conversation with Plaintiff, Albert Smith. The officers observed what they believed to be an exchange between the two individuals. As the Plaintiff walked away towards Patapsco Avenue, Officer Thompson and the other officers pulled up alongside of the Plaintiff to ask what he had received in exchange for the money. Once the Plaintiff saw the officers, the officers observed him place a white substance in his mouth. The Officers got out of the vehicle and Officer Thompson grabbed Plaintiff Smith and ordered him to spit out the bag with the substance.

Plaintiff Smith contends that he had put chewing gum in his mouth and that Officer Thompson choked him until the chewing gum came out of his mouth. Officer Thompson contends that the Plaintiff refused to spit out the substance and so he was placed under arrest along with the suspected drug dealer without struggle.

MINUTESLaw Department - cont'd

Both individuals were transported to the Southern District for debriefing and booking. Plaintiff was later diagnosed with a traumatic fracture of his right hyoid bone and sprain of the anterior neck muscle. Plaintiff also suffered back pain and bruising to his neck.

Plaintiff filed suit against Officer Thompson for his injuries and seeking unspecified damages. Because of conflicting factual issues and objective injuries suffered by Plaintiff, the parties propose to settle the matter for a total sum of \$60,000.00 in return for a dismissal of the litigation.

Based on a review of the facts and legal issues specific to this case, the Settlement Committee of the Law Department recommends that the Board of Estimates approve the settlement of this case as set forth herein.

APPROVED FOR FUNDS BY FINANCE

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Settlement Agreement and Release of the action brought by Albert Smith against Officer Paul Thompson for alleged assault, battery, false arrest, false imprisonment, and violations of provisions of the Maryland Declaration of Rights arising out of an incident in which Mr. Smith was arrested by the Defendant.

MINUTES

TRANSFERS OF FUNDS

* * * * *

UPON MOTION duly made and seconded,

the Board approved

the Transfers of Funds

listed on the following pages:

1888 - 1890

SUBJECT to receipt of favorable reports

from the Planning Commission,

the Director of Finance having

reported favorably thereon,

as required by the provisions of the

City Charter.

MINUTES**TRANSFERS OF FUNDS**

<u>AMOUNT</u>	<u>FROM ACCOUNT/S</u>	<u>TO ACCOUNT/S</u>
<u>Department of Recreation and Parks</u>		
1. \$99,750.00	9938-916022-9475 General Fund Community Center Master Plan (Reserve)	9938-928012-9474 Citywide BCRP System Plan (Active)

This transfer will provide funds to cover the costs associated with the change order/(increase) for Contract Number B50003304 - Baltimore Citizens Planning Survey with the Melior Group, Inc. for recreation and open space professional services. The increase for B50003304 appears on pages 138-139 item no. 22 of this agenda.

Department of Public Works/Office
of Engineering and Construction

2. \$249,000.00	9958-914406-9526 SW Utility (Construction Reserve) Impervious Removal/Greening	9958-904419-9525-6 Construction
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This transfer will cover costs for Recreation and Parks to plant trees to enable DPW to meet the terms of the MS4 Permit relating to impervious surfaces.

Department of General Services

3. \$150,000.00	9916-908104-9194 1 st Parks & Public Facilities Loan	9916-910404-9197 4 South Frederick Street Elevator (Active)
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MINUTES**TRANSFERS OF FUNDS**

<u>AMOUNT</u>	<u>FROM ACCOUNT/S</u>	<u>TO ACCOUNT/S</u>
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Department of General Services - cont'd

The elevators are nearing the end of their useful life span as they, at times, do not travel to the correct floors, and are constantly out of service. The elevator replacement would allow the building to function normally and will reduce future maintenance and repairs on the equipment.

4.	\$550,000.00	9916-905001-9194	9916-902966-9197
	State	Construction (Reserve)	Mitchell Courthouse
	Revenue	-Unallotted	Jury Room
			Renovations
			(Active)

The court is seeing an increase in the number of trials being held. In order to accommodate the additional jurors required for these trials, an additional assembly area is needed.

Department of Transportation

5.	\$12,000.00	9950-910036-9509
	FED	I-83 Joint Repairs
		Phase II
	3,000.00	"
	GF (HUR)	"
	<u>\$15,000.00</u>	

MINUTES

TRANSFERS OF FUNDS

<u>AMOUNT</u>	<u>FROM ACCOUNT/S</u>	<u>TO ACCOUNT/S</u>
<u>Department of Transportation - cont'd</u>		
<u>\$15,000.00</u>	<u>-----</u>	9950-902772-9506 I-83 Joint Repairs Phase II

This transfer will cover the costs of prints and preliminary expenses and other related costs necessary to advertise Project TR 13301 I-83 Joint Repairs Phase II in the amount of \$15,000.00.

MINUTES

Parking Authority of - Parking Facility Rate Adjustment
Baltimore City (PABC)

ACTION REQUESTED OF B/E:

The Board is requested to approve an adjustment to the transient rate at the City-owned Caroline Street Garage that is managed by the PABC. The Parking Facility Rate Adjustment is effective upon Board approval.

AMOUNT OF MONEY AND SOURCE:

N/A

BACKGROUND/EXPLANATION:

The PABC is charged with managing the City of Baltimore's parking assets. Proper stewardship of those assets requires that the PABC realize the best possible return on the City's parking investments.

Pursuant to Article 31, §13(f)(2) of the Baltimore City Code, subject to the approval of the Board of Estimates, the PABC may set the rates for any parking project. The PABC believes that a rate adjustment at this parking facility is warranted at this time.

To bring the transient rate charged at the Caroline Street Garage in line with its surrounding facilities, the PABC staff developed the rate adjustment recommendation submitted hereto.

MINUTES

PABC - cont'd

This rate adjustment was unanimously approved by the PABC Board of Directors.

Location	Proposed Transient Rate Changes				Proposed Monthly Rate Changes
	Regular Transient Rates				Regular Monthly Rate
	Current Rate	Proposed Rate	Last Rate Change		
Caroline Street Garage	1 hour rate	\$7.00	\$8.00	September 2015	No Proposed Changes

MBE/WBE PARTICIPATION:

N/A

APPROVED FOR FUNDS BY FINANCE

UPON MOTION duly made and seconded, the Board approved the adjustment to the transient rate at the City-owned Caroline Street Garage that is managed by the PABC.

MINUTES

PERSONNEL MATTERS

* * * * *

UPON MOTION duly made and seconded,

the Board approved

all of the Personnel matters

listed on the following pages:

1894 - 1913

All of the Personnel matters have been approved

by the EXPENDITURE CONTROL COMMITTEE.

All of the contracts have been approved

by the Law Department

as to form and legal sufficiency.

The President **ABSTAINED** on item no. 1.

MINUTES**PERSONNEL**City Council1. Reclassify the following filled position:

From: Staff Assistant
Job Code: 00138
Grade: 903 (\$43,400.00 - \$69,400.00)
Position No.: 1000-40110

To: Operations Specialist II
Job Code: 00084
Grade: 907 (\$54,200.00 - \$86,800.00)

Cost: \$19,832.00 - 1001-000000-1000-104800-601001

This position is to be considered a Position of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

Circuit Court2. Create the following position:

Classification: Court Technologist
Job Code: 00867
Grade: 092 (\$48,812.00 - \$59,437.00)
Position No.: To be determined

Cost: \$79,472.00 - 1001-00000-1100-109400-601001

3. Reclassify the following two vacant non-civil positions:

From: Investigator
Job Code: 00820
Grade: 087 (\$39,701.00 - \$47,990.00)
Position Nos.: 10390 and 33868

MINUTES**PERSONNEL**Circuit Court - cont'd

To: Licensed Clinical Social Worker
Job Code: 01954
Grade: 093 (\$50,927.00 - \$62,096.00)

Cost: \$68,892.00 - 5000-544417-1100-117001-601001
1001-000000-1100-109400-601001

4. Reclassify the following filled non-civil position:

From: Secretary III
Job Code: 00711
Grade: 084 (\$35,564.00 - \$42,446.00)
Position No.: 50545

To: Court Secretary II
Job Code: 00812
Grade: 089 (\$43,026.00 - \$52,239.00)

Cost: \$27,329.00 - 4000-400516-1100-576600-601001

These positions are to be considered Positions of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

	<u>Hourly Rate</u>	<u>Amount</u>
5. RACHEL JIANG	\$32.85	\$5,297.40

Account: 5000-544416-1100-117001-601009

Ms. Jiang will work as a Contract Services Specialist II (Assistant Counsel/Assistant Counsel). She will review motions and make recommendations in a wide variety of civil non-domestic cases. She will also perform legal research for either masters or judges and draft opinions and orders. The period of the agreement is effective upon Board approval through June 30, 2017.

MINUTES**PERSONNEL**Department of Finance

	<u>Hourly Rate</u>	<u>Amount</u>
6. CLEMENT H. RULEY, JR.	\$42.75	\$25,000.00

Account: 1001-000000-1423-160800-601009

Mr. Ruley, retiree, will continue to work as an Accounting Systems Analyst II/Accounting Systems Analyst. His duties will include, but are not limited to preparing financial statements for the principal agencies that are required by City Charter to undergo biennial audits. He will also prepare the City's Comprehensive Annual Financial Report. This is the same hourly rate as in the previous contract. The Department of Finance is requesting a waiver of the hourly rate portion of the AM 212-1, Part I. The period of the agreement is effective upon Board approval for one year.

Fire Department7. Reclassify the following 17 filled positions:

From: EMT Firefighter Suppression
Job Code: 41209
Grade: 311 (\$39,879.00 - \$63,728.00)
Position Nos.: 13210, 13412, 13425, 13450, 13483, 13548,
13554, 13601, 13686, 13689, 13708, 13745,
13828, 45234, 47832, 47843, and 47861

To: Firefighter Paramedic Suppression
Job Code: 41210
Grade: 312 (\$41,049.00 - \$65,512.00)

MINUTES**PERSONNEL**Fire Department - cont'd

Cost: \$49,130.00 - 1001-000000-2121-226400-601061

These positions are to be considered Positions of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

	<u>Hourly Rate</u>	<u>Amount</u>
8. MARY LESSER	\$15.89	\$19,063.00

Account: 4000-476415-2023-212600-601009

Ms. Lesser, retiree, will continue to work as a Contract Specialist I (Secretary III/Special Advisor). She will provide program support and coordinate activities for the City's homeland security programs. She will also provide governance and management of grant programs, and provide other program and administrative support to the Director of Emergency Management. This is a 2% decrease in the hourly rate from the previous contract period and is in compliance with AM 212-1. The period of the agreement is effective upon Board approval for one year.

9. Abolish the following classifications:

Classification: Fire Captain EMS CRT
Job Code: 41235
Grade: 379 (\$64,598.00 - \$79,178.00)

Classification: Fire Lieutenant EMS CRT
Job Code: 41234
Grade: 375 (\$57,887.00 - \$70,168.00)

MINUTES**PERSONNEL**Fire Department - cont'd

Due to the changes in the licensing regulations by the Maryland Institute for Emergency Medical Systems Services, the cardiac rescue tech no longer exists at the level of Lieutenant and Captain. Also, there are no remaining Baltimore City Fire Department employees with this licensure.

There are no costs associated with these actions.

10. Overlap in Employment in excess of 20 working days:

Classification: EMT Firefighter

Grade: 313 (\$36,950.00 - \$59,048.00)

Position Nos.: To be determined

Cost: \$362,220.00 - 1001-000000-2121-226400-601061

The Board is requested to approve an overlap of employment in excess of 20 working days. This action will 1) help the Operations Division adequately meet the demands of hiring, training, and staffing and 2) from a financial standpoint, help keep overtime to a minimum as the positions affected are in a working vacant situation. The overlap of employment will extend through the remainder of the calendar year due to training lasting approximately six months.

Therefore, in accordance with AM 211-1, Personnel - Overlap in Employment, the Department of Human Resources requests approval of an overlap in employment.

MINUTES**PERSONNEL**Fire & Police Retirement Systems11. Reclassify the following filled position:

From: Legal Assistant I
Job Code: 32932
Grade: 084 (\$35,564.00 - \$42,446.00)
Position No.: 1540-47202

To: Legal Assistant II
Job Code: 32933
Grade: 087 (\$39,701.00 - \$47,990.00)

Cost: \$3,115.00 - 6000-604117-1540-171400-601001

This position is considered to be a Position of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

Department of General Services

	<u>Hourly Rate</u>	<u>Amount</u>
12. RONALD CHRISTMAS	\$31.45	\$37,740.00

Account: 1001-000000-1981-718100-601009

Mr. Christmas, retiree, will continue to work as a Systems Analyst (Information Systems and Network Specialist). His duties will include, but are not limited to providing system administration and oversight for implementation and technical support of the Fleet License Plate Recognition System. He will also provide support during implementation of the Auto Vehicle Locator and Fuel/Conceiver global positioning systems

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PERSONNEL

Department of General Services - cont'd

to be installed in all City vehicles, and the implementation of the Archibus software system to support the Department's new Facilities Management System. He will assist in the training and technical support for the Fiscal Section, Executive Staff, Design/Construction Division, and Facilities Maintenance Division staff who will be utilizing the system. Mr. Christmas will also act as a liaison for the information technology and network administration. In addition, he will attend meetings within the Department, other City agencies and private entities on behalf of the Director, provide project consultation for the implementation of an upgrade to the FASTER (WIN) and to the FASTER (WEB) which will become the respective automotive maintenance service and repair systems. The salary is in compliance with AM 212-1 Part I. This is the same salary as in previous contract. The period of the agreement is effective upon Board approval for one year.

Health Department

13. Create the following position:

Classification: Community Outreach Worker

Job Code: 81351

Grade: 422 (\$28,533.00 - \$29,941.00)

Position No.: To be assigned

Cost: \$45,737.31 - 4000-422717-3080-279200-601001

MINUTES**PERSONNEL**Health Department - cont'd14. Reclassify the following filled position:

From: Community Health Educator III
Job Code: 61253
Grade: 088 (\$41,326.00 - \$50,069.00)
Position No.: 3023-48245

To: Health Program Administrator I
Job Code: 61111
Grade: 923 (\$58,300.00 - \$93,500.00)

Savings: \$21,955.87 - 1001-000000-3023-274000-601001

15. Reclassify the following filled position:

From: Health Program Administrator I
Job Code: 61111
Grade: 923 (\$58,300.00 - \$93,500.00)
Position No.: 3023-48244

To: Health Program Administrator II
Job Code: 61113
Grade: 927 (\$62,000.00 - \$99,200.00)

Savings: \$4,785.00 - 1001-000000-3023-274000-601001

These positions are to be considered Positions of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

MINUTES

PERSONNELHealth Department - cont'd

	<u>Hourly Rate</u>	<u>Amount</u>
16. PAULINE HOULIARAS	\$25.00	\$1,750.00
17. MARY SUE WELCOME	\$25.00	\$1,750.00
18. ORBIE R. SHIVELY	\$25.00	\$1,750.00

Account: 1001-000000-2401-258300-601009

Mses. Houliaras, Welcome, Shively continue work as a Contract Services Specialist II (Animal Control Investigator/Animal Hearing Panel Member) for the Bureau of Animal Control. They will serve as members of the Animal Hearing Panel to provide for the resolution of disputes arising from the enforcement of Title 10 of the Baltimore City Health Code. Any hearing pertaining to the determination of whether an animal is a dangerous or vicious animal requires the presence of three members of the Panel. The period of the agreement is July 1, 2017 through June 30, 2018.

19. JOY I. FREEDMAN	\$25.00	\$1,750.00
20. JOHN C. FRANK	\$25.00	\$1,750.00

Account: 1001-000000-2401-258300-601009

Ms. Freedman and Mr. Frank will continue work as a Contract Services Specialist II (Animal Control Investigator/Animal Hearing Panel Member) for the Bureau of Animal Control. They will provide notices of hearings in writing to the aggrieved party, any interested party, and the office at least five days before the hearing, attend meetings as scheduled by the Chairperson of the Panel and conduct hearings to assure procedural due process in accordance with the Panel Hearing

MINUTES**PERSONNEL**Health Department - cont'd

related in question and Procedure Regulations. They will obtain all relevant evidence pertaining to the issues limit the evidence to that which has bearings on the issue involved at the hearings. The period of the agreement is July 1, 2017 through June 30, 2018.

21. RUTH CANAN	\$75.00	\$10,000.00
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Account: 1001-000000-2401-258300-601009

Ms. Canan will work as a Contract Services Specialist II (Hearing Officer). Her duties will include, but are not limited to providing resolution of disputes arising as a result of licensing, regulation, and enforcement of certain activities administered by the Department's Environmental Section in accordance with the Baltimore City Code and/or Rules and Regulations promulgated there under by the City. The period of the agreement is July 1, 2017 through June 30, 2018.

22. JAMIKA L. YOCHIM	\$45.00	\$81,900.00
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Account: 6000-624018-3030-273200-601009

Ms. Yochim will work as a Contract Services Specialist II (Dental Hygienist/Clinical Dental Hygienist) for the Dental Program. Her duties will include, but are not limited to providing services within the two dental clinics (Eastern and Druid) and at designated outreach facilities and events. She will also provide diagnostic, preventive, and periodontal care to clinic patients, oral health education to clinic patients, outreach participants, participant family members, and facilities staff. Ms. Yochim will serve

MINUTES**PERSONNEL**Health Department - cont'd

as a patient referral source for clinic services, monitor outreach activities and off-site activities and outcomes. The period of the agreement is July 1, 2017 through June 30, 2018.

Mayor's Office23. Reclassify the following vacant Position:

From: Office Assistant I
Job Code: 00197
Grade: 914 (\$28,729.00 - \$39,444.00)
Position No.: 1250-16001

To: Operations Assistant I
Job Code: 00078
Grade: 902 (\$40,900.00 - \$65,400.00)

Cost: \$24,421.00 - 1001-000000-1250-775200-601001

This position is to be considered a Position of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

Mayor's Office of Employment Development

	<u>Hourly Rate</u>	<u>Amount</u>
24. DENISE ENGLAND	\$14.00	\$16,800.00

Ms. England will work as a Contract Service Specialist I (Office Support Specialist II/Intake Specialist). Her duties will include, but are not limited to providing clerical support, receiving and screening incoming calls and directing

MINUTES**PERSONNEL**Mayor's Office of Employment Development - cont'd

them to the appropriate department, greeting visitors/customers, giving routine information to the public or refers them to proper sources, and typing letters, memoranda, reports, documents and other material. She will also assist in maintaining databases; operating various office equipment, maintaining and organizing hard copy files and e-files; scheduling appointments assisting in special events, and assisting in meeting services. She will open, sort and distribute incoming mail, prepare outgoing mail, may order and maintain office supplies and maintain attendance and payroll records and files, and prepares basic reports of operations. This salary is in compliance with AM 212-1, Part I. The period of the agreement is effective upon Board approval for one year.

Mayor's Office of Human Services25. Overlap in Employment in Excess of 20 Working Days:

Classification: Operations Assistant I

Job Code: 54437

Grade: 902 (\$40,900.00 - \$65,400.00)

Position No.: 51544

Cost: \$10,087.00 - 1001-000000-3540-3264700-601001

The Department of Human Resources evaluated the request for an overlap in employment in excess of twenty working days. The extension is required to facilitate the transfer of a Staff Assistant position from the Mayor's Office to the Mayor's Office of Human Services. The period of the overlap is approximately 40 days, ending June 5, 2017.

MINUTES**PERSONNEL**Mayor's Office of Employment Development - cont'd

In accordance with the provisions of the Administrative Manual, Section 211-1, "Personnel Overlap in Employment," approval is requested.

26. Reclassify the following vacant Position:

From: Staff Asst. (Elected Official)
Job Code: 00138
Grade: 903 (\$43,400.00 - \$69,400.00)
Position No.: 3540-46618

To: Operations Assistant II
Job Code: 00080
Grade: 903 (\$43,400.00 - \$69,400.00)

Cost: N/A - 1001-000000-3540-326400-601001

This position is considered to be a Position of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

Mayor's Office of Information Technology27. Reclassify the following three vacant Positions:

a. From: IT Specialist
Job Code: 33159
Grade: 902 (\$40,900.00 - \$65,400.00)
Position Nos.: 1474-50704, 1474-50705

MINUTES**PERSONNEL**

Mayor's Office of Information Technology - cont'd

To: MOIT IT Specialist I
Job Code: 31107
Grade: 923 (\$58,300.00 - \$93,500.00)

b. From: IT Project Manager
Job Code: 33160
Grade: 929 (\$65,900.00 - \$105,300.00)
Position No.: 1472-49935

To: MOIT IT Specialist IV
Job Code: 33156
Grade: 931 (\$71,000.00 - \$113,500.00)

Savings: (\$ 8,528.00) - 1001-000000-1472-165800-603026
(\$25,667.00) - 1001-000000-1472-165800-603026
(\$67,495.00) - 9903-952002-9116-900000-709001

28. a. Create the following Civil Service Classification:

Classification: Fiscal Officer
Job Code: 34424
Grade: 923 (\$58,300.00 - \$93,500.00)

b. Reclassify the following Vacant Position:

From: HR Generalist II
Job Code: 33677
Grade: 923 (\$58,300.00 - \$93,500.00)
Position: 1870-48030

MINUTES**PERSONNEL**Mayor's Office of Information Technology - cont'd

To: Fiscal Officer (Civil Service)
Job Code: 34424
Grade: 923 (\$58,300.00 - \$93,500.00)

Cost: \$0.00

These positions are considered to be Positions of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

Planning Department

	<u>Hourly Rate</u>	<u>Amount</u>
29. DANIELLE REAVES	\$17.50	\$14,000.00

Ms. Reaves will work as a Contract Services Specialist II (Secretary II/Administrative Assistant). Her duties will include, but are not limited to planning and schedule meetings, appointments and travel, assembling meeting materials and preparing agendas and meeting minutes, screening mail and telephone calls; retrieve and distribute messages and delegating inquiries. In addition, she will open and log director's incoming mail, initiate resolution in response to routine verbal and written inquiries and serve as a backup to the Receptionist. The agreement is effective upon Board approval for six months.

Police Department30. Reclassify the following Filled Position:

From: System Analyst
Job Code: 33151
Grade: 927 (\$62,000.00 - \$99,200.00)
Position No.: 34931

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PERSONNEL

Police Department - cont'd

To: Agency IT Specialist II
Job Code: 33148
Grade: 927 (\$62,000.00 - \$99,200.00)

Cost: \$0.00

31. a. Abolish the following One Vacant Position:

Classification: Research Analyst II
Job Code: 34512
Grade: 927 (\$62,000.00 - \$99,200.00)
Position No.: 50469

b. Create the following One Position:

Classification: Program Compliance Officer II
Job Code: 31502
Grade: 927 (\$62,000.00 - \$99,200.00)
Position No.: TBA

Cost: \$0.00

These positions are to be considered Positions of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

Department of Public Works

32. a. Reclassify the following Seven Filled Positions:

From: Office Support Specialist II
Job Code: 33212
Grade: 075 (\$27,929.00 - \$31,746.00)
Position Nos.: 22326, 24019, 24031, 24034,
49973, 49974, 49993

MINUTES**PERSONNEL**Department of Public Works - cont'd

To: Customer Care Analyst II
Job Code: 34264
Grade: 082 (\$33,140.00 - \$39,199.00)

b. Reclassify the following Vacant Position:

From: Collections Representative I
Job Code: 34253
Grade: 080 (\$31,142.00 - \$36,634.00)
Position No.: 49981

To: Customer Care Analyst II
Job Code: 34264
Grade: 082 (\$33,140.00 - \$39,199.00)

Cost: \$40,513.00 - 2071-000000-5471-400500-601001

33. Reclassify the following Eleven Filled Positions:

From: Utility Meter Reader II
Job Code: 34312
Grade: 081 (\$32,076.00 - \$38,001.00)
Position Nos.: 23951, 23954, 23957, 23952,
23953, 23956, 23959, 50693,
33716, 23955, 33716

To: Utility Meter Technician II
Job Code: 34313
Grade: 082 (\$33,140.00 - \$39,199.00)

Cost: \$19,013.00 - 2071-000000-5471-609100-601001
- 2071-000000-5471-609200-601001

These positions are to be considered Positions of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

MINUTES**PERSONNEL**Department of Recreation and Parks

	<u>Hourly Rate</u>	<u>Amount</u>
34. DAMON L. EDWARDS	\$13.00	\$24,741.60

Account: 6000-680817-4782-717300-601009

Mr. Edwards will Work as a Contract Service Specialist II (Horticultural Assistant/City Farm Associate). He will provide maintenance and repair of City Farm infrastructure (carpentry, water line installation and winterization, observing and securing city gardens); horticultural care of farm facilities (invasive weeds and rodent IPM, managing plot usability and equipment, weed control, cardboard/mulch install, erosion prevention); customer service to patrons (timely delivery and removal of materials, timely response to gardener inquiries/concerns); and landscape maintenance of median strips, City Hall, Green roofs, Cylburn and Conservatory grounds. The period of the agreement is effective upon Board approval for one year.

State's Attorney's Office35. Create the following Classification:

Classification: Victim Witness Coordinator
Job Code: 01967
Grade: 090 (\$44,858.00 - \$54,520.00)
Position No.: TBA

Cost: \$65,340.00 - 1001-000000-1150-715200-601001

MINUTES**PERSONNEL**State's Attorney's Office - cont'd36. Create the following Classification:

Classification: Assistant State's Attorney
Job Code: 01962
Grade: 929 (\$65,900.00 - \$105,300.00)
Position No.: TBA

Cost: \$91,600.00 - 5000-500117-1150-118100-601001

	<u>Hourly Rate</u>	<u>Amount</u>
37. ASHLEY BONSALL	\$33.88	\$42,282.00

Account: 5000-504717-118300-601009

Ms. Bonsall will continue to work as a Contract Services Specialist II (Assistant State's Attorney/Assistant State's Attorney). She will perform legal work involving preparing and trying cases of varying complexity in the Baltimore City Circuit Court and District Courts, as well as a variety of other legal matters.

Department of Transportation38. Reclassify the following Filled Position:

From: Traffic Maintenance Worker II
Job Code: 53322
Grade: 078 (\$29,672.00 - \$34,218.00)
Position No.: 2391-35829

To: Storekeeper II
Job Code: 33562
Grade: 080 (\$31,142.00 - \$36,634.00)

Costs: \$2,205.00 - 1001-000000-2391-1255700-601001

MINUTES

PERSONNELHealth Department39. Hourly Rates for the Following Temporary Classifications:

Classification	Job Code	Grade		Hiring	Full Performance	Experience	Senior
Licensed Practical Nurse	10223	034	From	\$18.51	\$19.17	\$21.13	N/A
			To	\$18.88	\$19.55	\$21.55	N/A
Community Health Nurse I	10224	035	From	\$26.72	\$30.07	\$30.82	\$31.59
			To	\$27.25	\$30.67	\$31.44	\$32.22
Community Health Nurse II	10225	036	From	\$31.46	\$34.39	\$35.24	\$36.13
			To	\$32.09	\$35.08	\$35.94	\$36.85

Costs: \$ 1,573.00 - 6000-624917-3100-295900-601002
 (Special Funds)

The Department of Human Resources has reviewed a request from the Health Department to adjust the hourly rates for the above classifications. Positions in these classifications perform temporary summer work for the Health Department in city schools. This change will maintain pay parity of these classifications with the comparable 10-month regular classifications which received salary adjustments effective July 01, 2016. The work of these classifications is of the same nature and scope as the regular classifications.

These positions are to be considered Positions of Trust in accordance with the policy outlined in the Administrative Manual, Section 237-1.

MINUTES

Department of Transportation - Minor Privilege Permit Applications

The Board is requested to approve the following applications for a Minor Privilege Permit. The applications are in order as to the Minor Privilege Regulations of the Board and the Building Regulations of Baltimore City.

<u>LOCATION</u>	<u>APPLICANT</u>	<u>PRIVILEGE/SIZE</u>
1. 1724 Aliceanna Street	Henrietta Kan	Bracket sign 16" x 30"
		\$ 158.60 - Flat Charge
2. 1000 W. Lombard Street	Sarbjit Kaur Singh	ADA ramp 16' x 5'
		\$ 70.30 - Flat Charge
3. 2229 Callow Avenue	Druid Heights Community Development Corp.	Oriel window 2 nd fl. 10'10" x 4'5"
		\$ 264.38 - Flat Charge
4. 1118 S. Charles Street	1018 South Charles Street, LLC	One patio 16' x 5'
		\$1,688.00 - Annual Charge

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Transportation - cont'd

<u>LOCATION</u>	<u>APPLICANT</u>	<u>PRIVILEGE/SIZE</u>
5. 1051 Greenmount Avenue	Woo T. Lee	ADA ramp 14' 4" x 4' 6"
\$ 70.30 - Flat Charge		

Since no protests were received, there are no objections to approval.

There being no objections, the Board, UPON MOTION duly made and seconded, approved the foregoing minor privilege permits.

MINUTES

Department of Transportation (DOT) - Developers' Agreements

The Board is requested to approve and authorize execution of the various Developers' Agreements.

<u>DEVELOPER</u>	<u>NO.</u>	<u>AMOUNT</u>
1. MERRITT CANTON BP, LLC	1459	\$101,910.00

Merritt Canton BP, LLC would like to install new water service, conduit, street lighting, storm drain, sanitary sewer, and streetscape improvements to its proposed construction located at 3401 Boston Street. This agreement will allow the organization to do its own installation in accordance with Baltimore City Standards.

A Performance Bond in amount of \$101,910.00 has been issued to Merritt Canton BP, LLC which assumes 100% of the financial responsibility.

2. TWO FARMS, INC.	1482	\$ 51,000.00
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Two Farms, Inc. would like to install new utilities to their new building located in the vicinity of 1200 Ponca Street. This agreement will allow the organization do its own installation in accordance with Baltimore City Standards.

A Performance Bond in the amount of \$51,000.00 has been issued to Two Farms, Inc. which assumes 100% of the financial responsibility.

MINUTES

DOT - cont'd

<u>DEVELOPER</u>	<u>NO.</u>	<u>AMOUNT</u>
3. 1238 LIGHT STREET APARTMENTS, LLC	1516	\$ 19,245.00

1238 Light Street Apartments, LLC would like to install new water service to its proposed construction located at 1238 Light Street. This agreement will allow the organization to do its own installation in accordance with Baltimore City Standards.

A Letter of Credit in the amount of \$19,245.00 has been issued to 1238 Light Street Apartments, LLC which assumes 100% of the financial responsibility.

MBE/WBE PARTICIPATION:

City funds will not be utilized for the projects. Therefore, MBE/WBE participation is not applicable.

UPON MOTION duly made and seconded, the Board approved and authorized execution of the foregoing Developers' Agreements.

MINUTES

Department of Transportation - Task Assignment
Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve the assignment of Task No. 13 to A. Morton Thomas and Associates, Inc. under Project No. 1217, On-Call Project Management Services. The period of Task No. 13 is approximately six months.

AMOUNT OF MONEY AND SOURCE:

\$ 47,692.93 - 9950-905023-9508-900010-705032
50,000.00 - 9950-905190-9527-900010-705032
50,000.00 - 9950-904393-9527-900020-705032
30,000.00 - 9950-902323-9527-900010-705032
\$177,692.93

BACKGROUND/EXPLANATION:

This authorization provides for Construction Management Services with the Transportation Engineering and Construction Division in connection with contract nos. TR 12317, TR 13321, TR 13025, and TR 11318.

MBE/WBE PARTICIPATION:

The Consultant will comply with Article 5, Subtitle 28 of the Baltimore City Code and the MBE and WBE goals established in the original agreement.

MBE: 27%

WBE: 10%

1919

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Transportation - cont'd
Engineering and Construction

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED AND FOUND THE BASIS FOR COMPENSATION CONSISTENT WITH CITY POLICY.

UPON MOTION duly made and seconded, the Board approved the assignment of Task No. 13 to A. Morton Thomas and Associates, Inc. under Project No. 1217, On-Call Project Management Services.

MINUTESDepartment of Transportation - Lease Agreement**ACTION REQUESTED OF B/E:**

The Board is requested to approve and authorize execution of a Lease Agreement between the Housing Authority of Baltimore City, Lessor and the Department of Transportation, Lessee, for the property known as Perkins Homes, located at 1411 Gough Street. The Lease Agreement is effective upon Board approval for ten years with an additional three 5-year renewal option unless either party gives 90 days written notice to the other party prior to the end of the current term of its intention to renew.

AMOUNT OF MONEY AND SOURCE:Annual Rent

\$1.00 per year - 6000-600517-2303-749800-603051

BACKGROUND/EXPLANATION:

The Lease Agreement establishes the roles and responsibilities in connection with leasing property at the Perkins Homes, located at 1411 Gough Street, Baltimore, Maryland for the Bicycle Sharing Station. The Housing Authority of Baltimore City is willing to allow the Department of Transportation to use a part of the property in connection with the Department of Transportation's Bicycle Sharing System Program. The Bicycle Sharing Station will be installed at the Department of Transportation's expense.

The Space Utilization Committee approved this Lease Agreement on May 23, 2017.

1921

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Transportation - cont'd

MBE/WBE PARTICIPATION:

N/A

APPROVED FOR FUNDS BY FINANCE

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Lease Agreement between the Housing Authority of Baltimore City, Lessor and the Department of Transportation, Lessee, for the property known as Perkins Homes, located at 1411 Gough Street.

1922

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Transportation - Sponsor-A-Road Maintenance Provider Agreement

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of a Sponsor-A-Road Maintenance Provider Agreement with Adopt-A-Highway Corporation.

AMOUNT OF MONEY AND SOURCE:

N/A

BACKGROUND/EXPLANATION:

The Department of Transportation desires to enter into a Maintenance Provider Agreement whereby the Maintenance Provider will work with various businesses, corporations and other entities to perform road and highway maintenance services, such as litter removal in the name of sponsors on and about Baltimore City roadways. Each sponsor will be acknowledged by a sign with a recognition panel approved by the Department which will be placed close to the beginning of the road or highway segment. Locations, proposed logos, and material certification for the placement of signs will be approved by the Department once the permit application is approved.

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Sponsor-A-Road Maintenance Provider Agreement with Adopt-A-Highway Corporation.

1923

BOARD OF ESTIMATES

05/31/2017

MINUTES

Mayor's Office of Human Services - Agreements

The Board is requested to approve and authorize execution of the following Continuum of Care Program Agreements:

AGREEMENTS

1. **ST. ABMROSE HOUSING AID CENTER, INC.** \$ 64,372.00

Account: 4000-407016-3573-759700-603051

St. Ambrose Housing Aid Center, Inc. will provide rental assistance to four formerly homeless households. Clients served by this program are formerly homeless individuals affected by HIV/AIDS, chronic mental illness, substance abuse and/or domestic violence. The period of the agreement is August 1, 2017 through July 31, 2018.

2. **ASSOCIATED CATHOLIC CHARITIES, INC.** \$ 99,436.50

Account: 4000-407016-3571-757200-603051

Associated Catholic Charities, Inc. will provide permanent housing and supportive services to 12 clients as part of their Project Fresh Start. The funds will be utilized to cover case management personnel costs and client housing costs. The period of the agreement is December 1, 2017 through November 30, 2018.

MWBOO GRANTED A WAIVER.

1924

BOARD OF ESTIMATES

05/31/2017

MINUTES

Mayor's Office of Human Services - cont'd

APPROVED FOR FUNDS BY FINANCE

UPON MOTION duly made and seconded, the Board approved and authorized execution of the foregoing Continuum of Care Program Agreements.

1925

BOARD OF ESTIMATES

05/31/2017

MINUTES

Mayor's Office of Human - Amendment No. 1 to
Services (MOHS) _____ Contract _____

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of Amendment No. 1 to Contract with Fund for Educational Excellence, Inc. The amendment extends the period of the agreement through July 31, 2017.

AMOUNT OF MONEY AND SOURCE:

No funds are required at this time.

BACKGROUND/EXPLANATION:

On August 31, 2016, the Board approved a contract agreement with Fund for Educational Excellence. The Fund for Educational Excellence has been contracted to renovate the George Washington Elementary School and provide new books, furniture, and technology to the school. Due to a delay in the start of the construction project, the MOHS requests that the Board approve a no-cost extension of this contract to allow for the continued provision of services through July 31, 2017, as needed. The current expiration date is May 31, 2017.

MWBOO GRANTED A WAIVER.

AUDITS NOTED THE NO-COST TIME EXTENSION.

UPON MOTION duly made and seconded, the Board approved and authorized execution of Amendment No. 1 to Contract with Fund for Educational Excellence, Inc.

1926

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Acquisition by Gift
Community Development (DHCD)

ACTION REQUESTED OF B/E:

The Board is requested to approve the acquisition of the leasehold interest in the property located at 432 S. Parrish Street (Block 0708 Lot 079) by gift from 234 Parrish, LLC, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

AMOUNT OF MONEY AND SOURCE:

The Owner agrees to pay for any title work and all associated settlement costs, not to exceed \$600.00 total. Therefore, no City funds will be expended.

BACKGROUND/EXPLANATION:

The DHCD, Land Resources Division strategically acquires and manages vacant or abandoned properties, which enables these properties to be returned to productive use and improve neighborhoods in Baltimore City.

The Owner has offered to donate to the City, title to the property located at 432 S. Parrish Street. With the Board's approval, the City will receive clear and marketable title to the property, subject only to certain City liens. The City's acceptance of this donation is less costly than acquiring the property by tax sale foreclosure or eminent domain.

The Owner will pay all current water bills up through the date of settlement. The DHCD will acquire the properties subject to all municipal liens, and all interest and penalties that may accrue prior to recording a deed. The water bills must be paid as part of the transaction. A list of open municipal liens

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BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

accrued through March 10, 2017, other than water bills, are as follows:

432 S. Parrish Street

Real Property Tax	2016-2017	\$ 0.00
Miscellaneous	7885734	151.26
Miscellaneous	7897911	257.08
Miscellaneous	8163503	210.58
	Total Taxes Owed:	<u>\$618.92</u>

UPON MOTION duly made and seconded, the Board approved the acquisition of the leasehold interest in the property located at 432 S. Parrish Street (Block 0708 Lot 079) by gift from 234 Parrish, LLC, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

1928

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Acquisition by Gift
Community Development (DHCD)

ACTION REQUESTED OF B/E:

The Board is requested to approve the acquisition of the leasehold interest in the property located at 521 N. Collington Avenue (Block 1653 Lot 061) by gift from Fethina Adem, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

AMOUNT OF MONEY AND SOURCE:

The Owner agrees to pay for any title work and all associated settlement costs, not to exceed \$600.00 total. Therefore, no City funds will be expended.

BACKGROUND/EXPLANATION:

The DHCD, Land Resources Division strategically acquires and manages vacant or abandoned properties, which enables these properties to be returned to productive use and improve neighborhoods in Baltimore City.

The Owner has offered to donate to the City, title to the property located at 521 N. Collington Avenue. With the Board's approval, the City will receive clear and marketable title to the property, subject only to certain City liens. The City's acceptance of this donation is less costly than acquiring the property by tax sale foreclosure or eminent domain.

The Owner will pay all current water bills up through the date of settlement. The DHCD will acquire the properties subject to all municipal liens, and all interest and penalties that may accrue prior to recording a deed. The water bills must be paid as part of the transaction. A list of open municipal liens

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BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

accrued through March 9, 2017, other than water bills, are as follows:

521 N. Collington Avenue

Real Property Tax	2016-2017	\$51.80
	Total Taxes Owed:	\$51.80

UPON MOTION duly made and seconded, the Board approved the acquisition of the leasehold interest in the property located at 521 N. Collington Avenue (Block 1653 Lot 061) by gift from Fethina Adem, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Acquisition by Gift
Community Development (DHCD)

ACTION REQUESTED OF B/E:

The Board is requested to approve the acquisition of the fee simple interest in the property located at 5617 Govane Avenue (Block 5140A Lot 015) by gift from Cheryl Oconis, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

AMOUNT OF MONEY AND SOURCE:

The Owner agrees to pay for any title work and all associated settlement costs, not to exceed \$600.00 total. Therefore, no City funds will be expended.

BACKGROUND/EXPLANATION:

The DHCD, Land Resources Division strategically acquires and manages vacant or abandoned properties, which enables these properties to be returned to productive use and improve neighborhoods in Baltimore City.

The Owner has offered to donate to the City, title to the property located at 5617 Govane Avenue. With the Board's approval, the City will receive clear and marketable title to the property, subject only to certain City liens. The City's acceptance of this donation is less costly than acquiring the property by tax sale foreclosure or eminent domain.

The Owner will pay all current water bills up through the date of settlement. The DHCD will acquire the properties subject to all municipal liens, and all interest and penalties that may accrue prior to recording a deed. The water bills must be paid as part of the transaction. A list of open municipal liens

MINUTES

DHCD - cont'd

accrued through April 20, 2017, other than water bills, are as follows:

5617 Govane Avenue

Real Property Tax	2016-2017	\$2,110.64
Miscellaneous Bill	#8204778	134.14
Property has Special Credits		(115.66)
	Total Taxes Owed:	\$2,129.12

UPON MOTION duly made and seconded, the Board approved the acquisition of the fee simple interest in the property located at 5617 Govane Avenue (Block 5140A Lot 015) by gift from Cheryl Oconis, Owner, SUBJECT to municipal liens, interest, and penalties, other than water bills.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and
Community Development (DHCD) - Acquisition by Gift

ACTION REQUESTED OF B/E:

The Board is requested to approve the acquisition of the fee simple interest in the property located at 2836 Kentucky Avenue (Block 4151 Lot 019) by gift from Wells Fargo Bank, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

AMOUNT OF MONEY AND SOURCE:

The Owner agrees to pay for any title work and all associated settlement costs, not to exceed \$600.00 total. Therefore, no City funds will be expended.

BACKGROUND/EXPLANATION:

The DHCD, Land Resources Division strategically acquires and manages vacant or abandoned properties, which enables these properties to be returned to productive use and improve neighborhoods in Baltimore City.

The Owner has offered to donate to the City, title to the property located at 2836 Kentucky Avenue. With the Board's approval, the City will receive clear and marketable title to the property, subject only to certain City liens. The City's acceptance of this donation is less costly than acquiring the property by tax sale foreclosure or eminent domain.

The Owner will pay all current water bills up through the date of settlement. The DHCD will acquire the properties subject to all municipal liens, and all interest and penalties that may accrue prior to recording a deed. The water bills must be paid as part of the transaction. A list of open municipal liens

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BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

accrued through March 10, 2017, other than water bills, are as follows:

2836 Kentucky Avenue

Real Property Taxes	2016-2017	\$ 0.00
Miscellaneous	8190209	128.35
Miscellaneous	8211641	130.28
	Total Taxes Owed:	\$258.63

UPON MOTION duly made and seconded, the Board approved the acquisition of the fee simple interest in the property located at 2836 Kentucky Avenue (Block 4151 Lot 019) by gift from Wells Fargo Bank, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Acquisition by Gift
Community Development (DHCD)

ACTION REQUESTED OF B/E:

The Board is requested to approve the acquisition of the fee simple interest in the property located at 2320 W. Baltimore Street (Block 2153 Lot 085) by gift from Timothy Bridges and Dex Williams, Owners, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

AMOUNT OF MONEY AND SOURCE:

The Owners agree to pay for any title work and all associated settlement costs, not to exceed \$600.00 total. Therefore, no City funds will be expended.

BACKGROUND/EXPLANATION:

The DHCD, Land Resources Division strategically acquires and manages vacant or abandoned properties, which enables these properties to be returned to productive use and improve neighborhoods in Baltimore City.

The Owners have offered to donate to the City, title to the property located at 2320 W. Baltimore Street. With the Board's approval, the City will receive clear and marketable title to the properties, subject only to certain City liens. The City's acceptance of this donation is less costly than acquiring the property by tax sale foreclosure or eminent domain.

The Owners will pay all current water bills up through the date of settlement. The DHCD will acquire the property subject to all municipal liens, and all interest and penalties that may accrue prior to recording a deed. The water bills must be paid as part of the transaction. A list of open municipal liens accrued

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BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

through March 6, 2017, other than water bills, are as follows:

2320 W. Baltimore Street

Real Property Taxes	2016-2017	\$77.70
	Total Taxes Owed:	\$77.70

UPON MOTION duly made and seconded, the Board approved the acquisition of the fee simple interest in the property located at 2320 W. Baltimore Street (Block 2153 Lot 085) by gift from Timothy Bridges and Dex Williams, Owners, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Acquisition by Gift
Community Development (DHCD)

ACTION REQUESTED OF B/E:

The Board is requested to approve the acquisition of the leasehold interest in the property located at 620 Saint Anns Avenue (Block 4066 Lot 005) by gift from Jane McCauley, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

AMOUNT OF MONEY AND SOURCE:

The Owner agrees to pay for any title work and all associated settlement costs, not to exceed \$600.00 total. Therefore, no City funds will be expended.

BACKGROUND/EXPLANATION:

The DHCD, Land Resources Division strategically acquires and manages vacant or abandoned properties, which enables these properties to be returned to productive use and improve neighborhoods in Baltimore City.

The Owner has offered to donate to the City, title to the property located at 620 Saint Anns Avenue. With the Board's approval, the City will receive clear and marketable title to the property, subject only to certain City liens. The City's acceptance of this donation is less costly than acquiring the property by tax sale foreclosure or eminent domain.

The Owner will pay all current water bills up through the date of settlement. The DHCD will acquire the properties subject to all municipal liens, and all interest and penalties that may accrue prior to recording a deed. The water bills must be paid as part of the transaction. A list of open municipal liens

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BOARD OF ESTIMATES

05/31/2017

MINUTESDHCD - cont'd

accrued through March 9, 2017, other than water bills, are as follows:

620 Saint Anns Avenue

Tax Sale	289673	\$ 3,602.18
Tax Sale	257306	62,780.29
Real Property Tax	2016-2017	0.00
Real Property Tax	2015-2016	31.42
Real Property Tax	2014-2015	36.94
Real Property Tax	2013-2014	93.84
Real Property Tax	2012-2013	59.46
Real Property Tax	2011-2012	53.70
Real Property Tax	2010-2011	110.93
Real Property Tax	2009-2010	64.74
Real Property Tax	2008-2009	82.71
Real Property Tax	2007-2008	75.78
Miscellaneous	926162	9,150.00
Miscellaneous	4745899	357.75
Miscellaneous	4822706	214.37
Miscellaneous	5259023	425.43
Miscellaneous	5392774	372.92
Miscellaneous	5780473	304.83
Miscellaneous	6081988	325.40
Miscellaneous	6087274	300.67
Miscellaneous	6188874	335.76
Miscellaneous	7015274	229.05
Miscellaneous	7393507	293.21
Miscellaneous	7450166	284.34
Miscellaneous	7673692	298.38
Registration	206433	543.00
Total Taxes Owed:		\$80,427.10

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BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

UPON MOTION duly made and seconded, the Board approved the acquisition of the leasehold interest in the property located at 620 Saint Anns Avenue (Block 4066 Lot 005) by gift from Jane McCauley, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Acquisition by Gift
Community Development (DHCD)

ACTION REQUESTED OF B/E:

The Board is requested to approve the acquisition of the leasehold interest in the property located at 2117 E. Chase Street (Block 1569 Lot 009) by gift from Teresa D. Wessendorf, Owner, **SUBJECT** to municipal liens, interest, and penalties, other than water bills.

AMOUNT OF MONEY AND SOURCE:

The Owner agrees to pay for any title work and all associated settlement costs, not to exceed \$600.00 total. Therefore, no City funds will be expended.

BACKGROUND/EXPLANATION:

The DHCD, Land Resources Division strategically acquires and manages vacant or abandoned properties, which enables these properties to be returned to productive use and improve neighborhoods in Baltimore City.

The Owner has offered to donate to the City, title to the property located at 2117 E. Chase Street. With the Board's approval, the City will receive clear and marketable title to the property, subject only to certain City liens. The City's acceptance of this donation is less costly than acquiring the property by tax sale foreclosure or eminent domain.

The Owner will pay all current water bills up through the date of settlement. The DHCD will acquire the properties subject to all municipal liens, and all interest and penalties that may accrue prior to recording a deed. The water bills must be paid as part of the transaction. A list of open municipal liens

MINUTES

DHCD - cont'd

accrued through March 6, 2017, other than water bills, are as follows:

2117 E. Chase Street

Miscellaneous	8175176	\$126.54
Miscellaneous	8178006	199.17
Environmental	54613401	500.00
Registration	035007	143.00
	Total Taxes Owed:	<u>\$968.71</u>

UPON MOTION duly made and seconded, the Board approved the acquisition of the leasehold interest in the property located at 2117 E. Chase Street (Block 1569 Lot 009) by gift from Teresa D. Wessendorf, Owner, SUBJECT to municipal liens, interest, and penalties, other than water bills.

MINUTES

**Department of Housing and - Community Development Block
Community Development Grant Agreements**

The Board is requested to approve and authorize execution of the following Community Development Block Grant Agreements (CDBG). The period of the CDBG Agreement is July 1, 2016 through June 30, 2017, unless otherwise indicated.

1. LEARNING IS FOR TOMORROW, INC. \$ 63,370.00

Account: 2089-208917-5930-435134-603051

Learning Is For Tomorrow, Inc. will utilize the funds to provide a literacy program offering personalized participatory and comprehensive literacy and support services to low- and moderate income illiterate adults. The program curriculum includes pre-GED/GED preparation, literacy, math, computer labs, life skills classes, and tutoring.

MWBBO GRANTED A WAIVER.

2. CASA DE MARYLAND, INC. \$180,000.00

Accounts: 2089-208917-5930-426426-603051 \$ 87,998.57
2089-208917-5930-426429-603051 \$ 21,216.54
2089-208917-5930-426434-603051 \$ 70,784.89

Casa De Maryland, Inc. will provide a variety of public services for day labor and low-wage workers, including permanent and temporary employment placement services, educational programs, information and referral services, legal services, representation, and workshops. Services will be provided at 2224 E. Fayette Street.

FOR FY 2017, THE MBE AND WBE PARTICIPATION GOALS FOR THE ORGANIZATION WERE SET ON THE AMOUNT OF \$12,089.94, AS FOLLOWS:

MBE: \$3,264.28

WBE: \$1,208.99

MINUTES

DHCD - cont'd

3. GREEN & HEALTHY HOMES INITIATIVE, INC. \$185,400.00

Account: 2089-208917-5930-436763-603051

The Green & Healthy Homes Initiative, Inc. is dedicated to preventing childhood lead poisoning through advocacy, outreach and education. Working in partnership with the community, the Green & Healthy Homes Initiative, Inc. is committed to ensuring that all children grow up in affordable, lead-safe housing and that community-based solutions for lead-safe housing are implemented which will result in healthier children and healthier communities. The Green & Healthy Homes Initiative, Inc. through its Safe at Home Green and Healthy Homes Program, will implement a comprehensive approach to reduce childhood lead poisoning in Baltimore's older, low- and moderate-income communities. The period of the agreement is September 1, 2016 through August 31, 2017.

FOR FY 2017, THE MBE AND WBE PARTICIPATION GOALS FOR THE ORGANIZATION WERE SET ON THE AMOUNT OF \$124,835.48, AS FOLLOWS:

MBE: \$33,705.58

WBE: \$12,483.55

On May 4, 2016, the Board approved the Resolution authorizing the Commissioner of the Department of Housing and Community Development (DHCD), on behalf of the Mayor and City Council, to file a Federal FY 2016 Annual Action Plan for the following formula programs:

1943

BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

1. Community Development Block Grant (CDBG)
2. HOME
3. Emergency Solutions Grant (ESG)
4. Housing Opportunities for Persons with AIDS (HOPWA)

Upon approval of the Resolution, the DHCD's Contracts Section began negotiating and processing this CDBG Agreement as outlined in the Plan effective July 1, 2016 and beyond. Consequently, these CDBG Agreements were delayed due to final negotiations and processing.

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED AND HAD NO OBJECTION.

UPON MOTION duly made and seconded, the Board approved and authorized execution of the foregoing Community Development Block Grant Agreements. Item No. 2 was **DEFERRED** for one week.

1944

BOARD OF ESTIMATES

05/31/2017

MINUTES

Office of the City Council - Governmental/Charitable
Solicitation Application

ACTION REQUESTED OF B/E:

The Board is requested to endorse a Governmental/Charitable Solicitation Application for submission to the Board of Ethics of Baltimore City to raise \$250,000.00 to develop a non-partisan democracy building program with Maryland Working Families. Mr. Zeke Cohen wishes to solicit donations from local individuals, businesses, and the general population to support the creation of this program to pay for two staff members along with additional materials for the program. The period of the campaign is effective upon Board approval through May 30, 2018.

AMOUNT OF MONEY AND SOURCE:

No general funds are involved in this transaction.

BACKGROUND/EXPLANATION:

Donations will be solicited from Baltimore businesses, civic leaders, the foundation community, and the general population. A potential donor list will be comprised of individuals and corporate entities that contribute to the economic, social, and cultural vitality of Baltimore City. Most of the individual and corporate entities fitting that description are not controlled donors. However, those potential donors who are controlled donors, with respect to the City Council or the Board of Estimates, will not be targeted or singled out in any way and will be solicited, if at all, in the same manner as the other potential donors.

As a former civics teacher, Mr. Cohen has seen across the city that young people lack a proper sense of citizenship. Voter turnout in the general population is low. Over the last 50 years, as the city has lost population it has also lost

1945

BOARD OF ESTIMATES

05/31/2017

MINUTES

Office of the City Council - cont'd

representation. Therefore, it is critically important that citizens feel a responsibility to vote.

This is a completely non-partisan effort. No candidates will be endorsed. This initiative solely concerns participation, education, and engagement.

This program is a collaboration between Maryland Working Families and other public, private, and nonprofit organizations to teach leadership and build civic capacity among our communities in an effort to increase voter participation.

Baltimore City Code Article 8, Section 6-26, prohibits solicitation or facilitating the solicitation of a gift. An exception was enacted in 2005 to permit certain solicitations that are for the benefit of an official governmental program or activity, or a City-endorsed charitable function or activity. Ethics Regulation 96.26B sets out the standards for approval, which includes the requirement that the program, function, or activity to be benefited and the proposed solicitation campaign must be endorsed by the Board of Estimates or its designee.

MBE/WBE PARTICIPATION:

N/A

UPON MOTION duly made and seconded, the Board endorsed the Governmental/Charitable Solicitation Application for submission to the Board of Ethics of Baltimore City to raise \$250,000.00 to develop a non-partisan democracy building program with Maryland Working Families. The President **ABSTAINED**.

1946

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Land Disposition Agreement
Community Development

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the Land Disposition Agreement with Adopt A Block, Inc., Developer, for the sale of the City-owned property located at 2129 Cliftwood Avenue.

AMOUNT OF MONEY AND SOURCE:

\$1,000.00

BACKGROUND/EXPLANATION:

The project will involve the rehabilitation of the vacant building as a single family home, which the Developer will donate to a military veteran to use as his/her private residence. The property is in the South Clifton Park neighborhood.

The authority to sell the property is given under Baltimore City Code, Article 13, §2-7 (h) of the Baltimore City Code.

STATEMENT OF PURPOSE AND RATIONALE FOR SALE BELOW THE PRICE DETERMINED BY THE WAIVER VALUATION PROCESS:

The property was valued pursuant to the Appraisal Policy of Baltimore City through the Waiver Valuation Process. The Waiver Valuation price for 2129 Cliftwood Avenue is \$7,100.00 and the purchase price is \$1,000.00.

The property is being sold to Adopt A Block, Inc., below the price determined by the Waiver Valuation Process because of the following reasons:

MINUTESDHCD - cont'd

- the sale will help to promote a specific benefit to the immediate community,
- the sale will continue the elimination of blight,
- the sale will facilitate home ownership of a military veteran, and
- the sale will promote economic development through placement on the City's tax rolls.

MBE/WBE PARTICIPATION:

The Developer will purchase the property for a price that is less than \$50,000.00 and will receive no City funds or incentives for the purchase or rehabilitation; therefore, MBE/WBE is not applicable.

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Land Disposition Agreement with Adopt A Block, Inc., Developer, for the sale of the City-owned property located at 2129 Cliftwood Avenue.

1948

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Land Disposition Agreement
Community Development

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the Land Disposition Agreement with Elise Victoria, Developer, for the sale of the City-owned property located at 4013 Penhurst Avenue.

AMOUNT OF MONEY AND SOURCE:

\$3,000.00

BACKGROUND/EXPLANATION:

The project will involve new construction of a small personal home. The property is in the West Arlington neighborhood.

The authority to sell the property located at 4013 Penhurst Avenue comes from the Rogers Avenue Transit Station Urban Renewal Plan, approved by the Mayor and City Council of Baltimore as Ordinance No. 923, dated April 5, 1983.

STATEMENT OF PURPOSE AND RATIONALE FOR SALE BELOW THE PRICE DETERMINED BY THE WAIVER VALUATION PROCESS:

The property was valued pursuant to the Appraisal Policy of Baltimore City through the Waiver Valuation Process. The Waiver Valuation price for 4013 Penhurst Avenue is \$5,750.00 and the purchase price is \$3,000.00.

The property is being sold to Elise Victoria, below the price determined by the Waiver Valuation Process because of the following reasons:

1949

BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

- the sale will help to promote a specific benefit to the immediate community,
- the sale will continue the elimination of blight, and
- the sale will promote economic development through placement on the City's tax rolls.

MBE/WBE PARTICIPATION:

The Developer will purchase the property for a price that is less than \$50,000.00 and will receive no City funds or incentives for the purchase or rehabilitation; therefore, MBE/WBE is not applicable.

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Land Disposition Agreement with Elise Victoria, Developer, for the sale of the City-owned property located at 4013 Penhurst Avenue.

1950

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Land Disposition Agreement
Community Development

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the Land Disposition Agreement with B&D Phase III, LLC, Developer, for the sale of the City-owned properties located at 555, 557, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581 Baker Street and 2222, 2224, and 2226 Division Street.

AMOUNT OF MONEY AND SOURCE:

555 Baker Street	\$ 1.00
557 Baker Street	1.00
561 Baker Street	1.00
563 Baker Street	1.00
565 Baker Street	1.00
567 Baker Street	1.00
569 Baker Street	1.00
571 Baker Street	1.00
573 Baker Street	1.00
575 Baker Street	1.00
577 Baker Street	1.00
579 Baker Street	1.00
581 Baker Street	1.00
2222 Division Street	1.00
2224 Division Street	1.00
2226 Division Street	1.00
Total	<u>\$16.00</u>

BACKGROUND/EXPLANATION:

The Developer will purchase the vacant lots known as 555, 557, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581 Baker Street and 2222, 2224, 2226 Division Street. To consolidate them with the Developer-owned lots at 559 Baker Street and 2228 Division Street.

MINUTESDHCD - cont'd

The Developer will re-subdivide and construct seven new for-sale homeownership units. The properties are located within the Druid Heights Community. The purchase price and improvements to the site will be funded through public and private funds.

The authority to sell these properties is within Article 13, §2-7 (h) (2) (ii) (C) of the Baltimore City Code and the Druid Heights Urban Renewal Plan.

STATEMENT OF PURPOSE AND RATIONALE FOR SALE BELOW THE ASSESSED VALUE:

Pursuant to Baltimore City's Appraisal policy, "unimproved real property with an assessed value of \$2,500.00 or less will not require an appraisal." Each property is assessed for \$1,000.00.

The properties are being sold to B&D Phase III, LLC, below the assessed value because of the following reasons:

- the new construction will help to promote a specific benefit to the immediate community,
- the transaction will continue the elimination of blight, and
- the sale and construction will promote economic development through placement on the City's tax rolls.

MBE/WBE PARTICIPATION:

The Developer has signed a Commitment to Comply.

MBE: 27%

WBE: 10%

1952

BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Land Disposition Agreement with B&D Phase III, LLC, Developer, for the sale of the City-owned properties located at 555, 557, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581 Baker Street and 2222, 2224, and 2226 Division Street.

1953

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Housing and - Land Disposition Agreement
Community Development

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the Land Disposition Agreement with Marlon D. Clary, Developer, for the sale of the City-owned property located at 2700 Lauretta Avenue.

AMOUNT OF MONEY AND SOURCE:

\$6,800.00

BACKGROUND/EXPLANATION:

The property is a partially boarded and vacant two-story porch front corner dwelling, located in the Rosemont Community that is in need of work. Once work is completed, the property will serve as residential housing and leased at market rate.

The City is authorized to dispose of the property by virtue of Article 13 §2-7 (h) (2) (ii) (c) and ordinance 03-509, Rosemont Urban Renewal Plan, dated April 3, 2003.

The property was valued pursuant to the Appraisal Policy of Baltimore City through the Waiver Valuation Process. The Waiver Valuation price for 2700 Lauretta Avenue is \$6,800.00 and the purchase price is \$6,800.00.

MBE/WBE PARTICIPATION:

The Developer will purchase the property for a price that is less than \$50,000.00 and will receive no City funds or incentives for the purchase or rehabilitation; therefore, MBE/WBE is not applicable.

1954

BOARD OF ESTIMATES

05/31/2017

MINUTES

DHCD - cont'd

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Land Disposition Agreement with Marlon D. Clary, Developer, for the sale of the City-owned property located at 2700 Lauretta Avenue.

MINUTESDepartment of Recreation and Parks - Task Assignment**ACTION REQUESTED OF B/E:**

The Board is requested to approve the assignment of Task No. 08 under Project No. 1234, GWWO, Inc. The period of the task assignment is approximately 24 months.

AMOUNT OF MONEY AND SOURCE:

\$156,327.30 - 9938-919031-9474-000000-703032

BACKGROUND/EXPLANATION:

This task will include design services for the Druid Hill Park Parking Lot at East Drive.

AUDITS REVIEWED AND FOUND THE BASIS FOR COMPENSATION CONSISTENT WITH CITY POLICY.

MBE/WBE PARTICIPATION:

MBE: 18.57%

WBE: 18.63%

AUDITS REVIEWED AND FOUND THE BASIS FOR COMPENSATION CONSISTENT WITH CITY POLICY.

MINUTES

TRANSFERS OF FUNDS

<u>AMOUNT</u>	<u>FROM ACCOUNT/S</u>	<u>TO ACCOUNT/S</u>
<u>Department of Recreation and Parks - cont'd</u>		
\$ 20,000.00	9938-918031-9475	
General Fund	Druid Hill Park	
HUR Eligible	Head Trail Parking (Reserve)	
140,000.00	9938-903778-9475	
1 st Parks & Public <u>Facilities</u>	Druid Hill Pool & Bathhouse (Reserve)	
\$160,000.00	-----	9938-919031-9474
		Druid Hill Park Head Trail Parking (Active)

This transfer will provide funds to cover the costs associated with design services under On-Call Contract No. 1234, Task #8 to GWWO, Inc. and to reconcile the account's deficit.

UPON MOTION duly made and seconded, the Board approved the assignment of Task No. 08 under Project No. 1234, GWWO, Inc. The Transfer of Funds was approved, SUBJECT to the receipt of a favorable report from the Planning Commission, the Director of Finance having reported favorably thereon, in accordance with the provisions of the City Charter.

1957

BOARD OF ESTIMATES

05/31/2017

MINUTES

Space Utilization Committee - Interdepartmental Lease
Agreement Amendment

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the Interdepartmental Lease Agreement Amendment between the Department of General Services (Landlord) and the Mayor's Office of Human Services (Tenant) for the rental of approximately 2,514 square feet of space located at 5225 York Road - 1st floor. The period of the Interdepartmental Lease Agreement Amendment will be effective upon Board approval with the option to renew for three remaining one-year terms.

AMOUNT OF MONEY AND SOURCE:

<u>Annual Rent</u>	<u>Monthly Installment</u>
\$21,494.70	\$1,791.23

Account: 1001-000000-1191-594700-603096

BACKGROUND/EXPLANATION

The original Interdepartmental Lease Agreement was approved by the Board on August 20, 2014, with five one-year renewal option periods. The Lease Agreement Amendment will change the usable space from 3033 square feet to 2514 square feet. The Landlord will still be responsible for the exterior of the building and all interior common areas; will provide and pay all utilities; will furnish janitorial, trash, and pest control services, and will provide for snow and ice removal. The Tenant will not make any alterations, additions, or improvements without the Landlord's written consent; will provide all equipment necessary for the operation of the Tenant's programs, as well as keeping that equipment in the Leased Premises in proper working condition, and will be responsible for telephone and computer services on the Leased Premises.

BOARD OF ESTIMATES

1958

05/31/2017

MINUTES

Space Utilization Committee - cont'd

The Space Utilization Committee approved this Interdepartmental Lease Agreement Amendment on May 23, 2017.

APPROVED FOR FUNDS BY FINANCE

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Interdepartmental Lease Agreement Amendment between the Department of General Services and the Mayor's Office of Human Services for the rental of approximately 2,514 square feet of space located at 5225 York Road - 1st floor.

1959

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Real Estate - Lease Renewal

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize a Lease Renewal with Alison Spiesman and Brian Dowdall for the rental of the property known as 2090 Woodbourne Avenue located on the grounds of the Mt. Pleasant Golf Course. The period of the renewal agreement is July 16, 2017 through July 15, 2018.

AMOUNT OF MONEY AND SOURCE:

The annual rent will be \$1.00, if demanded.

BACKGROUND/EXPLANATION:

On July 16, 2014, the Board approved the Lease Agreement for two 2-year periods commencing upon Board approval with the option to renew for two 1-year periods. On August 10, 2016, the Board approved the first renewal option for the period July 16, 2016 through July 15, 2017. The second renewal option has been exercised for the period July 16, 2017 through July 15, 2018, with no further renewal options.

All other rentals, conditions, and provisions of the Lease Agreement dated July 16, 2014 and the renewal option dated August 10, 2016 will remain in full force and effect.

UPON MOTION duly made and seconded, the Board approved and authorized the Lease Renewal with Alison Spiesman and Brian Dowdall for the rental of the property known as 2090 Woodbourne Avenue located on the grounds of the Mt. Pleasant Golf Course.

MINUTES

Department of Real Estate - Option Agreement

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of an Option Agreement with Big City Farms, Inc., owner, for the purchase of the property known as 4825 Windsor Mill Road (Block 8455, Lot 4) in fee simple.

AMOUNT OF MONEY AND SOURCE:

\$260,000.00 - 9938-920300-9474-900000-706040

BACKGROUND/EXPLANATION:

This acquisition is necessary for the Department of Recreation and Parks to acquire the five acre property contiguous to Gwynns Falls/Leakin Park and across from the Carrie Murray Nature Center. The site, once under City control, will primarily be used to enhance the visitor experience to the Carrie Murray Nature Center.

APPROVED FOR FUNDS BY FINANCE

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Option Agreement with Big City Farms, Inc., owner, for the purchase of the property known as 4825 Windsor Mill Road (Block 8455, Lot 4) in fee simple.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Baltimore Development Corporation - Office Lease Agreement

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of an Office Lease Agreement with Patricia L. Thompson, Sole Proprietor, Tenant, for the rental of 912 square feet for the property known as Suite A100 at the Business Center @ Park Circle located at 2901 Druid Park Drive. The period of Agreement is June 1, 2017 through May 31, 2018, with one additional 1-year renewal option.

AMOUNT OF MONEY AND SOURCE:

Annual Rent Monthly Installments

\$12,768.00 \$1,064.00

After year one, the base rent will escalate at a rate of 4% annually in order to allow for any increases in building expenses.

BACKGROUND/EXPLANATION:

Ms. Thompson, will use the space for private and pastoral counseling services. Ms. Thompson is also establishing a non-profit corporation to provide individual and family treatment services including parental services, promoting self-esteem for children and adults and enhancing personal and community safety.

The space is leased on an "As Is" basis and does not require the landlord to make any modifications. The Tenant will be responsible for any improvements or build-out of the premises.

All other landlord services such as utilities, limited janitorial services, maintenance, and repairs to the premises are included in the initial base rent.

MINUTES

BDC - cont'd

In addition, the Tenant is obligated to maintain and keep in force general public liability, contractual liability, and property damage insurance protection for the premises and name the City as additionally insured under said insurance policies.

MBE/WBE PARTICIPATION:

N/A

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Office Lease Agreement with Patricia L. Thompson, Sole Proprietor, Tenant, for the rental of 912 square feet for the property known as Suite A100 at the Business Center @ Park Circle located at 2901 Druid Park Drive.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

PROPOSALS AND SPECIFICATIONS

1. Department of Public Works/
Office of Engineering and
Construction - WC 1361, AMI/R Urgent Need
Metering Infrastructure
Repair & Replacement, Various
Locations (3" & Larger Water
Service)
BIDS TO BE RECV'D: 6/14/2017
BIDS TO BE OPENED: 6/14/2017

2. Department of Public Works/
Department of Recreation
and Parks - RP 15802R, Latrobe Park Field
House
BIDS TO BE RECV'D: 7/12/2017
BIDS TO BE OPENED: 7/12/2017

There being no objections, the Board, UPON MOTION duly made
and seconded, approved the above Proposals and Specifications to
be advertised for receipt and opening of bids on the dates
indicated.

MINUTES

Baltimore Development - Second Amendment to Lease Agreement,
Corporation Interagency Contracts, Loan Termination
and Release Agreement

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the following:

1. Second Amendment to Lease Agreement with the Inner Harbor East Marina LLC, Lessee, for the facilities known as the Harbor East Marina,
2. Interagency Contract with the State of Maryland Department of Natural Resources to receive a \$200,000.00 grant through the Boating Infrastructure Grant Program "BIG Program",
3. Interagency Contract with the State of Maryland Department of Natural Resources to receive a \$1,458,707.00 Grant through the Boating Infrastructure Grant Program, and
4. Loan Termination and Release Agreement with the Inner Harbor East Marina LLC (IHEM), Harbor East Limited Partnership (HELP), and Harbor East-Office, LLC (HEO), collectively referred to as "Harbor East."

AMOUNT OF MONEY AND SOURCE:

The City will receive annual revenues from the Second Amendment to Lease Agreement according to the following schedule:

- (i) 5% of the gross income from the operation of the Marina;
- (ii) 31.25% of the difference between Lessee's charges for fuel (if any) and its expenditures;

MINUTESBaltimore Development Corporation - cont'd

- (iii) 15.625% of the difference between Lessee's charges for electricity and its expenditures;
- (iv) 5% of the net rent collected by Lessee from any sub-lessee of a portion of any Marina Building; and
- (v) 5% of the net income generated by Lessee from the operation of any convenience or retail store located within any Marina Building.

Rent percentages will escalate to (i) 8%, (ii) 50%, (iii) 25%, (iv) 8%, and (v) 8% for the final seven (7) renewal terms.

The City will receive \$200,000.00 in BIG Program grant funds for Grant #F16AP00249.

The City will receive \$1,458,707.00 in BIG Program grant funds for Grant #F16AP00250.

The City will receive a payment of \$525,545.82 from Harbor East through the Loan Termination and Release.

BACKGROUND/EXPLANATION:

The City is the owner of property known as the "Harbor East Marina." Inner Harbor East Marina LLC is the Lessee of the property, pursuant to a Lease Agreement approved by the Board of Estimates on July 14, 1995, as amended by the First Amendment dated June 10, 2009. Through this lease agreement, as amended, the Lessee is responsible for the normal operations and maintenance of the marina, for an initial term that ended on December 31, 2016, and 15 five-year renewals that extend the Lease to December 31, 2091, if exercised by Lessee.

1966

BOARD OF ESTIMATES

05/31/2017

MINUTES

Baltimore Development Corporation - cont'd

The existing Marina is at end of its serviceable life and is in need of replacement. These two BIG Program grants provide matching federal funds for the replacement of portions of the marina dedicated to transient boating. The Lessee, through this second amendment, has committed to providing upfront funding of additional costs connected with the Marina Replacement, including the non-federal matching funds, and assuming all obligations of the City pursuant to the requirements of the BIG Program grants. Presidential Investors Limited Partnership, LLLP, an affiliate of IHEM, has guaranteed the performance of all construction related obligations under the Interagency Contracts. The effect of the Second Amendment to Lease is to reduce rent to be paid to the City under the Lease Agreement through the end of the term and first two renewal terms to partially reimburse Lessee for it's out of pocket cost of providing the replacement facility.

To satisfy the requirements of the Maryland Department of Natural Resources under the BIG Program grants that the lease term equal or exceed the useful life of the new marina improvements, certain of the existing renewal periods are being exercised at this time such that the current term of the Lease will expire on December 31, 2046, with 9 five-year renewal periods that would extend the lease term through December 31, 2091, the same outside expiration date that exists as set forth in the First Amendment.

Regarding the Loan Termination and Release: HEO is the mortgagor under a Purchase Money Mortgage dated May 12, 1996 recorded in the Land Records of Baltimore City in Liber SEB 5561 folio 330 under which the City is the mortgagee, Purchase Money Mortgage. The Purchase Money Mortgage matured on May 16, 2016 with an unpaid balance owed the City in the amount of \$2,005,878.75.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Baltimore Development Corporation - cont'd

In connection with the Marina Lease, IHEM has received a matching grant to pay for the cost of dredging estimated to cost \$800,000.00, with respect to which the City is required to provide matching funds for one-half up to the amount of \$400,000.00, "City Dredging Share."

The City and HELP are also parties to a Second Amendment to Land Disposition Agreement dated October 11, 1995 pursuant to which the City agreed to pay HELP the sum of \$750,000.00 with interest at 7% per annum, to be paid solely from the rent received under the Marina Lease, the current outstanding balance of which is \$1,080,332.93, "City Debt".

The parties have agreed to a) offset against the Purchase Money Mortgage the amount of the City Dredging Share and the City Debt to result in a lump sum net payment to be made by Harbor East and b) to release and terminate any further payment obligations under the Purchase Money Mortgage, the City Dredging Share, and the City Debt. Thus all rent owed under the Marina Lease will now be paid in cash to the City rather than being applied to the City Debt, as has been the case since 1995.

UPON MOTION duly made and seconded, the Board approved and authorized execution of the foregoing: 1) Second Amendment to Lease Agreement with the Inner Harbor East Marina LLC, Lessee, for the facilities known as the Harbor East Marina, 2) Interagency Contract with the State of Maryland Department of

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Baltimore Development Corporation - cont'd

Natural Resources to receive a \$200,000.00 grant through the Boating Infrastructure Grant Program "BIG Program", 3) Interagency Contract with the State of Maryland Department of Natural Resources to receive the \$1,458,707.00 Grant through the Boating Infrastructure Grant Program, and 4) Loan Termination and Release Agreement with the Inner Harbor East Marina LLC, Harbor East Limited Partnership, and Harbor East-Office, LLC, collectively referred to as "Harbor East."

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BOARD OF ESTIMATES

05/31/2017

MINUTES

OPTIONS/CONDEMNATION/QUICK-TAKES:

<u>Owner(s)</u>	<u>Property</u>	<u>Interest</u>	<u>Amount</u>
<u>Dept. of Housing and Community Development - Condemnations</u>			
1. Myrtle Avenue Opportunities, LLC	1311 Myrtle Avenue	L/H	\$ 4,466.00
2. Marvin Jones	1317 Myrtle Avenue	L/H	\$ 6,360.00
3. Tia C. Matthews	1319 Myrtle Avenue	L/H	\$ 9,360.00
4. Zulfigar Ahmad	1316 Argyle Avenue	L/H	\$ 1,250.00
5. Bernice Scott Street, James G. Scott, Jr., Alger T. Scott, John Calvin Scott, and KGC Development, LLC	1324 Argyle Avenue	L/H	\$ 1,250.00
<u>DHCD - Rescission and Approval</u>			
6. Jacqueline Jenifer, Mary C. McFadden, Quintus M. Webb, and Howard O. Govans	1340 Argyle Avenue	F/S	\$ 6,900.00

On May 5, 2016, the Board accepted the donation of the fee simple interest of 1340 Argyle Avenue from the listed owners.

1970

BOARD OF ESTIMATES

05/31/2017

MINUTES

OPTIONS/CONDEMNATION/QUICK-TAKES:

<u>Owner(s)</u>	<u>Property</u>	<u>Interest</u>	<u>Amount</u>
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DHCD - Rescission and Approval - cont'd

The property cannot be donated because there are open mortgages on it. Therefore, the Board is requested to rescind the May 5, 2016 acceptance and approve the purchase, by condemnation, of the fee simple interest of 1340 Argyle Avenue for \$6,900.00. The property is needed for the Upton Ball Fields Project.

Funds are available in City Bond Funds in account no. 9910-905142-9588-900000-704040, Upton Ball Fields Project.

DHCD - Condemnation or Redemption

7. Unknown	1317 Myrtle Avenue	G/R	\$ 640.00
			\$96.00

Funds are available in City Bond Funds in account no. 9910-905142-9588-900000-704040, Upton Ball Fields Project.

The Board is requested to approve acquisition of the ground rent interest by condemnation, or in the alternative may, SUBJECT to the prior approval of the Board, make application to the Maryland Department of Assessments and Taxation to redeem or extinguish the ground rent interest for these properties.

UPON MOTION duly made and seconded, the Board approved the foregoing Condemnations, Rescission and Approval, and the Condemnation or Redemption.

1971

BOARD OF ESTIMATES

05/31/2017

MINUTES

Mayor's Office of Employment - Ratification to First Amendment
Development _____ to Subgrant Agreement _____

ACTION REQUESTED OF B/E:

The Board is requested to ratify the First Amendment to Subgrant Agreement with Bon Secours of Maryland Foundation, Inc. dba Bon Secours Community Works. The period of the First Amendment to Sub-grant Agreement extends the term through October 31, 2017.

AMOUNT OF MONEY AND SOURCE:

No additional cost - 4000-807416-6312-781005-603051

BACKGROUND/EXPLANATION:

On November 25, 2015, the Board approved the original agreement with Bon Secours of Maryland Foundation, Inc. dba Bon Secours Community Works. This agreement authorizes Bon Secours of Maryland Foundation, Inc. to provide Certified Nursing Assistant and Geriatric Nursing Assistant training with a defined curriculum designed for low skilled, unemployed, or underemployed Baltimore City residents. The period of the Agreement was November 1, 2015 through April 30, 2017.

On June 1, 2016, the Board approved a correction to the account number of the original agreement. The corrected account number is referenced above (source of funds). The purpose of this First Amendment to Subgrant Agreement is to extend the term of this Agreement through October 31, 2017. The total funding amount remains the same, a maximum of \$248,866.00. All other terms remain the same.

APPROVED FOR FUNDS BY FINANCE

AUDITS NOTED THE NO-COST TIME EXTENSION.

1972

BOARD OF ESTIMATES

05/31/2017

MINUTES

Mayor's Office of Employment Development - cont'd

UPON MOTION duly made and seconded, the Board ratified the First Amendment to Subgrant Agreement with Bon Secours of Maryland Foundation, Inc. dba Bon Secours Community Works.

MINUTES

RECOMMENDATIONS FOR CONTRACT AWARDS/REJECTIONS

* * * * *

On the recommendations of the City agencies
hereinafter named, the Board,
UPON MOTION duly made and seconded,
awarded the formally advertised contracts
listed on the following pages:

1974 - 1987

to the low bidders meeting the specifications,
or rejected bids on those as indicated
for the reasons stated.

The Transfers of Funds was approved
SUBJECT to receipt of a favorable report
from the Planning Commission,
the Director of Finance having reported favorably
thereon, as required by the provisions
of the City Charter.

1974

BOARD OF ESTIMATES

05/31/2017

MINUTES

RECOMMENDATIONS FOR CONTRACT AWARDS/REJECTIONS

Department of Public Works/Office
of Engineering and Construction

1. WC 1355, Urgent Need Spiniello Companies \$ 3,873,300.00
Water Infrastructure
Rehabilitation

MBE: Machado Construction Company, Inc. \$387,500.00 10%

WBE: R&R Contracting Utilities, Inc. \$ 77,500.00 2%

MWBOO FOUND VENDOR IN COMPLIANCE.

2. **TRANSFER OF FUNDS**

<u>AMOUNT</u>	<u>FROM ACCOUNT/S</u>	<u>TO ACCOUNT/S</u>
\$ 79,318.97	9960-936001-9558	
Baltimore Co.	Construction Reserve	
	Unallocated	
3,200,000.00	" "	
Water Revenue		
Bonds		
1,753,467.92	9960-909100-9558	
Water Revenue	Construction Reserve	
Bonds	Water Infrastructure	
	Rehab	
345,571.11	9960-910031-9558	
Baltimore Co.	Construction Reserve	
	Water Supply	
	Facilities	
<u>\$5,378,358.00</u>		

1975

BOARD OF ESTIMATES

05/31/2017

MINUTES**RECOMMENDATIONS FOR CONTRACT AWARDS/REJECTIONS**Office of Engineering and Construction - cont'd

<u>AMOUNT</u>	<u>FROM ACCOUNT/S</u>	<u>TO ACCOUNT/S</u>
\$ 387,330.00	-----	9960-906145-9557-900020-2 Extra Work
387,330.00	-----	9960-906145-9557-900020-3 Engineering
498,000.00	-----	9960-906145-9557-900020-5 Inspection
3,873,300.00	-----	9960-906145-9557-900020-6 Construction
<u>232,398.00</u>	-----	9960-906145-9557-900020-9 Administration
\$5,378,358.00		

Bureau of Purchases

3. B50004928, Summer Food Service Program	Martin's, Inc.	\$ 1,364,800.00
---	-------------------	------------------------

(DHCD)

Area #1 MBE: Class Act Café & Catering, Inc.	\$ 62,920.00	16.2%
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WBE: Shalom Catering Corp. MR Enterprises, Inc.	\$ 27,382.20	7.05%
	<u>8,734.00</u>	<u>2.25%</u>
	\$ 36,116.20	9.30%

Area #2 MBE: Class Act Café & Catering, Inc.	\$ 45,635.40	16.2%
---	--------------	-------

WBE: Shalom Catering Corp. MR Enterprises, Inc.	\$ 19,859.85	7.05%
	<u>6,338.25</u>	<u>2.25%</u>
	\$ 26,198.10	9.30%

1976

BOARD OF ESTIMATES

05/31/2017

MINUTES

RECOMMENDATIONS FOR CONTRACT AWARDS/REJECTIONS

Bureau of Purchases

Area #3 **MBE:** Class Act Café & Catering, Inc. \$ 53,460.00 16.2%

WBE: Shalom Catering Corp.	\$ 19,859.85	7.05%
MR Enterprises, Inc.	<u>7,425.00</u>	<u>2.25%</u>
	\$ 27,284.85	9.30%

Area #4 **MBE:** Class Act Café & Catering, Inc. \$ 59,081.40 16.2%

WBE: Shalom Catering Corp.	\$ 25,711.35	7.05%
MR Enterprises, Inc.	<u>8,205.75</u>	<u>2.25%</u>
	\$ 33,917.10	9.30%

MWBOO FOUND VENDOR IN COMPLIANCE.

Four proposals were received on April 26, 2017. Two proposals submitted by K&B WholeBody Solutions, LLC and Revolution Foods, Inc., were referred to the Law Department for review of apparent deficiencies in their bid guarantees. The bids are currently with the Clerk to the Board of Estimates. These proposals have not been received by the Bureau of Purchases and due to the need to have an award prior to June 1st to allow sufficient time to begin to serve meals beginning June 19th, the Bureau of Purchases recommends the Board award all four areas to the above responsible proposer. The proposals for each area submitted by Martin's Inc. were determined to be responsive, and received the highest total scores of the proposals evaluated. This award recommendation has been approved by the Maryland State Department of Education, as required.

The Bureau of Purchases further recommends that the two proposals submitted by K&B WholeBody Solutions, LLC and Revolution Foods, Inc. that have not been forwarded, be rejected. The Summer Foods Services Program for children and teens is funded by the U.S. Department of Agriculture, through the Maryland State Department of Education, and is administrated locally by the Baltimore Housing Office of Community Services.

A PROTEST WAS BEEN RECEIVED FROM K & B WHOLEBODY SOLUTIONS, LLC.



Kendra Winston and Brittany Adams
K & B WholeBody Solutions, LLC
5609 Hess Ave.
Baltimore, MD 21212

May 30, 2017

Harriet Taylor
Deputy Comptroller
100 North Holliday St.
Baltimore, MD 21202

Re: solicitation B50004928; summer food service program

Dear Ms. Taylor:

This letter is a bid protest with respect to the above noted solicitation. Please see that this letter is brought to the attention of the Board of Estimates with respect its consideration of this solicitation. We understand that the matter is on the Board's agenda for May 31, 2017.

Our firm submitted a bid in response to a request for proposals for a food service management company for the summer food service program. Bids were opened at noon on April 26, 2017.

Administratively, the matter has been handled irregularly. Our proposal was, according to Erin Sher of the Purchasing Bureau, not transmitted to the Purchasing Bureau and was therefore not evaluated by the Purchasing Bureau, meaning that the Purchasing Bureau's recommendation for award to the Board of Estimates did not consider our proposal. This is unfair and wrong.

Our proposal was referred to the Department of Law. We do not know, as of this writing, what the Department of Law opines about our proposal. We were told at the bid opening that our proposal was questionable because the bid security attached to the proposal was a business check and was not a certified check.



This statement surprised us because the request for proposal, both at item B-8 and appendix A-7 clearly states that the proposal should be accompanied with a guarantee in the form of a bid bond or a deposit check; the request for proposal does not ask that the deposit check be a certified check.

The Department of Law could very well conclude that our proposal was legally valid in which case our perfectly fine proposal would be ignored. If the Department of Law would opine that our proposal was not valid, that opinion would have to be brought to your attention.

But as the matter sits now, our proposal was not evaluated by the Purchasing Bureau.

Should it be appropriate or necessary to do so, please find enclosed a certified check substituting for the business check we deposited as our bid security.

Regards,

Two handwritten signatures are shown side-by-side. The signature on the left is "Kendra Winston" and the signature on the right is "Brittany Adams".

Kendra Winston and Brittany Adams
Members, K & B Whole Body Solutions, LLC

cc: Erin Sher

1977

BOARD OF ESTIMATES

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MINUTES

RECOMMENDATIONS FOR CONTRACT AWARDS/REJECTIONS

Bureau of Purchases

President: The first item on the non-routine agenda can be found on pages 84 - 86, item no. 3, umm -- Recommendations for Contract Award B50004928, Summer Food Service Program. Will the parties please come forward?"

Ms. Erin Sher Smyth: "Good morning, Madam Mayor, Honorable members of the Board. Erin Sher Smyth for Department of Finance. Um -- I am recommending award at this time due to the extremely time sensitive nature of this contract which is for the Summer Food Program."

Mr. Tom Baker: "A Good morning. I am Tom Baker representing K & B Whole Body Solutions, which is protesting one quarter of this award. I'll explain why there's a quarter. K & B Whole Body Solutions is represented is -- excuse me, Kendra Winston and Brittany Adams, the two ladies immediately behind me. But, I'm their lawyer. This is on page 84 of the agenda-which bespeaks, as Erin has spoken, of a four-part award, all to Martin's,

1978

BOARD OF ESTIMATES

05/31/2017

MINUTES

Incorporated. What the contract is, is an award of administration of the Summer Food Program and the award was broken into four geographic areas. Is that correct -- areas one, two, three and four? K & B submitted a bid for area two, but not for areas one, three, four. So, areas -- the award to Martin's of areas one, three and four is not protested. The basis of protest is an administrative failure. K & B submitted a timely bid and for reasons not perfectly clear, but I think clear. The award of K -- I'm sorry -- the proposal of K & B was sent to the Department of Law and the Department of Law hasn't done anything about it and as a consequence, the oh -- proposals that were evaluated by the Bureau of Purchases did not ah -- include a proposal by K & B. So, the fundamental of the protest is, our proposal has never been evaluated and it looks like a good proposal."

1979

BOARD OF ESTIMATES

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MINUTES

Interim City Solicitor: "K --"

Mr. Baker: "That is to say -- it's low. It's submitted by a responsible bidder."

President: "Umm -- umm -- Mr. Ralph you want --"

Interim City Solicitor: "Yes. So, Council, ah -- you said, ah -- it was submitted to the Department of Law and the Department of Law never did anything with it. Do you know that to be correct?"

Mr. Baker: "No, that's hearsay. Okay -- well the -- my client, K & B has received no piece of paper from any City agency at all. Not a thank you for your proposal, not a your proposal was accepted, not a your proposal was rejected, a nothing, and so it looks like an administrative failure from Board of Estimates, which opened the proposals to the place where it purportedly was sent."

1980

BOARD OF ESTIMATES

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MINUTES

Interim City Solicitor: "Okay. But -- but you don't know that?"

Mr. Baker: "That is correct, Sir. And so --"

Interim City Solicitor: "Just want to be clear."

"Mr. Baker: "That is correct and so, the fundamental of the protest is failure to evaluate the proposal."

Interim City Solicitor: "Okay."

Mr. Baker: "And it looks like a good proposal, which is to say this is not an academic protest, it's a real protest. So, I'd like to know where it happened."

Ms. Sher Smyth: "So, the Bureau -- that is correct and the Bureau of Purchases did never receive um -- the proposal of K & B. However, um -- it was referred to the Law Department and the Law Department made a recommendation to the Board of Estimates."

Mr. Baker: "Okay, thanks. Didn't know that. What was the recommendation?"

1981

BOARD OF ESTIMATES

05/31/2017

MINUTES

Interim City Solicitor: "We can talk about the problem -- with the -- what the problem was."

Ms. Hana Rose Kondratyuk: "Ah -- Hana Rose Kontradyuk from the Law Department. Good morning, members of the Board. Um -- the issue with the -- the bid from K & B Whole Body Solutions was it was in the form of a company check. Um -- according to the solicitation and the fact that this is a federally funded project, and it's required by ah -- the CFR, a code section that um -- bid security be submitted in the form of a bid bond in the -- in the amount of 5%. So, it was the Law Department's determination, at the time, that we reviewed the bids that um -- this was immaterial, it was ah -- a minor defect that the Law Department, at the time, recommended that the Board could consider curing and allowing the bidder to submit a bid bond in compliance with the CFR. After the Law Department submitted the opinion ah -- it was determined that this was uh -- a timely manner. The Bureau of Purchases has recommended award at this time. Um -- the, ah -- Law Department went upstairs just to

1982

BOARD OF ESTIMATES

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MINUTES

review K & B's bid just to ensure that although the Bureau of Purchases was recommending rejection, that their -- their bid price that was submitted was not lower than Martin's. And when I reviewed the bid, I determined that the price for K & B was actually higher than Martin's. So, although the Law Department initially recommended the Board to consider cure, it's moot at this time because Purchases needs the Board to act. And even if they were given the opportunity to cure, they would still not be considered the lowest response -- responsible bidder."

Interim City Solicitor: "Thank you."

Comptroller: "May I ask? --"

President: "Madam Comptroller."

Comptroller: "Yeah, do you -- can you state for the record what Martin's ah -- bid was -- the amount and K & B? You said it was higher."

Ms. Kondratyuk: "Do you want me to --"

Ms. Sher Smith: "They're all right here."

1983

BOARD OF ESTIMATES

05/31/2017

MINUTES

Ms. Kondratyuk: "So, the -- the price for area two, which is what's in question right now, for Martin's Inc., was \$281,700.00, the price for K & B, area two, was \$296,670.00."

Comptroller: "Thank you."

Ms. Kondratyuk: "You're welcome."

President: "Go ahead. Any -- anybody else?"

Ms. Brittany Adams: "May I speak?"

President: "Yeah. State your name."

Ms. Adams: "My name is Brittany Adams. I represent K & B Whole Body Solutions, LLC. Um -- the one um -- area in the solicitation that spoke about um -- as far as how it's awarded, that's not a low bidder re -- responsive type award. It's on a 100 point scale and that the price per meal will hold a weight of 35 points, while everything else holds a weight of 65 points. So, uh -- menu creativity, food quality, management, and logistics, your work force, all that is taken into consideration for the bid since it's not a low bidder type award. Um -- and

1984

BOARD OF ESTIMATES

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MINUTES

also, in the actual solicitation, it spoke about a deposit check or a bid bond which is in several places, which I have printed out as well, which is why we chose the ah -- check."

Ms. Sher Smyth: "So, while I'm sure the Board of Estimates knows that we generally will recommend any efforts to cure minor deviations because of the nature of this program. At this point, we're not recommending that. However, um -- I just wanted to point out there are many steps involved in this other than just um - the -- the bid guarantee. And, if the Board did accept a cure at this time, the proposals would still have to be evaluated and they would have to be scored and then that recommendation would then have to go to the State for approval. So, we would be looking at a delay of approximately five weeks to include all of those steps at this time. So, because of the -- the sensitive nature of the program, we are asking to move for an award, regardless of what could be included in this proposal as we never received it."

Mayor: "So, when is the proposal -- when does this contract go into operation?"

1985

BOARD OF ESTIMATES

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MINUTES

Ms. Sher Smyth: "The first meal needs to be served at June 19th I believe the last day of school is June 13th and these schools are meant for children that are not able to get school -- school meals."

President: "Any -- anything um -- anything else, Sir?"

Mr. Baker: "Well, I'm sorry it's taken so -- it will take so long. I can see the problem immediately. Um -- I just wish our bid had been evaluated earlier. So, we'd have that time to have it be evaluated rather than stand up here in this somewhat theatrical moment. Um -- I just wish we had more time, because when all the points are together, we might very -- we being K & B, just might very well be the best bidder, and the opportunity to have the best bidder will be lost."

President: "Okay. Madam Comptroller."

Comptroller: "Ms. Sher, since there seems to be some ambiguity about what the -- the form of the check, whether it should have been a bid bond or a check, shouldn't the Bureau of Purchases send out an amendment so that it is clear, since it was -- appears seems to be some confusion?"

1986

BOARD OF ESTIMATES

05/31/2017

MINUTES

Ms. Sher Smyth: "Ah -- yes, if we were still in the solicitation phase. If there were confusion as to that requirement what the City's regular requirements are which are a bid bond or a bid check and what the CFR's requirements which are only a bond, we would have done an addendum. Correct."

President: "I entertain a Motion."

Interim City Solicitor: "I move that we um -- reject the protest uh -- in connection with page 84 through 86 um -- item 3 of the agenda and Move that we approve the recommendation by the Bureau of Purchases for the award of contract ah -- as stated in page 6, excuse me, page 84 through 86, item 3 of the agenda.

Comptroller: "Second."

President: "All those in favor say, Aye. All oppose, Nay. The Motion carries."

Mr. Baker: "Thank you, folks. Thank you."

President: "You have something to say, Madam Mayor?"

Mayor: "No."

* * * * *

1987

BOARD OF ESTIMATES

05/31/2017

MINUTES

RECOMMENDATIONS FOR CONTRACT AWARDS/REJECTIONS

Bureau of Purchases

4. B50004930, Aluminum Street Light Poles and Accessories Flagpoles, Inc. \$ 2,131,800.00

(Department of Transportation)

MWBBO GRANTED A WAIVER.

5. B50004939, Telephone System Maintenance Services Millennium Technologies, LLC \$ 200,000.00

(Dept. of Communication Services,
Municipal Telephone Exchange)

MWBBO GRANTED A WAIVER.

1988

BOARD OF ESTIMATES

05/31/2017

MINUTES

Bureau of Purchases - Acceptance of Technical Proposals
and Opening of Price Proposals and
Rejection of Proposals

ACTION REQUESTED OF B/E:

The Board is requested to accept the technical proposals submitted in response to Solicitation No. B50004822, Psychological Services and Employee Assistance Program and authorize the opening of the envelope "B" containing the price proposals of the following vendors for the Employee Assistance Program:

Janus Associates, Inc. d/b/a BHS
Adventist Healthcare, Inc.

The Board is further requested to reject the proposals for Psychological Services from Greenside Psychological Associates, Inc. d/b/a Atlantic OccuPsych; and Interdynamics Incorporated.

AMOUNT OF MONEY AND SOURCE:

N/A

BACKGROUND/EXPLANATION:

On March 08, 2017, four proposals were received and were found responsive and subsequently reviewed by the evaluation committee for technical scoring.

Out of the two responsive proposals scored by the evaluation committee for the Employee Assistance Program, both met the City's minimum technical score requirements for price opening.

However, after reviewing the proposals for the Psychological Services, it was determined that rejection of these proposals and re-bidding on revised specifications would be in the best interest of the City.

1989

BOARD OF ESTIMATES

05/31/2017

MINUTES

Bureau of Purchases - cont'd

UPON MOTION duly made and seconded, the Board accepted the technical proposals submitted in response to Solicitation No. B50004822, Psychological Services and Employee Assistance Program and authorized the opening of the envelope "B" containing the price proposals of the foregoing vendors for the Employee Assistance Program: Janus Associates, Inc. d/b/a BHS and Adventist Healthcare, Inc. The Board further rejected the proposals for Psychological Services from Greenside Psychological Associates, Inc. d/b/a Atlantic OccuPsych; and Interdynamics Incorporated.

MINUTES

Department of Public Works/Office - Employee Expense Statement
of Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve an Employee Expense Statement to reimburse Mr. Ruffin Downes for expenses incurred during the month of December 2016.

AMOUNT OF MONEY AND SOURCE:

\$42.91 - 2070-000000-5601-400200-603002

BACKGROUND/EXPLANATION:

The employee no longer works for the City. The statement was delayed due to incorrect information.

The Administrative Manual, Section 240-11, states the Employee Expense Reports that are submitted more than 40 work days after the calendar day of the month in which the expenses were incurred require the Board's approval.

APPROVED FOR FUNDS BY FINANCE**AUDITS REVIEWED AND HAD NO OBJECTION.**

UPON MOTION duly made and seconded, the Board approved the Employee Expense Statement to reimburse Mr. Ruffin Downes for expenses incurred during the month of December 2016.

1991

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - Employee Expense Statement
of Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve an Employee Expense Statement to reimburse Mr. Ruffin Downes for expenses incurred during the month of January 2017.

AMOUNT OF MONEY AND SOURCE:

\$168.31 - 2070-000000-5601-40020-603002

BACKGROUND/EXPLANATION:

The employee no longer works for the City. The statement was delayed due to incorrect information.

The Administrative Manual, Section 240-11, states the Employee Expense Reports that are submitted more than 40 work days after the calendar day of the month in which the expenses were incurred require the Board's approval.

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED AND HAD NO OBJECTION.

UPON MOTION duly made and seconded, the Board approved the Employee Expense Statement to reimburse Mr. Ruffin Downes for expenses incurred during the month of January 2017.

1992

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - Amendment No. 1 to Agreement of Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of Amendment No. 1 to Agreement with Johnson, Mirmiran & Thompson, Inc. under Project 1401, On-Call Project and Construction Management Assistance Services. The amendment extends the period of the agreement through May 14, 2018.

AMOUNT OF MONEY AND SOURCE:

No funds are required at this time.

BACKGROUND/EXPLANATION:

On May 14, 2014, the Board approved an agreement with Johnson, Mirmiran & Thompson, Inc. for On-Call Construction Services for the Department of Public Works/Bureau of Water and Wastewater. The current expiration date is May 14, 2017. Services to be provided include but are not limited to assisting the City Construction Management Division with construction monitoring and inspection, preparation of daily reports, maintenance of project records and documentation, review and processing of contractor's application for payment, attendance at progress meetings, preparation of record drawings, review of contract claims and supports, estimating, scheduling, project engineering, constructability reviews, construction contract administration, and MBE/WBE and wage regulation compliance reporting.

This amendment will increase the duration time of the contract by one year for a total contract duration time of four years. This amendment is within the original scope of work and was requested by the Agency. All other terms and conditions of the original agreement remain unchanged.

1993

BOARD OF ESTIMATES

05/31/2017

MINUTES

DPW/Office of Engineering and Construction - cont'd

MBE/WBE PARTICIPATION:

The Consultant will continue to comply with all terms and conditions of the MBE/WBE programs in accordance with Baltimore City Code, Article 5, Subtitle 28.

MBE: 27%

WBE: 9%

AUDITS NOTED THE TIME EXTENSION AND WILL REVIEW TASK ASSIGNMENTS.

UPON MOTION duly made and seconded, the Board approved and authorized execution of Amendment No. 1 to Agreement with Johnson, Mirmiran & Thompson, Inc. under Project 1401, On-Call Project and Construction Management Assistance Services.

1994

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - Amendment No. 1 to Agreement of Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of Amendment No. 1 to Agreement with Louis Berger Water Services, Inc. under Project 1405, On-Call Project and Construction Management Assistance Services. The amendment extends the period of the agreement through June 10, 2018.

AMOUNT OF MONEY AND SOURCE:

No funds are required at this time.

BACKGROUND/EXPLANATION:

On June 11, 2014, the Board approved an agreement with Louis Berger Water Services, Inc. for three years or until the upset limit is reached. The current expiration date is June 10, 2017. Services to be provided include but are not limited to assisting the City Construction Management Division with construction monitoring and inspection, preparation of daily reports, maintenance of projects records and documentation, review and processing of contractor's application for payment, attendance at progress meetings, preparation of record drawings, review of contract claims and supports, estimating, scheduling, project engineering, constructability reviews, construction contract administration and MBE/WBE and wage regulation compliance reporting.

This amendment is within the original scope of work and was requested by the Agency. All other terms and conditions of the original agreement remain unchanged.

1995

BOARD OF ESTIMATES

05/31/2017

MINUTES

DPW/Office of Engineering and Construction - cont'd

MBE/WBE PARTICIPATION:

The Consultant will continue to comply with all terms and conditions of the MBE/WBE programs in accordance with Baltimore City Code, Article 5, Subtitle 28.

MBE: 27%

WBE: 10%

AUDITS NOTED THE TIME EXTENSION AND WILL REVIEW TASK ASSIGNMENTS.

UPON MOTION duly made and seconded, the Board approved and authorized execution of Amendment No. 1 to Agreement with Louis Berger Water Services, Inc. under Project 1405, On-Call Project and Construction Management Assistance Services.

1996

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - Task Assignment
of Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve the assignment of Task No. 20 to Hazen & Sawyer, PC, under Project No. 1406 - WC 1286, On-Call Project and Construction Management Assistance Services. The period of Task No. 20 is approximately 12 months.

AMOUNT OF MONEY AND SOURCE:

\$300,468.00 - 9960-915617-9557-900020-705032

BACKGROUND/EXPLANATION:

The Office of Engineering and Construction is in need of assistance from Hazen & Sawyer, PC to provide inspection services on W.C. 1286 - Guilford Avenue & Vicinity-Water Main Replacements for the Department of Public Works/Bureau of Water and Wastewater. The services provided will be for the duration of approximately 12 months. The current expiration date is June 2, 2018. There have been no other inspection or Construction Management Assistance tasks written or approved by the Board of Estimates previously.

Hazen & Sawyer, PC, will provide that include but are not limited to assisting the Construction Management Division with construction monitoring and inspection, preparation of daily reports, maintenance of project records and documentation, review and processing of contractor's application for payment, attendance at progress meetings, preparation of record drawings, review of contract claims and support, estimating, scheduling, project engineering, constructability reviews, construction contract administration, and MBE/WBE and wage regulation compliance reporting.

1997

BOARD OF ESTIMATES

05/31/2017

MINUTES

Dept. of Public Works/Office of Eng. & Constr. - cont'd

MBE/WBE PARTICIPATION:

The Consultant will comply with Article 5, Subtitle 28 of the Baltimore City Code and the MBE and WBE goals established in the original agreement.

MBE: 27%

WBE: 10%

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED AND FOUND THE BASIS FOR COMPENSATION CONSISTENT WITH CITY POLICY.

UPON MOTION duly made and seconded, the Board approved the assignment of Task No. 20 to Hazen & Sawyer, PC, under Project No. 1406 - WC 1286, On-Call Project and Construction Management Assistance Services.

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MINUTES

Department of Public Works/Office - Emergency Construction
of Engineering and Construction Services Agreement

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of the Emergency Construction Services Agreement with The Whiting-Turner Contracting Co., Inc. for SC 961, Emergency Construction Services. The period of the agreement is effective upon the Notice of Proceed until the work is completed as determined by the City Engineer, but in no case later than 365 days from approval by the Board of Estimates.

AMOUNT OF MONEY AND SOURCE:

\$7,833,453.64 - 9956-903554-9551-900020-706063

BACKGROUND/EXPLANATION:

The completion of the Patapsco Enhanced Nutrient Removal Projects is subject to a December 31, 2016 Consent Decree deadline imposed by the Maryland Department of the Environment.

The Patapsco Enhanced Nutrient Removal Projects, SC 845R-Nitrification Filters Related Work for the Enhanced Nutrient Removal Facilities at Patapsco Wastewater Treatment Plant and SC 852R-Denitrification Filters Related Work for the Enhanced Nutrient Removal Facilities at Patapsco Wastewater Treatment Plant have been delayed by disputes with the existing contractor over the correction of identified quality control deficiencies. The most significant of these disputes concerns the quality of welds on process piping at the Patapsco Enhanced Nutrient Removal Projects.

The Department has repeatedly directed the existing contractor to take corrective action, but it has not done so to the satisfaction of the Department. The lack of resolution of this dispute, together with other issues has delayed the project past the Consent Decree deadline. At this time, the Department is taking every measure

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Department of Public Works/Office - cont'd
of Engineering and Construction

necessary to complete the Patapsco Enhanced Nutrient Removal Projects as quickly as possible and at the level of workmanship contemplated by the contract.

The delays to the completion have subjected the City to potential fines from the Maryland Department of Environment. To minimize further delays to the completion of the project, it is imperative that the City retain the services of a supplemental contractor to investigate, repair, and/or replace deficient work identified by the City. The Phase 2 time and materials proposal is for the follow-on contract to the previously approved Pre-Construction Phase I services contract. The Whiting Turner Contracting Co., Inc. is an experienced contracting firm with the personnel and ability to complete the necessary work in a timely manner. The time and materials aspect of this contract will be tracked daily in a database for full documentation of all hours charged toward specific deficient work. This will support the eventual back charge to the retainage fund currently held on these projects.

In addition, The Whiting Turner Contracting Co., Inc. is currently on site at the Enhanced Nutrient Removal projects and has the resources and sub-contractors available to conduct the work. It is the Department's intent to recover the costs of Phase 1 and Phase 2 from the existing contractor during close-out of the Patapsco Enhanced Nutrient Removal Projects.

On July 6, 2016, pursuant to the Baltimore City Charter, Article VI, §11(e)(i), the Department certified to the Director of Finance that the failure to correct deficient work on the Enhanced Nutrient Removal projects jeopardizes the City's ability to meet the Consent Decree Order deadline and has created a situation where no advantage will result in seeking, nor is it practicable to obtain, competitive bids to repair the deficient work identified by the Department. In addition, given the passing of the Consent Decree Order deadline, the need to retain a supplemental contractor

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Department of Public Works/Office - cont'd
of Engineering and Construction

is of an emergency nature as there is insufficient time to procure the necessary work through the normal competitive bidding process.

**PURSUANT TO ARTICLE VI, §11(e)(i) OF THE BALTIMORE CITY CHARTER,
IT IS HEREBY CERTIFIED NO ADVANTAGE WILL RESULT IN SEEKING NOR
IS IT PRACTICABLE TO OBTAIN COMPETITIVE BIDS.**

ON JULY 6, 2016, WRITTEN NOTICE WAS PROVIDED TO THE DIRECTOR OF FINANCE AND THE INTENT TO USE THE WHITING-TURNER CONTRACTING CO., INC. TO PERFORM THE WORK.

THE DIRECTOR OF FINANCE RECOMMENDED APPROVAL.

AUDITS REVIEWED AND FOUND THE BASIS FOR COMPENSATION CONSISTENT WITH CITY POLICY.

TRANSFER OF FUNDS

<u>AMOUNT</u>	<u>FROM ACCOUNT/S</u>	<u>TO ACCOUNT/S</u>
\$ 4,726,580.00	9956-906526-9549	
Wastewater	Constr. Res. Back	
Revenue Bonds	River Digesters	
5,947,013.00	9956-933001-9549	
Wastewater	Constr. Res.	
Revenue Bonds	Unallocated	
<u>\$10,673,593.00</u>		

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Department of Public Works/Office - cont'd
of Engineering and Construction

\$ 783,345.00	-----	9956-903554-9551-2
		Extra Work
783,345.36	-----	9956-903554-9551-3
		Design
803,442.00	-----	9956-903554-9551-5
		Inspection
7,833,453.64	-----	9956-903554-9551-6
		Construction
<u>470,007.00</u>	-----	9956-903554-9551-9
		Administration
\$10,673,593.00		

A SUPPLEMENTAL PROTEST WAS RECEIVED FROM MARTIN HILDA, P.A. ON BEHALF OF BALFOUR BEATTY INFRASTRUCTURE INC. AND ITS DIVISION OF FRU-CON CONSTRUCTION.

Deputy Comptroller and Clerk: "The Board received the protest for pages 100 to 102 uh -- from Martin Hilda, P.A. on behalf of Balfour Beatty Infrastructure and its Division of Fru-Con Construction, as well as for pages 96 to 99. A protest was also received on behalf of Fru-Con Construction from Martin Hilda, P.A. Those two items, pages 100 to 102, and pages 96 to 99 uh -- will not be heard by the Board. The protestor is not a bidder

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Department of Public Works/Office - cont'd
of Engineering and Construction

on the contracts at issue, and in addition, the protestor is currently disputing the underlying matter through the administrative process and the Courts. Uh -- the appropriate forum to hear those disputes, uh -- are the administrative process and the Courts and not the Board of Estimates. Therefore, pages 100 to 102 and 96 to 99 will not be heard by the Board of Estimates today."

UPON MOTION duly made and seconded, the Board approved and authorized execution of the foregoing Emergency Construction Services Agreement with The Whiting-Turner Contracting Co., Inc. for SC 961, Emergency Construction Services. The Transfer of Funds was approved, **SUBJECT** to the receipt of a favorable report from the Planning Commission, the Director of Finance having reported favorably thereon, in accordance with the provisions of the City Charter.



May 16, 2017

VIA HAND DELIVERY

Board of Estimates
c/o Clerk of the Board
204 City Hall
100 N. Holliday Street
Baltimore, MD 21202

Reference: Sanitary Contract 852R & 845R
Subject: Written Protest
Amendment #1 to Agreement of Engineering and Construction
Project 1402 (Rummel, Klepper & Kahl, LLP)

Dear Members of the Board,

We represent Balfour Beatty Infrastructure, Inc. and its division Fru-Con Construction (hereinafter “BBII/FC”) and as well as its sureties, Travelers Casualty and Surety Company of America and Fidelity & Deposit Company of Maryland (“852 Co-Sureties”) and Travelers Casualty and Surety Company of America, Fidelity & Deposit Company of Maryland, Zurich American Insurance Company, Liberty Mutual Insurance Company and Federal Insurance Company (“845 Co-Sureties”). BBII/FC is the general contractor for the SC 852R and SC 845R projects (“Projects”). BBII/FC and its sureties respectfully submit this Written Protest to the proposed Amendment #1 to Agreement of Engineering and Construction for the reasons set forth below. BBII/FC and its sureties request the opportunity to be heard on this Protest at the May 17, 2017 Board of Estimates meeting. Specifically, BBII/FC and its sureties object to the proposed Amendment #1 because, as more fully set forth below, it will delay the Projects by one year; cost taxpayers unjustified expenses; and, subject BBII/FC and its sureties to unwarranted damage claims from the City, all for work which is unnecessary and not needed.

First it would be prudent to provide the Board with some background.¹ Rummel, Klepper & Kahl, LLP (“RKK”) is the design engineer for both the SC 852R and SC 845R Projects. With respect to the SC 852R Project, RKK failed to properly design the concrete structure, among other things. Specifically, RKK designed a concrete keyway which cracked when subjected to expected loading of the various components of the structure which resulted in significant water leaks. BBII/FC first brought RKK’s deficient design to OEC’s attention in 2012. From that time until August 2016, OEC and RKK blamed BBII/FC for the extensive leaks and the more than 3-year delay to completion of the SC 852R Project. Notably, at some point, the City retained the services of a forensic engineer Rath, Rath, & Johnson (“RRJ”) to review and evaluate RKK’s structural design. In August 2016, the City provided BBII/FC with a copy of RRJ’s report. See **Attachment 1**, RRJ’s August 19, 2016 Report.

¹ BBII can provide a full and detailed explanation of the events that occurred on the Projects concerning this matter upon request.



In its report, RRJ states plainly that RKK's design is severely deficient, flawed and the direct cause of extensive leaks throughout the SC 852R structure.

Joints and Shear Keys

The shear keys at joints within the DNF structure were designed without Code-prescribed capacity to resist the expected shear demands. This improper design has caused joint cracking and subsequent joint leakage.

It is RRJ's opinion that RK&K is responsible for the majority of joint repair costs because of its failure to provide a Code-compliant design to transfer shear forces and control leakage at the keyed joints. Fru-Con should be responsible for a portion of joint repair costs because its poorly constructed joints likely contributed to the severity of the cracking and leaking. A detailed analysis of repair costs and allocations is beyond the scope of this report.

Although RRJ attempts to place some responsibility on BBII/FC, RRJ's statements concerning construction deficiencies were fully addressed in BBII/FC's response. *See Attachment 2*, September 15, 2016 letter, FC-BC-345. In short, any construction deficiencies were remedied during the course of construction, are typical for this type of work, and are not the cause of the extensive leaking of the facility.

On March 9, 2017, RRJ issued a Supplemental Report to report its findings based upon computer modeling RRJ performed on RKK's design. *See Attachment 3*, RRJ's March 9, 2017 Supplemental Report. In its Supplemental Report, RRJ confirmed its earlier findings that RKK's design is severely deficient, flawed, and the direct cause of the leaks. In fact, RRJ concluded that RKK's design would cause the structure to crack and leak irrespective of how it was constructed. Based upon the findings of the City's independent engineer, RKK is fully responsible for the delays associated with the SC 852R Project. Because it is the City's designer that is directly responsible for the delays, the City is improperly withholding nearly \$13 million in liquidated damages from BBII/FC.²

With respect to the Sanitary Contract 961 ("SC 961") element of this Amendment #1 authorization for RKK, the City issued SC 961 purportedly to address rework of alleged field welding deficiencies on the Projects. Any concerns about the integrity of the field welds, though, should be directed at RKK for its design, and not to BBII/FC. BBII/FC performed the field welding work as required and to the standards set forth in the design RKK provided under the respective SC 852R and SC 845R Projects.

² BBII/FC has other time extension requests pending on both Projects directly related to RKK's woefully inadequate design which have been fully documented during the course of the Project, but which have essentially gone unanswered by OEC. Notwithstanding those time extension requests, the City has withheld over \$26 million in liquidated damages from BBII/FC without giving BBII/FC any opportunity to be heard on its claims concerning RKK's deficient design. BBII/FC will make copies of these claims available at the Board's request.



To confirm the integrity of the field welds and the work BBII/FC performed, BBII/FC retained the services of Mr. Walter Sperko, P.E., an expert in welding engineering. Mr. Sperko graduated from the University of Notre Dame in 1968 with a degree in engineering and in 1969 with a bachelor of science in Metallurgical Engineering and Materials Science. Mr. Sperko began his career as a material engineer in 1969 and subsequently founded Sperko Engineering in 1981, providing engineering consulting services to clients in the metal fabrication industry and specifically advising in the areas of welding, metallurgy, manufacturing processes, piping design, inspection, and quality assurance. Mr. Sperko is also a Codes Committee Member for the American Welding Society and on the committee and subcommittees for several American Society of Mechanical Engineers (“ASME”) boards regarding welding and pipe codes and standards. He is well regarded in the welding industry and attains a deep knowledge of the welding processes and procedures for technical adequacy and code conformance.

After his site visit and review of the Contracts and other related documents, Mr. Sperko issued a report concluding that the field welds on the Projects were in complete compliance with the Specification requirements.³ Moreover, Mr. Sperko advised the welds were suitable for their intended purpose as the possibility of leaks in the air pipes were negligible and the possibility of leaks and corrosion at the water pipe joints were minimal (Mr. Sperko’s report is attached hereto as **Attachment 4**). Additionally, BBII/FC successfully pressure tested the pipe systems which required the piping system to withstand 150% of the working pressure at a minimum of 150 pounds per square inch (psi). In other words, OEC’s pursuit of the remedial contract SC 961 and this Amendment #1 to RKK’s on-call contract is a complete waste of money.

Notwithstanding the compliant field welds, but in an effort to allay OEC’s stated concerns regarding the integrity of the field welds, BBII/FC submitted a proposal to the OEC that included installing Depend-o-Lok pipe couplers over each of the “questionable” welds – a “belt and suspenders” approach. These pipe couplers are permitted under the Specifications to join stainless steel pipe. BBII/FC’s Depend-o-Lok solution would cost approximately \$200,000 as compared to the \$1 million OEC wants to give to RKK and the reported \$8 million OEC wants to spend to investigate and replace all of the field welds. Nevertheless, OEC rejected BBII/FC’s proposed solutions without a sound engineering basis to do so (BBII/FC’s proposal is attached hereto as **Attachment 5**).

BBII/FC reemphasizes that the field welds on the Project satisfy the Contract requirements; *i.e.*, RKK’s design. While the welds and piping systems work as intended, any continuing concerns about the integrity of the welds is a design issue for RKK. Moreover, the welds do not adversely impact the plant’s operations or endanger the safety of the workers. There is no possibility of a catastrophic failure occurring through the air or water pipes. There is no engineering reason to spend taxpayers’ dollars on “remediating” field welds that perform and comply with the Specifications. Respectfully, the worst that can happen is a hissing from the air pipes or dripping from the water pipes and BBII/FC has already proposed a solution to that

³ Mr. Sperko did report some minor mismatch of the alignment of two pipes which BBII/FC has since corrected.



possibility which costs significantly less than the RKK Amendment #1 extension and the reported \$8 million for the SC 961 contract. There are no legitimate engineering concerns about the integrity of the welds. Accordingly, any extension of RKK's contract or the SC 961 contract is entirely unnecessary and amounts to economic waste for the City of Baltimore and its taxpayers.

Notably, both the RKK proposed Amendment #1 extension and the report increase in the SC 961 contract will significantly delay the completion of the Projects and unreasonably expose BBII/FC and its sureties to additional damage claims from the City. Currently, both Projects will be ready to receive treatable water June 1, 2017 and to begin performance testing.

For these reasons, BBII/FC and its sureties respectfully request the Board reject the proposed Amendment #1 to RKK's on-call contract.

Sincerely,

/s/ Gregory S. Martin

Gregory S. Martin

GSM/ndb
Enclosure



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APPENDED

- Figures 1 through 10
- Appendix A Documents Reviewed
- Appendix B Resume of Otto C. Guedelhoefer

EVALUATION OF CONCRETE CONSTRUCTION DEFICIENCIES
PATAPSCO WASTE WATER TREATMENT PLANT DENITRIFICATION STRUCTURE
BALTIMORE, MARYLAND

INTRODUCTION

Raths, Raths & Johnson, Inc. (RRJ) has been retained by the City of Baltimore (City), Maryland, to perform an engineering evaluation of issues encountered during the construction of the concrete Denitrification Filter (DNF) structure at the Patapsco Waste Water Treatment Plant (PWWTP) located in Baltimore, Maryland. The scope and findings of RRJ's evaluation are summarized in this report. The information included herein is provided with a reasonable degree of engineering certainty. RRJ's findings are based on the review of documentation made available as of the date of this report and its site observations conducted to date. RRJ reserves the right to amend these findings should additional relevant information be made available.

SCOPE

RRJ was asked to evaluate certain project documents, related analyses, and industry standard reference data relevant to concrete construction defects that were identified during construction of the DNF structure. RRJ evaluated allegations made by the project's designer, RK&K and the project's concrete contractor, Fru-Con Construction, LLC (Fru-Con), regarding the nature and causes of the defects to determine the reasonableness of the allegations. RRJ has reviewed numerous industry references and limited project documentation, including design drawings, specifications, test results, inspection reports, and certain project correspondences. Appendix A contains a listing of all documents reviewed in the preparation of this report. RRJ visited the project site to view the facility on May 9, 2016. As of the date of this report, RRJ has not yet been authorized to prepare a computer software analysis of the structure or to perform destructive examinations at PWWTP to independently verify the stated observations and findings of others. RRJ is prepared to proceed with further analysis and testing if authorized to proceed.

SUMMARY OF FINDINGS

Shear Capacity at Base of Y-Walls

The cracking failure of shear keys at the base of the filter Y-walls represent a potentially hazardous structural defect that should be investigated by RK&K and its findings reported to the City. RK&K should develop appropriate conceptual remediation options and submit to the City for review if its investigation reveals structural deficiencies associated with shear key failure at the base of the Y-walls.

Joints and Shear Keys

The shear keys at joints within the DNF structure were designed without Code-prescribed capacity to resist the expected shear demands. This improper design has caused joint cracking and subsequent joint leakage.

Project records indicate the shear keys at some joints were poorly constructed and did not comply with project quality requirements. Some joints were constructed with excessively rough surfaces, some keys exhibited improperly back-sloped or "dove-tailed" profiles, and at least one joint was constructed with an excessively large key projection. Poor shear key construction has contributed to cracking and leaking at the joints.

It is RRJ's opinion that RK&K is responsible for the majority of joint repair costs because of its failure to provide a Code-compliant design to transfer shear forces and control leakage at the keyed joints. Fru-Con should be responsible for a portion of joint repair costs because its poorly constructed joints likely contributed to the severity of the cracking and leaking. A detailed analysis of repair costs and allocations is beyond the scope of this report.

Common Deficiencies

Based on the provisions of the project specifications, Fru-Con was responsible for remediation work necessary to address common construction installation deficiencies that were identified and addressed during the course of the project. This work included patching areas of voids or poor consolidation, epoxy crack injection, and other typical remediation procedures. Installation and maintenance costs for completed repairs utilizing the CIM 1000 coating/sealant system or other repair products at locations other than joints are the responsibility of the contractor.



Ongoing Maintenance of Joint Repair Materials

The installed CIM 1000 repair coating/sealant system has provided limited duration leakage control but will require substantial ongoing maintenance and inspection to insure the structure maintains reasonable watertightness. Responsibility for sealant/coating maintenance costs related to joint deficiencies should be allocated between RK&K and Fru-Con because of their shared responsibility for the cause of the defects. Maintenance, should it become necessary, of materials installed to repair construction defects at locations other than at joints should be the responsibility of Fru-Con.

DESCRIPTION OF FACILITY

The DNF structure is one part of the "Enhanced Nutrient Removal Facilities" upgrade to the PWWTP facility, which is owned and operated by the City. The RK&K-designed DNF structure is a rectangular reinforced concrete structure with a roofless interior divided by a series of closely spaced concrete walls, oriented north-to-south, creating a total of 34 "filter cells," each measuring approximately 12 feet wide by 100 feet long. Seventeen cells are located to the east of an enclosed equipment and control gallery, and 17 cells are located to the west of the gallery. An enclosed filter gallery that extends the entire length of the structure borders the south end walls of the filter cells. Centered at the north end of the structure is an enclosed portion of the building housing the sludge pump and dissolved air flotation thickener rooms (Figure 1).

The DNF structure incorporates three east-west-oriented contraction joints that divide the concrete filter cells into four segments 24 feet to 26 feet long. North-south contraction joints are spaced at 27 feet, and every third joint in this direction is specified as an expansion joint (Figure 2). Joints are also specified at other locations, including at the base of the walls between adjacent filter cells, referred to as "Y-walls" because of the top of the wall configuration (Figure 3).

BACKGROUND

Concrete Joints

Contraction and expansion joints are customarily incorporated into concrete structures to allow limited movement between adjoining concrete sections, relieving internal stress accumulation which can cause



cracking. Contraction joints are designed to allow adjoining sections to separate or shrink, and are typically constructed with little or no space between the adjacent concrete sections. Expansion joints incorporate compressible filler materials between the adjacent concrete sections, allowing the concrete to shrink or expand relative to adjacent segments. The joint spacing at the DNF structure creates a grid of separate concrete segments roughly 25 feet by 27 feet, considered a reasonable spacing for purposes of minimizing shrinkage cracking. Shear keys, discussed below, were incorporated into the joint design to ensure that the separate concrete segments function together structurally as intended.

Shear Keys, General

Shear keys are interlocking projections incorporated into joints between adjacent sections of cast-in-place concrete. They are intended to allow the structure to expand or contract along or across the joint while restraining movement in one direction across the shear key projection. The shear keys enable waterstops and sealant installed at the joints to function properly and prevent leakage while the structure maintains proper alignment. A cracked or otherwise failed shear key will not have the intended shear capacity. A failed shear key may allow excessive structural deflection and potential damage to joined elements of the structure. A failed shear key may also compromise the waterstop function, enabling uncontrolled leakage at the joints (Figures 4 and 5).

Shear keys are proportioned to provide adequate rigidity and strength to allow the transfer of shear forces across a joint. For the DNF structure, the specified key width was typically T/3 and the key projection length was T/6, where "T" is the thickness of the wall or slab. Per the response issued in February 2011 to RFI 366, the T/6 key projection was revised to a standard 4½ inches for all key locations.

Shear keys at the DNF structure incorporated waterstops, a flexible polyvinyl chloride (PVC) strip material cast into the concrete at joints so that they span the joint, to provide a continuous seal against leakage at the joint. The specified waterstops were 9 inches long and were embedded approximately 4½ inches into the concrete on each side of a joint.

Project History

The contract for construction was awarded to Fru-Con with a notice to proceed on December 29, 2009. Concrete placement began in January 2011. Special Inspection Reports (SIR) were compiled throughout the duration of the concrete construction. The SIRs, based on field quality control inspections of the construction activities, were generated by the City's inspectors and document nonconforming work. SIRs, specifically related to concrete deficiencies, involve inadequate curing before removing forms, improper



curing techniques, installation of reinforcement without shop drawings, improper rebar installation techniques, improper keyway construction, incorrect keyway depth, and voids in the concrete. RRJ has reviewed 36 separate SIRs related to the concrete construction at the DNF that were documented by City inspectors Chuck Biondo, Frank Ziegler, Yomi Salami, and Dave Tornqvist. All SIRs reviewed by RRJ are listed in Appendix A.

Deficiencies involving shear key and joint construction, manifested as leaking joints and cracking at joints, emerged as the primary focus of concern as evidenced by the SIRs. Of the 36 SIRs reviewed by RRJ, a total of 10 (SIRs 42, 44, 47, 49, 54, 62, 63, 64, 106, and 124) are directly related to the joint/shear key construction and joint leakage.

Fru-Con along with its consultants Wiss, Janney, Elstner and Associates, Inc. (WJE), Gibraltar Construction Services (GCS), and Hanskat Consulting Group, LLC (Hanskat) allege that water leakage/cracking deficiencies at joints in the DNF structure are explained by design deficiencies involving inadequate shear key capacity and improper shear key geometry. Fru-Con contends that adequate construction practices were followed during the concreting based on the quantity of defects requiring repair that were discovered after the original concrete placement and compared to typical defect quantities encountered on similar projects. Fru-Con's allegations and contentions are set forth in WJE reports dated October 16, 2012 and August 28, 2014; WJE letters dated March 18, 2013 and June 24, 2013; GCS report dated August 29, 2014; and Hanskat letter report dated September 8, 2014.

RK&K, through its own documentation and that of its consultant, A+F Engineers, Inc. (A+F), has alleged that all concrete deficiencies, including the shear key/joint issues, were caused by Fru-Con's poor construction practices. The RK&K/A+F allegations are set forth in their September 12, 2014 joint presentation, as well as RK&K's August 9, 2013 Hearing Presentation and A+F's November 21, 2014 Supplemental Information Submission.

EVALUATION OF DEFICIENCIES

The damage and subsequent leakage treatment of the DNF concrete structure occurred prior to RRJ's involvement. Currently, the remedial sealant system that was applied to the concrete surface conceals virtually all the joints in the DNF structure. RRJ's evaluation therefore relied upon documentation compiled by others and review of numerous relevant project documents, including the SIRs discussed above, construction RFIs, design drawings and specifications, photographs, miscellaneous correspondences, industry standards, and other miscellaneous reference material.



Due to the predominance of shear key, joint cracking, and leakage issues within the available project documentation, RRJ's evaluation focused largely on those joint deficiencies.

JOINT DESIGN DEFICIENCIES

Shear Key Structural Capacity

Although cracking and leakage at joints was addressed by RK&K and Fru-Con in detail, neither have offered technical commentary or opinions regarding potential capacity deficiencies associated with the shear key defects. Of particular concern to RRJ is the condition at the base of the Y-walls where the shear key is relied upon to prevent out-of-plane lateral wall movement under unbalanced loading conditions. Unbalanced loading conditions could occur when one filter cell is filled with water while an adjacent filter is relatively empty. A crack forming across the base of the shear key will reduce direct shear transfer across the joint, potentially causing unanticipated and hazardous out-of-plane deflections, increased cracking and leakage, and permanent reductions to wall stiffness and shear capacity. The severity of shear capacity reduction is partially a function of the actual crack separation. If the crack is held relatively tightly together, "aggregate interlock" across the crack will likely decrease the deleterious effect. Since the as-built configuration of the Y-walls completely conceals the cracked condition of the shear keys, this potential structural deficiency should be addressed through rational analysis combined with further destructive evaluation and/or installation of supplemental shear reinforcement at the base of the walls.

Waterstop

The keyed joints were designed incorporating 4 $\frac{1}{2}$ -inch key projections and a 9-inch-wide "dumbbell" style PVC waterstop cast directly into the center of concrete key projections to prevent leakage at the joint. Since one-half of the 9-inch waterstop is embedded into the concrete on both sides of the joint, the waterstop terminates at 4 $\frac{1}{2}$ inches deep within the male key, coinciding with the base of the male key. This design makes the joint susceptible to leakage because a crack that forms across the base of the male key can bypass the end of the waterstop, providing a direct leakage path through the joint.

As-designed and installed, the waterstop is centered in the male key, effectively dividing the key into two segments, each with half the effective width of the whole. The total combined shear capacity of two-half-width shear keys is less than that of a single full-width key. In some instances, such as within the Y-walls, the effective width of the shear key on one side of the waterstop (3 $\frac{1}{2}$ inches) is less than the length of the projection (4 $\frac{1}{2}$ inches), indicating a condition where shear keys will be particularly vulnerable to cracking.



Shear Reinforcement

Unreinforced concrete has limited resistance to shear cracking failure, which occurs abruptly and without warning. To address this, customary reinforced concrete design incorporates reinforcing steel located to intersect the plane of expected shear cracking. Embedded steel reinforcement resists the shear force, controlling concrete crack size and propagation. The design for the DNF shear keys incorporated no steel reinforcement crossing the plane of expected shear cracking, which is located at the base of the male keys. The lack of reinforcement crossing the shear plane at the base of the male shear keys has likely exacerbated the size and propagation of cracks originating at those locations and offers no additional shear capacity once the concrete key fails (Figure 6).

Shear Key Geometry Around the Sump Trough

A sump trough present at each filter cell in the DNF interrupts a horizontal keyway installed in the base slab at east-west contraction joints. The design incorporated a U-shaped keyway segment around each sump pit to maintain the continuity of the waterstop embedded in the keyway (Figure 7). The vertical legs of the keyway in the U-shaped segment resist differential movement between adjacent slab sections in the direction parallel to the east-west joint, increasing stress concentrations and the likelihood of shear failure at the base of the male keys at these locations and effectively freezes the joint. During leakage testing, some of these locations reportedly exhibited high rates of leakage prior to repairs.

Consultants for Fru-Con and RK&K offered opposing opinions regarding the amount of differential movement, level of stress, and likelihood that shear key cracking failure would occur at these locations. WJE opined that the shrinkage and thermal effects at this location would cause an overstress condition capable of cracking and failing the vertical portion of the shear keys. A+F opined that the amount of differential movement and stress concentration estimated by WJE was excessive and stresses that were present would not be concentrated at the most vulnerable part of the shear key.

Analyses undertaken by WJE and A+F were based on rational engineering approaches and did not attempt to take into account normal concrete construction tolerances and imperfections that could worsen their results. For example, a small length of the vertical portion of the sump trough key surface with a minor flatness deviation, or "bump," could become overstressed and crack if it contacts the mating key surface before nearby portions of the key come into contact. In this example, only a small amount of differential movement could initiate the cracking failure of the key. As-designed, the configuration of shear keys at the sump troughs contained vulnerabilities that were at least partially responsible for joint failures at these

locations. The extent that poor concrete construction contributed to the sump trough shear key failures cannot be accurately estimated because the conditions are concealed.

Design Capacity

In its report dated August 28, 2014, WJE concluded the unreinforced male keys, specifically for the base slab and Y-walls, appeared to not be properly designed to resist the service loads. Computer modeling performed by WJE determined the demand on the shear keys was greater than 700 psi. The available shear capacity calculated by WJE was 89 psi, using building code provisions set forth in American Concrete Institute (ACI) 318-08, Section 22.5.4. WJE's analysis indicated that the as-designed shear keys would be overstressed by a factor of nearly eight and therefore would likely crack under service conditions.

In its report dated November 21, 2014, A+F reported calculating a shear capacity for the DNF wall shear keys of 805 psi, nearly ten times larger than that calculated by WJE using ACI code provisions. A+F's calculations relied on a specification within the American Association of State Highway and Transportation Officials (AASHTO), *Guide Specification for Design and Construction of Segmental Bridges*, which addresses shear keys between segmental concrete bridge sections.

The geometric properties and loading characteristics of segmental bridge sections are generally not comparable to those incorporated at the keyed walls of the DNF structure. The use of the AASHTO shear capacity calculation method is not customary or proper for use in the design of wastewater treatment plant shear keys. The use of the ACI shear calculation method is the predominant standard for wastewater treatment plant design.

Calculations should have been performed to ensure the capacity of the as-designed male key projections was adequate to control cracking. To date, RRJ has not been provided RK&K calculations demonstrating the design of the shear keys at the DNF structure was sufficient to prevent cracking.

JOINT CONSTRUCTION DEFICIENCIES

Keyway Forming Issues

The contract specifications obligated Fru-Con to provide at least a slight taper to the keyed joints. Male key projections with a back-sloped profile do not comply with the original design intent as outlined in Specification Section 03 00 30 3.1.O:



Forms shall be filleted at all sharp corners, except when otherwise specified in the Contract Documents and shall be given a bevel or draft in the case of all projections.

A "draft" refers to providing a slight taper to the projections to allow for easy removal of the formwork. See Figure 8 for graphic representations of the shear key conditions discussed in this section.

After cracking and leaking started to become problematic, Fru-Con involved WJE to investigate the cause of the leakage. WJE performed investigative openings at the sump walls of Filters #4 and #6, which revealed a "dovetailed" keyway condition in which the sides of the keyway were slightly back-sloped. RRJ's review found no other documentation indicating that the "dovetail" condition was present at other locations. Subsequent reports assume the majority of keyways improperly incorporated the "dovetail" configuration, which would have likely contributed to the cracking and leaking observed. Keyed joints that were back-sloped by Fru-Con did not conform to Specification Section 03 00 30 3.1.O.

Fru-Con issued RFI 037 on February 3, 2010, prior to the start of concrete placement, proposing the use of a tapered keyed joint. The proposal was accepted by RK&K on February 11, 2010. It is unclear why RFI 037 was accepted by RK&K since its specification (Section 03 00 30 3.1.O) already required the use of drafts at keyways.

In a letter report dated April 3, 2013, Fru-Con states that they did not provide a tapered key and were under no contractual obligation to do so. This statement was reiterated by Mike Fisher of Fru-Con during the Division Chief's Level Hearing on August 9, 2013. However, in later reports, Fru-Con stated that the majority of keyways were tapered in accordance with RFI 037. Fru-Con's later claim was corroborated by Mr. Biondo who reported that the tapered keyway configuration was typical of all joints in the facility. RRJ observed two tapered vertical keyways on the south wall between the walkway and the filters during its site visit.

Although the documentation available to RRJ indicates that tapered keyways were provided at the majority of the joints, it is not clear how many of these joints were properly formed. SIR 42 provides photographs from the City inspector showing the female side of a horizontal keyed joint that appears to have been gouged out of the plastic concrete after placement. SIR 44 describes completed walls 89 through 93 with nonconforming keyways having a similar rough profile. Fru-Con responded to SIR 42 by issuing RFI 037A, which proposed leaving the tapered section of the gouged joint with a rough finish but grinding the edges at the top of the key to provide smoother surfaces. Fru-Con's proposed repair approach was accepted by RK&K on October 13, 2011. In its response to SIR 42, Fru-Con indicated that a wood key-forming insert would be provided to properly form all subsequent wall keyways. However, Robert Nash (Senior Project

Manager for the City) reported that the majority of keyways were constructed without incorporating proper key-forming inserts in the formwork. Figure 9 depicts a key-forming insert incorporated into concrete formwork.

Normal concrete shrinkage and thermal expansion/contraction causes movement of mating parts at joints. If a joint is not properly formed, or has been subject to gouging, the relative displacement of the mating parts may cause interlocking, excessive stress, and cracking between the male and female keys. Attempts to remediate improperly formed or gouged keys using mechanical methods can cause impact damage to the near-surface concrete, increasing leakage potential by opening additional pathways within the concrete for liquids to bypass the embedded waterstop.

The project documents reveal evidence of both improper joint construction, resulting in rough-formed key surfaces and proper construction practices using forms and inserts to provide smooth, tapered joints. No information identifying and quantifying joints that were improperly formed has been discovered.

Shear Key Projection

SIR 106 indicates a Y-wall vertical keyway was observed to have a male key projection of 7¹/₄ inches, significantly larger than the uniform key projection of 4¹/₂ inches accepted through RFI 366. RK&K accepted the joint stating that more problems would be created if a repair was attempted. The large projection of this shear key causes increased forces at its base and an increased likelihood of cracking. RK&K required Fru-Con to seal this joint with CIM 1000.

COMMON DEFICIENCIES

Numerous commonly occurring concrete construction deficiencies involving concrete placement, consolidation, curing, and formwork accuracy were identified during the construction of the DNF structure. Common concrete construction deficiencies on large projects are generally accepted if repaired to be in compliance with the project specifications. Section 03 30 00 3.30.A.2 of the DNF construction specifications states, "Completed concrete work, which fails to meet one or more requirements, but which has been repaired to bring it into compliance will be accepted without qualification." Project documents reviewed by RRJ indicate that where common construction defects were identified, repairs were performed to achieve compliance with the project specifications.

LEAKAGE REMEDIATION

Widespread leakage issues occurring throughout the DNF structure are evidenced by the project documentation and by observations of the repaired structure. Mr. Biondo reported to RRJ that cracking and leaking could be found essentially everywhere in the facility. During RRJ's site visit, repairs utilizing polyurethane-based CIM 1000 coating/lining system were observed along every joint in the DNF structure. In some locations, large portions of the filter walls were also coated with the CIM material. Large-scale application of coating to wall surfaces likely indicates that the concrete substrate was not adequately watertight and, therefore, prone to leakage due to cracked, voided, poorly-consolidated, or otherwise defective concrete.

FINDINGS

Shear Capacity at Base of Y-Walls

The cracking failure of shear keys at the base of the filter Y-walls represents a potentially hazardous structural defect that should be promptly investigated by RK&K and its findings should be reported to the City expediently. Should its investigation reveal structural deficiencies associated with shear key failure at the base of the Y-walls, RK&K should develop appropriate conceptual remediation options and submit to the City for review.

Joint and Shear Keys

The shear keys at joints within the DNF structure were designed without Code-prescribed capacity to resist the expected shear demands. This improper design has caused joint cracking and subsequent joint leakage.

Project records indicate the shear keys at some joints were poorly constructed and did not comply with project quality requirements. Some joints were constructed with excessively rough surfaces, some keys exhibited improperly back-sloped or "dove-tailed" profiles, and at least one joint was constructed with an excessively large key projection. Poor shear key construction has contributed to cracking and leaking at the joints.

Common Deficiencies

Based on the provisions of the project specifications, Fru-Con was responsible for remediation work necessary to address common construction installation deficiencies that were identified and addressed during the course of the project. This work included patching areas of voids or poor consolidation, epoxy crack injection, removal, and other typical remediation procedures. Installation and maintenance costs for completed repairs utilizing the CIM 1000 coating/sealant system or other repair products at locations other than the joints are the responsibility of the contractor.

RECOMMENDATIONS FOR REMEDIATION

Ongoing Maintenance of Joint Repair Materials

The installed CIM 1000 repair coating/sealant system has temporarily provided leakage control but will require substantial ongoing maintenance and inspection to insure the structure maintains reasonable watertightness.

Supplemental Shear Reinforcement for the Base of the Y-Walls

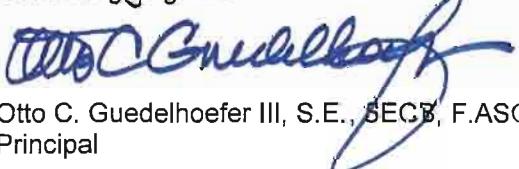
If the review by RK&K determines the structural deficiency at the base of the Y-walls requires remediation, RRJ anticipates that externally anchored wall base supports would provide a solution that does not require demolition of existing concrete construction. Figure 10 depicts a conceptual repair to provide supplemental shear capacity at the base of the Y-walls.

Respectfully submitted,

RATHS, RATHS & JOHNSON, INC.



W. Joseph Macicak, S.E., P.E. (IL)
Consulting Engineer



Otto C. Guedelhoefer III, S.E., SECB, F.ASCE
Principal

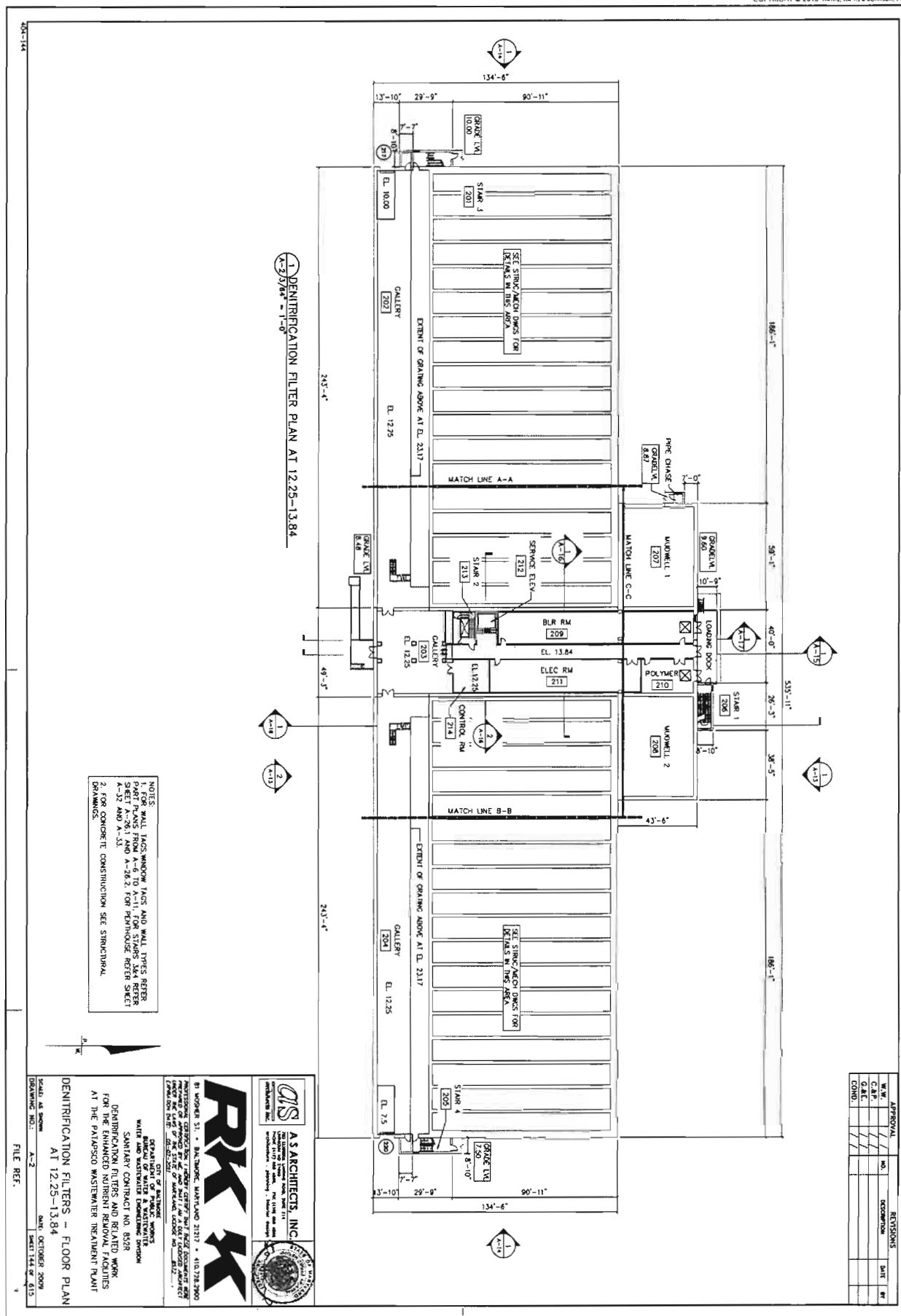
August 19, 2016

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FIGURES 1 THROUGH 10





23



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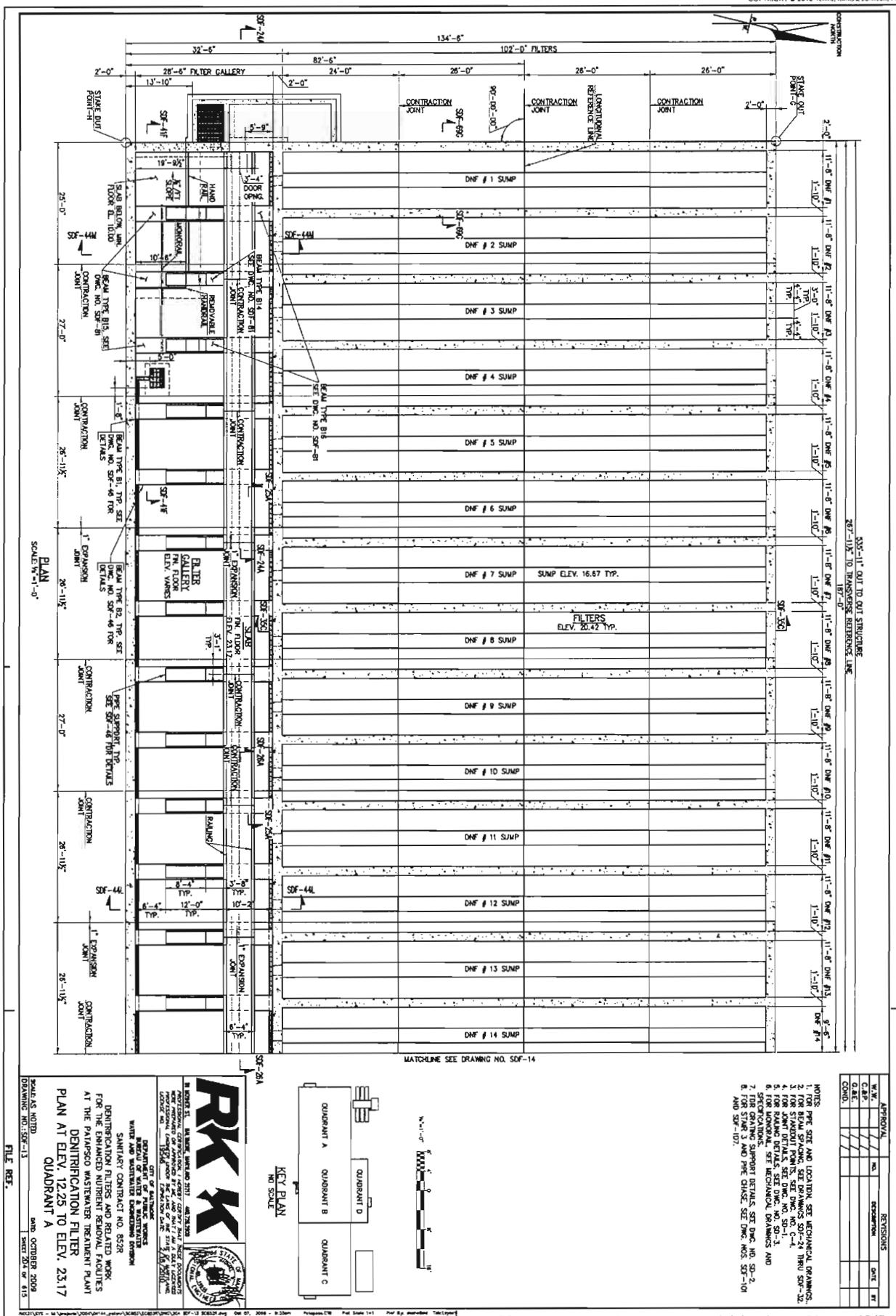
DENITRIFICATION FILTER PLAN
PATAPSCO WASTE WATER
TREATMENT PLANT

MARYLAND PRINCIPAL.
CHECKED BY:

08-19-16
N.T.S.
14099
BAG
OCG
WIM

FIGURE

1



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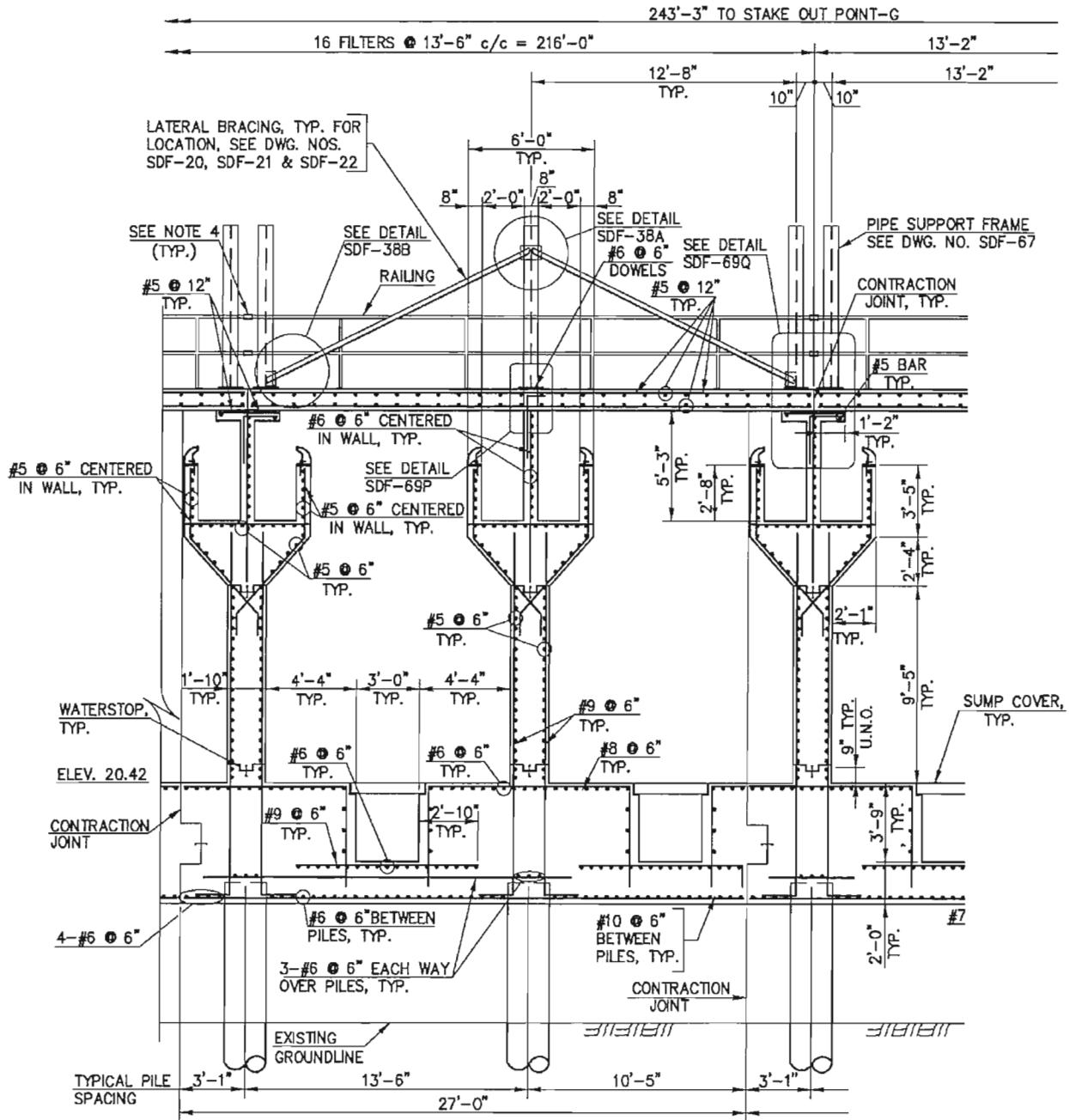
DENITRIFICATION FILTER PLAN
PATAPSCO WASTE WATER
TREATMENT PLANT

BALTIMORE

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TER	SCALE:	N.T.S.
	JOB #:	14099
MARYLAND	DRAWN BY:	BAG
	PRINCIPAL:	OCG
	CHECKED BY:	WJM

FIGURE

2



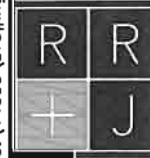
THE UNDERLYING DRAWING IS FOR REFERENCE ONLY:

FROM DRAWINGS BY: RK&K

SHEET: SDF-36

DATED: OCTOBER 2009

ISSUED FOR:



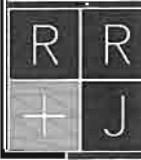
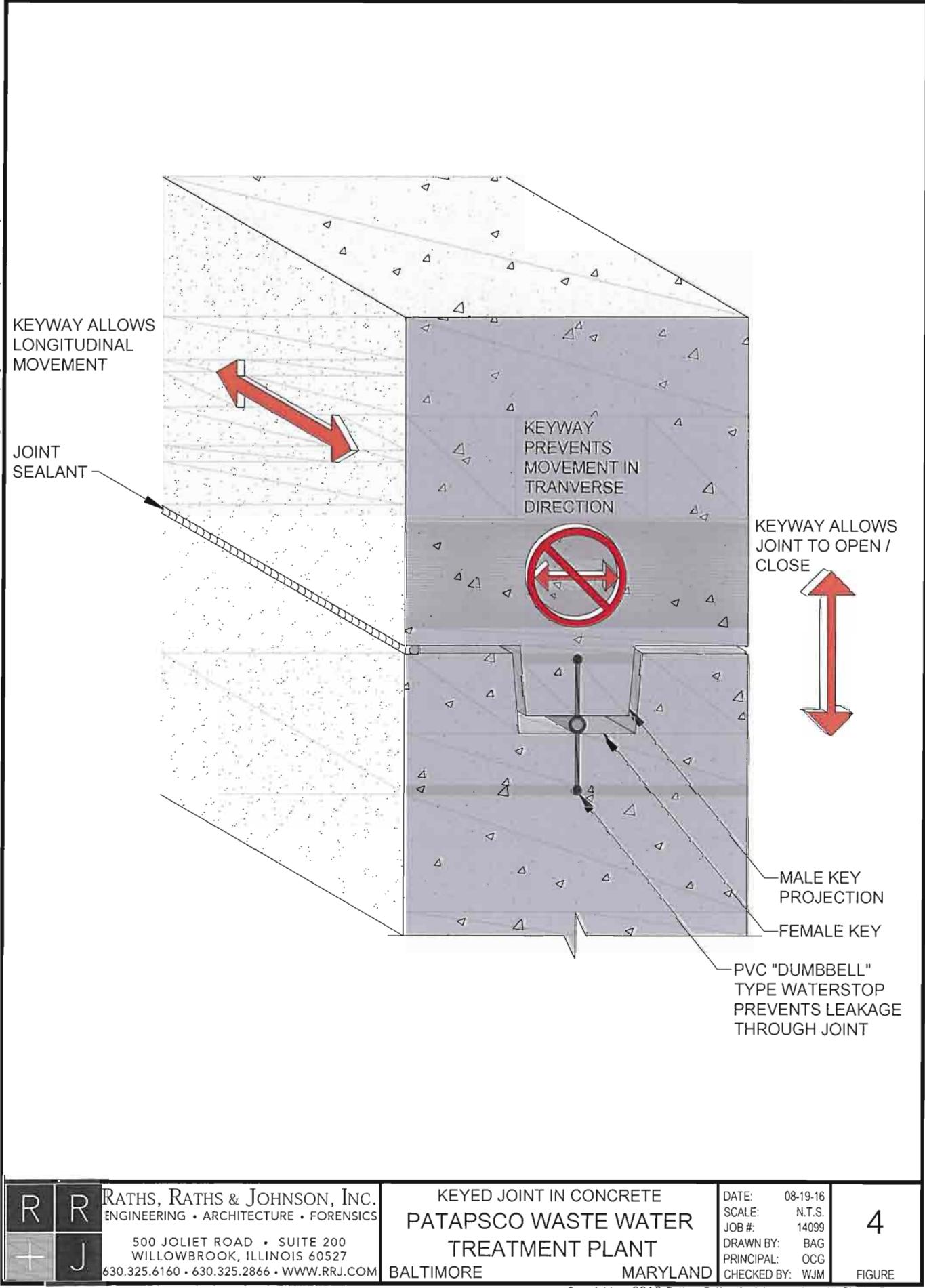
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DENITRIFICATION FILTER SECTION
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3



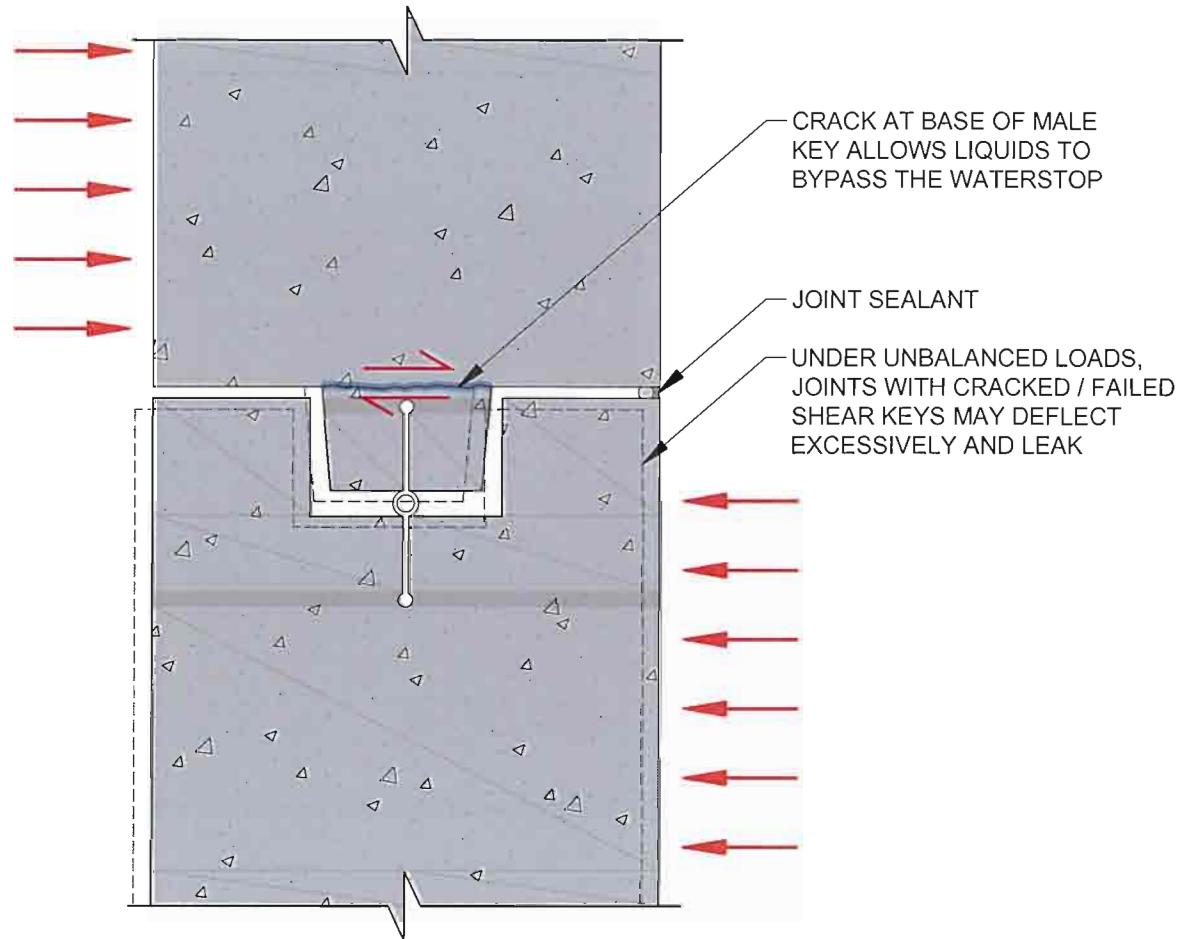
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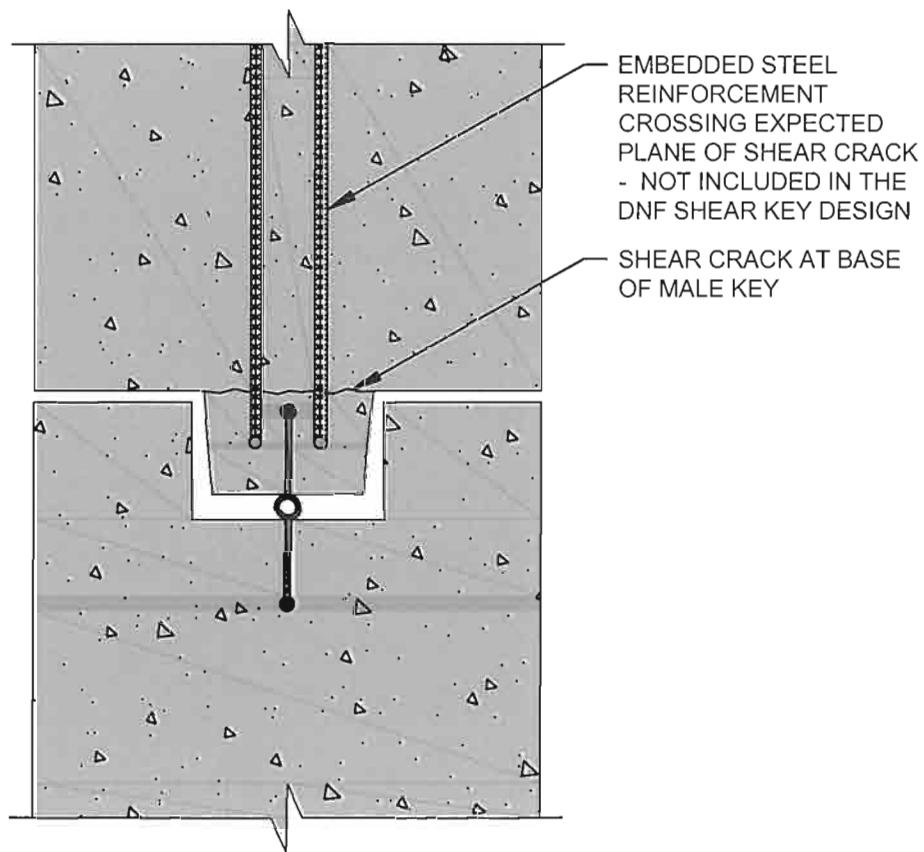
KEYED JOINT IN CONCRETE
PATAPSICO WASTE WATER
TREATMENT PLANT
BALTIMORE MARYLAND

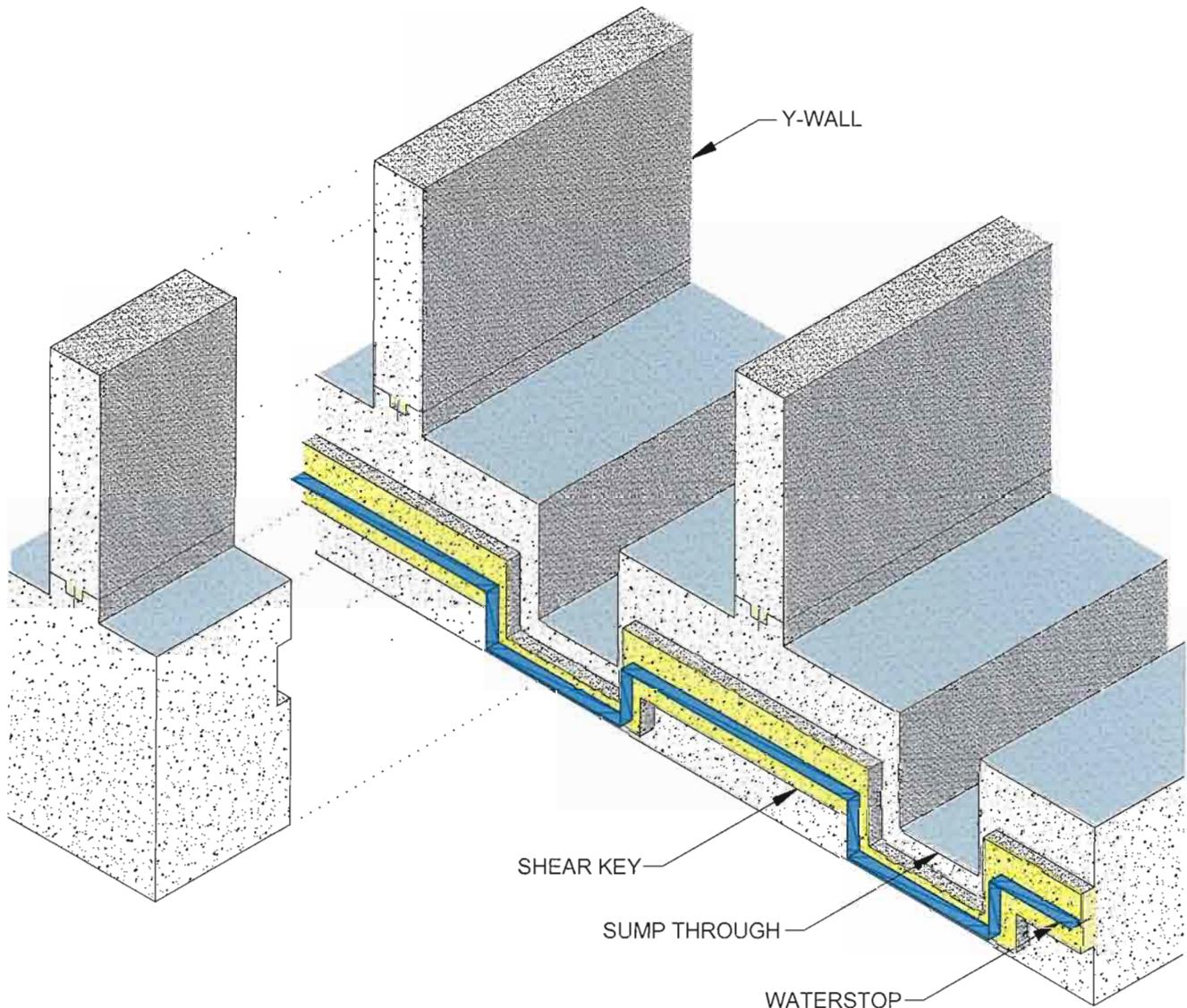
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CHECKED BY: WJM

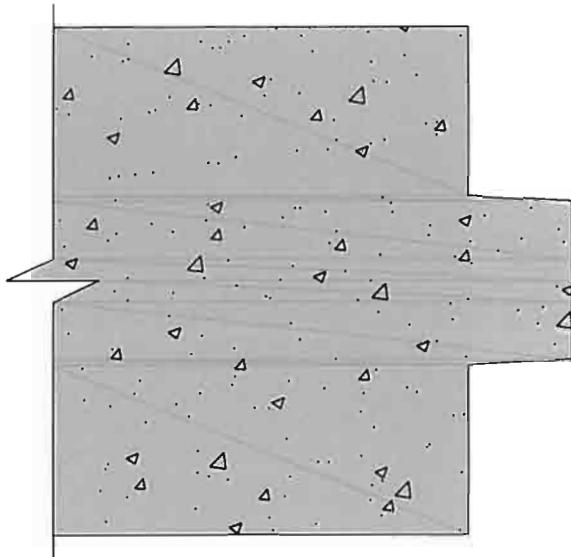
4

FIGURE

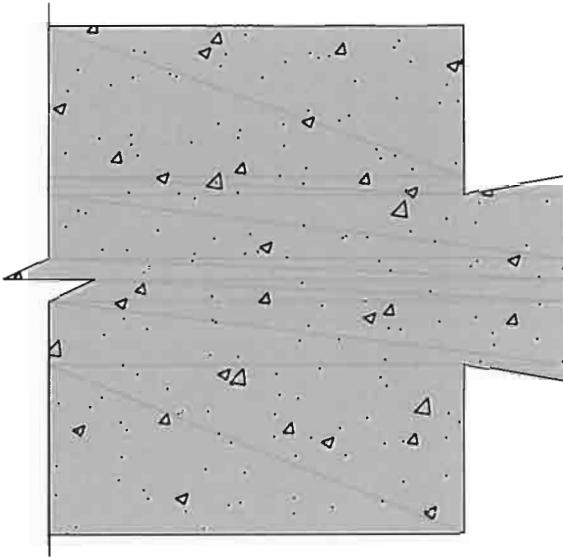




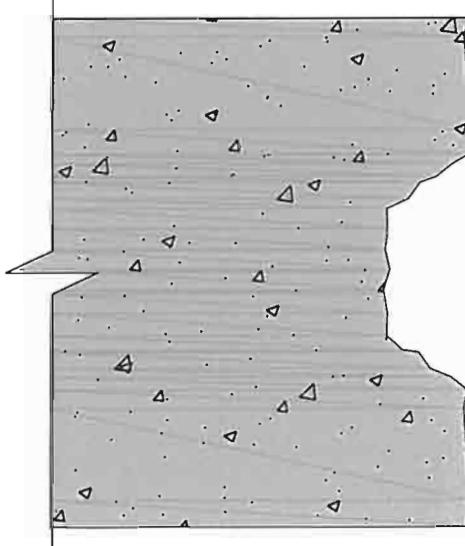




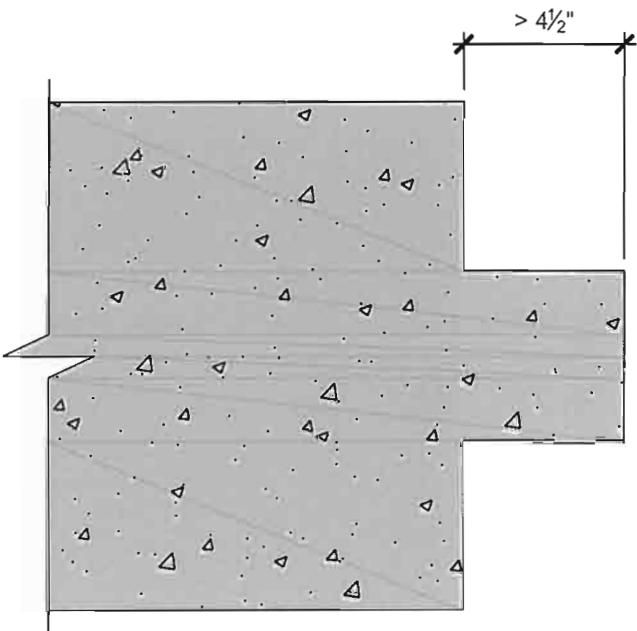
A. MALE SHEAR KEY WITH PROPERLY FORMED "DRAFT" INCORPORATED TO AID IN FORM REMOVAL



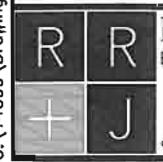
B. MALE SHEAR KEY WITH IMPROPER BACK-SLOPED OR "DOVE-TAILED" PROFILE



C. ROUGH-FORMED OR "GOUGED" FEMALE KEY



D. EXCESSIVE KEY PROJECTION



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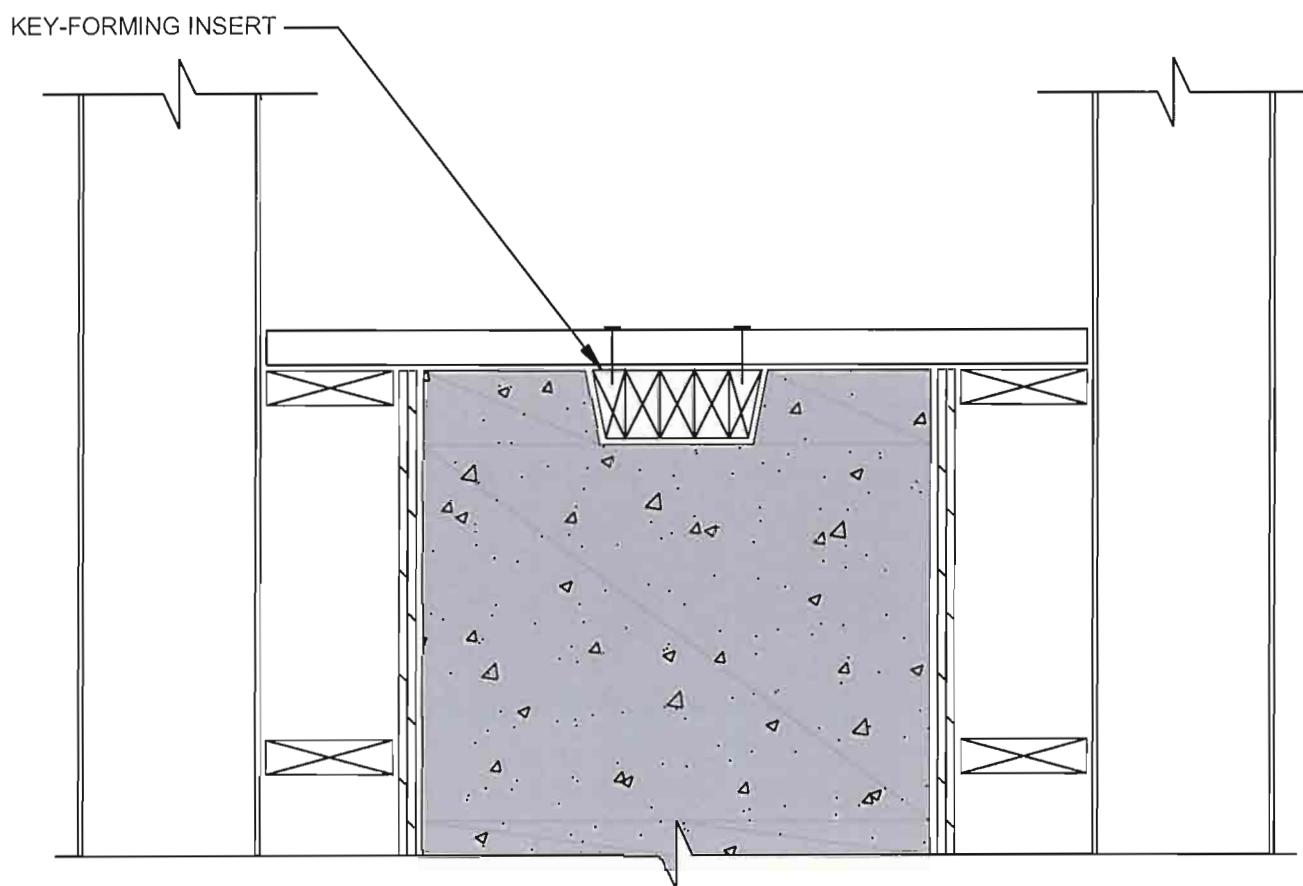
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AS-BUILT SHEAR KEYS
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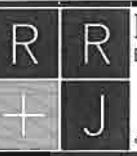
DATE: 08-19-16
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8

FIGURE



CONCEPTUAL VIEW OF CONCRETE FORMWORK INCORPORATING
"KEY-FORMING INSERT" TO FORM A TAPERED FEMALE KEY



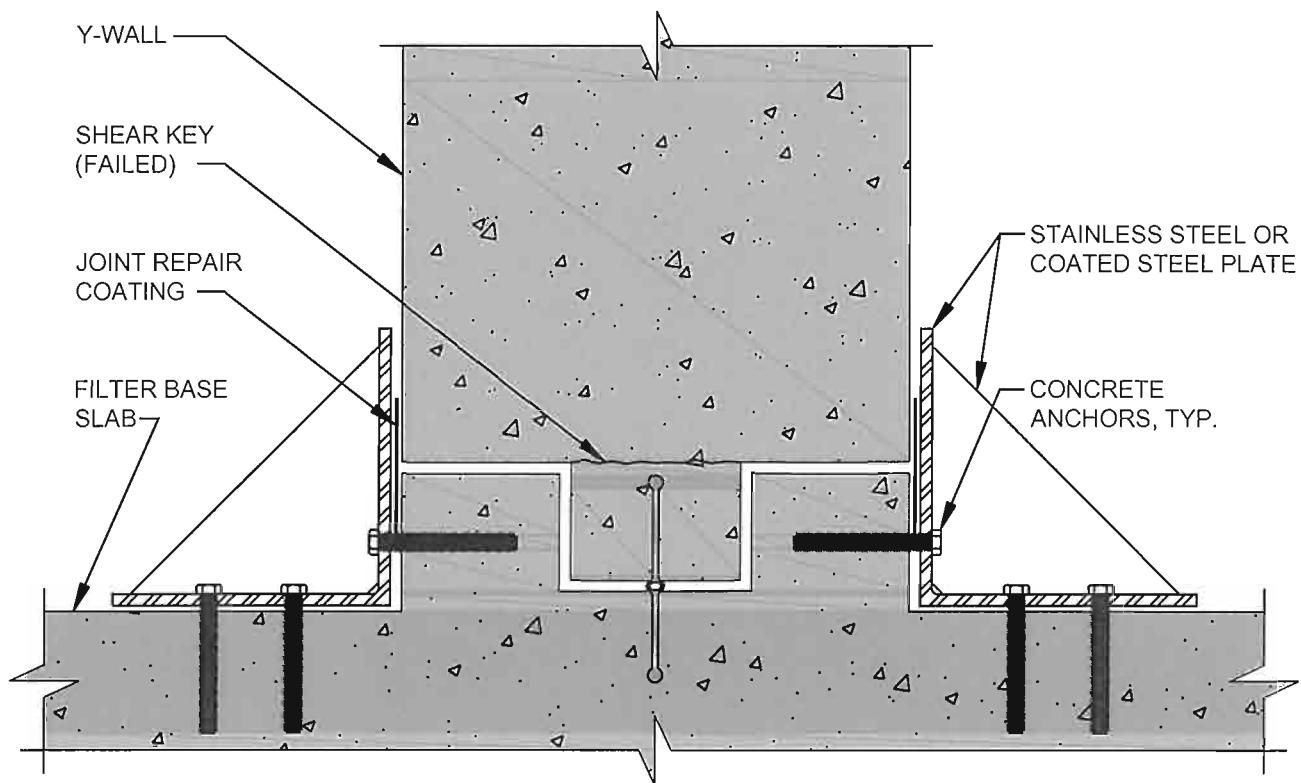
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CONCEPTUAL KEY FORMWORK
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9

FIGURE



CONCEPTUAL REPAIR
SUPPLEMENTAL SHEAR
REINFORCEMENT AT BASE OF Y-WALL



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CONCEPTUAL REPAIR
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BALTIMORE MARYLAND

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SCALE: N.T.S.
JOB #: 14099
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10

FIGURE

APPENDIX A

Documents Reviewed



DOCUMENTS REVIEWED

- RKK Contract Drawings Volumes 1 through 4 dated October 2009
- RKK Addendum No. 1 dated October 23, 2009
- RKK PowerPoint presentation dated September 12, 2014
- A+F formal report dated November 21, 2014 and all attachments
- RKK Structural Calculations Volume No. 1 dated November 2010
- City filter leak repair letter dated February 20, 2013 and all attachments
- City concrete claims outline document dated September 12, 2014 and all attachments
 - Attachment A: Concrete pre-construction meeting agenda dated September 23, 2010
 - Attachment B: Various special inspection reports (SIRs)
 - Attachment C: Various formal letters and correspondence from the City, RKK, and Fru-Con
 - Attachment D: Photographs
- Inspection photographs received during site visit on May 9, 2016
- Fru-Con filter joint repairs letter dated October 17, 2012 and all attachments
- Fru-Con filter joint waterstop submittals dated June 8, 2012, June 27, 2012, and July 9, 2012 and RKK response
- Fru-Con filter joint repairs cost proposal letter dated February 4, 2013 and all attachments
- Fru-Con appeal of claim denial letter dated March 18, 2013
- Fru-Con additional support documentation letter dated Apr. 3, 2013 and attachment
- Fru-Con formal report dated September 10, 2014 and all attachments
 - Ex. A: Concrete specific special inspection reports (SIRs)
 - Ex. B: Leak specific SIRs
 - Ex. C: Photographs
 - Ex. D: City response to request for information (RFI) no. 37A dated October 13, 2011
 - Ex. E: RKK response to RFI no. 37A dated October 13, 2011
 - Ex. F: Gibraltar Construction Services expert report dated August 29, 2014
 - Ex. G: RFI 366 dated January 31, 2011
 - Ex. H: WJE letter report dated August 28, 2014
 - Ex. I: Hanskat Consulting Group letter report dated September 8, 2014
- Fru-Con appeal letter to Bureau Head dated October 28, 2014.
- WJE letter report dated October 16, 2012
- WJE letter report dated August 28, 2014
- WJE letter report dated October 27, 2014
- American Concrete Institute, "Standard Specifications for Tolerances for Concrete Construction and Materials" (ACI 117-90) and Commentary (ACI 117R-90)
- American Concrete Institute, "Joints in Concrete Construction" (ACI 224.3R-95)
- American Concrete Institute, "Building Code Requirements for Structural Concrete Structures" (ACI 318-05) and Commentary (ACI 318R-05)
- American Concrete Institute, "Code Requirements for Environmental Engineering Concrete Structures" (ACI 350-01) and Commentary (ACI 350R-01)
- American Concrete Institute, "Tightness Testing of Environmental Engineering Concrete Structures" (ACI 350.1-01) and Commentary (350.1R-01)
- American Concrete Institute, "Design Considerations for Environmental Engineering Concrete Structures" (ACI 350.4R-04)

- RFI 366 correspondence
 - RFI 366 issued by Fru-Con on January 31, 2011
 - RKK response to RFI 366 dated February 23, 2011
 - City response to RFI 366 dated February 23, 2011
- Filter movement and defects photographs provided by the City from 2012 and 2013 on July 16, 2015
- Various correspondence between Fru-Con and City regarding CIM 1000 repairs
- Pre-bid contractor questions and answers
- Contract specifications
- AASHTO Guide Specifications for Design and Construction of Segmental Concrete Bridges, 1999/2003 Interim
- SIRs reviewed by RRJ

SIR 33	Unauthorized Work Performed	June 30, 2011
SIR 38	Rust Stains on Concrete	August 8, 2011
SIR 40	Improper Form Removal	September 22, 2011
SIR 41	Unauthorized Work Performed	October 5, 2011
SIR 42	Non-Conforming Work Performed	October 11, 2011
SIR 44	Non-Conforming Work Performed	November 14, 2011
SIR 45	Improper Curing of Cylinders	November 21, 2011
SIR 47	Water Leakage at Filters	November 29, 2011
SIR 49	Contraction Joint Excessive Movement	December 2, 2011
SIR 54	Water Leakage at Filters	December 14, 2011
SIR 60	Concrete Defects	February 7, 2012
SIR 62	Influent Trough Cracks	March 1, 2012
SIR 63	Contraction Joint Concerns	March 2, 2012
SIR 64	Water Leakage at Filters	March 16, 2012
SIR 66	Improper Curing Techniques	April 9, 2012
SIR 74	Improper Curing Techniques	July 15, 2012
SIR 75	Improper Curing Techniques	July 25, 2012
SIR 76	Non-Conforming Repair Work Performed	August 1, 2012
SIR 77	Non-Conforming Work Performed	August 7, 2012
SIR 80	Non-Conforming Work Performed	September 20, 2012
SIR 90	Anchor Bolts Placed through CIM Repair	November 7, 2012
SIR 102 (Revised)	Inadequate Concrete Cover	March 15, 2013
SIR 106	Non-Conforming Work Performed	April 3, 2013
SIR 114	Water Leakage through Electrical Conduit	May 9, 2013
SIR 116	Non-Conforming Work Performed	May 21, 2013
SIR 124	Water Leakage at Filters	August 2, 2013
SIR 146	Improper Grouting Procedure	December 13, 2013
SIR 148	Cracking of Roof Sloped Toping	January 2, 2014
SIR 164	Lack of Productivity in Applying CIM Repairs	March 21, 2014
SIR 168	Leakage in the Mudwells	April 17, 2014
SIR 173	Unauthorized Repair Performed	June 20, 2014
SIR 174	Inadequate Repair	June 24, 2014
SIR 175	Inadequate Repair	June 24, 2014
SIR 177	Inadequate Repair	July 1, 2014
SIR 179	Inadequate Repair	July 9, 2014
SIR 183	Inadequate Repair	July 22, 2014

APPENDIX B

Resume of Otto C. Guedelhoefer



OTTO C. GUEDELHOEFER, S.E., F.ASCE

Principal



+CONTACT

Raths, Raths & Johnson, Inc.
500 Joliet Road, Suite 200
Willowbrook, IL 60527
Phone: 630.325.6160
Email: ocg@ix.netcom.com

Chuck Guedelhoefer is a Licensed Structural Engineer and Principal at Raths, Raths & Johnson, Inc. An accomplished structural engineer with over 46 years of experience, he has specialized in structural engineering and forensics, field and laboratory testing, design and construction peer view, quality assurance programs, and litigation consulting.

During his 37-year career as a key leader of RRJ, he has directed hundreds of investigations for many high-profile collapses and structural failures, and complex investigations related to capacity, deterioration, and repair with multiple disputes involving a variety of complaints.

A significant portion of Mr. Guedelhoefer's work has involved the evaluation and repair of distressed or aged structures. These projects have required designs of specialty forming and shoring systems and innovative repair solutions.

An expert witness, he has assisted owners, contractors, architects, engineers, insurance companies, governmental agencies, and attorneys providing legal strategy, litigation support, consultation on the use of experts, and deposition and trial testimony on numerous matters.

Previously, he served as Manager of Structural Engineering Services for a global forensic consulting firm for ten years. His projects involved investigations to determine failure causation or collapse, rehabilitation, or unique original design, and expert witness. He managed a variety of research, testing, design, and investigation projects, including major collapses and hundreds of building and bridge performance evaluations.

■ EDUCATION

Master of Science in Civil Engineering
Oklahoma University

Bachelor of Science in Civil Engineering
Purdue University

■ REGISTRATIONS

Licensed Structural Engineer in Illinois

Licensed Professional Engineer in Alaska, Colorado, Connecticut, Delaware, District of Columbia, Florida, Guam, Hawaii, Indiana, Kentucky, Maryland, Michigan, Minnesota, Mississippi, New Jersey, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, U. S. Virgin Islands, Virginia, West Virginia, and Wisconsin

National Council of Examiners for Engineering and Surveying (NCEES)

Structural Engineering Certification Board (SECB)

■ PROFESSIONAL AFFILIATIONS

American Concrete Institute (ACI)

American Institute of Steel Construction (AISC)

American Society of Civil Engineers (ASCE), Fellow,
Forensic Engineering Division, FED Committee on
Publications, Associate Editor

Illinois Society of Professional Engineers / National
Society of Professional Engineers (ISPE / NSPE)

International Code Council (ICC)

Structural Engineers Association of Illinois (SEAOL)

Structural Engineering Institute (SEI)



OTTO C. GUEDELHOEFER, S.E., F.ASCE

Principal

■ PUBLICATIONS

"Case Study: The Critical Role of Sealants in the Repair of a Fluid-Applied Roofing Membrane," *Durability of Building and Construction Sealants and Adhesives*: 5th Volume, W.J. Macicak, O.C. Guedelhoefer, K.D. Magnuson, and D.M. VanDommelen, ASTM STP 1583, L. Carbay and A.T. Wolf, Eds., ASTM International, West Conshohocken, PA 2015

"Using an Alternative Method of Analysis to Evaluate Punching Shear Capacity in Existing Pre-Tensioned Shear Reinforced Concrete Floor Slabs," Proceedings of the 2015 Structures Congress, Portland, OR, R.W. Kritzler, B.T. Lammert, W.J. Macicak, and O.C. Guedelhoefer, April 24, 2015

"Repair and Completion of a Damaged Cooling Tower," ASCE Journal, submitted for publication, P.L. Gould and O.C. Guedelhoefer, May 18, 1988

"To Bond or Not to Bond," *ACI Concrete International*, O.C. Guedelhoefer and A.T. Krauklis, August 1986

Comments on "Spandrel Beam Behavior and Design," *PCI Journal*, A.T. Krauklis and O.C. Guedelhoefer, V.G. Naidu, and C.H. Raths, September-October 1985

"Evaluation of Performance by Full-Scale Testing," ASTM International Symposium on Full Scale Testing of Structures, Philadelphia, PA, April 2, 1979; ASTM STP 702, O.C. Guedelhoefer and J. R. Janney, April 1980

"Minicomputers in Full-Scale Structural Testing," *Journal of the Technical Councils of ASCE*, Vol. 105, No. TC1, pp.103-111, O.C. Guedelhoefer and S.G. Pinjarkar, April 1979

"Structural Design of Tall Concrete and Masonry Buildings," Chapter A38 - Model Analysis, Contributor March 1976

■ PRESENTATIONS

"Securing the Site and Preserving the Evidence / Dealing with OSHA and Other Government Agencies," American Bar Association Litigation Section, Regional CLE Workshop: Handling a Construction Failures Case O.C. Guedelhoefer, Panelist, Philadelphia, PA, June 3, 2016

"Analyzing Causation, Proposing a Fix, Economic Waste, Betterment and Related Damages Issues," American Bar Association Litigation Section, Regional CLE Workshop: Handling a Construction Failures Case, O.C. Guedelhoefer, Panelist, Philadelphia, PA, June 3, 2016

"When 1 Test Is Worth More Than 10 Expert Opinions," Construction SuperConference, O.C. Guedelhoefer, B.T. Lammert, and Louis Cairo, San Diego, CA, December 7-9, 2015

"Navigating Construction Failures," 2014 Construction SuperConference, Las Vegas, NV, Panelist, Dec. 2014

"Construction Failures and Defects - Parking Garages," Mealey's Construction Litigation Conference, May 20, 2008

"Engineering Disasters - 9 Rosemont Collapse," History Channel, Modern Marvels, December 10, 2004

"Current Trends in Failures of Civil Engineering Structures," ASM Materials Week '94, Seminar on Analysis of Civil Structural Failures, October 5, 1994

"Management & Organization of Structural Failure Investigations," University of Wisconsin-Extension, Madison, WI, November 3 and 4, 1987



OTTO C. GUEDELHOEFER, S.E., F.ASCE

Principal

■ PRESENTATIONS

"Typical Recurring Problems with Parking Structures," ASCE Structures Congress, Chicago, IL, September, 1985

"Observations Made During the Repair of a Tornado-Damaged Cooling Tower," International Symposium on Natural-Draught Cooling Towers, University of Bochum, Bochum, West Germany, September 5-7, 1984

"Methods for Strength Evaluation of Distressed Structures," ASCE Conference, St. Louis, MO, October 26-27, 1981

"Project Management," Evaluation of Structural Failures, University of Wisconsin-Extension, Madison, WI, May 12, 1983

"Repair of Cracks in Structural Concrete," American Concrete Institute Convention, Detroit, MI, O.C. Guedelhoefer and R.J. Rioux, September 23, 1982

"Stability Investigation Based on In Situ Geometry," ASME/ASCE Conference, Boulder, CO, P.L. Gould and O.C. Guedelhoefer, June 22, 1981

"Recurring Causes of Construction Failures," ASCE Conference, New York, NY, T.L. Rewerts, R.J. Kudder, and O.C. Guedelhoefer, May 1981

"Evaluation and Repair of Tornado-Damaged Cooling Tower," American Concrete Institute (ACI) Convention, O.C. Guedelhoefer, P.L. Gould, and A.L. Parme, April, 1981

"Evaluation of Performance by Full-Scale Testing," ASTM International Symposium on Full Scale Testing of Structures, Philadelphia, PA, O.C. Guedelhoefer and J. R. Janney, April 2, 1979

"Instrumentation & Techniques of Full-Scale Testing of Structures," American Concrete Institute (ACI) Convention, Washington, D.C., October 1979

"Correlation of Load Testing With Design," O.C. Guedelhoefer and C. H. Rath, May 17, 1979

"Consequences & Reasons for Breakdown of Quality Assurance," ASCE Georgia Section Annual Meeting, Atlanta, GA, December 1, 1978

"Full-Scale Testing of an Elevated Rapid-Transit Structure," ASCE Convention, Pittsburgh, PA, O.C. Guedelhoefer, J.R. Janney, and D. Boggs, April 24-28, 1978

"Practical Applications of Minicomputers in Full-Scale Structural Testing," ASCE National Convention, San Francisco, CA, O.C. Guedelhoefer and S.G. Pinjarkar, October 17-21, 1977

"Dynamic Response Method for Structural Evaluation," ASCE Convention, San Francisco, CA, O.C. Guedelhoefer, J.R. Janney, and J.F. Wiss, October 17-21, 1977

"Computer Applications in Full-Scale Structural Testing," ASCE Specialty Conference in Structural Engineering Practice, Montreal, Canada, O.C. Guedelhoefer, R.J. Kudder, and S.G. Pinjarkar, October 6-7, 1977

"Static Load Testing of Concrete Structures in Accord with U. S. Building Code," International Symposium on Testing In Situ of Concrete Structures, Budapest, Hungary, O.C. Guedelhoefer, J.R. Janney, and J.M. Hanson, September 12-15, 1977



WWW.RRJ.COM

OTTO C. GUEDELHOEFER, S.E., F.ASCE

Principal

■ PRESENTATIONS

"The Use of Experimental Stress Analysis Techniques with Civil Engineering," Society for Experimental Stress Analysis, Indianapolis, IN, October 1974

"Benefits of Model Studies to the Design Process," ASCE Structural Meeting, Cincinnati, OH, O.C. Guedelhoefer, A. Moreno, and J.R. Janney, April 1974

"Small-Scale Models of Buildings for the Study of Structural Behavior," Symposia/Engineering Study, April 1969

ATTACHMENT 2



September 15, 2016

Mr. Azzam Ahmad, P.E.
Chief Engineer
Office of Engineering and Construction
Room, 900, Abel Wolman Building
Baltimore, MD 21202

Fru-Con Construction, A Division of
Balfour Beatty Infrastructure, Inc.
3601 Leo Street
Baltimore, MD 21226

410 355 2451
www.bblius.com

Attention: *Azzam Ahmad, P.E.*

FC-BC-345

Reference: Sanitary Contract 852R

Subject: BBII/Fru-Con's Filter Leak Claim and RKK's Deficient Design

Dear Mr. Ahmad:

After four (4) years of struggling to contend with RKK's deficient design, BBII/Fru-Con received Raths, Raths, & Johnson, Inc.'s ("RRJ") "Evaluation of Concrete Construction Deficiencies." In his letter of August 25, 2016, Thak Bakhru requested BBII/Fru-Con and RKK provide responses to RRJ's report by September 16, 2016. BBII/Fru-Con has reviewed RRJ's report as requested and accept RRJ's conclusion that RKK's flawed design of the contraction and expansion joints is the root cause of the leaks that occurred in the DNF Structure. BBII/Fru-Con disagrees with RRJ statements concerning construction deficiencies potentially contributing to the leaks experienced. RRJ cites no credible evidence in regards to any such construction deficiencies and specifically acknowledges that any common construction deficiencies which occurred were resolved to the City's and RKK's satisfaction. In sum, RRJ's Report supports BBII/Fru-Con's Filter Leak Claim.

RKK's Expansion/Contraction Joint Design Deficiencies

1. In its report, RRJ states: "The improper design has caused joint cracking and subsequent joint leakage." See RRJ Report, p.2. BBII/Fru-Con agrees. Attached is BBII/Fru-Con's engineering expert, Wiss, Janney, Elstner Associates, Inc. ("WJE") Technical Comments concerning the RRJ Report. WJE also confirms that RRJ is in agreement with WJE's opinions concerning RKK's deficient design being the root cause of the leaks at the DNF structure. See Attached Technical Comments from WJE dated September 9, 2016.
2. Based upon the findings and conclusions reached, RRJ's report is incorrectly titled "Evaluation of Concrete Construction Deficiencies." The report should be titled "Evaluation of RKK's Deficient Design of Expansion and Contraction Joints."
3. In its report, RRJ notes that RKK's engineer, A+F Engineers, Inc., improperly used AASHTO standards for its engineering evaluation of RKK's expansion and contraction joint design. "The use of AASHTO shear capacity calculation method is not customary or proper



for use in the design of wastewater treatment plant shear keys." See RRJ Report, p.8. BBII/Fru-Con is unable to comment on RRJ's opinions concerning A+F's November 21, 2014 report because the City has not provided BBII/Fru-Con with a copy of the report notwithstanding BBII/Fru-Con's request that it be provided. However, given the comparison RRJ made between WJE's analysis and the A+F's analysis, BBII/Fru-Con accepts RRJ's ultimate opinion – WJE's analysis is correct and A+F's is not.

4. BBII/Fru-Con offers no comments regarding the structural integrity of RKK's design except to note that the joint at the base of the Y-Wall is a construction joint and not a moveable joint. Reinforcing steel extends from the wall through the joint into the base slab.

Common Construction Deficiencies did not Contribute to Leakage

1. In its report, RRJ addresses two distinctly different construction "issues:" (1) Concrete deficiencies which commonly occur when concrete is placed; and, (2) Alleged deficiencies in forming of the keyways during placement of concrete. As to the first, RRJ states: "Project documents reviewed by RRJ indicate that where common construction defects were identified, repairs were performed to achieve compliance with the project specifications." BBII/Fru-Con agrees. Any common construction defects were remedied to the City's and RKK's satisfaction during the course of the Project. These defects did not contribute in any way to the leakage experienced at the expansion and contraction joints.
2. In its report starting on page 11, RRJ discusses early confusion among the City, RKK, BBII/Fru-Con and WJE concerning the method and manner in which the concrete keyways for the expansion and contraction joints were formed. As set forth in BBII/Fru-Con's September 2014 report, the concrete keyways for the expansion and contraction joints were uniformly constructed with a taper. RRJ verified BBII/Fru-Con's position in its report. "Fru-Con's later claim was corroborated by [City Inspector] Mr. Biono who reported that the tapered keyway was typical of all joints in the facility." See RRJ Report, p.12. RRJ also observed tapered keyways during its visit to the Project site.
3. In its report, RRJ states: "However, Robert Nash (Senior Project Manager for the City) reported that the majority of keyways were constructed without incorporating proper key-forming inserts in the formwork." The statement attributed to Mr. Nash is neither credible nor supportable. All documentary evidence including photographs demonstrate the consistent use of tapered forms for the keyways.



Additionally, Mr. Nash has no personal knowledge to support the statement attributed to him. He was not involved with the Project or onsite when the concrete work discussed was placed.

4. On page 12 of its report, RRJ addresses SIRs 42 and 44 and suggests that these joints contributed to the leaks in the facility. The joints at issue in SIRs 42 and 44 are construction joints, not moveable joints. The joints are located at the top of the Y-Wall and have reinforcing steel running through the joint. Therefore, the issues addressed in SIRs 42 and 44 fall in the category of common construction deficiencies which did not contribute in any way to the leaks in the facility. Moreover, these common construction deficiencies were remedied during the course of the Project to the satisfaction of the City and RKK.
5. Based on RRJ's report, a full examination of the Project documents, and observation of the City Inspector onsite during concrete placement, BBII-Fru-Con's construction practices did not contribute to any of the leaks in the facility.

CIM 1000 is Appropriate

1. In its report, RRJ states that the CIM 1000 "has temporarily provided leakage control but will require substantial ongoing maintenance and inspection..." See RRJ Report, p.12. BBII/Fru-Con disagrees with RRJ's findings and refers to WJE's comments regarding CIM 1000.
2. Even if RRJ's conclusion regarding CIM 1000 is accepted, any costs associated with maintenance and inspection are RKK's responsibility because RKK's "improper design [of the joint and shear key] has caused the joint cracking and subsequent joint leakage." See RRJ Report, p.11

BBII/Fru-Con has suffered under RKK's flawed design for years and at the cost of millions of dollars. The City has also subjected BBII/Fru-Con to liquidated damages for delays to completion of the Work which are irrefutably RKK's responsibility. BBII/Fru-Con again demands the immediate



return of all liquidated damages assessed including those for SC 845R, together with accrued interest. (Without a completed SC 852R Project, SC 845R cannot function). Lastly, BBII/Fru-Con demands a commensurate extension of time and reimbursement of all costs – direct and time-related – which BBII/Fru-Con needlessly incurred in attempting to remedy RKK's failed design.

Regards,

A handwritten signature in blue ink, appearing to read "Mark Johnnie".

Mark Johnnie
Vice President & Region Manager
Balfour Beatty Infrastructure Inc.

Enc

CC: Robert Nash (OEC);
Robert J. Andryszak (RK&K);
Jeff Kracun (BBII);
file



Wiss, Janney, Elstner Associates, Inc.
330 Pfingsten Road
Northbrook, Illinois 60062
847.272.7400 tel | 847.291.4813 fax
www.wje.com

Via E-mail
gsm@martinhild.com

September 9, 2016

Gregory Martin, Esquire
Martin Hild, P.A.
555 Winderley Place, Suite 415
Maitland, FL 32751

Re: Technical Comments on
RRJ Report dated August 19, 2016
Patapsco Water Treatment Plant
Baltimore, Maryland
WJE No. 2012.1200.4

Dear Mr. Martin:

At your request, we have reviewed the August 19, 2016 report "Evaluation of Concrete Construction Deficiencies" for the above-referenced structure, prepared by Raths, Raths & Johnson, Inc. (RRJ) and have the following comments:

1. Joint Design Deficiencies

a. Shear Capacity at Base of Y-Walls

The joint at the base of the Y-walls is a construction joint and not a movement joint. The vertical reinforcing bars that run from the base slab through this joint on each face of the Y-wall take all shear forces from the unbalanced water loads. It appears that this keyway was placed by the designer only to accommodate placement of a waterstop.

The shape of the keyway and lack of reinforcement in the male key does not diminish the ability of the wall to resist shear forces. Therefore, we disagree with RRJ's opinion that the unreinforced horizontal keyway at the base of the Y-wall presents a potentially hazardous condition.

b. Waterstop

We agree with RRJ's conclusions regarding the location and design of the waterstop and their contribution to leakage through the joint.

c. Shear Reinforcement

We agree with RRJ's conclusion that lack of steel reinforcing through the concrete keyway has likely exacerbated the size and propagation of cracks at the base of the male and female keys.

d. Shear Key Geometry Around the Sump Trough

We agree with RRJ's analysis and conclusions that the configuration and design of shear keys at the sump trough could not accommodate expected differential movements and were responsible for joint failures at these locations.

Headquarters & Laboratories—Northbrook, Illinois

Atlanta | Austin | Boston | Chicago | Cleveland | Dallas | Denver | Detroit | Honolulu | Houston | Los Angeles
Minneapolis | New Haven | New York | Princeton | San Francisco | Seattle | South Florida | Washington, DC

e. Design Capacity

We agree with RRJ's conclusions that the design capacity of the unreinforced male keys was inadequate.

2. Joint Construction Deficiencies

a. Keyway Forming Issues

Tapered keyway conditions were addressed by Fru-Con and WJE in past correspondence. We only want to point out that the photograph of the female side of the gouged keyway joint depicts the horizontal keyway at the Y-wall. As stated earlier in this letter, this is not a moving joint but a construction joint and therefore the rough-formed surfaces only enhance the bond between the concrete pours below and above the joint.

b. Shear Key Projection

We agree with RRJ's opinion about the Y-wall vertical keyway projection.

3. Common Deficiencies

It is our understanding that all commonly occurring construction deficiencies were repaired in accordance with the project specifications.

4. Leakage Remediation

Large-scale application of the CIM 1000 coating system in several areas of the walls was not due to watertightness issues of the substrate but because the subcontractor for installation of CIM 1000 was required to repair his original faulty installation and he overcoated portions of the walls during the corrective work.

According to the manufacturer, the CIM 1000 coating application is supposed to last the life of the structure. No special or frequent maintenance is required. During the scheduled emptying of the tanks for their regular maintenance, the SIM locations should be inspected and addressed if necessary.

If you have any questions about this report, please contact us.

Very truly yours,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.



Andy Osborn, S.E., P.E.
Senior Principal



Predrag L. Popovic, P.E., S.E.
Vice President and Senior Principal

ATTACHMENT 3

EVALUATION OF CONCRETE CONSTRUCTION ISSUES SUPPLEMENTAL REPORT

PATAPSCO WASTE WATER TREATMENT PLANT
DENITRIFICATION STRUCTURE

BALTIMORE, MARYLAND

Prepared For:

Baltimore City Law Department
100 North Holliday Street
Suite 101
Baltimore, Maryland 21202

Prepared By:

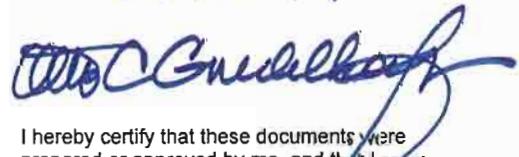
Raths, Raths & Johnson, Inc.
500 Joliet Road, Suite 200
Willowbrook, Illinois 60527-5618
630.325.6160
www.rrj.com

RRJ 14099

March 9, 2017



3/9/2017



I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland, License No. 14569, Expiration Date: September 2, 2017.

RR
+ J

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APPENDED

- Figures 1 through 6
- Appendix A Documents Review
- Appendix B RRJ Modeling Approach

**EVALUATION OF CONCRETE CONSTRUCTION ISSUE
SUPPLEMENTAL REPORT
PATAPSCO WASTE WATER TREATMENT PLANT DENITRIFICATION STRUCTURE
BALTIMORE, MARYLAND**

INTRODUCTION

Raths, Raths & Johnson, Inc. (RRJ) was retained by the City of Baltimore, Maryland, to perform an engineering evaluation of issues encountered during the construction of the concrete Denitrification Filter (DNF) structure at the Patapsco Waste Water Treatment Plant located in Baltimore, Maryland. The following report supplements RRJ's report dated August 19, 2016. Project documentation describing project background, chronology, and the factual basis and opinions of RRJ and others, was previously reported and is not reproduced in this supplemental report. It is assumed that readers are familiar with the project documents produced to date. A complete listing of documents reviewed is included in Appendix A. Refer to Figures 1 through 3 of RRJ's August 19, 2016 Report for basic location/geometric information. The information included herein is provided with a reasonable degree of engineering certainty. RRJ's findings are based on the review of documentation made available as of the date of this report, its site observations, and its Finite Element Method (FEM) modeling conducted to date. RRJ reserves the right to amend these findings should additional relevant information be made available.

Rummel, Klepper & Kahl, LLP (RK&K) and Fru-Con Construction, LLC (Fru-Con), through their respective consultants, A+F Engineers, Inc. (A+F) and Wiss, Janey, Elstner Associates, Inc. (WJE), both have indicated the opinion that cracked shear keys throughout the DNF structure allowed water to bypass the embedded waterstops, and this defect is at least partially responsible for the water test failures and the resultant need for the extensive remediation that has been performed. WJE alleges the



key cracking is caused by improper design, and A+F alleges cracking is caused by improper construction. RRJ's supplemental report is intended to further clarify this and other disputed issues related to shear key demand, shear key capacity, and miscellaneous concrete construction defects. Results of RRJ's FEM modeling of concrete assemblies, including portions of the base slab and Y-walls that incorporate shear keys and movement joints, and other technical analyses, are included.

The project records contain numerous photographs and field reports describing concrete surface cracks, other concrete defects, and water leakage at joints. As previously reported, nondestructive testing results indicated cracking at concealed male shear keys in numerous locations throughout the DNF structure. However, visual confirmation of the actual condition of concealed male shear keys is limited to a few instances investigated by WJE in 2012. The quantity of actual physical evidence is likely inadequate to provide statistically relevant findings that could be extrapolated throughout the DNF structure. Therefore, if it becomes necessary to quantify hidden defects in order to resolve this dispute, further destructive testing will likely be required.

MODELING AND ANALYSIS

To better understand and evaluate the DNF structural behavior, RRJ performed a series of FEM analyses between December 2016 and February 2017 using SAP2000 structural software. A representative portion of the base slab system, which includes the keyway that transitions around the sump pit, was modeled utilizing 3D solid elements. RRJ developed separate full-length model of a single filter cell incorporating two Y-walls that was also composed of 3D solid elements, including the Y-wall keyways. A detailed description of RRJ's FEM models is provided in Appendix B of this report. Objectives of RRJ's modeling are outlined below:

- Evaluate the validity of previous modeling performed by A+F and WJE.
- Evaluate A+F's assumptions regarding average shear stress distribution and horizontal restraint within the base slab.
- Evaluate WJE's assumptions regarding temperature strains caused by concrete cooling and shrinkage.
- Evaluate and compare A+F and WJE allegations regarding shear key demand and capacity.

RRJ modeled shear keys and incorporated the material properties of the waterstop, which was excluded in A+F's modeling approach. RRJ's Y-wall model incorporated the end walls similar to the approach taken by A+F. WJE did not model the end walls.

SUMMARY OF FINDINGS

Table 1 summarizes the output from the various FEM models and the predicted capacities. The differences in capacities are based on the interpretations by each expert of different standards and research, and are discussed in more detail in the proceeding sections of this report.

Table 1. Summary of Analysis Results* (psi)

		RRJ	A+F	WJE
Shear in the Base Slab Shear Key	Demand	500	135	>700
	Capacity	<340	700	77
Tension in the Base Slab Shear Key	Demand	800	-	>1400
	Capacity	435	-	349
Shear in the Y-wall Shear Key	Demand	100	87	113
	Capacity	<370	805	89
Tension in the Y-wall Shear Key	Demand	103	-	-
	Capacity	503	-	-

*Boxed areas represent areas where demands were found to exceed the capacities.

Maximum stresses in the base slab shear key were located in RRJ's model at the vertical portion of the key that transitions the two horizontal keys around the sump pit. At the reentrant corner of the base of this vertical key, shear and tensile demands were found that exceed RRJ's calculated shear and tensile capacities. This finding indicates that, as-designed, the male shear keys in the base slab may crack even when properly constructed. In RRJ's Y-wall model, maximum stresses were located at the top of the key. These demands were found to be less than RRJ's calculated capacities, and RRJ does not expect cracking to occur at this location when constructed properly. RRJ's modeling output is shown in Figures 1 through 5.

RESPONSES TO SPECIFIC ALLEGATIONS IN A+F AND WJE REPORTS

Issue 1: Capacity of DNF Shear Keys

Description

Shear capacities of the DNF shear keys, as estimated by each expert, are summarized in Table 1. The large differences between the experts' estimations result from the use of differing research as the basis of their calculations. The building code does not directly address the calculation of shear key capacity at structures similar to the DNF facility. Therefore, each expert has apparently attempted to apply rational engineering judgment in its approach, as is discussed below.

RK&K/A+F

A+F predicts the shear capacity of the DNF shear keys by using an approach outlined in an American Association of State Highway and Transportation Officials (AASHTO) method that is intended to estimate shear key capacity between segmental bridge sections¹. Based on this model, the shear strength of the concrete at 75 percent compressive strength is about 700 psi². A+F does not agree with the approach taken by WJE, which utilizes the shear capacity calculation methods prescribed in American Concrete Institute *Building Code Requirements for Structural Concrete and Commentary* (ACI 318). A+F indicates that, in the case of the DNF shear keys, a direct shear is developed and the mechanism of shear failure outlined in ACI 318 does not properly correspond. A+F presents several research studies that relate to the AASHTO method as a basis for its applicability to the DNF shear keys.

Fru-Con/WJE

WJE predicts the shear capacity of the DNF shear keys by using the shear capacity of plain concrete as outlined in ACI 318, wherein allowable shear forces are a small fraction of those allowed by the AASHTO segmental bridge model. WJE estimates the shear strength of the concrete at 75 percent

¹ *Guide Specifications for Design and Construction of Segmental Concrete Bridges*. Washington, D.C.: AASHTO, 199/2003.

² Per WJE August 28, 2014, report estimate for percentage of full concrete strength after dissipation of heat of hydration.



compressive strength is 77 psi. As of the date of this report, WJE has not commented on A+F's claim regarding the use of the AASHTO method.

RRJ Discussion/Analysis

The beam shear model, on which the ACI 318 method for calculating shear capacity is based, assumes the shear occurs across an unrestrained failure plane. The failure plane for the DNF shear keys is partially restrained and, therefore, the ACI 318 allowable beam shear capacity values are conservative.

The AASHTO method, on which A+F's assessment of shear capacity is based, is nonconservative, considering that the DNF shear keys comprise conditions significantly dissimilar to those assumed for segmental bridge design and the associated research provided by A+F. These conditions will be further discussed below.

RRJ agrees with the statement made by Koseki and Breen³ that the provisions provided in ACI 318-77 Section 11.9 for corbels are "somewhat analogous" to the behavior expected in single shear key joints. Geometry and loading parameters required for the use of these provisions are met by the DNF shear keys. The research by Kriz and Raths⁴ is based on numerous tests with different sizes and shapes, tension reinforcement and stirrups, concrete strengths, and loading conditions performed to develop empirical expressions for the shear strength of corbels. In these provisions, reinforcement of the corbel is always considered, and Kriz and Raths indicate that a minimum amount of tension reinforcement and stirrups should be provided. The DNF shear keys do not contain reinforcing steel. Hence, the provisions of ACI 318-77 can only provide an upper bound of shear strength for the DNF shear keys with the expectation that the actual strength will fall somewhere below this upper bound. Using the minimum tension reinforcement ratio indicated by Kriz and Raths of $\rho_v = 0.004$ and ACI 318-77 Eqn. 11-32, the shear capacity of the DNF shear keys at a compressive strength of 3,375 psi is likely less than 340 psi as shown below:

$$v_n = 6.5 \left(1 - 0.5 \frac{a}{d}\right) (1 + 64\rho_v) \sqrt{f'_c} = 6.5 \left(1 - 0.5 \frac{4.5''}{8''}\right) (1 + 64 * 0.004) \sqrt{3375 \text{ psi}} = 340 \text{ psi}$$

³ Koseki, K., and J. E. Breen. *Exploratory Study of Shear Strength of Joints for precast Segmental Bridges*. Research Report No. 248-1. Austin, Texas: Center for Transportation Research, U of Texas, 1983.

⁴ Kriz, L. B., and C. H. Raths. "Connections in Precast Concrete Structures—Strength of Corbels." *PCI Journal* 10.1 (1965): 16-61.



As previously stated, the DNF shear keys contain several differing conditions compared to the keys considered by AASHTO and associated research provided by A+F. For example, the DNF shear keys are unreinforced single keys, as opposed to multiple rows of shear keys in the segmental bridge model. In the experimental studies conducted by Koseki and Breen, both large, single key configurations and multiple rows of keys are tested and result in similar capacities. However, the single key configuration tested in this study does not correspond to the conditions present at the DNF structure. The following highlight the differences between the tested keys and the DNF keys:

- Tested keys were reinforced with 10-gauge wire reinforcement, which follows the general shape of the male key projection and crosses the shear plane. No such reinforcement was present within the DNF male shear keys.
- Tested keys incorporate a depth to width (Figure 6) ratio approximately two and one-half times less than the keys in question at the DNF structure. The DNF shear keys projected further than the tested keys.
- Waterstops were not included in these tests. RRJ modeling has shown that the relative compressibility of the waterstop within the center of the DNF shear keys allows tensile stresses due to bending to develop.
- Segmental bridge joints are generally held together in compression. Prestressing forces were applied to the single shear key configuration during testing to simulate this condition. Compression in the joint can increase shear capacity. The DNF shear keys occur at joints that are subject to no such compressive forces.

The AASHTO method and associated research presented by A+F assumes the transfer of forces occur as a direct shear. However, the DNF shear keys were found to also exhibit bending behavior that creates tensile stresses. As outlined above, the DNF shear keys are not held in compression against the mating surfaces, are only partially restrained due to the compressibility of the waterstop, and are subject to bending. This behavior is consistent with a cantilever beam with relatively high tensile stresses occurring at the heel of the key. Tensile stresses exceeding the rupture threshold can form a crack near the corner of the key. Sustained loading may cause the crack to propagate in an uncontrolled manner, potentially bypassing the waterstop.



A+F incorrectly used a shear capacity equation taken from a publication by Curtis⁵ to support its claim of high allowable shear capacity ($2 * f_t = 15\sqrt{f'_c} = 870 \text{ psi}$, $(f'_c = 3375 \text{ psi})$). According to the study, the correct equation is $2 * f_t = 2 * 1.22(f'_c)^{\frac{2}{3}} = 9.9\sqrt{f'_c} = 575 \text{ psi}$ ($f'_c = 3375 \text{ psi}$). Further, the Curtis equation is only valid at zero normal stress, which means that no tensile stresses from bending are present. As demonstrated in RRJ's modeling, tensile stresses develop in the DNF shear keys.

RRJ has not been provided calculations related to RK&K's design of the DNF shear keys. A calculation package dated November 2010, produced by RK&K and reviewed by RRJ, does not address shear key sizes, capacities, or anticipated loadings. RK&K provided cross-sectional details of shear keys with waterstops that were reportedly used successfully on other projects. RK&K has provided no documentation indicating that the shear keys at these other projects incorporated changes in direction, as occurs at the DNF structure sump pits. ACI 350.4R Section 5.1 indicates caution should be used when specifying shear keys in moving joints. The apparent lack of original design calculations for the shear keys is in conflict with ACI's recommendations.

Laboratory testing could be performed in order to validate the shear capacity of unreinforced single shear keys similar to those installed at the DNF structure.

Issue 2: Demands on DNF Shear Keys

Description

A+F, WJE, and RRJ each performed FEM modeling of the base slab and Y-wall movement joints in order to predict the loading demands (internal stresses) on the DNF shear keys. Although the experts' modeling approaches are similar, notable differences, including the configuration of end restraint conditions and the interpretation of stress distribution, are partially responsible for the variation of the demands reported by the experts.

⁵ Curtis, D.D. "Estimated Shear Strength of Shear Keys and Bonded Joints in Concrete Dams." *31st Annual USSD Conference* (April 11-15, 2011). San Diego, California.



Fru-Con/WJE

WJE claims that relative movement between the male and female sides of the base slab movement joint will occur as the male slab cools and the heat produced from cement hydration dissipates. WJE applied a 20 degree temperature differential to their FEM model to determine the resultant demands on the shear keys. In the Y-wall model, WJE applied hydrostatic loads corresponding to the water test load in a single cell while the adjacent cells remained empty as a means of predicting demands on the keys in the Y-walls. The results of WJE's FEM modeling are summarized in Table 1.

RK&K/A+F

A+F claims that the demands imposed on the shear key will be resisted by direct shear behavior. In its October 10, 2016 report, A+F states "confinement of the shear key develops a direct shear at the root without any appreciable moment." A+F developed FEM models of both the base slab and the Y-wall movement joints. In its base slab model, A+F imposed a 20-degree temperature differential (as assumed by WJE) and found that "some localized higher shear stresses are located within fractions of an inch at the corner of the contact points, again under WJE's hypothetical conditions, however these are typically numerical errors. It is our opinion that average shear stresses are representative of the shear stresses in this hypothetical worst case condition."

A+F also reported stress demands in the Y-wall keyway that were derived from its model. The A+F Y-wall model incorporated end walls. The demands predicted by A+F are summarized in Table 1.

RRJ Discussion/Analysis

RRJ's modeling shows that the waterstop used in the DNF joints was compressible and, therefore, the key was subject to tensile bending stresses similar to a cantilever beam. RRJ's modeling incorporated the published modulus of elasticity of the PVC material comprising the waterstop, which is approximately 3000 times smaller than that of concrete, meaning that the material is relatively soft, flexible and compressible compared to concrete, resulting in the development of these bending stresses. Therefore, RRJ does not agree with A+F's modeling approach which ignores the effect of the waterstop.



RRJ disagrees with A+F's use of the average shear stress across the entire base of the shear key to derive its reported stress demand. Averaging of the stresses across the width of the shear key underestimates the actual peak stress at the reentrant corner where a crack is most likely to originate.

A stress peak or "stress riser" should be expected to occur at the reentrant corner of the shear key⁶. When the stress in this area of concrete exceeds the shear capacity and/or the modulus of rupture, a crack can form. The tip of the crack remains as a point of high stress, which is responsible for the rapid propagation of the crack after origination.

RRJ's modeling indicates that Y-wall joint shear key stresses do not exceed the shear capacity or the rupture threshold, and so cracking of the keys is not predicted under the maximum unbalanced hydrostatic load. This finding is consistent with RRJ's document review, which did not reveal evidence of leakage which was determined to originate at the vertical Y-wall joints. Therefore, based on RRJ's calculation of shear capacity, we disagree with WJE's findings regarding cracking at the top of the Y-wall.

Based on modeling results, RRJ considers it reasonable to assume that some areas within the base slab could experience temperature induced deflections large enough to induce cracking. Reference literature suggests that certain locations within the base slab may experience hydration temperature rise of as much as 60 degrees F, followed by a corresponding temperature reduction as the concrete hardens.⁷ WJE assumed a uniform 20-degree temperature differential based on broad assumptions. Neither WJE, A+F, or RRJ have performed a rigorous thermal analysis that could clarify actual temperature changes experienced by the base slab during hydration.

RRJ's base slab modeling assumed a 20-degree temperature differential, for comparison with the other experts' models, resulting in maximum tension stresses of approximately 800 psi and maximum shear stresses of approximately 500 psi. These values were less than WJE's results and greater than A+F's calculated 135 psi average shear stress across the male key. (A+F rejects the presence of tension stress in the shear keys.)

⁶ Beer, Ferdinand P., E. Russell Johnston, John T. DeWolf, David F. Mazurek, and Sanjeev Sanghi. *Mechanics of Materials*. 5th ed. New York: McGraw-Hill, 2006. 107-108.

⁷ ACI Committee 211. "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete (ACI 211.1-91) (Reapproved 2009)."

RRJ modeling found that base slab stress concentrations occurred where the shear key changes direction from horizontal to vertical on either side of the sump pits. This finding was consistent with WJE's modeling results and with A+F's statement that restraint does occur in the base slab joint due to the joint's change in direction. The base slab key configuration puts the keys at risk of failure modes warned against by ACI.⁸ RRJ believes the restraint in the joint is due to the as-designed configuration in this area and is likely responsible for the concentration of joint-related defects at the sump pits.

The sump pit sidewall cracks adjacent to movement joints are evidence of transverse forces present within the base slabs. The lack of reinforcement within the female side projection of the keyway exacerbated the severity of the cracks. However, while more effective placement of reinforcement may have limited crack sizes, it would not have prevented cracking. Cracking of the female key would not alone be responsible for excessive leakage rates, although they may contribute to leakage, particularly at locations where poor consolidation of the concrete around the waterstop may have occurred. Failure of the male key is the most likely cause of excessive leakage rates.

Issue 3: Shear Key Configuration

Description

Shear keys installed at expansion and contraction joints throughout the DNF structure are configured as a single, male projection within the center portion of the concrete thickness and designed to interlock with a female projection. Project records indicate that the female side of the joint was typically formed and placed first. The design drawings further indicate the key width was to be one-third the thickness of the concrete cross section, centered on the cross-section centerline, projecting one-sixth the thickness of the concrete cross section. The latter requirement was modified by RFI Response No. 366 to be a uniform 4½ inches. As a result, the shear key projection at Y-wall joints and the sides and bottom of the sump pits exceeded the original projection length. A waterstop was to be located at the centerline of the key.

Although the design drawings schematically depict the male key as a rectangular projection, RK&K's specifications indicate that a slight taper ("draft") was required for forming all projecting elements. In other words, the original project specifications required the use of tapered joints. During construction,

⁸ ACI Committee 350. "5.1. Design Considerations for Environmental Engineering Concrete Structures (ACI 350.4R-04)."



Fru-Con's RFI 37, which relates to the use of "tapered" formwork to form shear keys, was accepted by RK&K. Fru-Con later indicated that the RFI was never implemented, citing costs.

RK&K/A+F

A+F claims that all cracking can be shown to be caused by improper construction based on the as-built concrete condition and the dovetailed shape of the male keys. Male keys formed in an improper shape will cause the joint to bind and crack during normal, anticipated structural movement. Additionally, if the concrete used to create the shear keys was below design strength, it may crack under normally anticipated shear loads. Cracks that allowed water to bypass the waterstop were identified as the primary cause of the water test failures. A+F also alleged that poorly consolidated concrete would allow water to find a path to bypass the waterstop through voids in the concrete.

Fru-Con/WJE

During early investigative work in 2012, WJE examined cracked concrete at two joints located in the sidewalls of sump pits. Excavation revealed that the cracks represented spalling of the female side of the keys and that the exposed male keys appeared to be cracked along the base. Measurements indicated the male key projections were reverse-sloped, causing the joint to bind and crack as joint movement occurred. WJE initially estimated that 50 percent of rectangular keys throughout the DNF structure could have been constructed with a slight reverse slope and still have met ACI geometric tolerances. In later reports, WJE revised its position based on review of project records, alleging that the majority of the keys had been constructed with a tapered form that would allow joint movement without binding. WJE's most current position is that the cracked male keys were caused by improper design based on its analysis and modeling, which relies on certain assumptions regarding concrete shear capacity, differential shrinkage rates, and other aspects of material behavior are discussed below.

RRJ Discussion/Analysis

RK&K should have rejected RFI 37 and directed the contractor to follow the original specifications, which required a drafted or tapered key. Per the specification language, Fru-Con was not allowed the option of providing an untapered key.



To the extent that the keys were formed in such a way as to prevent "free movement" of the joint (i.e., movement perpendicular to the plane of the joint), the joints were installed defectively and shear key cracking/joint leakage can be attributed to defective installation. The project documents, however, are unclear as to the extent to which the keys were improperly installed. Construction photographs reviewed by RRJ depicting typical formed keyway surfaces are inconclusive with regard to the inclusion of a draft, which may not have been discernable in photographs.

RRJ discussions with on-site city personnel revealed conflicting reports regarding the use of tapered key forming inserts. As pointed out by A+F, comments from field personnel occurred many years after the construction, making this information difficult to rely upon. Fru-Con's reported decision to forego the use of tapered keys does not, however, prove that the draft required by the original construction specification was excluded from the concrete construction.

Certain construction documents refer to improper keyways that were not formed. These are referenced within SIR 42 and RFI 37A, with Fru-Con proposing to remediate. The approach was approved by RK&K. These conditions occurred in horizontal wall construction joints with continuous steel crossing the joints, which were not movement joints, and to RRJ's understanding, were not identified as a discrete source of water leakage during water testing.

MISCELLANEOUS ISSUES

Issue 4: Curing

Improper curing could result in increased cracking, particularly on large exposed surfaces, such as the Y-wall surfaces. Failure to properly complete the specified curing method can cause rapid drying/moisture loss that could result in the initiation of plastic shrinkage cracks, failure of the concrete to achieve the full design strength, and increased shrinkage strain, resulting in larger, more numerous cracks. Confined, unexposed concrete, such as within the base slab at the depth of the shear keys, would not experience rapid moisture loss to the same degree as the exposed surfaces; therefore, these detrimental effects would not be expected to have an impact on these locations. Improper curing is not expected to be a substantial contributor to the joint leakage.



Issue 5: Rebar Placement

As stated in RRJ's previous report, placing reinforcement to cross the plane of the male shear key base would have helped limit the extent of the crack size at that location. However, reinforcement would not have prevented the crack from forming or stopped the water leak through the crack. A concrete crack forms before the tensile strength of the steel reinforcement is fully mobilized.

The design drawings for reinforcing in the vicinity of the sump pits are generally schematic and do not address the extra complication involved with maintaining adequate clear cover where the key is too thin to provide the required cover on opposite sides. Shop drawings were allegedly submitted and approved for reinforcing details, but have not been reviewed by RRJ. On other projects under similar circumstances, it would be expected that these types of issues would be resolved through the shop drawing review process.

Issue 6: CIM 1000 Repairs

RRJ has not opined that the CIM was an unsuitable choice for sealing leaking joints. The CIM 1000 repair material is a polyurethane-based sealant product, and in RRJ's experience, polyurethane-based sealant materials degrade over time, leading to increasing incidences of both adhesive and cohesive failures. Conventional building sealants exposed to ultraviolet light and weather have a typical life expectancy between 5 and 15 years. The basic CIM product warranty is for a 5-year period.

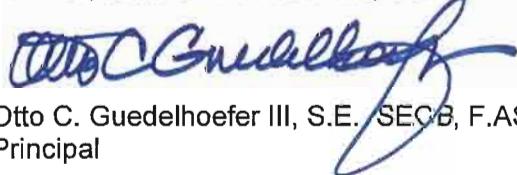
CONCLUSIONS

1. RRJ determined a reasonable estimate of the DNF shear key shear capacity at compressive strength of 3,375 psi is likely less than 340 psi. WJE's use of ACI 318 provisions is an overly conservative estimate of the shear capacity. A+F's use of the AASHTO method to determine shear capacities in wastewater treatment plant shear keys is overly nonconservative. If necessary, laboratory testing could be used to better validate shear capacity of concrete shear key assemblies similar to those constructed at the DNF facility.
2. Properly constructed male shear keys in the base slab of the DNF structure may be subject to shear and tensile demands large enough to produce cracking.

3. Properly constructed male shear keys in the Y-walls of the DNF structure are not subject to shear and tensile demands large enough to produce cracking.
4. Physical evidence detailing the condition and geometry of the concealed male shear keys is inadequate to provide statistically relevant findings that could be extrapolated throughout the DNF structure. Further destructive testing could be performed to quantify the defectively constructed male shear keys.
5. Improper curing may have contributed to crack formation and leakage through walls, but is not likely a substantial contributor to shear key cracking and joint leakage.
6. Rebar placement did not significantly impact the location or quantity of water leakage at the DNF structure.
7. The CIM 1000 repair material is a polyurethane-based sealant that will degrade over time and require maintenance.

Respectfully submitted,

RATHS, RATHS & JOHNSON, INC.

A handwritten signature in blue ink, appearing to read "Otto C. Guedelhoefer III".

Otto C. Guedelhoefer III, S.E., SECB, F.ASCE
Principal

March 9, 2017

G:\14099\Docs\Report_2\text.docx



FIGURES 1 THROUGH 6



+
R
R

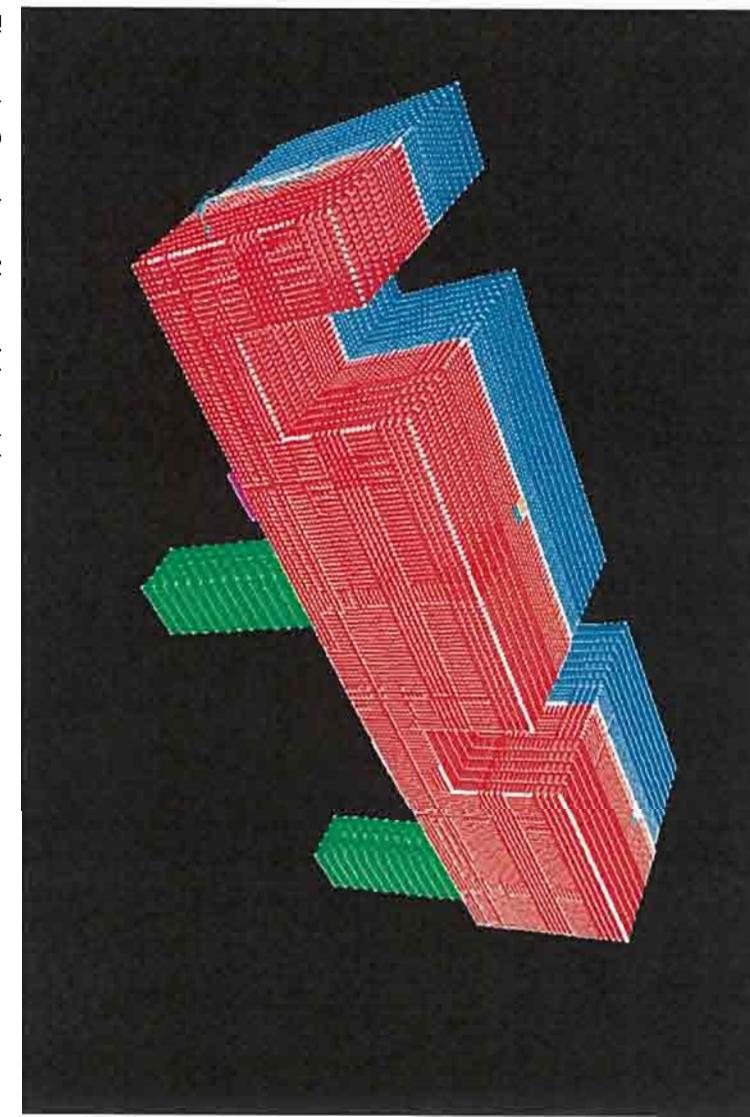
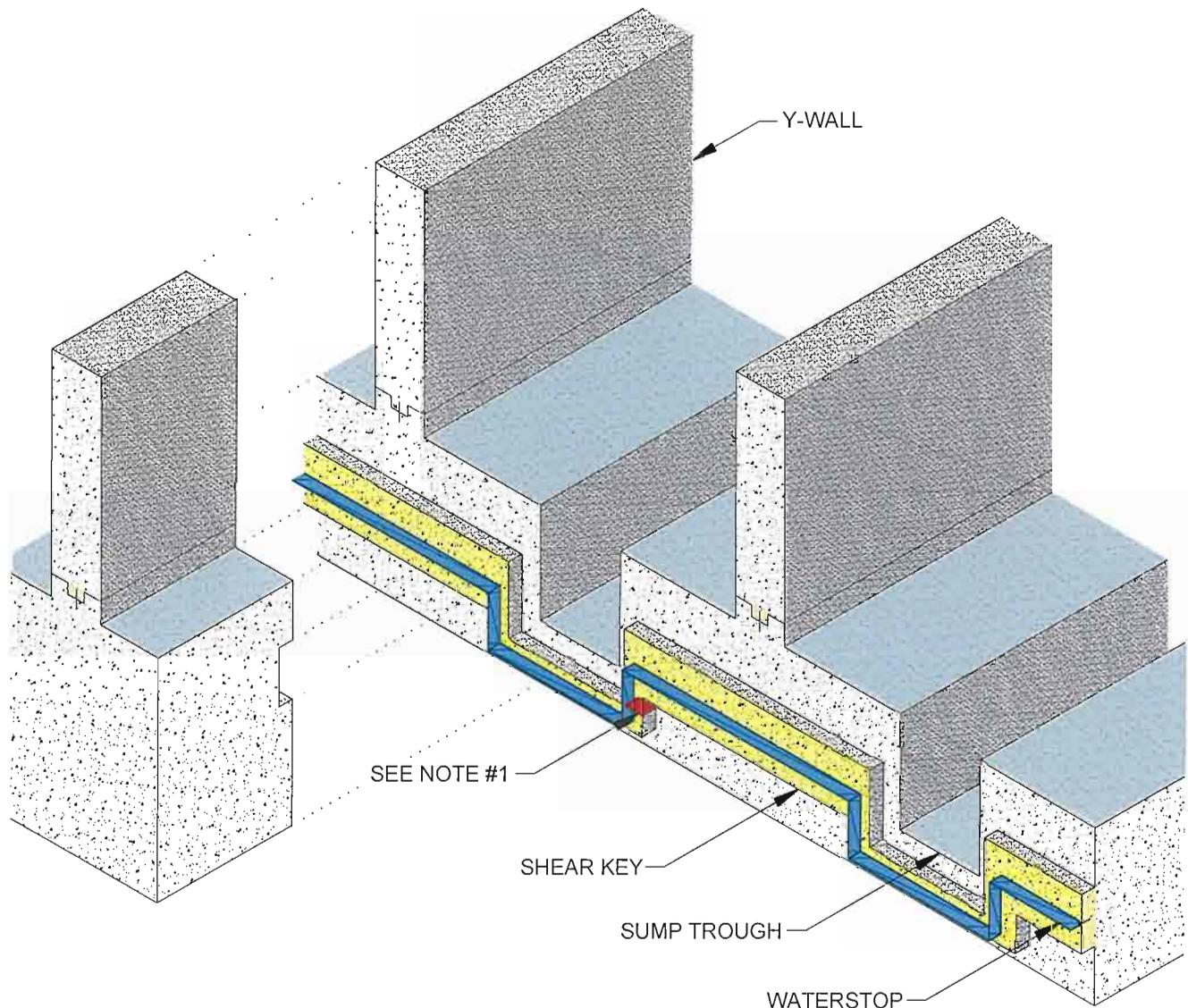


Figure 1. Overview of base slab model.



NOTES

1. LOCATION OF MAXIMUM SHEAR AND TENSILE STRESSES AT BASE OF VERTICAL SHEAR KEY.

R R J	RATHS, RATHS & JOHNSON, INC. ENGINEERING • ARCHITECTURE • FORENSICS 500 JOLIET ROAD • SUITE 200 WILLOWSBROOK, ILLINOIS 60527 630.325.6160 • 630.325.2866 • WWW.RRJ.COM	SHEAR KEY CONFIGURATION AT SUMP TROUGHS PATAPSICO WASTE WATER TREATMENT PLANT BALTIMORE MARYLAND	DATE: 03-08-17 SCALE: N.T.S. JOB #: 14099 DRAWN BY: BAG PRINCIPAL: OCG CHECKED BY: WJM	2 FIGURE
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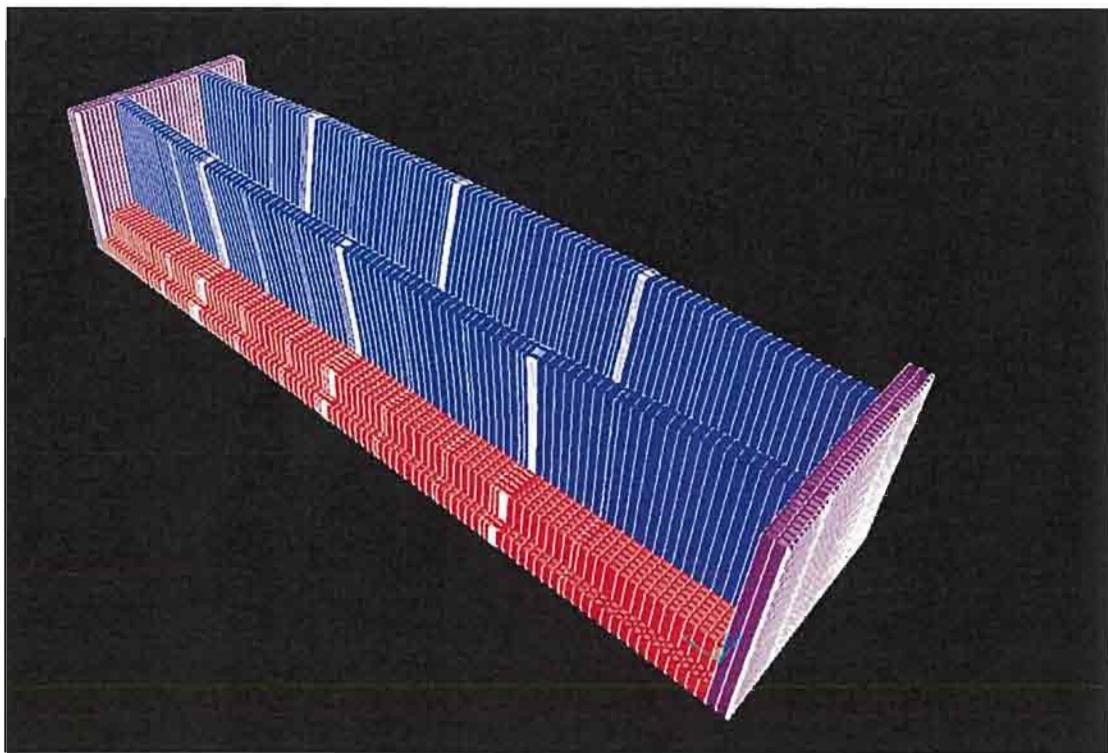


Figure 3. Overview of Y-wall model.

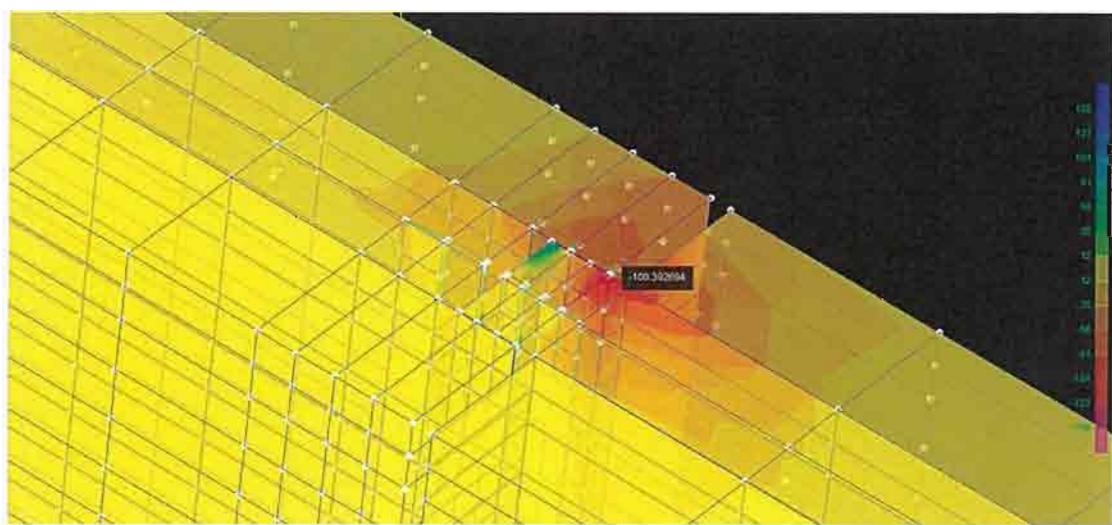


Figure 4. Location of maximum shear stress at top of Y-wall shear key.

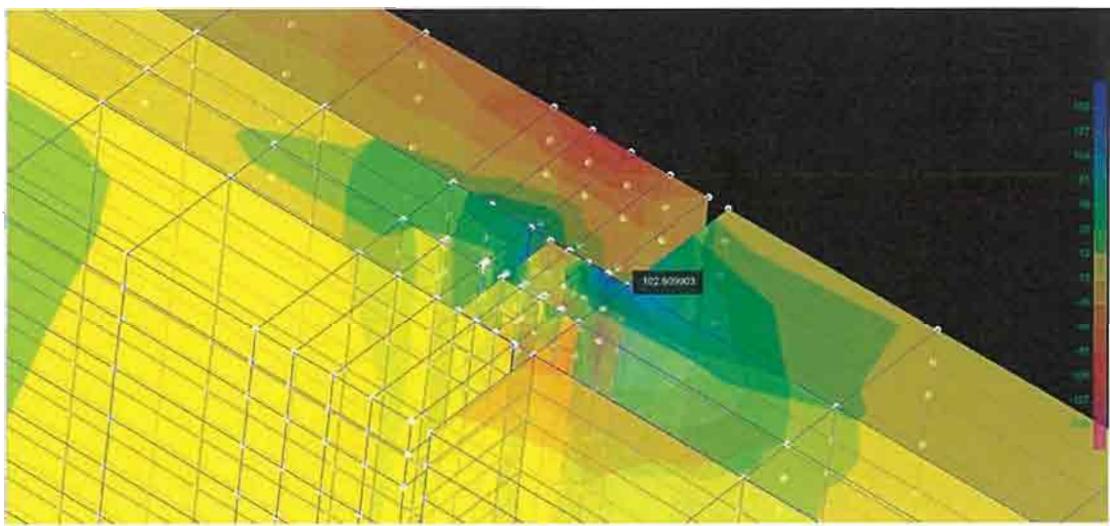
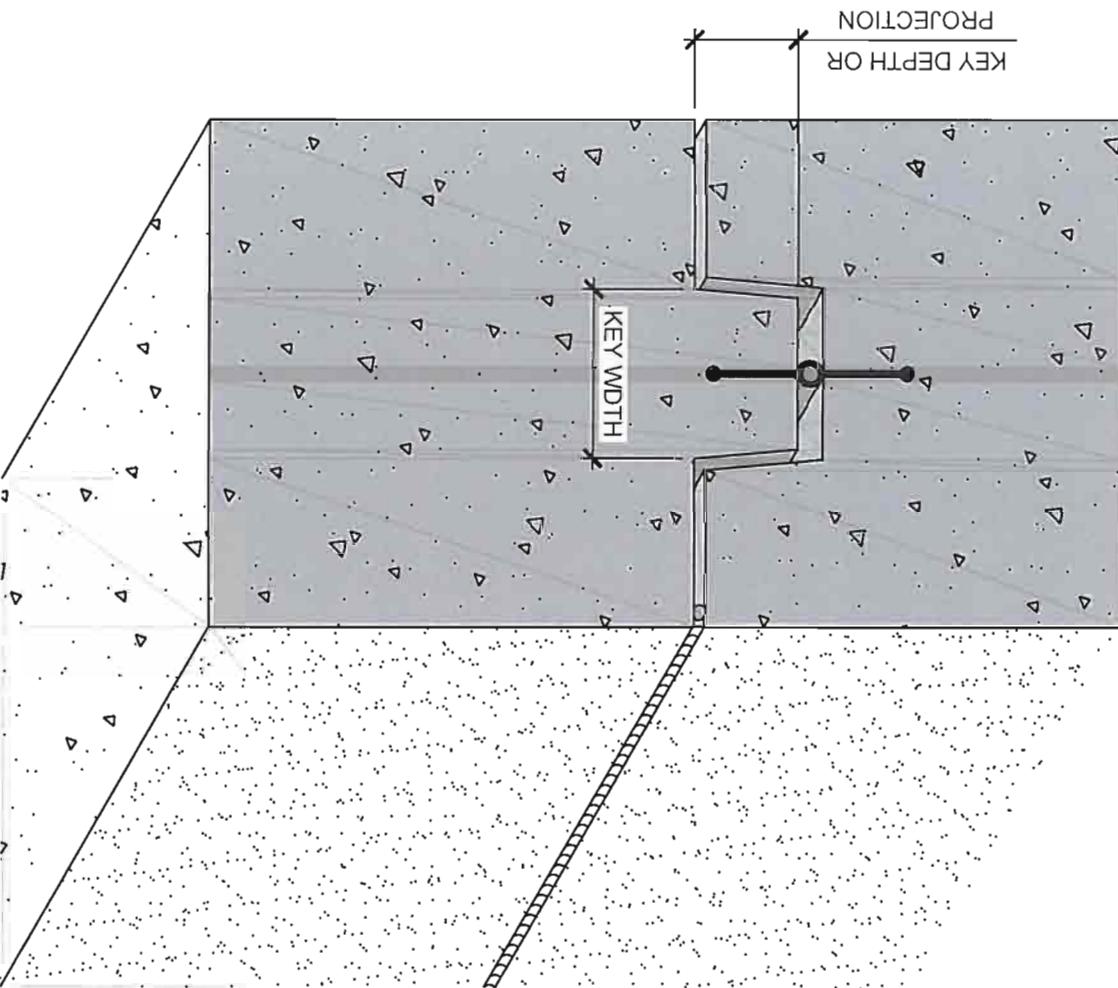


Figure 5. Location of maximum tensile stress at top of Y-wall shear key.

R	J	+/-
RATHS, RATHS & JOHNSON, INC.	TREATMENT PLANT	KEYED JOINT IN CONCRETE
DATE: 03-08-17	SCALE: N.T.S.	SCALE: N.T.S.
JOB #: 14099	DRAWN BY: BAG	DRAWN BY: BAG
PRINCIPAL: OCG	PRINTED BY: WJM	CHECKED BY: WJM
WILLOWBROOK, ILLINOIS 60527	MARYLAND	BALTIMORE
630.325.6160 • 630.325.2866 • WWW.RJ.COM	630.325.6160 • 630.325.2866 • WWW.RJ.COM	630.325.6160 • 630.325.2866 • WWW.RJ.COM
FIGURE		



APPENDIX A

Documents Reviewed



DOCUMENTS REVIEWED

- A+F letter report dated September 16, 2016 and all attachments
- A+F letter report dated October 10, 2016 and all attachments
- RKK Contract Drawings Volumes 1 through 4 dated October 2009
- RKK Addendum No. 1 dated October 23, 2009
- RKK PowerPoint presentation dated September 12, 2014
- A+F formal report dated November 21, 2014 and all attachments
- RKK Structural Calculations Volume No. 1 dated November 2010
- City filter leak repair letter dated February 20, 2013 and all attachments
- City concrete claims outline document dated September 12, 2014 and all attachments
 - Attachment A: Concrete pre-construction meeting agenda dated September 23, 2010
 - Attachment B: Various special inspection reports (SIRs)
 - Attachment C: Various formal letters and correspondence from the City, RKK, and Fru-Con
 - Attachment D: Photographs
- Inspection photographs received during site visit on May 9, 2016
- Fru-Con filter joint repairs letter dated October 17, 2012 and all attachments
- Fru-Con filter joint waterstop submittals dated June 8, 2012, June 27, 2012, and July 9, 2012 and RKK response
- Fru-Con filter joint repairs cost proposal letter dated February 4, 2013 and all attachments
- Fru-Con appeal of claim denial letter dated March 18, 2013
- Fru-Con additional support documentation letter dated Apr. 3, 2013 and attachment
- Fru-Con formal report dated September 10, 2014 and all attachments
 - Ex. A: Concrete specific special inspection reports (SIRs)
 - Ex. B: Leak specific SIRs
 - Ex. C: Photographs
 - Ex. D: City response to request for information (RFI) no. 37A dated October 13, 2011
 - Ex. E: RKK response to RFI no. 37A dated October 13, 2011
 - Ex. F: Gibraltar Construction Services expert report dated August 29, 2014
 - Ex. G: RFI 366 dated January 31, 2011
 - Ex. H: WJE letter report dated August 28, 2014
 - Ex. I: Hanskat Consulting Group letter report dated September 8, 2014
- Fru-Con appeal letter to Bureau Head dated October 28, 2014.
- WJE letter report dated October 16, 2012
- WJE letter report dated August 28, 2014
- WJE letter report dated October 27, 2014
- American Concrete Institute, "Standard Specifications for Tolerances for Concrete Construction and Materials" (ACI 117-90) and Commentary (ACI 117R-90)
- American Concrete Institute, "Joints in Concrete Construction" (ACI 224.3R-95)
- American Concrete Institute, "Building Code Requirements for Structural Concrete Structures" (ACI 318-05) and Commentary (ACI 318R-05)
- American Concrete Institute, "Code Requirements for Environmental Engineering Concrete Structures" (ACI 350-01) and Commentary (ACI 350R-01)
- American Concrete Institute, "Tightness Testing of Environmental Engineering Concrete Structures" (ACI 350.1-01) and Commentary (350.1R-01)

- American Concrete Institute, "Design Considerations for Environmental Engineering Concrete Structures" (ACI 350.4R-04)
- RFI 366 correspondence
 - RFI 366 issued by Fru-Con on January 31, 2011
 - RKK response to RFI 366 dated February 23, 2011
 - City response to RFI 366 dated February 23, 2011
- Filter movement and defects photographs provided by the City from 2012 and 2013 on July 16, 2015
- Various correspondence between Fru-Con and City regarding CIM 1000 repairs
- Pre-bid contractor questions and answers
- Contract specifications
- AASHTO Guide Specifications for Design and Construction of Segmental Concrete Bridges, 1999/2003 Interim
- SIRs reviewed by RRJ

SIR 33	Unauthorized Work Performed	June 30, 2011
SIR 38	Rust Stains on Concrete	August 8, 2011
SIR 40	Improper Form Removal	September 22, 2011
SIR 41	Unauthorized Work Performed	October 5, 2011
SIR 42	Non-Conforming Work Performed	October 11, 2011
SIR 44	Non-Conforming Work Performed	November 14, 2011
SIR 45	Improper Curing of Cylinders	November 21, 2011
SIR 47	Water Leakage at Filters	November 29, 2011
SIR 49	Contraction Joint Excessive Movement	December 2, 2011
SIR 54	Water Leakage at Filters	December 14, 2011
SIR 60	Concrete Defects	February 7, 2012
SIR 62	Influent Trough Cracks	March 1, 2012
SIR 63	Contraction Joint Concerns	March 2, 2012
SIR 64	Water Leakage at Filters	March 16, 2012
SIR 66	Improper Curing Techniques	April 9, 2012
SIR 74	Improper Curing Techniques	July 15, 2012
SIR 75	Improper Curing Techniques	July 25, 2012
SIR 76	Non-Conforming Repair Work Performed	August 1, 2012
SIR 77	Non-Conforming Work Performed	August 7, 2012
SIR 80	Non-Conforming Work Performed	September 20, 2012
SIR 90	Anchor Bolts Placed through CIM Repair	November 7, 2012
SIR 102 (Revised)	Inadequate Concrete Cover	March 15, 2013
SIR 106	Non-Conforming Work Performed	April 3, 2013
SIR 114	Water Leakage through Electrical Conduit	May 9, 2013
SIR 116	Non-Conforming Work Performed	May 21, 2013
SIR 124	Water Leakage at Filters	August 2, 2013
SIR 146	Improper Grouting Procedure	December 13, 2013
SIR 148	Cracking of Roof Sloped Toping	January 2, 2014
SIR 164	Lack of Productivity in Applying CIM Repairs	March 21, 2014
SIR 168	Leakage in the Mudwells	April 17, 2014
SIR 173	Unauthorized Repair Performed	June 20, 2014
SIR 174	Inadequate Repair	June 24, 2014
SIR 175	Inadequate Repair	June 24, 2014
SIR 177	Inadequate Repair	July 1, 2014
SIR 179	Inadequate Repair	July 9, 2014
SIR 183	Inadequate Repair	July 22, 2014

APPENDIX B

RRJ Modeling Approach



RRJ Modeling Approach

Base Slab and Sump Pit

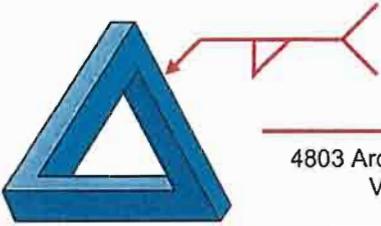
The analysis model of the base slab, created using 3D solid elements, extends between two construction joints in the project east/west direction and between the outer edges of two piles in the north/south direction, with the full slab thickness accounted for. A joint comprised of a keyway was positioned along the east/west plane and centered between the two extreme north/south boundaries of the base slab model. The keyway was modeled with an approximately 4½-inch male key projection on one side of the joint and a 4½-inch female key depression on the adjacent side. The male key projection was slightly undersized to allow a small gap to be modeled between the male and female contact edges and compression only (gap) elements with relatively large stiffness properties that were modeled at this interface to allow load transfer and simulate contact. Both male and female sections of the keyway were modeled with a ¾ inch gap in the center of the key to account for the presence of the waterstop. The waterstop was modeled using compression only (gap) elements with the approximate compressive stiffness as provided in the product literature for the SIKA Greenstreak waterstop used on the project. Piles are modeled as approximately 24-inch-by-24-inch-by-6-foot-deep concrete solid elements, fixed at the base, with properties defined to simulate the in-place steel piles. The effects of the soil were not considered in this analysis. The slab portion containing the female keyway and the base slab was provided with the full material properties of the as-designed concrete, corresponding to a compressive strength of 4,500 psi. The slab portion with the male keyway was modeled using 75 percent of the design strength to account for the approximate material characteristics that would be expected at the time the heat generated by hydration had dissipated. The model was subjected to a series of loads, all of which relate to shrinkage due to the heat of hydration. Temperature loads, simulating the effects of shrinkage, were applied to the slab portion containing the male keyway only, including temperature differentials of -5 degrees to -30 degrees at 5-degree intervals.

Y-wall

The analysis model of the Y-wall, created using 3D solid elements, was developed to investigate the stress induced in the Y-wall keyway due to the maximum hydrostatic load that would be applied during the lifetime of the facility. To depict this condition, two Y-walls are modeled to the height of the top of

the weir wall (approximately 16 feet 2 inches) and all additional material above this point is disregarded. The wall extends to this particular height to simulate the maximum head of water that would occur during water leakage testing of a single bay at the DNF structure. The walls are modeled at full-length in the project north/south direction (approximately 100 feet) with keyway joints located at the quarter points. The full thickness base slab is modeled (excluding any keyway joints) and extends the full length of the model in the project north/south direction and to the midpoint of the sump adjacent to each of the Y-walls in the east and west directions. All Y-walls are modeled at 22 inches thick. All three vertical keyway joints along the length of the Y-walls are modeled with the keyways terminating at a height of approximately 12 feet 6 inches. A $\frac{3}{8}$ inch gap is modeled in the center of each key, and the waterstop is modeled as a solid element within these gaps. The male key projection was slightly undersized to allow a small gap to be modeled between the male and female contact edges. Compression only (gap) elements, with relatively large stiffness properties, were modeled at this interface to allow load transfer and simulate contact. The base of the base slab was fixed at the approximate locations of the slab/pile interfaces. The effects of the soil were not considered in this analysis. At the north and south ends of the model, 24-inch-thick end walls were modeled to the symmetry plane to simulate the actual Y-wall end stiffness conditions. The effect of the pumping gallery building located along the south wall of the structure is not considered. All concrete solid elements were modeled with full design material properties corresponding to a compressive strength of 4,500 psi. Hydrostatic load corresponding to water filled to the full-height of the wall was applied on the insides of each of the two Y-walls and end walls. No load was applied on the opposite ends of the Y-walls to simulate the worst case loading condition of filling a single cell while the other cells remain unfilled.

ATTACHMENT 4



Sperko Engineering

Services, Incorporated

4803 Archwood Drive, Greensboro, NC 27406, USA, www.sperkoengineering.com
Voice: 336-674-0600 FAX: 336-674-0202 e-mail: sperko@asme.org

February 17, 2016

Mr. Jeff Kracun, Project Director
Balfour Beaty Infrastructure, Inc.
Patapsco Wastewater Treatment Plant
3601 Leo Street
Baltimore, MD 21226

Subject: Weld Quality Issues

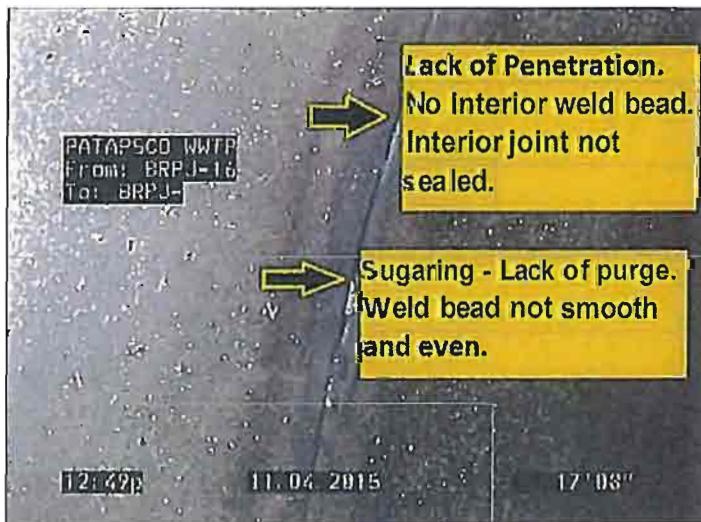
Dear Mr. Kracun,

I have reviewed the February 1, 2016 letter from Mr. Art Shapiro, P.E., PMP Chief of the Office of Engineering and Construction Department of Public Works, City of Baltimore, regarding weld quality issues, and I have the following observations.

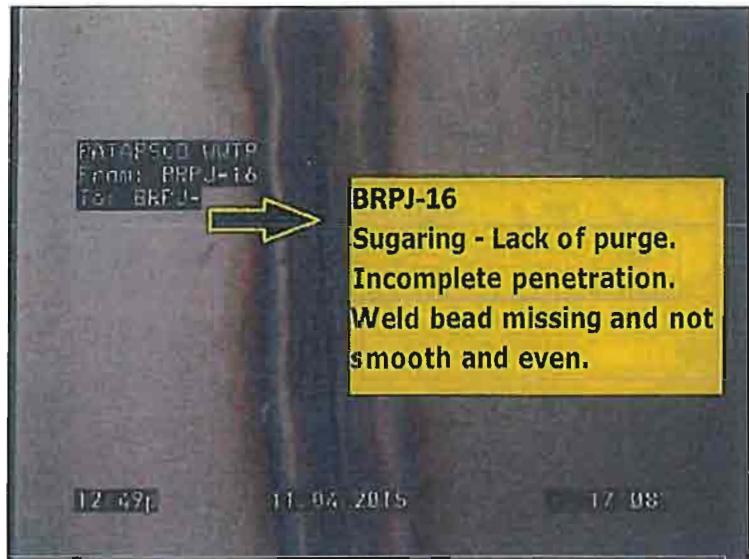
Mr. Shapiro's letter indicated that the specification SC845R Volume III of V Specification Section 40 23 36.13 for the project states that all field welds must meet the following:

- Filler wire shall be added to all welds to provide a cross section of weld metal equal to, or greater than the parent metal.
- Inert gas shielding shall be provided to the interior and the exterior of the joint.
- Interior weld beads shall be smooth, even, and not have an interior projection of more than 1/6 inch beyond the I.D. of the pipe or fitting.

I do not believe that there is any dispute about these requirements. His letter goes on to illustrate by the following photographs where he believes that the specification does not fulfill the above. Specifically, that the weld BRPJ-16 exhibits a lack of an interior weld bead and lack of penetration on over 80% of the joint.



Patapsco Wastewater Treatment Plant Weld Quality Issues



Weld cross-section of weld metal equal to or greater than the parent metal

Considering the requirement that all welds shall have a cross-section of weld metal equal to or greater than the parent metal thickness, the above photographs only show the interior of the pipe surface; during my visit to the site last June, welds typically exhibited modest external reinforcement as shown in this photograph:



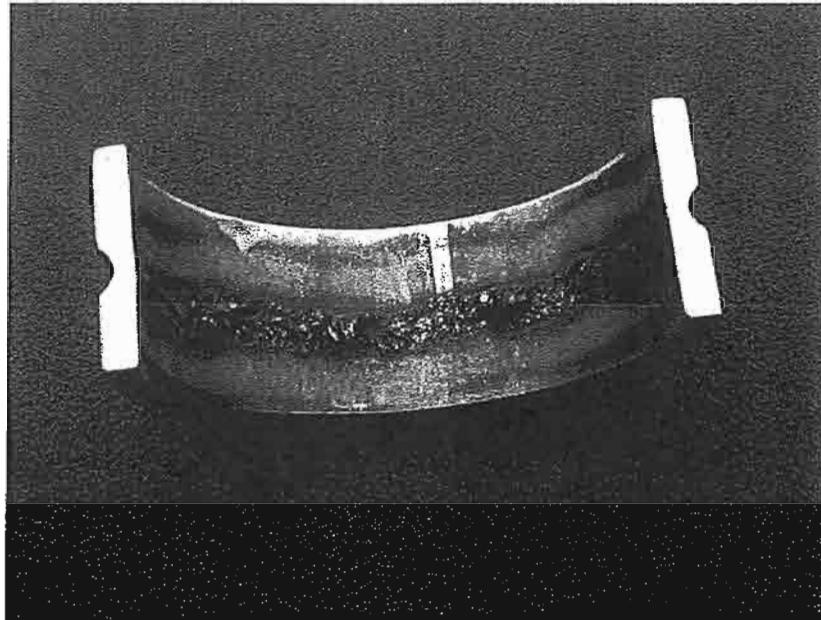
While the weld metal may not be flush with the *interior* surface, any incomplete fill will be compensated for by *external* reinforcement making the weld at least as thick as the parent metal thickness.

Patapsco Wastewater Treatment Plant Weld Quality Issues

In my opinion, the presence of incomplete penetration does not violate the requirement that the weld be as thick as the parent metal since there is external reinforcement to compensate for incomplete penetration.

Inert gas shielding shall be provided to the interior and the exterior of the joint

Regarding the requirement that inert gas shielding be provided to the interior and the exterior of the joint, the following photograph shows what a weld looks like when inert gas ("purge") is not provided on the interior surface of a stainless steel joint:



Note the coarseness of the surface as well as the discoloration. While the photos provided by Mr. Shapiro exhibited discoloration which would have resulted from making a weld where there was oxygen present during welding, that does not mean that inert gas was not provided to the root side of the joint. Those who have expertise in writing specifications for stainless steel piping where the surface oxidation and resulting discoloration has to be controlled will specify that the interior weld surface discoloration shall be permitted to have "a light straw to light blue color" or similar words that relate to the efficacy of the purge and resulting oxide thickness; others will specify a visual comparison standard such as that found in AWS D18.1; this standard contains photographs of the internal surfaces of welds made over a range of oxygen levels showing corresponding discoloration.

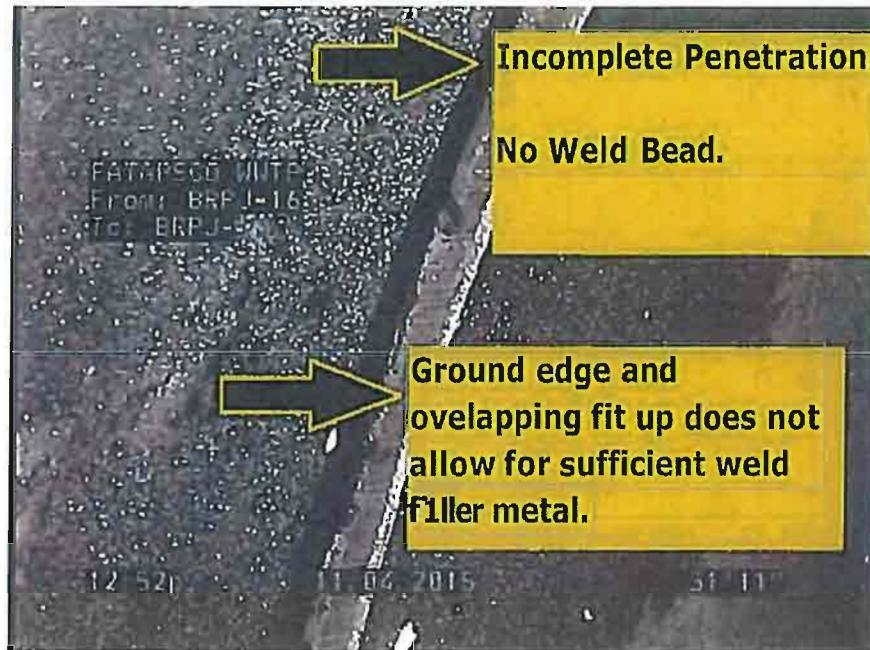
Unfortunately, the specification does not specify any basis for determining the efficacy of the purge gas that was used based on discoloration of the surface; just because there is discoloration does not mean that inert gas was not provided. Further, while one may actually purge pipe down to less than $\frac{1}{2}\%$ oxygen, if a lot of moisture is present in the pipe, that moisture will cause discoloration of the surface since that moisture will be absorbed by the argon and react with the heat from welding causing discoloration. Finally, the presence of a thin film of cutting fluid or similar contaminant will cause the same kind of discoloration even if no oxygen is present at the inside surface during welding.

In my opinion, the presence of discoloration of the internal weld surfaces does not demonstrate that Balfour Beaty did not provide inert gas on the inside surfaces of the welds.

Patapsco Wastewater Treatment Plant Weld Quality Issues

Interior weld beads shall be smooth, even, and not have an interior projection of more than 1/6 inch beyond the I.D. of the pipe or fitting.

Mr. Shapiro illustrates the third point, that the interior weld beads shall be smooth, even, and not have an interior projection of more than 1/6 inch beyond the I.D. of the pipe or fitting with this photograph:



It appears that the surface shown in this photograph has significant mismatch between the mating surfaces (i.e., is not smooth) and that there more than 1/6 inch of mismatch; in my opinion, this weld requires rework to bring it in compliance with the specification. While one may use a video camera or boroscope to locate this type of mismatch, it is my experience when welding large-diameter, thin-wall pipe that there will be locations around a circumference where the welder did not match up the ends well with the result that there will be obvious mismatch on the *external* surfaces of the pipe, and that such *external* mismatch will be *mirrored* with similar mismatch at the *internal* surfaces; locations showing evident external mismatch should be further examined by Balfour Beaty to determine if rework is necessary to bring the internal surfaces to within 1/6th of an inch.

Most disturbing, however, in the photographs provided by Mr. Shapiro is the repeated observation of "incomplete penetration." In the welding industry, when an engineer wants the weld metal to penetrate all the way through a joint and be visible on the opposite side of the joint, he uses the term "full penetration." A requirement for a "smooth" surface is not the same thing as "welds shall be fully penetrated." Had the specification required full penetration or had the specification incorporated ASME B31.3 in for this piping as it did in paragraph 2.15 for the stainless steel double wall piping, the welds shown in the above photographs would not be acceptable.

It should be understood, however, that if the specification required that welds be fully penetrated, the cost of welding on the project would have increased *significantly*. Further, if any type of volumetric examination or visual examination of the interior surfaces (such as was performed to obtain these photographs) had been imposed, the cost of welding would have increased several times. Some factors that cause the cost of welding to increase when the above are imposed are:

Patapsco Wastewater Treatment Plant Weld Quality Issues

- Fewer welders are available who have the skill needed do the work
- Welders will take more time preparing ends and precleaning
- Welders will take more time to get perfect fit-up and alignment. This is especially true when dealing with large-diameter, thin-wall pipe.
- Welders will take more time to make tack welds and prepare them for incorporation into the root pass.
- Welders will take more time make root pass.
- Welders will take more time to get perfect layers of weld metal, including cleaning between layers and contouring previous layers of weld.
- Welders will take more time preparing the cover pass for examination.
- Additional supervision and/or inspection personnel will be needed to verify that the welders are doing the job so that the examinations pass.
- The only way to get welds that are capable of passing internal visual or volumetric examinations is to examine the weld, identify any unacceptable indications, make the necessary repairs and reexamine the repair areas.

In the opinion of Sperko Engineering, imposing a requirement on this work that welds exhibit full penetration is, in fact, a material change to the contract.

Suitability for Service

The open question is whether or not the conditions observed are suitable for service. Stainless steel *in water-wetted service* suffers from a phenomenon known as crevice corrosion, and the incomplete penetration shown in the above photos has the potential for initiating pitting attack in wetted service. Similarly, surfaces discolored with oxides or other surface contamination like those shown in the above photographs will suffer from underdeposit corrosion. Since the internal surfaces of the air-supply system is not water-wetted service, neither crevice corrosion nor underdeposit corrosion will be a problem. I would also note that there are split-sleeve type couplings in the system (see photo below), and such fittings have significant crevices where they meet the pipe outside surfaces; if these fittings are acceptable for the service, crevices associated with incomplete penetration should perform equally as well.



Split-sleeve type coupling

Patapsco Wastewater Treatment Plant Weld Quality Issues

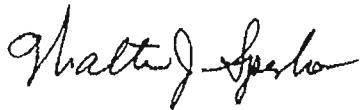
Incomplete penetration and surface oxidation and other surface contamination are, unfortunately, potential problems in water-wetted service as they can lead to pitting attack and leakage. I do not know enough about the actual service conditions, water chemistry, flow rates, etc. to speculate whether or not welds exhibiting incomplete penetration, surface oxidation or other contamination will be a problem. It is my understanding that the water will be highly aerated, and that is usually a positive condition since aeration provides plenty of oxygen to maintain the stability of the oxide layer that gives stainless steel its corrosion resistance.

Conclusions

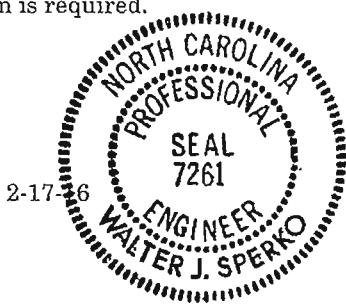
It is the opinion of Sperko Engineering that, with the exception of where pipe joints are mismatched resulting in internal misalignment in excess of 1/6 inch (which should be evident from OD mismatch), the welds made by Balfour Beaty Infrastructure, Inc. on the subject project are in compliance with the specification requirements.

Please advise if further discussion is required.

Very truly yours,



Walter J. Sperko, P.E.



ATTACHMENT 5



June 30, 2016

Mr. Art Shapiro, PE, PMP
Chief Engineer
Office of Engineering and Construction
Room, 900, Abel Wolman Building
Baltimore, MD 21202

Fru-Con Construction

A Division of Balfour Beatty Infrastructure, Inc.

3601 Leo Street
Baltimore, MD 21226
Tel 410-355-2451
Fax 410-355-2454
www.bbius.com

Attention: *Bob Nash*

FC-BC-244

Reference: Sanitary Contract 845R

Subject: Field Weld Proposal

Dear Mr. Nash:

Balfour Beatty Infrastructure, Inc./Fru-Con ("BBII/FC") is submitting the attached proposal regarding the disputed field weld issue on the 852 and 845 project. This proposal is an attempt by BBII/FC to move forward the completion of both the 852 and 845 projects, which are being delayed by the City's actions. BBII/FC maintains that the field welds meet the specifications for both projects and admits no fault of any kind regarding the field welds on either project. BBII/FC also reserves all its rights under the contract for compensation. Please contact us should you have any questions.

Sincerely,

Jeff Kraoun
Project Director
BBII/Fru-Con Construction

CC: Joe Paplauskas (OEC); Bob Nash (OEC); Don Lambrow (OEC); Jerry Henger (RKK); Joe Tack (RKK); Ben Johns (BBII), Ashu Vyas (BBII)

Balfour Beatty Infrastructure/Frucon

Patapsco 852 AND 845 Project

Potential Solution - Stainless Steel Pipe Weld Issue

Introduction

Balfour Beatty Infrastructure/FRUCON (BBII) and the City of Baltimore have been engaged in a dispute over the quality of the field weldments performed on various stainless steel pipes incorporated into both the 852 project and the 845 project. In short, the City of Baltimore believes that the weldments in question are of questionable quality for their intended purpose. BBII believes that it performed the weldments in accordance with specification requirements and industry standard and -if the quality is not sufficient for the intended purpose, it is because no recognized welding standard was -specified. The purpose of this paper is not -to further this dispute or to argue either sides position. The purpose of this paper is to propose a solution that could resolve this issue such that work can advance and cost and schedule impacts can be minimized.

Understanding of the Primary Concern

After significant discussion between the City and BBII, both parties generally agree that this issue is not a safety issue or a structural issue. Instead, the City has a concern that is centered around longevity of the pipe welds in question. More specifically, should an issue arise either in the air handling pipe or the water handling pipe the issue would most likely manifest itself in the form of a leak. Whatever the case may be, the City's concern is that repairs to any of the questioned pipe welds will be extremely difficult, and potentially expensive, to repair because it could require a complete plant shutdown. BBII does not accept the City's concern as being reasonable or even one of BBII's making. But, by identifying the City's concern clearly, we can move forward with a solution.

The field welds may be generally divided into two groups field welds performed on air handling pipe and field welds performed on water handling pipe. In all cases, the welds are circumferential and splice two pieces of pipe together. With the air handling pipe, the City's concern is related to welds closest to the blowers and the subsequent vibration transmitted to those welds from the blower. With the water handling pipe, the concern is centered around "crevice corrosion." Crevice corrosion is corrosion that could develop in or around crevices in a pipe surface, such as those found around weldments or other pipe connections. It should be noted that nobody involved with this issue knows with certainty if one or both of these issues will decrease the useful life of the weldments in question. The solution proposed herein is, therefore, is a "belt and suspenders" solution to ensure that these potential longevity issues are no longer issues.

Magnitude of the Issue

The City prepared the following field weld inventories for stainless steel pipe at each plant. BBII has reviewed these inventories and generally agrees with them.

Patapsco 852 - Stainless Steel Pipe Field Weld Inventory				
Item	Location	No. of Welds	Pipe Dia	Comments
1	Pipe Gallery	4	12"	12" pipe coming off of 24" backwash filters 1,2,3,13
2	Pipe Gallery	2	24"	Dirty Backwash 2 welds by filter 23
3	Mudwell	4	8"	3 welds in the connection between air blowers 1B and 1A. 1 weld on 2A. See drawing M-12.
4	Daft No. 2 Quad D	4	14"	influent
5	Daft No. 2 Quad D	8	16"	effluent
6	Daft No. 2 Quad D	7	10"	Effluent drains. 2 welds east, 5 welds west of the tank
7	Daft No. 1 Quad D	6	12"	Drain
8	Daft No. 1 Quad D	9	14"	Effluent
9	Daft No. 1 Quad D	4	10"	Drain
10	Daft effluent	13	16"	Daft effluent, see marked up M-20 for elevation view
11	Clearwell No.1 drain pump	2	6"	The welds are on both sides on an elbow
12	Clearwell No.2 drain pump	7	6"	All 7 welds are surrounding an elbow. See M-28
13	Blower room	10	10"	2 welds per blower. One on each of the vertical pipes.
14	24" clean backwash. see M-10	12	24"	4 welds in 3 locations each
15	Filter drain	4	12"	See M-10. 2 welds around each off the elbows in Quad B.
Total Field welds known to date =			96	

Patapsco 845 - Stainless Steel Pipe Field Weld Inventory

Item	Location	No. of Welds	Pipe Dia.	Comments
1	Mudwell Pump Room	14	16"	See figure on the right for specific locations
2	Blower #1	4	12"	See figure on the right for specific locations
3	Blower #2	3	12"	See figure on the right
4	Blower #3	2	12"	see figure on the right
5	Blower #4	2	12"	see figure on the right
6	Blower #5	4	12"	see figure on the right
7	Sludge tank 1	3	6"	There's an elbow between 2 welds for access
8	Sludge tank2	5	6"	
9	Sludge room	4		Two pipes in the middle off the room running up
10	Sludge room corner	3	6"	Need scaffolding for access
11	DAFT tank 1	3	18"	Need scaffolding for access
12	DAFT tank 1	1	24"	
13	DAFT tank 2	1	18"	
14	Process air pipe in Pipe Gallery	4	8"	between line 1&2, 5&6, 8&9, 10&11
15	2" x 4" double containment pipe	60	2"x4"	both sides of the pipe gallery 30 on each side
16	End of the pipe gallery	5	12"	Above the exit sign

Total Field welds known to date =

118

In total, between the 852 and the 845 projects there are approximately 214 field welded pipe connections on stainless steel pipe that will be addressed by this solution.

Solution Objective

Because BBII will seek to recover the time and cost associated with the solution to this problem and the City will deny responsibility based upon its position, the common ground -for both parties must be a least time and least cost impact solution that satisfies the City's concern with longevity. Of note, and of concern to both parties, is a solution that requires the removal and replacement of all the welds. Both parties generally agree that this solution would delay project completion for at least 9 months with costs in the \$3 to \$5 million range. Not an attractive prospect for either party.

Proposed Solution

1. 845 and 852 Air Handling Pipe

On the 845 Project, Items 2,3,4,5,6, 14 (partial) and 16 (+- 23 welds) outlined in the table above and Items 3 and 13 (14 welds) on the 852 project are all air handling pipes. Because these pipes do not handle water, crevice corrosion is not an issue. However, the City has voiced concern that because the bulk of these welds are located close to the blowers, vibration may cause weld failure.

The bulk, if not all, of the air handling pipe weldments in question have been removed by the City for testing. The testing, which is destructive, effectively makes the pipe unusable and hence, it must be replaced. BBII is taking the steps necessary to replace the pipe now. **We propose to replace these pipe elements with sections that have been fabricated in a qualified shop.** This will eliminate all field welds of concern.

2. 845 Mudwell Pump Room

Item 1 on the 845 weld list above (14 welds) has been removed and will be refabricated to accommodate the adjusted mudwell pump room layout. **We propose to replace this pipe element with a pipe section that has been fabricated in a qualified shop.** This will eliminate all field welds of concern.

3. 852 DAFT Pipe

Items 4,5, 6,7,8,9, and 10 outline 38 welds for 852 DAFT pipe. BBII records indicate that each of these welds were inspected by OEC at the time the weldments were installed. These welds have been installed to the satisfaction of the City. **Proposed solution – no further action necessary.**

4. 845 sludge & DAFT Pipe

Items 7,8,9,10, 11,12, and 13(20 welds) outlined in the table above address sludge pipe and daft pipe in 845. All of these weldments were performed by Chesapeake Mechanical as opposed to BBII forces. The

City has not identified any concerns with these field welds. **Proposed solution – no further action necessary.**

5. 845 2"x4" Double Containment pipe

Item 15 in the table above addresses the Double containment pipe (60 welds). Of note, these weldments are “socket welds” and are not similar to any of the other weldments in question. Also, we understand that OEC’s welding expert (Mr. Kidwell) was on site and inspected these welds during construction. Therefore, the welds meet the City’s quality expectations. **Proposed solution – no further action necessary.**

6. All other field Welds

All field welds except items 1,2,3,10,11,12,14, and 15 (35 welds) in the 852 table above have been addressed in the narrative above. **Proposed solution for “all other field welds – Install Dependa Lock pipe couplers at each of the weldment splice locations noted.** BBII proposes to leave the weld in question in place and simply install a Dependa Lock coupling over the welded splice. Given that a Dependa Lock coupling is fully capable of splicing these pipes on their own, with a weldment in place, this solution is a “belts and suspenders” solution to the City’s concern about these welds.

Conclusion

BBII proposes to execute the solutions outlined herein. We believe this solution resolves the longevity concerns raised by the City for the least time and cost impact. Of note, solutions 1 and 2 are in process and solution 6 will be the most difficult of all the solutions to implement. However, please note that once solutions 1 and 2 are complete, solution 6 can be implemented anytime after solutions 1 and 2 are complete meaning that it can be done without impacting plant I&C work and startup efforts.

BBII respectfully requests the City’s approval of this proposal.

ATTACHMENT 1



EVALUATION OF CONCRETE CONSTRUCTION DEFICIENCIES

PATAPSCO WASTE WATER TREATMENT PLANT
DENITRIFICATION STRUCTURE

BALTIMORE, MARYLAND

Prepared For:

Mr. William Michael Mullen
Baltimore City Law Department
100 North Holliday Street
Suite 101
Baltimore, Maryland 21202

Prepared By:

Raths, Raths & Johnson, Inc.
500 Joliet Road, Suite 200
Willowbrook, Illinois 60527-5618
630.325.6160
www.rrj.com

RRJ 14099

August 19, 2016



Otto Guedelhoeffer
8-19-2016

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland, License No. 14569, Expiration Date: September 2, 2017.



3



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2003

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - Amendment No. 1 to Agreement of Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of Amendment No. 1 to Agreement for Project 1402, On-Call Project and Construction Management Assistance Services with Rummel Klepper & Kahl, LLP (RK&K), and an increase of the upset limit from \$4,000,000.00 to \$5,000,000.00. The Amendment No. 1 to Agreement will extend the period of the agreement through December 10, 2018.

AMOUNT OF MONEY AND SOURCE:

\$1,000,000.00 - The amount of money and source will be determined with each individual task. No funds are required at this time.

BACKGROUND/EXPLANATION:

The completion of the Patapsco Enhanced Nutrient Removal (ENR) Projects is subject to a December 31, 2016 consent decree deadline imposed by the Maryland Department of the Environment. The Patapsco ENR Projects (Sanitary Contract No. 845R, Nitrification Filters Related Work for the Enhanced Nutrient Removal Facilities at Patapsco Wastewater Treatment Plant and Sanitary Contract No. 852R, Denitrification Filters Related Work for the Enhanced Nutrient Removal Facilities at Patapsco Wastewater Treatment Plant) have been delayed by disputes with the existing contractor over the correction of identified quality control deficiencies. The most significant of these disputes concerns the quality of welds on process piping at the Patapsco ENR Projects.

2004

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - cont'd
of Engineering and Construction

The DPW has repeatedly directed the existing contractor to take corrective action, but it has not done so to the satisfaction of the DPW. The lack of resolution of this dispute, together with other issues, has delayed the project past the consent decree deadline. At this time, the DPW is taking every measure necessary to complete the Patapsco ENR Projects as quickly as possible and at the level of workmanship contemplated by the contract. The delays to the completion have subjected the City to potential fines from the Maryland Department of the Environment (MDE).

To minimize further delays to the completion of the ENR projects (SC 845R and 852R), it is imperative that the City retain the services of a supplemental contractor to investigate, repair, and/or replace deficient work identified by the City.

The purpose of this request is to provide time and money for Task 22. The proposed Task #22 (to be issued by the agency) is an important and concurrent component in supporting the effort of SC 961 Emergency Construction Services (Phase 2) with additional inspections and project management support. The services to be provided by RK&K in Task 22 are within the existing scope of work in on-call Contract 1402. The Office of Engineering and Construction is utilizing MBE and WBE consultants from the current contract in a major role for this task. Accurate documentation is paramount towards the goal of back-charging the existing contractor for this overall rework effort.

Since time is of the essence, and the Office of Engineering and Construction does not have available personnel with the necessary experience, the City must engage RK&K inspection and project management personnel to provide the services needed for Task 22.

2005

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - cont'd
of Engineering and Construction

IT IS HEREBY CERTIFIED THAT PURSUANT TO ARTICLE VI, §11(e)(i) OF THE CHARTER, THE EMERGENCY IS OF SUCH A NATURE THAT NO ADVANTAGE WILL RESULT IN SEEKING, OR IT IS NOT PRACTICABLE TO OBTAIN, COMPETITIVE BIDS. ON A MEMO DATED JULY 06, 2016, THE DIRECTOR OF FINANCE APPROVED THE REQUEST OF THE DIRECTOR OF THE DEPARTMENT OF PUBLIC WORKS TO RETAIN A SUPPLEMENTAL CONTRACTOR FOR THIS WORK.

MBE/WBE PARTICIPATION:

The vendor will comply with Article 5, Subtitle 28 of the Baltimore City Code and the MBE and WBE goals assigned to the original agreement of 27% and 10%.

AUDITS NOTED THE TIME EXTENSION.

AUDITS NOTED THE INCREASE IN THE UPSET LIMIT.

AUDITS NOTED THIS ON-CALL AGREEMENT AND WILL REVIEW TASK ASSIGNMENT.

A PROTEST AND SUPPLEMENTAL PROTEST WERE RECEIVED FROM MARTIN HILDA, P.A. ON BEHALF OF BALFOUR BEATTY INFRASTRUCTURE, INC. AND ITS DIVISION FRU-CON CONSTRUCTION.



May 16, 2017

VIA HAND DELIVERY

Board of Estimates
c/o Clerk of the Board
204 City Hall
100 N. Holliday Street
Baltimore, MD 21202

Reference: Sanitary Contract 852R & 845R
Subject: Written Protest
Amendment #1 to Agreement of Engineering and Construction
Project 1402 (Rummel, Klepper & Kahl, LLP)

Dear Members of the Board,

We represent Balfour Beatty Infrastructure, Inc. and its division Fru-Con Construction (hereinafter “BBII/FC”) and as well as its sureties, Travelers Casualty and Surety Company of America and Fidelity & Deposit Company of Maryland (“852 Co-Sureties”) and Travelers Casualty and Surety Company of America, Fidelity & Deposit Company of Maryland, Zurich American Insurance Company, Liberty Mutual Insurance Company and Federal Insurance Company (“845 Co-Sureties”). BBII/FC is the general contractor for the SC 852R and SC 845R projects (“Projects”). BBII/FC and its sureties respectfully submit this Written Protest to the proposed Amendment #1 to Agreement of Engineering and Construction for the reasons set forth below. BBII/FC and its sureties request the opportunity to be heard on this Protest at the May 17, 2017 Board of Estimates meeting. Specifically, BBII/FC and its sureties object to the proposed Amendment #1 because, as more fully set forth below, it will delay the Projects by one year; cost taxpayers unjustified expenses; and, subject BBII/FC and its sureties to unwarranted damage claims from the City, all for work which is unnecessary and not needed.

First it would be prudent to provide the Board with some background.¹ Rummel, Klepper & Kahl, LLP (“RKK”) is the design engineer for both the SC 852R and SC 845R Projects. With respect to the SC 852R Project, RKK failed to properly design the concrete structure, among other things. Specifically, RKK designed a concrete keyway which cracked when subjected to expected loading of the various components of the structure which resulted in significant water leaks. BBII/FC first brought RKK’s deficient design to OEC’s attention in 2012. From that time until August 2016, OEC and RKK blamed BBII/FC for the extensive leaks and the more than 3-year delay to completion of the SC 852R Project. Notably, at some point, the City retained the services of a forensic engineer Rath, Rath, & Johnson (“RRJ”) to review and evaluate RKK’s structural design. In August 2016, the City provided BBII/FC with a copy of RRJ’s report. See **Attachment 1**, RRJ’s August 19, 2016 Report.

¹ BBII can provide a full and detailed explanation of the events that occurred on the Projects concerning this matter upon request.



In its report, RRJ states plainly that RKK's design is severely deficient, flawed and the direct cause of extensive leaks throughout the SC 852R structure.

Joints and Shear Keys

The shear keys at joints within the DNF structure were designed without Code-prescribed capacity to resist the expected shear demands. This improper design has caused joint cracking and subsequent joint leakage.

It is RRJ's opinion that RK&K is responsible for the majority of joint repair costs because of its failure to provide a Code-compliant design to transfer shear forces and control leakage at the keyed joints. Fru-Con should be responsible for a portion of joint repair costs because its poorly constructed joints likely contributed to the severity of the cracking and leaking. A detailed analysis of repair costs and allocations is beyond the scope of this report.

Although RRJ attempts to place some responsibility on BBII/FC, RRJ's statements concerning construction deficiencies were fully addressed in BBII/FC's response. *See Attachment 2*, September 15, 2016 letter, FC-BC-345. In short, any construction deficiencies were remedied during the course of construction, are typical for this type of work, and are not the cause of the extensive leaking of the facility.

On March 9, 2017, RRJ issued a Supplemental Report to report its findings based upon computer modeling RRJ performed on RKK's design. *See Attachment 3*, RRJ's March 9, 2017 Supplemental Report. In its Supplemental Report, RRJ confirmed its earlier findings that RKK's design is severely deficient, flawed, and the direct cause of the leaks. In fact, RRJ concluded that RKK's design would cause the structure to crack and leak irrespective of how it was constructed. Based upon the findings of the City's independent engineer, RKK is fully responsible for the delays associated with the SC 852R Project. Because it is the City's designer that is directly responsible for the delays, the City is improperly withholding nearly \$13 million in liquidated damages from BBII/FC.²

With respect to the Sanitary Contract 961 ("SC 961") element of this Amendment #1 authorization for RKK, the City issued SC 961 purportedly to address rework of alleged field welding deficiencies on the Projects. Any concerns about the integrity of the field welds, though, should be directed at RKK for its design, and not to BBII/FC. BBII/FC performed the field welding work as required and to the standards set forth in the design RKK provided under the respective SC 852R and SC 845R Projects.

² BBII/FC has other time extension requests pending on both Projects directly related to RKK's woefully inadequate design which have been fully documented during the course of the Project, but which have essentially gone unanswered by OEC. Notwithstanding those time extension requests, the City has withheld over \$26 million in liquidated damages from BBII/FC without giving BBII/FC any opportunity to be heard on its claims concerning RKK's deficient design. BBII/FC will make copies of these claims available at the Board's request.



To confirm the integrity of the field welds and the work BBII/FC performed, BBII/FC retained the services of Mr. Walter Sperko, P.E., an expert in welding engineering. Mr. Sperko graduated from the University of Notre Dame in 1968 with a degree in engineering and in 1969 with a bachelor of science in Metallurgical Engineering and Materials Science. Mr. Sperko began his career as a material engineer in 1969 and subsequently founded Sperko Engineering in 1981, providing engineering consulting services to clients in the metal fabrication industry and specifically advising in the areas of welding, metallurgy, manufacturing processes, piping design, inspection, and quality assurance. Mr. Sperko is also a Codes Committee Member for the American Welding Society and on the committee and subcommittees for several American Society of Mechanical Engineers (“ASME”) boards regarding welding and pipe codes and standards. He is well regarded in the welding industry and attains a deep knowledge of the welding processes and procedures for technical adequacy and code conformance.

After his site visit and review of the Contracts and other related documents, Mr. Sperko issued a report concluding that the field welds on the Projects were in complete compliance with the Specification requirements.³ Moreover, Mr. Sperko advised the welds were suitable for their intended purpose as the possibility of leaks in the air pipes were negligible and the possibility of leaks and corrosion at the water pipe joints were minimal (Mr. Sperko’s report is attached hereto as **Attachment 4**). Additionally, BBII/FC successfully pressure tested the pipe systems which required the piping system to withstand 150% of the working pressure at a minimum of 150 pounds per square inch (psi). In other words, OEC’s pursuit of the remedial contract SC 961 and this Amendment #1 to RKK’s on-call contract is a complete waste of money.

Notwithstanding the compliant field welds, but in an effort to allay OEC’s stated concerns regarding the integrity of the field welds, BBII/FC submitted a proposal to the OEC that included installing Depend-o-Lok pipe couplers over each of the “questionable” welds – a “belt and suspenders” approach. These pipe couplers are permitted under the Specifications to join stainless steel pipe. BBII/FC’s Depend-o-Lok solution would cost approximately \$200,000 as compared to the \$1 million OEC wants to give to RKK and the reported \$8 million OEC wants to spend to investigate and replace all of the field welds. Nevertheless, OEC rejected BBII/FC’s proposed solutions without a sound engineering basis to do so (BBII/FC’s proposal is attached hereto as **Attachment 5**).

BBII/FC reemphasizes that the field welds on the Project satisfy the Contract requirements; *i.e.*, RKK’s design. While the welds and piping systems work as intended, any continuing concerns about the integrity of the welds is a design issue for RKK. Moreover, the welds do not adversely impact the plant’s operations or endanger the safety of the workers. There is no possibility of a catastrophic failure occurring through the air or water pipes. There is no engineering reason to spend taxpayers’ dollars on “remediating” field welds that perform and comply with the Specifications. Respectfully, the worst that can happen is a hissing from the air pipes or dripping from the water pipes and BBII/FC has already proposed a solution to that

³ Mr. Sperko did report some minor mismatch of the alignment of two pipes which BBII/FC has since corrected.



possibility which costs significantly less than the RKK Amendment #1 extension and the reported \$8 million for the SC 961 contract. There are no legitimate engineering concerns about the integrity of the welds. Accordingly, any extension of RKK's contract or the SC 961 contract is entirely unnecessary and amounts to economic waste for the City of Baltimore and its taxpayers.

Notably, both the RKK proposed Amendment #1 extension and the report increase in the SC 961 contract will significantly delay the completion of the Projects and unreasonably expose BBII/FC and its sureties to additional damage claims from the City. Currently, both Projects will be ready to receive treatable water June 1, 2017 and to begin performance testing.

For these reasons, BBII/FC and its sureties respectfully request the Board reject the proposed Amendment #1 to RKK's on-call contract.

Sincerely,

/s/ Gregory S. Martin

Gregory S. Martin

GSM/ndb
Enclosure



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APPENDED

- Figures 1 through 10
- Appendix A Documents Reviewed
- Appendix B Resume of Otto C. Guedelhoefer

EVALUATION OF CONCRETE CONSTRUCTION DEFICIENCIES
PATAPSCO WASTE WATER TREATMENT PLANT DENITRIFICATION STRUCTURE
BALTIMORE, MARYLAND

INTRODUCTION

Raths, Raths & Johnson, Inc. (RRJ) has been retained by the City of Baltimore (City), Maryland, to perform an engineering evaluation of issues encountered during the construction of the concrete Denitrification Filter (DNF) structure at the Patapsco Waste Water Treatment Plant (PWWTP) located in Baltimore, Maryland. The scope and findings of RRJ's evaluation are summarized in this report. The information included herein is provided with a reasonable degree of engineering certainty. RRJ's findings are based on the review of documentation made available as of the date of this report and its site observations conducted to date. RRJ reserves the right to amend these findings should additional relevant information be made available.

SCOPE

RRJ was asked to evaluate certain project documents, related analyses, and industry standard reference data relevant to concrete construction defects that were identified during construction of the DNF structure. RRJ evaluated allegations made by the project's designer, RK&K and the project's concrete contractor, Fru-Con Construction, LLC (Fru-Con), regarding the nature and causes of the defects to determine the reasonableness of the allegations. RRJ has reviewed numerous industry references and limited project documentation, including design drawings, specifications, test results, inspection reports, and certain project correspondences. Appendix A contains a listing of all documents reviewed in the preparation of this report. RRJ visited the project site to view the facility on May 9, 2016. As of the date of this report, RRJ has not yet been authorized to prepare a computer software analysis of the structure or to perform destructive examinations at PWWTP to independently verify the stated observations and findings of others. RRJ is prepared to proceed with further analysis and testing if authorized to proceed.

SUMMARY OF FINDINGS

Shear Capacity at Base of Y-Walls

The cracking failure of shear keys at the base of the filter Y-walls represent a potentially hazardous structural defect that should be investigated by RK&K and its findings reported to the City. RK&K should develop appropriate conceptual remediation options and submit to the City for review if its investigation reveals structural deficiencies associated with shear key failure at the base of the Y-walls.

Joints and Shear Keys

The shear keys at joints within the DNF structure were designed without Code-prescribed capacity to resist the expected shear demands. This improper design has caused joint cracking and subsequent joint leakage.

Project records indicate the shear keys at some joints were poorly constructed and did not comply with project quality requirements. Some joints were constructed with excessively rough surfaces, some keys exhibited improperly back-sloped or "dove-tailed" profiles, and at least one joint was constructed with an excessively large key projection. Poor shear key construction has contributed to cracking and leaking at the joints.

It is RRJ's opinion that RK&K is responsible for the majority of joint repair costs because of its failure to provide a Code-compliant design to transfer shear forces and control leakage at the keyed joints. Fru-Con should be responsible for a portion of joint repair costs because its poorly constructed joints likely contributed to the severity of the cracking and leaking. A detailed analysis of repair costs and allocations is beyond the scope of this report.

Common Deficiencies

Based on the provisions of the project specifications, Fru-Con was responsible for remediation work necessary to address common construction installation deficiencies that were identified and addressed during the course of the project. This work included patching areas of voids or poor consolidation, epoxy crack injection, and other typical remediation procedures. Installation and maintenance costs for completed repairs utilizing the CIM 1000 coating/sealant system or other repair products at locations other than joints are the responsibility of the contractor.



Ongoing Maintenance of Joint Repair Materials

The installed CIM 1000 repair coating/sealant system has provided limited duration leakage control but will require substantial ongoing maintenance and inspection to insure the structure maintains reasonable watertightness. Responsibility for sealant/coating maintenance costs related to joint deficiencies should be allocated between RK&K and Fru-Con because of their shared responsibility for the cause of the defects. Maintenance, should it become necessary, of materials installed to repair construction defects at locations other than at joints should be the responsibility of Fru-Con.

DESCRIPTION OF FACILITY

The DNF structure is one part of the "Enhanced Nutrient Removal Facilities" upgrade to the PWWTP facility, which is owned and operated by the City. The RK&K-designed DNF structure is a rectangular reinforced concrete structure with a roofless interior divided by a series of closely spaced concrete walls, oriented north-to-south, creating a total of 34 "filter cells," each measuring approximately 12 feet wide by 100 feet long. Seventeen cells are located to the east of an enclosed equipment and control gallery, and 17 cells are located to the west of the gallery. An enclosed filter gallery that extends the entire length of the structure borders the south end walls of the filter cells. Centered at the north end of the structure is an enclosed portion of the building housing the sludge pump and dissolved air flotation thickener rooms (Figure 1).

The DNF structure incorporates three east-west-oriented contraction joints that divide the concrete filter cells into four segments 24 feet to 26 feet long. North-south contraction joints are spaced at 27 feet, and every third joint in this direction is specified as an expansion joint (Figure 2). Joints are also specified at other locations, including at the base of the walls between adjacent filter cells, referred to as "Y-walls" because of the top of the wall configuration (Figure 3).

BACKGROUND

Concrete Joints

Contraction and expansion joints are customarily incorporated into concrete structures to allow limited movement between adjoining concrete sections, relieving internal stress accumulation which can cause



cracking. Contraction joints are designed to allow adjoining sections to separate or shrink, and are typically constructed with little or no space between the adjacent concrete sections. Expansion joints incorporate compressible filler materials between the adjacent concrete sections, allowing the concrete to shrink or expand relative to adjacent segments. The joint spacing at the DNF structure creates a grid of separate concrete segments roughly 25 feet by 27 feet, considered a reasonable spacing for purposes of minimizing shrinkage cracking. Shear keys, discussed below, were incorporated into the joint design to ensure that the separate concrete segments function together structurally as intended.

Shear Keys, General

Shear keys are interlocking projections incorporated into joints between adjacent sections of cast-in-place concrete. They are intended to allow the structure to expand or contract along or across the joint while restraining movement in one direction across the shear key projection. The shear keys enable waterstops and sealant installed at the joints to function properly and prevent leakage while the structure maintains proper alignment. A cracked or otherwise failed shear key will not have the intended shear capacity. A failed shear key may allow excessive structural deflection and potential damage to joined elements of the structure. A failed shear key may also compromise the waterstop function, enabling uncontrolled leakage at the joints (Figures 4 and 5).

Shear keys are proportioned to provide adequate rigidity and strength to allow the transfer of shear forces across a joint. For the DNF structure, the specified key width was typically T/3 and the key projection length was T/6, where "T" is the thickness of the wall or slab. Per the response issued in February 2011 to RFI 366, the T/6 key projection was revised to a standard 4½ inches for all key locations.

Shear keys at the DNF structure incorporated waterstops, a flexible polyvinyl chloride (PVC) strip material cast into the concrete at joints so that they span the joint, to provide a continuous seal against leakage at the joint. The specified waterstops were 9 inches long and were embedded approximately 4½ inches into the concrete on each side of a joint.

Project History

The contract for construction was awarded to Fru-Con with a notice to proceed on December 29, 2009. Concrete placement began in January 2011. Special Inspection Reports (SIR) were compiled throughout the duration of the concrete construction. The SIRs, based on field quality control inspections of the construction activities, were generated by the City's inspectors and document nonconforming work. SIRs, specifically related to concrete deficiencies, involve inadequate curing before removing forms, improper



curing techniques, installation of reinforcement without shop drawings, improper rebar installation techniques, improper keyway construction, incorrect keyway depth, and voids in the concrete. RRJ has reviewed 36 separate SIRs related to the concrete construction at the DNF that were documented by City inspectors Chuck Biondo, Frank Ziegler, Yomi Salami, and Dave Tornqvist. All SIRs reviewed by RRJ are listed in Appendix A.

Deficiencies involving shear key and joint construction, manifested as leaking joints and cracking at joints, emerged as the primary focus of concern as evidenced by the SIRs. Of the 36 SIRs reviewed by RRJ, a total of 10 (SIRs 42, 44, 47, 49, 54, 62, 63, 64, 106, and 124) are directly related to the joint/shear key construction and joint leakage.

Fru-Con along with its consultants Wiss, Janney, Elstner and Associates, Inc. (WJE), Gibraltar Construction Services (GCS), and Hanskat Consulting Group, LLC (Hanskat) allege that water leakage/cracking deficiencies at joints in the DNF structure are explained by design deficiencies involving inadequate shear key capacity and improper shear key geometry. Fru-Con contends that adequate construction practices were followed during the concreting based on the quantity of defects requiring repair that were discovered after the original concrete placement and compared to typical defect quantities encountered on similar projects. Fru-Con's allegations and contentions are set forth in WJE reports dated October 16, 2012 and August 28, 2014; WJE letters dated March 18, 2013 and June 24, 2013; GCS report dated August 29, 2014; and Hanskat letter report dated September 8, 2014.

RK&K, through its own documentation and that of its consultant, A+F Engineers, Inc. (A+F), has alleged that all concrete deficiencies, including the shear key/joint issues, were caused by Fru-Con's poor construction practices. The RK&K/A+F allegations are set forth in their September 12, 2014 joint presentation, as well as RK&K's August 9, 2013 Hearing Presentation and A+F's November 21, 2014 Supplemental Information Submission.

EVALUATION OF DEFICIENCIES

The damage and subsequent leakage treatment of the DNF concrete structure occurred prior to RRJ's involvement. Currently, the remedial sealant system that was applied to the concrete surface conceals virtually all the joints in the DNF structure. RRJ's evaluation therefore relied upon documentation compiled by others and review of numerous relevant project documents, including the SIRs discussed above, construction RFIs, design drawings and specifications, photographs, miscellaneous correspondences, industry standards, and other miscellaneous reference material.



Due to the predominance of shear key, joint cracking, and leakage issues within the available project documentation, RRJ's evaluation focused largely on those joint deficiencies.

JOINT DESIGN DEFICIENCIES

Shear Key Structural Capacity

Although cracking and leakage at joints was addressed by RK&K and Fru-Con in detail, neither have offered technical commentary or opinions regarding potential capacity deficiencies associated with the shear key defects. Of particular concern to RRJ is the condition at the base of the Y-walls where the shear key is relied upon to prevent out-of-plane lateral wall movement under unbalanced loading conditions. Unbalanced loading conditions could occur when one filter cell is filled with water while an adjacent filter is relatively empty. A crack forming across the base of the shear key will reduce direct shear transfer across the joint, potentially causing unanticipated and hazardous out-of-plane deflections, increased cracking and leakage, and permanent reductions to wall stiffness and shear capacity. The severity of shear capacity reduction is partially a function of the actual crack separation. If the crack is held relatively tightly together, "aggregate interlock" across the crack will likely decrease the deleterious effect. Since the as-built configuration of the Y-walls completely conceals the cracked condition of the shear keys, this potential structural deficiency should be addressed through rational analysis combined with further destructive evaluation and/or installation of supplemental shear reinforcement at the base of the walls.

Waterstop

The keyed joints were designed incorporating 4 $\frac{1}{2}$ -inch key projections and a 9-inch-wide "dumbbell" style PVC waterstop cast directly into the center of concrete key projections to prevent leakage at the joint. Since one-half of the 9-inch waterstop is embedded into the concrete on both sides of the joint, the waterstop terminates at 4 $\frac{1}{2}$ inches deep within the male key, coinciding with the base of the male key. This design makes the joint susceptible to leakage because a crack that forms across the base of the male key can bypass the end of the waterstop, providing a direct leakage path through the joint.

As-designed and installed, the waterstop is centered in the male key, effectively dividing the key into two segments, each with half the effective width of the whole. The total combined shear capacity of two-half-width shear keys is less than that of a single full-width key. In some instances, such as within the Y-walls, the effective width of the shear key on one side of the waterstop (3 $\frac{1}{2}$ inches) is less than the length of the projection (4 $\frac{1}{2}$ inches), indicating a condition where shear keys will be particularly vulnerable to cracking.



Shear Reinforcement

Unreinforced concrete has limited resistance to shear cracking failure, which occurs abruptly and without warning. To address this, customary reinforced concrete design incorporates reinforcing steel located to intersect the plane of expected shear cracking. Embedded steel reinforcement resists the shear force, controlling concrete crack size and propagation. The design for the DNF shear keys incorporated no steel reinforcement crossing the plane of expected shear cracking, which is located at the base of the male keys. The lack of reinforcement crossing the shear plane at the base of the male shear keys has likely exacerbated the size and propagation of cracks originating at those locations and offers no additional shear capacity once the concrete key fails (Figure 6).

Shear Key Geometry Around the Sump Trough

A sump trough present at each filter cell in the DNF interrupts a horizontal keyway installed in the base slab at east-west contraction joints. The design incorporated a U-shaped keyway segment around each sump pit to maintain the continuity of the waterstop embedded in the keyway (Figure 7). The vertical legs of the keyway in the U-shaped segment resist differential movement between adjacent slab sections in the direction parallel to the east-west joint, increasing stress concentrations and the likelihood of shear failure at the base of the male keys at these locations and effectively freezes the joint. During leakage testing, some of these locations reportedly exhibited high rates of leakage prior to repairs.

Consultants for Fru-Con and RK&K offered opposing opinions regarding the amount of differential movement, level of stress, and likelihood that shear key cracking failure would occur at these locations. WJE opined that the shrinkage and thermal effects at this location would cause an overstress condition capable of cracking and failing the vertical portion of the shear keys. A+F opined that the amount of differential movement and stress concentration estimated by WJE was excessive and stresses that were present would not be concentrated at the most vulnerable part of the shear key.

Analyses undertaken by WJE and A+F were based on rational engineering approaches and did not attempt to take into account normal concrete construction tolerances and imperfections that could worsen their results. For example, a small length of the vertical portion of the sump trough key surface with a minor flatness deviation, or "bump," could become overstressed and crack if it contacts the mating key surface before nearby portions of the key come into contact. In this example, only a small amount of differential movement could initiate the cracking failure of the key. As-designed, the configuration of shear keys at the sump troughs contained vulnerabilities that were at least partially responsible for joint failures at these

locations. The extent that poor concrete construction contributed to the sump trough shear key failures cannot be accurately estimated because the conditions are concealed.

Design Capacity

In its report dated August 28, 2014, WJE concluded the unreinforced male keys, specifically for the base slab and Y-walls, appeared to not be properly designed to resist the service loads. Computer modeling performed by WJE determined the demand on the shear keys was greater than 700 psi. The available shear capacity calculated by WJE was 89 psi, using building code provisions set forth in American Concrete Institute (ACI) 318-08, Section 22.5.4. WJE's analysis indicated that the as-designed shear keys would be overstressed by a factor of nearly eight and therefore would likely crack under service conditions.

In its report dated November 21, 2014, A+F reported calculating a shear capacity for the DNF wall shear keys of 805 psi, nearly ten times larger than that calculated by WJE using ACI code provisions. A+F's calculations relied on a specification within the American Association of State Highway and Transportation Officials (AASHTO), *Guide Specification for Design and Construction of Segmental Bridges*, which addresses shear keys between segmental concrete bridge sections.

The geometric properties and loading characteristics of segmental bridge sections are generally not comparable to those incorporated at the keyed walls of the DNF structure. The use of the AASHTO shear capacity calculation method is not customary or proper for use in the design of wastewater treatment plant shear keys. The use of the ACI shear calculation method is the predominant standard for wastewater treatment plant design.

Calculations should have been performed to ensure the capacity of the as-designed male key projections was adequate to control cracking. To date, RRJ has not been provided RK&K calculations demonstrating the design of the shear keys at the DNF structure was sufficient to prevent cracking.

JOINT CONSTRUCTION DEFICIENCIES

Keyway Forming Issues

The contract specifications obligated Fru-Con to provide at least a slight taper to the keyed joints. Male key projections with a back-sloped profile do not comply with the original design intent as outlined in Specification Section 03 00 30 3.1.O:



Forms shall be filleted at all sharp corners, except when otherwise specified in the Contract Documents and shall be given a bevel or draft in the case of all projections.

A "draft" refers to providing a slight taper to the projections to allow for easy removal of the formwork. See Figure 8 for graphic representations of the shear key conditions discussed in this section.

After cracking and leaking started to become problematic, Fru-Con involved WJE to investigate the cause of the leakage. WJE performed investigative openings at the sump walls of Filters #4 and #6, which revealed a "dovetailed" keyway condition in which the sides of the keyway were slightly back-sloped. RRJ's review found no other documentation indicating that the "dovetail" condition was present at other locations. Subsequent reports assume the majority of keyways improperly incorporated the "dovetail" configuration, which would have likely contributed to the cracking and leaking observed. Keyed joints that were back-sloped by Fru-Con did not conform to Specification Section 03 00 30 3.1.O.

Fru-Con issued RFI 037 on February 3, 2010, prior to the start of concrete placement, proposing the use of a tapered keyed joint. The proposal was accepted by RK&K on February 11, 2010. It is unclear why RFI 037 was accepted by RK&K since its specification (Section 03 00 30 3.1.O) already required the use of drafts at keyways.

In a letter report dated April 3, 2013, Fru-Con states that they did not provide a tapered key and were under no contractual obligation to do so. This statement was reiterated by Mike Fisher of Fru-Con during the Division Chief's Level Hearing on August 9, 2013. However, in later reports, Fru-Con stated that the majority of keyways were tapered in accordance with RFI 037. Fru-Con's later claim was corroborated by Mr. Biondo who reported that the tapered keyway configuration was typical of all joints in the facility. RRJ observed two tapered vertical keyways on the south wall between the walkway and the filters during its site visit.

Although the documentation available to RRJ indicates that tapered keyways were provided at the majority of the joints, it is not clear how many of these joints were properly formed. SIR 42 provides photographs from the City inspector showing the female side of a horizontal keyed joint that appears to have been gouged out of the plastic concrete after placement. SIR 44 describes completed walls 89 through 93 with nonconforming keyways having a similar rough profile. Fru-Con responded to SIR 42 by issuing RFI 037A, which proposed leaving the tapered section of the gouged joint with a rough finish but grinding the edges at the top of the key to provide smoother surfaces. Fru-Con's proposed repair approach was accepted by RK&K on October 13, 2011. In its response to SIR 42, Fru-Con indicated that a wood key-forming insert would be provided to properly form all subsequent wall keyways. However, Robert Nash (Senior Project

Manager for the City) reported that the majority of keyways were constructed without incorporating proper key-forming inserts in the formwork. Figure 9 depicts a key-forming insert incorporated into concrete formwork.

Normal concrete shrinkage and thermal expansion/contraction causes movement of mating parts at joints. If a joint is not properly formed, or has been subject to gouging, the relative displacement of the mating parts may cause interlocking, excessive stress, and cracking between the male and female keys. Attempts to remediate improperly formed or gouged keys using mechanical methods can cause impact damage to the near-surface concrete, increasing leakage potential by opening additional pathways within the concrete for liquids to bypass the embedded waterstop.

The project documents reveal evidence of both improper joint construction, resulting in rough-formed key surfaces and proper construction practices using forms and inserts to provide smooth, tapered joints. No information identifying and quantifying joints that were improperly formed has been discovered.

Shear Key Projection

SIR 106 indicates a Y-wall vertical keyway was observed to have a male key projection of 7¹/₄ inches, significantly larger than the uniform key projection of 4¹/₂ inches accepted through RFI 366. RK&K accepted the joint stating that more problems would be created if a repair was attempted. The large projection of this shear key causes increased forces at its base and an increased likelihood of cracking. RK&K required Fru-Con to seal this joint with CIM 1000.

COMMON DEFICIENCIES

Numerous commonly occurring concrete construction deficiencies involving concrete placement, consolidation, curing, and formwork accuracy were identified during the construction of the DNF structure. Common concrete construction deficiencies on large projects are generally accepted if repaired to be in compliance with the project specifications. Section 03 30 00 3.30.A.2 of the DNF construction specifications states, "Completed concrete work, which fails to meet one or more requirements, but which has been repaired to bring it into compliance will be accepted without qualification." Project documents reviewed by RRJ indicate that where common construction defects were identified, repairs were performed to achieve compliance with the project specifications.

LEAKAGE REMEDIATION

Widespread leakage issues occurring throughout the DNF structure are evidenced by the project documentation and by observations of the repaired structure. Mr. Biondo reported to RRJ that cracking and leaking could be found essentially everywhere in the facility. During RRJ's site visit, repairs utilizing polyurethane-based CIM 1000 coating/lining system were observed along every joint in the DNF structure. In some locations, large portions of the filter walls were also coated with the CIM material. Large-scale application of coating to wall surfaces likely indicates that the concrete substrate was not adequately watertight and, therefore, prone to leakage due to cracked, voided, poorly-consolidated, or otherwise defective concrete.

FINDINGS

Shear Capacity at Base of Y-Walls

The cracking failure of shear keys at the base of the filter Y-walls represents a potentially hazardous structural defect that should be promptly investigated by RK&K and its findings should be reported to the City expediently. Should its investigation reveal structural deficiencies associated with shear key failure at the base of the Y-walls, RK&K should develop appropriate conceptual remediation options and submit to the City for review.

Joint and Shear Keys

The shear keys at joints within the DNF structure were designed without Code-prescribed capacity to resist the expected shear demands. This improper design has caused joint cracking and subsequent joint leakage.

Project records indicate the shear keys at some joints were poorly constructed and did not comply with project quality requirements. Some joints were constructed with excessively rough surfaces, some keys exhibited improperly back-sloped or "dove-tailed" profiles, and at least one joint was constructed with an excessively large key projection. Poor shear key construction has contributed to cracking and leaking at the joints.

Common Deficiencies

Based on the provisions of the project specifications, Fru-Con was responsible for remediation work necessary to address common construction installation deficiencies that were identified and addressed during the course of the project. This work included patching areas of voids or poor consolidation, epoxy crack injection, removal, and other typical remediation procedures. Installation and maintenance costs for completed repairs utilizing the CIM 1000 coating/sealant system or other repair products at locations other than the joints are the responsibility of the contractor.

RECOMMENDATIONS FOR REMEDIATION

Ongoing Maintenance of Joint Repair Materials

The installed CIM 1000 repair coating/sealant system has temporarily provided leakage control but will require substantial ongoing maintenance and inspection to insure the structure maintains reasonable watertightness.

Supplemental Shear Reinforcement for the Base of the Y-Walls

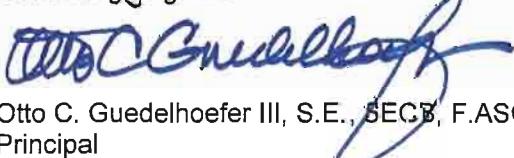
If the review by RK&K determines the structural deficiency at the base of the Y-walls requires remediation, RRJ anticipates that externally anchored wall base supports would provide a solution that does not require demolition of existing concrete construction. Figure 10 depicts a conceptual repair to provide supplemental shear capacity at the base of the Y-walls.

Respectfully submitted,

RATHS, RATHS & JOHNSON, INC.


W. Joseph Macicak

W. Joseph Macicak, S.E., P.E. (IL)
Consulting Engineer


Otto C. Guedelhoefer III, S.E., SECB, F.ASCE
Principal

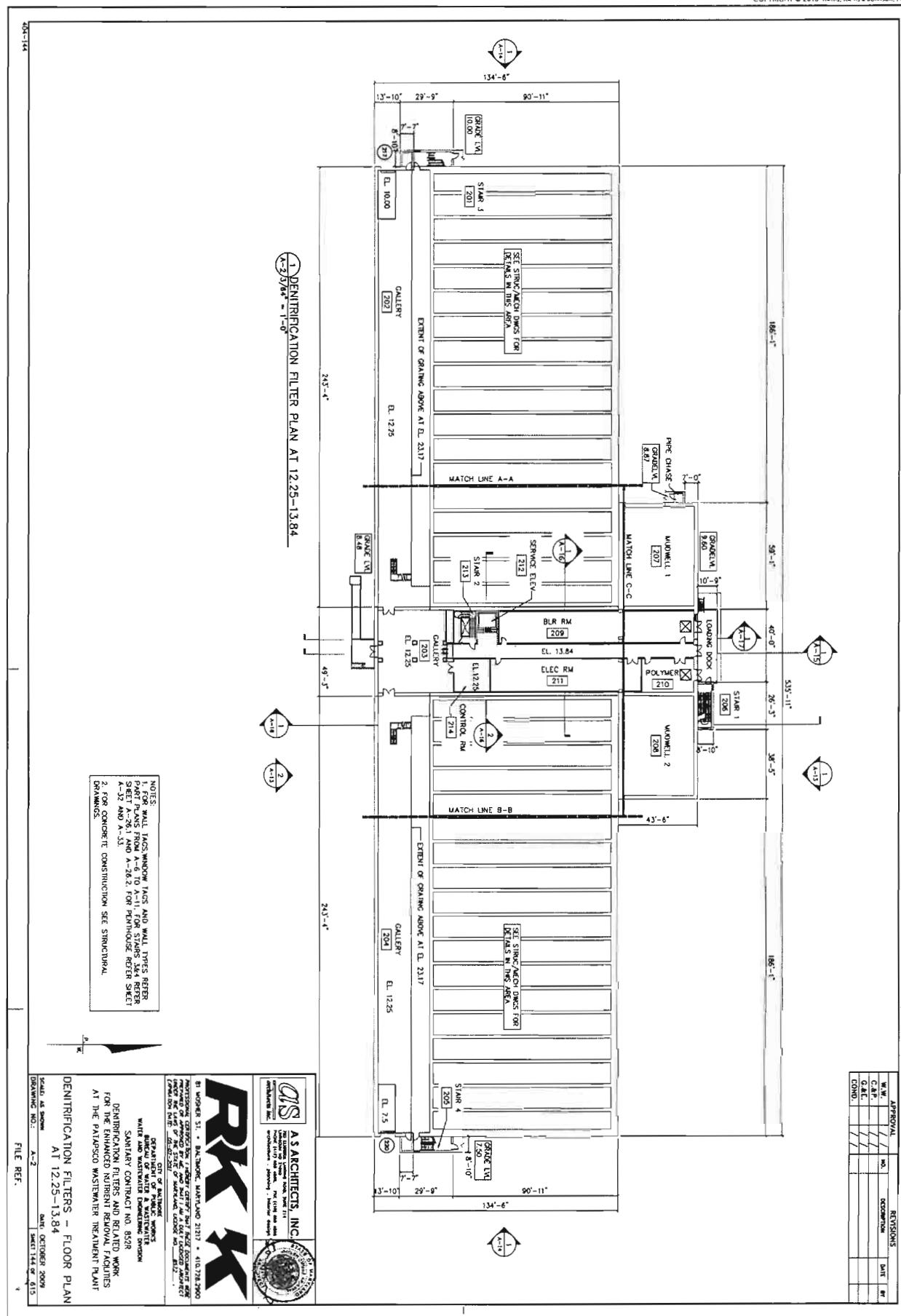
August 19, 2016

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FIGURES 1 THROUGH 10





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500 JOLIET ROAD • SUITE 200
WILLOWBROOK, ILLINOIS 60527
630.325.6160 • 630.325.2866 • WWW.RRJ.COM

DENITRIFICATION FILTER PLAN
PATAPSCO WASTE WATER
TREATMENT PLANT

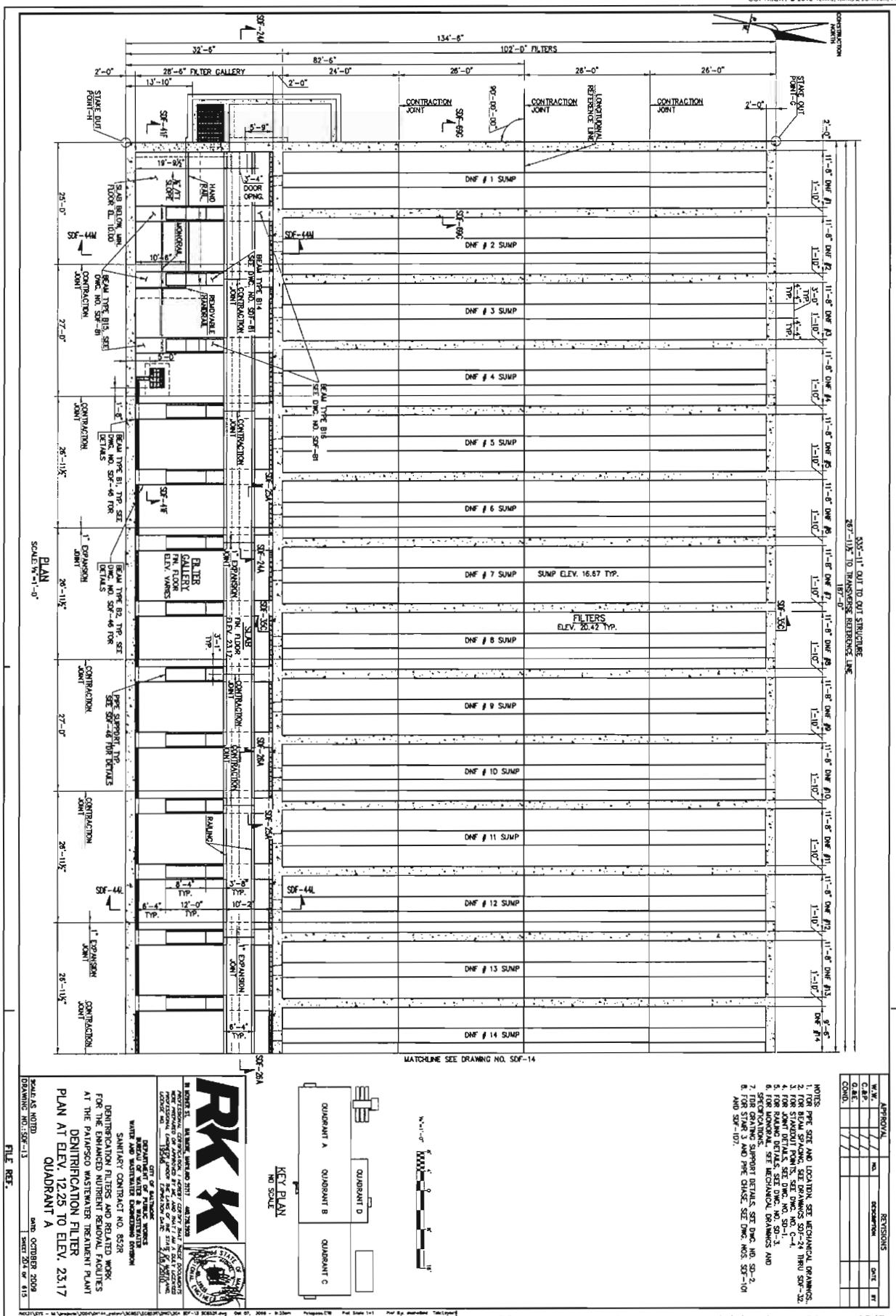
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FIGURE





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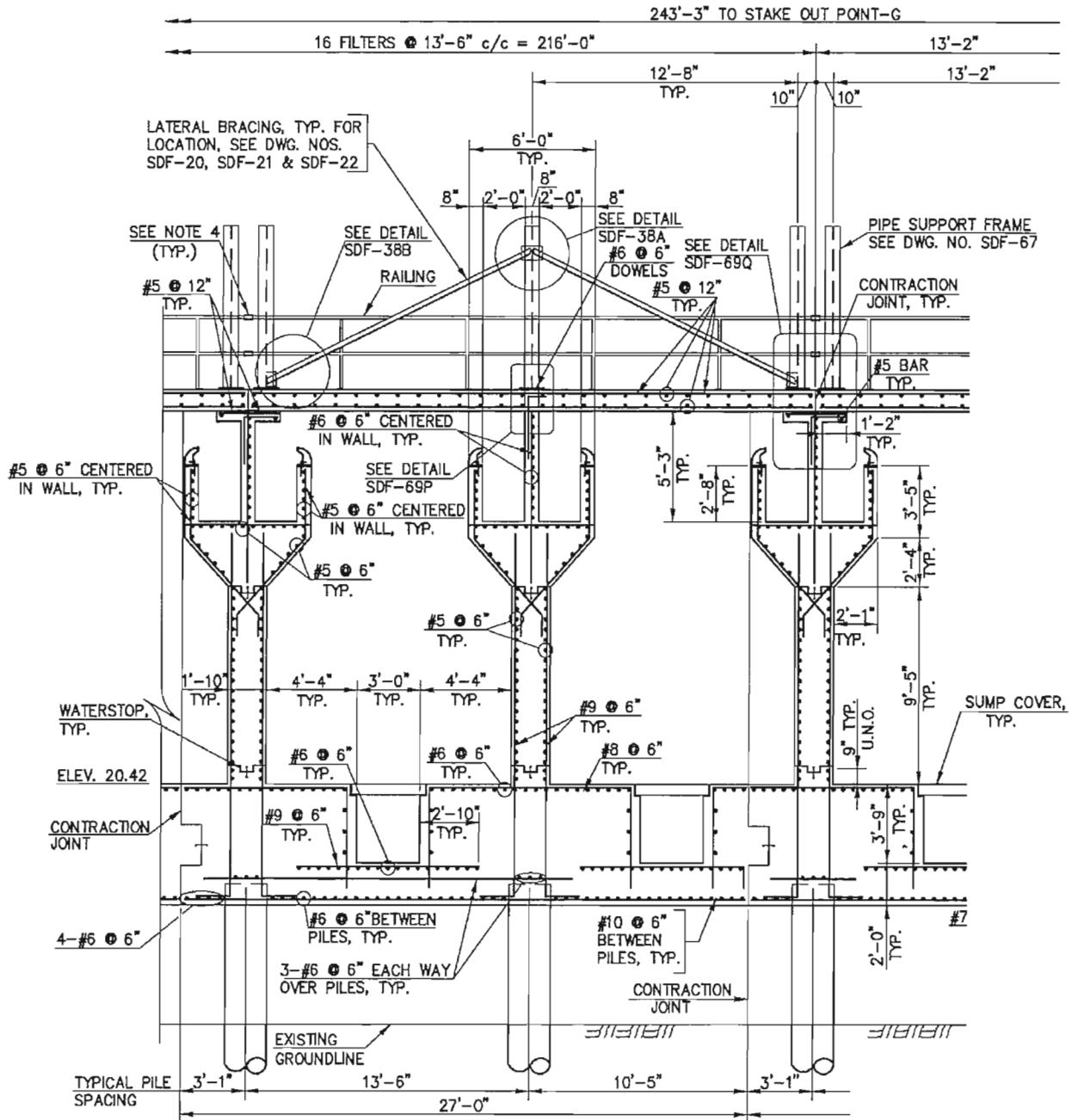
DENITRIFICATION FILTER PLAN
PATAPSCO WASTE WATER
TREATMENT PLANT

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FIGURE

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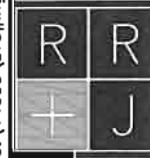
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FROM DRAWINGS BY: RK&K

SHEET: SDF-36

DATED: OCTOBER 2009

ISSUED FOR:



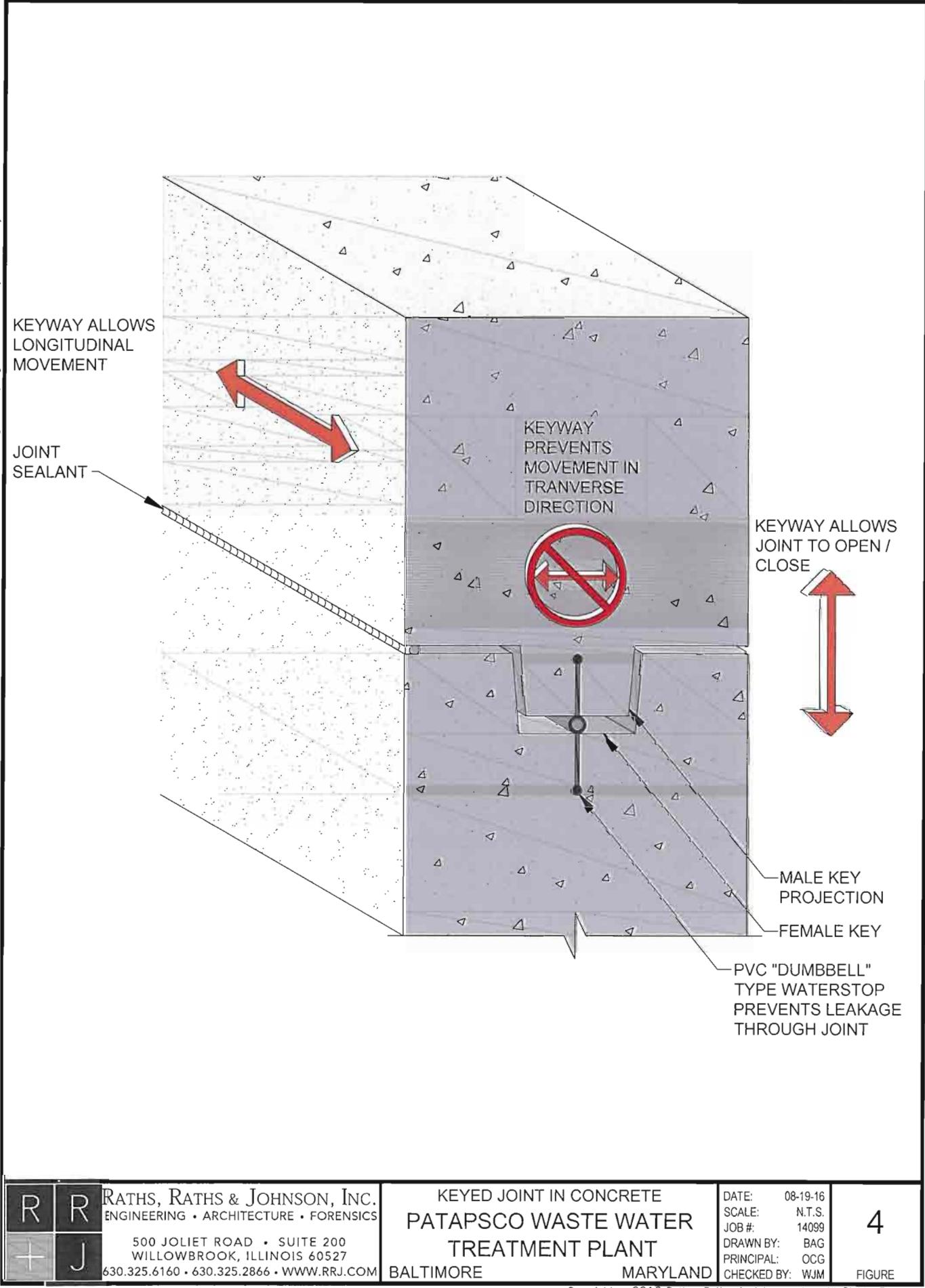
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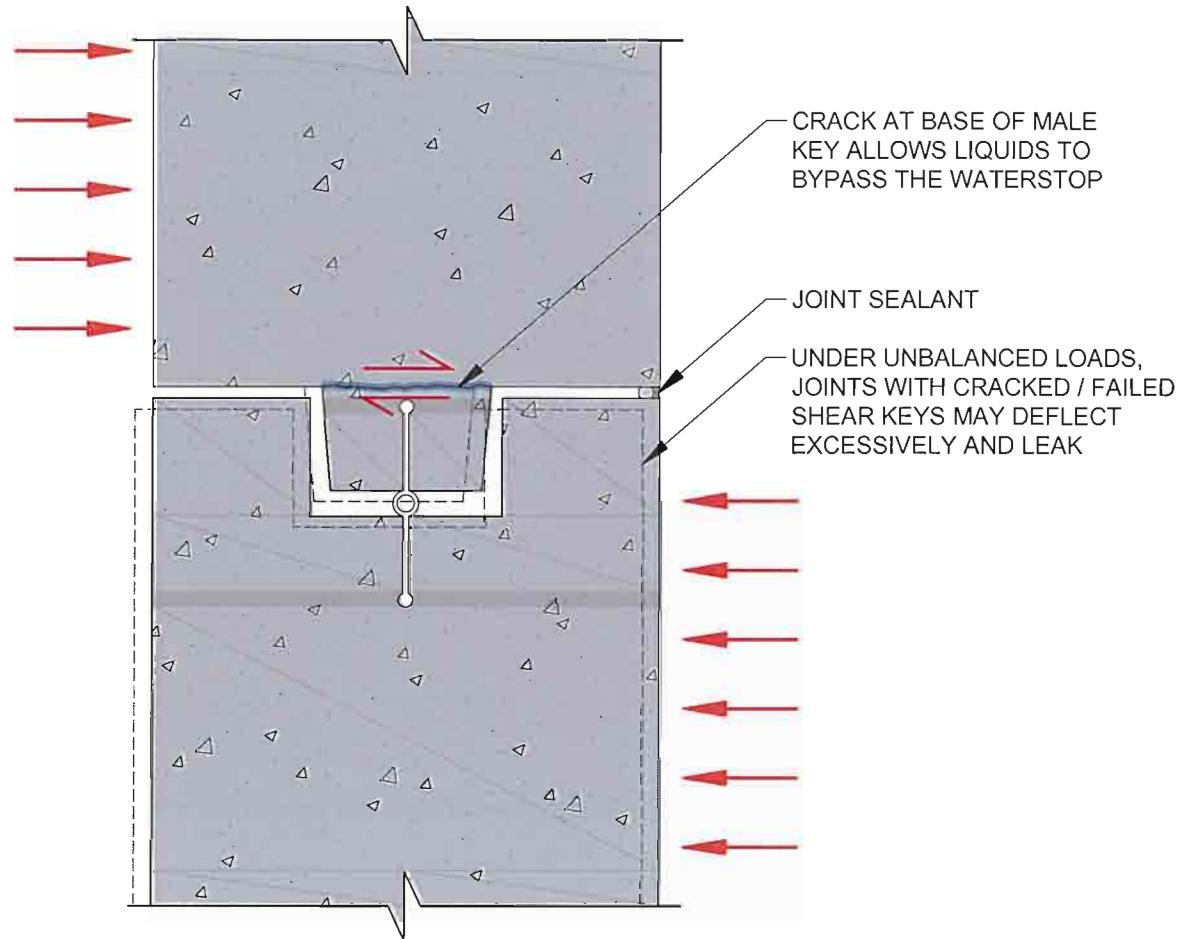
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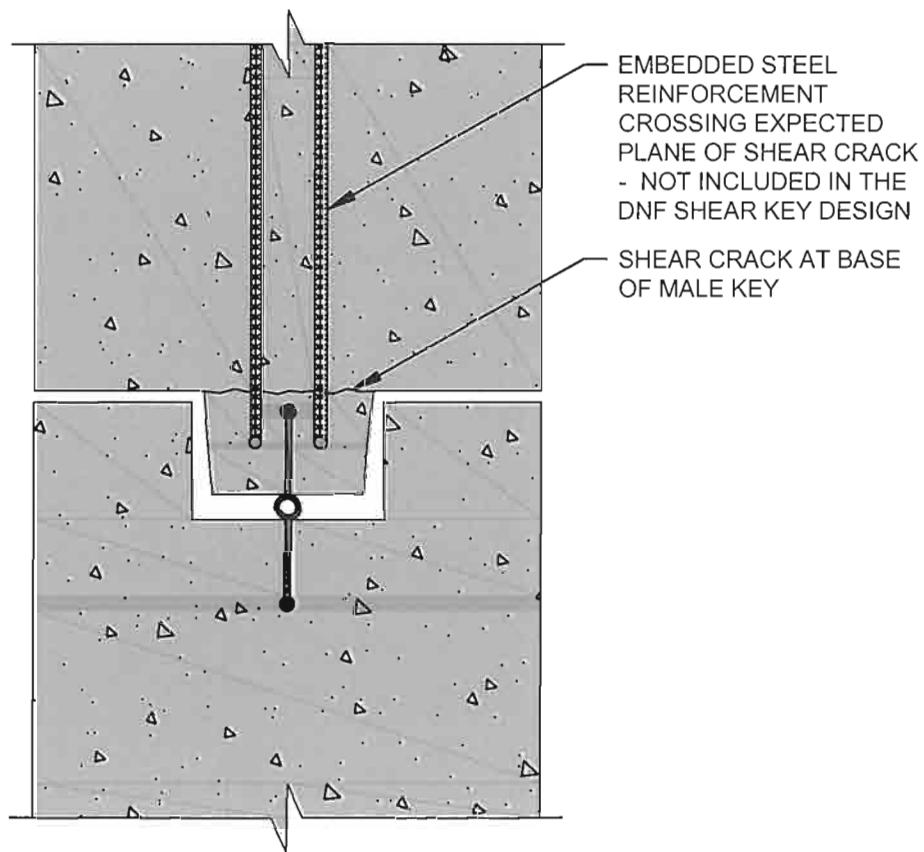
DENITRIFICATION FILTER SECTION
PATAPSCO WASTE WATER
TREATMENT PLANT
BALTIMORE MARYLAND

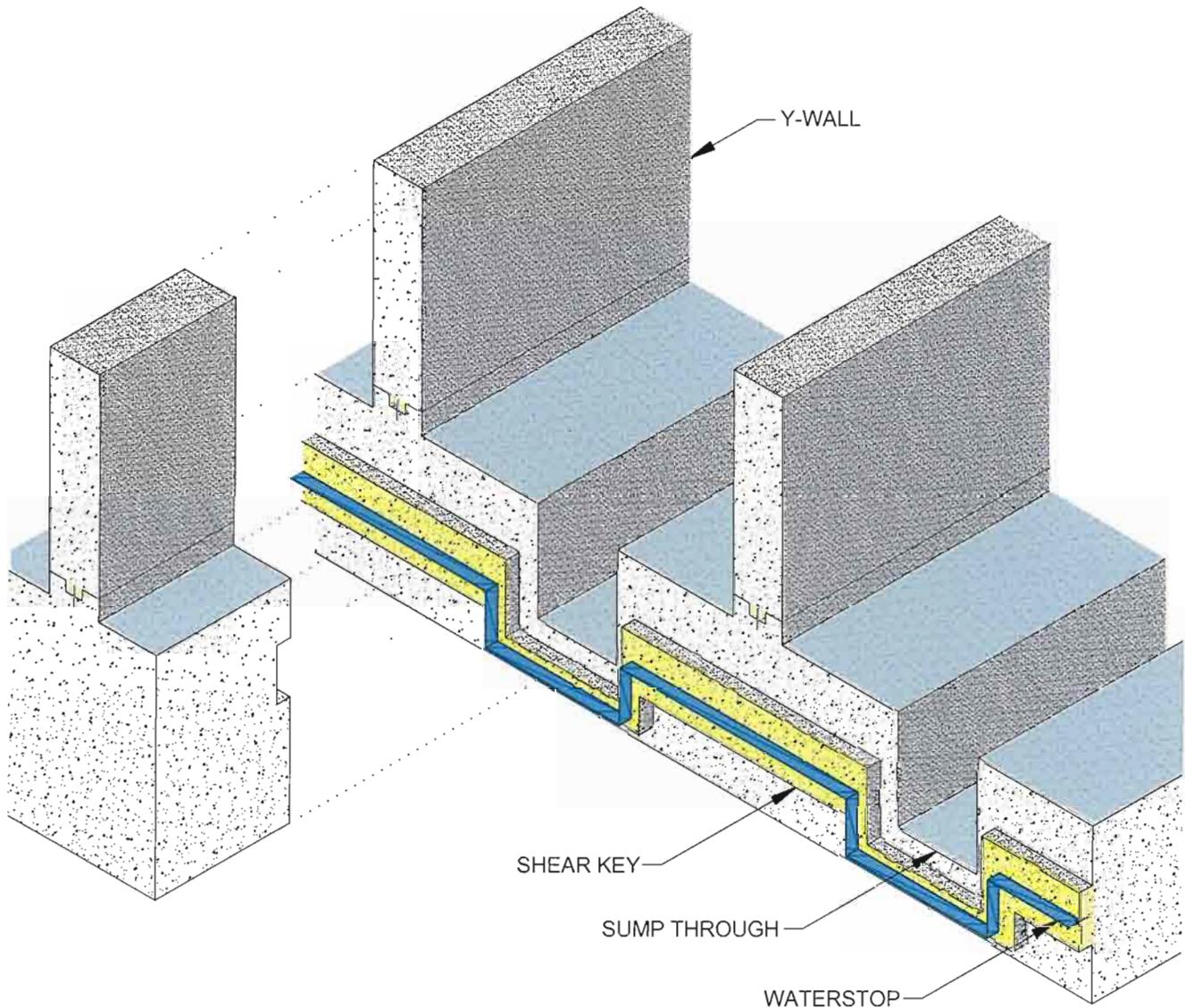
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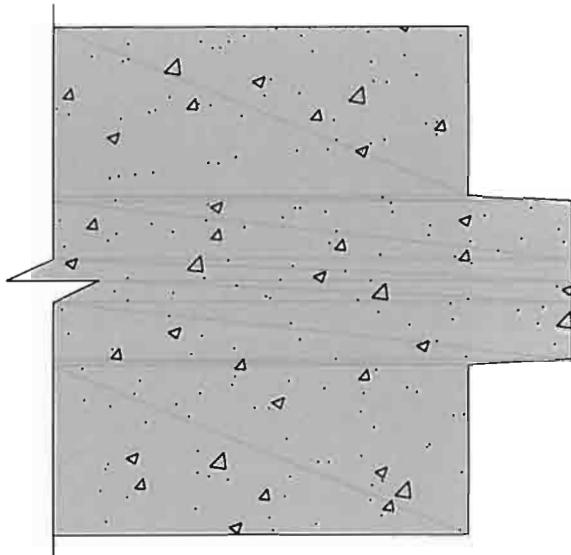
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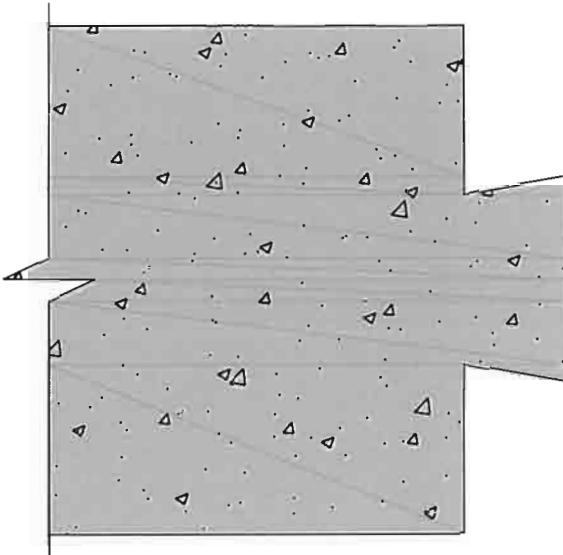








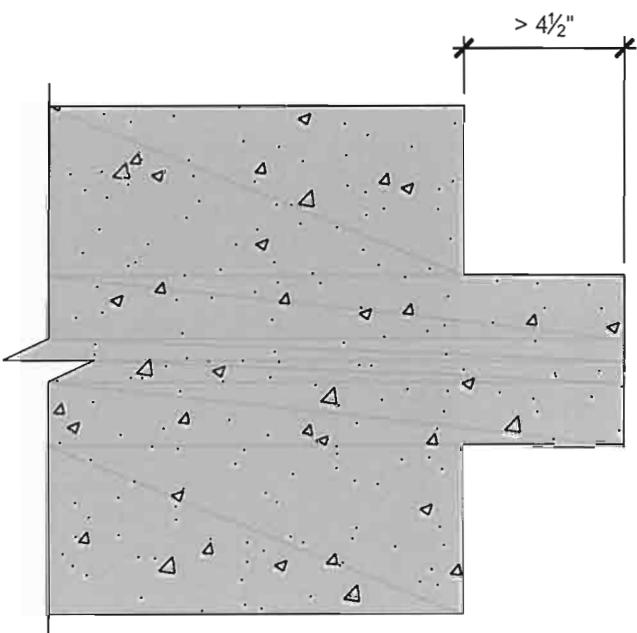
A. MALE SHEAR KEY WITH PROPERLY FORMED "DRAFT" INCORPORATED TO AID IN FORM REMOVAL



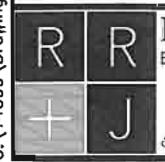
B. MALE SHEAR KEY WITH IMPROPER BACK-SLOPED OR "DOE-TAILED" PROFILE



C. ROUGH-FORMED OR "GOUGED" FEMALE KEY



D. EXCESSIVE KEY PROJECTION



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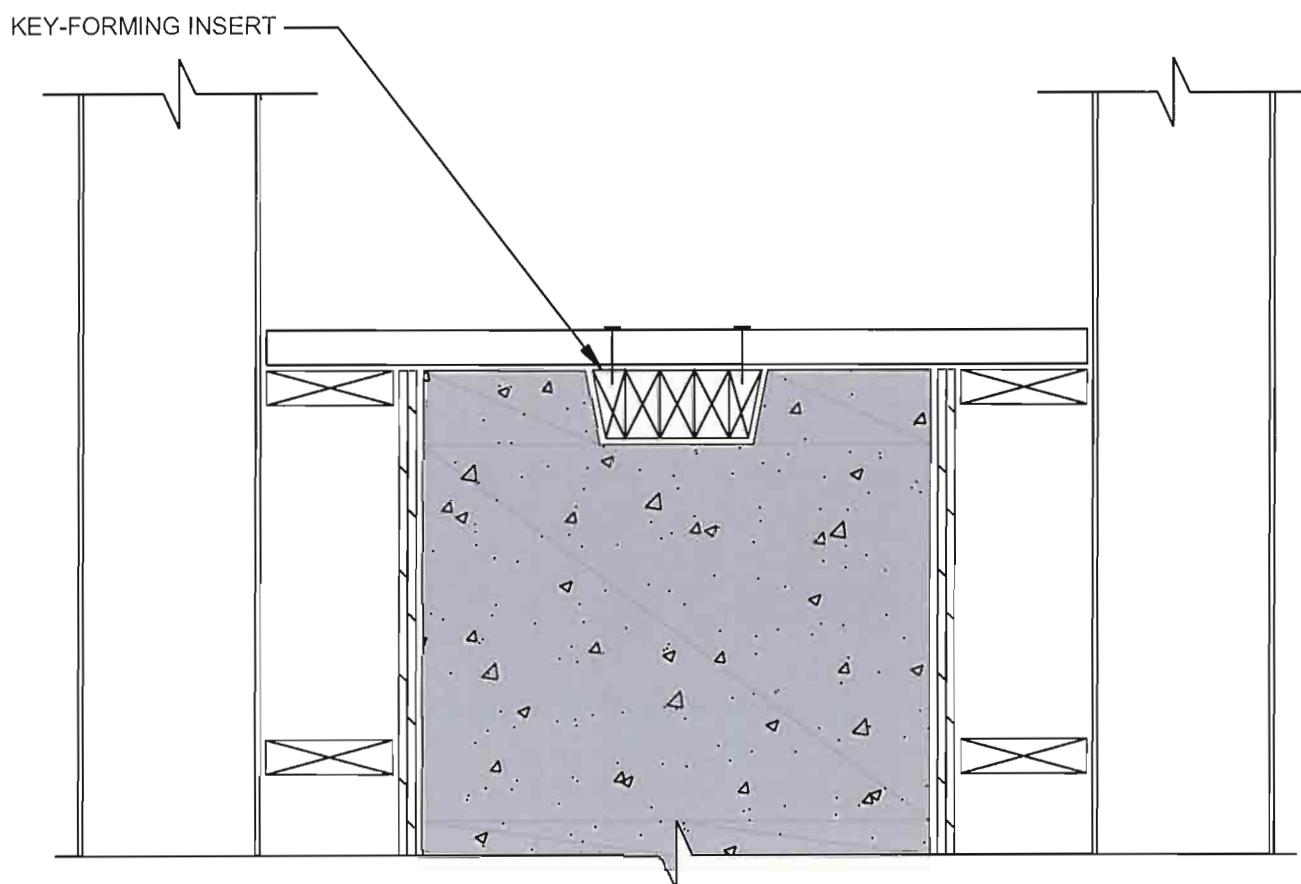
500 JOLIET ROAD • SUITE 200
WILLOWBROOK, ILLINOIS 60527
630.325.6160 • 630.325.2866 • WWW.RRJ.COM

AS-BUILT SHEAR KEYS
PATAPSCO WASTE WATER
TREATMENT PLANT
BALTIMORE MARYLAND

DATE: 08-19-16
SCALE: N.T.S.
JOB #: 14099
DRAWN BY: BAG
PRINCIPAL: OCG
CHECKED BY: WJM

8

FIGURE



CONCEPTUAL VIEW OF CONCRETE FORMWORK INCORPORATING
"KEY-FORMING INSERT" TO FORM A TAPERED FEMALE KEY



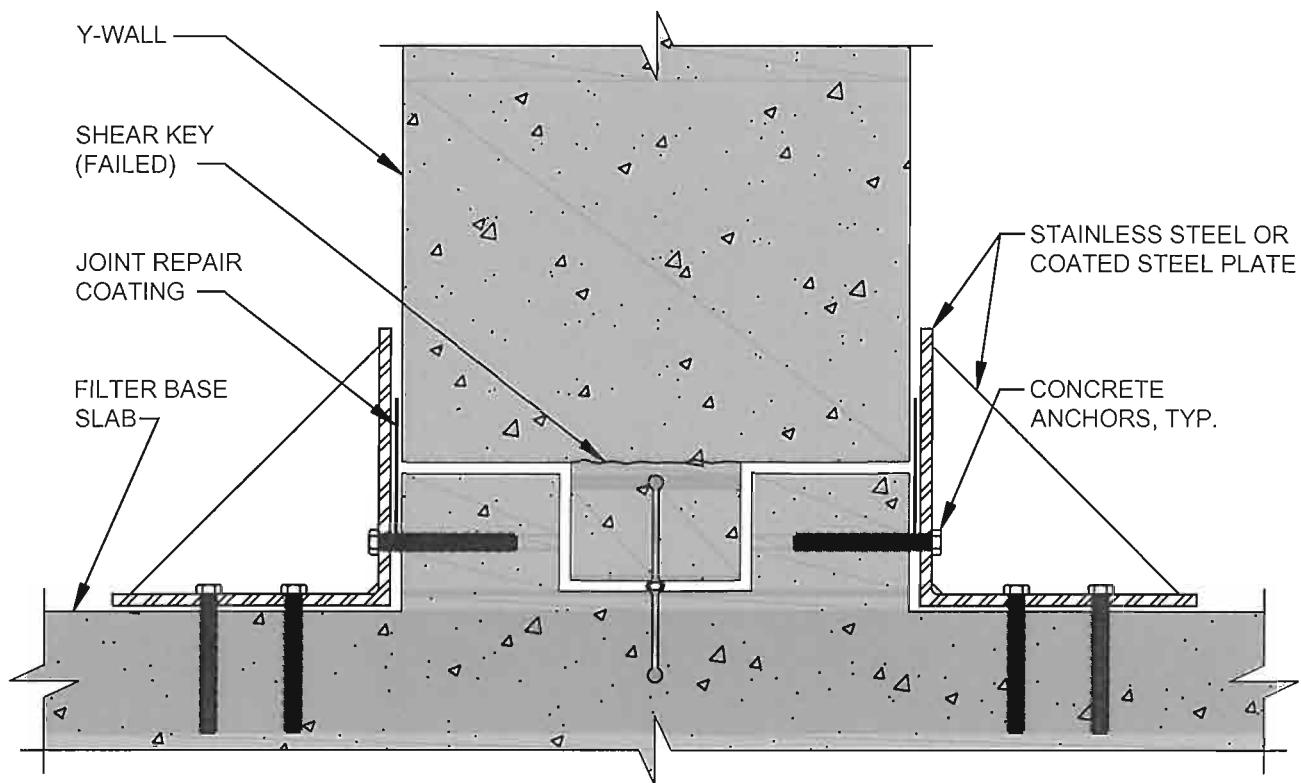
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630.325.6160 • 630.325.2866 • WWW.RRJ.COM

CONCEPTUAL KEY FORMWORK
PATAPSICO WASTE WATER
TREATMENT PLANT
BALTIMORE MARYLAND

DATE: 08-19-16
SCALE: N.T.S.
JOB #: 14099
DRAWN BY: BAG
PRINCIPAL: OCG
CHECKED BY: WJM

9

FIGURE



CONCEPTUAL REPAIR
SUPPLEMENTAL SHEAR
REINFORCEMENT AT BASE OF Y-WALL



RATHS, RATHS & JOHNSON, INC.
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630.325.6160 • 630.325.2866 • WWW.RRJ.COM

CONCEPTUAL REPAIR
PATAPSCO WASTE WATER
TREATMENT PLANT
BALTIMORE MARYLAND

DATE: 08-19-16
SCALE: N.T.S.
JOB #: 14099
DRAWN BY: BAG
PRINCIPAL: OCG
CHECKED BY: WJM

10

FIGURE

APPENDIX A

Documents Reviewed



DOCUMENTS REVIEWED

- RKK Contract Drawings Volumes 1 through 4 dated October 2009
- RKK Addendum No. 1 dated October 23, 2009
- RKK PowerPoint presentation dated September 12, 2014
- A+F formal report dated November 21, 2014 and all attachments
- RKK Structural Calculations Volume No. 1 dated November 2010
- City filter leak repair letter dated February 20, 2013 and all attachments
- City concrete claims outline document dated September 12, 2014 and all attachments
 - Attachment A: Concrete pre-construction meeting agenda dated September 23, 2010
 - Attachment B: Various special inspection reports (SIRs)
 - Attachment C: Various formal letters and correspondence from the City, RKK, and Fru-Con
 - Attachment D: Photographs
- Inspection photographs received during site visit on May 9, 2016
- Fru-Con filter joint repairs letter dated October 17, 2012 and all attachments
- Fru-Con filter joint waterstop submittals dated June 8, 2012, June 27, 2012, and July 9, 2012 and RKK response
- Fru-Con filter joint repairs cost proposal letter dated February 4, 2013 and all attachments
- Fru-Con appeal of claim denial letter dated March 18, 2013
- Fru-Con additional support documentation letter dated Apr. 3, 2013 and attachment
- Fru-Con formal report dated September 10, 2014 and all attachments
 - Ex. A: Concrete specific special inspection reports (SIRs)
 - Ex. B: Leak specific SIRs
 - Ex. C: Photographs
 - Ex. D: City response to request for information (RFI) no. 37A dated October 13, 2011
 - Ex. E: RKK response to RFI no. 37A dated October 13, 2011
 - Ex. F: Gibraltar Construction Services expert report dated August 29, 2014
 - Ex. G: RFI 366 dated January 31, 2011
 - Ex. H: WJE letter report dated August 28, 2014
 - Ex. I: Hanskat Consulting Group letter report dated September 8, 2014
- Fru-Con appeal letter to Bureau Head dated October 28, 2014.
- WJE letter report dated October 16, 2012
- WJE letter report dated August 28, 2014
- WJE letter report dated October 27, 2014
- American Concrete Institute, "Standard Specifications for Tolerances for Concrete Construction and Materials" (ACI 117-90) and Commentary (ACI 117R-90)
- American Concrete Institute, "Joints in Concrete Construction" (ACI 224.3R-95)
- American Concrete Institute, "Building Code Requirements for Structural Concrete Structures" (ACI 318-05) and Commentary (ACI 318R-05)
- American Concrete Institute, "Code Requirements for Environmental Engineering Concrete Structures" (ACI 350-01) and Commentary (ACI 350R-01)
- American Concrete Institute, "Tightness Testing of Environmental Engineering Concrete Structures" (ACI 350.1-01) and Commentary (350.1R-01)
- American Concrete Institute, "Design Considerations for Environmental Engineering Concrete Structures" (ACI 350.4R-04)

- RFI 366 correspondence
 - RFI 366 issued by Fru-Con on January 31, 2011
 - RKK response to RFI 366 dated February 23, 2011
 - City response to RFI 366 dated February 23, 2011
- Filter movement and defects photographs provided by the City from 2012 and 2013 on July 16, 2015
- Various correspondence between Fru-Con and City regarding CIM 1000 repairs
- Pre-bid contractor questions and answers
- Contract specifications
- AASHTO Guide Specifications for Design and Construction of Segmental Concrete Bridges, 1999/2003 Interim
- SIRs reviewed by RRJ

SIR 33	Unauthorized Work Performed	June 30, 2011
SIR 38	Rust Stains on Concrete	August 8, 2011
SIR 40	Improper Form Removal	September 22, 2011
SIR 41	Unauthorized Work Performed	October 5, 2011
SIR 42	Non-Conforming Work Performed	October 11, 2011
SIR 44	Non-Conforming Work Performed	November 14, 2011
SIR 45	Improper Curing of Cylinders	November 21, 2011
SIR 47	Water Leakage at Filters	November 29, 2011
SIR 49	Contraction Joint Excessive Movement	December 2, 2011
SIR 54	Water Leakage at Filters	December 14, 2011
SIR 60	Concrete Defects	February 7, 2012
SIR 62	Influent Trough Cracks	March 1, 2012
SIR 63	Contraction Joint Concerns	March 2, 2012
SIR 64	Water Leakage at Filters	March 16, 2012
SIR 66	Improper Curing Techniques	April 9, 2012
SIR 74	Improper Curing Techniques	July 15, 2012
SIR 75	Improper Curing Techniques	July 25, 2012
SIR 76	Non-Conforming Repair Work Performed	August 1, 2012
SIR 77	Non-Conforming Work Performed	August 7, 2012
SIR 80	Non-Conforming Work Performed	September 20, 2012
SIR 90	Anchor Bolts Placed through CIM Repair	November 7, 2012
SIR 102 (Revised)	Inadequate Concrete Cover	March 15, 2013
SIR 106	Non-Conforming Work Performed	April 3, 2013
SIR 114	Water Leakage through Electrical Conduit	May 9, 2013
SIR 116	Non-Conforming Work Performed	May 21, 2013
SIR 124	Water Leakage at Filters	August 2, 2013
SIR 146	Improper Grouting Procedure	December 13, 2013
SIR 148	Cracking of Roof Sloped Toping	January 2, 2014
SIR 164	Lack of Productivity in Applying CIM Repairs	March 21, 2014
SIR 168	Leakage in the Mudwells	April 17, 2014
SIR 173	Unauthorized Repair Performed	June 20, 2014
SIR 174	Inadequate Repair	June 24, 2014
SIR 175	Inadequate Repair	June 24, 2014
SIR 177	Inadequate Repair	July 1, 2014
SIR 179	Inadequate Repair	July 9, 2014
SIR 183	Inadequate Repair	July 22, 2014

APPENDIX B

Resume of Otto C. Guedelhoefer



OTTO C. GUEDELHOEFER, S.E., F.ASCE

Principal



+CONTACT

Raths, Raths & Johnson, Inc.
500 Joliet Road, Suite 200
Willowbrook, IL 60527
Phone: 630.325.6160
Email: ocg@ix.netcom.com

Chuck Guedelhoefer is a Licensed Structural Engineer and Principal at Raths, Raths & Johnson, Inc. An accomplished structural engineer with over 46 years of experience, he has specialized in structural engineering and forensics, field and laboratory testing, design and construction peer view, quality assurance programs, and litigation consulting.

During his 37-year career as a key leader of RRJ, he has directed hundreds of investigations for many high-profile collapses and structural failures, and complex investigations related to capacity, deterioration, and repair with multiple disputes involving a variety of complaints.

A significant portion of Mr. Guedelhoefer's work has involved the evaluation and repair of distressed or aged structures. These projects have required designs of specialty forming and shoring systems and innovative repair solutions.

An expert witness, he has assisted owners, contractors, architects, engineers, insurance companies, governmental agencies, and attorneys providing legal strategy, litigation support, consultation on the use of experts, and deposition and trial testimony on numerous matters.

Previously, he served as Manager of Structural Engineering Services for a global forensic consulting firm for ten years. His projects involved investigations to determine failure causation or collapse, rehabilitation, or unique original design, and expert witness. He managed a variety of research, testing, design, and investigation projects, including major collapses and hundreds of building and bridge performance evaluations.

■ EDUCATION

Master of Science in Civil Engineering
Oklahoma University

Bachelor of Science in Civil Engineering
Purdue University

■ REGISTRATIONS

Licensed Structural Engineer in Illinois

Licensed Professional Engineer in Alaska, Colorado, Connecticut, Delaware, District of Columbia, Florida, Guam, Hawaii, Indiana, Kentucky, Maryland, Michigan, Minnesota, Mississippi, New Jersey, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, U. S. Virgin Islands, Virginia, West Virginia, and Wisconsin

National Council of Examiners for Engineering and Surveying (NCEES)

Structural Engineering Certification Board (SECB)

■ PROFESSIONAL AFFILIATIONS

American Concrete Institute (ACI)

American Institute of Steel Construction (AISC)

American Society of Civil Engineers (ASCE), Fellow,
Forensic Engineering Division, FED Committee on
Publications, Associate Editor

Illinois Society of Professional Engineers / National
Society of Professional Engineers (ISPE / NSPE)

International Code Council (ICC)

Structural Engineers Association of Illinois (SEAOL)

Structural Engineering Institute (SEI)



OTTO C. GUEDELHOEFER, S.E., F.ASCE

Principal

■ PUBLICATIONS

"Case Study: The Critical Role of Sealants in the Repair of a Fluid-Applied Roofing Membrane," *Durability of Building and Construction Sealants and Adhesives*: 5th Volume, W.J. Macicak, O.C. Guedelhoefer, K.D. Magnuson, and D.M. VanDommelen, ASTM STP 1583, L. Carbay and A.T. Wolf, Eds., ASTM International, West Conshohocken, PA 2015

"Using an Alternative Method of Analysis to Evaluate Punching Shear Capacity in Existing Pre-Tensioned Shear Reinforced Concrete Floor Slabs," Proceedings of the 2015 Structures Congress, Portland, OR, R.W. Kritzler, B.T. Lammert, W.J. Macicak, and O.C. Guedelhoefer, April 24, 2015

"Repair and Completion of a Damaged Cooling Tower," ASCE Journal, submitted for publication, P.L. Gould and O.C. Guedelhoefer, May 18, 1988

"To Bond or Not to Bond," *ACI Concrete International*, O.C. Guedelhoefer and A.T. Krauklis, August 1986

Comments on "Spandrel Beam Behavior and Design," *PCI Journal*, A.T. Krauklis and O.C. Guedelhoefer, V.G. Naidu, and C.H. Raths, September-October 1985

"Evaluation of Performance by Full-Scale Testing," ASTM International Symposium on Full Scale Testing of Structures, Philadelphia, PA, April 2, 1979; ASTM STP 702, O.C. Guedelhoefer and J. R. Janney, April 1980

"Minicomputers in Full-Scale Structural Testing," *Journal of the Technical Councils of ASCE*, Vol. 105, No. TC1, pp.103-111, O.C. Guedelhoefer and S.G. Pinjarkar, April 1979

"Structural Design of Tall Concrete and Masonry Buildings," Chapter A38 - Model Analysis, Contributor March 1976

■ PRESENTATIONS

"Securing the Site and Preserving the Evidence / Dealing with OSHA and Other Government Agencies," American Bar Association Litigation Section, Regional CLE Workshop: Handling a Construction Failures Case O.C. Guedelhoefer, Panelist, Philadelphia, PA, June 3, 2016

"Analyzing Causation, Proposing a Fix, Economic Waste, Betterment and Related Damages Issues," American Bar Association Litigation Section, Regional CLE Workshop: Handling a Construction Failures Case, O.C. Guedelhoefer, Panelist, Philadelphia, PA, June 3, 2016

"When 1 Test Is Worth More Than 10 Expert Opinions," Construction SuperConference, O.C. Guedelhoefer, B.T. Lammert, and Louis Cairo, San Diego, CA, December 7-9, 2015

"Navigating Construction Failures," 2014 Construction SuperConference, Las Vegas, NV, Panelist, Dec. 2014

"Construction Failures and Defects - Parking Garages," Mealey's Construction Litigation Conference, May 20, 2008

"Engineering Disasters - 9 Rosemont Collapse," History Channel, Modern Marvels, December 10, 2004

"Current Trends in Failures of Civil Engineering Structures," ASM Materials Week '94, Seminar on Analysis of Civil Structural Failures, October 5, 1994

"Management & Organization of Structural Failure Investigations," University of Wisconsin-Extension, Madison, WI, November 3 and 4, 1987



OTTO C. GUEDELHOEFER, S.E., F.ASCE

Principal

■ PRESENTATIONS

"Typical Recurring Problems with Parking Structures," ASCE Structures Congress, Chicago, IL, September, 1985

"Observations Made During the Repair of a Tornado-Damaged Cooling Tower," International Symposium on Natural-Draught Cooling Towers, University of Bochum, Bochum, West Germany, September 5-7, 1984

"Methods for Strength Evaluation of Distressed Structures," ASCE Conference, St. Louis, MO, October 26-27, 1981

"Project Management," Evaluation of Structural Failures, University of Wisconsin-Extension, Madison, WI, May 12, 1983

"Repair of Cracks in Structural Concrete," American Concrete Institute Convention, Detroit, MI, O.C. Guedelhoefer and R.J. Rioux, September 23, 1982

"Stability Investigation Based on In Situ Geometry," ASME/ASCE Conference, Boulder, CO, P.L. Gould and O.C. Guedelhoefer, June 22, 1981

"Recurring Causes of Construction Failures," ASCE Conference, New York, NY, T.L. Rewerts, R.J. Kudder, and O.C. Guedelhoefer, May 1981

"Evaluation and Repair of Tornado-Damaged Cooling Tower," American Concrete Institute (ACI) Convention, O.C. Guedelhoefer, P.L. Gould, and A.L. Parme, April, 1981

"Evaluation of Performance by Full-Scale Testing," ASTM International Symposium on Full Scale Testing of Structures, Philadelphia, PA, O.C. Guedelhoefer and J. R. Janney, April 2, 1979

"Instrumentation & Techniques of Full-Scale Testing of Structures," American Concrete Institute (ACI) Convention, Washington, D.C., October 1979

"Correlation of Load Testing With Design," O.C. Guedelhoefer and C. H. Rath, May 17, 1979

"Consequences & Reasons for Breakdown of Quality Assurance," ASCE Georgia Section Annual Meeting, Atlanta, GA, December 1, 1978

"Full-Scale Testing of an Elevated Rapid-Transit Structure," ASCE Convention, Pittsburgh, PA, O.C. Guedelhoefer, J.R. Janney, and D. Boggs, April 24-28, 1978

"Practical Applications of Minicomputers in Full-Scale Structural Testing," ASCE National Convention, San Francisco, CA, O.C. Guedelhoefer and S.G. Pinjarkar, October 17-21, 1977

"Dynamic Response Method for Structural Evaluation," ASCE Convention, San Francisco, CA, O.C. Guedelhoefer, J.R. Janney, and J.F. Wiss, October 17-21, 1977

"Computer Applications in Full-Scale Structural Testing," ASCE Specialty Conference in Structural Engineering Practice, Montreal, Canada, O.C. Guedelhoefer, R.J. Kudder, and S.G. Pinjarkar, October 6-7, 1977

"Static Load Testing of Concrete Structures in Accord with U. S. Building Code," International Symposium on Testing In Situ of Concrete Structures, Budapest, Hungary, O.C. Guedelhoefer, J.R. Janney, and J.M. Hanson, September 12-15, 1977



WWW.RRJ.COM

OTTO C. GUEDELHOEFER, S.E., F.ASCE

Principal

■ PRESENTATIONS

"The Use of Experimental Stress Analysis Techniques with Civil Engineering," Society for Experimental Stress Analysis, Indianapolis, IN, October 1974

"Benefits of Model Studies to the Design Process," ASCE Structural Meeting, Cincinnati, OH, O.C. Guedelhoefer, A. Moreno, and J.R. Janney, April 1974

"Small-Scale Models of Buildings for the Study of Structural Behavior," Symposia/Engineering Study, April 1969

ATTACHMENT 2



September 15, 2016

Mr. Azzam Ahmad, P.E.
Chief Engineer
Office of Engineering and Construction
Room, 900, Abel Wolman Building
Baltimore, MD 21202

Fru-Con Construction, A Division of
Balfour Beatty Infrastructure, Inc.
3601 Leo Street
Baltimore, MD 21226

410 355 2451
www.bblius.com

Attention: *Azzam Ahmad, P.E.*

FC-BC-345

Reference: Sanitary Contract 852R

Subject: BBII/Fru-Con's Filter Leak Claim and RKK's Deficient Design

Dear Mr. Ahmad:

After four (4) years of struggling to contend with RKK's deficient design, BBII/Fru-Con received Raths, Raths, & Johnson, Inc.'s ("RRJ") "Evaluation of Concrete Construction Deficiencies." In his letter of August 25, 2016, Thak Bakhru requested BBII/Fru-Con and RKK provide responses to RRJ's report by September 16, 2016. BBII/Fru-Con has reviewed RRJ's report as requested and accept RRJ's conclusion that RKK's flawed design of the contraction and expansion joints is the root cause of the leaks that occurred in the DNF Structure. BBII/Fru-Con disagrees with RRJ statements concerning construction deficiencies potentially contributing to the leaks experienced. RRJ cites no credible evidence in regards to any such construction deficiencies and specifically acknowledges that any common construction deficiencies which occurred were resolved to the City's and RKK's satisfaction. In sum, RRJ's Report supports BBII/Fru-Con's Filter Leak Claim.

RKK's Expansion/Contraction Joint Design Deficiencies

1. In its report, RRJ states: "The improper design has caused joint cracking and subsequent joint leakage." See RRJ Report, p.2. BBII/Fru-Con agrees. Attached is BBII/Fru-Con's engineering expert, Wiss, Janney, Elstner Associates, Inc. ("WJE") Technical Comments concerning the RRJ Report. WJE also confirms that RRJ is in agreement with WJE's opinions concerning RKK's deficient design being the root cause of the leaks at the DNF structure. See Attached Technical Comments from WJE dated September 9, 2016.
2. Based upon the findings and conclusions reached, RRJ's report is incorrectly titled "Evaluation of Concrete Construction Deficiencies." The report should be titled "Evaluation of RKK's Deficient Design of Expansion and Contraction Joints."
3. In its report, RRJ notes that RKK's engineer, A+F Engineers, Inc., improperly used AASHTO standards for its engineering evaluation of RKK's expansion and contraction joint design. "The use of AASHTO shear capacity calculation method is not customary or proper



for use in the design of wastewater treatment plant shear keys." See RRJ Report, p.8. BBII/Fru-Con is unable to comment on RRJ's opinions concerning A+F's November 21, 2014 report because the City has not provided BBII/Fru-Con with a copy of the report notwithstanding BBII/Fru-Con's request that it be provided. However, given the comparison RRJ made between WJE's analysis and the A+F's analysis, BBII/Fru-Con accepts RRJ's ultimate opinion – WJE's analysis is correct and A+F's is not.

4. BBII/Fru-Con offers no comments regarding the structural integrity of RKK's design except to note that the joint at the base of the Y-Wall is a construction joint and not a moveable joint. Reinforcing steel extends from the wall through the joint into the base slab.

Common Construction Deficiencies did not Contribute to Leakage

1. In its report, RRJ addresses two distinctly different construction "issues:" (1) Concrete deficiencies which commonly occur when concrete is placed; and, (2) Alleged deficiencies in forming of the keyways during placement of concrete. As to the first, RRJ states: "Project documents reviewed by RRJ indicate that where common construction defects were identified, repairs were performed to achieve compliance with the project specifications." BBII/Fru-Con agrees. Any common construction defects were remedied to the City's and RKK's satisfaction during the course of the Project. These defects did not contribute in any way to the leakage experienced at the expansion and contraction joints.
2. In its report starting on page 11, RRJ discusses early confusion among the City, RKK, BBII/Fru-Con and WJE concerning the method and manner in which the concrete keyways for the expansion and contraction joints were formed. As set forth in BBII/Fru-Con's September 2014 report, the concrete keyways for the expansion and contraction joints were uniformly constructed with a taper. RRJ verified BBII/Fru-Con's position in its report. "Fru-Con's later claim was corroborated by [City Inspector] Mr. Biono who reported that the tapered keyway was typical of all joints in the facility." See RRJ Report, p.12. RRJ also observed tapered keyways during its visit to the Project site.
3. In its report, RRJ states: "However, Robert Nash (Senior Project Manager for the City) reported that the majority of keyways were constructed without incorporating proper key-forming inserts in the formwork." The statement attributed to Mr. Nash is neither credible nor supportable. All documentary evidence including photographs demonstrate the consistent use of tapered forms for the keyways.



Additionally, Mr. Nash has no personal knowledge to support the statement attributed to him. He was not involved with the Project or onsite when the concrete work discussed was placed.

4. On page 12 of its report, RRJ addresses SIRs 42 and 44 and suggests that these joints contributed to the leaks in the facility. The joints at issue in SIRs 42 and 44 are construction joints, not moveable joints. The joints are located at the top of the Y-Wall and have reinforcing steel running through the joint. Therefore, the issues addressed in SIRs 42 and 44 fall in the category of common construction deficiencies which did not contribute in any way to the leaks in the facility. Moreover, these common construction deficiencies were remedied during the course of the Project to the satisfaction of the City and RKK.
5. Based on RRJ's report, a full examination of the Project documents, and observation of the City Inspector onsite during concrete placement, BBII-Fru-Con's construction practices did not contribute to any of the leaks in the facility.

CIM 1000 is Appropriate

1. In its report, RRJ states that the CIM 1000 "has temporarily provided leakage control but will require substantial ongoing maintenance and inspection..." See RRJ Report, p.12. BBII/Fru-Con disagrees with RRJ's findings and refers to WJE's comments regarding CIM 1000.
2. Even if RRJ's conclusion regarding CIM 1000 is accepted, any costs associated with maintenance and inspection are RKK's responsibility because RKK's "improper design [of the joint and shear key] has caused the joint cracking and subsequent joint leakage." See RRJ Report, p.11

BBII/Fru-Con has suffered under RKK's flawed design for years and at the cost of millions of dollars. The City has also subjected BBII/Fru-Con to liquidated damages for delays to completion of the Work which are irrefutably RKK's responsibility. BBII/Fru-Con again demands the immediate



return of all liquidated damages assessed including those for SC 845R, together with accrued interest. (Without a completed SC 852R Project, SC 845R cannot function). Lastly, BBII/Fru-Con demands a commensurate extension of time and reimbursement of all costs – direct and time-related – which BBII/Fru-Con needlessly incurred in attempting to remedy RKK's failed design.

Regards,

A handwritten signature in blue ink, appearing to read "Mark Johnnie".

Mark Johnnie
Vice President & Region Manager
Balfour Beatty Infrastructure Inc.

Enc

CC: Robert Nash (OEC);
Robert J. Andryszak (RK&K);
Jeff Kracun (BBII);
file



Wiss, Janney, Elstner Associates, Inc.
330 Pfingsten Road
Northbrook, Illinois 60062
847.272.7400 tel | 847.291.4813 fax
www.wje.com

Via E-mail
gsm@martinhild.com

September 9, 2016

Gregory Martin, Esquire
Martin Hild, P.A.
555 Winderley Place, Suite 415
Maitland, FL 32751

Re: Technical Comments on
RRJ Report dated August 19, 2016
Patapsco Water Treatment Plant
Baltimore, Maryland
WJE No. 2012.1200.4

Dear Mr. Martin:

At your request, we have reviewed the August 19, 2016 report "Evaluation of Concrete Construction Deficiencies" for the above-referenced structure, prepared by Raths, Raths & Johnson, Inc. (RRJ) and have the following comments:

1. Joint Design Deficiencies

a. Shear Capacity at Base of Y-Walls

The joint at the base of the Y-walls is a construction joint and not a movement joint. The vertical reinforcing bars that run from the base slab through this joint on each face of the Y-wall take all shear forces from the unbalanced water loads. It appears that this keyway was placed by the designer only to accommodate placement of a waterstop.

The shape of the keyway and lack of reinforcement in the male key does not diminish the ability of the wall to resist shear forces. Therefore, we disagree with RRJ's opinion that the unreinforced horizontal keyway at the base of the Y-wall presents a potentially hazardous condition.

b. Waterstop

We agree with RRJ's conclusions regarding the location and design of the waterstop and their contribution to leakage through the joint.

c. Shear Reinforcement

We agree with RRJ's conclusion that lack of steel reinforcing through the concrete keyway has likely exacerbated the size and propagation of cracks at the base of the male and female keys.

d. Shear Key Geometry Around the Sump Trough

We agree with RRJ's analysis and conclusions that the configuration and design of shear keys at the sump trough could not accommodate expected differential movements and were responsible for joint failures at these locations.

Headquarters & Laboratories—Northbrook, Illinois

Atlanta | Austin | Boston | Chicago | Cleveland | Dallas | Denver | Detroit | Honolulu | Houston | Los Angeles
Minneapolis | New Haven | New York | Princeton | San Francisco | Seattle | South Florida | Washington, DC

e. Design Capacity

We agree with RRJ's conclusions that the design capacity of the unreinforced male keys was inadequate.

2. Joint Construction Deficiencies

a. Keyway Forming Issues

Tapered keyway conditions were addressed by Fru-Con and WJE in past correspondence. We only want to point out that the photograph of the female side of the gouged keyway joint depicts the horizontal keyway at the Y-wall. As stated earlier in this letter, this is not a moving joint but a construction joint and therefore the rough-formed surfaces only enhance the bond between the concrete pours below and above the joint.

b. Shear Key Projection

We agree with RRJ's opinion about the Y-wall vertical keyway projection.

3. Common Deficiencies

It is our understanding that all commonly occurring construction deficiencies were repaired in accordance with the project specifications.

4. Leakage Remediation

Large-scale application of the CIM 1000 coating system in several areas of the walls was not due to watertightness issues of the substrate but because the subcontractor for installation of CIM 1000 was required to repair his original faulty installation and he overcoated portions of the walls during the corrective work.

According to the manufacturer, the CIM 1000 coating application is supposed to last the life of the structure. No special or frequent maintenance is required. During the scheduled emptying of the tanks for their regular maintenance, the SIM locations should be inspected and addressed if necessary.

If you have any questions about this report, please contact us.

Very truly yours,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.



Andy Osborn, S.E., P.E.
Senior Principal



Predrag L. Popovic, P.E., S.E.
Vice President and Senior Principal

ATTACHMENT 3

EVALUATION OF CONCRETE CONSTRUCTION ISSUES SUPPLEMENTAL REPORT

PATAPSCO WASTE WATER TREATMENT PLANT
DENITRIFICATION STRUCTURE

BALTIMORE, MARYLAND

Prepared For:

Baltimore City Law Department
100 North Holliday Street
Suite 101
Baltimore, Maryland 21202

Prepared By:

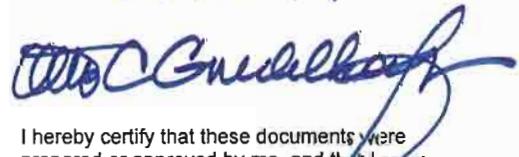
Raths, Raths & Johnson, Inc.
500 Joliet Road, Suite 200
Willowbrook, Illinois 60527-5618
630.325.6160
www.rrj.com

RRJ 14099

March 9, 2017



3/9/2017



I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland, License No. 14569, Expiration Date: September 2, 2017.

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**EVALUATION OF CONCRETE CONSTRUCTION ISSUE
SUPPLEMENTAL REPORT
PATAPSCO WASTE WATER TREATMENT PLANT DENITRIFICATION STRUCTURE
BALTIMORE, MARYLAND**

INTRODUCTION

Raths, Raths & Johnson, Inc. (RRJ) was retained by the City of Baltimore, Maryland, to perform an engineering evaluation of issues encountered during the construction of the concrete Denitrification Filter (DNF) structure at the Patapsco Waste Water Treatment Plant located in Baltimore, Maryland. The following report supplements RRJ's report dated August 19, 2016. Project documentation describing project background, chronology, and the factual basis and opinions of RRJ and others, was previously reported and is not reproduced in this supplemental report. It is assumed that readers are familiar with the project documents produced to date. A complete listing of documents reviewed is included in Appendix A. Refer to Figures 1 through 3 of RRJ's August 19, 2016 Report for basic location/geometric information. The information included herein is provided with a reasonable degree of engineering certainty. RRJ's findings are based on the review of documentation made available as of the date of this report, its site observations, and its Finite Element Method (FEM) modeling conducted to date. RRJ reserves the right to amend these findings should additional relevant information be made available.

Rummel, Klepper & Kahl, LLP (RK&K) and Fru-Con Construction, LLC (Fru-Con), through their respective consultants, A+F Engineers, Inc. (A+F) and Wiss, Janey, Elstner Associates, Inc. (WJE), both have indicated the opinion that cracked shear keys throughout the DNF structure allowed water to bypass the embedded waterstops, and this defect is at least partially responsible for the water test failures and the resultant need for the extensive remediation that has been performed. WJE alleges the

key cracking is caused by improper design, and A+F alleges cracking is caused by improper construction. RRJ's supplemental report is intended to further clarify this and other disputed issues related to shear key demand, shear key capacity, and miscellaneous concrete construction defects. Results of RRJ's FEM modeling of concrete assemblies, including portions of the base slab and Y-walls that incorporate shear keys and movement joints, and other technical analyses, are included.

The project records contain numerous photographs and field reports describing concrete surface cracks, other concrete defects, and water leakage at joints. As previously reported, nondestructive testing results indicated cracking at concealed male shear keys in numerous locations throughout the DNF structure. However, visual confirmation of the actual condition of concealed male shear keys is limited to a few instances investigated by WJE in 2012. The quantity of actual physical evidence is likely inadequate to provide statistically relevant findings that could be extrapolated throughout the DNF structure. Therefore, if it becomes necessary to quantify hidden defects in order to resolve this dispute, further destructive testing will likely be required.

MODELING AND ANALYSIS

To better understand and evaluate the DNF structural behavior, RRJ performed a series of FEM analyses between December 2016 and February 2017 using SAP2000 structural software. A representative portion of the base slab system, which includes the keyway that transitions around the sump pit, was modeled utilizing 3D solid elements. RRJ developed separate full-length model of a single filter cell incorporating two Y-walls that was also composed of 3D solid elements, including the Y-wall keyways. A detailed description of RRJ's FEM models is provided in Appendix B of this report. Objectives of RRJ's modeling are outlined below:

- Evaluate the validity of previous modeling performed by A+F and WJE.
- Evaluate A+F's assumptions regarding average shear stress distribution and horizontal restraint within the base slab.
- Evaluate WJE's assumptions regarding temperature strains caused by concrete cooling and shrinkage.
- Evaluate and compare A+F and WJE allegations regarding shear key demand and capacity.

RRJ modeled shear keys and incorporated the material properties of the waterstop, which was excluded in A+F's modeling approach. RRJ's Y-wall model incorporated the end walls similar to the approach taken by A+F. WJE did not model the end walls.

SUMMARY OF FINDINGS

Table 1 summarizes the output from the various FEM models and the predicted capacities. The differences in capacities are based on the interpretations by each expert of different standards and research, and are discussed in more detail in the proceeding sections of this report.

Table 1. Summary of Analysis Results* (psi)

		RRJ	A+F	WJE
Shear in the Base Slab Shear Key	Demand	500	135	>700
	Capacity	<340	700	77
Tension in the Base Slab Shear Key	Demand	800	-	>1400
	Capacity	435	-	349
Shear in the Y-wall Shear Key	Demand	100	87	113
	Capacity	<370	805	89
Tension in the Y-wall Shear Key	Demand	103	-	-
	Capacity	503	-	-

*Boxed areas represent areas where demands were found to exceed the capacities.

Maximum stresses in the base slab shear key were located in RRJ's model at the vertical portion of the key that transitions the two horizontal keys around the sump pit. At the reentrant corner of the base of this vertical key, shear and tensile demands were found that exceed RRJ's calculated shear and tensile capacities. This finding indicates that, as-designed, the male shear keys in the base slab may crack even when properly constructed. In RRJ's Y-wall model, maximum stresses were located at the top of the key. These demands were found to be less than RRJ's calculated capacities, and RRJ does not expect cracking to occur at this location when constructed properly. RRJ's modeling output is shown in Figures 1 through 5.

RESPONSES TO SPECIFIC ALLEGATIONS IN A+F AND WJE REPORTS

Issue 1: Capacity of DNF Shear Keys

Description

Shear capacities of the DNF shear keys, as estimated by each expert, are summarized in Table 1. The large differences between the experts' estimations result from the use of differing research as the basis of their calculations. The building code does not directly address the calculation of shear key capacity at structures similar to the DNF facility. Therefore, each expert has apparently attempted to apply rational engineering judgment in its approach, as is discussed below.

RK&K/A+F

A+F predicts the shear capacity of the DNF shear keys by using an approach outlined in an American Association of State Highway and Transportation Officials (AASHTO) method that is intended to estimate shear key capacity between segmental bridge sections¹. Based on this model, the shear strength of the concrete at 75 percent compressive strength is about 700 psi². A+F does not agree with the approach taken by WJE, which utilizes the shear capacity calculation methods prescribed in American Concrete Institute *Building Code Requirements for Structural Concrete and Commentary* (ACI 318). A+F indicates that, in the case of the DNF shear keys, a direct shear is developed and the mechanism of shear failure outlined in ACI 318 does not properly correspond. A+F presents several research studies that relate to the AASHTO method as a basis for its applicability to the DNF shear keys.

Fru-Con/WJE

WJE predicts the shear capacity of the DNF shear keys by using the shear capacity of plain concrete as outlined in ACI 318, wherein allowable shear forces are a small fraction of those allowed by the AASHTO segmental bridge model. WJE estimates the shear strength of the concrete at 75 percent

¹ *Guide Specifications for Design and Construction of Segmental Concrete Bridges*. Washington, D.C.: AASHTO, 199/2003.

² Per WJE August 28, 2014, report estimate for percentage of full concrete strength after dissipation of heat of hydration.



compressive strength is 77 psi. As of the date of this report, WJE has not commented on A+F's claim regarding the use of the AASHTO method.

RRJ Discussion/Analysis

The beam shear model, on which the ACI 318 method for calculating shear capacity is based, assumes the shear occurs across an unrestrained failure plane. The failure plane for the DNF shear keys is partially restrained and, therefore, the ACI 318 allowable beam shear capacity values are conservative.

The AASHTO method, on which A+F's assessment of shear capacity is based, is nonconservative, considering that the DNF shear keys comprise conditions significantly dissimilar to those assumed for segmental bridge design and the associated research provided by A+F. These conditions will be further discussed below.

RRJ agrees with the statement made by Koseki and Breen³ that the provisions provided in ACI 318-77 Section 11.9 for corbels are "somewhat analogous" to the behavior expected in single shear key joints. Geometry and loading parameters required for the use of these provisions are met by the DNF shear keys. The research by Kriz and Raths⁴ is based on numerous tests with different sizes and shapes, tension reinforcement and stirrups, concrete strengths, and loading conditions performed to develop empirical expressions for the shear strength of corbels. In these provisions, reinforcement of the corbel is always considered, and Kriz and Raths indicate that a minimum amount of tension reinforcement and stirrups should be provided. The DNF shear keys do not contain reinforcing steel. Hence, the provisions of ACI 318-77 can only provide an upper bound of shear strength for the DNF shear keys with the expectation that the actual strength will fall somewhere below this upper bound. Using the minimum tension reinforcement ratio indicated by Kriz and Raths of $\rho_v = 0.004$ and ACI 318-77 Eqn. 11-32, the shear capacity of the DNF shear keys at a compressive strength of 3,375 psi is likely less than 340 psi as shown below:

$$v_n = 6.5 \left(1 - 0.5 \frac{a}{d}\right) (1 + 64\rho_v) \sqrt{f'_c} = 6.5 \left(1 - 0.5 \frac{4.5''}{8''}\right) (1 + 64 * 0.004) \sqrt{3375 \text{ psi}} = 340 \text{ psi}$$

³ Koseki, K., and J. E. Breen. *Exploratory Study of Shear Strength of Joints for precast Segmental Bridges*. Research Report No. 248-1. Austin, Texas: Center for Transportation Research, U of Texas, 1983.

⁴ Kriz, L. B., and C. H. Raths. "Connections in Precast Concrete Structures—Strength of Corbels." *PCI Journal* 10.1 (1965): 16-61.



As previously stated, the DNF shear keys contain several differing conditions compared to the keys considered by AASHTO and associated research provided by A+F. For example, the DNF shear keys are unreinforced single keys, as opposed to multiple rows of shear keys in the segmental bridge model. In the experimental studies conducted by Koseki and Breen, both large, single key configurations and multiple rows of keys are tested and result in similar capacities. However, the single key configuration tested in this study does not correspond to the conditions present at the DNF structure. The following highlight the differences between the tested keys and the DNF keys:

- Tested keys were reinforced with 10-gauge wire reinforcement, which follows the general shape of the male key projection and crosses the shear plane. No such reinforcement was present within the DNF male shear keys.
- Tested keys incorporate a depth to width (Figure 6) ratio approximately two and one-half times less than the keys in question at the DNF structure. The DNF shear keys projected further than the tested keys.
- Waterstops were not included in these tests. RRJ modeling has shown that the relative compressibility of the waterstop within the center of the DNF shear keys allows tensile stresses due to bending to develop.
- Segmental bridge joints are generally held together in compression. Prestressing forces were applied to the single shear key configuration during testing to simulate this condition. Compression in the joint can increase shear capacity. The DNF shear keys occur at joints that are subject to no such compressive forces.

The AASHTO method and associated research presented by A+F assumes the transfer of forces occur as a direct shear. However, the DNF shear keys were found to also exhibit bending behavior that creates tensile stresses. As outlined above, the DNF shear keys are not held in compression against the mating surfaces, are only partially restrained due to the compressibility of the waterstop, and are subject to bending. This behavior is consistent with a cantilever beam with relatively high tensile stresses occurring at the heel of the key. Tensile stresses exceeding the rupture threshold can form a crack near the corner of the key. Sustained loading may cause the crack to propagate in an uncontrolled manner, potentially bypassing the waterstop.



A+F incorrectly used a shear capacity equation taken from a publication by Curtis⁵ to support its claim of high allowable shear capacity ($2 * f_t = 15\sqrt{f'_c} = 870 \text{ psi}$, $(f'_c = 3375 \text{ psi})$). According to the study, the correct equation is $2 * f_t = 2 * 1.22(f'_c)^{\frac{2}{3}} = 9.9\sqrt{f'_c} = 575 \text{ psi}$ ($f'_c = 3375 \text{ psi}$). Further, the Curtis equation is only valid at zero normal stress, which means that no tensile stresses from bending are present. As demonstrated in RRJ's modeling, tensile stresses develop in the DNF shear keys.

RRJ has not been provided calculations related to RK&K's design of the DNF shear keys. A calculation package dated November 2010, produced by RK&K and reviewed by RRJ, does not address shear key sizes, capacities, or anticipated loadings. RK&K provided cross-sectional details of shear keys with waterstops that were reportedly used successfully on other projects. RK&K has provided no documentation indicating that the shear keys at these other projects incorporated changes in direction, as occurs at the DNF structure sump pits. ACI 350.4R Section 5.1 indicates caution should be used when specifying shear keys in moving joints. The apparent lack of original design calculations for the shear keys is in conflict with ACI's recommendations.

Laboratory testing could be performed in order to validate the shear capacity of unreinforced single shear keys similar to those installed at the DNF structure.

Issue 2: Demands on DNF Shear Keys

Description

A+F, WJE, and RRJ each performed FEM modeling of the base slab and Y-wall movement joints in order to predict the loading demands (internal stresses) on the DNF shear keys. Although the experts' modeling approaches are similar, notable differences, including the configuration of end restraint conditions and the interpretation of stress distribution, are partially responsible for the variation of the demands reported by the experts.

⁵ Curtis, D.D. "Estimated Shear Strength of Shear Keys and Bonded Joints in Concrete Dams." *31st Annual USSD Conference* (April 11-15, 2011). San Diego, California.



Fru-Con/WJE

WJE claims that relative movement between the male and female sides of the base slab movement joint will occur as the male slab cools and the heat produced from cement hydration dissipates. WJE applied a 20 degree temperature differential to their FEM model to determine the resultant demands on the shear keys. In the Y-wall model, WJE applied hydrostatic loads corresponding to the water test load in a single cell while the adjacent cells remained empty as a means of predicting demands on the keys in the Y-walls. The results of WJE's FEM modeling are summarized in Table 1.

RK&K/A+F

A+F claims that the demands imposed on the shear key will be resisted by direct shear behavior. In its October 10, 2016 report, A+F states "confinement of the shear key develops a direct shear at the root without any appreciable moment." A+F developed FEM models of both the base slab and the Y-wall movement joints. In its base slab model, A+F imposed a 20-degree temperature differential (as assumed by WJE) and found that "some localized higher shear stresses are located within fractions of an inch at the corner of the contact points, again under WJE's hypothetical conditions, however these are typically numerical errors. It is our opinion that average shear stresses are representative of the shear stresses in this hypothetical worst case condition."

A+F also reported stress demands in the Y-wall keyway that were derived from its model. The A+F Y-wall model incorporated end walls. The demands predicted by A+F are summarized in Table 1.

RRJ Discussion/Analysis

RRJ's modeling shows that the waterstop used in the DNF joints was compressible and, therefore, the key was subject to tensile bending stresses similar to a cantilever beam. RRJ's modeling incorporated the published modulus of elasticity of the PVC material comprising the waterstop, which is approximately 3000 times smaller than that of concrete, meaning that the material is relatively soft, flexible and compressible compared to concrete, resulting in the development of these bending stresses. Therefore, RRJ does not agree with A+F's modeling approach which ignores the effect of the waterstop.



RRJ disagrees with A+F's use of the average shear stress across the entire base of the shear key to derive its reported stress demand. Averaging of the stresses across the width of the shear key underestimates the actual peak stress at the reentrant corner where a crack is most likely to originate.

A stress peak or "stress riser" should be expected to occur at the reentrant corner of the shear key⁶. When the stress in this area of concrete exceeds the shear capacity and/or the modulus of rupture, a crack can form. The tip of the crack remains as a point of high stress, which is responsible for the rapid propagation of the crack after origination.

RRJ's modeling indicates that Y-wall joint shear key stresses do not exceed the shear capacity or the rupture threshold, and so cracking of the keys is not predicted under the maximum unbalanced hydrostatic load. This finding is consistent with RRJ's document review, which did not reveal evidence of leakage which was determined to originate at the vertical Y-wall joints. Therefore, based on RRJ's calculation of shear capacity, we disagree with WJE's findings regarding cracking at the top of the Y-wall.

Based on modeling results, RRJ considers it reasonable to assume that some areas within the base slab could experience temperature induced deflections large enough to induce cracking. Reference literature suggests that certain locations within the base slab may experience hydration temperature rise of as much as 60 degrees F, followed by a corresponding temperature reduction as the concrete hardens.⁷ WJE assumed a uniform 20-degree temperature differential based on broad assumptions. Neither WJE, A+F, or RRJ have performed a rigorous thermal analysis that could clarify actual temperature changes experienced by the base slab during hydration.

RRJ's base slab modeling assumed a 20-degree temperature differential, for comparison with the other experts' models, resulting in maximum tension stresses of approximately 800 psi and maximum shear stresses of approximately 500 psi. These values were less than WJE's results and greater than A+F's calculated 135 psi average shear stress across the male key. (A+F rejects the presence of tension stress in the shear keys.)

⁶ Beer, Ferdinand P., E. Russell Johnston, John T. DeWolf, David F. Mazurek, and Sanjeev Sanghi. *Mechanics of Materials*. 5th ed. New York: McGraw-Hill, 2006. 107-108.

⁷ ACI Committee 211. "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete (ACI 211.1-91) (Reapproved 2009)."

RRJ modeling found that base slab stress concentrations occurred where the shear key changes direction from horizontal to vertical on either side of the sump pits. This finding was consistent with WJE's modeling results and with A+F's statement that restraint does occur in the base slab joint due to the joint's change in direction. The base slab key configuration puts the keys at risk of failure modes warned against by ACI.⁸ RRJ believes the restraint in the joint is due to the as-designed configuration in this area and is likely responsible for the concentration of joint-related defects at the sump pits.

The sump pit sidewall cracks adjacent to movement joints are evidence of transverse forces present within the base slabs. The lack of reinforcement within the female side projection of the keyway exacerbated the severity of the cracks. However, while more effective placement of reinforcement may have limited crack sizes, it would not have prevented cracking. Cracking of the female key would not alone be responsible for excessive leakage rates, although they may contribute to leakage, particularly at locations where poor consolidation of the concrete around the waterstop may have occurred. Failure of the male key is the most likely cause of excessive leakage rates.

Issue 3: Shear Key Configuration

Description

Shear keys installed at expansion and contraction joints throughout the DNF structure are configured as a single, male projection within the center portion of the concrete thickness and designed to interlock with a female projection. Project records indicate that the female side of the joint was typically formed and placed first. The design drawings further indicate the key width was to be one-third the thickness of the concrete cross section, centered on the cross-section centerline, projecting one-sixth the thickness of the concrete cross section. The latter requirement was modified by RFI Response No. 366 to be a uniform 4½ inches. As a result, the shear key projection at Y-wall joints and the sides and bottom of the sump pits exceeded the original projection length. A waterstop was to be located at the centerline of the key.

Although the design drawings schematically depict the male key as a rectangular projection, RK&K's specifications indicate that a slight taper ("draft") was required for forming all projecting elements. In other words, the original project specifications required the use of tapered joints. During construction,

⁸ ACI Committee 350. "5.1. Design Considerations for Environmental Engineering Concrete Structures (ACI 350.4R-04)."



Fru-Con's RFI 37, which relates to the use of "tapered" formwork to form shear keys, was accepted by RK&K. Fru-Con later indicated that the RFI was never implemented, citing costs.

RK&K/A+F

A+F claims that all cracking can be shown to be caused by improper construction based on the as-built concrete condition and the dovetailed shape of the male keys. Male keys formed in an improper shape will cause the joint to bind and crack during normal, anticipated structural movement. Additionally, if the concrete used to create the shear keys was below design strength, it may crack under normally anticipated shear loads. Cracks that allowed water to bypass the waterstop were identified as the primary cause of the water test failures. A+F also alleged that poorly consolidated concrete would allow water to find a path to bypass the waterstop through voids in the concrete.

Fru-Con/WJE

During early investigative work in 2012, WJE examined cracked concrete at two joints located in the sidewalls of sump pits. Excavation revealed that the cracks represented spalling of the female side of the keys and that the exposed male keys appeared to be cracked along the base. Measurements indicated the male key projections were reverse-sloped, causing the joint to bind and crack as joint movement occurred. WJE initially estimated that 50 percent of rectangular keys throughout the DNF structure could have been constructed with a slight reverse slope and still have met ACI geometric tolerances. In later reports, WJE revised its position based on review of project records, alleging that the majority of the keys had been constructed with a tapered form that would allow joint movement without binding. WJE's most current position is that the cracked male keys were caused by improper design based on its analysis and modeling, which relies on certain assumptions regarding concrete shear capacity, differential shrinkage rates, and other aspects of material behavior are discussed below.

RRJ Discussion/Analysis

RK&K should have rejected RFI 37 and directed the contractor to follow the original specifications, which required a drafted or tapered key. Per the specification language, Fru-Con was not allowed the option of providing an untapered key.



To the extent that the keys were formed in such a way as to prevent "free movement" of the joint (i.e., movement perpendicular to the plane of the joint), the joints were installed defectively and shear key cracking/joint leakage can be attributed to defective installation. The project documents, however, are unclear as to the extent to which the keys were improperly installed. Construction photographs reviewed by RRJ depicting typical formed keyway surfaces are inconclusive with regard to the inclusion of a draft, which may not have been discernable in photographs.

RRJ discussions with on-site city personnel revealed conflicting reports regarding the use of tapered key forming inserts. As pointed out by A+F, comments from field personnel occurred many years after the construction, making this information difficult to rely upon. Fru-Con's reported decision to forego the use of tapered keys does not, however, prove that the draft required by the original construction specification was excluded from the concrete construction.

Certain construction documents refer to improper keyways that were not formed. These are referenced within SIR 42 and RFI 37A, with Fru-Con proposing to remediate. The approach was approved by RK&K. These conditions occurred in horizontal wall construction joints with continuous steel crossing the joints, which were not movement joints, and to RRJ's understanding, were not identified as a discrete source of water leakage during water testing.

MISCELLANEOUS ISSUES

Issue 4: Curing

Improper curing could result in increased cracking, particularly on large exposed surfaces, such as the Y-wall surfaces. Failure to properly complete the specified curing method can cause rapid drying/moisture loss that could result in the initiation of plastic shrinkage cracks, failure of the concrete to achieve the full design strength, and increased shrinkage strain, resulting in larger, more numerous cracks. Confined, unexposed concrete, such as within the base slab at the depth of the shear keys, would not experience rapid moisture loss to the same degree as the exposed surfaces; therefore, these detrimental effects would not be expected to have an impact on these locations. Improper curing is not expected to be a substantial contributor to the joint leakage.



Issue 5: Rebar Placement

As stated in RRJ's previous report, placing reinforcement to cross the plane of the male shear key base would have helped limit the extent of the crack size at that location. However, reinforcement would not have prevented the crack from forming or stopped the water leak through the crack. A concrete crack forms before the tensile strength of the steel reinforcement is fully mobilized.

The design drawings for reinforcing in the vicinity of the sump pits are generally schematic and do not address the extra complication involved with maintaining adequate clear cover where the key is too thin to provide the required cover on opposite sides. Shop drawings were allegedly submitted and approved for reinforcing details, but have not been reviewed by RRJ. On other projects under similar circumstances, it would be expected that these types of issues would be resolved through the shop drawing review process.

Issue 6: CIM 1000 Repairs

RRJ has not opined that the CIM was an unsuitable choice for sealing leaking joints. The CIM 1000 repair material is a polyurethane-based sealant product, and in RRJ's experience, polyurethane-based sealant materials degrade over time, leading to increasing incidences of both adhesive and cohesive failures. Conventional building sealants exposed to ultraviolet light and weather have a typical life expectancy between 5 and 15 years. The basic CIM product warranty is for a 5-year period.

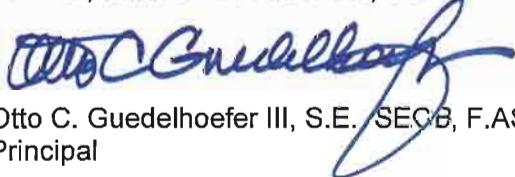
CONCLUSIONS

1. RRJ determined a reasonable estimate of the DNF shear key shear capacity at compressive strength of 3,375 psi is likely less than 340 psi. WJE's use of ACI 318 provisions is an overly conservative estimate of the shear capacity. A+F's use of the AASHTO method to determine shear capacities in wastewater treatment plant shear keys is overly nonconservative. If necessary, laboratory testing could be used to better validate shear capacity of concrete shear key assemblies similar to those constructed at the DNF facility.
2. Properly constructed male shear keys in the base slab of the DNF structure may be subject to shear and tensile demands large enough to produce cracking.

3. Properly constructed male shear keys in the Y-walls of the DNF structure are not subject to shear and tensile demands large enough to produce cracking.
4. Physical evidence detailing the condition and geometry of the concealed male shear keys is inadequate to provide statistically relevant findings that could be extrapolated throughout the DNF structure. Further destructive testing could be performed to quantify the defectively constructed male shear keys.
5. Improper curing may have contributed to crack formation and leakage through walls, but is not likely a substantial contributor to shear key cracking and joint leakage.
6. Rebar placement did not significantly impact the location or quantity of water leakage at the DNF structure.
7. The CIM 1000 repair material is a polyurethane-based sealant that will degrade over time and require maintenance.

Respectfully submitted,

RATHS, RATHS & JOHNSON, INC.

A handwritten signature in blue ink, appearing to read "Otto C. Guedelhoefer III".

Otto C. Guedelhoefer III, S.E., SECB, F.ASCE
Principal

March 9, 2017

G:\14099\Docs\Report_2\text.docx



FIGURES 1 THROUGH 6



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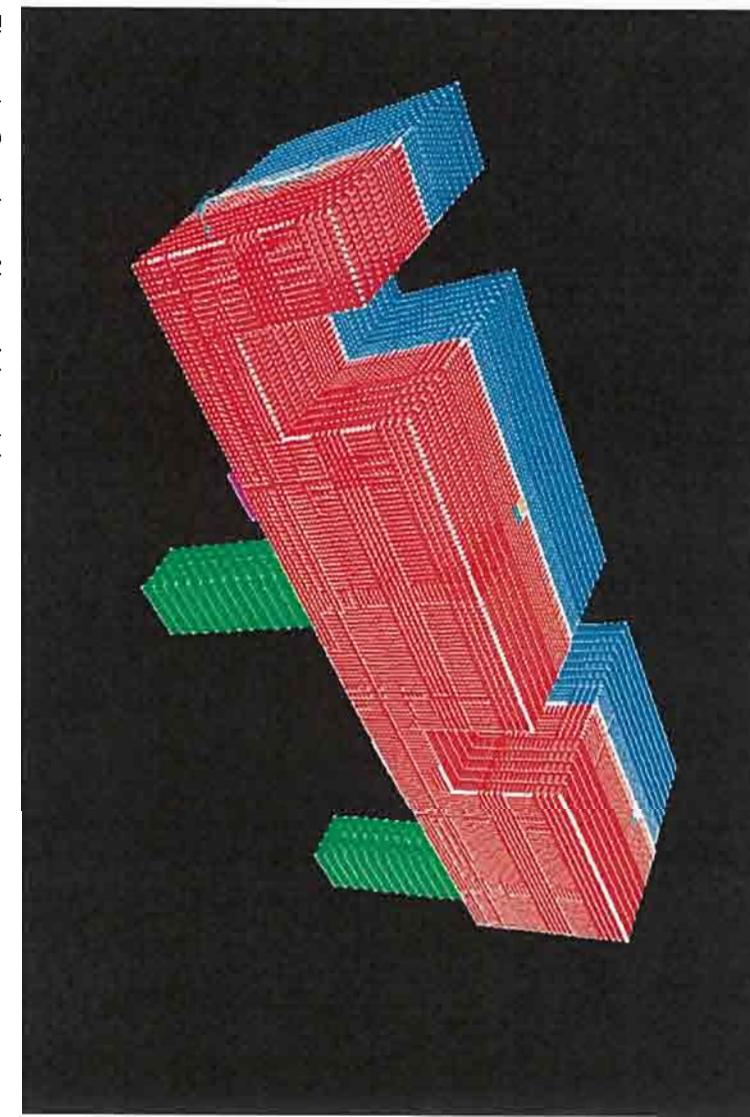
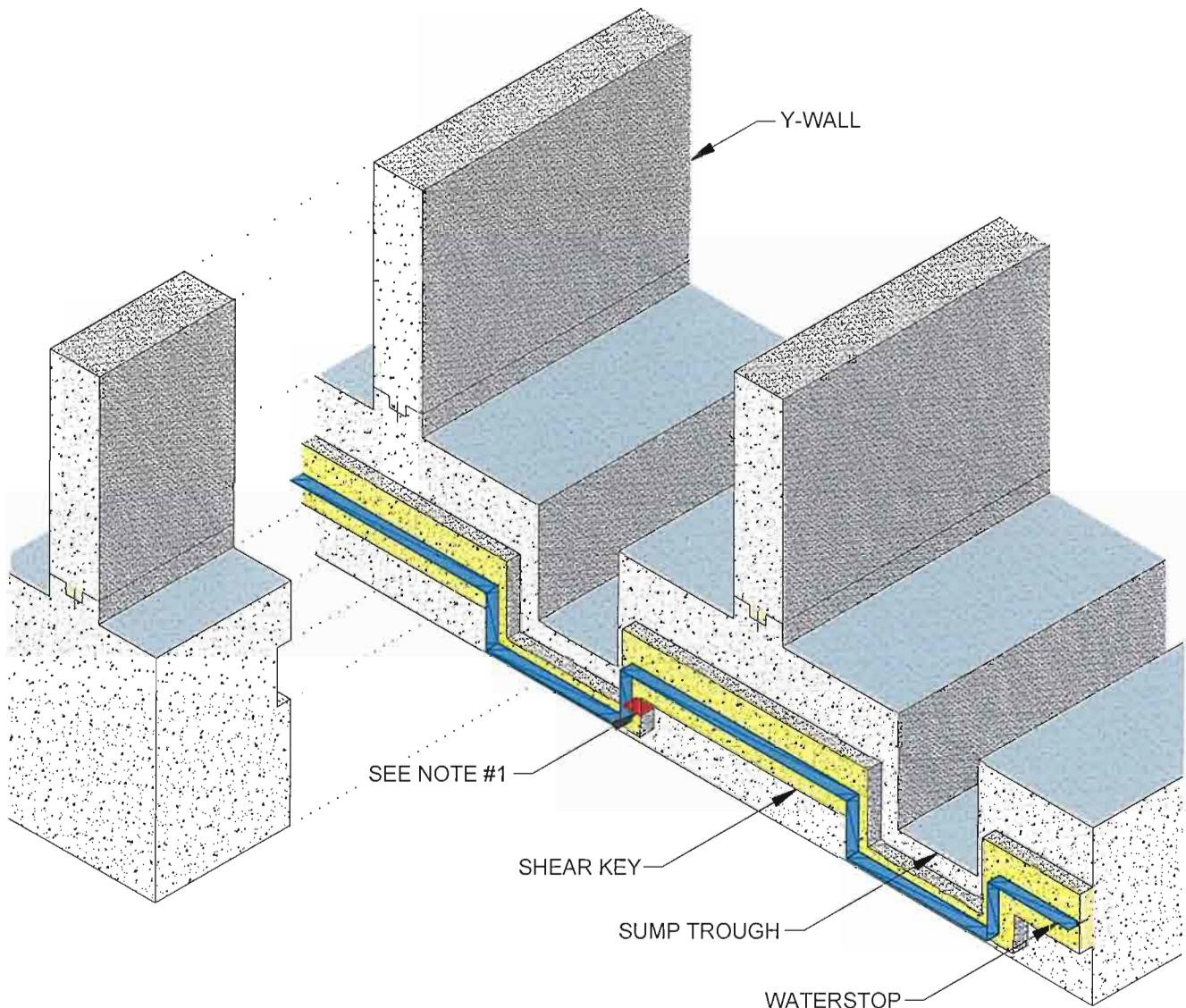


Figure 1. Overview of base slab model.



NOTES

1. LOCATION OF MAXIMUM SHEAR AND TENSILE STRESSES AT BASE OF VERTICAL SHEAR KEY.

R R J	RATHS, RATHS & JOHNSON, INC. ENGINEERING • ARCHITECTURE • FORENSICS 500 JOLIET ROAD • SUITE 200 WILLOWSBROOK, ILLINOIS 60527 630.325.6160 • 630.325.2866 • WWW.RRJ.COM	SHEAR KEY CONFIGURATION AT SUMP TROUGHS PATAPSICO WASTE WATER TREATMENT PLANT BALTIMORE MARYLAND	DATE: 03-08-17 SCALE: N.T.S. JOB #: 14099 DRAWN BY: BAG PRINCIPAL: OCG CHECKED BY: WJM	2 FIGURE
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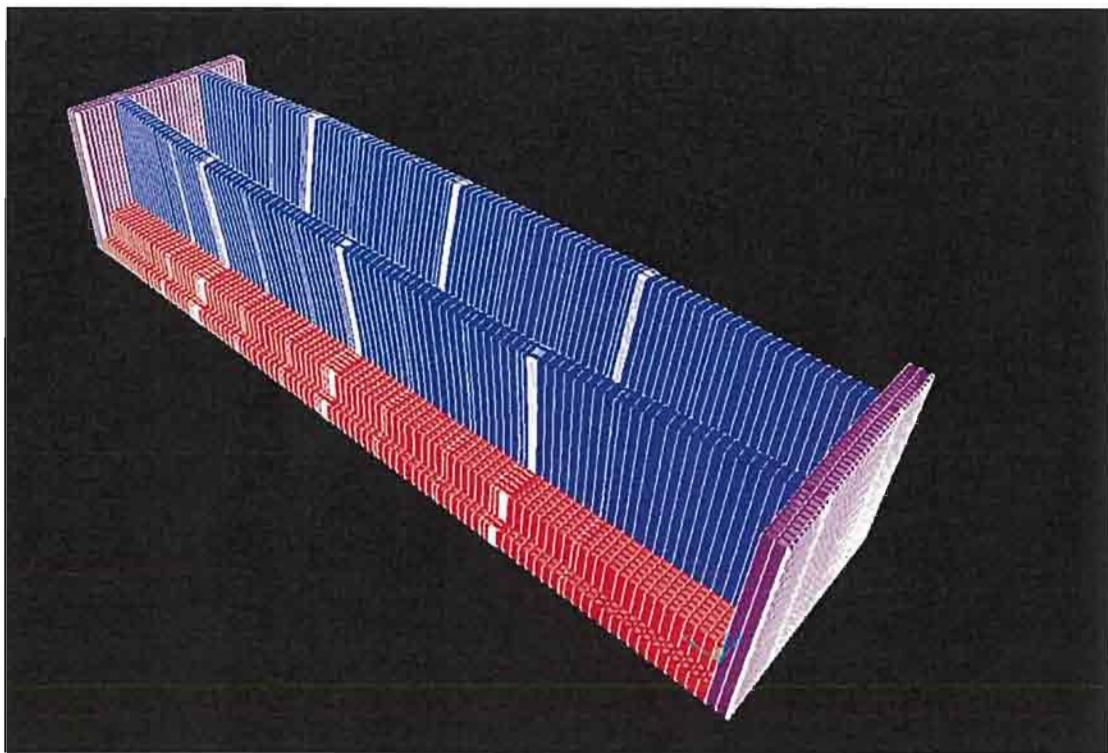


Figure 3. Overview of Y-wall model.

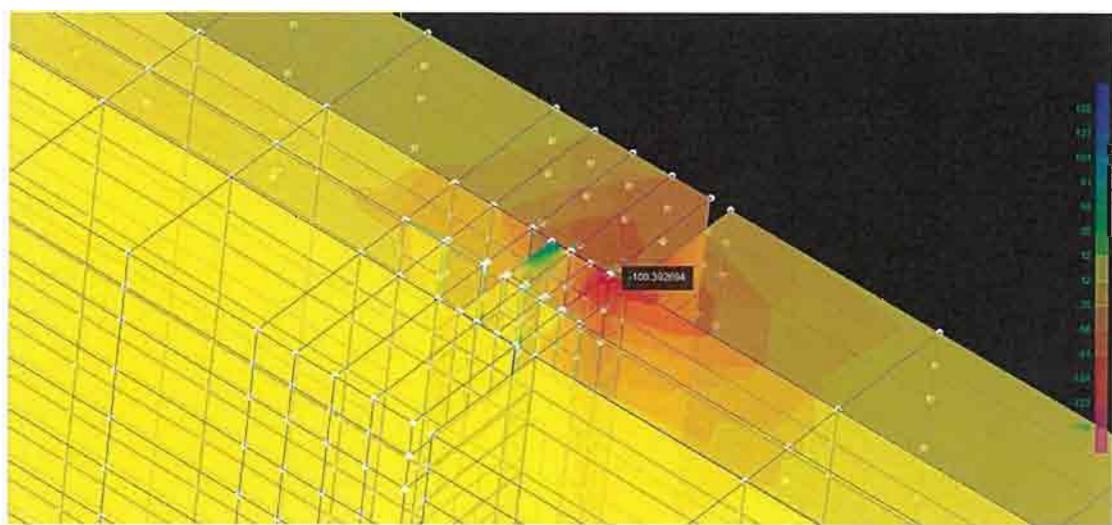


Figure 4. Location of maximum shear stress at top of Y-wall shear key.

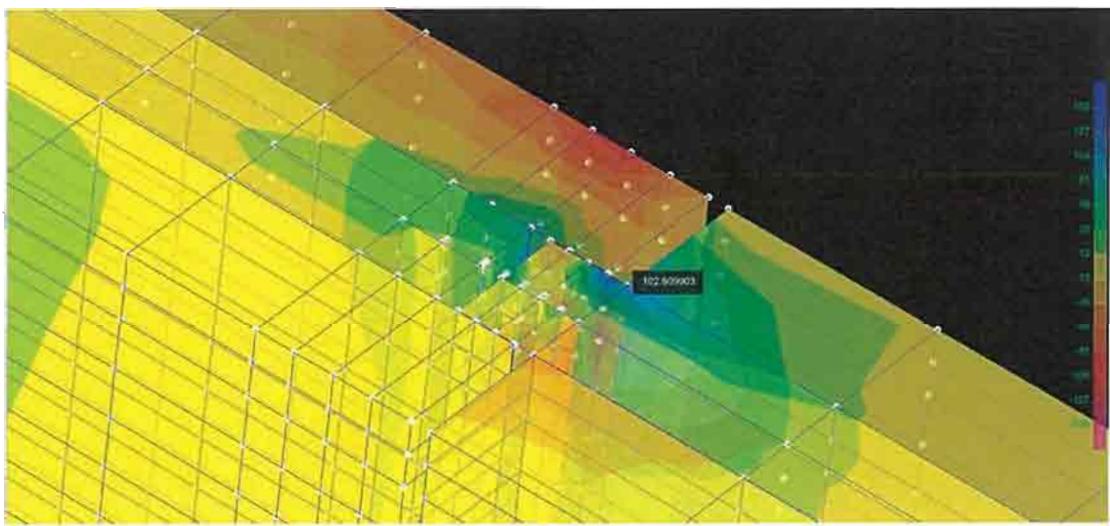
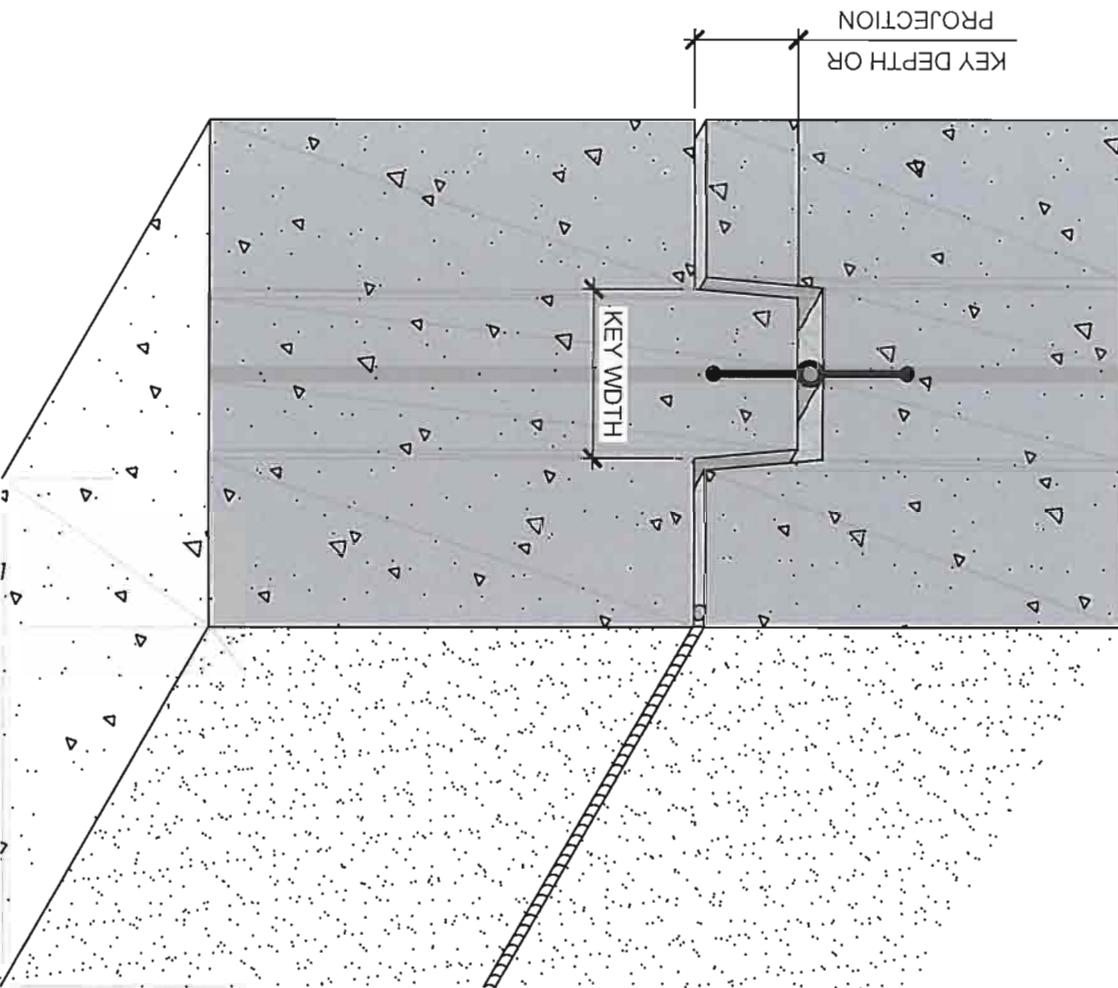


Figure 5. Location of maximum tensile stress at top of Y-wall shear key.

R	J	+/-
RATHS, RATHS & JOHNSON, INC.	TREATMENT PLANT	KEYED JOINT IN CONCRETE
DATE: 03-08-17	SCALE: N.T.S.	SCALE: N.T.S.
JOB #: 14099	DRAWN BY: BAG	DRAWN BY: BAG
PRINCIPAL: OCG	PRINTED BY: WJM	CHECKED BY: WJM
WILLOWBROOK, ILLINOIS 60527	MARYLAND	BALTIMORE
630.325.6160 • 630.325.2866 • WWW.RJ.COM	630.325.6160 • 630.325.2866 • WWW.RJ.COM	630.325.6160 • 630.325.2866 • WWW.RJ.COM
FIGURE		



APPENDIX A

Documents Reviewed



DOCUMENTS REVIEWED

- A+F letter report dated September 16, 2016 and all attachments
- A+F letter report dated October 10, 2016 and all attachments
- RKK Contract Drawings Volumes 1 through 4 dated October 2009
- RKK Addendum No. 1 dated October 23, 2009
- RKK PowerPoint presentation dated September 12, 2014
- A+F formal report dated November 21, 2014 and all attachments
- RKK Structural Calculations Volume No. 1 dated November 2010
- City filter leak repair letter dated February 20, 2013 and all attachments
- City concrete claims outline document dated September 12, 2014 and all attachments
 - Attachment A: Concrete pre-construction meeting agenda dated September 23, 2010
 - Attachment B: Various special inspection reports (SIRs)
 - Attachment C: Various formal letters and correspondence from the City, RKK, and Fru-Con
 - Attachment D: Photographs
- Inspection photographs received during site visit on May 9, 2016
- Fru-Con filter joint repairs letter dated October 17, 2012 and all attachments
- Fru-Con filter joint waterstop submittals dated June 8, 2012, June 27, 2012, and July 9, 2012 and RKK response
- Fru-Con filter joint repairs cost proposal letter dated February 4, 2013 and all attachments
- Fru-Con appeal of claim denial letter dated March 18, 2013
- Fru-Con additional support documentation letter dated Apr. 3, 2013 and attachment
- Fru-Con formal report dated September 10, 2014 and all attachments
 - Ex. A: Concrete specific special inspection reports (SIRs)
 - Ex. B: Leak specific SIRs
 - Ex. C: Photographs
 - Ex. D: City response to request for information (RFI) no. 37A dated October 13, 2011
 - Ex. E: RKK response to RFI no. 37A dated October 13, 2011
 - Ex. F: Gibraltar Construction Services expert report dated August 29, 2014
 - Ex. G: RFI 366 dated January 31, 2011
 - Ex. H: WJE letter report dated August 28, 2014
 - Ex. I: Hanskat Consulting Group letter report dated September 8, 2014
- Fru-Con appeal letter to Bureau Head dated October 28, 2014.
- WJE letter report dated October 16, 2012
- WJE letter report dated August 28, 2014
- WJE letter report dated October 27, 2014
- American Concrete Institute, "Standard Specifications for Tolerances for Concrete Construction and Materials" (ACI 117-90) and Commentary (ACI 117R-90)
- American Concrete Institute, "Joints in Concrete Construction" (ACI 224.3R-95)
- American Concrete Institute, "Building Code Requirements for Structural Concrete Structures" (ACI 318-05) and Commentary (ACI 318R-05)
- American Concrete Institute, "Code Requirements for Environmental Engineering Concrete Structures" (ACI 350-01) and Commentary (ACI 350R-01)
- American Concrete Institute, "Tightness Testing of Environmental Engineering Concrete Structures" (ACI 350.1-01) and Commentary (350.1R-01)

- American Concrete Institute, "Design Considerations for Environmental Engineering Concrete Structures" (ACI 350.4R-04)
- RFI 366 correspondence
 - RFI 366 issued by Fru-Con on January 31, 2011
 - RKK response to RFI 366 dated February 23, 2011
 - City response to RFI 366 dated February 23, 2011
- Filter movement and defects photographs provided by the City from 2012 and 2013 on July 16, 2015
- Various correspondence between Fru-Con and City regarding CIM 1000 repairs
- Pre-bid contractor questions and answers
- Contract specifications
- AASHTO Guide Specifications for Design and Construction of Segmental Concrete Bridges, 1999/2003 Interim
- SIRs reviewed by RRJ

SIR 33	Unauthorized Work Performed	June 30, 2011
SIR 38	Rust Stains on Concrete	August 8, 2011
SIR 40	Improper Form Removal	September 22, 2011
SIR 41	Unauthorized Work Performed	October 5, 2011
SIR 42	Non-Conforming Work Performed	October 11, 2011
SIR 44	Non-Conforming Work Performed	November 14, 2011
SIR 45	Improper Curing of Cylinders	November 21, 2011
SIR 47	Water Leakage at Filters	November 29, 2011
SIR 49	Contraction Joint Excessive Movement	December 2, 2011
SIR 54	Water Leakage at Filters	December 14, 2011
SIR 60	Concrete Defects	February 7, 2012
SIR 62	Influent Trough Cracks	March 1, 2012
SIR 63	Contraction Joint Concerns	March 2, 2012
SIR 64	Water Leakage at Filters	March 16, 2012
SIR 66	Improper Curing Techniques	April 9, 2012
SIR 74	Improper Curing Techniques	July 15, 2012
SIR 75	Improper Curing Techniques	July 25, 2012
SIR 76	Non-Conforming Repair Work Performed	August 1, 2012
SIR 77	Non-Conforming Work Performed	August 7, 2012
SIR 80	Non-Conforming Work Performed	September 20, 2012
SIR 90	Anchor Bolts Placed through CIM Repair	November 7, 2012
SIR 102 (Revised)	Inadequate Concrete Cover	March 15, 2013
SIR 106	Non-Conforming Work Performed	April 3, 2013
SIR 114	Water Leakage through Electrical Conduit	May 9, 2013
SIR 116	Non-Conforming Work Performed	May 21, 2013
SIR 124	Water Leakage at Filters	August 2, 2013
SIR 146	Improper Grouting Procedure	December 13, 2013
SIR 148	Cracking of Roof Sloped Toping	January 2, 2014
SIR 164	Lack of Productivity in Applying CIM Repairs	March 21, 2014
SIR 168	Leakage in the Mudwells	April 17, 2014
SIR 173	Unauthorized Repair Performed	June 20, 2014
SIR 174	Inadequate Repair	June 24, 2014
SIR 175	Inadequate Repair	June 24, 2014
SIR 177	Inadequate Repair	July 1, 2014
SIR 179	Inadequate Repair	July 9, 2014
SIR 183	Inadequate Repair	July 22, 2014

APPENDIX B

RRJ Modeling Approach



RRJ Modeling Approach

Base Slab and Sump Pit

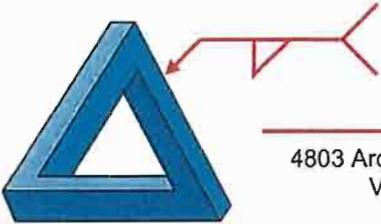
The analysis model of the base slab, created using 3D solid elements, extends between two construction joints in the project east/west direction and between the outer edges of two piles in the north/south direction, with the full slab thickness accounted for. A joint comprised of a keyway was positioned along the east/west plane and centered between the two extreme north/south boundaries of the base slab model. The keyway was modeled with an approximately 4½-inch male key projection on one side of the joint and a 4½-inch female key depression on the adjacent side. The male key projection was slightly undersized to allow a small gap to be modeled between the male and female contact edges and compression only (gap) elements with relatively large stiffness properties that were modeled at this interface to allow load transfer and simulate contact. Both male and female sections of the keyway were modeled with a ¾ inch gap in the center of the key to account for the presence of the waterstop. The waterstop was modeled using compression only (gap) elements with the approximate compressive stiffness as provided in the product literature for the SIKA Greenstreak waterstop used on the project. Piles are modeled as approximately 24-inch-by-24-inch-by-6-foot-deep concrete solid elements, fixed at the base, with properties defined to simulate the in-place steel piles. The effects of the soil were not considered in this analysis. The slab portion containing the female keyway and the base slab was provided with the full material properties of the as-designed concrete, corresponding to a compressive strength of 4,500 psi. The slab portion with the male keyway was modeled using 75 percent of the design strength to account for the approximate material characteristics that would be expected at the time the heat generated by hydration had dissipated. The model was subjected to a series of loads, all of which relate to shrinkage due to the heat of hydration. Temperature loads, simulating the effects of shrinkage, were applied to the slab portion containing the male keyway only, including temperature differentials of -5 degrees to -30 degrees at 5-degree intervals.

Y-wall

The analysis model of the Y-wall, created using 3D solid elements, was developed to investigate the stress induced in the Y-wall keyway due to the maximum hydrostatic load that would be applied during the lifetime of the facility. To depict this condition, two Y-walls are modeled to the height of the top of

the weir wall (approximately 16 feet 2 inches) and all additional material above this point is disregarded. The wall extends to this particular height to simulate the maximum head of water that would occur during water leakage testing of a single bay at the DNF structure. The walls are modeled at full-length in the project north/south direction (approximately 100 feet) with keyway joints located at the quarter points. The full thickness base slab is modeled (excluding any keyway joints) and extends the full length of the model in the project north/south direction and to the midpoint of the sump adjacent to each of the Y-walls in the east and west directions. All Y-walls are modeled at 22 inches thick. All three vertical keyway joints along the length of the Y-walls are modeled with the keyways terminating at a height of approximately 12 feet 6 inches. A $\frac{3}{8}$ inch gap is modeled in the center of each key, and the waterstop is modeled as a solid element within these gaps. The male key projection was slightly undersized to allow a small gap to be modeled between the male and female contact edges. Compression only (gap) elements, with relatively large stiffness properties, were modeled at this interface to allow load transfer and simulate contact. The base of the base slab was fixed at the approximate locations of the slab/pile interfaces. The effects of the soil were not considered in this analysis. At the north and south ends of the model, 24-inch-thick end walls were modeled to the symmetry plane to simulate the actual Y-wall end stiffness conditions. The effect of the pumping gallery building located along the south wall of the structure is not considered. All concrete solid elements were modeled with full design material properties corresponding to a compressive strength of 4,500 psi. Hydrostatic load corresponding to water filled to the full-height of the wall was applied on the insides of each of the two Y-walls and end walls. No load was applied on the opposite ends of the Y-walls to simulate the worst case loading condition of filling a single cell while the other cells remain unfilled.

ATTACHMENT 4



Sperko Engineering

Services, Incorporated

4803 Archwood Drive, Greensboro, NC 27406, USA, www.sperkoengineering.com
Voice: 336-674-0600 FAX: 336-674-0202 e-mail: sperko@asme.org

February 17, 2016

Mr. Jeff Kracun, Project Director
Balfour Beaty Infrastructure, Inc.
Patapsco Wastewater Treatment Plant
3601 Leo Street
Baltimore, MD 21226

Subject: Weld Quality Issues

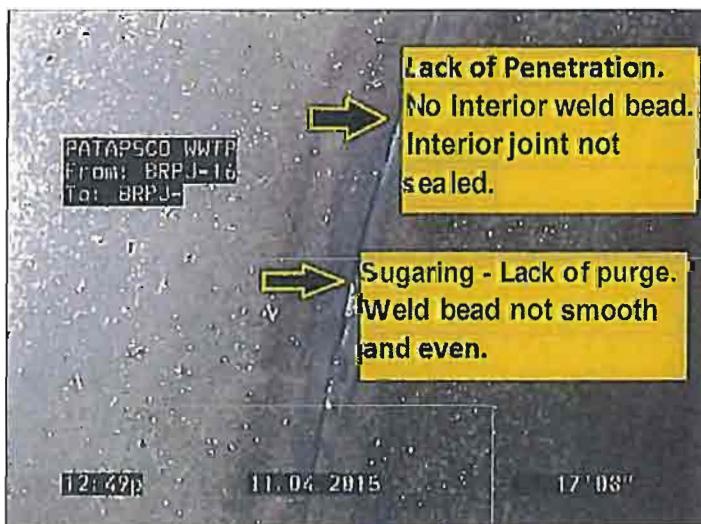
Dear Mr. Kracun,

I have reviewed the February 1, 2016 letter from Mr. Art Shapiro, P.E., PMP Chief of the Office of Engineering and Construction Department of Public Works, City of Baltimore, regarding weld quality issues, and I have the following observations.

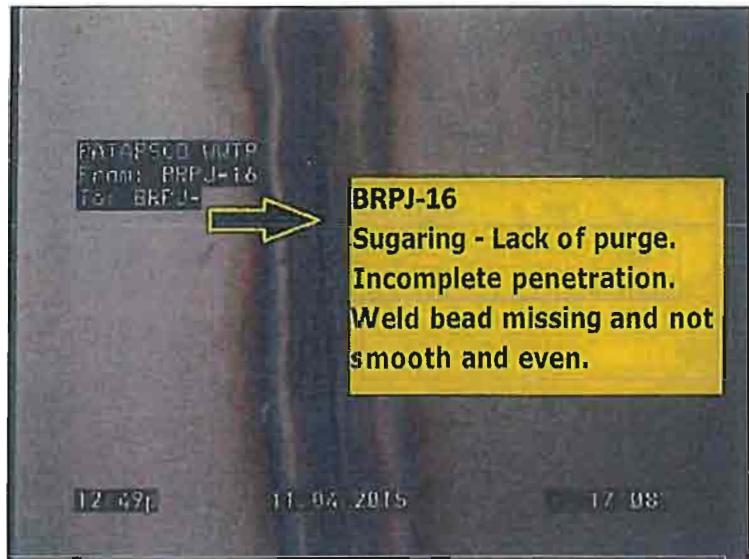
Mr. Shapiro's letter indicated that the specification SC845R Volume III of V Specification Section 40 23 36.13 for the project states that all field welds must meet the following:

- Filler wire shall be added to all welds to provide a cross section of weld metal equal to, or greater than the parent metal.
- Inert gas shielding shall be provided to the interior and the exterior of the joint.
- Interior weld beads shall be smooth, even, and not have an interior projection of more than 1/6 inch beyond the I.D. of the pipe or fitting.

I do not believe that there is any dispute about these requirements. His letter goes on to illustrate by the following photographs where he believes that the specification does not fulfill the above. Specifically, that the weld BRPJ-16 exhibits a lack of an interior weld bead and lack of penetration on over 80% of the joint.



Patapsco Wastewater Treatment Plant Weld Quality Issues



Weld cross-section of weld metal equal to or greater than the parent metal

Considering the requirement that all welds shall have a cross-section of weld metal equal to or greater than the parent metal thickness, the above photographs only show the interior of the pipe surface; during my visit to the site last June, welds typically exhibited modest external reinforcement as shown in this photograph:



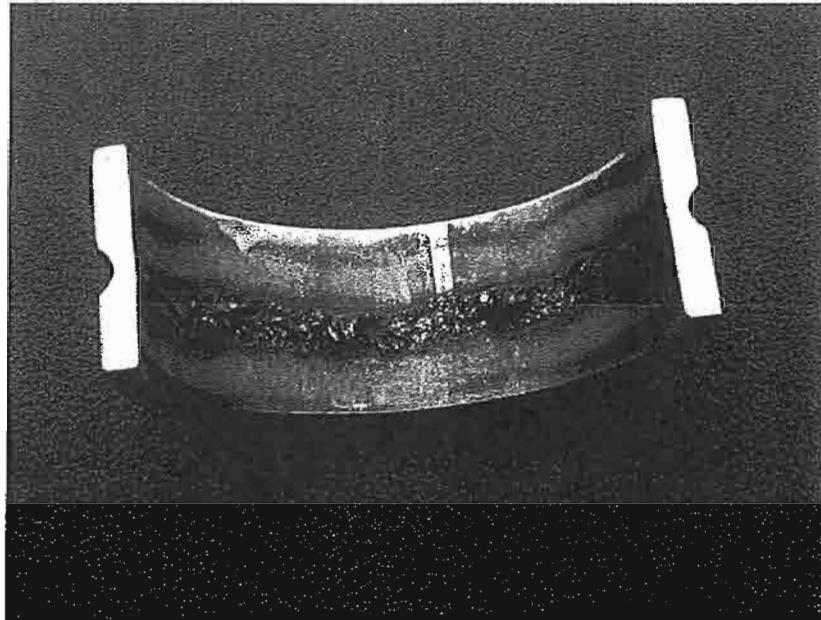
While the weld metal may not be flush with the *interior* surface, any incomplete fill will be compensated for by *external* reinforcement making the weld at least as thick as the parent metal thickness.

Patapsco Wastewater Treatment Plant Weld Quality Issues

In my opinion, the presence of incomplete penetration does not violate the requirement that the weld be as thick as the parent metal since there is external reinforcement to compensate for incomplete penetration.

Inert gas shielding shall be provided to the interior and the exterior of the joint

Regarding the requirement that inert gas shielding be provided to the interior and the exterior of the joint, the following photograph shows what a weld looks like when inert gas ("purge") is not provided on the interior surface of a stainless steel joint:



Note the coarseness of the surface as well as the discoloration. While the photos provided by Mr. Shapiro exhibited discoloration which would have resulted from making a weld where there was oxygen present during welding, that does not mean that inert gas was not provided to the root side of the joint. Those who have expertise in writing specifications for stainless steel piping where the surface oxidation and resulting discoloration has to be controlled will specify that the interior weld surface discoloration shall be permitted to have "a light straw to light blue color" or similar words that relate to the efficacy of the purge and resulting oxide thickness; others will specify a visual comparison standard such as that found in AWS D18.1; this standard contains photographs of the internal surfaces of welds made over a range of oxygen levels showing corresponding discoloration.

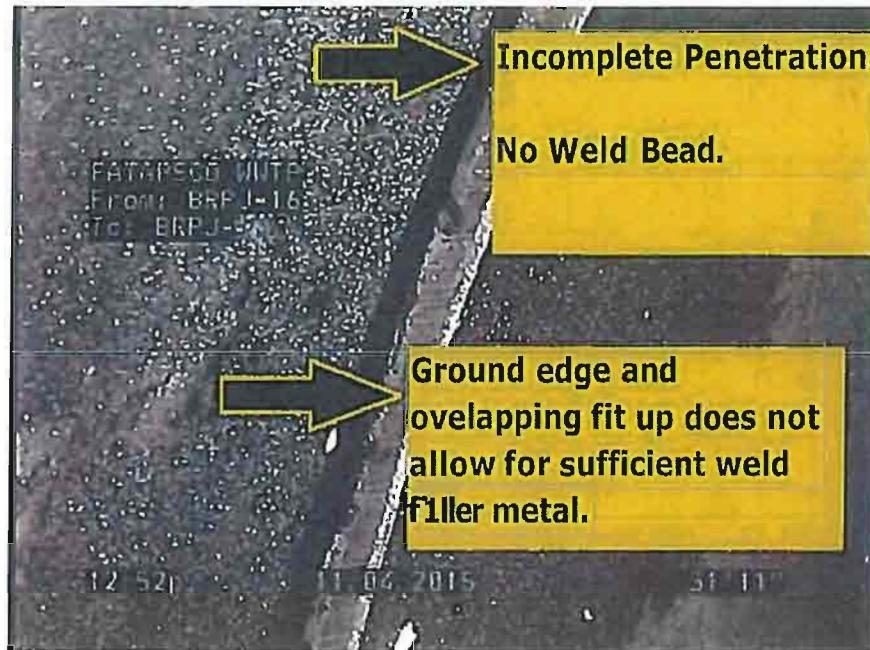
Unfortunately, the specification does not specify any basis for determining the efficacy of the purge gas that was used based on discoloration of the surface; just because there is discoloration does not mean that inert gas was not provided. Further, while one may actually purge pipe down to less than $\frac{1}{2}\%$ oxygen, if a lot of moisture is present in the pipe, that moisture will cause discoloration of the surface since that moisture will be absorbed by the argon and react with the heat from welding causing discoloration. Finally, the presence of a thin film of cutting fluid or similar contaminant will cause the same kind of discoloration even if no oxygen is present at the inside surface during welding.

In my opinion, the presence of discoloration of the internal weld surfaces does not demonstrate that Balfour Beaty did not provide inert gas on the inside surfaces of the welds.

Patapsco Wastewater Treatment Plant Weld Quality Issues

Interior weld beads shall be smooth, even, and not have an interior projection of more than 1/6 inch beyond the I.D. of the pipe or fitting.

Mr. Shapiro illustrates the third point, that the interior weld beads shall be smooth, even, and not have an interior projection of more than 1/6 inch beyond the I.D. of the pipe or fitting with this photograph:



It appears that the surface shown in this photograph has significant mismatch between the mating surfaces (i.e., is not smooth) and that there more than 1/6 inch of mismatch; in my opinion, this weld requires rework to bring it in compliance with the specification. While one may use a video camera or boroscope to locate this type of mismatch, it is my experience when welding large-diameter, thin-wall pipe that there will be locations around a circumference where the welder did not match up the ends well with the result that there will be obvious mismatch on the *external* surfaces of the pipe, and that such *external* mismatch will be *mirrored* with similar mismatch at the *internal* surfaces; locations showing evident external mismatch should be further examined by Balfour Beaty to determine if rework is necessary to bring the internal surfaces to within 1/6th of an inch.

Most disturbing, however, in the photographs provided by Mr. Shapiro is the repeated observation of "incomplete penetration." In the welding industry, when an engineer wants the weld metal to penetrate all the way through a joint and be visible on the opposite side of the joint, he uses the term "full penetration." A requirement for a "smooth" surface is not the same thing as "welds shall be fully penetrated." Had the specification required full penetration or had the specification incorporated ASME B31.3 in for this piping as it did in paragraph 2.15 for the stainless steel double wall piping, the welds shown in the above photographs would not be acceptable.

It should be understood, however, that if the specification required that welds be fully penetrated, the cost of welding on the project would have increased *significantly*. Further, if any type of volumetric examination or visual examination of the interior surfaces (such as was performed to obtain these photographs) had been imposed, the cost of welding would have increased several times. Some factors that cause the cost of welding to increase when the above are imposed are:

Patapsco Wastewater Treatment Plant Weld Quality Issues

- Fewer welders are available who have the skill needed do the work
- Welders will take more time preparing ends and precleaning
- Welders will take more time to get perfect fit-up and alignment. This is especially true when dealing with large-diameter, thin-wall pipe.
- Welders will take more time to make tack welds and prepare them for incorporation into the root pass.
- Welders will take more time make root pass.
- Welders will take more time to get perfect layers of weld metal, including cleaning between layers and contouring previous layers of weld.
- Welders will take more time preparing the cover pass for examination.
- Additional supervision and/or inspection personnel will be needed to verify that the welders are doing the job so that the examinations pass.
- The only way to get welds that are capable of passing internal visual or volumetric examinations is to examine the weld, identify any unacceptable indications, make the necessary repairs and reexamine the repair areas.

In the opinion of Sperko Engineering, imposing a requirement on this work that welds exhibit full penetration is, in fact, a material change to the contract.

Suitability for Service

The open question is whether or not the conditions observed are suitable for service. Stainless steel *in water-wetted service* suffers from a phenomenon known as crevice corrosion, and the incomplete penetration shown in the above photos has the potential for initiating pitting attack in wetted service. Similarly, surfaces discolored with oxides or other surface contamination like those shown in the above photographs will suffer from underdeposit corrosion. Since the internal surfaces of the air-supply system is not water-wetted service, neither crevice corrosion nor underdeposit corrosion will be a problem. I would also note that there are split-sleeve type couplings in the system (see photo below), and such fittings have significant crevices where they meet the pipe outside surfaces; if these fittings are acceptable for the service, crevices associated with incomplete penetration should perform equally as well.



Split-sleeve type coupling

Patapsco Wastewater Treatment Plant Weld Quality Issues

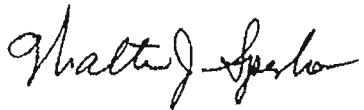
Incomplete penetration and surface oxidation and other surface contamination are, unfortunately, potential problems in water-wetted service as they can lead to pitting attack and leakage. I do not know enough about the actual service conditions, water chemistry, flow rates, etc. to speculate whether or not welds exhibiting incomplete penetration, surface oxidation or other contamination will be a problem. It is my understanding that the water will be highly aerated, and that is usually a positive condition since aeration provides plenty of oxygen to maintain the stability of the oxide layer that gives stainless steel its corrosion resistance.

Conclusions

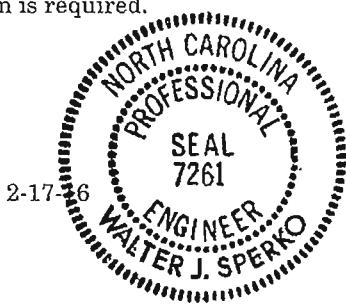
It is the opinion of Sperko Engineering that, with the exception of where pipe joints are mismatched resulting in internal misalignment in excess of 1/6 inch (which should be evident from OD mismatch), the welds made by Balfour Beaty Infrastructure, Inc. on the subject project are in compliance with the specification requirements.

Please advise if further discussion is required.

Very truly yours,



Walter J. Sperko, P.E.



ATTACHMENT 5



June 30, 2016

Mr. Art Shapiro, PE, PMP
Chief Engineer
Office of Engineering and Construction
Room, 900, Abel Wolman Building
Baltimore, MD 21202

Fru-Con Construction

A Division of Balfour Beatty Infrastructure, Inc.

3601 Leo Street
Baltimore, MD 21226
Tel 410-355-2451
Fax 410-355-2454
www.bbius.com

Attention: *Bob Nash*

FC-BC-244

Reference: Sanitary Contract 845R

Subject: Field Weld Proposal

Dear Mr. Nash:

Balfour Beatty Infrastructure, Inc./Fru-Con ("BBII/FC") is submitting the attached proposal regarding the disputed field weld issue on the 852 and 845 project. This proposal is an attempt by BBII/FC to move forward the completion of both the 852 and 845 projects, which are being delayed by the City's actions. BBII/FC maintains that the field welds meet the specifications for both projects and admits no fault of any kind regarding the field welds on either project. BBII/FC also reserves all its rights under the contract for compensation. Please contact us should you have any questions.

Sincerely,

Jeff Kraoun
Project Director
BBII/Fru-Con Construction

CC: Joe Paplauskas (OEC); Bob Nash (OEC); Don Lambrow (OEC); Jerry Henger (RKK); Joe Tack (RKK); Ben Johns (BBII), Ashu Vyas (BBII)

Balfour Beatty Infrastructure/Frucon

Patapsco 852 AND 845 Project

Potential Solution - Stainless Steel Pipe Weld Issue

Introduction

Balfour Beatty Infrastructure/FRUCON (BBII) and the City of Baltimore have been engaged in a dispute over the quality of the field weldments performed on various stainless steel pipes incorporated into both the 852 project and the 845 project. In short, the City of Baltimore believes that the weldments in question are of questionable quality for their intended purpose. BBII believes that it performed the weldments in accordance with specification requirements and industry standard and -if the quality is not sufficient for the intended purpose, it is because no recognized welding standard was -specified. The purpose of this paper is not -to further this dispute or to argue either sides position. The purpose of this paper is to propose a solution that could resolve this issue such that work can advance and cost and schedule impacts can be minimized.

Understanding of the Primary Concern

After significant discussion between the City and BBII, both parties generally agree that this issue is not a safety issue or a structural issue. Instead, the City has a concern that is centered around longevity of the pipe welds in question. More specifically, should an issue arise either in the air handling pipe or the water handling pipe the issue would most likely manifest itself in the form of a leak. Whatever the case may be, the City's concern is that repairs to any of the questioned pipe welds will be extremely difficult, and potentially expensive, to repair because it could require a complete plant shutdown. BBII does not accept the City's concern as being reasonable or even one of BBII's making. But, by identifying the City's concern clearly, we can move forward with a solution.

The field welds may be generally divided into two groups field welds performed on air handling pipe and field welds performed on water handling pipe. In all cases, the welds are circumferential and splice two pieces of pipe together. With the air handling pipe, the City's concern is related to welds closest to the blowers and the subsequent vibration transmitted to those welds from the blower. With the water handling pipe, the concern is centered around "crevice corrosion." Crevice corrosion is corrosion that could develop in or around crevices in a pipe surface, such as those found around weldments or other pipe connections. It should be noted that nobody involved with this issue knows with certainty if one or both of these issues will decrease the useful life of the weldments in question. The solution proposed herein is, therefore, is a "belt and suspenders" solution to ensure that these potential longevity issues are no longer issues.

Magnitude of the Issue

The City prepared the following field weld inventories for stainless steel pipe at each plant. BBII has reviewed these inventories and generally agrees with them.

Patapsco 852 - Stainless Steel Pipe Field Weld Inventory				
Item	Location	No. of Welds	Pipe Dia	Comments
1	Pipe Gallery	4	12"	12" pipe coming off of 24" backwash filters 1,2,3,13
2	Pipe Gallery	2	24"	Dirty Backwash 2 welds by filter 23
3	Mudwell	4	8"	3 welds in the connection between air blowers 1B and 1A. 1 weld on 2A. See drawing M-12.
4	Daft No. 2 Quad D	4	14"	influent
5	Daft No. 2 Quad D	8	16"	effluent
6	Daft No. 2 Quad D	7	10"	Effluent drains. 2 welds east, 5 welds west of the tank
7	Daft No. 1 Quad D	6	12"	Drain
8	Daft No. 1 Quad D	9	14"	Effluent
9	Daft No. 1 Quad D	4	10"	Drain
10	Daft effluent	13	16"	Daft effluent, see marked up M-20 for elevation view
11	Clearwell No.1 drain pump	2	6"	The welds are on both sides on an elbow
12	Clearwell No.2 drain pump	7	6"	All 7 welds are surrounding an elbow. See M-28
13	Blower room	10	10"	2 welds per blower. One on each of the vertical pipes.
14	24" clean backwash. see M-10	12	24"	4 welds in 3 locations each
15	Filter drain	4	12"	See M-10. 2 welds around each off the elbows in Quad B.
Total Field welds known to date =			96	

Patapsco 845 - Stainless Steel Pipe Field Weld Inventory

Item	Location	No. of Welds	Pipe Dia.	Comments
1	Mudwell Pump Room	14	16"	See figure on the right for specific locations
2	Blower #1	4	12"	See figure on the right for specific locations
3	Blower #2	3	12"	See figure on the right
4	Blower #3	2	12"	see figure on the right
5	Blower #4	2	12"	see figure on the right
6	Blower #5	4	12"	see figure on the right
7	Sludge tank 1	3	6"	There's an elbow between 2 welds for access
8	Sludge tank2	5	6"	
9	Sludge room	4		Two pipes in the middle off the room running up
10	Sludge room corner	3	6"	Need scaffolding for access
11	DAFT tank 1	3	18"	Need scaffolding for access
12	DAFT tank 1	1	24"	
13	DAFT tank 2	1	18"	
14	Process air pipe in Pipe Gallery	4	8"	between line 1&2, 5&6, 8&9, 10&11
15	2" x 4" double containment pipe	60	2"x4"	both sides of the pipe gallery 30 on each side
16	End of the pipe gallery	5	12"	Above the exit sign

Total Field welds known to date =

118

In total, between the 852 and the 845 projects there are approximately 214 field welded pipe connections on stainless steel pipe that will be addressed by this solution.

Solution Objective

Because BBII will seek to recover the time and cost associated with the solution to this problem and the City will deny responsibility based upon its position, the common ground -for both parties must be a least time and least cost impact solution that satisfies the City's concern with longevity. Of note, and of concern to both parties, is a solution that requires the removal and replacement of all the welds. Both parties generally agree that this solution would delay project completion for at least 9 months with costs in the \$3 to \$5 million range. Not an attractive prospect for either party.

Proposed Solution

1. 845 and 852 Air Handling Pipe

On the 845 Project, Items 2,3,4,5,6, 14 (partial) and 16 (+- 23 welds) outlined in the table above and Items 3 and 13 (14 welds) on the 852 project are all air handling pipes. Because these pipes do not handle water, crevice corrosion is not an issue. However, the City has voiced concern that because the bulk of these welds are located close to the blowers, vibration may cause weld failure.

The bulk, if not all, of the air handling pipe weldments in question have been removed by the City for testing. The testing, which is destructive, effectively makes the pipe unusable and hence, it must be replaced. BBII is taking the steps necessary to replace the pipe now. **We propose to replace these pipe elements with sections that have been fabricated in a qualified shop.** This will eliminate all field welds of concern.

2. 845 Mudwell Pump Room

Item 1 on the 845 weld list above (14 welds) has been removed and will be refabricated to accommodate the adjusted mudwell pump room layout. **We propose to replace this pipe element with a pipe section that has been fabricated in a qualified shop.** This will eliminate all field welds of concern.

3. 852 DAFT Pipe

Items 4,5, 6,7,8,9, and 10 outline 38 welds for 852 DAFT pipe. BBII records indicate that each of these welds were inspected by OEC at the time the weldments were installed. These welds have been installed to the satisfaction of the City. **Proposed solution – no further action necessary.**

4. 845 sludge & DAFT Pipe

Items 7,8,9,10, 11,12, and 13(20 welds) outlined in the table above address sludge pipe and daft pipe in 845. All of these weldments were performed by Chesapeake Mechanical as opposed to BBII forces. The

City has not identified any concerns with these field welds. **Proposed solution – no further action necessary.**

5. 845 2"x4" Double Containment pipe

Item 15 in the table above addresses the Double containment pipe (60 welds). Of note, these weldments are “socket welds” and are not similar to any of the other weldments in question. Also, we understand that OEC’s welding expert (Mr. Kidwell) was on site and inspected these welds during construction. Therefore, the welds meet the City’s quality expectations. **Proposed solution – no further action necessary.**

6. All other field Welds

All field welds except items 1,2,3,10,11,12,14, and 15 (35 welds) in the 852 table above have been addressed in the narrative above. **Proposed solution for “all other field welds – Install Dependa Lock pipe couplers at each of the weldment splice locations noted.** BBII proposes to leave the weld in question in place and simply install a Dependa Lock coupling over the welded splice. Given that a Dependa Lock coupling is fully capable of splicing these pipes on their own, with a weldment in place, this solution is a “belts and suspenders” solution to the City’s concern about these welds.

Conclusion

BBII proposes to execute the solutions outlined herein. We believe this solution resolves the longevity concerns raised by the City for the least time and cost impact. Of note, solutions 1 and 2 are in process and solution 6 will be the most difficult of all the solutions to implement. However, please note that once solutions 1 and 2 are complete, solution 6 can be implemented anytime after solutions 1 and 2 are complete meaning that it can be done without impacting plant I&C work and startup efforts.

BBII respectfully requests the City’s approval of this proposal.

ATTACHMENT 1



EVALUATION OF CONCRETE CONSTRUCTION DEFICIENCIES

PATAPSCO WASTE WATER TREATMENT PLANT
DENITRIFICATION STRUCTURE

BALTIMORE, MARYLAND

Prepared For:

Mr. William Michael Mullen
Baltimore City Law Department
100 North Holliday Street
Suite 101
Baltimore, Maryland 21202

Prepared By:

Raths, Raths & Johnson, Inc.
500 Joliet Road, Suite 200
Willowbrook, Illinois 60527-5618
630.325.6160
www.rrj.com

RRJ 14099

August 19, 2016



Otto Guedelhoeffer
8-19-2016

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland, License No. 14569, Expiration Date: September 2, 2017.



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2006

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - cont'd
of Engineering and Construction

Deputy Comptroller and Clerk: "The Board received the protests for pages 100 - 102 uh -- from Martin Hilda, P.A. on behalf of Balfour Beatty Infrastructure and its Division of Fru-Con Construction, as well as for pages 96 - 99. A protest was also received on behalf of Fru-Con Construction from Martin Hilda, P.A. Those two items, pages 100 - 102 and pages 96 - 99 uh -- will not be heard by the Board. The protestor is not a bidder on the contract at issue, and in addition, the protestor is currently disputing the underlying matter through the administrative process and the Courts. Uh -- the appropriate forum to hear those disputes, uh -- are the administrative process of the Courts and not the Board of Estimates. Therefore, pages 100 - 102 and 96 - 99 will not be heard by the Board of Estimates, today."

UPON MOTION duly made and seconded, the Board approved and authorized execution of Amendment No. 1 to Agreement for Project 1402, On-Call Project and Construction Management Assistance Services with Rummel Klepper & Kahl, LLP, and the increase of the upset limit from \$4,000,000.00 to \$5,000,000.00.

2007

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - Amendment No. 2 to Agreement of Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of Amendment No. 2 to Agreement with Hazen & Sawyer, PC, under S.C. No. 913, Wastewater Engineering Services for the Improvements of the Low Level Sewershed Collection System. The Amendment No. 2 extends the period of the Agreement for six months through November 11, 2017 or until the upset limit is reached, which occurs first.

AMOUNT OF MONEY AND SOURCE:

\$0.00 - 9956-918616-9551-900020-703032

BACKGROUND/EXPLANATION:

The Office of Engineering and Construction is requesting Hazen & Sawyer, PC to continue to provide engineering services for the Improvement to the Low Level Sewershed. Hazen & Sawyer, PC was awarded the agreement on May 11, 2011 to provide engineering services for the Improvement of Low Level Sewershed Collection System in compliance with the Consent Decree for a period of five years. A time extension was then awarded for an additional year. Due to the discrepancy between the provided as-builts, post closed circuit television (CCW), and pay estimates, the Design Consultant needed to go back and cross check all assets on S.C. 913 with the inspector's daily reports and make sure there no discrepancies. The final incompletely items reported under this project needed to match the list of items to be completed under the de-scoping project. The total items has to match what was reported to be completed under the Consent Decree

2008

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - cont'd
of Engineering and Construction

for this sewershed. This is a very time sensitive procedure and this Amendment No. 2 will allow the Consultant to continue to be able to provide a final report outlining where the discrepancies are and resolve them. Hazen & Sawyer, PC will need to go back and update the records. Hazen & Sawyer, PC was originally approved by the Office of Boards and Commissions and the Architectural and Engineering Awards Commission.

Under the terms of the scope of the original Agreement, the project involves the design of improvements recommended by the Low Level Sewershed Study and Plan under the City's Wet-Weather Consent Decree Program. The work may include condition assessment, preliminary and final design and providing post-award services for relief sewers, point repairs, rehabilitation, and replacement of sanitary sewers and manholes within the Low Level Sewershed. Included in this submission is a detailed description of the individual scope of work items for this project. The period of the current agreement expires May 11, 2017.

MBE/WBE PARTICIPATION:

The vendor will comply with Article 5, Subtitle 28 of the Baltimore City Code and the MBE goals of 27% and the WBE goals of 9% assigned to the original Agreement.

MWBOO FOUND VENDOR IN COMPLIANCE.

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED THE SUBMITTED DOCUMENTATION AND FOUND THE BASIS FOR COMPENSATION CONSISTENT WITH CITY POLICY.

2009

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - cont'd
of Engineering and Construction

UPON MOTION duly made and seconded, the Board approved and authorized execution of Amendment No. 2 to Agreement with Hazen & Sawyer, PC, under S.C. No. 913, Wastewater Engineering Services for the Improvements of the Low Level Sewershed Collection System.

2010

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - Amendment No. 7 to Agreement of Engineering and Construction

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of Amendment No. 7 to Agreement with KCI Technologies, Inc., under Project No. 1118, Improvements to the Wastewater Collection System for Consent Decree Wet Weather Compliance. The Amendment No. 7 extends the period of the Agreement for 12 months through September 22, 2018 or until the upset limit is reached, which occurs first.

AMOUNT OF MONEY AND SOURCE:

\$ 600,000.00 - Wastewater Utility
531,139.57 - Water Utility
\$1,131,139.57 - 2070-000000-5601-5601-728800-603018

BACKGROUND/EXPLANATION:

The Office of Asset Management is requesting the final optional renewal year for Project No. 1118. This last year will enable the activities associated with core and operational data management to continue as well as allow time for execution/enhancement of asset management systems to support the Department and Capacity Management Operation Maintenance (CMOM) activities. The execution of this final renewal year is also due to the fact that negotiations of the modified Consent Decree are on-going. The modified Consent Decree introduced a new Program-Preventive Maintenance Cleaning/Inspection Program which falls under the responsibility of this Office and scope of this project. The resources available through this contract also assist the Department to robustly manage large datasets that are

2011

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - cont'd
of Engineering and Construction

then used to prepare metrics and reports provided to the Regulators at prescribed intervals throughout the duration of the Consent Decree.

This project, under the scope of the original agreement, was awarded to KCI Technologies, Inc. to develop the CMOM Program for the Department, per the requirements of the 2002 Wet Weather Consent Decree. Numerous preventive maintenance Project Management (PM) programs designed to eliminate sanitary sewer overflows have been developed and implemented under this project (e.g. root control, FOG abatement, food service establishment inspection, closed circuit television analysis/root cause analysis). As the PM programs have matured, the focus has shifted from understanding the system needs to managing the work and the associated data. The period of the current Agreement expires September 22, 2017.

MBE/WBE PARTICIPATION:

The vendor will comply with Article 5, Subtitle 28 of the Baltimore City Code and the MBE goals of 27% and the WBE goals of 10% assigned to the original Agreement.

MWBOO FOUND VENDOR IN COMPLIANCE.

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED THE SUBMITTED DOCUMENTATION AND FOUND THE BASIS FOR COMPENSATION CONSISTENT WITH CITY POLICY.

2012

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/Office - cont'd
of Engineering and Construction

UPON MOTION duly made and seconded, the Board approved and authorize execution of Amendment No. 7 to Agreement with KCI Technologies, Inc., under Project No. 1118, Improvements to the Wastewater Collection System for Consent Decree Wet Weather Compliance.

2013

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works - Maintenance Agreement

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of an Agreement for Ongoing Maintenance of a Sewage Pre-Treatment Unit for a Conventional Onsite Sewage Disposal System with Baltimore County Department of Environmental Protection and Sustainability and for installing and maintaining the on-site septic system at the new Loch Raven Vehicle Storage Facility that is under construction at 9800 Loch Raven Drive.

AMOUNT OF MONEY AND SOURCE:

\$0.00

BACKGROUND/EXPLANATION:

Baltimore City is constructing vehicle storage buildings, a salt storage building and fueling station at the lower site, 9800 Loch Raven Drive, as part of the project WC 1183. These buildings will provide the necessary infrastructure for the environmental operations crew to maintain the Loch Raven Watershed Facility. Previously, the crew was using an old barn at the lower site and temporary sheds for storing salt and their maintenance vehicles.

We are constructing an on-site septic system as part of this project because this watershed area does not have a sewer system. The site, being in Baltimore County, requires the Department to obtain a septic permit from Baltimore County Department of Environmental Protection and Sustainability to construct a septic system. To obtain the permit, the property owner (Baltimore City) is required to execute an ongoing maintenance agreement for the new septic system that will be constructed on-site.

2014

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works - cont'd

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Agreement for Ongoing Maintenance of the Sewage Pre-Treatment Unit for the Conventional Onsite Sewage Disposal System with Baltimore County Department of Environmental Protection and Sustainability, and for installing and maintaining the on-site septic system at the new Loch Raven Vehicle Storage Facility that is under construction at 9800 Loch Raven Drive.

2015

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works - Maintenance Agreement

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize execution of an Agreement for Ongoing Maintenance of a Sewage Pre-Treatment Unit for a Conventional Onsite Sewage Disposal System with Baltimore County Department of Environmental Protection and Sustainability and for installing and maintaining the on-site septic system at the Loch Raven Administrative Building that is under construction at 9900 Loch Raven Drive.

AMOUNT OF MONEY AND SOURCE:

\$0.00

BACKGROUND/EXPLANATION:

Baltimore City is constructing an administrative building at the upper site, 9900 Loch Raven Drive, as part of the project WC 1183. This building will provide the necessary infrastructure for the environmental operations crew to maintain the Loch Raven Watershed Facility. Previously, the crew was working from their trucks and a small conference room available at the existing Zebra Mussel Facility.

We are constructing an on-site septic system as part of this project because this watershed area does not have a sewer system. The site, being in Baltimore County, requires the Department to obtain a septic permit from Baltimore County Department of Environmental Protection and Sustainability to construct a septic system. To obtain the permit, the property owner (Baltimore City) is required to execute an ongoing maintenance agreement for the new septic system that will be constructed on-site.

2016

BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works - cont'd

UPON MOTION duly made and seconded, the Board approved and authorized execution of the Agreement for Ongoing Maintenance of the Sewage Pre-Treatment Unit for the Conventional Onsite Sewage Disposal System with Baltimore County Department of Environmental Protection and Sustainability and for installing and maintaining the on-site septic system at the Loch Raven Administrative Building that is under construction at 9900 Loch Raven Drive.

2017

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - TRANSFER OF LIFE-TO-DATE
SICK LEAVE

The Board is requested to approve the transfer of LIFE-TO-DATE sick leave days from the listed City employees to the designated employee, Ms. Janice Green.

The transfer of sick leave days is necessary in order for the designated employee to remain in pay status with continued health coverage. The City employees have asked permission to donate the sick leave days that will be transferred from their LIFE-TO-DATE sick leave balances as follows:

<u>Donors</u>	<u>Days</u>
Rhonda Shields	4
Joan Johnson	2
Deborrah Jones	2
Angelisa Morton	2
Nichole Pope	2
Juliet Saunders	1
Candice Nichols	1
Ardie Shaw	1
Deborah Hamilton	3
Aisha Darby	5
Steven Litzenberger	5
Mary Brennan	<u>1</u>
Total:	29

Ms. Green is not a member of a union sick leave bank and is not eligible for membership in a union sick leave bank. All of her leave has been used. This transfer will allow Ms. Green to remain in pay status.

THE LABOR COMMISSIONER RECOMMENDED APPROVAL.

2018

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

UPON MOTION duly made and seconded, the Board approved the transfer of LIFE-TO-DATE sick leave days from the listed City employees to the designated employee, Ms. Janice Green.

2019

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - TRANSFER OF LIFE-TO-DATE
SICK LEAVE

The Board is requested to approve the transfer of LIFE-TO-DATE sick leave days from the listed City employees to the designated employee, Michal Thornton.

The transfer of sick leave days is necessary in order for the designated employee to remain in pay status with continued health coverage. The City employees have asked permission to donate the sick leave days that will be transferred from their LIFE-TO-DATE sick leave balances as follows:

<u>Donors</u>	<u>Days</u>
LaTonya Moore	5
Francine Childs	4
Yvonne Coleman	3
Phillis Goods	3
Marietta Farrell	3
Sherry Adeyemi	2
Aisha Ross	2
Charmagne Thompson	1
Total: 23	

Michal Thornton is not a member of a union sick leave bank and is not eligible for membership in a union sick leave bank. All of his leave has been used. This transfer will allow Mr. Thornton to remain in pay status.

THE LABOR COMMISSIONER RECOMMENDED APPROVAL.

UPON MOTION duly made and seconded, the Board approved the transfer of LIFE-TO-DATE sick leave days from the listed City employees to the designated employee, Michal Thornton.

2020

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - Expenditure of Funds

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize the purchase of gift cards from Rite Aid for the STD/HIV Prevention Program.

AMOUNT OF MONEY AND SOURCE:

\$2,900.00 - 5000-569717-3023-274401-604051

(580 Rite Aid gift cards @ \$5.00 each)

BACKGROUND/EXPLANATION:

The incentive cards will be distributed to help reduce the number of new HIV infections and improve the health of persons living with HIV/AIDS. In addition, the incentive cards will enhance the staff's ability to attract those encountered to receive counseling and testing on the van. T-shirts are purchased and provided to the outreach team.

The STD/HIV Prevention Program adheres to all policies associated with the usage of incentives and has sufficient procedures in place to address the safeguarding and accountability of incentives.

The Department has adopted a consolidated policy for the purchase, distribution, and documentation of all incentive cards. The central tenets of this policy account for: 1) a single means of procuring all incentive cards through the Board of Estimates; 2) the documentation of each incentive card and its recipient; 3) a monthly reconciliation for all purchases that account for all distributed and non-distributed cards, and;

2021

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

4) periodic internal review of programs' activity vis-à-vis the internal policy which are to be shared with the Department of Audits.

MBE/WBE PARTICIPATION:

N/A

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED AND HAD NO OBJECTION.

UPON MOTION duly made and seconded, the Board approved and authorized the purchase of gift cards from Rite Aid for the STD/HIV Prevention Program.

2022

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - Agreements and Amendments to Agreements

The Board is requested to approve and authorize execution of the Agreements and Amendments to Agreements.

AGREEMENTS

1. **KENNEDY KRIEGER INSTITUTE, INC.** **\$ 38,037.00**

Account: 4000-427117-3080-294300-603051

The organization's Center for Autism and Related Disorders will provide screening assessment, training, and staff case consultation by a trained psychologist with expertise in the early identification of autism spectrum disorders. The period of the agreement is July 1, 2016 through June 30, 2017.

The agreement is late because the Grant Award from the Maryland State Department of Education was approved late in the fiscal year.

2. **GAY FAMILY FOUNDATION, LTD.** **\$ 87,419.00**

Account: 4000-427717-3023-273307-603051

The organization will assist the Department in the process of performing a comprehensive needs assessment for the Greater Baltimore HIV Health Services Planning Council identifying key service needs and what populations are in need of care. The period of the agreement is March 1, 2017 through May 31, 2017.

The agreement is late because budget review and revisions delayed processing.

MWBOO GRANTED A WAIVER.

2023

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

3. THE JOHNS HOPKINS UNIVERSITY \$431,605.00

Account: 4000-484817-3023-718000-603051

The organization's Center for Child & Community Research will design, implement, and evaluate STD/HIV prevention projects. The organization will be responsible for managing the day-to-day evaluation aspects of the project, such as setting-up evaluation forms and tracking mechanisms. The period of the agreement is September 30, 2016 through September 29, 2017.

The agreement is late because of a delay in the administrative process.

MWBOO GRANTED A WAIVER.

4. PARK WEST HEALTH SYSTEMS, INC. \$20,000.00

Account: 5000-583517-3041-294000-603051

The organization will work with the Department to prevent and reduce Colorectal Cancer mortality rates. The program coordinator will monitor and provide access to education prevention, screening, and research across the continuum of care. The period of the agreement is September 1, 2016 through June 30, 2017.

The agreement is late because of a delay in the administrative process.

2024

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

5. **HOUSE OF VICTORY HOME CARE, INC.** **\$15,600.00**

Account: 5000-534017-3254-767800-607001

This agreement will allow the Department to disburse State Subsidized Assisted Housing Funds to low income residents at the organization.

The organization is enrolled in the Senior Assisted Living Group Home Subsidy Program, and will provide subsidized senior assisted housing services for individuals age 62 and over, who have temporary or periodic difficulties with the activities of daily living. The Senior Assisted residents receive shelter, meals, housekeeping, personnel care services, and 24-hour on-site supervision. The period of the agreement is July 1, 2016 through June 30, 2017.

The agreement is late because the Department waiting for information and signatures from the providers.

6. **THE JOHNS HOPKINS UNIVERSITY** **\$598,796.00**

Account: 4000-424517-3023-274409-603051

The organization's School of Medicine will provide medical case management, outpatient ambulatory health services, health education and risk reduction, medical transportation, non-medical case management and psychosocial support services to accommodate the increasing number of uninsured and underinsured HIV-infected clients. Funding will be used to continue program services for the special population of HIV- infected children, adolescent and young adult clients, including young African-American men who have sex with men. The period of the agreement July 1, 2016 through June 30, 2017.

2025

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

The agreement is late because the Prevention and Health Promotion Administration programmatically manages the Ryan White Part B services. The providers are asked to submit a budget, budget narrative, and a scope of services. The Department thoroughly reviews the entire package before preparing a contract and submitting it to the Board. These budgets are many times revised because of inadequate information from the providers. This review is required to comply with grant requirements.

MWBBO GRANTED A WAIVER.

AMENDMENTS TO AGREEMENTS

7. **HEAVENLY GRACE ASSISTANT LIVING
FACILITY, INC.** (\$5,416.60)

Account: 5000-534017-3254-767807-607001

On November 2, 2016, the Board approved the original agreement in the amount of \$39,000.00 for the period of July 1, 2016 through June 30, 2017.

This amendment will decrease funding by \$5,416.60, making the new total for FY'17 \$33,583.40.

8. **BETTY & DEBBIE'S FAMILY PLACE, INC.** (\$2,275.00)

Account: 5000-534017-3254-767806-607001

On October 12, 2016, the Board approved the original agreement in the amount of \$39,000.00 for the period of July 1, 2016 through June 30, 2017.

2026

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

This amendment will decrease funding by \$2,275.00, making the new total for FY'17 \$36,725.00.

9. **HOME OF TENDER CARE, LLC** (\$7,800.00)

Account: 5000-534017-3254-767807-607001

On March 8, 2017, the Board approved the original agreement in the amount of \$23,400.00 for the period of July 1, 2016 through June 30, 2017.

This amendment will decrease funding by \$7,800.00 making the new total for FY'17 \$15,600.00.

The organizations are enrolled in the Senior Assisted Living Group Home Subsidy Program, and will provide subsidized senior assisted housing services for individuals age 62 and over, who have temporary or periodic difficulties with the activities of daily living. The Senior Assisted residents receive shelter, meals, housekeeping, personnel care services, and 24-hour on-site supervision.

AUDITS REVIEWED AND HAD NO OBJECTION.

10. **PRESERVATION MANAGEMENT INC./NEW WATERS
TOWERS APARTMENTS** \$ 0.00

The Baltimore City Health Department was awarded a grant from the Corporation for National and Community Services to develop and/or operate volunteer services programs, specifically the Retired and Senior Volunteer Program where services are performed by persons 55 years of age and over.

2027

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

RSVP volunteers serve in a diverse range of non-profit private organizations, public agencies, faith-based groups, or an eligible proprietary health care agency. Assignments include, but are not limited to: health and other education, assisting seniors to live independently, mentoring and tutoring children, visiting nursing home residents, disaster preparedness and response, delivery of health services, food collection and distribution and assisting organizations with capacity building through planning, organizing, and grant writing. The period of the agreement is July 1, 2016 through June 30, 2019.

APPROVED FOR FUNDS BY FINANCE

UPON MOTION duly made and seconded, the Board approved and authorized execution of the foregoing Agreements and Amendments to Agreements. The Comptroller **ABSTAINED** on item no. 7.

2028

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - Ratification of Third Amendment to Agreement

ACTION REQUESTED OF B/E:

The Board is requested to ratify the Third Amendment to Agreement with Associated Black Charities, Inc.

AMOUNT OF MONEY AND SOURCE:

\$370,000.00 - 4000-427716-3023-273033-603051

BACKGROUND/EXPLANATION:

On March 23, 2016, the Board approved the original agreement in the amount of \$7,398,458.00 for the period of March 1, 2016 through February 28, 2017.

On October 5, 2016, the Board approved the first amendment increasing the amount of funds by \$6,267,249.00, which made the total amount of the contract \$13,665,707.00.

On January 18, 2017, the Board approved the second amendment increasing the amount of funds by \$105,000.00 for the Ryan White Part A services for a total contract amount of \$13,770,707.00.

This amendment will allow additional funds to be provided to the organization to reimburse its direct service providers and will make the total contract amount of \$14,140,707.00.

The Third Amendment is late because budget revisions delayed processing.

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED AND HAD NO OBJECTION.

UPON MOTION duly made and seconded, the Board ratified the Third Amendment to Agreement with Associated Black Charities, Inc. The Comptroller **ABSTAINED**.

2029

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - No-Cost Time Extension to the Grant Agreement

ACTION REQUESTED OF B/E:

The Board is requested to approve the No-Cost Time Extension to the Grant Agreement with the March of Dimes Foundation. The period of the grant agreement is extended through September 30, 2017.

AMOUNT OF MONEY AND SOURCE:

N/A

BACKGROUND/EXPLANATION:

On April 30, 2014, the Board approved the grant agreement in the amount of \$20,000.00 for the period of March 1, 2014 through February 28, 2015, FY 2015.

On March 13, 2015, the Board approved the grant agreement in the amount of \$15,000.00 for the period of March 1, 2015 through February 28, 2016, FY 2016.

On September 28, 2016, the Board approved the first no-cost time extension, extending the period through December 31, 2016. The majority of the funds were not spent due to administrative challenges in sub-granting them to the implementation partner for the project.

This second no-cost time extension will allow for \$20,365.51, of unspent funds across FY'15 and FY'16 to be sub-granted to

2030

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

Roberta's House for incurred expenses to continue program implementation through the end of the calendar year and will extend the period through September 30, 2017.

APPROVED FOR FUNDS BY FINANCE

AUDITS NOTED THE NO-COST TIME EXTENSION.

UPON MOTION duly made and seconded, the Board approved the No-Cost Time Extension to the Grant Agreement with the March of Dimes Foundation. The Comptroller **ABSTAINED**.

2031

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - Revised Notice of Grant Award

ACTION REQUESTED OF B/E:

The Board is requested to approve and authorize acceptance of the Revised Notice of Grant Award (NGA) from the Maryland Department of Aging. The period of the NGA was October 1, 2015 through September 30, 2016.

AMOUNT OF MONEY AND SOURCE:

\$ 2,835.00	- 4000-433516-3024-761400-404001
5,742.00	- 4000-432916-3255-761200-404001
1,889.00	- 4000-434316-3255-761600-404001
198.00	- 4000-436216-3255-761800-404001
1,210.00	- 4000-436116-3255-761700-404001
240.00	- 4000-433916-3044-761500-404001
<hr/>	
\$12,114.00	

BACKGROUND/EXPLANATION:

On February 24, 2016, the Board approved the original NGA in the amount of \$692,933.00 for the period of October 1, 2015 through September 30, 2016.

On March 30, 2016, the Board approved an increase in the amount of \$3,678,638.00 and on September 28, 2016, the Board approved an increase in the amount of \$500,364.00 making the new total \$4,871,935.00.

On March 15, 2017, the Board approved a correction to the Board Memo that had incorrectly stated an increased NGA amount of \$3,678,638.00. The correct amount was \$2,985,705.00, making the new total NGA \$4,179,002.00.

2032

BOARD OF ESTIMATES

05/31/2017

MINUTES

Health Department - cont'd

This fourth revised NGA increased the total by \$12,114.00, making the new total \$4,191,116.00.

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED AND HAD NO OBJECTION.

UPON MOTION duly made and seconded, the Board approved and authorized acceptance of the Revised Notice of Grant Award from the Maryland Department of Aging.

MINUTESDepartment of Planning - Fee-in-Lieu Structure**ACTION REQUESTED OF B/E:**

The Board is requested to approve the Fee-in-Lieu Structure associated with the City's new Landscape Manual to be adopted by the Planning Commission.

AMOUNT OF MONEY AND SOURCE:

N/A

BACKGROUND/EXPLANATION:

The recommendations of the 2006 Comprehensive Master Plan for the City of Baltimore called for the creation and adoption of a City-wide Landscape Manual in addition to modernization of the Baltimore City Zoning Code. The Landscape Manual has been developed in conjunction with and in support of the update of the Zoning Code, and is scheduled to be adopted by the Planning Commission at their May 25, 2017 meeting.

The Landscape Manual is intended to set minimum standards for high quality development, the protection of property values, and environmental protection. The requirements established in the Landscape Manual have been coordinated with other environmental regulations, including the City of Baltimore and the State of Maryland Critical Areas, Forest Conservation, and Stormwater Management regulations so as not to duplicate requirements established through other regulations.

The Landscape Manual was developed with the understanding that in some cases, difficult or unique site conditions or other constraints of a site or project may justify the need to request alternative methods of compliance with the landscape requirements.

MINUTESDepartment of Planning - cont'd

The manual establishes a prioritized set of options for achieving alternative compliance if requirements cannot be met within the project site. The last of these options is a fee-in-lieu, which will only be accepted as a form of alternative compliance if none of the other options for alternative compliance can be achieved.

Proposed Fee-in-Lieu Structure as follows:

- \$600.00 per planting unit (PU) to meet planting requirements not met on the project site or through other options for alternative compliance
- \$250.00 per caliper inch for mitigation of the removal of Protected Trees not replaced within the project site or through other options for alternative compliance

Minimum plant quantities are defined in the Landscape Manual based per PU. The use of planting units allows more creative planting design options and encourages the use of a greater variety of plant types.

One PU is equivalent to:

- one major deciduous tree 2 1/2 inches or greater in caliper at installation, or
- two minor deciduous trees 1 1/4 inches or greater in caliper at installation, or
- two evergreen trees 6 ft. or greater in height at installation or three evergreen trees 5 ft. or greater in height at installation, or

MINUTESDepartment of Planning - cont'd

- six shrubs 18 to 36 inches in height at installation depending on screen type, or
- five hundred square feet of groundcover planted at recommended ANLA standards, or
- ten herbaceous/perennial plants at 1 gallon size, or
- twenty herbaceous/perennial plants at 1 quart size.

The standard method of measurement for determining the size of an existing tree is to measure the diameter of the trunk of the tree approximately 4.5 ft. above the ground. The term for this measurement is "diameter at breast height," which is abbreviated to DBH. The term caliper refers to the tool commonly used for making such measurements.

The category of trees designated as Protected Trees are listed on page 19 of the Landscape Manual and include:

- Street Trees and Public Trees (per Article 7, Division 5 of the City Code),
- trees within properties or rights-of-way designated as Baltimore City Landmarks by City ordinance,
- Specimen Trees - 20 inches DBH or greater, and
- Significant Trees - 12 inches DBH or greater for major/canopy trees and 8 inches DBH or greater for understory/minor trees located within required setbacks and within 10 feet of a public property or right-of-way.

The fee-in-lieu rates proposed are based upon the amount necessary to produce public benefits equal to normal compliance with the

MINUTESDepartment of Planning - cont'd

Landscape Manual requirements, including the costs of the planting, establishment, and maintenance of equivalent landscaping.

To determine the total required fee for a particular project, the fee-in-lieu base rate shall be multiplied by the number of planting units or number of caliper inches DBH required by the landscape manual that are determined to be infeasible to be fulfilled on site or on an alternate site. The payment of the fee-in-lieu must be made before a construction permit can be issued.

Collection and Use of Fees-in-Lieu

The Department of Planning shall establish a new capital account for the deposit of all sums paid in lieu of landscaping. All fees collected shall be used to install and maintain landscaping that satisfies one or more of the Project Site Conditions defined in the Landscape Manual. In no case shall the funds be used for routine maintenance of existing landscaping, or other facility maintenance. The fees shall be spent within the same watershed as the project for which such fees are paid, be visible to the general public, and be in conformance with the regulations set forth in the Landscape Manual.

UPON MOTION duly made and seconded, the Board approved the Fee-in-Lieu Structure associated with the City's new Landscape Manual to be adopted by the Planning Commission.

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
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Bureau of Purchases

1. <u>INQUIRIES, INC.</u>	\$35,000.00	Renewal
Contract No. B50004504 - Background Investigation Services - Department of Human Resources - P.O. No. P536194		

On July 13, 2016, the Board approved the initial award in the amount of \$35,000.00. The award contained five 1-year renewal options. On July 28, 2016, the City Purchasing Agent approved an increase in the amount of \$15,000.00. This first renewal in the amount of \$35,000.00 is for the period July 13, 2017 through July 12, 2018, with four 1-year renewal options remaining. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

Not applicable. The initial award was below MBE/WBE subcontracting threshold of \$50,000.00.

2. MARTY'S AUTO PAINT SUPPLY, INC.	\$ 0.00	Renewal
Contract No. 06000 - Automotive Paint and Supplies - Department of General Services - Fleet Management - P.O. No. P527667		

On June 11, 2014, the Board approved the initial award in the amount of \$200,000.00. The award contained two 1-year renewal options. This first renewal in the amount of \$0.00 is for the period July 1, 2017 through June 30, 2018, with one 1-year renewal option remaining. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

On March 6, 2014, it was determined that no goals would be set because of no opportunity to segment the contract.

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
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Bureau of Purchases

3. PERKINELMER HEALTH SCIENCES, INC. \$ 16,894.80 Renewal
 Contract No. 08000 - PerkinElmer Service Plan - Department of Public Works, Bureau of Water and Wastewater - P.O. No. P524736

On August 15, 2013, the Board approved the initial award in the amount of \$41,552.55. The award contained three 1-year renewal options. On June 8, 2016, the Board approved the first renewal in the amount of \$16,000.00. This second renewal in the amount of \$16,894.80 is for the period June 9, 2017 through June 8, 2018, with one 1-year renewal option remaining. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

Not applicable. The vendor is the equipment manufacturer and is the exclusive service provider.

4. SLEC, INC. \$12,000.00 Renewal
 Contract No. 08000 - O.E.M. Parts and Service for SEFAC Heavy Duty Mobile Lifts - Department of General Services - Fleet Management - P.O. No. P527447

On May 28, 2014, the Board approved the initial award in the amount of \$150,000.00. The award contained two 1-year renewal options. On April 27, 2016, the Board approved an increase in the amount of \$75,000.00. This first renewal in the amount of \$12,000.00 is for the period July 1, 2017 through June 30, 2018, with one 1-year renewal option remaining. The above amount is the City's estimated requirement.

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
<u>Bureau of Purchases</u>		

MBE/WBE PARTICIPATION:

Not applicable. The vendor is the sole supplier of the required parts and service.

5. WM RECYCLE AMERICA

<u>L.L.C.</u>	\$900,000.00	Renewal
Contract No. B50004514 - Single Stream Recycling - Department of Public Works, Bureau of Solid Waste - P.O. No. P535575		

On May 18, 2016, the Board approved the initial award in the amount of \$904,560.00. The award contained four 1-year renewal options. This first renewal in the amount of \$900,000.00 is for the period June 1, 2017 through May 31, 2018, with three 1-year renewal options remaining.

MBE/WBE PARTICIPATION:

On December 1, 2015, it was determined that no goals would be set because of no opportunity to segment the contract. There is only one certified MBE/WBE recycling vendor, and the work cannot be segmented. The Department of Public Works collects the recyclable materials and delivers to the vendor's facility.

6. ANNE CLEWELL

<u>GRAPHIC DESIGN, LLC</u>	\$ 16,102.00	Renewal
Contract No. B50004619 - Typeset City Comprehensive Annual Financial Report - Department of Finance - P.O. No. P535831		

On June 8, 2016, the City Purchasing Agent approved the initial award in the amount of \$16,102.00. The award contained four 1-year renewal options. This first renewal in the amount of \$16,102.00 is for the period June 8, 2017 through June 7, 2018, with three 1-year renewal options remaining.

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
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Bureau of Purchases		
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MBE/WBE PARTICIPATION:

Not applicable. The initial award and contract value is below the MBE/WBE subcontracting threshold of \$50,000.00.

7. AL PACKER WHITE

MARSH FORD, LLC	\$1,000,000.00	Renewal
Contract No. B50003447 - O.E.M. Parts and Service for Ford Vehicles - Department of General Services - Fleet Management - P.O. No. P527249		

On May 7, 2014, the Board approved the initial award in the amount of \$4,000,000.00. The award contained two 1-year renewal options. This first renewal in the amount of \$1,000,000.00 is for the period July 1, 2017 through June 30, 2018, with one 1-year renewal option remaining. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

On January 24, 2014, it was determined that no goals would be set because of no opportunity to segment the contract.

8. MICROLOG CORPORATION OF

MARYLAND	\$ 30,000.00	Renewal
Contract No. B50003154 - Interactive Voice Recognition System - Department of Transportation - P.O. No. P526789		

On March 19, 2014, the Board approved the initial award in the amount of \$37,000.00. The award contained two 1-year renewal options. On October 8, 2014, the Board approved an increase in the amount of \$24,000.00. This first renewal in the amount of \$30,000.00 is for the period June 1, 2017 through May 31, 2018, with one 1-year renewal option remaining.

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
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Bureau of Purchases

MBE/WBE PARTICIPATION:

On August 20, 2013, it was determined that no goals would be set because of no opportunity to segment the contract.

9. COMPRISE TECHNOLOGIES,

INC.	\$ 53,243.00	Renewal
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Contract No. 08000 - Annual Renewal of Smart Access Manager (SAM) Software and Hardware License and Technical Support - Enoch Pratt Free Library - Req. No. R763797

On June 1, 2016, the Board approved the initial award in the amount of \$50,890.00. The award contained four 1-year renewal options. This software is used to allow the Enoch Pratt Library to manage patrons; authentication, time, and print functions on the library's PCs. This first renewal in the amount of \$53,243.00 is for the period June 1, 2017, through May 31, 2018, with three 1-year renewal options remaining.

MBE/WBE PARTICIPATION:

Not applicable. This is a sole source procurement.

10. ATLANTIC TACTICAL,

INC.	\$ 0.00	Renewal
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Contract No. B50003559 - Police Duty Gear - Baltimore City Police Department - P.O. No. P528036

On July 16, 2014, the Board approved the initial award in the amount of \$111,366.00. The award contained two 2-year renewal options. On March 16, 2016, the Board approved an increase in the amount of \$200,000.00. The first renewal in

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
<u>Bureau of Purchases</u>		

the amount of \$0.00 is for the period July 16, 2017 through July 15, 2019, with one 2-year renewal option remaining. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

On May 27, 2014, it was determined that no goals would be set because of no opportunity to segment the contract. This a procurement of commodities only.

MWBOO GRANTED A WAIVER.

11. <u>VEND CENTRAL INC.</u>	\$ 10,000.00	Renewal
Contract No. B50004082 - Supply and Deliver Gatorade/Water - Fire Department - P.O. No. P531314		

On May 20, 2015, the City Purchasing Agent approved the initial award in the amount of \$12,000.00. The award contained two 1-year renewal options. On April 27, 2016, the City Purchasing Agent approved the first renewal in the amount of \$10,000.00. This final renewal in the amount of \$10,000.00 is for the period June 1, 2017 through May 31, 2018.

MBE/WBE PARTICIPATION:

Not applicable. The initial award was below MBE/WBE subcontracting threshold of \$50,000.00.

12. <u>MOTOROLA SOLUTIONS, INC.</u>	\$1,346,500.00	Renewal
Contract No. 06000 - 311 Call Center System Hosting - Mayor's Office of Information Technology - P.O. No. P502959		

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
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Bureau of Purchases

On September 28, 2005, the Board approved the initial award in the amount of \$5,364,000.00. The award contained five 1-year renewal options. Subsequent actions have been approved and three renewal options have been exercised. This fourth renewal in the amount of \$1,346,500.00 is necessary for the continuity of the 311 system hosting applications, which include PremierOne Customer Service Request, PremierOne Customer Relationship Management (CRM) and Cityworks Asset Management System while the new 311 CRM system awarded under Contract No. B50004268 is implemented. This fourth renewal in the amount of \$1,346,500.00 is for the period July 1, 2017 through June 30, 2018, with one 1-year renewal option remaining.

MBE/WBE PARTICIPATION:

On March 26, 2007, it was determined that no goals would be set because of no opportunity to segment the contract.

13. LORENZ LAWN & LANDSCAPE,
 INC. d/b/a LORENZ, INC. \$186,660.00 Renewal
 Contract No. B50004553 - Mowing, Maintenance & Landscaping Services for Cluster Six - Department of Recreation and Parks - P.O. No. P535711

On June 1, 2016, the Board approved the initial award in the amount of \$186,660.00. The award contained four 1-year renewal options. This first renewal in the amount of \$186,660.00 is for the period June 1, 2017 through May 31, 2018, with three 1-year renewal options remaining. The above amount is the City's estimated requirement.

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
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Bureau of Purchases

MBE/WBE PARTICIPATION:

MWBOO SET GOALS OF 27% MBE and 9% WBE.

	<u>Commitment</u>	<u>Performed</u>	
MBE: 4Evergreen Lawn Care Corp., LLC	27%	\$33,067.60	27%
WBE: Fouts Lawn Care	9%	\$17,108.00	14%

MWBOO FOUND VENDOR IN COMPLIANCE.

14. DENVER-ELEK, INC.

R.F. WARDER, INC.

J.F. FISCHER, INC.

	\$	0.00	Renewal
Contract No. B50003484 - Maintenance and Repair Service for Central Chilled Water Systems - Department of General Services and others - P.O. Nos. P527796, P527797 and P527798			

On June 25, 2014, the Board approved the initial award in the amount of \$3,000,000.00. The award contained one renewal option. This sole renewal in the amount of \$0.00 is for the period June 25, 2017 through June 24, 2019. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

MWBOO SET GOALS OF 27% MBE AND 0% WBE.

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
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Bureau of Purchases

Denver-Elek, Inc.

Commitment Performed

MBE:

See note

Below

Per contracting agency, vendor has performed to date less than \$50,000.00 of work on this contract.

MWBOO FOUND VENDOR IN COMPLIANCE.

R.F. Warder, Inc.

MBE: BMC Services, LLC

Per contracting agency, vendor has performed to date less than \$50,000.00.

MWBOO FOUND VENDOR IN COMPLIANCE.

J.F. Fischer, Inc.

MBE: Horton Mechanical Contractors, Inc.	27%	\$168,627.88	33.9%
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MWBOO FOUND VENDOR IN COMPLIANCE.

15. PERMA-PATCH, INC.	\$ 0.00	Ratification
	100,000.00	and Renewal
	<u>\$100,000.00</u>	

Contract No. B50002837 - Furnish and Deliver Black Fill Mix - Department of Public Works, Bureau of Water and Wastewater - P.O. No. P523598

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
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Bureau of Purchases

On May 8, 2013, the Board approved the initial award in the amount of \$200,000.00. The award contained three 1-year renewal options. Subsequent actions have been approved. Due to an administrative error, the renewal option was not exercised in a timely fashion. This second renewal in the amount of \$100,000.00 will provide continued procurement of black fill mix, required for repairs of roads, streets, sidewalks, etc. The ratification is for the period May 8, 2017 through May 30, 2017. The period of the renewal is May 31, 2017 through May 7, 2018, with one 1-year renewal option remaining.

MBE/WBE PARTICIPATION:

On February 22, 2013, it was determined that no goals would be set because of no opportunity to segment the contract as it is a commodity contract.

MWBBO GRANTED A WAIVER.

16. TRAFFIC SYSTEMS, LLC d/b/a TRAFFIC SYSTEMS & TECHNOLOGY	\$ 0.00	Ratification and Renewal
Contract No. 08000 - Traffic Surveillance Components - Department of Transportation - P.O. No. P530572		

On March 25, 2015, the Board approved the initial award in the amount of \$82,000.00. The award contained two 1-year renewal options. On January 20, 2016, the Board approved the first renewal in the amount of \$20,000.00. Due to an administrative error, the renewal option was not exercised in

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
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Bureau of Purchases

a timely fashion. The ratification is for the period March 25, 2017 through May 31, 2017. This final renewal in the amount of \$0.00 is for the period June 1, 2017 through March 24, 2018. The above amount is the City's estimated requirement.

It is hereby certified, that the above procurement is of such a nature that no advantage will result in seeking nor would it be practical to obtain competitive bids. Therefore, pursuant to Article VI, Section 11 (e)(i) of the City Charter, the procurement of the equipment and/or service is recommended.

MBE/WBE PARTICIPATION:

Not applicable. This is a sole source procurement of proprietary traffic components.

17. INTERDYNAMICS, INCORPORATED \$100,000.00 Increase
 Contract No. 06000 - Psychology Services - Police Department
 - P.O. No. P533984

On December 28, 2015, the City Purchasing Agent approved the initial award in the amount of \$25,000.00. Subsequent increases have been approved. This increase in the amount of \$100,000.00 is necessary to cover outstanding invoices and ongoing services as needed. This increase will make the award amount \$262,500.00. The above amount is the City's estimated requirement.

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
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Bureau of Purchases

MBE/WBE PARTICIPATION:

Not applicable. Initial award was below MBE/WBE subcontracting threshold of \$50,000.00. Vendor is MDOT Certified, MBE Certified, Small Disadvantaged, SBA 8a Certified Business.

18. LAAKE ENTERPRISES, INC.
t/a FESCO EMERGENCY SALES

Contract No. 06000 - O.E.M. Parts and Service for Horton Medics - Department of General Services - P.O. No. P525152	\$100,000.00	Increase
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On September 25, 2013, the Board approved the initial award in the amount of \$400,000.00. The first renewal in the amount of \$150,000.00 was approved by the Board on August 10, 2016. Due to the underestimated anticipated utilization for the current term, an increase in the amount of \$100,000.00 is necessary to provide additional funding to allow the agency to continue to order O.E.M. Parts and Service for the City during the contract period. This increase in the amount of \$100,000.00 will make the award amount \$650,000.00. The contract expires on September 2, 2017. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

On July 8, 2013, it was determined that no goals would be set because of no opportunity to segment the contract.

MWBOO GRANTED A WAIVER.

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
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Bureau of Purchases

19. THE BEST BATTERY

COMPANY, INC.	\$500,000.00	Increase
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Contract No. B50003292 - Vehicle, Motorcycle, Generator and Lawn & Garden Batteries - Department of General Services - P.O. 526328

On January 29, 2014, the Board approved the initial award in the amount of \$700,000.00. The award contained two 1-year renewal options. Subsequent actions have been approved. Due to the underestimated anticipated utilization for the current contract term, an increase in the amount of \$500,000.00 is necessary to provide additional funding to allow the agency to continue to order batteries for the City during the contract period. This increase in the amount of \$500,000.00 will make the award amount \$1,550,000.00. The contract expires on February 27, 2018 with one 1-year renewal option remaining. The above amount is the City's estimated requirement for vehicle, motorcycle, generator and lawn and garden batteries.

MBE/WBE PARTICIPATION:

On October 18, 2013, it was determined that no goals would be set because of no opportunity to segment the contract. This contract is for the purchase of the following commodities: vehicle motorcycle, generator, and lawn and garden batteries. No services are being provided under this contract.

MWBOO GRANTED A WAIVER.

20. HWC ENTERPRISES LLC

t/a HYDRATEC INC.	\$ 65,000.00	Increase
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Contract No. B50003823 - Parts and Repair Services for Muncie Pumps, PTO's and Valves - Department of General Services - Fleet Management - P.O. No. P529186

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
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Bureau of Purchases

On October 23, 2014, the City Purchasing Agent approved the initial award in the amount of \$22,500.00. Subsequent actions have been approved. An increase in the amount of \$65,000.00 is necessary to continue to supply parts and services to the Department of General Services, Fleet Management. The projected initial expenditure for this contract was based on the prior contract, and there has been a substantial increase in the use of these parts. Only one bid was originally received, and it was determined to be fair and reasonable.

This business is located in Baltimore City. The contract expires on October 22, 2017. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

Not applicable. The initial award was below MBE/WBE subcontracting threshold of \$50,000.00.

21. NORRIS CHESAPEAKE

TRUCK SALES, LLC	\$110,000.00	Increase
Contract No. B50003731 O.E.M. Parts and Service for UD Trucks		
- Department of General Services - Fleet Management - P.O.		
No. P529066		

On October 8, 2014, the Board approved the initial award in the amount of \$500,000.00. The award contained two 1-year renewal options. The contract expires on October 7, 2017 with two 1-year renewal options remaining. The above amount is the City's estimated requirement.

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
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Bureau of Purchases

MBE/WBE PARTICIPATION:

On August 19, 2014, it was determined that no goals would be set because of no opportunity to segment the contract. There are no certified MBE/WBE vendors who provide these parts or services.

MWBOO GRANTED A WAIVER.

22. THE MELIOR GROUP, INC. \$ 99,750.00 Increase
 Contract No. B50003304 - Baltimore Citizens Planning Survey - Recreation and Parks, Department of Finance - P.O. No. P527574

On June 11, 2014 the Board approved the initial award in the amount of \$165,485.00. The award contained one 2-year renewal option. The Department of Recreation and Parks desires to engage The Melior Group, Inc. to incorporate the voices of residents so that City residents' issues, interests, and concerns are addressed in the Department's long term strategic planning effort. This increase in the amount of 99,750.00 will allow the Department to immediately begin the survey effort, rather than completing a separate procurement for services already under contract for other City survey requirements. The contract expires on June 10, 2018, with one 2-year renewal option remaining.

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

VENDOR	AMOUNT OF AWARD	AWARD BASIS
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Bureau of Purchases

It is hereby certified, that the above procurement is of such a nature that no advantage will result in seeking nor would it be practical to obtain competitive bids. Therefore, pursuant to Article VI, Section 11 (e)(i) of the City Charter, the procurement of the equipment and/or service is recommended.

MBE/WBE PARTICIPATION:

MWBOO SET GOALS OF 0% MBE AND 5% WBE.

The Melior Group, Inc.

Commitment Performed

MBE: N/A

WBE: Maryland Reprographic,
Inc. 5% \$5,995.00 5%

MWBOO FOUND VENDOR IN COMPLIANCE.

23. P & J CONTRACTING CO. INC.

K & K ADAMS, INC. \$12,000,000.00 Increase
Contract No. B50004150 - Baltimore City Building Demolition -
Agency Various - Req. No. R701418

On November 4, 2015, the Board approved the initial award in the amount of \$12,000,000.00. Due to the number of emergency demolitions completed by the City was unprecedented for 2016 and will continue through 2017, an increase in the amount of \$12,000,000.00 is necessary. This increase in the amount of

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
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Bureau of Purchases

\$12,000,000.00 will make the award amount \$24,000,000.00. The contract expires November 30, 2018. The above amount is the City's estimated requirement.

MWBOO SET GOALS OF 27% MBE AND 10% WBE.P & J Contracting Company, Inc.

	<u>Commitment</u>	<u>Performed</u>	
MBE: P & J Contracting Co., Inc.	40.3%	\$1,419,106.55	50%
WBE: Hopkins Fuel Oil Company	7.55%	252,848.38	8.9%
The Donne Group, LLC	1.26%	0.00	
Fallsway Construction Co., LLC	1.26%	35,735.00	1.3%
	<u>10.07%</u>	<u>\$288,583.38</u>	<u>10.2%</u>

MWBOO FOUND VENDOR IN COMPLIANCE.

	<u>Commitment</u>	<u>Performed</u>	
<u>K & K Adams, Inc.</u>			
MBE: K & K Adams, Inc.	35.9%	\$1,148,292.34	35.9%
JJ Adams Fuel Oil Co. LLC	5.0%	189,332.26	5.9%
Spence Trucking, Inc.	8.0%	0	
Solomon's Termite & Pest Control	1.0%	9,715.00	0.3%
	<u>49.9%</u>	<u>\$1,347,339.60</u>	<u>42%</u>

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
<u>Bureau of Purchases</u>		
WBE: Ball & Breckenridge Trucking, Inc.	4.9%	\$ 164,602.00
The Dirt Express Company	6.0%	0
	<u>10.9%</u>	<u>\$ 164,602.00</u>
		<u>5.1%</u>

Per contracting agency. The Dirt Express Company was not used due to emergency and public safety hazardous responses.

MWBOO FOUND VENDOR IN COMPLIANCE.

24. BEWEGEN TECHNOLOGIES,
INC. \$ 600,000.00 Increase
Contract No. B50004211 - The Design, Installation, Operation
and Maintenance of a Bike Share System for the City of
Baltimore - Department of Transportation - P.O. No. P 534939

On March 16, 2016, the Board approved the initial award in the amount of \$2,361,320.20. Subsequent actions have been approved. An increase in the amount of \$600,000.00 is necessary to pay the Operating Costs for the next four quarters of the system operation. This increase in the amount of \$600,000.00 will make the award amount \$3,011,320.20. The contract expires on March 15, 2021. The above amount is the City's estimated requirement.

MBE/WBE PARTICIPATION:

The funding was provided by a federal grant and the DBE goals were set at 0%.

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
<u>Bureau of Purchases</u>		
25. SICO AMERICA, INC.	\$ 23,858.44	First Amendment and Increase

Solicitation No. 08000 - Replace Staging Equipment at the Baltimore Convention Center - P.O. No. P538210

The Board is requested to approve and authorize execution of the First Amendment with SICO America, Inc.

On January 12, 2017, the City Purchasing Agent approved an agreement with SICO America, Inc. to provide staging equipment to the City. The period of the agreement is January 11, 2017 through January 12, 2018. The First Amendment will add four 1-year optional renewal terms to be exercised at the sole discretion of the City commencing immediately following the conclusion of the initial term.

This amendment will also allow the City to purchase SICO America stage replacement parts and equipment from the Contractor on an as-required and as-needed basis, which includes repair and maintenance services. The increase is needed for the additional services and replacement parts. The above amount is the City's estimated requirement.

It is hereby certified that the above procurement is of such a nature that no advantage will result in seeking nor would it be practical to obtain competitive bids. Therefore, pursuant to Article VI, §11 (e)(i) of the City Charter, the procurement of the equipment and/or services is recommended.

26. WERRES CORPORATION	\$ 25,575.52	Low Bid
Solicitation No. B50004980 - Enclosed Golf Carts - Department of General Services - Req. No. R758065		

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
<u>Bureau of Purchases</u>		
27. SHI INTERNATIONAL CORP.	\$3,000,000.00	Selected Source/ Agreement
Contract No. 06000 - Oracle Maintenance and Renewals Agreement - BPD, DGS, DPW, DOT, MOIT, etc. - Req. No. TBD		

The Board is requested to approve and authorize execution of the Amendment with SHI International Corp. The period of the agreement is effective upon Board approval for five years.

SHI International Corp. will provide Oracle products, software renewals, licenses, maintenance, and technical support for the City's existing Oracle system platforms used by various agencies. The vendor has a platinum partnership with the software manufacturer, Oracle, to provide the highest level of support required.

It is hereby certified that the above procurement is of such a nature that no advantage will result in seeking nor would it be practical to obtain competitive bids. Therefore, pursuant to Article VI, §11 (e)(i) of the City Charter, the procurement of the equipment and/or services is recommended.

MWBOO GRANTED A WAIVER.

28. CCG SYSTEMS, INC.	\$ 55,202.23	Sole Source/ Agreement
Contract No. 08000 - FASTER Maintenance Agreement - Department of General Services, Fleet Management - Req. No. R753913		

MINUTES**INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS**

VENDOR	AMOUNT OF AWARD	AWARD BASIS
---------------	------------------------	--------------------

Bureau of Purchases

The Board is requested to approve and authorize execution of the FASTER Software Maintenance & Support Agreement with CCG Systems, Inc. The period of the agreement is March 01, 2017 through February 28, 2018.

This award is requested on a sole source basis. These proprietary support services are only available from the owner of the software, and are not available from subcontractors.

It is hereby certified that the above procurement is of such a nature that no advantage will result in seeking nor would it be practical to obtain competitive bids. Therefore, pursuant to Article VI, §11 (e)(i) of the City Charter, the procurement of the equipment and/or services is recommended.

29. FERNO WASHINGTON, INC. \$ 40,655.25 Sole Source
 Contract No. 08000 - Stretchers - Fire Department - Req. No.
 R763300

The vendor, Ferno Washington, Inc. is the manufacturer and sole authorized distributor of the custom stretchers currently used by the Fire Department. The Fire Department is required to maintain continuity of operations, training, and compatibility with current existing equipment.

It is hereby certified that the above procurement is of such a nature that no advantage will result in seeking nor would it be practical to obtain competitive bids. Therefore, pursuant to Article VI, §11 (e)(i) of the City Charter, the procurement of the equipment and/or services is recommended.

The above amount is the City's estimated annual requirement for stretchers; however, the vendor shall supply the City's entire requirement, be it more or less.

MINUTES

INFORMAL AWARDS, RENEWALS, INCREASES TO CONTRACTS AND EXTENSIONS

<u>VENDOR</u>	<u>AMOUNT OF AWARD</u>	<u>AWARD BASIS</u>
---------------	------------------------	--------------------

Bureau of Purchases

30. SCHREIBER TRANSLATIONS, INC.	N/A	Extension
Maryland State Contract Number 050B3400002 - Statewide Language Interpretation Services (Written) - Mayor's Office, Department of Transportation, Health Department - P.O. No. P521506		

The initial award was approved on October 01, 2012. The contract was competitively bid by the Maryland State Department of Budget and Management. The City is currently utilizing the Maryland State Contract for translation services.

The State has extended its contract through February 28, 2018. Therefore, an extension is being requested to continue translation services for various City agencies until a new contract is awarded by the State. The requested action is an extension of a competitively bid requirements contract. The above amount is the City's estimated requirement.

UPON MOTION duly made and seconded, the Board approved the Informal Awards, Renewals, Increases to Contracts and Extensions. The Board also approved and authorized execution of the First Amendment and Increase with SICO America, Inc. (item no. 25), the Selected Source Agreement with SHI International Corp. (item no. 27), and the Sole Source Agreement with CCG Systems, Inc. (item no. 28). The Comptroller **ABSTAINED** on item no. 23.

MINUTES

EXTRA WORK ORDERS AND TRANSFER OF FUNDS

* * * * *

UPON MOTION duly made and seconded,

the Board approved the

Extra Work Orders and Transfer of Funds

listed on the following pages:

2060 - 2065

All of the EWOs had been reviewed and approved

by the

Department of Audits, CORC,

and MWBOO, unless otherwise indicated.

The Transfer of Funds was approved

SUBJECT to receipt of a favorable report

from the Planning Commission,

the Director of Finance having reported favorably

thereon, as required by the provisions

of the City Charter.

MINUTES

EXTRA WORK ORDERS

<u>Contract</u>	<u>Prev. Apprvd.</u>	<u>Time</u>	<u>%</u>
<u>Awd. Amt.</u>	<u>Extra Work</u>	<u>Contractor</u>	<u>Ext. Compl.</u>

Department of Public Works/Office of Engineering & Construction

1. EWO #006, \$400,000.00 - S.C. 882, Enhanced Nutrient Removal at the Back River Waste Water Treatment Plant Project 2 - Activated Sludge Plant No. 4
-
- | | | | | |
|------------------|--------------|----------------|---|---|
| \$284,564,665.00 | \$566,039.77 | Archer Western | - | - |
| Contractors, LLC | | | | |

Sanitary Contract No. 882 includes new storm sewer installation below Willis Avenue to drain new sediment traps built to manage runoffs created by the project. During test-pitting, existing utility conflicts were discovered in the area where the new storm pipe crosses Willis Avenue. The design engineer has revised the drawings to avoid the existing utilities and provide a clear route to the drain pipe. This redesign added costs for changed materials and labor. The Contractor has been directed to proceed on a time and material basis with hours and costs tracked by the on-site Office of Engineering and Construction Inspector. This work is expected to begin in the summer of 2017, with an approximate duration of 60 days.

MWBOO FOUND VENDOR IN COMPLIANCE.

2. EWO #006, \$0.00 - S.C. 857, Chlorination/Dechlorination Facilities Process Conversion at the Patapsco Waste Water Treatment Plant
-

\$12,714,000.00	\$103,648.58	The Whiting Turner	133	98%
Contracting Co., CCD				
Inc.				

MINUTES

EXTRA WORK ORDERS

<u>Contract Awd. Amt.</u>	<u>Prev. Apprvd. Extra Work</u>	<u>Contractor</u>	<u>Time % Ext. Compl.</u>
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Department of Public Works/Office of Engineering & Construction

This is the first time extension and will increase the contract duration time five months. The new completion date will be June 27, 2017.

The Office of Engineering Construction is requesting this extra work because, this project was put on hold for several years after completion of design due to Fru-Con Construction (Contractor for another project in the same plant location) having to perform work in the chlorination/dechlorination facility.

During construction, a number of changed field conditions (including further deterioration) were discovered at the facilities which required additional work to be completed by the contractor. The additional work included: demolition and removal of damaged existing bisulfite piping, replacement of leaking underground hypochlorite line, installation of fiber optic cable, the repair of electrical conduit which was damaged during excavation for an unloading pad (a conduit line that was not shown in the contract drawings or as-built), additional roof repairs for the dechlorination building during new work on roof, and light pole replacement for Chlorine Contact Chambers No. 1, which was extremely damaged by weather and chemicals.

Also, during construction, the newly installed equipment and control panels were damaged due to a water pump failure located on the lower level. The pump's coupling disassembled in the same area as the newly installed equipment causing severe flooding and damage in the High Pressure Effluent Water building. The lower level was pumped out and cleaned to assess damages and it was determined that the new equipment needs to be repaired and the new control panels need to be relocated to the upper level to avoid a recurrence of such an incident.

MINUTES

EXTRA WORK ORDERS

<u>Contract</u>	<u>Prev. Apprvd.</u>	<u>Time</u>	<u>%</u>
<u>Awd. Amt.</u>	<u>Extra Work</u>	<u>Contractor</u>	<u>Ext. Compl.</u>

Department of Public Works/Office of Engineering & Construction

The Department is requesting the 133 continuous calendar day time extension in order to complete the project. Based on the analysis performed by the Office of Engineering & Construction, this was acceptable. No additional funds are being requested and the \$276,670.00 cost of this time extension will be paid out of contingent bid allowance. The Certificate of Completion form will not be completed until a scheduled time after final payment and final completion has been given to the Department.

The extra work order is in the original scope of the work and was requested by the Contractor. The scope of the construction project includes: the provision of new temporary liquid sodium bisulfite system for dechlorination; the provision of a new permanent liquid hypochlorite and liquid bisulfite system; and civil and utility work on the plant.

MBE/WBE PARTICIPATION:

The vendor will continue to comply with Article 5, Subtitle 28 of the Baltimore City Code. The goals of this project are 8% MBE goals and 2% WBE goals.

Department of Transportation/Engineering & Construction Division

3. EWO #006, (\$500.00) - TR 14009, Conduit System Reconstruction at Various locations, Citywide
- | | | | | |
|----------------|----------------|--|------|-------|
| \$2,651,455.00 | \$6,713,575.00 | Highlander
Contracting
Co., Inc. | 180 | 44.9% |
| | | | days | |

MINUTES**EXTRA WORK ORDERS**

<u>Contract</u>	<u>Prev. Apprvd.</u>	<u>Time %</u>	
<u>Awd. Amt.</u>	<u>Extra Work</u>	<u>Contractor</u>	<u>Ext. Compl.</u>

Department of Transportation/Engineering & Construction Division

This authorization is requested on behalf of the Department and includes a 180-day non-compensational time extension, due to time spent completing several Department-assigned urgent need projects (i.e. Mulberry Street, Cathedral Street sinkholes and assisting the Department of Recreation and Parks with signal intersection work). Additionally, on July 13, 2016, the Board approved EWO #005, where the Department intended to replace the poorly conditioned electrical duct system along Monroe Street from Washington Boulevard to Pratt Street. However, the BGE acknowledged some internal issues that would need to be resolved before the Monroe Street project could commence. Upon the discovery of this condition, the Department decided to postpone the planned work for Monroe Street because it would require a modification in the quantity of construction line items in the contract.

While issues were being resolved by the BGE, the Department planned for conduit duct bank restoration and/or repair of damaged, unusable, unoccupied duct banks at three locations: 1.) Park Heights from Cold Spring Lane to Oakford Avenue; 2.) Park Heights Avenue from Oakford Avenue to Wylie Avenue; and 3.) North Avenue from Hilton Parkway to Milton Avenue that would optimize the use of existing line items until the zero cost change is executed. The Board has approved five previous time extensions for a total of 870 days, which resulted in a completion date of June 22, 2017. This sixth request for a time extension of 180 non-compensable days will result in a completion date of December 18, 2017, thereby allowing the time to complete all of the aforementioned work.

MINUTES

EXTRA WORK ORDERS

<u>Contract</u>	<u>Prev. Apprvd.</u>	<u>Time %</u>	
<u>Awd. Amt.</u>	<u>Extra Work</u>	<u>Contractor</u>	<u>Ext. Compl.</u>

Department of Transportation/Engineering & Construction Division

The \$500.00 credit results from the additional work referenced in the explanation above, in the amount of \$1,692,000.00, offset by the cost of work not performed as a result of the BGE delay, in the amount of \$1,692,500.00.

4. EWO #008, (\$3,354.46) - TR 04306, Resurfacing Caton Avenue from Benson Avenue to Frederick Avenue
-
- | | | | | |
|----------------|-------------|-------------------|---|---|
| \$1,091,699.25 | \$51,254.90 | M. Luis Construc- | - | - |
| tion Co., Inc. | | | | |

This authorization is necessary for payment of overrun items, deduction of amounts not needed due to underrun or not used items, and to balance out the contract.

DBE PARTICIPATION:

The Contractor will comply with Title 49 of the Federal Regulation Parts (CFR26) and the DBE goal of 25% established in the original contract.

5. EWO #002, \$509,503.00 - TR 13321, Downtown Bicycle Network
-
- | | | | | |
|----------------|----------------|---------------|---|-----|
| \$2,849,822.40 | \$1,064,266.27 | P. Flanigan & | - | 25% |
| Sons, Inc. | | | | |

This authorization is a request by the Department for additional milling and paving. The paving has been requested to repair utility cuts and improve the roadway surface. The surface improvement is needed prior to the new lane striping and bike configuration. Without the additional paving, the new lane configuration would have created

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BOARD OF ESTIMATES

05/31/2017

MINUTES**EXTRA WORK ORDERS**

<u>Contract</u>	<u>Prev. Apprvd.</u>	<u>Time %</u>	
<u>Awd. Amt.</u>	<u>Extra Work</u>	<u>Contractor</u>	<u>Ext. Compl.</u>

Department of Transportation/Engineering & Construction Division

a maintenance and safety issue for the Department's Maintenance Division. The total paving equals 2.76 lane miles on five city streets. This Change Order will be 100% locally funded.

An Engineer's Certificate of Completion has not been issued.

6. **TRANSFER OF FUNDS**

<u>AMOUNT</u>	<u>FROM ACCOUNT/S</u>	<u>TO ACCOUNT/S</u>
\$270,597.99 MVR	9950-902627-9528 Constr. Reserve Park Circle Inter- section Improvements	
225,000.00 MVR	9950-902187-9528 Constr. Reserve Maryland Avenue Modifications	
64,855.31 GF	9950-928011-9528 Constr. Reserve Red Line	
\$560,453.30	-----	9950-905190-9527-2 Contingencies Downtown Bicycle Network

This transfer will fund the costs associated with Change Order No. 2 for Project TR 13321, Downtown Bicycle Network, with P. Flanigan & Sons, Inc.

MINUTES

Bureau of the Budget and
Management Research (BBMR)

- Appropriation Adjustment
Order No. 67, Grant Award

ACTION REQUESTED OF B/E:

The Board is requested to approve acceptance of a grant award from the Governor's Office of Crime Control and Prevention to the Office of the State's Attorney for Baltimore City, Service 115, Prosecution of Criminals. The period of the grant award is April 1, 2017 through June 30, 2017.

AMOUNT OF MONEY AND SOURCE:

\$10,200.00

No appropriation adjustment action is required. The appropriation will be placed in the State fund, detailed fund 503517.

BACKGROUND/EXPLANATION:

The funds will be used to purchase bus passes and bus tokens for both current and new defendants enrolled in the AIM to B'More program. AIM to B'More is a three-year diversion program for first-time, non-violent felony drug offenders that includes community service, education, job training, and employment assistance. Transportation has been a significant barrier for many of the AIM to B'More defendants, especially during the first few months they are enrolled in the program.

The majority of the defendants enter the program without a job, having previously relied on drug dealing to earn money. During the first few months of the program, the defendants must travel frequently to job training and GED classes, meeting with their mentors and Probation Agent, community service, and more. Providing bus passes for defendants during this time will increase compliance with the program's requirements and expedite

MINUTES

BBMR - cont'd

the process of securing paid employment. The distribution and use of the bus passes will be closely monitored by the program's staff.

MBE/WBE PARTICIPATION:

N/A

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED THE SUBMITTED DOCUMENTATION AND FOUND THAT IT CONFIRMED THE GRANT AWARD.

UPON MOTION duly made and seconded, the Board approved acceptance of the grant award from the Governor's Office of Crime Control and Prevention to the Office of the State's Attorney for Baltimore City, Service 115, Prosecution of Criminals.

MINUTES

Department of Public Works/ - Employee Expense Reports
Bureau of Water and Wastewater

The Board is requested to approve the various expense reports for following employees.

1. JOSEPH PRYOR* \$100.00

Account: 2070-000000-5501-396801-603020
December 2016 - Exam and Certification

2. KENNY L. MACK \$ 50.00

Account: 2070-000000-5501-630001-603020
December 2016 - Certification

3. ANTHONY WORTHAM \$ 50.00

Account: 2070-000000-5501-396801-603020
December 2016 - Certification

4. LOIS A. HEFLIN \$ 50.00

Account: 2071-000000-5521-632440-603020
December 2016 - Certification

Certain managers and employees are required to be certified by the State of Maryland, Department of the Environment (MDE).

*Managers' fees are different from employees' fees.

This request is late because there is a lengthy process before employees take the actual exam and the exam may take as long as 40 days before certifications are received.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

Department of Public Works/ - cont'd
Bureau of Water and Wastewater

The Administrative Manual, in Section 240-11, states that Employee Expense Reports that are submitted more than 40 work days after the last calendar day of the month in which the expenses were incurred require Board of Estimates approval.

APPROVED FOR FUNDS BY FINANCE

AUDITS REVIEWED AND HAD NO OBJECTION.

UPON MOTION duly made and seconded, the Board approved the various expense reports for foregoing employees.

MINUTES**TRAVEL REQUESTS**

<u>Name</u>	<u>To Attend</u>	<u>Fund Source</u>	<u>Amount</u>
<u>Mayor's Office of Information Technology</u>			
1. Samantha Luckhardt	ESRI User Conference San Diego, CA July 9 - 14, 2017 (Reg. Fee \$0.00)	General Funds	\$1,894.21

The transportation cost of \$587.96 was prepaid using City-issued credit card assigned to C. Baker. Therefore, the disbursement to Ms. Luckhardt is \$1,306.25.

Baltimore Police Department

2. Jo Anne Wallace	Site Visit with LAPD Homeless Outreach Team Los Angeles, CA June 4 - 9, 2017 (Reg. Fee \$0.00)	General Funds	\$2,297.46
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The subsistence rate for this location is \$222.00 per night. The cost of the hotel is \$251.10 per night plus taxes of \$39.40 per night. The Department is requesting additional subsistence of \$29.10 per day to cover the cost of the hotel and \$40.00 per day for meals and incidentals.

The transportation cost of \$584.97 was prepaid using City-issued credit card assigned to Tribhuvan Thacker. Therefore, the disbursement to Ms. Wallace is \$1,712.49.

MINUTES

TRAVEL REQUESTS

<u>Name</u>	<u>To Attend</u>	<u>Fund Source</u>	<u>Amount</u>
<u>Mayor's Office</u>			
3. Catherine E. Pugh	Yale Mayor's College and Yale CEO Summit Manhattan, NY June 8 - 9, 2017 (Reg. Fee \$0.00)	General Funds	\$1,020.69

The subsistence rate for this location is \$341.00 per night. The cost of the hotel is \$625.00 per night and the hotel tax is \$95.69 per night. The Department is requesting additional subsistence of \$284.00 to cover the cost of the hotel, plus hotel taxes of \$95.69 and \$40.00 for meals and incidentals.

The train fare in the amount of \$200.00, hotel cost of \$625.00, hotel taxes of \$95.69 were prepaid using a City-issued procurement card assigned to Renee Newton. Therefore, Ms. Pugh will be disbursed \$100.00.

4. Afra Vance-White	Yale Mayor's College and Yale CEO Summit Manhattan, NY June 8 - 9, 2017 (Reg. Fee \$0.00)	General Funds	\$ 963.31
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The subsistence rate for this location is \$341.00 per night. The cost of the hotel is \$575.00 per night and the hotel tax is \$88.91 per night. The Department is requesting additional subsistence of \$234.00 to cover the cost of the hotel, plus hotel taxes of \$88.91 and \$40.00 for meals and incidentals.

MINUTES**TRAVEL REQUESTS**

<u>Name</u>	<u>To Attend</u>	<u>Fund Source</u>	<u>Amount</u>
<u>Mayor's Office</u> - cont'd			

The train fare in the amount of \$200.00, hotels costs of \$575.00, and hotel taxes of \$88.91 were prepaid using a City-issued procurement card assigned to Renee Newton. Therefore, Ms. Vance-White will be disbursed \$100.00.

Department of Transportation

5. Adrienne Barnes	2017 National Meeting & Training Conference - Conference of Minority Transportation Officials (COMTO)	General Funds	\$2,129.30
	Detroit, MI		
	July 16 - 20, 2017		
	(Reg. Fee \$750.00)		

The subsistence rate for this location is \$176.00 per night. The cost of the hotel is \$189.00 per night and the hotel taxes are \$28.35 per night. The dates of the conference are July 14-18, 2017. The sponsor, COMTO, has requested that Ms. Barnes remain on-site an additional 2-3 days after the close of the conference to debrief and begin preliminary planning for the 2018 conference.

The Department is requesting additional subsistence in the amount of \$13.00 per day to cover the costs of the hotel and \$40.00 per day for meals and incidentals. The registration was pre-paid on a City-issued credit card assigned to Dhirendra Sinha. Therefore, Ms. Barnes will be disbursed \$1,379.30.

MINUTES**TRAVEL REQUESTS**

<u>Name</u>	<u>To Attend</u>	<u>Funds</u>	<u>Amount</u>
<u>Department of Public Works</u>			
6. Rudolph S. Chow	American Water Works Association 2017 Annual Conference & Exposition Philadelphia, PA June 10 - 11, 2017 (Reg. Fee \$0.00)	General Funds	\$ 400.75

The subsistence rate for this location is \$252.00 per night. The cost of the hotel is \$219.00 per night and the hotel tax is \$33.95 per night.

The Department is requesting additional subsistence in the amount of \$7.00 to cover the costs of meals and incidentals. Since the Philadelphia-Marriott Downtown Hotel charges \$53.90 per day for parking, the Department is requesting additional subsistence in the amount of \$47.80 to cover the cost of parking. Therefore, Mr. Chow will be disbursed \$400.75.

Department of Public Works/Office of Fiscal Management

7. Troy Brogden	2017 NABA National Convention & Expo New Orleans, LA June 6 - 10, 2017 (Reg. Fee \$1,175.00)	General Funds	\$2,295.36
-----------------	--	---------------	------------

The subsistence rate for this location is \$192.00 per day. The hotel cost is \$184.00 per night, plus hotel taxes of \$28.98 per day, and an occupancy tax of \$2.00 per day. The Department is requesting additional subsistence in the amount of \$32.00 per day for meals and incidentals.

MINUTES**TRAVEL REQUESTS**

<u>Name</u>	<u>To Attend</u>	<u>Funds</u>	<u>Amount</u>
Department of Public Works/Office of Fiscal Management - cont'd			

The Department had an airfare credit of \$160.52 which decreased the airfare to \$40.44. The airfare in the amount of \$40.44 and registration fee in the amount of \$1,175.00 were prepaid by a City-issued procurement card assigned to Ms. Lyque O'Connor. Therefore, the amount to be disbursed to Mr. Brogden is \$1,079.92.

UPON MOTION duly made and seconded, the Board approved the foregoing travel requests. The Mayor **ABSTAINED** on item nos. 3 and 4. The Director of Public Works **ABSTAINED** on item no. 6.

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BOARD OF ESTIMATES

05/31/2017

MINUTES

A PROTEST WAS RECEIVED FROM MS. KIM TRUEHEART ON ALL ITEMS ON THE AGENDA.

The Board of Estimates received and reviewed Ms. Trueheart's protest. As Ms. Trueheart does not have a specific interest that is different from that of the general public, the Board will not hear her protest.

Kim A. Trueheart

May 31, 2017

Board of Estimates
Attn: Clerk
City Hall, Room 204
100 N. Holliday Street,
Baltimore, Maryland 21202

Dear Ms. Taylor:

Herein is my written protest on behalf of the underserved and disparately treated citizens of the Baltimore City who appear to be victims of questionable management and administration within the various boards, commissions, agencies and departments of the Baltimore City municipal government.

The following details are provided to initiate this action as required by the Board of Estimates:

1. Whom you represent: Self
2. What the issues are:

Pages 1 - 161, City Council President and members of the Board of Estimates, BOE Agenda dated May 31, 2017, if acted upon:

- a. The proceedings of this board often renew business agreements without benefit of clear measures of effectiveness to validate the board's decision to continue funding the provider of the city service being procured;
- b. The Baltimore City School Board of Commissioners routinely requires submissions for board consideration to include details of the provider's success in meeting the objectives and/or desired outcomes delineated in the previously awarded agreement;
- c. The members of this board continue to fail to provide good stewardship of taxpayers' funds as noted by the lack of concrete justification to substantiate approval of actions presented in each weekly agenda;
- d. This board should immediately adjust the board's policy to ensure submissions to the board include measures of effectiveness in each instance where taxpayer funds have already been expended for city services;

Email: kimtrueheart@gmail.com

*5519 Belleville Ave
Baltimore, MD 21207*

- e. In the interest of promoting greater transparency with the public this board should willing begin to include in the weekly agenda more details which it discusses in closed sessions without benefit of public participation.
 - f. Lastly this board should explain to the public how, without violating the open meeting act, a consent agenda is published outlining the protocols for each week's meeting prior to the board opening its public meeting.
3. How the protestant will be harmed by the proposed Board of Estimates' action: As a citizen I have witnessed what appears to be a significant dearth in responsible and accountable leadership, management and cogent decision making within the various agencies and departments of the Baltimore City municipal government which potentially cost myself and my fellow citizens excessive amounts of money in cost over-runs and wasteful spending.

4. Remedy I desire: The Board of Estimates should immediately direct each agency to include measures of effectiveness in any future submissions for the board's consideration.

I look forward to the opportunity to address this matter in person at your upcoming meeting of the Board of Estimates on May 31, 2017.

If you have any questions regarding this request, please telephone me at (410) 205-5114.

Sincerely,
Kim Trueheart,
Voter, Citizen & Resident

5519 Belleville Ave
Baltimore, MD 21207

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BOARD OF ESTIMATES

05/31/2017

MINUTES

President: "There being no more business before the Board, we will recess until bid opening at twelve noon."

* * * * *

MINUTES

Clerk: "The Board is now in session for the receiving and opening of bids."

BIDS, PROPOSALS, AND CONTRACT AWARDS

Prior to the reading of bids received today and the opening of bids scheduled for today, the Clerk announced that **NO ADDENDA WERE RECEIVED** extending the dates for receipt and opening of bids. There were no objections.

Thereafter, UPON MOTION duly made and seconded, the Board received, opened, and referred the following bids to the respective departments for tabulation and report:

Department of Public Works - SC 966, Cleaning and Inspection of Sanitary Sewers at Various Locations in Baltimore City - Zone A

Spiniello Companies
Hydrostructures, LLC
Reviera Enterprises, Inc.
Mobile Dredging & Video Pipe, Inc.
Pipe and Plant Solutions, Inc.

MINUTES

Bureau of Purchases

- B50004989, Provide Custom Wheeled
Stretchers & Equipment
-

Ferno-Washington, Inc.

Bureau of Purchases

- B50004822, Psychological Services
and Employee Assistance Program
(PRICE OPENING)
-

Janus Associates, Inc. d/b/a
Business Health Services (BHS)
Adventist HealthCare d/b/a LifeWork Strategies

* * * * *

There being no objections, the Board, UPON MOTION duly made
and seconded, adjourned until its next regularly scheduled
meeting on Wednesday, June 7, 2017.



JOAN M. PRATT
Secretary