CITY OF
WEST CHICAGO

WHERE HISTORY & PROGRESS MEET

INFRASTRUCTURE COMMITTEE

Thursday, June 1, 2023
7:00 P.M. – City Council Chambers

AGENDA

1. Call to Order, Roll Call, and Establishment of a Quorum

2. Approval of Minutes

   A. Infrastructure Committee of May 4, 2023

3. Public Participation / Presentations

4. Items for Consent

   A. Rejection of all Bids and Re-bid – Klein Road Culvert Replacement Project
   B. 2023 Asphalt Materials Procurement – DuPage County Joint Purchasing Program – Plote Construction, Inc.
   C. Purchase of Road Salt from Compass Minerals America, Inc. of Chicago, Illinois, for the 2023-2024 Winter Season
   D. Purchase of One 2023 John Deere 410 P-Tier Backhoe Loader from West Side Tractor Sales of Lisle, Illinois
   E. Purchase of Two 2024 International Model HV613 SBA Single Axle Truck Chassis Equipped By Bonnell Industries Inc. with 10' Commander Stainless Steel Muni Dump Body, 11' Bonnell Snow Plow with Quick Link Hitch, 300-gallons Pre-Wetting and appurtenances from Rush Truck Centers of Springfield, Illinois in an amount not to exceed $592,858.62
   F. Resolution No. 23-R-0050 – License Agreement with the Commuter Rail Division of the Regional Transportation Authority (Metra) for the use of its property to install a Sanitary Forcemain associated with Lift Station 5 Rehabilitation Project
   G. Resolution No. 23-R-0051 – Contract Award – Corrective Asphalt Materials, LLC for the 2023 Pavement Preventative Maintenance Program in an Amount Not to Exceed $49,914.00
   H. Resolution No. 23-R-0052 – Contract Award – Boller Construction Company, Inc. for the Headworks Gate Improvement Project at the West Chicago/Winfield Wastewater Authority Regional Wastewater Treatment Plant in the amount not to exceed $529,300.00

5. Items for Discussion

   A. City of West Chicago 2022 Hydraulic Water System Model Update

475 Main Street
West Chicago, Illinois
60185

T (630) 293-2200
F (630) 293-3028
www.westchicago.org

Ruben Pineda
MAYOR

Nancy M. Smith
CITY CLERK

Michael L. Guttman
CITY ADMINISTRATOR

6. Unfinished Business

7. New Business

8. Reports from Staff

9. Adjournment

CITY OF
WEST CHICAGO

WHERE HISTORY & PROGRESS MEET

Draft

MINUTES

INFRASTRUCTURE COMMITTEE

May 4, 2023 7:00 P.M.

1. Call to Order, Roll Call, and Establishment of a Quorum. Director of Public Works, Mehul Patel, called the meeting to order at 7:00 P.M. Roll call found Aldermen Dan Beebe, Heather Brown, Sandra Dimas, Alton Hallett, Joe Morano, Jeanne Short, and John C. Smith, Jr., present.

Staff present included Director of Public Works, Mehul Patel, and Administrative Assistant, Ashley Heidorn.

2. Selection of a Chairman and Vice-Chairman.

Alderman Dimas nominated Alderman Morano as Chairman of the Infrastructure Committee, seconded by Alderman Brown.

Roll call found the vote unanimous for approval. Voting Yea: Aldermen Beebe, Brown, Dimas, Hallett, Morano, Short, and Smith. Voting Nay: 0.

Alderman Dimas nominated Alderman Smith as Vice-Chairman of the Infrastructure Committee, seconded by Alderman Brown.

Roll call found the vote unanimous for approval. Voting Yea: Aldermen Beebe, Brown, Dimas, Hallett, Morano, Short, and Smith. Voting Nay: 0.

3. Approval of Minutes

A. Infrastructure Committee Minutes of April 6, 2023. Alderman Brown made a motion, seconded by Alderman Smith to approve the Meeting Minutes of April 6, 2023.

Roll call was taken. Voting Yea: Aldermen Beebe, Brown, Dimas, Hallett, Morano, and Smith. Voting Nay: 0. Abstaining: Alderman Short.

4. Public Participation / Presentations. None.

5. Items for Consent. Alderman Dimas made a motion, seconded by Alderman Brown to approve:

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Ruben Pineda
MAYOR

Nancy M. Smith
CITY CLERK

Michael L. Guttman
CITY ADMINISTRATOR

A. Ordinance No. 23-O-0011 – Authorizing the Disposal of Surplus Equipment, Stock Inventory, and/or Personal Property Owned By the City Of West Chicago
B. Resolution No. 23-R-0044 – Execution of a Joint Funding Agreement for State-Let Construction Work with Illinois Department of Transportation and Local Match Appropriation for Construction Costs Associated with the Conde Street Resurfacing Project
C. Resolution No. 23-R-0045 – ESI Consultants, LLC – Phase III Construction Engineering Services for Conde Street Resurfacing Project in the Amount not to Exceed $76,700.00

Roll call found the vote unanimous for approval. Voting Yea: Aldermen Beebe, Brown, Dimas, Hallett, Morano, Short, and Smith. Voting Nay: 0.

6. Items for Discussion. None.

7. Unfinished Business. Mr. Patel provided an update regarding some METRA repairs requested by Alderman Beifuss at the last Infrastructure Committee meeting. Union Pacific crews began working on the stairs this week but have not yet started repairs on the platform. Mr. Patel anticipates that work on the ADA detectible warning tiles will follow after the stairs are completed.

8. New Business. Mr. Patel discussed the Headworks Influent Gate Replacement Project at the West Chicago/Winfield Wastewater Authority Regional Wastewater Treatment Plant (WWTP). The flow of raw sewage enters the WWTP at two locations – one through a 20-inch forcemain into the grit chamber and one through a 36-inch gravity interceptor at the headworks. The two influent gates that control the gravity flow from the City of West Chicago into the headworks lift station are currently inoperable. The Project was first bid in 2022, but results came in much higher than was budgeted, and the two bids received were subsequently rejected. The thought was to modify the project to include other work planned for 2023 at the WWTP and re-bid the project in the hopes of receiving more bids, which was done in March 2023; however, no bids were received. The only contractor that expressed interest in the project was the low bidder from 2022, Boller Construction. The scope of work has since changed, and staff has decided to handle the bypass pumping in-house, as it was the most costly item from the original Project scope. Boller has been working with staff to identify ways to get this Project in motion and at least get it done during 2023. Boller has done satisfactory work for the WWTP in the past, and staff is unsure if they would show further interest in the project after assisting staff over the past month if the project was bid out for the third time.

It is Mr. Patel's recommendation to get a proposal for the work from Boller Construction and waive competitive bidding. Since the Project must be approved jointly under the West Chicago/Winfield Wastewater Authority, Mr. Patel has also discussed this recommendation with Winfield's Village Manager and Village Engineer, and they concur with this course of action. So long as the proposal comes in near the budgeted amount, the Project would come back to the Committee for approval at the June Infrastructure Committee meeting.

9. Reports from Staff. Mr. Patel noted that the 2023 Roadway Rehabilitation, Fair Meadows Subdivision Rehabilitation, and Sophia Street Area Water Main and Streets Rehabilitation Projects are all underway. Staff also had a pre-construction meeting on May 3rd for the Technology Boulevard Resurfacing Project; the contractor anticipates a starting date of May 15th. The 200 Main Street – Lower Level and Main Street Rehabilitation Project will also begin next week.

Alderman Hallett mentioned that he has gotten several questions from residents about why the construction is going on simultaneously throughout town. Mr. Patel noted that construction season is relatively short in this region, and every community competes for contractors and their availability; the availability of subcontractors can also come into play. All contractors also have a completion date in their contract that must be met or liquidated damages could be imposed. By getting projects done earlier in the season, the focus can then be shifted to the next year's design projects as well, so the City can go to bid early in the year when contractors a ready to fill their calendar and may provide more competitive pricing.

10. Adjournment. At 7:15 P.M., Alderman Hallett made a motion to adjourn, seconded by Alderman Dimas. **Motion was unanimously approved by voice vote.**

Respectfully submitted,

Ashley Heidorn
Administrative Assistant of Public Works

CITY OF WEST CHICAGO

INFRASTRUCTURE COMMITTEE
AGENDA ITEM SUMMARY

ITEM TITLE:

Rejection of all Bids and Re-bid – Klein Road Culvert Replacement Project.

AGENDA ITEM NUMBER: 4.A.

COMMITTEE AGENDA DATE: June 1, 2023
COUNCIL AGENDA DATE: June 5, 2023

STAFF REVIEW: Mehul T. Patel, P.E., CFM- Director of Public Works **SIGNATURE** Mehul T. Patel

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman **SIGNATURE**_____

ITEM SUMMARY:

In June 2022, the City received American Rescue Plan Act (ARPA) Grant through DuPage County Stormwater Management for Klein Road Culvert Replacement Project (Project) in the amount not to exceed $169,000.00. Subsequently, the City Council approved an Intergovernmental Agreement (IGA) with DuPage County on September 6, 2022, for acceptance of grant funds for construction costs. The IGA requires the City to substantially complete the project by October 31, 2024.

The Project's scope includes the removal of the existing corrugated metal pipe culvert and two cast-in-place (CIP) junction chambers and replace it with a single-cell, 6' x 3' precast concrete box culvert with a CIP end section, solider pile retaining wall and a precast concrete junction chamber, full depth hot-mix asphalt (HMA) pavement removal and reconstruction, HMA resurfacing, widening and placement of 8-foot HMA bike path to accommodate for future Wayne Township's bike path project along Klein Road, HMA and aggregate shoulder construction, storm sewer improvements, temporary detour, thermoplastic pavement markings, fieldstone riprap installation, tree removals, native planting, landscaping, and other collateral work necessary to complete the project as described in the Project plans and specifications. The Project also requires obtaining temporary and permanent easements from the Forest Preserve District of DuPage County (FPDDC) for proposed improvements, agreement for which is in the works and will be forthcoming.

The request for bids was advertised in the Daily Herald and on an online bidding platform QuestCDN on April 11, 2023. Staff opened bids on April 25, 2023, and below are the bid results:

CONTRACTOR	BASE BID SUBMITTAL AMOUNT	RANK (BASE BID)
Alliance Contractors	$577,674.15	1
Copenhaver Construction	$657,531.25	2
Martam Construction	$724,333.20	3
Benchmark Construction	$738,000.00	4
Swallow Construction	$769,931.00	5
Trine Construction	$1,142,000.00	6
ENGINEER'S ESTIMATE	*$447,194.00*	*N/A*

The FY 2023 budget includes $338,000.00 under the Capital Projects Fund Account No. 08-34-53-4857 for the Construction of the Project. The responsible low bidder, Alliance Contractor is $219,674.15 or 65% over the budgeted amount and $130,480.15 or 29% over the Engineer's Estimate. Project's Phase II Design Engineer, Engineering Resource Associates (ERA), believes that increases in fuel cost, industry workload, demand, and labor shortages are the biggest factors for inflated bids.

Furthermore, Staff discussed with DuPage County Stormwater Management team to determine if there is a mechanism in place to request additional grant funds for the Project; however, there is no mechanism in place currently, but one could become available in the future.

Staff recommends rejecting all bids and rebidding the project in winter 2023 to receive bids that are more competitive as industry workload and demand typically softens during winter months for projects of this size and scope.

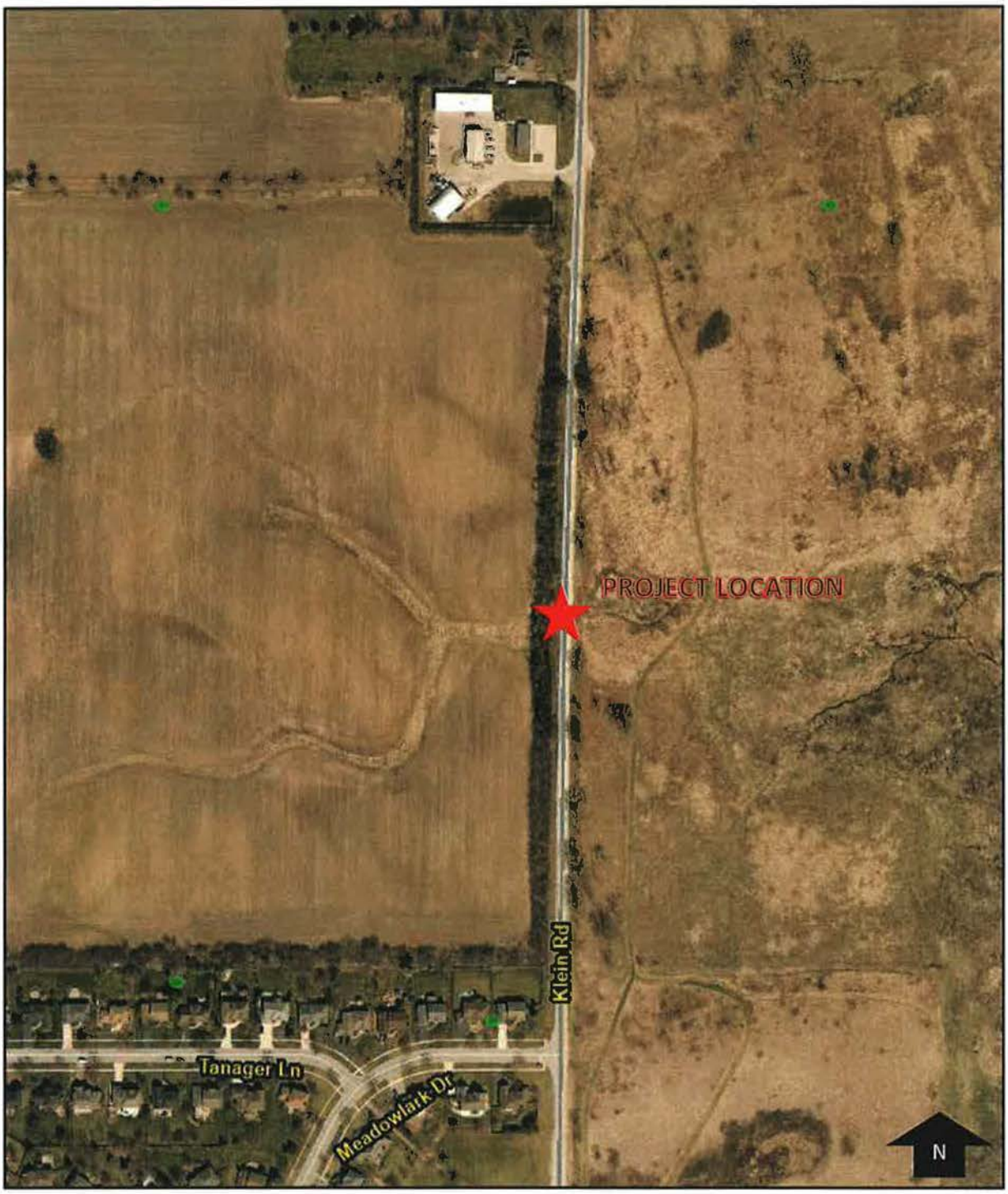
ACTIONS PROPOSED:

Reject all bids.

COMMITTEE RECOMMENDATION:

PROJECT LOCATION MAP

KLEIN ROAD CULVERT REPLACEMENT PROJECT
CITY OF WEST CHICAGO
DUPAGE COUNTY



CITY OF WEST CHICAGO

INFRASTRUCTURE COMMITTEE
AGENDA ITEM SUMMARY

ITEM TITLE:

2023 Asphalt Materials Procurement – DuPage County Joint Purchasing Program – Plote Construction, Inc.

AGENDA ITEM NUMBER: 4.B.

COMMITTEE AGENDA DATE: Jun 1, 2023
COUNCIL AGENDA DATE: June 5, 2023

STAFF REVIEW: Mehul T. Patel, P.E., CFM, Director of Public Works **SIGNATURE**

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman **SIGNATURE**

ITEM SUMMARY:

For over 34 years the City has utilized the DuPage County Joint Purchasing Program for the procurement of asphalt materials. DuPage County has a Joint Purchasing Program similar to the State of Illinois Joint Purchasing Program where annually it solicits bids for materials by way of public bid and then allows municipalities to take advantage of the competitively bid unit prices. The bid is attached for your reference.

Recently DuPage County advised staff that it will be utilizing all of the vendors except Superior Asphalt Company that bid for Asphalt Materials, depending on which site is closest to the ongoing operations within the County limits. All vendors have agreed to extend its bid to other taxing bodies in DuPage County through the Joint Purchasing Program. The City staff is proposing to use Plote Construction as its choice for vendor due to the close proximity. The two commonly used Hot-Mix Asphalt (HMA) products by the City are HMA Surface Course, Mix D, N50 and HMA Binder Couse, IL-19.0, N50. Although Plote's bid pricing for these two products are higher than other vendors, staff believes due to Plote's close proximity, Public Works staff will be able to pick up HMA material as needed from the plant located in West Chicago, Illinois, and/or in Bartlett, Illinois, which will save a lot of transit time. This will help offset the higher purchase price.

The City uses HMA to repair street openings from water and sewer excavations; for pothole patching, repair of surface imperfections through grinding and patching, and overlayment of sections of streets where the surface is deteriorated and the street is not scheduled for contractual reconstruction or resurfacing. For Fiscal Year 2023, staff anticipates using approximately 600 tons of surface mix and approximately 100 tons of binder mix. Material cost varies from $67.00 to $125.00 per ton depending on the type of HMA required. The amount of $51,000.00 has been budgeted in the Capital Projects Fund (08-34-53-4672) for the purchase of HMA during Fiscal Year 2023.

Staff recommends using the DuPage County Joint Purchasing Program for the procurement of Asphalt Materials from Plote Construction, Inc. for Fiscal Year 2023.

ACTIONS PROPOSED:

Authorize the purchase of Asphalt Materials, as needed, from Plote Construction, Inc. for an amount not to exceed $51,000.00, through the DuPage County Joint Purchasing Program, during Fiscal Year 2023.

COMMITTEE RECOMMENDATION:

THE COUNTY OF DUPAGE
FINANCE - PROCUREMENT
2023 CONSTRUCTION MATERIALS (SECTION 1 - BITUMINOUS PAVING MATERIALS)
23-023-DOT

K-Five Companies

Vendor Plant Site	UOM	HMA Surface Course, Mix D, N70	HMA Surface Course, Mix D, N50	HMA Binder Course, IL-19, N70	HMA Binder Course, IL-19, N50	PolymerizedHMA Surface Course, Mix E, N70	Driveway / Private Mix	SS-1 Asphalt Emulsion (BULK)	SS-1 Asphalt Emulsion 5 Gallon / Pail	Cold Patch	Dumping of Asphalt Grindings	Dumping of Clean Concrete	Dumping of Broken Asphalt
	UOM	Ton	Ton	Ton	Ton	Ton	Ton	GAL	PAIL	Ton	Ton	Ton	Ton
Elmhurst (DuPage Materials Company LLC)		$75.25	$72.75	$63.50	$65.75	$120.00	$70.25	No Bid	$47.25	$165.00	$7.75	No Bid	$7.75
Hodgkins (K-Five Hodgkins LLC)		$74.25	$71.25	$63.75	$64.75	$120.00	$69.50	No Bid	$47.25	$165.00	$7.75	No Bid	$7.75
Naperville (Chicago Materials Corporation)		$73.75	$74.00	$67.25	$66.25	$120.00	$71.25	No Bid	$47.25	No Bid	$7.75	$7.75	$7.75
Romeoville (Route 66 Asphalt)		$71.75	$69.50	$65.75	$64.25	$120.00	$67.25	No Bid	$47.25	No Bid	$7.75	No Bid	$7.75

Plote Construction Inc.

Vendor Plant Site	UOM	HMA Surface Course, Mix D, N70	HMA Surface Course, Mix D, N50	HMA Binder Course, IL-19, N70	HMA Binder Course, IL-19, N50	PolymerizedHMA Surface Course, Mix E, N70	Driveway / Private Mix	SS-1 Asphalt Emulsion (BULK)	SS-1 Asphalt Emulsion 5 Gallon / Pail	Cold Patch	Dumping of Asphalt Grindings	Dumping of Broken Asphalt	Dumping of Clean Concrete
	UOM	Ton	Ton	Ton	Ton	Ton	Ton	GAL	EA	Ton	Ton	Ton	Ton
Location 1 - West Chicago		$73.00	$73.00	$67.00	$67.00	$125.00	No Bid	No Bid	$50.00	$175.00	No charge	No charge	No charge
Location 2 - Bartlett		$73.00	$73.00	$67.00	$67.00	$125.00	No Bid	No Bid	$50.00	$175.00	No charge	No charge	No charge

Ozinga

Vendor Plant Site	UOM	HMA Surface Course, Mix D, N70	HMA Surface Course, Mix D, N50	HMA Binder Course, IL-19, N70	HMA Binder Course, IL-19, N50	PolymerizedHMA Surface Course, Mix E, N70	Driveway / Private Mix	SS-1 Asphalt Emulsion (BULK)	SS-1 Asphalt Emulsion 5 Gallon / Pail	Cold Patch	Dumping of Asphalt Grindings	Dumping of Broken Asphalt	Dumping of Clean Concrete
	UOM	Ton	Ton	Ton	Ton	Ton	Ton	GAL	EA	Ton	Ton	Ton	Ton
Location 1 - Lincolnshire		No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	$ 9.77	No charge	$ 9.77

Superior Asphalt Co.

Vendor Plant Site	UOM	HMA Surface Course, Mix D, N70	HMA Surface Course, Mix D, N50	HMA Binder Course, IL-19, N70	HMA Binder Course, IL-19, N50	PolymerizedHMA Surface Course, Mix E, N70	Driveway / Private Mix	SS-1 Asphalt Emulsion (BULK)	SS-1 Asphalt Emulsion 5 Gallon / Pail	Cold Patch	Dumping of Asphalt Grindings	Dumping of Broken Asphalt	Dumping of Clean Concrete
	UOM	Ton	Ton	Ton	Ton	Ton	Ton	GAL	EA	Ton	Ton	Ton	Ton
Location 1 - North Aurora		No Bid	$63.50	No Bid	$58.50	No Bid	$63.50	No Bid	$60.00	$153.50	No charge	No charge	No charge

DuKane Asphalt Co.

Vendor Plant Site	UOM	HMA Surface Course, Mix D, N70	HMA Surface Course, Mix D, N50	HMA Binder Course, IL-19, N70	HMA Binder Course, IL-19, N50	PolymerizedHMA Surface Course, Mix E, N70	Driveway / Private Mix	SS-1 Asphalt Emulsion (BULK)	SS-1 Asphalt Emulsion 5 Gallon / Pail	Cold Patch	Dumping of Asphalt Grindings	Dumping of Broken Asphalt	Dumping of Clean Concrete
	UOM	Ton	Ton	Ton	Ton	Ton	Ton	GAL	EA	Ton	Ton	Ton	Ton
Location 1 - Addison		$65.00	$65.00	$62.00	$62.00	$82.00	No Bid	No Bid	$65.00	No Bid	$8.00	$8.00	$8.00

NOTES

Bid Opening 3/13/23 @ 2:30 P.M.	DW, NE
Invitations Sent	54
Total Bidders Requesting Documents	1
Total Bid Responses Received	5

CITY OF WEST CHICAGO

INFRASTRUCTURE COMMITTEE
AGENDA ITEM SUMMARY

ITEM TITLE:

Purchase of Road Salt from Compass Minerals America, Inc. of Chicago, Illinois, for the 2023-2024 Winter Season

AGENDA ITEM NUMBER: 4.C.

COMMITTEE AGENDA DATE: June 1, 2023
COUNCIL AGENDA DATE: June 5, 2023

STAFF REVIEW: Mehul T. Patel, P.E., CFM, Director of Public Works **SIGNATURE**

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman **SIGNATURE**

ITEM SUMMARY:

For FY 2023, or for the 2023-2024 winter season, City staff participated in the DuPage County Road Salt Purchasing Program for the purchase of road salt. On Wednesday, March 1, 2023, City staff submitted information to DuPage County of the City's intent to participate in its Road Salt Purchasing Program for the purchase of 2,000 tons of road salt (1,600 tons (80%) minimum purchase required and 2,600 tons (130%) maximum purchase guaranteed available). It should be noted that purchase of Road Salt has decreased by 1,500 tons from 2023-2023 season due to less than average winter season as well as operational efficiencies implemented by staff.

On Monday, May 1, 2023, DuPage County opened bids for BID#23-057-DOT – BULK ROAD SALT. Bid results are shown below, with Compass Minerals America, Inc. of Overland Park, Kansas, submitting the lowest responsible bid of $78.31 per ton of road salt delivered. On Wednesday, May 3, 2023, DuPage County advised all program participants that it would be awarding its 2023-2024 salt procurement contract to Compass Minerals America, Inc. Each participating agency is required to awards its own contract. Compass Minerals America, Inc. is required to hold its bid prices for 90 days; a contract/commitment from the City of West Chicago is required prior to Thursday, August 1, 2023. The City of West Chicago is grouped with other local agencies in bid category Group 2B, which means the salt delivery will take place after December 1, 2023. The bid pricing below only represents the Group 2B pricing.

CONTRACTOR	BID SUBMITTAL AMOUNT	OVERALL RANK
Compass Minerals America, Inc.	$78.31/ton	1
Morton Salt, Inc.	$79.10/ton	2
Cargill, Inc.	$91.25/ton	3
ENGINEER'S ESTIMATE	N/A	N/A

Based upon pricing received under the DuPage County Rock Salt Purchasing Program, City staff recommends that City Council authorize the purchase of up to 2,600 tons of road salt, at the price of $78.31 per ton delivered, from Compass Minerals America, Inc. of Overland Park, Kansas, for the 2023-2024 winter season under the DuPage County Joint Purchasing Program.

Purchase History:

- For FY 2022, or the 2022-2023 season, the City paid $75.88 per ton of road salt delivered under the DuPage County Road Salt Purchasing Program.
- For FY 2020 and FY 2021, or the 2020-2021 and 2021-2022 winter seasons, the City paid $81.13 per ton of road salt delivered under the DuPage County Road Salt Purchasing Program (one contract extension).
- For FY 2019, or the 2019-2020 winter season, the City paid $82.96 per ton of road salt delivered under the DuPage County Road Salt Purchasing Program.
- For FY 2018, or the 2018-2019 winter season, the City paid $67.15 per ton of road salt delivered under the

CITY OF WEST CHICAGO

DuPage County Road Salt Purchasing Program.

- For FY 2017, or the 2017-2018 winter season, the City paid $51.49 per ton of road salt delivered under the DuPage County Road Salt Purchasing Program.
- For FY 2016, or the 2016-2017 winter season, the City paid $56.35 per ton of road salt delivered under the DuPage County Road Salt Purchasing Program.
- For FY 2015, or the 2015-2016 winter season, the City paid $70.44 per ton of road salt delivered under the DuPage County Road Salt Purchasing Program.
- For FY 2014, or the 2014-2015 winter season, the City paid $112.69 per ton of road salt delivered under the CMS program (State of Illinois Program).

The cost to deliver 2,600 tons at $78.31/ton will be $203,606.00. In FY2023, there is $405,000.00 budgeted under 08-34-53-4670 for this expenditure.

ACTIONS PROPOSED:

Authorize the purchase and delivery of up to 2,600 tons of road salt, at the price of $78.31 per ton, from Compass Minerals America, Inc. of Overland Park, Kansas, under the DuPage County Road Salt Joint Purchasing Program for the 2023-2024 winter season.

COMMITTEE RECOMMENDATION:

CITY OF WEST CHICAGO

INFRASTRUCTURE COMMITTEE
AGENDA ITEM SUMMARY

ITEM TITLE:

Purchase of One 2023 John Deere 410 P-Tier Backhoe Loader from West Side Tractor Sales of Lisle, Illinois.

AGENDA ITEM NUMBER: 4.D.

COMMITTEE AGENDA DATE: June 1, 2023
COUNCIL AGENDA DATE: June 5, 2023

STAFF REVIEW: Mehul T. Patel, P.E., CFM- Director of Public Works **SIGNATURE**

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman **SIGNATURE**

ITEM SUMMARY:

Annually, Public Works Department staff plans and budgets for the purchase and delivery of replacement vehicles. For FY 2023, staff budgeted for one 2023 John Deere 410 P-Tier Backhoe Loader with 1.31 Cubic Yard Multi-Purpose bucket, 18-inch wide Heavy Duty dirt bucket, and 42-inch wide Heavy Duty ditch bucket. This machine is generally referred to as a combination tractor machine (Combo) due to its dual capacity to operate as a backhoe and a loader. Combos are utilized daily by personnel for various reasons, including, but not limited to excavation, water main breaks, material hauling, debris removal, landscaping, loading of salt, and snow removal operations (i.e., push backs, drifts, haul outs, downtown area, cul-de-sacs, etc.).

For 2023, John Deere holds a joint purchasing contract under the Sourcewell Cooperative Contracting Program (formerly National Joint Powers Alliance (NJPA) Program) with West Side Sales of Lisle, Illinois, being the local authorized John Deere vendor for our area. The City is a member of the Sourcewell Program, which is a municipal cooperative contracting agency that provides nationally leveraged and competitively solicited purchasing contracts under the guidance of the Uniform Municipal Contracting law for use by education, government, and non-profits.

With wheel loader, equipment, and attachments specified by the City, John Deere submitted a price quote of $181,812.07 under the Sourcewell program (Cooperative Contract # #011723-JDC). The government discount offered through the Sourcewell program is forty-one percent (41%) below list price.

Associated with the above referenced Combo purchase, staff desires to trade-in a 2007 CASE 500 Super M combination tractor (Unit #570) no longer utilized. Unit#570 was declared surplus under Ordinance No. 23-O-0011. West Side Tractor Sales has quoted a trade-in value of $36,000.00 for the 2000 CASE 580 SL II combination tractor, resulting in a total purchase price of $147,850.64 for the 2023 John Deere 410 P-Tier Backhoe Loader and appurtenances, equipment, and attachments. The purchase comes with 12-month unlimited hour warranty as well as a five-year, 3,000 hours extended machine warranty.

The wheel loader, equipment, and attachments will be purchased from the Capital Equipment Replacement Fund (04-34-39-4804) in which $143,200.00 has been budgeted in FY2023. The shortfall of $4,650.64 will be supplemented by the Capital Equipment Replacement Fund (04-34-39-4804) in which $50,000.00 is budgeted for miscellaneous equipment needs.

ACTIONS PROPOSED:

That the West Chicago City Council authorize the purchase of one 2023 John Deere 410 P-Tier Backhoe Loader from West Side Tractor Sales of Lisle, Illinois, for an amount not to exceed $147,850.64.

COMMITTEE RECOMMENDATION:

JOHN DEERE

WEST SIDE TRACTOR SALES CO

0

May 23, 2023

CITY OF WEST CHICAGO
FINANCE DEPT
WEST CHICAGO, IL
6302932200

2023 John Deere 410 P Backhoe Loader

SOURCEWELL Cooperative Contract 011723-JDC

All the prices in the detailed sections are Per machine basis.

Machine Configuration

Code	Description	Qty	Unit Price
17E0T	410 P-tier Backhoe Loader	1	202,392.75
202	United States	1	-
351	Translated Text Labels	1	-
259	English	1	-
1003	Cab	1	14,600.25
8096	Premium Mirror Option - Exterior Rear View Mirrors (2) and Front	1	185.85
8109	Sun Visor	1	105.00
8146	Left Side Console Storage with Cup Holders	1	89.25
8183	Radio, Bosch Premium Package	1	1,495.20
8209	Seat, Vinyl Air-Suspension	1	554.40
183E	JDLink™	1	-
3009	Autoshift Transmission - Mechanical Front Wheel Drive (MFWD)	1	-
4006	John Deere 4.5L - FT4/Stage IV	1	-
8075	Diagnostic Oil Sampling Ports	1	227.85
5256	Galaxy 580 Radial - 500/70R24 Rear & 340/80R18 Front	1	1,271.55
6154	Dual Batteries with Disconnect, Jump Post, and Engine Block	1	506.10
8142	LED Light Package	1	1,161.30
6752	Extendible Dipperstick	1	9,222.15
6577	1250 lb. (567 kg.) Front Counterweight	1	1,938.30
8131	Heavy-Duty Stabilizer Pads	1	509.25
7001	Auxiliary Hydraulics with One Way Flow (Hammer)	1	4,547.55
7028	Pilot Controls, Two Lever, with Pattern Selection	1	-
7040	Three-Function Loader Hydraulics, Single Lever	1	3,602.55
8165	Auto Ride Control	1	2,574.60
80A3	Custom Code - Accu-Swing	1	812.70
7800	Less Backhoe Bucket with Bucket Pins	1	-
7713	Rear Hydraulic Coupler for Pin-on Buckets - Less Thumb	1	8,934.45
7861	1.31 cu. yd. (1.0 cu. m.) Multi-Purpose Bucket	1	13,408.50
8062	Backhoe Boom Protection Plate	1	663.60
8115	MFWD Driveshaft Guard	1	471.45
8126	Heavy-Duty Grille Frame	1	612.15

List Price	$	269,886.75
Discount 41%	$	110,653.57
Net Price	$	159,233.18

Custom Jobs

Code	Description	Qty	Price
	Dlr provide Pre-Delivery Inspection, Supplies and Fuel Fill	1	1,600.00
	Dealer Provided Delivery	1	-
	Labor for field installed kits	1	3,294.00
Ext Warranty	• Extended 60/3000 PTH Warranty Machine Only	1	2,782.22
BYT11568	Pre-Cleaner, Engine Air Intake	1	813.94
BYT11137	Boom Light Kit	1	314.89
AT371257	MFWD Wheel Fender Kit for 18 in. tires only	1	538.39
AT434236	Rubber Bumper for Grille Frame	1	182.61
BYT11926	Heavy-Duty Grille Screen Kit	1	526.50
AT451194	Pivotable Beacon Bracket	1	90.44
AT431164	Controlled Lowering Device for Backhoe Boom Cylinder	1	2,048.44
AT313589	Beacon/Strobe Ready Wiring Kit	1	37.44
0	TAG 12", 18" and 24" Bkts, 42" Ditch, HD Ripper	1	6,852.22
INDECO	INDECO HP1500 Top Cap 410P	1	2,261.11
0	OP, Service, and Test Manuals (Digital)	1	1,236.67
PM CONTRACT		1	-
WORKSITE	WKSITE KIT- ADD DESC HERE	1	-
		Total Price	$ 22,578.89

Quote Summary (per unit)

Item Description		Prices
Machine Net Price	$	159,233.18
Custom Jobs	$	22,578.89
Price per Machine	**$**	**181,812.07**

Destination	Freight Charge	
Lisle, IL 60532	$	2,038.57

Total Net Price Quantity (1) **$ 183,850.64**

Less Trade-in

2007 CASE 590 SUPER M with 3315 hours	**36,000.00**
0	-
	-
	-

Payoff to Trade -

Net Price less Trade-Ins **$ 147,850.64**

Warranty Terms

410 P includes • Full Machine 12 Month -Unlimited Hour Warranty

• Extended 60/3000 PTH Warranty Machine Only

Remarks:

Please note that this quote is valid for 30 days. Purchase cards are accepted -- a 3% transaction fee will be calculated into the PO total for the credit card invoice payment.

Tom Becker - Sales Representative West Side Tractor Sales - (630) 355-7150 • Fax (630) 355-7173 - tbecker@westsidetractorsales.com

CITY OF WEST CHICAGO

INFRASTRUCTURE COMMITTEE
AGENDA ITEM SUMMARY

ITEM TITLE:

Purchase of Two 2024 International Model HV613 SBA Single Axle Truck Chassis Equipped By Bonnell Industries Inc. with 10' Commander Stainless Steel Muni Dump Body, 11' Bonnell Snow Plow with Quick Link Hitch, 300-gallons Pre-Wetting and appurtenances from Rush Truck Centers of Springfield, Illinois in an amount not to exceed $592,858.62

AGENDA ITEM NUMBER: 4.E.

COMMITTEE AGENDA DATE: June 1, 2023
COUNCIL AGENDA DATE: June 5, 2023

STAFF REVIEW: Mehul T. Patel, P.E., Director of Public Works

SIGNATURE Mehul T. Patel

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman

SIGNATURE_____

ITEM SUMMARY:

Annually, via the State of Illinois Joint Purchasing Contract, the Public Works Department staff plans and budgets for the purchase and delivery of replacement vehicles. For FY 2023, staff planned and budgeted for the replacement of one 2009 International 7400 Single Axle Dump Truck (Unit 791); one 2009 International 7400 Tandem Axle Dump Truck (Unit 793) and one 2002 GMC 2-Ton Dump Truck (Unit 720), presently all utilized by the Street Division. For FY 2024, staff planned and budgeted for the replacement of one 2009 7400 Single Axle Dump Truck (Unit 790) and one International 7400 Tandem Axle Dump Truck (Unit 792).

For 2023, the State of Illinois did not solicit bids for large dump trucks, leaving municipalities to solicit bids on their own, or to purchase demo/stock trucks, or purchase through another joint purchasing program. Staff has spent the past several months speaking with various truck chassis manufacturers (i.e., Ford, Freightliner, International, Peterbuilt, etc.) and equipment vendors (i.e., Henderson Truck Equipment, Monroe Truck Equipment, Auto Truck Group, etc.) about ordering a customized snow plow/dump truck to meet City needs. Rush Truck Centers and Bonnell Industries Inc. both hold joint purchasing contracts under the Sourcewell Competitive Bid Contract (formerly National Joint Powers Alliance Program).

The City of West Chicago is a member of Sourcewell. Sourcewell is a municipal national contracting agency that provides nationally leveraged and competitively solicited purchasing contracts under the guidance of the Uniform Municipal Contracting law for use by education, government, and non-profits.

With cab, chassis, and equipment specified by the City, Rush Truck Centers and Bonnell Industries Inc. submitted a price quote of $296,429.31 per truck under the Sourcewell Program. As specified, the truck would be a 2024 International Model HV613 SBA Single Axle Truck Chassis Equipped By Bonnell Industries Inc. with 10' Commander Stainless Steel Muni Dump Body, 11' Bonnell Snow Plow with Quick Link Hitch, 300-gallons Pre-Wetting Tank System, and appurtenances.

The snowplow trucks and equipment will be purchased from the Capital Equipment Replacement Fund (04-34-39-4804) in which for FY 2023, $227,700.00 has been budgeted for replacement of Unit 791, $216,900.00 has been budgeted for replacement of Unit 793, and $231,300.00 is budgeted for replacement of Unit 720, for a total of $675,900.00. For FY 2024, $223,500.00 has been budgeted for replacement of Unit 790 and $234,600.00 has been budgeted for replacement of Unit 792. Staff has determined the versatility of the two new trucks will allow staff to eliminate unit 720, which is primarily used for landscape restoration. This will reduce the overall fleet by one large truck in the future. Furthermore, given the current condition of Units 790, 792, and 793, staff believes it would be beneficial to postpone the replacement of Unit 793 to FY 2024 and advance the purchase of Unit 790 to FY 2023.

CITY OF WEST CHICAGO

When the new units arrive in June 2025, the current Units 790 and 791 will become spare pieces of equipment while the current spare pieces of equipment (Units 717 and 718) will be declared surplus.

If a purchase order is processed in June 2023, said truck will not be delivered until approximately June 2025. Due to the current climate for automotive industries, the pricing is valid for 30 days from the date on the quote; however, given the inflationary environment the pricing may change by delivery date. If such happens, staff will bring the change order for committee consideration and approval at that time.

ACTIONS PROPOSED:

That the West Chicago City Council waive competitive bidding and authorize the purchase of two 2024 International Model HV613 SBA Single Axle Truck Chassis Equipped By Bonnell Truck Equipment with 10' Commander Stainless Steel Muni Dump Body, 11' Bonnell Snow Plow with Quick Link Hitch, 300-gallons Pre-Wetting Tank System, and appurtenances from Rush Truck Centers of Springfield, Illinois in an amount not to exceed $592,858.62.

COMMITTEE RECOMMENDATION:

BONNELL INDUSTRIES INC
TRUCK & ROAD EQUIPMENT
Sourcewell Contract Number: 062222-BNL

1385 Franklin Grove Rd
Dixon, IL 61021
815-284-3819 * 815-284-8815 Fax
800-851-9664
www.bonnell.com * info@bonnell.com

Quote

Quote Number: 0167555
Quote Date: 5/15/2023
Sourcewell ID: 66368

Bill To: 0002250
CITY OF WEST CHICAGO
475 MAIN STREET
WEST CHICAGO, IL 60185

Ship To: 01
CITY OF WEST CHICAGO
412 BLAKLEY STREET
WEST CHICAGO, IL 60185

Phone: (630) 243-2200 Fax: scalderon@westchicago.org

Phone:
Fax:

Confirm To: JAKE WHITEAKER Comment:

Customer P.O.	Ship VIA	F.O.B.	Terms	Quote Expiration
	ANY WAY		Net 30 Days	6/15/2023

Ordered	Unit	Item Number
1.00	EACH	**TRUCK PACKAGE**

SOURCEWELL # 155877 COMPLETE SNOW FIGHTER PACKAGE "ULTIMATE LEVEL"
SINGLE AXLE CLASS

$135,451.95

APPLICATION: ONE NEW INTERNATIONAL HV SERIES SINGLE AXLE CLASS 7 SNOW AND ICE TRUCK WITH AN 85" CAB TO AXLE MEASUREMENT. AUTOMATIC TRANSMISSION WITH LIVE PTO PROVISIONS, FACTORY SNOW PLOW PREP PACKAGE, FACTORY GROUND SPEED CONNECTION POINT.
FACTORY FRAME EXTENSIONS ARE NOT REQUIRED.

INCLUDES INSTALLATION OF THE FOLLOWING EQUIPMENT:

- COMMANDER BODY
- CAB SHIELD INSTALLED ON BODY
- HYDRAULIC SYSTEM
- ELECTRICAL & LIGHTING
- CONSOLE AND CONTROLS
- REAR TOWING HITCH
- PLOW HITCH
- SNOW PLOW
- PREWET SYSTEM, (MOUNTED ON COMMANDER BODY)

THE FOLLOWING ADDTIONAL ITEMS ARE INCLUDED:

- VIBRATOR INSTALLED (NEW VIBRATOR)
- POLY FULL COVER FENDERS MANUFACTURED BY MINIMIZER
- FENDER BRACKET MAT'L: STAINLESS
- FRAME COATING, (BLACK PPG AMERSHIELD PAINT)

INSTALLED EQUIPMENT DETAILS ARE LISTED BELOW:

1.00	EACH	**COMMANDER**
1.00	EACH	**C10100** 4.5" Bore x 3 Stage Double Acting Trunnion Hoist.
1.00	EACH	**C10160** Lower Trunnion Frame for 9' - 11' Bodies.
1.00	EACH	**C10190**

Continued

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Ordered	Unit	Item Number
		Rear Hinge Assembly for All Bodies.
1.00	EACH	**C10662** 201 Stainless Steel Hanger Style Rear Material Spreader with Height Adjustment and Bottom Mounted Motor and 20" Poly Spinner Disc. (Installed)
1.00	EACH	**C10749** 1/4" AR400 Steel Summer Replacement Floor for 10'Auger Conveyor. (Shipped Loose) Auger Assembly must be removed.
1.00	EACH	**C10840** 201 Stainless Steel Tank Brackets for 300 Gallon Poly Pre-Wet Tanks. (Installed) (Note- Tanks are not Included in this Kit. See Prewet System for Tankand Plumbing Price.)
1.00	EACH	**C10905** Three 700 Series Whelen Light Boxes in each CornerPost.
1.00	EACH	**C10906** Conduit Hole in Front Corner Post Panel
1.00	EACH	**C10920** 304 Stainless Steel Ladder. (Installed)
1.00	EACH	**C10931** Vibrator Bracket for a Stainless Body. (Installed)
1.00	EACH	**C10936** Stainless Steel Mud Flap Brackets. (Installed)
1.00	EACH	**C10950** 12" Removable 201 Stainless Steel Rear Spill Pan.(Installed)
1.00	EACH	**MTR-10-S2** 10'-0" Bonnell Commander Base Unit with a Twin Auger converyor assembly that will convey material to the Rear of the body. Augers to be driven by 24 Cubic Inch Geroler Valve Hydraulic Motors Coupled Directly to 3.6:1 Planetary Gear Boxes. Body to be fabricated of 201 Stainless Steel. Sides, bulkhead, corner posts and tailgate are of 7 gauge material. Long sills are of 1/4" material and are boxed for strength. 2-1/2" schedule 40 stainless steel pipe cross members. Stainless steel corner posts. Long sills have a 4" x 6" opening to accommodate pre-wet plumbing and wiring. Body is welded solid with no skip welding. Body includes a 6 panel air operated tailgate powered by two double acting air cylinders located inside the rear corner posts. The tailgate linkage and trip rods are stainless steel and the trip rods ride in greasable non corrosive bearings. Body includes

Continued

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Ordered	Unit	Item Number
		manifold grease system and Body Props. Stainless Steel Bodies are Chemically Cleaned and Passivated. Paint Options are listed below if Applicable.
1.00	EACH	**CAB SHIELD** . CONFIGURED AS FOLLOWS: *MATERIAL IS TO BE 201 STAINLESS STEEL. *PAN WIDTH- 18". *WIDTH- DETERMINED. *HEIGHT TO BE DETERMINED TO BOTTOM OF PAN. *DOUBLE M6 LIGHT BRACKETS. *STAINLESS STEEL TO BE ELECTROCHEMICALLY CLEANED AND PASSIVATED. **LIGHTING CODE: 11311
1.00	EACH	**HYDRAULIC SYSTEM** - PTO: OMFB 278 SERIES - PUMP: TXV92 - ADD-A-FOLD HYDRAULIC VALVE TO OPERATE: HOIST, PLOW, PREWET, AUGER, SPINNER - "FORCE" ULTRA CONTROL ARM - "FORCE" 6100 GEN5 SPREADER CONTROLLER - "FORCE" VT35 STAINLESS STEEL TANK AND LID - LOW OIL/HIGH TEMP AUTO SHUTDOWN SYSTEM - EATON HP171 SERIES WITH SENSOR HIGH PRESSURE FILTER - BRASS QUICK COUPLERS - CLOSED LOOP PREWET CABLE - BONNELL CONSOLE FOR ULTRA CONTROLLER ARM
1.00	EACH	**ELECTRICAL** - ALL LED LIGHTING UNLESS OTHERWISE NOTED - BONNELL IGNITION ACTIVATED BATTERY RELAY DISCONNECT SYSTEM - InPOWER STANDARD 8 SWITCH PANEL WITH 4 WARNING LAMPS AND 16 OUTPUTS - DATA SHEET REQUIRED - BODY UP SWITCH WITH INDICATOR LAMP - BONNELL WIRE HARNESSES CAB ROOF LIGHTING AND ACCESSORIES - WHELEN 98" LIGHT BAR AS FOLLOWS: PER CUSTOMER SUPPLIED CONFIGURATION WITH 8" RISER BARCKETS

Continued

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Ordered	Unit	Item Number
		PLOW LIGHTING
		- ABL-3830-0080 LED PLOW LIGHTS ON MIRROR MOUNTED MOUNTING BRACKETS - WHELEN MICRO PIONEER MODEL MPBB WORK LIGHTS ON MIRROR MOUNTED MOUNTING BRACKETS
		BODY LIGHTING - ONE PAIR WHELEN M60BTT STT LIGHTS IN REAR CABSHIELD - ONE PAIR WHELEN MC6 FLASHERS LIGHTS IN REAR CABSHIELD
		- TWO PAIR WHE-70BTT STT IN REAR POSTS - ONE PAIR WHE-70C00WCR BACKUP LIGHTS IN REAR POSTS - MARKER LIGHTS PER FMVSS STANDARDS - WHELEN, TRI-LIGHT CLUSTER, SS MOUNTING BOX, 500 SERIES FLASHERS (2 YELLOW, 1 WHITE FLASHER), OUTSIDE EACH CORNER POST
		REAR HITCH AND CHASSIS LIGHTING
		- ONE PAIR WHELEN M60BTT STT LIGHTS ON REAR HITCH - ONE CENTER WHE-M60C00WCR BACKUP LIGHT ON REAR HITCH - PM-290C LICENSE PLATE LIGHT ON REAR HITCH - ICC THREE LIGHT CLUSTER ON REAR HINGE OF BODY - VEL-697112 BACK UP ALARM ON REAR HITCH OR FRAME
		EQUIPMENT WORK LIGHTS AND FLASHERS
		- WHELEN MICRO PIONEER MODEL MPBB WORK LIGHT MOUNTED OUTSIDE CORNER POST ON DRIVERS SIDE AIMED AT SPINNER - WHELEN MICRO PIONEER MODEL MPBB WORK LIGHT MOUNTED OUTSIDE CORNER POST ON CURB SIDE AIMED REARWARD - LIGHTS ON SAME SWITCH
		ONE CAMERA SYSTEM
		- 1ST CAMERA MOUNTED ON R/H CORNER POST-AIMED REARWARD - CAMERA SYSTEM TO USE FORCE AMERICA DISPLAY - INCLUDES AUTOMATIC SELF CLEANING WASH-N-DRY SYSTEM
1.00	EACH	**WHE-01-1517049-27** WHELEN, TRI-LIGHT CLUSTER, SS MOUNTING BOX, 500 SERIES FLASHERS (2 YELLOW, 1 WHITE FLASHER),
2.00	EACH	**WHE-60BTT** IDOT, RED LED, 4 X 6 1/2 LAMP AND LENS ASSY 84 LEDS IS NOW WHELEN 604BTT.
2.00	EACH	**WHE-70BTT**

Continued

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Ordered	Unit	Item Number
		700 LED BRAKELIGHT
		PART IS NOW 704BTT
1.00	EACH	**WHE-M6C**
		M6 SERIES FLASHER
		WHITE LED WITH CLEAR LENS
4.00	EACH	**WHE-MPBB**
		MICRO PIONEER 12 VOLT SUPER LED WORK LIGHT
1.00	EACH	***LIGHT BAR**
		- WHELEN 98" LIGHT BAR AS FOLLOWS: PER CUSTOMER SUPPLIED CONFIGURATION
1.00	EACH	**REAR HITCH**
		CONFIGURED AS FOLLOWS: YES
		- REAR HITCH TYPE: CUSTOM REAR HITCH PER BELOW
		- 3/4" CARBON STEEL PLATE
		- BP200 PINTLE HOOK 25 TON, SWIVEL
		- STD PINTLE MTG HEIGHT
		- TRAILER PLUG: 7 FLAT PIN RV STYLE
		- CUTOUTS FOR M6 SERIES REAR LIGHTS
		- 5/8" CARBON STEEL D-RINGS
1.00	EACH	**BUY-BP200**
		PINTLE HOOK 25 TON, SWIVEL
1.00	EACH	**PLOW HITCH**
		PLOW HITCH FOR A IHV607 SBA, 2020 & UP INSTALLED ON NEW TRUCK PACKAGE
1.00	EACH	**HFF-QLX**
		Heavy Front Frame Side Plate Hitch with QLX Front Frameand and Offset Lift Arm. (QL2 Quick Link Receiver built into Lower section)
1.00	EACH	**H10170**
		4in X 10in Double Acting Cylinder W/Nitrided Rod
1.00	EACH	**H10190**
		Telescopic Lift Arm in Lieu of Rigid Lift Arm
1.00	EACH	**H10421**
		Cross Over Relief Valve Kit with Pressure Release feature. (Installed or uninstalled)

Continued

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	ANY WAY		Net 30 Days	6/15/2023

Ordered	Unit	Item Number
1.00	EACH	**PLOW** CONFIGURED AS FOLLOWS: YES PAINTED: ORANGE POLYURETHANE ENAMEL LEFT AND RIGHT END DOUBLERS EXTRA RIBS
1.00	EACH	**11ST49MX1** Base Model 11ST49MX1 Straight Steel Snow Plow 11'-0" Cutting Edge X 49" Straight Height Moldboard Trip (2) Heavy Duty Extension Spring Assemblies With 6 Springs Total Heavy Duty Tubular Table/A-Frame Assembly (2) 4X12 Reversing Cylinders (5) Table To Moldboard Hookup Points
1.00	EACH	**P10130** Level Raise Lift System with Lift Chains for High Country Plows (MX1 & MC1)
1.00	EACH	**P10260** QL-Quick Link swivel bar (plow section installed) (Flink Style and Penn Dot)
1.00	EACH	**P10410** Cove cut on on curb side end of moldboard
1.00	EACH	**P10425** 3/8" x 12" Rubber flap kit installed
1.00	EACH	**P10441** Extended front push beam on table Approximately 132" Long
2.00	EACH	**P10455** Extra ribs on Straight and Distant Discharge plows High Country only (MX1 & MC1)
1.00	EACH	**P10465** Plow stand - installed (to hold hook up point @ desired height when detached)
1.00	EACH	**P10470** 36" Blaze orange markers
1.00	EACH	**P10515** 1" x 8" C1084 Steel cutting edge in lieu of standard 5/8" x 6

Continued

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Ordered	Unit	Item Number
1.00	EACH	**P10556** 1/2" Stucci Brass Quick Couplers Installed (one set/per plow)
1.00	EACH	**P10626** 5/8" x 8" Carbide Universal 3-Bolt Bull Nose Curb Shoe (Installed on Right end of Plow)
1.00	EACH	**P10627** 5/8" x 8" Carbide Universal 3-Bolt Bull Nose Curb Shoe (Installed on Left end of Plow)
1.00	EACH	**PREWET SYSTEM** BONNELL CONFIGURED PREWET SYSTEM CONFIGURED AS FOLLOWS: YES - PREWET SYSTEM TO FIT A 10' LONG BODY, CONFIGURED AS FOLLOWS:
1.00	EACH	**COM-300P-2-150** Commander Body Prewet System with two 150 Gallon Poly Tanks, Stainless Steel Tank Brackets, and 1-1/2In Plumbing.
1.00	EACH	**L10120** Hydraulic Prewet Pump in a Stainless Enclosure to Operate a Closed Loop System. Includes an IP68 Wire Connection for Feedback Signal.
1.00	EACH	**L10315** 2in Male Quick Fill Kit Installed.
1.00	EACH	**L10320** 1-1/2in Cross Fill Kit (in addtion to standard Plumbing Kit) Installed.
1.00	EACH	**L10340** 18in Spay Bar Kit (For Mounting Inside the Auger Cavity) Installed.
1.00	EACH	**L10355** Flush Kit. (Includes small poly flush tank) Installed.
1.00	EACH	**L10410** Installation Charge for Two Tank Commander and V-box systems.
1.00	EACH	**BON-009030** UT PREWET BOOM KIT - 18"

Continued

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Ordered	Unit	Item Number
1.00	EACH	**CUSTOMIZATION**

- WHELEN 98" LIGHT BAR AS FOLLOWS: PER CUSTOMER SUPPLIED CONFIGURATION

- WHELEN MICRO PIONEER MODEL MPBB WORK LIGHTS ON MIRROR MOUNTED MOUNTING BRACKETS

BODY LIGHTING
- ONE PAIR WHELEN M60BTT STT LIGHTS IN REAR CABSHIELD
- ONE PAIR WHELEN MC6 FLASHERS LIGHTS IN REAR CABSHIELD

- WHELEN, TRI-LIGHT CLUSTER, SS MOUNTING BOX, 500 SERIES FLASHERS (2 YELLOW, 1 WHITE FLASHER), OUTSIDE EACH CORNER POST

REAR HITCH AND CHASSIS LIGHTING

- ONE PAIR WHELEN M60BTT STT LIGHTS ON REAR HITCH
- ONE CENTER WHELEN MC6 BACKUP LIGHT ON REAR HITCH

- WHELEN MICRO PIONEER MODEL MPBB WORK LIGHT MOUNTED OUTSIDE CORNER POST ON DRIVERS SIDE AIMED AT SPINNER
- WHELEN MICRO PIONEER MODEL MPBB WORK LIGHT MOUNTED OUTSIDE CORNER POST ON CURB SIDE AIMED REARWARD
- LIGHTS ON SEPARATE SWITCHES

2ND SPRAY BAR MOUNTED TO CAMMANDER AUGER PAN

BP200 PINTLE HOOK 25 TON, SWIVEL

HINGED REAR MUD FLAPS

1.00 EACH **/SOURCEWELL SOURCE GOODS ADJ**

ALL ITEMS LISTED BELOW ARE OPEN PURCHASE REQUESTS {SOURCE GOODS} BY THE CUSTOMER TO REPLACE ITEMS ON 155877 SNOW FIGHTER PACKAGE

$26,885.88

- WHELEN 98" LIGHT BAR AS FOLLOWS: PER CUSTOMER SUPPLIED CONFIGURATION ILO STANDARD
- WHELEN MICRO PIONEER MODEL MPBB WORK LIGHTS ON MIRROR MOUNTED MOUNTING BRACKETS ILO STANDARD LIGHTS
700 SERIES LIGHTS IN CORNER POSTS ILO STANDARD LIGHTS
- ONE PAIR WHELEN MC6 FLASHERS LIGHTS IN REAR CABSHIELD ILO STANDARD FLASHERS

Continued

BONNELL INDUSTRIES INC
TRUCK & ROAD EQUIPMENT
Sourcewell Contract Number: 062222-BNL

1385 Franklin Grove Rd
Dixon, IL 61021
815-284-3819 * 815-284-8815 Fax
800-851-9664
www.bonnell.com * info@bonnell.com

Quote

Quote Number: 0167555
Quote Date: 5/15/2023
Sourcewell ID: 66368

Bill To: 0002250
CITY OF WEST CHICAGO
475 MAIN STREET
WEST CHICAGO, IL 60185

Ship To: 01
CITY OF WEST CHICAGO
412 BLAKLEY STREET
WEST CHICAGO, IL 60185

Phone: (630) 243-2200 Fax: scalderon@westchicago.org

Phone:
Fax:

Confirm To: JAKE WHITEAKER Comment:

Customer P.O.	Ship VIA	F.O.B.	Terms	Quote Expiration
	ANY WAY		Net 30 Days	6/15/2023

Ordered	Unit	Item Number
		- WHELEN, TRI-LIGHT CLUSTER, SS MOUNTING BOX, 500 SERIES FLASHERS (2 YELLOW, 1 WHITE FLASHER), OUTSIDE EACH CORNER POST ILO NO TRI LIGHT CLUSTER - ONE PAIR WHELEN 60BTT STT LIGHTS ON REAR HITCH ILO STANDARD - ONE CENTER WHELEN MC6 BACKUP LIGHT ON REAR HITCH ILO OF STANDARD - WHELEN MICRO PIONEER MODEL MPBB WORK LIGHT MOUNTED OUTSIDE CORNER POST ON DRIVERS SIDE AIMED AT SPINNER ILO STANDARD LIGHT - WHELEN MICRO PIONEER MODEL MPBB WORK LIGHT MOUNTED OUTSIDE CORNER POST ON CURB SIDE AIMED REARWARD ILO STANDARD LIGHT HINGED REAR MUD FLAPS ILO STANDARD MUD FLAPS 2ND SPRAY BAR MOUNTED TO CAMMANDER AUGER PAN ILO ONE SPRAY BAR BP200 PINTLE HOOK 25 TON, SWIVEL ILO STANDARD PINTLE HFF-QLX ILO HFF-QX HITCH PLOW QL2 HITCH ILO QA LOOP COVE CUT ON PLOW ILO NO COVE CUT 1"x8" BLADE ILO STANDARD BLADES EXTENDED PLOW TABLE ILO NO EXTENSION CARBIDE CURB SHOES ILO NO CURB SHOES
	EACH	*** OPTION** OPTIONS LISTED BELOW IF SELECTED MUST BE ADDED TO THE FINAL PRICE
	EACH	***V-BOX** STANDARD STAINLESS DUMP BODY WITH STAINLESS V-BOX AND STAINLESS LEGSTAND KIT ILO CAMMANDER BODY ADD $12,000.00

SIGNING THIS QUOTE CONSTITUTES YOUR ACCEPTANCE AND AGREEMENT TO THE FOLLOWING:

- **DUE TO THE CLIMATE OF CURRENT MARKET CONDITIONS FINAL INVOICE PRICE MAY VARY FROM ORIGINAL QUOTE PRICE.**
- **NO PRODUCT/SPEC. CHANGES MAY BE MADE AFTER THE DATE OF SIGNATURE. ANY CHANGES REQUESTED AFTER THE DATE OF SIGNATURE WILL BE QUOTED SEPARATELY AND, IF APPLICABLE, WILL BE COMPLETED ON A SEPARATELY SCHEDULED TIME FRAME.**
- **15% RESTOCKING FEE ON RETURNED ITEMS. NO RETURNS ON ELECTRICAL ITEMS**
- **THIS QUOTE IS VALID FOR 30 DAYS. ALL QUOTES OVER 30 DAYS OLD ARE SUBJECT TO CHANGE AND REQUIRE A REQUOTE PRIOR TO ACCEPTANCE OF A PURCHASE ORDER.**

Net Order:	162,337.83
Less Discount:	0.00
Freight:	0.00
Sales Tax:	0.00
Quote Total:	162,337.83

AUTHORIZED APPROVAL CONTACT NAME (PRINTED): _____

AUTHORIZED APPROVAL CONTACT (SIGNATURE): _____

APPROVAL DATE: _____ **CUSTOMER PO NUMBER:** _____

0009 Joey Bonnell KJH

CITY OF WEST CHICAGO

CITY COUNCIL
AGENDA ITEM SUMMARY

ITEM TITLE:

Resolution No. 23-R-0050 – License Agreement with the Commuter Rail Division of the Regional Transportation Authority (Metra) for the use of its property to install a Sanitary Forcemain associated with Lift Station 5 Rehabilitation Project

AGENDA ITEM NUMBER: 4.F.

COMMITTEE AGENDA DATE: June 1, 2023
COUNCIL AGENDA DATE: June 5, 2023

STAFF REVIEW: Mehul T. Patel, P.E., CFM, Director of Public Works **SIGNATURE**

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman **SIGNATURE**

ITEM SUMMARY:

The City's Sanitary Lift Station #5, located at 344 S. Neltnor Boulevard, collects sanitary sewage from an area bounded by Wilson Avenue (west), Washington Street (north), Prince Crossing Road (east), and Blair Street (south), and pumps said sewage to the gravity sanitary sewer system on Main Street. In addition to gravity sewer flows, City-owned Sanitary Lift Stations #7 and #12, and the private lift station at the Main Park Apartments, all pump sanitary sewage to Sanitary Lift Station #5 making this a critical facility. Sanitary Lift Station #5 and its associated forcemain was originally constructed circa 1968. Multiple breaks have occurred in this forcemain pipe, specifically in the area of the Metra Station.

On May 16, 2022, City Council approved Resolution 22-R-0027, awarding a construction contract to Intergral Construction to rehabilitate the Lift Station 5 and replace associated approximately 1,250 feet of forcemain, part of which traverses through the Metra lot. In order to occupy the portion of the Metra lot for the proposed forcemain, a license agreement is required with Metra, a Commuter Rail Division of the Regional Transportation Authority. Attached is a License Agreement with Metra for use of its property. The cost to prepare the agreement is a onetime $2,500.00 fee paid to Metra. There are no recurring fees associated with this agreement.

The project construction has been delayed due to material delays but is anticipated to begin in June 2023.

ACTIONS PROPOSED:

Approve Resolution No. 23-R-0050 authorizing the Mayor to execute a certain License Agreement with the Commuter Rail Division of the Regional Transportation Authority (Metra) for the use of its property to install a sanitary forcemain associated with the Lift Station #5 Rehabilitation Project.

COMMITTEE RECOMMENDATION:

RESOLUTION NO. 23-R-0050

RESOLUTION AUTHORIZING MAYOR TO EXECUTE A CERTAIN LICENSE AGREEMENT WITH THE COMMUTER RAIL DIVISION OF THE REGIONAL TRANSPORTATION AUTHORITY (METRA) FOR THE USE OF ITS PROPERTY TO INSTALL A SANITARY FORCEMAIN ASSOCIATED WITH THE LIFT STATION #5 REHABILITATION PROJECT

BE IT RESOLVED by the City Council of the City of West Chicago, in regular session assembled, that the Mayor is hereby authorized to execute a certain License Agreement between the City of West Chicago and the Commuter Rail Division of the Regional Transportation Authority (Metra) for the use of its property to install a new sanitary forcemain associated with the Lift Station #5 Rehabilitation Project generally located at 244 S Neltnor Boulevard, , in substantially the form attached hereto and incorporated herein as Exhibit "A".

APPROVED this 5th day of June 2023

AYES: _____

NAYES: _____

ABSTAIN: _____

ABSENT: _____

_____
Mayor Ruben Pineda

ATTEST:

_____
Executive Office Manager, Valeria Perez

CITY OF WEST CHICAGO

INFRASTRUCTURE COMMITTEE
AGENDA ITEM SUMMARY

ITEM TITLE:

Resolution No. 23-R-0051 – Contract Award – Corrective Asphalt Materials, LLC for the 2023 Pavement Preventative Maintenance Program in an Amount Not to Exceed $49,914.00

AGENDA ITEM NUMBER: 4. G.

COMMITTEE AGENDA DATE: Jun 1, 2023
COUNCIL AGENDA DATE: June 19, 2023

STAFF REVIEW: Mehul T. Patel, P.E., CFM, Director of Public Works **SIGNATURE** Mehul T. Patel

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman **SIGNATURE**_____

ITEM SUMMARY:

Preventative maintenance is an essential part to prolonging the life of a roadway which delays the need for costlier repairs in the future. The preventative maintenance process involves the use of an asphalt rejuvenator application on roads that have been recently paved (within 2-3 years). This treatment is only applicable to hot-mix asphalt pavement. The application of such preventative treatment helps to delay breakdown of the asphalt pavement. Typically, the breakdown leads to costlier repairs such as resurfacing or reconstruction.

Staff is proposing to use a familiar product called Reclamite for the preventative maintenance process. Reclamite is an emulsion made up of specific petroleum oils and resins. It is formulated to suspend life cycle of asphalt pavement by restoring and preserving the asphalt's binder. When Reclamite combines with asphalt pavement it is able to restore the pavement's original properties, hence extending the life of the pavement. By extending the life cycle of the asphalt pavement, we are ultimately delaying all other treatments and most importantly keeping a "good road good." This program will include Reclamite application on Prince Crossing Rd (Geneva Rd to IL-64); Commerce Ct and Ingalton Ave (IL-59 to Hahndorf St).

Reclamite is sold through regional distributor and thus is considered a sole source item. Corrective Asphalt Materials (CAM) LLC is the local distributor of the material. CAM has provided a quote based on the pavement area to the Municipal Partner Initiative group in the Northwest Municipal Conference. CAM has extended the same price to the City of West Chicago. City has been part of the MPI group in DuPage County on other projects. A request for a quote produced the following result:

Company	BID TOTAL
Corrective Asphalt Materials (CAM) LLC. Sugar Grove, IL	$ 49,914.00 ($0.94/SY)

In Fiscal Year 2023, staff has budgeted $50,000.00 (08-34-53-4842) in the Capital Projects Fund for this program. Staff recommends approval of the contract award to Corrective Asphalt Materials, LLC.

ACTIONS PROPOSED:
Approve Resolution No. 23-R-0051 authorizing the Mayor to execute a Contract with Corrective Asphalt Materials, LLC of Sugar Grove, Illinois for the 2023 Pavement Preventative Maintenance Program in an Amount Not to Exceed $49,914.00

CITY OF WEST CHICAGO

COMMITTEE RECOMMENDATION:

RESOLUTION NO. 23-R-0051

A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE A CONTRACT WITH CORRECTIVE ASPHALT MATERIALS, LLC OF SUGAR GROVE, ILLINOIS, FOR THE 2023 PAVEMENT PREVENTATIVE MAINTENANCE PROGRAM IN AN AMOUNT NOT TO EXCEED $49,914.00

BE IT RESOLVED by the City Council of the City of West Chicago, in regular session assembled, that the Mayor is hereby authorized to execute a Contract with Corrective Asphalt Materials, LLC of Sugar Grove, Illinois, for the 2023 Pavement Preventative Maintenance Program in an Amount Not to Exceed $49,914.00, in substantially the form attached hereto and incorporated herein as Exhibit "A".

APPROVED this 19th day of June 2023.

AYES: _____

NAYES: _____

ABSTAIN: _____

ABSENT: _____

_____
Ruben Pineda, Mayor

ATTEST:

_____
Valeria Perez, Executive Office Manager

CITY OF WEST CHICAGO

INFRASTRUCTURE COMMITTEE
AGENDA ITEM SUMMARY

ITEM TITLE:

Resolution No. 23-R-0052 – Contract Award – Boller Construction Company, Inc. for the Headworks Gate Improvement Project at the West Chicago/Winfield Wastewater Authority Regional Wastewater Treatment Plant in the amount not to exceed $529,300.00

AGENDA ITEM NUMBER: 4.H.

COMMITTEE AGENDA DATE: June 1, 2023
COUNCIL AGENDA DATE: June 19, 2023

STAFF REVIEW: Mehul Patel, P.E., CFM, Director of Public Works

SIGNATURE Mehul Patel

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman

SIGNATURE_____

ITEM SUMMARY:

The City of West Chicago and the Village of Winfield jointly comprise the West Chicago/Winfield Wastewater Authority (WCWWA), which owns the Wastewater Treatment Plant (WWTP), which discharges to the West Branch of the DuPage River under NPDES Permit No. IL0023469. The WWTP receives and processes over five million (5,000,000) gallons of raw sewage daily from both municipalities. The flow enters the WWTP at two locations. The flow from the City of West Chicago enters the WWTP through a 36-inch gravity interceptor at the headworks while the flow from the Village of Winfield enters the WWTP through a 20-inch forcemain into the grit chamber,

The two influent gates that control the gravity flow into the headworks lift station and the bypass flow to the excess flow clarifiers are currently inoperable. In September 2021, the WCWWA hired Clark Dietz, Inc. an engineering firm, to provide design services for the replacement of the two influent gates. The Headworks Gate Improvement Project (Project) was initially let in January 2022; however, the bids were significantly higher due to the cost associated with bypass pumping. The staff recommended rejecting all bids and rebidding the Project in FY 2023.

The FY 2023 scope of work included a project Base Bid for the headworks gate improvements, including the removal of existing gates and grating, furnishing and installation of a new stainless steel slide gate and electric actuator, new stainless steel weir gate, new hatches and grating, spraying protective lining for the concrete headworks structure, and miscellaneous concrete repairs and electrical work. The project also included an Alternate Bid to spray protective and structural coating to each of the four primary clarifiers. Furthermore, onsite staff will handle the bypass pumping required for this project.

The Project was advertised for bids in the Daily Herald as well as on QuestCDN, an online bidding platform, on March 14, 2023. In addition, an onsite pre-bid meeting was held on March 20, 2023. Bid opening was scheduled for March 28, 2023, and the City did not receive any bids for the project.

Staff has now unsuccessfully bid this project twice. There are items in the scope of work, such as the gate at the headworks chamber, which is in dire need of replacement. The primary clarifier tanks are also showing signs of flaking and are in need of a protective coat to prevent further damage to the concrete walls. The low bidder in 2022 was Boller Construction and it was the only contractor that seemed interested in 2023 but decided not to bid due to its spray contractor being a non-union firm from out of State. Since the bid opening on March 28, 2023, when no bids were received, Boller has been working with the engineering consultant and staff to identify ways to reduce cost on the project by suggesting

alternate coating products after conducting site visits. At this point, staff had two options that were discussed with the Village of Winfield.

1. Re-bid the project essentially with the same scope of work and hope to receive a bid third time within our budget. After two rounds to bidding, staff was unsure if Boller Construction will be interested in going through the bidding process the third time around. In the process, WCWWA may also potentially jeopardize relationship with the only contractor that seemed interested in the project and has been a helping hand.
2. To waive the competitive bidding process and work directly with Boller Construction to obtain a price for the scope of improvements. Save the extra engineering costs for re-bidding and get the project fully or partially completed in 2023.

After some discussion with the Village of Winfield, Option #2 above was determined to be the best way to move the project forward. Staff also briefly discussed this project update at the May 4, 2023 Infrastructure Committee meeting. The total construction budget for the project is $560,000.00. Staff obtained the attached proposal from Boller Construction for the scope of improvements on May 22, 2023. The scope of improvements include all of the work at the headworks chamber plus the protective coating application on two of the four primary tanks

Based on the proposal, staff recommends waiving competitive bidding and award the contract to Boller Construction for aforementioned scope of improvements in the amount not to exceed $529,300.00.

ACTIONS PROPOSED:

Approve Resolution No. 23-R-0052 authorizing the Mayor to execute a construction contract with Boller Construction Company, Inc. of Waukegan, Illinois, for the Headworks Gate Improvement Project at the West Chicago/Winfield Wastewater Authority Regional Wastewater Treatment Plant in an amount not to exceed $529,300.00.

COMMITTEE RECOMMENDATION:

RESOLUTION NO. 23-R-0052

A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE A CONSTRUCTION CONTRACT WITH BOLLER CONSTRUCTION COMPANY, INC. OF WAUKEGAN, ILLINOIS, FOR THE HEADWORKS GATE IMPROVEMENT PROJECT AT THE WEST CHICAGO/WINFIELD WASTEWATER AUTHORITY REGIONAL WASTEWATER TREATMENT PLANT IN AN AMOUNT NOT TO EXCEED $529,300.00

BE IT RESOLVED by the City Council of the City of West Chicago, in regular session assembled, that the Mayor is hereby authorized to execute a construction contract with Boller Construction Company, Inc. of Waukegan, Illinois, for the Headworks Gate Improvement Project at the West Chicago/Winfield Wastewater Authority Regional Wastewater Treatment Plant in an amount not to exceed $529,300.00, in substantially the form attached hereto and incorporated herein as Exhibit "A".

APPROVED this 19th day of June 2023.

AYES: _____

NAYES: _____

ABSTAIN: _____

ABSENT: _____

_____
Ruben Pineda, Mayor

ATTEST:

_____
Valeria Perez, Executive Office Manager

Clark Dietz

Engineering Quality of Life®

May 23, 2023

Mehul Patel, P.E., CFM
Director of Public Works
City West Chicago
475 Main Street
West Chicago, IL 60185

Re: Headworks Gate Improvements Project Proposal

Dear Mr. Patel:

The Headworks Gate Improvement Project was re-bid earlier this year on March 28th, 2023. At this time, no bids were received. Only 2 bidders pulled plans for the project and were the same contractors that submitted on the original bid. Based on our discussions, only Boller Construction Co., Inc. was preparing to submit a bid but decided not to enter it due to difficulty finding a union applicator for the coating system. They offered to do a site visit and evaluate alternatives.

A site meeting was held on April 17th for a contractor walkthrough of the primary clarifiers and headworks area and evaluating which products may be feasible in each area. Boller prepared a proposal to complete the work based on the contract documents, but with Tnemec coating products. Clark Dietz has extensive experience with Tnemec products and they are a recognized name in the coating industry. In addition, they are providing a 3 year warranty on the coating compared to 1 year from the original bid.

The proposal for the base bid came in at $252,900. Since the bypass pumping is being removed from the bid and being procured by the City, the base bid is actually lower than the low bid received in January of 2022 ($266,900.00). They also submitted a fee for an alternate bid of 2 primary clarifiers. A second price was provided to complete the remaining primary clarifiers if budget allows in 2024. The detailed schedule values and changes to the coating are included for reference.

As this project has bid twice with no award, Clark Dietz recommends the City consider accepting this proposal in order to move the project forward this year. If you have any questions or require additional information regarding this matter, please contact our office.

Sincerely,

Clark Dietz, Inc.

Tom Foley, P.E.
E-mail: tom.foley@clarkdietz.com

Boller
CONSTRUCTION
3045 W. Washington Street
Waukegan, Illinois 60085-4843
Ph: 847-662-5566

Boller Construction Coo., Inc. proposes to furnish the labor and materials to complete the Headworks Gate Improvements Project at the West Chicago Winfield Wastewater Authority in accordance with the plans dated March 2023 and revised coating specifications, per the pricing schedule below.

SCHEDULE OF VALUES

Headworks Gate Improvements Project

The Bidder's lump sum price proposed on the Bid Form, is based upon the following items of equipment and materials as shown on the Contract Drawings and described in the Contract Specifications or subsequent clarifications of coating sections. Failure to submit this fully completed form with the Bid Form shall cause rejection of this bid as non- responsive.

Base Bid

No.	Item	Price
1	General Cost Items (mobilization, bonds, insurance, field supervision)	$ 43,800
2	Demolition/Removals	$ 31,300
3	Slide Gate and Actuator • Equipment • Installation	$ 23,600 $ 6,900
4	Weir Gate • Equipment • Installation	$ 12,000 $ 6,000
5	Concrete Protective Coating of Headworks Influent Chamber per Section 09 96 00 • Surface Preparation • Installation	$ 6,000 $ 57,200
6	Hatches & Tread • Equipment • Installation	$ 33,500 $ 11,800
7	6" Concrete Curb	$ 3,000
8	Electrical Work	$ 17,800
9	Coat the floor of the Headwork's	$ 18,900
	(Sum of Items 1-8)	**$ 252,900**
	(Sum of Items 1-9)	**$ 271,800**
	Concrete Protective Coating of Primary Clarifiers 1-2 5,600 sq ft. • Surface Preparation • Resurface with Ceramico • Installation G435 Perma – Glaze	$ 257,500
	Alternative Bid Item – Needs to Be Awarded by July 1, 2024 Concrete Protective Coating of Primary Clarifiers 3-4 5,600 sq ft. • Surface Preparation • Resurface with Ceramico • Installation G435 Perma – Glaze	$ 278,800

1:59 PM
5/23/23

PRODUCT DATA SHEET

Mortartec Ceramico

EPOXYTEC

PRODUCT PROFILE

GENERIC DESCRIPTION
Epoxy Modified Mortar

COMMON USAGE
Epoxytec Mortartec Ceramico is a highly advanced, formulated epoxy blend incorporating cutting-edge epoxide technology with proprietary engineered curing, combined with a specific balance of Portland cement, high density graded silica aggregate, and synthetic fibers to produce one of the most coveted mortars in the industrial market today. Once cured, it results in a smooth mortar application with the one of the hardest mortar surfaces in the industry. Designed to take early topcoats of epoxy coatings without the need for further preparation. Mortartec Ceramico is industrial-grade and exhibits excellent performance properties with incredible adhesive properties, enhanced barrier sealing capabilities assisting with minimizing outgassing.

COLORS
Gray

COATING SYSTEM

PRIMERS
Self-priming

TOPCOATS
Series 451, 454, 456, 457, Uroflex, Uroflex 61.

SURFACE PREPARATION

CONCRETE
Allow new cast-in-place concrete to cure a minimum of 28 days at 75°F (24°C). Verify concrete dryness in accordance with ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" (moisture vapor transmission should not exceed three pounds per 1,000 square feet in a 24 hour period), F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes" (relative humidity should not exceed 80%), or D 4263 "Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method" (no moisture present). Prepare concrete surfaces in accordance with NACE No. 6/SSPC-SP13 Joint Surface Preparation Standards and ICRI Technical Guidelines. Abrasive blast, shot-blast, water jet or mechanically abrade concrete surfaces to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide a minimum ICRI-CSP 5 surface profile.

CMU
Allow mortar to cure for 28 days. Level protrusions and mortar spatter.

PAINTED SURFACES
Not recommended.

ALL SURFACES
Must be clean, dry and free of oil, grease and other contaminants.

TECHNICAL DATA

VOLUME SOLIDS
100%

RECOMMENDED DFT
Parge Coat: 1/16" to 1" (62.5 to 1000 mils) per lift
Feather-Edge Capable: 1/32"(31.25 mils)

CURING TIME

Temperature	To Recoat	To Touch	Full Cure
77°F (24°C)	3 hours	3-4 hours	36 hours

VOLATILE ORGANIC COMPOUNDS (VOCs)
0.00 lbs/gallon (0 grams/litre)

THEORETICAL COVERAGE
1,604 mil sq ft/gal (39.3 m²/L at 25 microns). See APPLICATION for coverage rates.

TECHNICAL DATA *(cont.)*

PART OF THE TNEMEC FAMILY OF COATINGS 123 West 23rd Avenue, North Kansas City, MO 64116 USA +1 816-473-3400 epoxytec.com

NUMBER OF COMPONENTS
Three: Part A (epoxy), Part B (amine) and Part C (cement blend).

PACKAGING

	Part A	Part B	Part C	Yield (mixed)
UniPack †	1 gallon jug	16 oz jar	40 lb bag	2.73 gallons (10.3 L)

† All components are packaged in a 5 gallon pail.

STORAGE TEMPERATURE
Minimum 40°F (4°C) Maximum 110°F (43°C)
For optimum handling and application characteristics, all material components should be stored or conditioned between 70°F to 80°F (21°C to 27°C) 48 hours prior to use. Protect Part A and Part B from freezing; discard if frozen. Protect Part C from moisture; store in dry environment off ground.

TEMPERATURE RESISTANCE
(Dry) Continuous 170°F (77°C) Intermittent 200°F (93°C)

SHELF LIFE
12 months at recommended storage temperature.

FLASH POINT - SETA
>230°F (110°C)

HEALTH AND SAFETY
This product contains chemical ingredients which are considered hazardous. Read container label warning and Safety Data Sheet for important health and safety information prior to the use of this product. **Keep out of the reach of children.**

APPLICATION

COVERAGE RATES

Thickness	Coverage/Kit (0.39 ft³) (theoretical)
1/16" (62.5 mils)	70.1 sq ft (6.51 m²)
1/8" (125 mils)	35.1 sq ft (3.26 m²)
1/4" (250 mils)	17.5 sq ft (1.6 m²)
1/2" (500 mils)	8.75 sq ft (0.81 m²)
3/4" (750 mils)	5.9 sq ft (0.55 m²)
1" (1000 mils)	4.4 sq ft (0.41 m²)

MIXING
Pour liquid Part B into a new empty bucket. Any remaining Part B shall be removed by adding 3 to 5 oz. (88.7 to 147.9 ml) of liquid Part A, re-sealing lid and shaking quart can for 5 to 10 seconds; pour contents into bucket. Add remaining liquid Part A into bucket and blend for 30 seconds. Under agitation, slowly sift Part C powder into the mixed liquids taking care not to deposit entire contents of Part C at once. Mix for 2 minutes or until the cement-sand is thoroughly wetted and a smooth consistency is achieved. **Important: Do not add additional Part C.**

THINNING
If Mortartec Ceramico begins to thicken in pail during use, drill mix for an additional 20 to 30 seconds to drop the viscosity. Do not add additional water.

Hand Application: Do not add water.

Low-Pressure Spray Application: To transfer the material, may thin up to 6 oz. (177.4 ml) per kit. **Note:** Use only potable water.

APPLICATION
When using Mortartec Ceramico, surface should be "pre-wet" or dampened with potable water to a Saturated Surface Dry (SDD) condition; the concrete is darkened by water but there is no pooling on the surface. Do not oversaturate the surface.

APPLICATION (cont.)

APPLICATION EQUIPMENT
Mortar Hawk, steel, stiff concrete finishing trowels, broad knives and rubber floats are recommended.

APPLICATION
For troweling inside and outside corners, the use of a radius or margin trowel is recommended. Material can be transferred to the surface by utilizing hydraulic spray equipment (i.e. WIWA 410 9:1 or 600 12:1 pump, Graco M680 Mortar Pump 10:1, Graco ToughTek Piston Pump) followed by troweling to seal the material. No special ACI 308 curing requirements - ambient cure only. For a smoother finished appearance, trowel licks may be reduced by using a 1/4" (6.35 mm) nap roller cover lightly dampened with water over the sealed Ceramico material. **Note:** If white liquid is brought to the surface during this process, Ceramico is being overworked and/or oversaturated. Overworking or oversaturating the surface may have an adverse effect on the adhesion of subsequent coatings applied. Let Ceramico cure and remove surface deposit using concrete rub brick.

POT LIFE
1 hour at 77°F (24°C)

SURFACE TEMPERATURE
Minimum of 45°F (7°C), optimum 65°F to 80°F (18°C to 27°C), maximum of 90°F (32°C). Application should be performed out of direct sunlight and during times when the surface temperature of the concrete is stable or in a descending pattern. To minimize outgassing, concrete temperature should be stabilized or in a descending temperature mode.

MATERIAL TEMPERATURE
For optimum application, handling and performance, the material temperature during application should be between 70°F and 90°F (21°C and 32°C). Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten pot life.

CLEANUP
Flush and clean all equipment immediately after use with warm water.

PRODUCT DATA SHEET

CPP TROWEL-LINER™

EPOXYTEC™

PRODUCT PROFILE

GENERIC DESCRIPTION

Ultra-High Build, Structural-Grade, Trowel-Applied Microfiber Reinforced Polymer (FRP) Epoxy

COMMON USAGE

Epoxytec CPP Trowel-Liner™ is a two-component, 100% solids, ultra-high build, trowel-applied, high strength and reinforced amine epoxy system. CPP Trowel-Liner™ is truly versatile and can be used as a repair compound or as a high-build, stand-alone protective liner (certified **NSF/ANSI/CAN Standard 61**). The material can be applied up to 1/2" (500 mils) per pass (vertical/overhead) without sag. Blended with reinforcing agents and proprietary fibers, Epoxytec CPP Trowel-Liner™ when cured provides a microfiber-reinforced polymer (FRP) with high mechanical strengths. CPP Trowel-Liner™ bonds to concrete, steel, brick, and most construction materials. Blended with reinforcing agents and microfibers, Epoxytec CPP Trowel-Liner™ creates a reinforced liner as an applied microfiber-reinforced polymer (FRP), with high mechanical strength to protect against corrosion and seal I&I.

COLORS

Off-White

FINISH

Slightly textured

SPECIAL QUALIFICATIONS

Underwriters Laboratories Inc.® classified to NSF/ANSI/CAN Standard 61 and the extraction requirements of NSF/ANSI/CAN 600) for use in potable water storage.

COATING SYSTEM

SURFACER/FILLER/PATCHER

Mortartec Ceramico, Mortartec Silicate, Series 217

PRIMERS

Self-priming, SE-d Primecoat

SURFACE PREPARATION

CONCRETE

Allow new cast-in-place concrete to cure a minimum of 28 days at 75°F (24°C). Prepare the concrete by abrasive blasting, high or ultra-high pressure water cleaning, and/or approved mechanical methods to achieve clean, sound, and profiled concrete in accordance with SSPC-SP13/NACE No. 6. "Surface Preparation of Concrete." A minimum ICRI profile of CSP 5 or higher shall be achieved with a minimum pH 9. Large cracks, voids and other surface imperfections should be filled with a recommended filler or surfacer. **Note:** Epoxytec CPP Trowel-Liner™ is self-priming and may be applied direct to concrete (DTC). However, should an abnormal or conditional situation exist (i.e. outgassing, MVT, etc), primers and/or resurfacers (although optional) can assist, and may be recommended.

STEEL

Before preparing steel, please inspect and remove oil, grease, or other contaminants. Abrasive blasting (or other approved mechanical methods) must be used in order to achieve a clean surface in accordance with SSPC-SP10/NACE No. 2 "Near White Blast Cleaning" and a minimum profile of 4.0 mils (100 microns). To prevent flash rusting, consider the use of a Tnemec recommended holding primer. Contact your Tnemec representative for recommendation.

ALL SURFACES

Surface must be clean, sound and profiled. Remove all dust, contaminants, grease, curing compounds, rust, impregnation, waxes, foreign particles, and disintegrated materials from the surface, in order to achieve a clean and profiled surface. Methods outlined herein are a basis of design for generalized guidance. Refer to epoxytec.com for additional system design detail and guidelines; please consult with your Tnemec representative on other specific design considerations.

TECHNICAL DATA

VOLUME SOLIDS

100%

TNEMEC

PART OF THE TNEMEC FAMILY OF COATINGS

123 West 23rd Avenue, North Kansas City, MO 64116 USA +1 816-473-3400 epoxytec.com

TECHNICAL DATA (cont.)

RECOMMENDED DFT

Repair Compound:

"Feather Edge": 1/16", 32.0 mils (815 microns) - 1/2", 500 mils (12,700 microns)

Lining:

Mild Conditions, as a Protective Coating, Non-Structural: 80.0 mils (2030 microns) minimum.

I&I or Aggressive Conditions, as a High Strength Liner, Structural Film: 125.0 mils (3175 microns) minimum

For Potable Water: Refer to **Underwriters Laboratories Inc.®** website for film thickness listings.

Note: "Structural" reference herein describes an applied and bonded high-strength film designed to hold back low pressure inflow/infiltration (I&I) and other low pressure water transmission through concrete. For structures requiring fully structural design consideration, criteria and variables will need to be calculated for specific design thickness recommendations by a licensed professional engineer.

CURING TIME

Temperature	To Topcoat	Non-Potable Water	Potable Water
77°F (25°C)	2 hours	24 hours	72 hours

VOLATILE ORGANIC COMPOUNDS (VOCs)

0.00 lbs/gal (0 g/l)

THEORETICAL COVERAGE

1,604 mil sq ft/gal (39.3 m²/L at 25 microns). See APPLICATION for coverage rates.

NUMBER OF COMPONENTS

Two: Part A (Epoxy) and Part B (Amine)

MIXING RATIO

By volume: one (Part A) to one (Part B)

PACKAGING

	Part A	Part B	Yield (mixed)
Small Kit	1-2 gallon can	1-1 gallon can	2.0 gallons (3.79 L)

NET WEIGHT PER GALLON

8.68 ± 0.25 lbs (3.93 ± 0.11 kg) (mixed)

STORAGE TEMPERATURE

For optimum handling and application characteristics both material components should be stored or conditioned between 75°F (24°C) and 85°F (29°C) 48 hours prior to use.

TEMPERATURE RESISTANCE

Contact your Tnemec Representative for more information.

SHELF LIFE

12 months at recommended storage temperature.

FLASH POINT - SETA

Part A: >230°F (110°C) Part B: 259°F (126°C)

HEALTH AND SAFETY

This product contains chemical ingredients which are considered hazardous. Read container label warning and Safety Data Sheet for important health and safety information prior to the use of this product. **Keep out of the reach of children.**

APPLICATION

COVERAGE RATES

	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)
Minimum (Non-Structural)	80.0 (2030)	80.0 (2030)	20 (1.86)
Minimum (Structural Film)	125.0 (3175)	125.0 (3175)	12.8 (1.19)
Maximum (per coat)	500.0 (12700)	500.0 (12700)	3.2 (0.3)

Note: For potable water applications, visit to **Underwriters Laboratories Inc.®** website for current film thickness listings.

MIXING

Add Part B to Part A and mix for a minimum of two to three minutes with a high power mortar drill until a homogenous blend (uniformed color, with no streaks) is achieved. Mix with movement, getting the pail's edges, walls, and bottom. Do not add sand or aggregate; special thixotropes are incorporated to allow up to 0.5 inches (1.27 cm) at 70°F (21°C) of fill and hang on vertical or overhead surfaces without sagging, and to achieve performance properties.

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APPLICATION (cont.)

THINNING
Do not thin.

POT LIFE
30 minutes at 77°F (25°C)

APPLICATION EQUIPMENT
Apply by mortar hawk and trowel, spatula, or other hand-applied methods.

SURFACE TEMPERATURE
Minimum 45°F (7°C) Maximum 130°F (54°C)

MATERIAL TEMPERATURE
For optimum handling and application characteristics, both material components should be stored or conditioned between 70°F and 85°F (21°C and 29°C) 24 hours prior to use. Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten the pot life.

CLEANUP
Purge and clean with Epoxytec Cut 5 solvent or Tnemec No. 42 Thinner.

PART 1 - GENERAL

1.1 DESCRIPTION

A. SCOPE:

A manufacturer certified Applicator shall provide all labor, materials, equipment, incidentals, and quality requirements for concrete for surface preparation, repair or resurfacing, and ultra-high build, Structural Epoxy lining work to the entire interior surfaces of the structures as shown on drawings and specified herein.

This Section's intent is to provide minimum requirements of an installation of an ultra-high build, high strength, structural epoxy system; and the lining of newly installed, existing, and/or defective specified concrete/masonry structures and surfaces exposed to domestic wastewater and/or municipal sanitary sewage by an applied and bonded application of high performance, 100% solids, ultra-high build, structural grade, applied fiber-reinforced-polymer (FRP) epoxy coating/lining system (Structural Epoxy).

This Section's intent is for concrete and/or other masonry structures which are exposed to or in contact with domestic wastewater service; constituting domestic municipal wastewater and plant treatment and municipal sanitary sewage from collection systems (sanitary sewer and/or stormwater), where sewage contact and exposure to hydrogen sulfide are present. Not intended for non-sewage applications or industrial waste.

Structural Epoxy minimum film thickness specified herein is designed and intended for applied and bonded coating/lining, delivering barrier protection with high mechanical strength with a reinforced film to bridge and seal against low pressure forces of effective lateral earth pressure, moisture vapor transmission (MVT), hydrostatic head pressure, and inflow and infiltration (I&I) once cured; while protecting from effluent and H2S. Design thickness herein also accounts for long term performance; as unintentionally there may be circumstances that may prevent bonding in certain areas that an engineered Structural Epoxy is designed to bridge (with limitations), whereas non-structural coatings may not. Not intended: excessive or high-pressure forces and loading, or other force considerations for full structural reinstatement without a qualified assessment with calculated, verified and adjusted structural thickness calculations performed and certified by a registered Professional Engineer (film or system thicknesses may change depending on types of forces, force values and other variables, engineering assessments and calculations).

Types of Structural Epoxy lining for concrete Work required include but are not necessarily limited to the following:

1. Hydraulic water plug
2. Cementitious repair mortar
3. Epoxy cementitious resurfacer
4. Structural epoxy lining
5. Miscellaneous materials

B. Coordination:

1. Coordinate surface preparation of substrates to avoid later difficulty or delay in performing the Work of this Section.
2. Review installation procedures under other Sections and coordinate the installation of items that must be installed prior to application of the Structural Epoxy lining.
3. The Contractor shall coordinate with Engineer regarding the availability of work areas, completion times, safety, access, and other factors which can impact plant operations.

C. Related Sections:

1. Section 01300, Submittals
2. Section 03300, Cast-in-Place Concrete
3. Section 03400, Precast Concrete
4. Section 03640, Chemical Grouting
5. Section 03706, Concrete Repair

1.2 REFERENCES

A. This Section contains references to the governing standards and documents listed below. They are a part of this Section as specified and modified; the current version shall apply unless otherwise noted. In case of conflict between the requirements of this section and those of the listed documents, the more stringent of the requirements shall prevail.

American Concrete Institute, (ACI)

1. ACI 301 – Specifications for Structural Concrete

ASTM International, (ASTM)

2. ASTM C 868 – Standard Test Method for Chemical Resistance of Protective Linings
3. ASTM C 1583/1583M – Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)

4. ASTM D 4060 – Standard Test Method for Abrasion Resistance of Organic Linings by the Taber Abraser

5. ASTM D 4285 – Standard Test Method for Indicating Water or Oil in Compressed Air

6. ASTM D 4414 – Standard Practice for Measurement of Wet Film Thickness by Notch Gages

7. ASTM D 7682 – Standard Test Method for Replication and Measurement of Concrete Surface Profiles Using Replica Putty

International Concrete Repair Institute, (ICRI)

8. Guideline No. 310.1R – Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion

9. Guideline No. 310.2 – Selecting and Specifying Concrete Surface Preparation for Sealer, Linings, and Polymer Overlays

NACE International, (NACE)

10. NACE SP0188 – Standard Practice for Discontinuity (Holiday) Testing of Protective Linings

11. NACE No. 6/SSPC-SP13 – Surface Preparation of Concrete

Occupational Safety and health Administration, (OSHA)

12. Safety and health Standards (29 CFR 1910/1926)

SSPC: The Society for Protective Coatings, (SSPC)

13. SSPC-SP13/NACE No. 6 – Surface Preparation of Concrete

14. SSPC-Guide 12 – Guide for Illumination of Industrial Painting Projects

B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of receipt of Bids. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents, the last version of the document before it was discontinued.

1.3 SUBMITTALS

A. In accordance with the procedures and requirements set forth in the General Conditions and Section 01300 entitled "Submittals", the Contractor shall submit all required information as specified herein.

B. Shop Drawings: Submit for approval prior to commencing any Work:

1. Manufacturer's project reference lists with coating systems specified herein.

2. Product Data Sheets: Copies of current technical data for each component specified and applied as outlined in this Section.

3. Safety Data Sheets: Copies of current SDS for any materials brought on-site including all clean-up solvents, repair or resurfacing mortars and lining materials.

4. Qualification Data: Approved Installer Certification from manufacturer.

5. Performance Testing Reports: Copies of test data for the entire physical, chemical, and permeation properties listed herein and as outlined within this Section.

6. Installation Instructions: Manufacturer's written installation instructions for the materials specified in this Section.

C. Product Substitution: No substitutions permitted.

D. Jobsite Reports: Submit at the completion of Work

1. Daily Reports: Include surface preparation, substrate conditions, ambient conditions application procedures, lining materials applied, material quantities, material batch number(s), description of work completed and location thereof.

2. Quality Control Reports: Include all quality control testing and physical specimens.

3. Contractor shall maintain a copy of records until the expiration of the specified warranty period.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications:

1. Contractor shall be a certified Applicator by the Structural Epoxy manufacturer prior to bid date. Submit proof of Applicator certification by manufacturer to Engineer.

2. Installation equipment shall be acceptable to the Structural Epoxy manufacturer. If spraying Structural Epoxy, Applicator must utilize equipment approved by Structural Epoxy manufacturer.

3. Applicator shall establish quality control procedures and practices to monitor phases of surface preparation, storage, mixing, application, and inspection throughout the duration of the project. Contractor to provide a fulltime, on-site person whose dedicated responsibilities will include quality control of the Structural Epoxy linings and completed manufacturing certification training.

4. Applicator's quality control procedures and practices must include the following items:

a. Training of personnel in the proper surface preparation requirements.

b. Training of personnel in the proper storing, mixing, and application and quality control testing of the Structural Epoxy linings.

c. If spraying, training of personnel with the spray equipment to ensure proper film build, film quality, and ratio control.

B. Mock-Ups:

1. Prior to the installation of the Structural Epoxy lining and auxiliary system components, but after Engineer's approval of the Samples and Shop Drawings, install 32 square foot stepped-back mock-ups of the systems showing surface preparation and each system component in an area selected by Engineer to show representative installation of the Work.

2. Engineer shall approve the mock-up before the start of Work.

3. Retain and protect mock-ups during construction as one standard for judging completed corrosion protection lining Work. Do not alter mock-ups after approval by Engineer.

4. Contractor shall build as many mock-ups as required to achieve Engineer's acceptance of the corrosion protection lining.

5. The approved mock-up shall be considered the acceptable minimum standard of quality.

6. Any corrosion protection lining Work that proceeds without approved mock-ups will not be accepted by the Engineer and removed at no cost to the Owner.

C. Pre-Installation Conference:

1. Before erecting mock-ups Contractor, Installer and technical representative of the corrosion protection lining manufacturer shall meet on-site with Engineer to discuss approved products and workmanship to ensure proper application of the corrosion protection lining components and substrate preparation requirements.

2. Review foreseeable methods and procedures related to the Structural Epoxy lining of coating Work including but not necessarily limited to the following:

a. Review Project requirements and the Contract Documents.

b. Review required submittals, both completed and yet to be completed.

c. Review status of substrate Work, including approval of surface preparations and similar considerations.

d. Review requirements of on-Site quality control testing and requirements for preparing Site Quality Control Report as specified herein.

e. Review availability of materials, tradesmen, equipment and facilities needed to make progress and avoid delays.

f. Review required inspection and testing.

g. Review environmental conditions, other Project conditions, and procedures for coping with unfavorable conditions.

h. Review regulations concerning code compliance, environmental protection, health, safety, fire and similar considerations.

i. Review procedures required for the protection of the Structural Epoxy lining during the remainder of the construction period.

3. Record the discussions of the Pre-Installation Conference and the decisions and agreements or disagreements reached and furnish a copy of the minutes to each party attending. Record any revision or changes agreed upon, reasons therefore, and parties agreeing or disagreeing with them.

4. Reconvene the conference at the earliest opportunity if additional information must be developed in order to conclude the subjects under consideration.

D. Performance Criteria: Structural Epoxy lining shall be capable of withstanding under constant exposure to raw wastewater, permeation from hydrogen sulfide and other sewer gases, and attack from organic acids generated by microbial sources with no adverse effects; cured film at specified thickness must withstand negative side film forces from inflow and infiltration. Products must have sufficient field history and accelerated laboratory testing to substantiate product viability for these exposures.

E. Source Quality Control: Provide each component of Structural Epoxy lining produced by a single manufacturer, including recommended repair mortar, repair overlay (resurfacer), base coat and topcoat materials.

F. Reference Standards: Comply with applicable provisions and recommendations of all standards listed in Section 1.2 except as otherwise shown or specified.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery of Materials:

1. Deliver material in manufacturer's original, unopened and undamaged packages.

2. Clearly identify manufacturer's, brand name, contents, color, batch number, and any personal safety hazards associated with the use of or exposure to the materials on each package.

3. Packages showing indications of damage that may affect condition of contents are not acceptable.

B. Storage of Materials:

1. Materials shall be stored in accordance with manufacturer's recommendations in enclosed structures and shall be protected from weather and adverse temperature conditions. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life as defined by the manufacturer shall be removed promptly from the site. Store all materials only in area or areas designated by the Engineer solely for this purpose.

2. Store in original packaging under protective cover and protect from damage.

3. Stack containers in accordance with manufacturer's recommendations.

C. Handling of Materials: Handle materials in such a manner as to prevent damage to products or finishes.

1.6 JOB CONDITIONS

A. Environmental Requirements:

1. Proceed with Work only when temperature and moisture conditions of substrates, air temperature, relative humidity, dew point and other conditions comply with the Structural Epoxy lining manufacturer's written recommendations and when no damaging environmental conditions are forecasted for the time when the material will be vulnerable to such environmental damage. Record all such conditions and include in final Site Quality Control Report.

2. Maintain substrate temperature and ambient temperature before, during and after installation above 45°F (8°C) and rising in accordance with Structural Epoxy lining material manufacturer's instructions.

3. Provide adequate ventilation during instillation and full curing periods of the Structural Epoxy lining.

4. Structural Epoxy lining shall not be applied when ambient air temperature is within 5°F (3°C) of the dew point.

5. Structural Epoxy lining shall not be applied when relative humidity is outside of material manufacturer's recommendations. Do not prepare surfaces or apply materials in rain, snow, fog, mist, or otherwise inclement weather as per material manufacturer's instructions.

B. Dust and Contaminants: Protect work and adjacent areas from excessive dust and airborne contaminates during Structural Epoxy lining application and curing. Schedule Work to avoid excessive dust and airborne contaminants.

1.7 WARRANTY

A. Structural Epoxy lining Manufacturer shall warranty its products as free from material defects for a minimum period of three (3) years. Provide associated Warranty Certificate.

B. Contractor shall warranty the installed Structural Epoxy lining system as free from workmanship defects for a minimum period of three (3) years.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products and Manufacturer:

Products and Manufacturer:

1. Materials specified are those that have been evaluated for the specific service. Products of Tnemec www.tnemec.com ,+1-800-863-6321 are specified as a standard of quality and basis of design. Local representative Erik Otten 708-822-8323, eotten@tnemec.com

2. The specified basis of design is intended to provide the longest service life possible, lowest life cycle cost, and most sustainable solution.

B. Contractor shall provide all accessory components, as specified or recommended by the manufacturer for optimal application of the Structural Epoxy lining system's adhesion to substrate and long-term service performance.

C. Hydraulic Water Plug:

1. Active leak control materials are to be utilized for I&I abatement, to stop leaks, running water, infiltration, and other water stop needs. Material must be a quick setting, hydraulic cement compound designed for minor patching, and as a leak stopper and water plug which stops running water and/or seepage through concrete. Materials must be designed to set rapidly, in dry powder form, with no prior mixing of water needed (if necessary), to apply directly to active leaks under hydrostatic pressure in manholes or related structures, in accordance with the manufacturer's recommendations.

D. Cementitious Repair Mortar:

1. Rapid-setting, cementitious repair mortar when concrete is deteriorated greater than a depth of 1" and when recommended by the Manufacturer to rehabilitate and restore concrete and provide level substrate for application of the protective lining. Cementitious repair mortar shall be a rapid-setting, non-shrinking resurfacing material capable of spray-transfer. Material shall have similar CLTE properties as concrete.

E. Epoxy Cementitious Resurfacer:

1. Epoxy cementitious resurfacer shall be an epoxy-modified, aggregate reinforced material with for surfacing, patching and filling voids and bugholes in concrete.

The material shall be suitable for the application down to 1/16 inch (1.6 mm) thickness and be capable of spray-transfer.

2. Epoxy cementitious resurfacer shall exhibiting high bond strength and high mechanical strengths. Initial set time occurs early (4 hours @ 77F) to allow for Structural Epoxy coating. The Epoxy cementitious resurfacer shall not require for any further preparation or conditioning within 36 hours (at 77F) to accept epoxy top coats.

F. Structural Epoxy Lining:

1. Structural Epoxy shall be available in both trowel-version and spray-version to assist with various application needs or applications in limited access areas or perform any touch-ups.

2. Structural Epoxy shall be 100% solids, highly thixotropic microfiber-reinforced, applied epoxy polycyclic polymer protective barrier material specifically designed to protect concrete and masonry surfaces in severe wastewater environments, including H2S attack, while sealing inflow and infiltration (I&I).

3. Structural Epoxy is to provide protection from H2S corrosion and seal from I&I with applied and bonded high build Structural Epoxy; Structural Epoxy film thickness specified herein is designed and intended for applied and bonded coating, delivering barrier protection lining with high mechanical strength and a reinforced film to bridge and seal against moisture vapor transmission (MVT), hydrostatic head pressure, fine root intrusion, and seal inflow and infiltration (I&I).

4. Structural Epoxy lining must be a verified technology of US Environmental Protection Agency's, Environmental Technology Verification Program for Infrastructure Rehabilitation Technologies (EPA ETV).

5. Structural Epoxy lining shall be capable of achieving up to 375 mil. (3/8 inch) sag resistance, vertical and overhead.

6. Structural Epoxy lining must have a long open recoat window without the need for abrasive or mechanical preparation for simple repair requirements.

7. Structural Epoxy lining must be self-priming, able to be applied direct-to-concrete (DTC), requiring no primer.

8. Structural Epoxy lining must be able to bond to saturated-surface-dry (SSD) concrete, with moisture and relative humidity tolerances up 85% and capable to fully cure underwater.

PART 3 - EXECUTION

3.1 GENERAL

A. All work shall be in strict accordance with the specifications and recommendations including mixing, handling, storage, and application of all products as required and in accordance with manufacturer's published technical instructions, safety data sheets, including manufacturer's published PDS, design guidelines, and/or other written specifications.

B. Contractor shall provide, erect, and maintain all required hoists, scaffolding, staging and planking, and perform all access related hoisting work required to complete the Work of this Section as specified.

C. Contractor shall cover or otherwise protect finish work or other surfaces not being coated within the scope of this Section. Contractor shall erect and maintain protective tarps, enclosures and/or masking to contain debris, including dust or other airborne particles from surface preparation or application activities. This may include the use of dust or debris collection apparatus as required at no additional cost to Owner.

3.2 EXAMINATION

A. Contractor shall examine the areas and conditions under which the Structural Epoxy coating Work is to be performed in accordance with SSPC-SP13/NACE No. 6, and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work.

B. Commencement of the Work of this Section shall indicate that the substrate and other conditions of installation are acceptable to the Contractor and his Applicator and will produce a finished product meeting the requirements of the Specifications. All defects resulting from accepted conditions shall be corrected by Contractor at his own expense.

C. Stopping Active Leaks: After surface cleaning, any visible leaks or other water ingress shall be reported to the Engineer. Any water infiltration through minor leaks must be stopped using specified hydraulic water stop; should flows be aggressive, a chemical grout method shall be used in accordance with Section 03640. Surface and grouting material may require additional surface preparation prior to application of Structural Epoxy lining.

D. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures do exist, coating installation should be scheduled when the temperatures are falling versus rising.

3.3 PREPARATION

A. Concrete surfaces to receive Structural Epoxy coating shall be cast with a Smooth Form Finish in accordance with ACI 301. Surfaces shall not be rubbed, sacked, troweled or otherwise finished in any manner that will obscure or cover the parent concrete surface with materials other than materials as specified in this Section.

B. Allow cast-in-place concrete to cure for a minimum of 28 days at 75°F (24°C) and with adequate air movement before installing the corrosion protection lining system.

C. All surface washing, abrasive blasting, waterjetting, grinding, patching, filling and preparation shall be completed by the Applicator in accordance with the Structural Epoxy lining Manufacturer's recommendations.

D. Substrate: Concrete surfaces to be coated shall be free of curing compounds and form release agents, laitance and foreign particles that may inhibit bonding. Prior to start of Structural Epoxy coating systems application, pre-clean as required, and inspect the substrate in accordance with SSPC-SP13/NACE No. 6, Severe Service. Surface preparation procedures shall be in accordance with NACE No. 6/SSPC-SP13 and ICRI Guideline No. 310.2. Surface preparation shall expose aggregate and obtain a uniform surface texture resembling the minimum recommended concrete surface ICRI-CSP profile.

E. Level or grind concrete substrates to produce a uniform and smooth surface, including removal of all sharp edges, ridges, form fins, and other concrete protrusions.

F. Surface preparation of the substrate must be achieved immediately prior to utilizing any repair material and/or coating/lining material that will require bond to the substrate, re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.

G. Surface preparation will be required on existing and new concrete.

H. The objective of surface preparation is to produce a surface that is suitable for application and adhesion of the specified repair materials and coating/lining material. Surfaces therefore are to be free of contaminants and loosely adhering or unsound concrete, and should provide a dry, sound, uniform substrate suitable for the application of repair and coating/lining material.

I. Structures to receive Structural Epoxy lining system must be capable of withstanding imposed loads. All oil, grease, waste and chemical contaminants must be removed from the surface of the concrete prior to preparation in accordance with NACE No. 6/SSPC-SP13. Concrete surfaces must be sound and capable of supporting the Structural Epoxy Lining system as determined by the engineer. Surface preparation requirement is to expose a sound, uniform surface texture confirming to the minimum recommended ICRI-CSP amplitude. The appropriate cementitious repair mortar or epoxy cementitious resurfacer material shall be applied to the entire, prepared surface to level surface suitable for coating.

J. Metal Application: Remove all visible contaminants per SSPC-SP1. Prepare the surfaces in accordance with SSPC/NACE surface preparation standards per the Manufacturer's instructions.

3.4 APPLICATION

A. Structural Epoxy lining systems shall be installed when ambient air and surface temperature is above 45°F. The substrate temperature shall be at least 5°F (3°C) above the dew point. Condition the material between 70-80°F (21-27°C) for 24 hours prior to

use. Application when temperatures outside of this range will require written instruction from the Manufacturer and approval of the Engineer.

B. Application in direct sunlight and/or with rising surface temperatures is not advised, as this may result in blistering of the materials due to expansion of entrapped air or moisture in the concrete (induced outgassing). In such cases, it will be necessary to postpone the application until later in the day when the temperature of the substrate is falling or take precautionary steps as recommended by the Manufacturer. Concrete surfaces that have been in direct sunlight should be shaded for at least 24 hours prior to application. Consult the Manufacturer for application schedule guidelines specific to temperature conditions and possible sealer application recommendations to reduce outgassing.

C. Hydraulic Water Plug: Epoxytec Mortartec Hydrxx-1 or Hydrxx-3 hydraulic cement water plug shall be used for low pressure active leak stopping.

1. Cure – Press firmly pre-mixed paste or dry material into place, maintaining pressure until the material begins to harden and the leak is stopped. Continue until all active leaks cease.

D. Cementitious Repair Mortar: Tnemec Series 217 MortarCrete cementitious repair mortar shall be used for structural repairs or surface repairs exceeding a depth 1" in accordance with Manufacturer's written instructions as outlined in the product data sheet and application guide.

1. Thickness – Minimum 1" inch as required to re-establish original plane.

2. Cure – Ensure that the mortar while curing will remain moist, covered from direct sunlight, and if needed, covered by damp coverings to avoid mortar dry-out and to optimize curing.

3. Re-blast – Clean and profile the surface to remove the laitance layer and to uniformly profile the surface to produce a minimum ICRI CSP 6 surface profile amplitude.

E. Epoxy Modified Mortar Resurfacer: Tnemec Epoxytec Mortartec shall be applied to all surfaces to be coated to restore the concrete surface to a contiguous plane and to reduce outgassing of the concrete. Epoxy Modified Mortar shall be applied in accordance with Manufacturer's written instructions as outlined in the product data sheet and application guide.

1. Thickness – Epoxy Modified Mortar shall be applied to a minimum thickness of 1/16", maximum 1" inch. Feather edge capable to 1/32".

2. Cure - Ensure that the mortar while curing will remain moist, covered from direct sunlight, and if needed, covered by damp coverings to avoid mortar dry-out and to optimize curing.

F. Structural Epoxy Lining: Tnemec Epoxytec CPP Trowel-Liner epoxy lining. Structural Epoxy coating shall be applied and in accordance with Manufacturer's written instructions as outlined in the product data sheet and application guide.

1. Thickness – Epoxy lining shall be applied to a minimum thickness of 250 mils (1/4" inch) dry film thickness.

3.5 FIELD QUALITY CONTROL, INSPECTION AND TESTING

A. Contractor to perform the quality control procedures listed below in conjunction with the requirements of this Section.

B. Inspect all materials upon receipt to ensure that all are supplied by the approved Manufacturer.

C. Surface pH Testing: The pH of cement particles collected from the concrete substrate will be measured using pH indicating paper or pH meter. The pH testing is to be performed once every 500 square feet (5 square meters) for the first 500 square feet (46 square meters) and once every 1000 square feet (93 square meters) thereafter. Acceptable pH values shall be a minimum 9.0 as measured using color indicating pH paper with readable color calibrations and a scale at whole numbers or pH meter.

1. Collect 0.5 grams of cement paste from the surface and mix 1.0 mL of distilled or purified water into a vile; close lid and shake for 30 seconds and let mixture strand for 2 minutes.

2. Insert the pH paper into mixture and determine pH by comparing to the scale and record or insert the pH meter into the mixture and record the stabilized pH.

D. Surface Profile: Inspect and record substrate profile (anchor pattern) at least once every 50 square feet (5 square meters). If applying Structural Epoxy direct-to-concrete (DTC), surfaces shall be profiled equal to the CSP 5 amplitude as recommended by the coating manufacturer in accordance with ICRI Guideline 310.2 and SSPC-SP13/NACE No. 6; for Cementitious Repair Mortar work, surfaces shall be profiled equal to the CSP 6.

1. Replication of the concrete surface profile can also be performed at least once every 500 square feet (46 square meters) using replica putty in accordance with ASTM D7682.

E. Measure and record ambient air temperature once every two hours of each work shift using a thermometer and measure and record substrate temperature once every two hours using an infrared or other surface thermometer.

F. Measure and record relative humidity and dew point temperature every two hours of each work shift using a sling psychrometer in accordance with ASTM E 337.

G. Provide verification of correct mixing of coating materials in accordance with the Manufacturer's instructions.

H. Inspect and record that the "pot life" of coating materials is not exceeded during installation.

I. Verify curing of the coating materials in accordance with the Manufacturer's instructions.

J. Dry-Film Thickness:

1. Wet-Film Thickness shall be taken every 100 square feet (9 square meters) in accordance with ASTM D 4414 and recorded.

2. The Dry-Film Thickness can be determined using a surface area calculation for material consumption.

K. High-Voltage Holiday (Spark) Testing: Upon full cure, the installed lining system shall be checked by high voltage spark detection in accordance with NACE SP0188 and the Manufacturer's printed application guide to verify a pinhole-free surface. Areas which do not pass the spark detection test shall be corrected at no cost to the Owner.

L. Contractor is responsible for keeping the Engineer informed of all progress so that Engineer may provide additional quality control at his discretion.

M. Inspection by the Engineer or others does not absolve the Contractor from his responsibilities for quality control inspection and testing as specified herein or as required by the Manufacturer's instructions.

3.6 ACCEPTANCE CRITERIA

A. All surfaces shall be prepared, applied, and tested in accordance with the specification and referenced standards herein.

3.7 ADJUSTMENTS AND CLEANING

A. At the completion of the Work, Contractor shall remove all materials and debris associated with the Work of this Section.

B. Clean all surfaces not designated to receive Structural Epoxy coating. Restore all other work in a manner acceptable to Engineer.

C. All finished Structural Epoxy coating shall be protected from damage until Final Acceptance of the Work. Structural Epoxy coating damaged in any manner shall be repaired or replaced at the discretion of Engineer, at no additional cost to Owner.

END OF SECTION#

PRODUCT DATA SHEET

Mortartec Ceramico

EPOXYTEC

PRODUCT PROFILE

GENERIC DESCRIPTION
Epoxy Modified Mortar

COMMON USAGE
Epoxytec Mortartec Ceramico is a highly advanced, formulated epoxy blend incorporating cutting-edge epoxide technology with proprietary engineered curing, combined with a specific balance of Portland cement, high density graded silica aggregate, and synthetic fibers to produce one of the most coveted mortars in the industrial market today. Once cured, it results in a smooth mortar application with the one of the hardest mortar surfaces in the industry. Designed to take early topcoats of epoxy coatings without the need for further preparation. Mortartec Ceramico is industrial-grade and exhibits excellent performance properties with incredible adhesive properties, enhanced barrier sealing capabilities assisting with minimizing outgassing.

COLORS
Gray

COATING SYSTEM

PRIMERS
Self-priming

TOPCOATS
Series 451, 454, 456, 457, Uroflex, Uroflex 61.

SURFACE PREPARATION

CONCRETE
Allow new cast-in-place concrete to cure a minimum of 28 days at 75°F (24°C). Verify concrete dryness in accordance with ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" (moisture vapor transmission should not exceed three pounds per 1,000 square feet in a 24 hour period), F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes" (relative humidity should not exceed 80%), or D 4263 "Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method" (no moisture present). Prepare concrete surfaces in accordance with NACE No. 6/SSPC-SP13 Joint Surface Preparation Standards and ICRI Technical Guidelines. Abrasive blast, shot-blast, water jet or mechanically abrade concrete surfaces to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide a minimum ICRI-CSP 5 surface profile.

CMU
Allow mortar to cure for 28 days. Level protrusions and mortar spatter.

PAINTED SURFACES
Not recommended.

ALL SURFACES
Must be clean, dry and free of oil, grease and other contaminants.

TECHNICAL DATA

VOLUME SOLIDS
100%

RECOMMENDED DFT
Parge Coat: 1/16" to 1" (62.5 to 1000 mils) per lift
Feather-Edge Capable: 1/32"(31.25 mils)

CURING TIME

Temperature	To Recoat	To Touch	Full Cure
77°F (24°C)	3 hours	3-4 hours	36 hours

VOLATILE ORGANIC COMPOUNDS (VOCs)
0.00 lbs/gallon (0 grams/litre)

THEORETICAL COVERAGE
1,604 mil sq ft/gal (39.3 m²/L at 25 microns). See APPLICATION for coverage rates.

TECHNICAL DATA *(cont.)*

PART OF THE TNEMEC FAMILY OF COATINGS 123 West 23rd Avenue, North Kansas City, MO 64116 USA +1 816.473.3400 epoxytec.com

NUMBER OF COMPONENTS
Three: Part A (epoxy), Part B (amine) and Part C (cement blend).

PACKAGING

	Part A	Part B	Part C	Yield (mixed)
UniPack †	1 gallon jug	16 oz jar	40 lb bag	2.73 gallons (10.3 L)

† All components are packaged in a 5 gallon pail.

STORAGE TEMPERATURE
Minimum 40°F (4°C) Maximum 110°F (43°C)
For optimum handling and application characteristics, all material components should be stored or conditioned between 70°F to 80°F (21°C to 27°C) 48 hours prior to use. Protect Part A and Part B from freezing; discard if frozen. Protect Part C from moisture; store in dry environment off ground.

TEMPERATURE RESISTANCE
(Dry) Continuous 170°F (77°C) Intermittent 200°F (93°C)

SHELF LIFE
12 months at recommended storage temperature.

FLASH POINT - SETA
>230°F (110°C)

HEALTH AND SAFETY
This product contains chemical ingredients which are considered hazardous. Read container label warning and Safety Data Sheet for important health and safety information prior to the use of this product. **Keep out of the reach of children.**

APPLICATION

COVERAGE RATES

Thickness	Coverage/Kit (0.39 ft³) (theoretical)
1/16" (62.5 mils)	70.1 sq ft (6.51 m²)
1/8" (125 mils)	35.1 sq ft (3.26 m²)
1/4" (250 mils)	17.5 sq ft (1.6 m²)
1/2" (500 mils)	8.75 sq ft (0.81 m²)
3/4" (750 mils)	5.9 sq ft (0.55 m²)
1" (1000 mils)	4.4 sq ft (0.41 m²)

MIXING
Pour liquid Part B into a new empty bucket. Any remaining Part B shall be removed by adding 3 to 5 oz. (88.7 to 147.9 ml) of liquid Part A, re-sealing lid and shaking quart can for 5 to 10 seconds; pour contents into bucket. Add remaining liquid Part A into bucket and blend for 30 seconds. Under agitation, slowly sift Part C powder into the mixed liquids taking care not to deposit entire contents of Part C at once. Mix for 2 minutes or until the cement-sand is thoroughly wetted and a smooth consistency is achieved. **Important: Do not add additional Part C.**

THINNING
If Mortartec Ceramico begins to thicken in pail during use, drill mix for an additional 20 to 30 seconds to drop the viscosity. Do not add additional water.

Hand Application: Do not add water.

Low-Pressure Spray Application: To transfer the material, may thin up to 6 oz. (177.4 ml) per kit. **Note:** Use only potable water.

APPLICATION
When using Mortartec Ceramico, surface should be "pre-wet" or dampened with potable water to a Saturated Surface Dry (SDD) condition; the concrete is darkened by water but there is no pooling on the surface. Do not oversaturate the surface.

APPLICATION (cont.)

APPLICATION EQUIPMENT
Mortar Hawk, steel, stiff concrete finishing trowels, broad knives and rubber floats are recommended.

APPLICATION
For troweling inside and outside corners, the use of a radius or margin trowel is recommended. Material can be transferred to the surface by utilizing hydraulic spray equipment (i.e. WIWA 410 9:1 or 600 12:1 pump, Graco M680 Mortar Pump 10:1, Graco ToughTek Piston Pump) followed by troweling to seal the material. No special ACI 308 curing requirements - ambient cure only. For a smoother finished appearance, trowel licks may be reduced by using a 1/4" (6.35 mm) nap roller cover lightly dampened with water over the sealed Ceramico material. **Note:** If white liquid is brought to the surface during this process, Ceramico is being overworked and/or oversaturated. Overworking or oversaturating the surface may have an adverse effect on the adhesion of subsequent coatings applied. Let Ceramico cure and remove surface deposit using concrete rub brick.

POT LIFE
1 hour at 77°F (24°C)

SURFACE TEMPERATURE
Minimum of 45°F (7°C), optimum 65°F to 80°F (18°C to 27°C), maximum of 90°F (32°C). Application should be performed out of direct sunlight and during times when the surface temperature of the concrete is stable or in a descending pattern. To minimize outgassing, concrete temperature should be stabilized or in a descending temperature mode.

MATERIAL TEMPERATURE
For optimum application, handling and performance, the material temperature during application should be between 70°F and 90°F (21°C and 32°C). Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten pot life.

CLEANUP
Flush and clean all equipment immediately after use with warm water.

TNEMEC

PRODUCT DATA SHEET

PERMA-GLAZE SERIES G435

PRODUCT PROFILE

GENERIC DESCRIPTION Modified Polyamine Epoxy

COMMON USAGE A versatile, thick film, 100% solids, abrasion-resistant lining specifically designed for domestic wastewater immersion and fume environments. Series 435 provides low permeation to H_2S gas, protects against MIC and provides chemical resistance to severe wastewater environments. Contains micro-fiber reinforcement for improved film integrity.

COLORS 5020 Gray, 5023 Beige. **Note:** Epoxies chalk with extended exposure to sunlight.

FINISH Gloss

COATING SYSTEM

SURFACER/FILLER/PATCHER Series 215, 217, 218.

PRIMERS **Steel:** Self-priming or Series 61, L69, L69F, N69, N69F, V69, V69F. **Note:** Series 61 is recommended for use in mesophilic anaerobic digesters and other severe exposures. Contact your Tnemec representative for more information. **Note:** Series 61, L69, L69F, N69, N69F, V69, or V69F must be scarified after 7 days before topcoating with G435.
Concrete: Self-priming or Series 61, N69, N69F, 201. **Note:** Series 201 must be scarified after 24 hours before topcoating with G435. **Note:** Series 61, N69, or N69F must be scarified after 7 days before topcoating with G435. **Note:** Series 61 is recommended for use in mesophilic anaerobic digesters and other severe exposures. Contact your Tnemec representative for more information.

INTERMEDIATE Series 434 or 436 (optional)

Note: To minimize pinhole formation in the topcoat, it is recommended that concrete substrates be fully resurfaced and/or primed prior to topcoat application.

SURFACE PREPARATION

Prepare surfaces by method suitable for exposure and service. Refer to the appropriate primer data sheet for specific recommendations.

STEEL SSPC-SP5/NACE 1 White Metal Blast Cleaning with a 3.0 mil minimum angular anchor profile.

CONCRETE Allow new cast-in-place concrete to cure a minimum of 28 days at 75°F (24°C). Verify concrete dryness in accordance with ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" (moisture vapor transmission should not exceed three pounds per 1,000 square feet in a 24 hour period), F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes" (relative humidity should not exceed 80%), or D 4263 "Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method" (no moisture present). Prepare concrete surfaces in accordance with NACE No. 6/SSPC-SP13 Joint Surface Preparation Standards and ICRI Technical Guidelines. Abrasive blast, shot-blast, water jet or mechanically abrade concrete surfaces to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide a minimum ICRI-CSP 5 surface profile. Large cracks, voids and other surface imperfections should be filled with a recommended filler or surfacer.

OTHER SUBSTRATES Contact your Tnemec representative or Tnemec Technical Services.

ALL SURFACES Must be clean, dry and free of oil, grease and other contaminants.

TECHNICAL DATA

VOLUME SOLIDS 100% (mixed)

RECOMMENDED DFT **Steel:** 15.0 to 40.0 mils (380 to 1015 microns) in one or two coats.
Concrete: 30.0 to 40.0 mils (760 to 1015 microns) in one or two coats.
High-Build Option: 40.0 to 125.0 mils (1015 to 3175 microns) in one or two coats.
Glaze Coat Option (over Series 434 or 436): 15.0 to 20.0 mils (380 to 510 microns).
Note: Number of coats and thickness requirements will vary with substrate, application method, and exposure. Contact your Tnemec representative.

CURING TIME

Temperature	To Touch	Dry Through	To Place in Service	Max. Recoat
75°F (24°C)	3 hours	14 hours	2 days	7 days
55°F (13°C)	7 hours	30 hours	3 days	7 days

Note: If more than 7 days have elapsed between coats, the Series 435 coated surface must be mechanically abraded before topcoating. Curing time will vary with surface temperature, air movement, humidity and film thickness. **Note:** Use "To Touch" cure information for minimum recoat times if succeeding coats are spray-applied and "Dry Through" if succeeding topcoats are applied by roller or brush.

VOLATILE ORGANIC COMPOUNDS EPA Method 24
Unthinned: 0.32 lbs/gallon (38 grams/litre)

HAPS 0.1 lbs/gal solids

THEORETICAL COVERAGE 1,604 mil sq ft/gal (39.4 m²/L at 25 microns). See APPLICATION for coverage rates.

NUMBER OF COMPONENTS Two: Part A (Epoxy) and Part B (Amine)

MIXING RATIO By volume: One (Part A) to one (Part B)

PERMA-GLAZE | SERIES G435

PACKAGING

	Part A (partial fill)	Part B (partial fill)	When Mixed
Large Kit †	5 gallon pail	5 gallon pail	8 gallons (30.28 L)
Medium Kit	3 gallon pail	6 gallon pail	5 gallons (15.14 L)
Small Kit	1 gallon can	1 gallon can	1 gallon (3.79 L)

† Plural Component application only.

NET WEIGHT PER GALLON 10.85 ± 0.25 lbs (4.92 ± 0.11 kg) (mixed)

STORAGE TEMPERATURE Minimum 40°F (4°C) Maximum 110°F (43°C)
For optimum handling and application characteristics, both material components should be stored or conditioned between 70°F and 80°F (21°C and 27°C) 48 hours prior to use.

TEMPERATURE RESISTANCE (Dry) Continuous 275°F (135°C) Intermittent 300°F (149°C)

SHELF LIFE 12 months at recommended storage temperature.

FLASH POINT - SETA Part A: >230°F (110°C) Part B: 184°F (84°C)

HEALTH & SAFETY This product contains chemical ingredients which are considered hazardous. Read container label warning and Safety Data Sheet for important health and safety information prior to the use of this product.
Keep out of the reach of children.

APPLICATION

COVERAGE RATES Before commencing, obtain and thoroughly read the Series 435 Surface Preparation and Application Guide.

	Conventional Build (Spray, Brush, or Roller)			High-Build (Spray Only)		
	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)
Minimum	15.0 (380)	15.0 (380)	107 (10.0)	40.0 (1015)	40.0 (1015)	40 (3.7)
Maximum	40.0 (1015)	40.0 (1015)	40 (3.7)	125.0 (3175)	125.0 (3175)	13 (1.2)

Note: Recommended DFT will depend on substrate condition and system design. Refer to Recommended DFT section on page 1. Allow for overspray and surface irregularities. Film thickness is rounded to the nearest 0.5 mil or 5 microns. Application of coating below the minimum or above maximum recommended dry film thicknesses may adversely affect coating performance.

MIXING Mix the entire contents of Part A and Part B separately. Scrape all of the Part A into the Part B using a flexible spatula. Use a variable speed drill with a PS Jiffy blade and mix the blended components for a minimum of two minutes. During the mixing process, scrape the sides and bottom of the container to ensure all of Parts A and B are blended together. Apply the mixed material within pot life limits after agitation. **Note:** A large volume of material will set up quickly if not applied or reduced in volume. **Caution: Do not reseal mixed material. An explosion hazard may be created.** Mixing ratio is one to one by volume.

THINNING **DO NOT THIN**

POT LIFE 25 to 30 minutes at 70°F (21°C) 15 to 20 minutes at 80°F (27°C)
Material temperatures above 80°F (27°C) will significantly reduce the spray and pot life.

SPRAY LIFE 20 to 25 minutes at 75°F (24°C)
Flush the pump and lines immediately after spraying.

APPLICATION EQUIPMENT **Airless Spray**

Pump Size	Tip Orifice	Atomizing Pressure	Mat'l Hose ID	Manifold Filter
45:1, 56:1, X50, 68:1 or X60	0.021"-0.025" (533-635 microns)	3400-4000 psi (234-276 bar)	3/8" to 1/2" (9.5 to 12.7 mm)	N/R

Note: Material needs to be gravity fed through a material hopper. Material will not feed through a suction tube.
Roller: Use high quality 3/8" to 1/2" synthetic woven nap roller covers.
Brush: Recommended for small areas only. Use high quality synthetic or nylon bristle brushes.
Plural Component: Please contact your Tnemec representative or Tnemec Technical Service for information.

SURFACE TEMPERATURE Minimum of 50°F (10°C), optimum 65°F to 80°F (18°C to 27°C), maximum of 130°F (54°C). The substrate temperature should be at least 5°F (3°C) above the dew point.

MATERIAL TEMPERATURE For optimum handling and application characteristics, both material components should be stored or conditioned between 70°F and 80°F (21°C and 27°C) 48 hours prior to use. Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten the spray and pot life.

HOLIDAY TESTING If required by project specifications, High Voltage Discontinuity (spark) testing shall be performed using a Tinker & Rasor AP/W High Voltage Holiday Tester. Contact Tnemec Technical Service for voltage recommendations.

CLEANUP Flush and clean all equipment immediately after use with Tnemec's No. 4 Thinner or MEK.

PART 1 - GENERAL

1.1 DESCRIPTION

A. SCOPE:

Applicator shall provide all labor, materials, equipment, incidentals, and quality requirements for concrete for surface preparation, repair or resurfacing with epoxy modified mortar, and modified polyamine epoxy lining work to the entire wall and underside surfaces of the primary clarifiers as shown on drawings and specified herein.

This Section's intent is to provide minimum requirements of an installation of an epoxy modified mortar and modified polyamine epoxy lining system; for the lining of newly installed, existing, and/or defective specified concrete/masonry structures and surfaces exposed to domestic wastewater and/or municipal sanitary sewage. This is to be accomplished by an applied application of performance hybrid epoxy mortar engineered and formulated to undergo curing via Portland cement and epoxide combined, with hardened reinforcement graded silica aggregate, synthetic fibers and silica fume to achieve early development of properties for lining sanitary sewer infrastructure (Epoxy Modified Mortar)

This Section's intent is for concrete and/or other masonry structures which are exposed to or in contact with domestic wastewater service; constituting domestic municipal wastewater and plant treatment and municipal sanitary sewage from collection systems (sanitary sewer and/or stormwater), where sewage contact and exposure to hydrogen sulfide are present (up to 100 ppm). Not intended for non-sewage applications or industrial waste.

Types of resurfacing and lining for concrete Work required include but are not necessarily limited to the following:

1. Hydraulic water plug
2. Epoxy Modified Mortar
3. Modified Polyamine Epoxy lining
4. Miscellaneous materials

B. Coordination:

1. Coordinate surface preparation of substrates to avoid later difficulty or delay in performing the Work of this Section.

2. Review installation procedures under other Sections and coordinate the installation of items that must be installed prior to application of the Epoxy Modified Mortar and Modified Polyamine lining.

3. The Contractor shall coordinate with Engineer regarding the availability of work areas, completion times, safety, access, and other factors which can impact plant operations.

C. Related Sections:

1. Section 01300, Submittals

2. Section 03300, Cast-in-Place Concrete

3. Section 03400, Precast Concrete

4. Section 03640, Chemical Grouting

5. Section 03706, Concrete Repair

1.2 REFERENCES

A. This Section contains references to the governing standards and documents listed below. They are a part of this Section as specified and modified; the current version shall apply unless otherwise noted. In case of conflict between the requirements of this section and those of the listed documents, the more stringent of the requirements shall prevail.

American Concrete Institute, (ACI)

1. ACI 301 – Specifications for Structural Concrete

ASTM International, (ASTM)

2. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars

3. ASTM C 267 - Standard Test Methods for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings and Polymer Concretes

4. ASTM C 293 - Standard Test Method for Flexural Strength of Concrete

5. ASTM C 496 - Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens

6. ASTM C 596 - Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement

7. ASTM C 666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing

8. ASTM D 4258 - Standard Practice for Surface Cleaning Concrete for Coating

9. ASTM D 4414 – Standard Practice for Measurement of Wet Film Thickness by Notch Gages

International Concrete Repair Institute, (ICRI)

10. Guideline No. 310.1R – Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion

11. Guideline No. 310.2 – Selecting and Specifying Concrete Surface Preparation for Sealer, Linings, and Polymer Overlays

NACE International, (NACE)

12. NACE No. 6/SSPC-SP13 – Surface Preparation of Concrete

Occupational Safety and health Administration, (OSHA)

13. Safety and health Standards (29 CFR 1910/1926)

SSPC: The Society for Protective Coatings, (SSPC)

14. SSPC-SP13/NACE No. 6 – Surface Preparation of Concrete

15. SSPC-Guide 12 – Guide for Illumination of Industrial Painting Projects

B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of receipt of Bids. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents, the last version of the document before it was discontinued.

1.3 SUBMITTALS

A. In accordance with the procedures and requirements set forth in the General Conditions and Section 01300 entitled "Submittals", the Contractor shall submit all required information as specified herein.

B. Shop Drawings: Submit for approval prior to commencing any Work:

1. Manufacturer's project reference lists.

2. Product Data Sheets: Copies of current technical data for each component specified and applied as outlined in this Section.

3. Safety Data Sheets: Copies of current SDS for any materials brought on-site including all clean-up solvents, repair or resurfacing mortars and lining materials.

4. Performance Testing Reports: Copies of test data for the entire physical, chemical, and permeation properties listed herein and as outlined within this Section.

5. Installation Instructions: Manufacturer's written installation instructions for the materials specified in this Section.

C. Product Substitution: No substitutions permitted.

D. Jobsite Reports: Submit at the completion of Work

1. Daily Reports: Include surface preparation, substrate conditions, ambient conditions application procedures, lining materials applied, material quantities, material batch number(s), description of work completed and location thereof.

2. Quality Control Reports: Include all quality control testing and physical specimens.

3. Contractor shall maintain a copy of records until the expiration of the specified warranty period.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications:

1. Installation equipment shall be acceptable to the manufacturer. If spraying, Applicator must utilize equipment specifically made for wet spray of cementitious materials.

2. Applicator shall establish quality control procedures and practices to monitor phases of surface preparation, storage, mixing, application, and inspection throughout the duration of the project. Contractor to provide a fulltime, on-site person whose dedicated responsibilities will include quality control of the resurfacer and lining.

3. Applicator's quality control procedures and practices must include the following items:

a. Training of personnel in the proper surface preparation requirements.

b. Training of personnel in the proper storing, mixing, and application and quality control testing of the resurfacer and lining.

c. If spraying, training of personnel with the spray equipment to ensure proper film build, quality, and ratio control.

B. Mock-Ups:

1. Prior to the installation of the resurfacer and lining and auxiliary system components, but after Engineer's approval of the Samples and Shop Drawings, install 32 square foot stepped-back mock-ups of the systems showing surface preparation and each system component in an area selected by Engineer to show representative installation of the Work.

2. Engineer shall approve the mock-up before the start of Work.

3. Retain and protect mock-ups during construction as one standard for judging completed corrosion protection lining Work. Do not alter mock-ups after approval by Engineer.

4. Contractor shall build as many mock-ups as required to achieve Engineer's acceptance of the corrosion protection lining.

5. The approved mock-up shall be considered the acceptable minimum standard of quality.

6. Any corrosion protection lining Work that proceeds without approved mock-ups will not be accepted by the Engineer and removed at no cost to the Owner.

C. Pre-Installation Conference:

1. Before erecting mock-ups Contractor, Installer and technical representative of the corrosion protection lining manufacturer shall meet on-site with Engineer to discuss approved products and workmanship to ensure proper application of the corrosion protection lining components and substrate preparation requirements.

2. Review foreseeable methods and procedures related to the resurfacing and lining Work including but not necessarily limited to the following:

   a. Review Project requirements and the Contract Documents.

   b. Review required submittals, both completed and yet to be completed.

   c. Review status of substrate Work, including approval of surface preparations and similar considerations.

   d. Review requirements of on-Site quality control testing and requirements for preparing Site Quality Control Report as specified herein.

   e. Review availability of materials, tradesmen, equipment and facilities needed to make progress and avoid delays.

   f. Review required inspection and testing.

   g. Review environmental conditions, other Project conditions, and procedures for coping with unfavorable conditions.

   h. Review regulations concerning code compliance, environmental protection, health, safety, fire and similar considerations.

   i. Review procedures required for the protection of the Epoxy Modified Mortar and Modified Polyamine lining during the remainder of the construction period.

3. Record the discussions of the Pre-Installation Conference and the decisions and agreements or disagreements reached and furnish a copy of the minutes to each

party attending. Record any revision or changes agreed upon, reasons therefore, and parties agreeing or disagreeing with them.

4. Reconvene the conference at the earliest opportunity if additional information must be developed in order to conclude the subjects under consideration.

D. Performance Criteria: Epoxy Modified Mortar and Lining system shall be capable of withstanding under constant exposure to raw wastewater and hydrogen sulfide (H_2S) exposure up to one-hundred parts per million (100 ppm). Products must have sufficient field history and accelerated laboratory testing to substantiate product viability for these exposures.

E. Source Quality Control: Provide each component of Epoxy Modified Mortar and Modified Polyamine lining produced by a single manufacturer, including recommended repair mortar, repair overlay (resurfacer), joint sealant, lining (coating) materials.

F. Reference Standards: Comply with applicable provisions and recommendations of all standards listed in Section 1.2 except as otherwise shown or specified.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery of Materials:

1. Deliver material in manufacturer's original, unopened and undamaged packages.

2. Clearly identify manufacturer's, brand name, contents, color, batch number, and any personal safety hazards associated with the use of or exposure to the materials on each package.

3. Packages showing indications of damage that may affect condition of contents are not acceptable.

B. Storage of Materials:

1. Materials shall be stored in accordance with manufacturer's recommendations in enclosed structures and shall be protected from weather and adverse temperature conditions. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life as defined by the manufacturer shall be removed promptly from the site. Store all materials only in area or areas designated by the Engineer solely for this purpose.

2. Store in original packaging under protective cover and protect from damage.

3. Stack containers in accordance with manufacturer's recommendations.

C. Handling of Materials: Handle materials in such a manner as to prevent damage to products or finishes.

1.6 JOB CONDITIONS

A. Environmental Requirements:

1. Proceed with Work only when temperature and moisture conditions of substrates, air temperature, relative humidity, dew point and other conditions comply with the manufacturer's written recommendations and when no damaging environmental conditions are forecasted for the time when the material will be vulnerable to such environmental damage. Record all such conditions and include in final Site Quality Control Report.

2. Maintain substrate temperature and ambient temperature before, during and after installation above in accordance with lining material manufacturer's instructions.

3. Provide adequate ventilation during instillation and full curing periods of the Epoxy Modified Mortar and Modified Polyamine Epoxy lining.

B. Dust and Contaminants: Protect work and adjacent areas from excessive dust and airborne contaminates during Epoxy Modified Mortar and Modified Polyamine lining and curing. Schedule Work to avoid excessive dust and airborne contaminants.

1.7 WARRANTY

A. Manufacturer shall warranty its products as free from material defects. Warranty shall be provided without an expiration date. Provide associated Warranty Certificate.

B. Contractor shall warranty the installed lining system as free from workmanship defects for a minimum period of three (3) years.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products and Manufacturer:

1. Materials specified are those that have been evaluated for the specific service. Products of Tnemec www.tnemec.com ,+1-800-863-6321 are specified as a standard of quality and basis of design. Local representative Erik Otten 708-822-8323, eotten@tnemec.com

2. The specified basis of design is intended to provide the longest service life possible, lowest life cycle cost, and most sustainable solution.

B. Contractor shall provide all accessory components, as specified or recommended by the manufacturer for optimal application of the resurfacing mortar and lining system's adhesion to substrate and long-term service performance.

C. Hydraulic Water Plug:

1. Active leak control materials are to be utilized for I&I abatement, to stop leaks, running water, infiltration, and other water stop needs. Material must be a quick setting, hydraulic cement compound designed for minor patching, and as a leak stopper and water plug which stops running water and/or seepage through concrete. Materials must be designed to set rapidly, in dry powder form, with

no prior mixing of water needed (if necessary), to apply directly to active leaks under hydrostatic pressure in manholes or related structures, in accordance with the manufacturer's recommendations.

D. Cementitious Repair Mortar:

1. Rapid-setting, cementitious repair mortar when concrete is deteriorated greater than a depth of 1" and when recommended by the Manufacturer to rehabilitate and restore concrete and provide level substrate for application of the protective lining. Cementitious repair mortar shall be a rapid-setting, non-shrinking resurfacing material capable of spray-transfer. Material shall have similar CLTE properties as concrete.

E. Epoxy Modified Mortar:

1. Epoxy Modified Mortar shall be a formulated blend of Portland cement, high density graded silica aggregate, and synthetic fibers cured with epoxy polymerization which is designed to enhance acid resistance and provide lining protection from corrosion derived from mild-to-moderate hydrogen sulfide (H_2S) conditions (up to 100 ppm) found in sanitary sewer and domestic wastewater environments.

2. Epoxy Modified Mortar shall be capable of achieving up to one inch (1") sag resistance, vertical and overhead.

3. Epoxy Modified Mortar must have a long open recoat window without the need for abrasive or mechanical preparation for simple repair requirements.

4. Epoxy Modified Mortar must be self-priming, able to be applied direct-to-concrete (DTC), requiring no primer.

5. Epoxy Modified Mortar must be able to bond to saturated-surface-dry (SSD) concrete, with moisture and relative humidity tolerances up 85%.

F. Modified Polyamine Epoxy:

1. Modified polyamine epoxy shall be 100% solids, abrasion-resistant lining specifically designed for domestic wastewater immersion and fume environment. Must provide low permeation to H_2S gas, against MIC and provides chemical resistance to severe wastewater environments.

2. Modified polyamine epoxy must contain micro-fiber reinforcement for improved film integrity. be a formulated blend of Portland cement, high density graded silica aggregate, and synthetic fibers cured with epoxy polymerization which is designed to enhance acid resistance and provide lining protection from corrosion derived from mild-to-moderate hydrogen sulfide (H_2S) conditions (up to 100 ppm) found in sanitary sewer and domestic wastewater environments and be tested by ASTM G210 with EIS above 10.0 before and after testing.

PART 3 - EXECUTION

3.1 GENERAL

A. All work shall be in strict accordance with the specifications and recommendations including mixing, handling, storage, and application of all products as required and in accordance with manufacturer's published technical instructions, safety data sheets, including manufacturer's published PDS, design guidelines, and/or other written specifications.

B. Contractor shall provide, erect, and maintain all required hoists, scaffolding, staging and planking, and perform all access related hoisting work required to complete the Work of this Section as specified.

C. Contractor shall cover or otherwise protect finish work or other surfaces not being coated within the scope of this Section. Contractor shall erect and maintain protective tarps, enclosures and/or masking to contain debris, including dust or other airborne particles from surface preparation or application activities. This may include the use of dust or debris collection apparatus as required at no additional cost to Owner.

3.2 EXAMINATION

A. Contractor shall examine the areas and conditions under which the Epoxy-Modified Cement lining Work is to be performed in accordance with SSPC-SP13/NACE No. 6, and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work.

B. Commencement of the Work of this Section shall indicate that the substrate and other conditions of installation are acceptable to the Contractor and his Applicator and will produce a finished product meeting the requirements of the Specifications. All defects resulting from accepted conditions shall be corrected by Contractor at his own expense.

C. Stopping Active Leaks: After surface cleaning, any visible leaks or other water ingress shall be reported to the Engineer. Any water infiltration through minor leaks must be stopped using specified hydraulic cement water stop; should flows be aggressive, a chemical grout method shall be used in accordance with Section 03640. Surface and grouting material may require additional surface preparation prior to application of Epoxy-Modified Cement lining.

D. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated.

3.3 PREPARATION

A. Concrete surfaces to receive Epoxy Modified Mortar and Modified Polyamine lining shall be cast with a Smooth Form Finish in accordance with ACI 301. Surfaces shall not be rubbed, sacked, troweled or otherwise finished in any manner that will obscure or cover

the parent concrete surface with materials other than materials as specified in this Section.

B. Allow cast-in-place concrete to cure for a minimum of 28 days at 75°F (24°C) and with adequate air movement before installing the applied lining system.

C. All surface washing, abrasive blasting, waterjetting, grinding, patching, filling and preparation shall be completed by the Applicator in accordance with the Manufacturer's recommendations.

D. Substrate: Concrete surfaces to be coated shall be free of curing compounds and form release agents, laitance and foreign particles that may inhibit bonding. Prior to start of Epoxy Modified Mortar application, pre-clean as required, and inspect the substrate in accordance with SSPC-SP13/NACE No. 6, Severe Service. Surface preparation procedures shall be in accordance with NACE No. 6/SSPC-SP13 and ICRI Guideline No. 310.2. Surface preparation shall expose aggregate and obtain a uniform surface texture resembling the minimum recommended concrete surface ICRI-CSP profile, CSP-6 for repair, and CSP-5 for resurfacing.

E. Level or grind concrete substrates to produce a uniform and smooth surface, including removal of all sharp edges, ridges, form fins, and other concrete protrusions.

F. Surface preparation of the substrate must be achieved immediately prior to utilizing any repair material and/or lining material that will require bond to the substrate, re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.

G. Surface preparation will be required on existing and new concrete.

H. The objective of surface preparation is to produce a surface that is suitable for application and adhesion of the specified repair materials and lining material. Surfaces therefore are to be free of contaminants and loosely adhering or unsound concrete, and should provide a dry, sound, uniform substrate suitable for the application of repair and lining material.

I. Structures to receive resurfacing and lining system must be capable of withstanding imposed loads. All oil, grease, waste and chemical contaminants must be removed from the surface of the concrete prior to preparation in accordance with NACE No. 6/SSPC-SP13. Concrete surfaces must be sound and capable of supporting the resurfacing and lining system as determined by the engineer. Surface preparation requirement is to expose a sound, uniform surface texture confirming to the minimum recommended ICRI-CSP amplitude. The epoxy modified mortar shall be applied to the entire, prepared surface to level surface suitable for lining application.

3.4 APPLICATION

A. Epoxy Modified Mortar shall be installed when ambient air and surface temperature is above 45°F. Condition the material between 70-80°F (21-27°C) for 24 hours prior to use.

Application when temperatures outside of this range will require written instruction from the Manufacturer and approval of the Engineer.

B. Modified Polyamine Epoxy shall be installed when ambient air and surface temperature is above 50°F., optimum 65°F to 80°F (18°C to 27°C), maximum of 130°F (54°C). Condition the material between 70-80°F (21-27°C) for 24 hours prior to use.

C. Application in direct sunlight is not advised, as this may result in adverse curing of the materials due to loss of retained water saturation required for curing. Concrete surfaces that have been in direct sunlight should be shaded for at least 24 hours prior to application. Consult the Manufacturer for application schedule guidelines specific to temperature and environmental conditions.

D. Hydraulic Water Plug: Epoxytec Mortartec Hydrxx-1 or Hydrxx-3 hydraulic cement water plug shall be used for low pressure active leak stopping.

1. Cure – Press firmly pre-mixed paste or dry material into place, maintaining pressure until the material begins to harden and the leak is stopped. Continue until all active leaks cease.

E. Cementitious Repair Mortar: Tnemec Series 217 MortarCrete cementitious repair mortar shall be used for structural repairs or surface repairs exceeding a depth 1" inch in accordance with Manufacturer's written instructions as outlined in the product data sheet and application guide.

1. Thickness – Minimum 1" inch as required to re-establish original plane.

2. Cure – Ensure that the mortar while curing will remain moist, covered from direct sunlight, and if needed, covered by damp coverings to avoid mortar dry-out and to optimize curing.

3. Re-blast – Clean and profile the surface to remove the laitance layer and to uniformly profile the surface to produce a minimum ICRI CSP 6 surface profile amplitude.

F. Epoxy Modified Resurfacing Mortar: Tnemec Epoxytec Mortartec shall be applied to the entire wall and overhead surfaces to restore the concrete surface to a contiguous plane and to reduce outgassing of the concrete. Epoxy Modified Mortar shall be applied in accordance with Manufacturer's written instructions as outlined in the product data sheet and application guide.

1. Thickness – Epoxy Modified Mortar shall be applied to a minimum thickness of 1/16", maximum 1" inch. Feather edge capable to 1/32".

G. Modified Polyamine Epoxy Lining: Tnemec Series G435 Perma-Glaze shall be applied to the surfaces shall be applied in accordance with Manufacturer's written instructions as outlined in the product data sheet and application guide.

1. Thickness – Modified Polyamine Epoxy Lining: shall be applied to a minimum thickness of 25 mils, maximum thickness 30 mils, in one or two coats.

3.5 FIELD QUALITY CONTROL, INSPECTION AND TESTING

A. Contractor to perform the quality control procedures listed below in conjunction with the requirements of this Section.

B. Inspect all materials upon receipt to ensure that all are supplied by the approved Manufacturer.

C. Surface pH Testing: The pH of cement particles collected from the concrete substrate will be measured using pH indicating paper or pH meter. The pH testing is to be performed once every 500 square feet (5 square meters) for the first 500 square feet (46 square meters) and once every 1000 square feet (93 square meters) thereafter. Acceptable pH values shall be a minimum 9.0 as measured using color indicating pH paper with readable color calibrations and a scale at whole numbers or pH meter.

1. Collect 0.5 grams of cement paste from the surface and mix 1.0 mL of distilled or purified water into a vile; close lid and shake for 30 seconds and let mixture strand for 2 minutes.

2. Insert the pH paper into mixture and determine pH by comparing to the scale and record or insert the pH meter into the mixture and record the stabilized pH.

D. Surface Profile: Inspect and record substrate profile (anchor pattern) at least once every 50 square feet (5 square meters). If applying Epoxy Modified mortar direct-to-concrete (DTC), surfaces shall be profiled equal to the CSP 5 amplitude as recommended by the coating manufacturer in accordance with ICRI Guideline 310.2 and SSPC-SP13/NACE No. 6; for Cementitious Repair Mortar work, surfaces shall be profiled equal to the CSP 6.

1. Replication of the concrete surface profile can also be performed at least once every 500 square feet (46 square meters) using replica putty in accordance with ASTM D7682.

E. Measure and record ambient air temperature once every two hours of each work shift using a thermometer and measure and record substrate temperature once every two hours using an infrared or other surface thermometer.

F. Provide verification of correct mixing of coating materials in accordance with the Manufacturer's instructions.

G. Verify curing of the coating materials in accordance with the Manufacturer's instructions.

H. Dry-Film Thickness:

1. Wet-Film Thickness shall be taken every 100 square feet (9 square meters) in accordance with ASTM D 4414 and recorded.

2. The Dry-Film Thickness can be determined using a surface area calculation for material consumption.

I. Contractor is responsible for keeping the Engineer informed of all progress so that Engineer may provide additional quality control at his discretion.

J. Inspection by the Engineer or others does not absolve the Contractor from his responsibilities for quality control inspection and testing as specified herein or as required by the Manufacturer's instructions.

3.6 ACCEPTANCE CRITERIA

A. All surfaces shall be prepared, applied, and tested in accordance with the specification and referenced standards herein.

3.7 ADJUSTMENTS AND CLEANING

A. At the completion of the Work, Contractor shall remove all materials and debris associated with the Work of this Section.

B. Clean all surfaces not designated to receive resurfacing and lining. Restore all other work in a manner acceptable to Engineer.

C. All finished Epoxy Modified Mortar and Modified Polyamine Epoxy lining shall be protected from damage until Final Acceptance of the Work. Epoxy Modified Mortar and Modified Polyamine Epoxy lining damaged in any manner shall be repaired or replaced at the discretion of Engineer, at no additional cost to Owner.

END OF SECTION#

CITY OF WEST CHICAGO

INFRASTRUCTURE COMMITTEE
AGENDA ITEM SUMMARY

ITEM TITLE:

City of West Chicago 2022 Hydraulic Water System Model Update

AGENDA ITEM NUMBER: 5.A.

COMMITTEE AGENDA DATE: June 1, 2023
COUNCIL AGENDA DATE: N/A

STAFF REVIEW: Mehul T. Patel, P.E., CFM, Director of Public Works **SIGNATURE** MTP

APPROVED BY CITY ADMINISTRATOR: Michael L. Guttman **SIGNATURE**_____

ITEM SUMMARY:

In the fall of 2021, staff requested proposals from several qualified engineering firms to perform an update to City's "water model". Christopher B. Burke Engineering LTD (CBBEL) of Rosemont, IL, was selected to perform the water model study for the City. A hydraulic water model is a computer simulation of a water system. Using a specialized software, a water system is modeled as a "network" which includes details such as pipe material, pipe size, length of pipe, system demand, age, storage, etc. The water model is a tool to analyze City's current water system as a whole by simulating various operating conditions without causing damage or interrupting existing service. Additionally, it assists in identifying the areas of the system in need of future improvements such as watermain replacements and storage capacity. It also allows the City to simulate conditions based on proposed future developments.

Public Works staff worked with CBBEL to complete an update to the City's water model. The key takeaways are as follows:

1. Approximately one-third of City's 147-miles of watermain network is over the age of 50 years and nearly 27% of the network is 6-inches in diameter or smaller. Based on the model, the City should be implementing a more sustainable watermain replacement program of approximately 1.5 miles/year, which translates to replacing the watermain once every 100 years.
2. Review of the most cost effective options for future ground or elevated water storage options. The model is recommending additional 2.75 MG of storage to meet the current and projected future needs.
3. Consideration to install a watermain along Klein Road to loop the water distribution system to Meadow Wood subdivision for better reliability and redundancy.

City staff have worked diligently with CBBEL to prepare an accurate model. The maintenance and strategically planned improvements of the current water system are vital to the City's continued growth and success. The executive summary is attached for reference. Should a committee member wish to review the full report, please contact the Director of Public Works.

ACTIONS PROPOSED:

The staff is hereby directed to utilize the water model as a guide to plan for future improvements as it relates to the City's water system.

COMMITTEE RECOMMENDATION:

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600
Rosemont, IL 60018

CITY OF WEST CHICAGO, IL
WATER DISTRIBUTION SYSTEM
WATER MODEL UPDATE

December 14, 2022
REVISED May 18, 2023

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Appendix E – Proposed Improvements Exhibits

1.0 EXECUTIVE SUMMARY

The City of West Chicago owns and operates a public water supply that provides potable water to the City's population of over 25,600. The average daily flow is currently near 3.30 million gallons per day (MGD) and the highest maximum daily usage was recorded in 2020 of 5.69 MGD. This usage was higher than previous maximum usages recorded in 2018 and 2019 of 4.80 MGD and 4.75 MGD respectively. The entire raw water collection system and distribution system has nearly 147 miles of pipe ranging from 2 – 36-inch diameter. Approximately one-third (34%) of the distribution water mains are more than 50 years old. Other major water system components include: a central 9 MGD lime softening plant constructed in 2005, 4 storage facilities with a total of 1.75 million gallons of storage, 3 high service pumps, 5 in-line booster pumps and 9 active supply wells connected with a raw water collection main system conveying to the lime softening plant.

The City has performed water modeling in the past. The most recent study involving water modeling was completed in 2007 and a tank feasibility and siting study in 2010.

Day to day operation of the water system is highly dependent on vigilant water operator monitoring of flow rates at key locations, spot system pressures, and water levels in the storage tanks. Responses to changes in system conditions are controlled by manually inputting changes through a central Supervisory Control and Data Acquisition (SCADA) system that utilizes radio-based telemetry.

This report will aid the City with recommendations to implement a more proactive water main replacement capital improvement plan. One of the major pieces along with this water model study is a rate study that will assist with the current funding levels. The present water main replacements are inadequate to sustain the system and keep pace with the rate at which the City's mains will extend beyond their predicted useful lives. It is estimated that at current replacement levels, it would take the City in the range of 150 to 175 years to replace its complete water main distribution system assuming a typical water main useful life range of 80 to 100 years. A more realistic life span (for budgeting water main replacement) may be 100 to 125 years.

The scope of this Water Model Update includes preparing a current water model of the City's water distribution system, using the model to evaluate the performance of current and anticipated future conditions, identifying deficiencies, and making recommendations to improve the overall performance of the City's Waterworks System.

The modeling of average day, maximum day, peak hour, and maximum day plus fire flow conditions indicates that the existing water works supply system can deliver these demand conditions within acceptable limits for flow and pressure. It is noted however, that 27% (207,400 feet of a total of 772,500 feet) of the pipes that comprise the distribution system are 6-inch or smaller and that 34% of the total pipe footage (265,000 feet or 50 miles) is 50 years old or older.

Recommendations from the study are presented in detail in Section 5 and briefly summarized below:

Increase water main replacement capital projects

We have recommended that the City increase its current water main replacement program to a more sustainable level of replacing 1.5 miles of main per year at a funding level of $2.5 - $3.0 million per year. This represents an average rate of replacing the City's 147 mile of mains once every 100 years. The current replacement program is roughly 12-15% of the recommended amount. Approximately a third of the City's distribution network is 50 years old or older and nearly a quarter of the mains are 6-inch diameter or smaller. See Appendices C & D for further information. In this study, a decision matrix has been compiled to analyze the water distribution system's Age, Material, Diameter, Fire Flows, and - more importantly – pipe breaks. The American Waterworks Associations (AWWA) standard is 0.27 breaks per mile per year. The City is currently below this standard for the 15 years of information provided (2007 to 2020), averaging 0.098 breaks per mile for the whole system. But by looking at the mains 50 years and older in the system, the breaks per mile per year is near 0.204. The breaks associated with the 50+ year old mains account for more than 70% of the breaks in the entire system over the last 15 years.

The Addition of more Ground and Elevated Storage within the Water System

The City of Chicago requires that Lake Michigan Water customers have a water storage volume of 2 times the customer's average daily usage. For communities that are supplied through intermediate water agencies, such as NSMJAWA and DWC, that storage volume may be provided (in whole or in part) by the combination of the community's storage and a dedicated portion of the agency's storage. There is also storage credit that can be used for communities that maintain emergency well backup supply sources. Since the City of West Chicago uses ground water wells as their sole water source, the Environmental Protection Agency's recommended means to determine the volume and height of an elevated tank or standpipe shall be based on a study of distribution system hydraulic conditions and anticipated water demands of the system.

The 2010 Tank Feasibility and Siting Study recommended that the overall system storage capacity have a *"minimum total ground and elevated storage tank capacity of 4.5 MG which means an additional 2.75 MG storage is recommended to meet the existing demand. Of the 2.75 MG in additional storage, at least 1.25 MG should be elevated storage, and the remaining 1.5 MG could be either elevated storage or ground storage depending on which is most convenient and cost-effective."*

Due to the proximity of the DuPage County Airport and several water ways located within the City limits, an expansion of the elevated storage capacity has limited options. The current system has 2 existing elevated towers (Hawthorne Tower and Fremont Tower). There have been previous siting studies and this report validates with further water modeling exercises showing the effects to the water system for each location.

It is recommended that the City consider the appropriate piping modifications to the existing Hawthorne Elevated Tank before any new additional elevated storage can connect to the existing distribution system. With the Hawthorne Tower being within the vicinity of the pumping operations of the Water Treatment Plant, the proposed tank locations are not able to function efficiently without some form of flow control into the Hawthorne Tower. See Summary Table below and Section 5.0 for further details.

Prop. Tank #	Location Description	Within FAA Boundary?	Within Airport Approach?	Is Location City Property?	Water Main Improvements	Tank Overflow Height	Outcome
1	NW of Washington & Prince Crossing	No	No	Yes	Minimal	150'	Optimal
2	St. Andrews Golf Course	No	No	No	Extensive	130'	Not Viable
3	SW of Joliet & Joy	No	No	No	Moderate	200'	Not Viable
4	Well #7 / Hawthorne Tower	Yes	No	Yes	Minimal	150'	Piping Mods / Optimal
5	E of Pearl & S of Pioneer Park	No	No	No	Moderate	185'	Not Viable

Looping of Klein Road / Meadow Wood Subdivision (Northeast)

The study shows the potential options for looping of the northeast corner of the City's water system as the existing Meadow Wood neighborhood is currently reliant on a single 12" water main. With the proposed improvement, this area will gain a second feed around the east & south which would always be in operation as a part of the system - which improves the water circulation, quality, and available fire flows for these residents. The City should consider looping this water main as the proposed improvement will provide redundancy for the City's overall distribution system.

There are two connections options shown as Exhibits E.1 & E.2. Exhibit E.1 shows the installation of approximately 8,000 linear feet of 12" water main to be spanning from Meadowlark Dr. to North Ave. along Klein Road connecting west on Prairie Crossing Dr.

Exhibit E.2 extends what is shown from Exhibit E.1 with an additional 5,000 linear feet of 12" water main to connect from North Ave. to Wheaton Academy along Prince Crossing Road which equates to approximately 13,000 linear feet of 12" water main to be installed in total.

Preliminary Estimated budget for Exhibit E.1 (8,000 linear feet of 12" water main) is $4,300,000 (water main improvements only) including design engineering and administration.

Preliminary Estimated budget for Exhibit E.2 (13,000 linear feet of 12" water main) is $7,000,000 (water main improvements only) including design engineering and administration.