



13. Review and consideration of replacing current Public Works Department two-way analog radio equipment with digital equipment
14. Pay Estimates: Strand Associates, Wisconsin Department of Transportation, and any other contractor/developer.
15. Adjournment

# STAFF REVIEW SUMMARY

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

Agenda Item:

**#4**

Project/Item Name: Corrosion Control within water system

Location: Citywide

Requested Action: Investigate Corrosion Control within water system including securing engineering & laboratory services

Staff Report/Description: Recent Wis. DNR sanitary survey and letter outline the Wis. DNR recommendation that the City of Onalaska initiate Corrosion Control within the City water system. The City has performed voluntary monitoring studies in previous years relating to copper corrosion within the water system. With the previous two Wis. DNR mandated sampling cycles, in 2014 & 2017, the City water system copper levels have been below the 90<sup>th</sup> percentile action level but trending up, which is the reason for the Wis. DNR recommendation for corrosion study. City staff is recommending hiring Process Research Solutions, LLC to restart the use of the water monitoring stations and in particular look at a dosage level for the addition of orthophosphate for corrosion control. The stations will be used as outlined in the PRS memo attached to obtain information on copper within the water system. This information will then be used to recommend the method and dosage amounts needed for proper corrosion control within the water system. It

is hoped that by the fall of 2018 a scientifically supported method of copper corrosion can begin within the water system.

This work will have a cost of \$17,000 for Process Research Solutions with an additional \$21,280 of laboratory testing billed to the City.

Attachments: Wis. DNR letter and Process Research solutions memo.



January 2, 2018

Mr. Jim Prindle, Public Works Director  
City of Onalaska  
415 Main Street  
Onalaska, WI 54601

PWS ID# 63203272  
Onalaska Waterworks  
La Crosse County

Subject: Corrosion Control

As discussed on the phone today and during the December sanitary survey, the Department recommends the City resume treatment for optimizing corrosion control. The reason for the recommendation is that your 90<sup>th</sup> percentile copper levels continue to be elevated and are close to the federal action level of 1300ug/l Cu. Improvements in your flushing and disinfection programs, while important, do not appear to have had an appreciable effect on reducing copper levels. It is unlikely the City will continue to remain below the action level without addressing uniform corrosion and addressing uniform corrosion would require treatment.

The Department is using recent EPA guidance in carrying out responsibilities related reviewing and approving optimization of corrosion control programs – “*Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems*” (2016). Voluntary water quality testing completed last year indicates that orthophosphate treatment may be appropriate in optimizing corrosion control in Onalaska. This appears to be supported by studies you have completed in the past.

The following information would be needed before you resume any treatment:

- Submit the *Corrosion Control Treatment Recommendation Packet* I emailed you today. Please include any corrosion control studies you performed in the past that would support the proposed treatment method. The Department reviews the information in the packet, proposed treatment method, and the target dose before approving it.
- While not a requirement, the City may want to consider a pilot study to determine whether orthophosphate would be effective at controlling copper corrosion. This could also help you to determine an appropriate chemical dose. If you decide to complete a pilot study, submit the results with the *Corrosion Control Treatment Recommendation Packet*.
- Feed system plan review would be required. If you are proposing orthophosphate treatment, the existing feed systems would likely remain the same. However, review is still needed to verify it can deliver the correct amount of chemical for the target dose and the feed pumps and solution containers are sized appropriately. Submit forms 3300-260 and 3300-227. Below are the links to the forms:

<http://dnr.wi.gov/files/PDF/forms/3300/3300-260.pdf>

<http://dnr.wi.gov/files/PDF/forms/3300/3300-227.pdf>

- Submit the material safety data sheet (MSDS) and national sanitation foundation (NSF) certification with the above plan review forms.
- Testing equipment is needed to ensure you maintain the correct target dose. You may already have that. If using ortho, the test method used must be for orthophosphate.
- When treatment begins, the Department will add reporting blocks in your monthly operating reports so you can report the test results. For orthophosphate treatment, entry point and distribution system testing will need to be completed twice weekly.

The Department is supportive of your consideration to resume treatment to optimize corrosion control. This should also allow you to meet newer federal requirements which may include monitoring at sites with new copper plumbing. If you have any questions, please contact me at (608)785-9013.

Sincerely,

  
Charlie Cameron, P.E.  
Environmental Engineer

cc: DG Supervisor – WCR  
Bureau of Drinking Water/Groundwater - DG/5

# memo

## Process Research Solutions, LLC

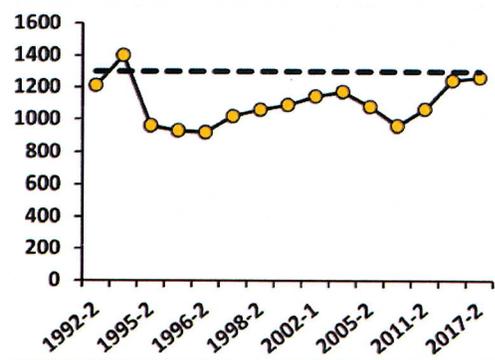
To: Jim Prindle, Public Works Manager  
From: Abigail Cantor, P.E.  
CC:  
Date: 1/25/2018  
Re: Proposal for Controlling Copper Concentrations in Drinking Water

### Comments: **Background**

PRS Monitoring Station studies were performed in 2008, 2009, and 2010 to determine why copper was elevated in the drinking water. Several factors appeared to be possible influences for the copper levels – transport by iron and manganese, microbiologically influenced corrosion, dissolution by chloride, sequestration by polyphosphate. To remedy this, a uni-directional flushing program was initiated for cleaning of water mains and this has been carried on to current times to clean out chemical scales and biofilms that can participate in creating high copper levels. An iron and manganese removal plant was added to Well 9, which was a problematic well with iron, manganese, and microbiological issues.

For the polyphosphate, the 2010 PRS Monitoring Station study compared a polyphosphate/orthophosphate blend chemical to a mostly orthophosphate chemical. It was demonstrated that copper levels were lower when orthophosphate was used versus when polyphosphate blend was used. It was recommended that the phosphate product be switched to the orthophosphate one and the same orthophosphate dosage achieved as with the blend product. It was further recommended that PRS Monitoring Stations be used in the distribution system to determine if the orthophosphate dosage could be lowered slowly. In 2012, the WDNR requested that the phosphate chemical be stopped completely, so the chemical was removed from the water system.

Below is a graph of the 90<sup>th</sup> percentile copper concentrations in  $\mu\text{g}/\text{L}$  from Onalaska's Lead and Copper Rule compliance sampling. The graph shows that the 90<sup>th</sup> percentile was just under the Action Level for copper of 1300  $\mu\text{g}/\text{L}$  in 2014 and 2017.



### **Theories on Copper Release in Onalaska**

In 2016, an industry in Onalaska reported fast corrosion of heat exchanger tubing. Both the cooling water and the incoming municipal water were studied. At that point in time, the municipal water looked to be free of iron and manganese and microbiological components. The corrosion patterns in the heat exchanger appeared to be from erosion corrosion from too fast a flowrate, especially as the water flowed past elbows in the piping. The characteristic horseshoe-shaped pits of erosion corrosion were evident.

However, in a discussion on 1/22/18, water utility personnel reported pitting observed in copper pipes in general when they are cut open. Researchers have found that when phosphorus is not available in a water source, some microorganisms may "find" phosphorus in copper piping that is part of the piping alloy. That is, if microorganisms attach to copper piping by excreting their acidic enzymes, they can be "rewarded" with a phosphorus source in the piping and begin to thrive in such locations.

It was also observed by water utility personnel that the abrupt end to the phosphate dosing may have disrupted the copper in the existing pipe wall scales. Researchers have found that abrupt changes to the chemical environment in water systems can disrupt existing scales, causing them to dissolve or break apart and be entrained as particulate copper. It is possible that copper in existing scales could have been released back into the water. A PRS Monitoring Station project in another water system that slowly lowered and removed the dosing of a polyphosphate chemical did capture data that showed a sloughing of metals and phosphorus from the pipe walls for about a year while the chemical was removed. In Onalaska, the polyphosphate chemical was removed in 2012. It is not known if the sloughing or dissolution of copper compounds could continue for six years.

Other possible causes of copper release into the water is the presence of not only chloride coming from the environment but also the presence of nitrates from the environment. Both nitrates and chlorides are increasing in the Onalaska water system. Both of these chemicals can form a soluble compound with copper.

### **Proposed Corrosion Control Study**

It is proposed to use the two PRS Monitoring Stations in Onalaska to gauge the status of copper release in the distribution system. The stations will need to be retrofit with improved test chambers, but the rest of the apparatus should function well if the stations prove to be able to hold a steady pressure and flow, operate automatically by means of the timer, and not leak.

One station will be located in a booster station in the area that is sampled during Lead and Copper Rule compliance sampling. The other station will be located at a booster station at a far reach of the water system where water age is in the highest range for the water system.

It sounds like it will be possible to start up the monitoring stations in April 2018. The stations need 4 to 8 weeks to develop films on the metal plates in the test chambers so that the copper release goes into a lower and steadier range of copper release than when the bare metal was exposed to the water. After 2 to 3 more months of operation, copper release data will be compared to other water quality parameter trends to strengthen theories as to which factors may be the most influential in the copper release.

At that point in time, it is possible that an orthophosphate dosing may be needed or, at least, tried while the monitoring stations are "watching" the system. In this case, a low dose would be applied. If the microbiological "mining" of phosphorus from the copper pipe is a factor, a low dose of phosphorus

would aid in lowering copper release because the microorganisms would no longer respond by secreting acidic enzymes onto pipe surfaces.

If that is not the case, an increase in orthophosphate dosing would be necessary to test the ability to form a phosphate copper scale to protect the pipe. If chlorides and nitrates are found to be factors in solubilizing copper, the phosphate would have to counteract that tendency.

A twelve-month study is proposed in order to assess the trends of parameters and to test dosing or other remediation scenarios.

Costs to perform this study are shown on the next page.

memo

**Costs for 2018-2019 Proposed Corrosion Control Study in Onalaska**

Action	Organization Responsible	Process Research Solutions Expenses	Other Expenses	Onalaska Direct Expenses
Test existing PRS Monitoring Stations	Onalaska		2,700	x
Assemble new test chambers	Rundle-Spence		<del>\$2000</del> estimated; cost not obtained yet	
New copper plates for test chambers	Process Research Solutions		\$580	
Retrofit new test chambers	Onalaska			x
Installation and startup of stations	Onalaska			2 people x 2.5 hours x 2 days
Supplies for weekly field analyses of water: pH, temperature, free chlorine, total chlorine, ORP, conductivity, turbidity, orthophosphate				x
Prepare monitoring plan	Process Research Solutions	\$ see below		
Arrange for routine sample bottles	Process Research Solutions	\$ see below		
Provide sampling instructions	Process Research Solutions	\$ see below		
Perform weekly sampling	Onalaska			3 hours per week for 1 person
Prepare for possible orthophosphate dosing	Process Research Solutions	\$ see below		x
Possible dosing of orthophosphate	Onalaska			x
Laboratory analyses	Laboratories		\$18,000	
Water use by PRS Monitoring Stations	Onalaska			0.5 gpm x 4 chambers x 60 min x 365 days = 43,800 gallons
Electricity use by PRS Monitoring Stations	Onalaska			x
Data management and analysis	Process Research Solutions	\$ see below		(continued)

memo

Reporting, conclusions, recommendations	Process Research Solutions	\$ see below		
TOTAL		Not to exceed \$17,000 from Jan 2018 to May 2019	<del>\$20,580</del>	

\$21,280.

# STAFF REVIEW SUMMARY

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

Agenda Item: #5

Project/Item Name: 12<sup>th</sup> Ave/Sand Lake Road & Main Street traffic signal upgrades

Location: 12<sup>th</sup> Ave./Sand Lake Road & Main Street

Requested Action: Approval of engineering services

Staff Report/Description: Traffic signal upgrades were included within the 2018 Capital Projects budget for the 12<sup>th</sup> Ave. / Sand Lake Road & Main Street intersection. The project will include new controller, control cabinet, traffic signal faces, vehicle detection, etc. The proposed engineering services include survey, design, specifications and bidding of the project. Strand Associates performed the initial traffic signal analysis for the project and has also performed design on the recently constructed traffic signal at Theater Road and Midwest Drive in 2015. Staff is recommending moving forward with Strand Associates for the traffic signal upgrade design.

Attachments: Task Order for Engineering Services



# OWNER REVIEW

Strand Associates, Inc.<sup>®</sup>  
910 West Wingra Drive  
Madison, WI 53715  
(P) 608-251-4843  
(F) 608-251-8655

# DRAFT

Task Order No. 18-02  
City of Onalaska, Wisconsin (OWNER)  
and Strand Associates, Inc.<sup>®</sup> (ENGINEER)  
Pursuant to Technical Services Agreement dated December 19, 2014

## Project Information

Services Description: Design and Bidding-Related Services for the 12th Avenue/Sand Lake Road and Main Street Signal Improvement

## Scope of Services

ENGINEER will provide the following services to OWNER.

### Design Services

1. Visit the site one time to review and document existing traffic signal equipment.
2. Conduct a 12-hour traffic count at the intersection of 12th Avenue/Sand Lake Road and Main Street.
3. Develop Traffic Modeling of the intersection using existing and forecasted (existing plus ten year) volumes. Review potential need for dedicated left-turn phasing for northbound 12th Avenue and southbound Sand Lake Road. Prepare models for up to two intersection control alternatives for use during construction staging. Prepare Technical Memorandum summarizing the result for the left-turn analysis and staging options.
4. Prepare and submit preliminary and final traffic signal upgrade plans for OWNER review and comment. Traffic signal upgrades will include control cabinet and base, traffic signal faces, and vehicle detection and intersection wiring. Existing underground equipment such as traffic signal bases, pullboxes, and conduit are to remain. Anticipated plan sections include the following:
  - a. Title Sheet
  - b. Overview/General Notes
  - c. Traffic Control Drawings
  - d. Traffic Signal Drawings
  - e. Traffic Signal Details
5. Prepare final traffic signal timing data for the project.
6. S preliminary and final Bidding Documents for OWNER review and comment.
7. Prepare preliminary and final opinion of probable construction cost for the project.
8. Prepare Bidding Documents using Engineers Joint Contract Documents Committee C-700 Standard General Conditions of the Construction Contract, 2013 edition, technical specifications, and engineering drawings.

### Bidding-Related Services

1. Distribute Bidding Documents electronically through QuestCDN, available at [www.strand.com](http://www.strand.com) and [www.questcdn.com](http://www.questcdn.com). Submit Advertisement to Bid to OWNER for publishing.



# STAFF REVIEW SUMMARY

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

Agenda Item: #6

Project/Item Name: Tandem axle cab & chassis

Location: Citywide

Requested Action: Approval of cab & chassis purchase

Staff Report/Description: Three proposals were received for the tandem axle cab and chassis. Staff is recommending the purchase of the International with options B & C for a total cost of \$95,312. This item was budgeted in the 2018 Capital Improvements Budget.

Attachments: Proposal tabulation

CITY OF ONALASKA

BID OPENING

ONE (1) NEW 2018 or NEWEST MODEL

TANDEM AXLE TRUCK

Opening: Thursday, January 25, 2018 @ 10:00 AM

COMPANY	MAKE/MODEL	TRUCK	OPTION A (ALUMINUM PAINTED AIR TANK)	OPTION B (TORQUE UPGRADE – 1,150 LBS)	OPTION C (ELECTRIC HEATED WINDSHIELD)	OPTION D (ADDITIONAL WARRANTY)	TOTAL BID AMOUNT AFTER OPTIONS	TOTAL BID AMOUNT W/ SELECTED OPTIONS (X)
DEBAUCHE TRUCK & DIESEL	7400 SBA INTERNATIONAL	\$92,745.00 X	\$260.00	\$2,187.00 X	\$380.00 X	\$3,668.00	\$99,240.00	\$95,312.00
ALLSTATE PETERBILT	348	\$96,801.00	\$127.00	\$1,025.00	N/A	\$4,595.00	\$102,548.00	
V&H TRUCKS	WESTERN STAR 4700 SB	\$98,834.00	N/A	N/A	\$250.00	\$2,100.00	\$101,184.00	

RECOMMEND AWARD TO: DEBAUCHE TRUCK & DIESEL FOR TRUCK, OPTION B & C TOTAL = \$95,312.00

# STAFF REVIEW SUMMARY

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

Agenda Item: #7

Project/Item Name: Traffic message Boards

Location: Citywide

Requested Action: Approval of purchase of two traffic message boards

Staff Report/Description: The 2018 Equipment Budget included the purchase of a traffic message board for relaying roadwork or emergency messages to the public. Upon further research it was found that two units could be purchased for \$19,000 while \$16,250 was included within the approved budget for one unit. With savings found on other 2018 purchases and the sale of existing equipment replaced by 2018 new equipment purchases staff is confident of not exceeding the overall equipment budget with the purchase of two units and therefore recommending the purchase of two messages boards.

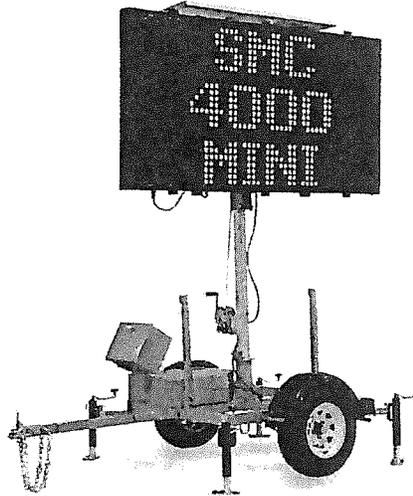
Attachments: Proposals





### 4000 Mast Mini solar message center

TAPCO SKU: 1415-30000



\$15,750  
from catalog

Quote  
\$14,962.50 EACH

<http://7aa12a81c3e635ad532e-f7cc18cbdbb0c5f64a3d357c0f170d67.r47.cf2.rackcdn.com/1BE7696F-9D04-4671-9011-FOFB2158B361-lg.jpg> Click image to enlarge

[Request Quote \(/contact/quote-request/?sku=1415-30000\)](/contact/quote-request/?sku=1415-30000)



## Request Quote

Call 1-800-236-0112  
8am - 5pm CST

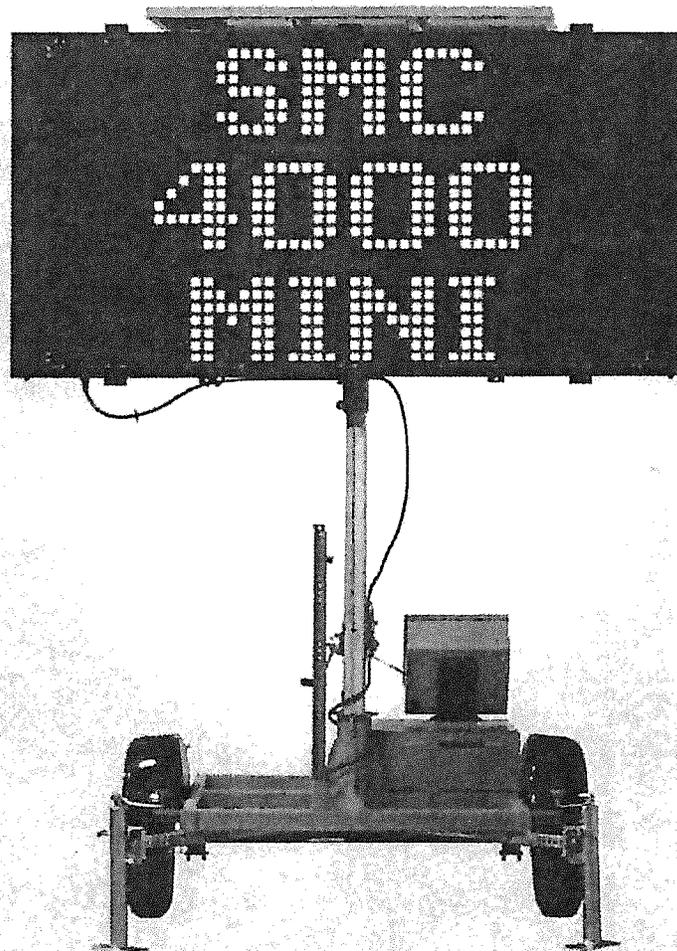
[Request Quote \(/contact/quote-request/?sku=1415-30000\)](/contact/quote-request/?sku=1415-30000)



**P**recision  
**S**olar  
**C**ontrols Inc

**S**olar  
**M**essage  
**C**enter

The



THE ALL NEW SOLAR MESSAGE CENTER  
**FULL MATRIX**  
**SMC 4000 MAST-MINI**



Marketed and Distributed by  
**Work Area Protection**

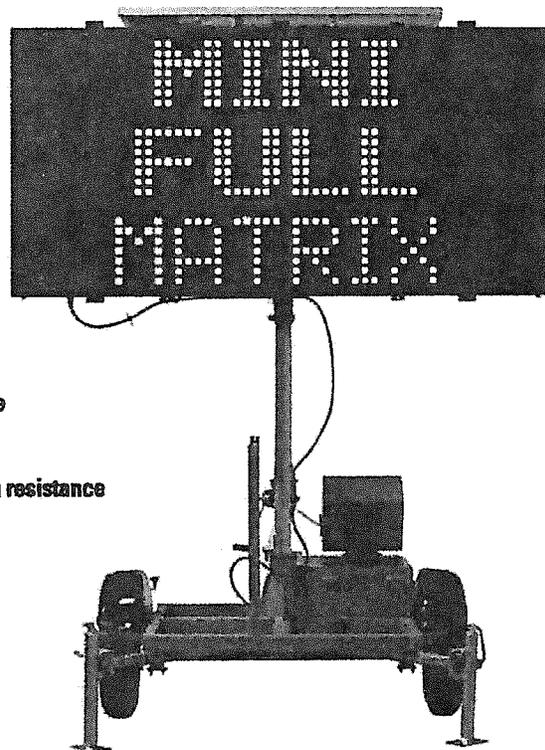


Precision Solar Controls has been recognized as the industry benchmark for quality and performance since the introduction of the original Solar Message Center.

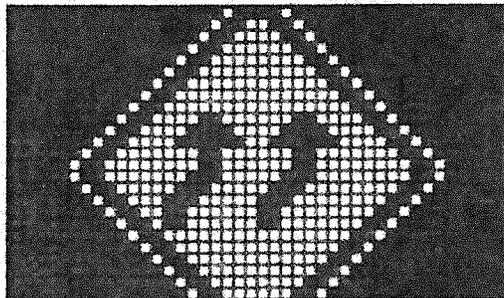
Manufactured to the same quality standards Precision Solar Controls is recognized for, the new SMC 4000 Mast-Mini message center deploys in places larger signs cannot.

You'll get just the features you want,  
in a compact design.

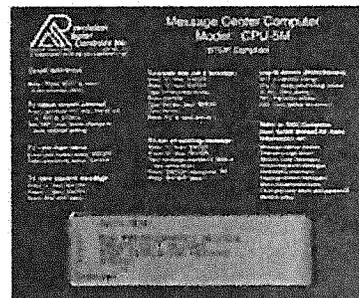
- Energy-efficient LED display provides minimal battery maintenance and long operational life
- Automatic intensity control provides optimum LED intensity
- Industrial-grade trailer provides stable platform
- 4 leveling jacks with slide out extensions provide stability when deployed
- Powder-coat paint for improved fade and scratch resistance
- Calendar programming capability
- Full Matrix display provides graphic messages and arrow board capability



- Graphic and Arrow Board functions available



- On-board dedicated NTCIP controller provides easy programming with secure password protection



# **STAFF REVIEW SUMMARY**

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

**Agenda Item:** #8

**Project/Item Name:** Fire hydrant painting

**Location:** Citywide

**Requested Action:** Approval of fire hydrant painting

**Staff Report/Description:** Staff is proposing the approval of a three year proposal for fire hydrant painting. Staff is recommending Davies Water to paint 150 fire hydrants per year at a cost of \$15,750 per year. This cost is budgeted yearly within the Water Department operating budget.

**Attachments:** Proposals

# DAVIES WATER

A division of



**RE: Leak** 1/10/2018

**Survey Proposal. Onalaska , WI 2018-2019-2020**

ATTN: John Wiatt

Dear John,

Below is the information you requested. Please let me know if you need any further information.

**Note** all access points must be clearly marked.

### Scope of Work

1. Perform leak detection services in Onalaska on City water main  
Listen to all Hydrants. Valves and Services will be used as needed.
2. Provide a prioritized list of leaks found in hydrant sweep.
3. Correlate and pinpoint main leaks.
4. Give a final report of survey findings.
5. **Recheck areas after repairs are made for any underlying leak noise that was masked.**

### Project Breakdown

Approximate duration of survey is 5 days.

#### Survey cost

**2018 \$7200.00**  
**2019 \$7350.00**  
**2020 \$7500.00**

### City responsibilities

The city must expose all valve boxes and Curb stops as needed.  
Clean out all valve boxes and curb stops as needed.

### → HYDRANT PAINTING

Sandblast, prime, and topcoat hydrants one color and color code caps.

**2018 \$105.00 each**  
**2019 \$105.00 each**  
**2020 \$105.00 each**

Fairway Painting & Sandblasting, Inc.

115 Union Street  
Holmen, WI 54636

# Quote

Date	Quote #
6/5/2017	1080

Name / Address
City of Onalaska 415 Main St. Onalaska, WI 54650

Description	Qty	Cost	Total
City of Onalaska Fire Hydrants 3 Year Agreement - 100 Hydrants/Year Contained Blast Coat with Sherwin Williams Epoxy Primer Top Coat with Sherwin Williams Hi-Solid Polyurethane Green Hydrant with White Caps  Price to Increase 5% Each Year	100	250.00	25,000.00

# STAFF REVIEW SUMMARY

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

Agenda Item: #9

Project/Item Name: Engineering Department survey equipment

Location: Citywide

Requested Action: Approval of purchase of fire hydrant painting

Staff Report/Description: Currently the Engineering Department utilizes a total station for topographic surveys and construction staking. This unit is limited by line of sight for acquisition of data. The proposed unit will be a GPS unit set to a local coordinate system that will allow the use of the instrument within 2,000 feet of the unit regardless of line of sight or traffic. The new GPS unit will allow faster survey and construction staking driving efficiency for Engineering staff. This purchase was included within the 2018 equipment budget.

Attachments: Quote & brochure



Topcon Solutions Store  
 2236 Bluemound Road, Unit A  
 Waukesha, WI 53186

**Proposal**  
**EST21138**  
**Cust#:807**  
**PO#:**  
**6/20/2017**

Billing Address	Ship To:	Sales Rep
City of Onalaska 415 Mean Street Onalaska Wisconsin 54650	City of Onalaska 415 Mean Street Onalaska Wisconsin 54650	Josh Nave

Proposal Expiration Date	Payment Terms	Shipping Method	Additional Notes:
10/18/2017	Net 30	Sales Rep	

Qty	Item and Description	Unit Cost	Amount
1	1000691-01 KIT,HiPer SR,LLINK BASE&ROVER,GGD,10 Hz	\$16,400.00	\$16,400.00
2	1001024-01 OAF-U,HiPer SR,Net+LLINK RTK,GGD10Hz	\$1,060.00	\$2,120.00
1	1000182-01 CABLE ASSY, HIROSE 6 PIN TO SAE w DB9	\$145.00	\$145.00
1	14-008025-01 ALLIGATOR CLIPS TO SAE CABLE	\$35.00	\$35.00
1	1003241-01 ADAPTER,HYBRID POSITIONING	\$77.25	\$77.25
1	07-4250 Thumb Release Tripod for Rover Pole	\$174.00	\$174.00
1	5119-00-YEL TRIPOD, ANTENNA, GPS, ADJ	\$821.95	\$821.95
1	809501 Tripod, Surveyors Grade, Wood, w/ Dual Clamp	\$278.10	\$278.10
1	1023136-01 FC-5000 GEO N. America /ER	\$2,645.00	\$2,645.00
1	1015317-01 FC/SHC5000 RAM CLIP mount Kit	\$225.00	\$225.00
1	559316 FC-5000 Carrying Case	\$36.05	\$36.05
1	61155 SOFTWARE, MAGNET FIELD MAINTENANCE 12 MONTH, Renewal Required to Transfer from Tesla to FC-5000	\$324.00	\$324.00
1	61086 Software, Magnet GPS Module	\$1,050.00	\$1,050.00
1	1002831-01 Magnet - Hybrid Positioning Module	\$525.00	\$525.00
1	Discount - GPS - Topcon Discount GPS	(\$2,410.00)	(\$2,410.00)





Topcon Solutions Store  
 2236 Bluemound Road, Unit A  
 Waukesha, WI 53186

**Proposal**  
**EST21138**  
**Cust#:807**  
**PO#:**  
**6/20/2017**

Qty	Item and Description	Unit Cost	Amount
1	<b>CSA-BASIC</b> 12 Months Unlimited phone, email and walk in support	\$500.00	\$500.00
1	<b>CSA-TRAIN-S</b> Training Programs Full Day Site	\$1,500.00	\$750.00

<b>Subtotal</b>	\$23,696.35
<b>Shipping Cost</b>	
<b>Tax Total (%)</b>	\$0.00
<b>Total</b>	\$23,696.35

**Proposal Approval**

---

<b>Print Name</b>	<b>Authorized Signature</b>	<b>Date</b>
-------------------	-----------------------------	-------------

**Disclaimer**

1) Accounts not paid within 30 days of invoice date will be charged an additional 1.5% (18% annually) per month on the unpaid balance.  
 2) Jobsite services provided by Topcon Solutions Store and its employees are based entirely upon the use of the owner's design and survey control data provided by the owner and then applied to our products. No warranty for these services is either expressed or implied.

**Destination Control Statement**

These commodities, technology or software were exported in accordance with applicable export control laws and regulations. Diversion contrary to those laws and regulations, as well as the export laws and regulations of any countries of re-export, is prohibited. In consideration for its purchase of commodities, technology or software from Topcon, Purchaser agrees that it will determine any license requirements to export the items and, as applicable, to re-export or transfer the items, obtain any license or other official authorization, and carry out any customs formalities for the export or re-export of the items. Purchaser agrees that it will not re-export or transfer the commodities, technology or software to Cuba, Iran, North Korea, Syria or North Sudan without a license or other authorization from all applicable export control authorities. It is also unlawful to receive, use, transfer, or re-export these items to persons on all applicable restricted party lists (see e.g. <http://www.bis.doc.gov/ComplianceAndEnforcement/ListsToCheck.htm> and <http://hmt-sanctions.s3.amazonaws.com/sanctionsconlist.htm> where prohibited, or to use these items in activities involving missiles or unmanned air vehicles, nuclear explosive devices or nuclear propulsion projects, chemical or biological weapons, or any other prohibited end-use prohibited (see e.g. [http://www.access.gpo.gov/bis/ear/ear\\_data.html](http://www.access.gpo.gov/bis/ear/ear_data.html)).



 **TOPCON**

**HIPER SR**  
EXTENDED RANGE  
SITE RECEIVER



## Compact. Rugged. Advanced. Affordable.



- Universal Tracking Channel technology
- Advanced Fence Antenna™ technology
- Compact, lightweight, rugged and cable free design
- Fully integrated LongLink™ and cellular configuration (optional)
- Dual SIM card support

### All the functionality needed, nothing more

Providing leading edge technology in a smart, rugged design, the HiPer SR receiver provides superior performance at an affordable price. The compact integrated design includes all-in-view satellite monitoring through Universal Tracking Channel (UTC) technology, industry leading Fence Antenna, sealed long-life power supply, and memory storage.

The HiPer SR comprises two different communication options including Topcon's innovative LongLink communication technology and integrated cellular module (optional).

With the HiPer SR, made in the USA means that you don't have to sacrifice durability and performance to have a versatile 3D job site system. HiPer SR – a compact lightweight receiver that is built to take the most intense environmental conditions and job site punishment.

In addition to ruggedness, the HiPer SR is the most versatile, configurable, compact receiver system available. Use just two units in many configurations, depending on the demands of the project site. Use as a job site base and rover with interference-free LongLink communication up to 300 m or base and rover with MAGNET Relay cellular communication RTK up to 35 km baselines.

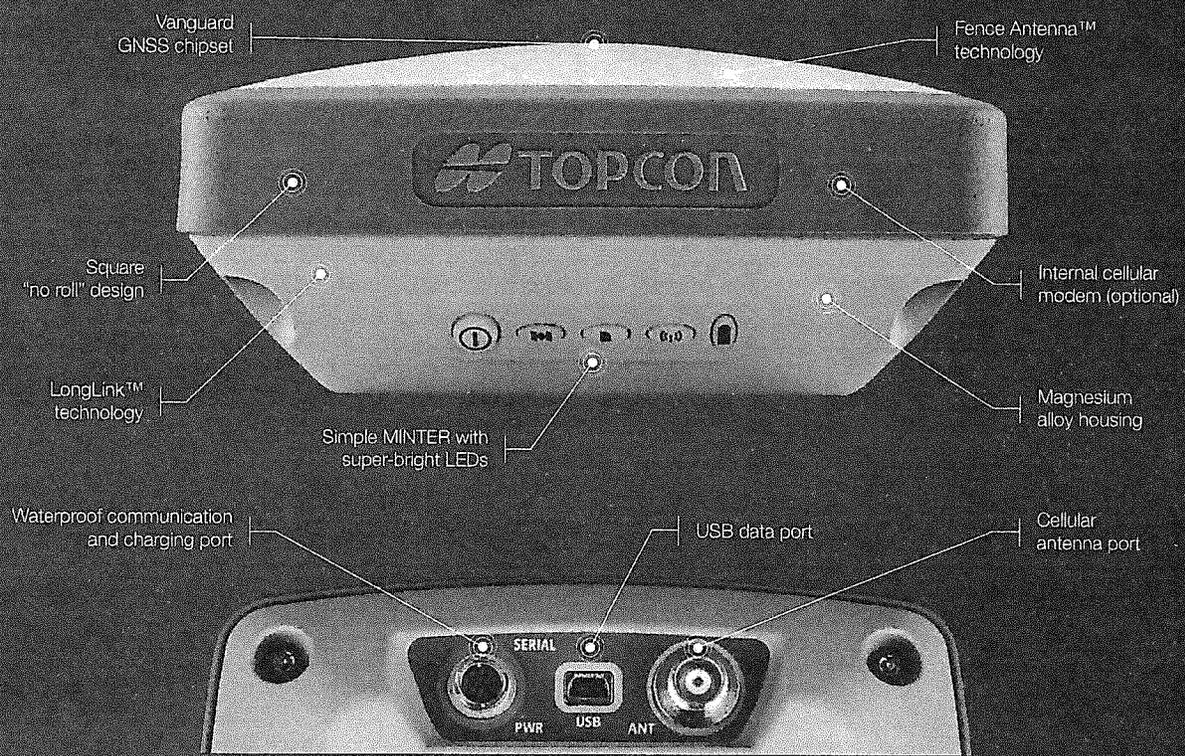
A pair of HiPer SR receivers can also be used with internal SIM cards as network rovers with Topcon TopNET/ive GNSS Reference Network, two network rovers with internet capable field controllers, two dual frequency static receivers, or in conjunction with a robotic instrument for Hybrid Positioning. All these configurations from just two receivers that can fit into any laptop carrying bag.



### MAGNET® Relay service

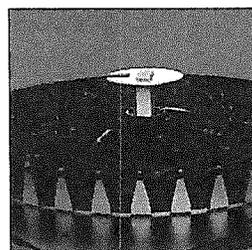
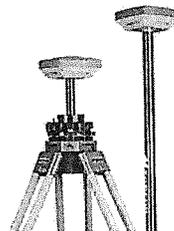
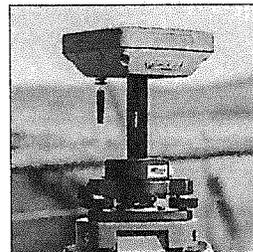
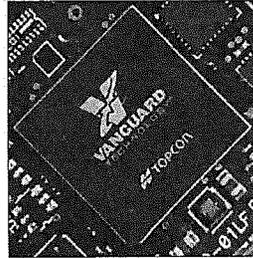
In cellular mode, the global MAGNET Relay RTK service allows a HiPer SR receiver to be used as a mobile base hosting and "relaying" corrections for up to 10 rovers.

MAGNET Relay is an RTK forwarding service that allows users to broadcast in-field base stations to their own private Company Account within the MAGNET Enterprise secure service for distributing the base station RTK messages to their own rover receivers.



GNSS Tracking	
Number of Channels	226-channel Vanguard Technology™ with Universal Tracking
GPS	L1, L2, L2C
GLONASS	L1, L2
SBAS	L1 C/A WAAS/MSAS/EGNOS/GAGAN
QZSS	L1 C/A
Antenna Type	Fence Antenna
Positioning Accuracy	
Static/Fast Static	H: 3.0 mm + 0.4 ppm V: 5.0 mm + 0.6 ppm
Precision Static**	H: 3.0 mm + 0.1 ppm V: 3.5 mm + 0.4 ppm
RTK (L1 + L2)	H: 10 mm + 0.8 ppm V: 15 mm + 1.0 ppm
DGPS	H: 0.4 m, V: 0.6 m
SBAS	H: 1.0 m, V: 1.5 m
Communication	
RTK Broadcast	LongLink™ 300 m+, Up to 3 simultaneous rovers
I/O Communications	Bluetooth®, Serial, USB
Cellular	Integrated HSPA+/CDMA
Dual SIM card available	
Data and Memory	
Data Update/Output Rate	Up to 10 Hz
Real Time Data Output	TPS, RTCM SC104 v2.x, 3.x and MSM, CMR/CMR+
ASCII Output	NMEA 0183 version 2.x, 3.x and 4.x
Physical	
Dimensions	150 x 150 x 64 mm
Weight	850 g – Basic 925 g – Cellular
Status Display/Panel	MINTER
External Power Connector	Yes
Operation Time	Up to 20 hours
Environmental	
Operating Temperature	
Internal Batteries	-20°C to 65°C
External Batteries	-40°C to 65°C
Storage Temperature	-40°C to 70°C
Humidity	100%, condensing
Dust/Water Rating	IP67

\*\* Under nominal observing conditions and strict processing methods, including use of dual frequency GPS, precise ephemerides, calm ionospheric conditions, approved antenna calibration, unobstructed visibility above 10 degrees and an observation duration of at least 3 hours (dependent on baseline length).



226-channel Vanguard with Universal Tracking  
Topcon's exclusive channel tracking technology provides unmatched GNSS signal flexibility and expandability.

Integrated cellular (optional)  
When cellular coverage is available, the HiPer SR is versatile enough for short or long range. MAGNET Relay serves up a simple way to perform mobile RTK session through a private environment.

Smart design  
An innovative combination of compact and lightweight engineering within a tight environmentally sealed form – guaranteed to survive a 2 m concrete drop.

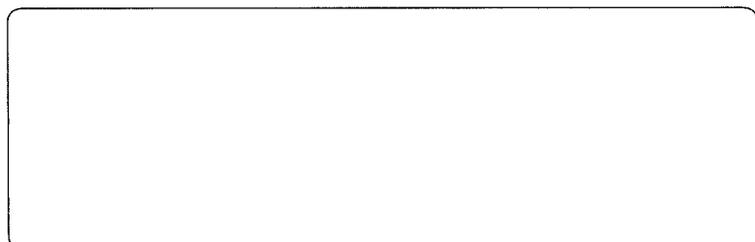
Fence Antenna™  
Compared to competitive options, the proven Fence Antenna technology isolates each signal and reduces noise delivering unparalleled results.



For more information:  
[topconpositioning.com/hiper-sr](http://topconpositioning.com/hiper-sr)

Specifications subject to change without notice.  
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7010-2108 D 4/17

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# STAFF REVIEW SUMMARY

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

Agenda Item: #10

Project/Item Name: Sanitary sewer televising

Location: Citywide

Requested Action: Approval of sanitary sewer televising

Staff Report/Description: Staff is proposing the approval of a three year proposal for sanitary sewer televising. Staff is recommending Flow-Rite Pipe & Sewer Services to perform the televising at a cost of \$24,500 per year. This cost is budgeted yearly within the Sanitary Sewer Department operating budget.

Attachments: Proposals

# Flow-Rite Pipe & Sewer Services, LLC

**Hydro Jetting Sewer Line Cleaning Pipe Line Video Inspection**

20526 W. Ridge Ave. PO Box 3 Galesville, WI 54630  
owner - Mike Happel

Phone: (608) 582-4793 or (866) 526-6161

Fax: (608) 582-4799 Mobile: (608) 385-1383

May 30, 2017

City of Onalaska

Bid proposal for three year contract for video inspection.

For years 2018, 2019 and 2020 the price will \$.50 (fifty cents) per foot for televising approximately 49,000 feet per year.

No additional charge for reverse set up.

This price includes all reports.

Sincerely



Mike Happel





1630 - 91st Avenue NE, Suite 110  
Blaine MN 55449

Phone 218-927-3138  
E-mail [joy.larsen@ritterinc.net](mailto:joy.larsen@ritterinc.net)

Quote: Televising

ITEM	UNIT	EST QTY	UNIT PRICE	AMOUNT
Mobilization Blaine MN to Onalaska WI	EA	1	\$ 825.00	\$ 825.00
Televis Sanitary Sewer 8" - 21"	LF	49,000	\$ 0.55	\$ 26,950.00

Hard-drive will contain video & pdf reports; a paper copy of reports can be included if needed

Total Quote \$ 27,775.00

*Joy Larsen-Ritter*  
CEO  
5/24/2017

# **STAFF REVIEW SUMMARY**

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

**Agenda Item:** #11

**Project/Item Name:** 2018 orthophotography flight

**Location:** Citywide

**Requested Action:** Approval of orthophotography flight

**Staff Report/Description:** Staff is proposing the acquisition of 2018 air photos of the entire City replacing the 2015 air photos. Ayres Associates has done this work for La Crosse County in 2007, 2010, 2011 and 2015 along with LIDAR flight work in 2017. Due to the extensive work with La Crosse County and the need for the data to be used within the City GIS system, which uses the La Crosse County base layers, staff is recommending Ayres Associates perform the work. Staff is recommending the acquisition of 3 inch ortho photos at a cost of \$21,400. This work was budgeted within the 2017 Capital Improvements budget.

**Attachments:** Proposal

## Holter, Jarrod

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**From:** Barstow, Joe  
**Sent:** Wednesday, January 24, 2018 2:01 PM  
**To:** Holter, Jarrod  
**Subject:** FW: phone call

Thank You

Joe Barstow

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**From:** Nienow, Zach [mailto:NienowZ@AyresAssociates.com]  
**Sent:** Wednesday, January 24, 2018 12:10 PM  
**To:** Barstow, Joe  
**Subject:** RE: phone call

Hi Joe,

We have prepared an estimate for 3-inch and for 6-inch orthophotography options for the City. Please see scope, deliverable, and fee information below.

**Scope of Work:**

Ayres Associates will provide the City of Onalaska with digital color orthophotography at 6-inch or 3-inch resolution across the requested project area of 21 PLSS sections. Digital orthophotography will be developed from aerial photography acquired using a calibrated, digital photogrammetric camera, in the spring during leaf-off, snow free, cloud-free conditions.

The delivered orthophotography will consist of GeoTIFF tiles based on PLSS sections for the 6-inch orthoimagery and PLSS quarter sections for the 3-inch orthoimagery . Additionally, we will provide MrSID or alternate format compressed tiles and a project-wide mosaic. The 6-inch orthoimagery will conform to ASPRS Level 2 standards for 1" = 100' scale mapping with a horizontal accuracy of 2.4 feet at 95% confidence level. The 3-inch orthoimagery will conform to ASPRS Level 2 standards for 1" = 50' scale mapping with a horizontal accuracy of 1.2 feet at 95% confidence level.

**Ground Control:**

Ayres will provide the ground control and targeting for the project using existing control locations or photo-identifiable points.

**Orthophotography Deliverables:**

Deliverable products included in the estimate are as follows:

- Digital ortho tiles in GeoTIFF and MrSID format
- Project-wide mosaic in MrSID format
- Ortho tile index in vector format
- Ground control locations in ASCII format
- FGDC compliant metadata

**Professional Fees, lump sum not-to-exceed:**

→ 3-inch orthos: \$21,400 ←

6-inch orthos: \$15,900

Please let me know if you have any questions regarding the above information. If you would like to proceed for this spring, we would need to have a contract in place by February 28.

Thank you,

Zach

**Zachary Nienow, GISP**

Project Manager - Geospatial Services

**Direct:** 608.443.1207 • **Mobile:** 608.212.5265

[NienowZ@AyresAssociates.com](mailto:NienowZ@AyresAssociates.com)

[www.AyresAssociates.com](http://www.AyresAssociates.com)

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**From:** Barstow, Joe [<mailto:jbarstow@cityofonalaska.com>]

**Sent:** Thursday, January 18, 2018 2:09 PM

**To:** Nienow, Zach <[NienowZ@AyresAssociates.com](mailto:NienowZ@AyresAssociates.com)>

**Subject:** RE: phone call

Should have probably asked what you were looking for. I went ahead and created a pdf layout detailing the

- PLSS sections
- City of Onalaska Limits
- Parcels, & Major Roads

The zip file contains the gis files for the list above plus more. Let me know if you need additional information

Thank You

Joe Barstow

---

**From:** Nienow, Zach [<mailto:NienowZ@AyresAssociates.com>]

**Sent:** Wednesday, January 17, 2018 4:31 PM

**To:** Barstow, Joe

**Subject:** RE: phone call

Joe,

Yes, I'll call you tomorrow. I ended up at home today with a sick child.

Thank you,

Zach

**Zachary Nienow, GISP**

Project Manager - Geospatial Services

**Direct:** 608.443.1207

[NienowZ@AyresAssociates.com](mailto:NienowZ@AyresAssociates.com)

[www.AyresAssociates.com](http://www.AyresAssociates.com)

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**From:** Barstow, Joe [<mailto:jbarstow@cityofonalaska.com>]

**Sent:** Wednesday, January 17, 2018 4:26 PM

# STAFF REVIEW SUMMARY

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

Agenda Item: #12

Project/Item Name: Valve operator/exerciser

Location: Citywide

Requested Action: Approval of valve operator/exerciser

Staff Report/Description: Replacement of the existing valve operator/exerciser was included within the 2018 Water Department equipment budget. The current unit has worn to the point that the wiring will give out and data is lost as the valves are turned. The existing data logger will be reused with the new valve exercising unit. Staff is recommending replacement of the current Wachs unit with another Wachs unit which works with the current data logger and GIS system.

Attachments: Proposal & data sheet

# Quotation

TO: **John Wiatt**  
 City of Onalaska  
 415 Main St.  
 Onalaska, WI 54650

Date: 1/9/2018  
 Quotation Number: KR107146  
 Payment Terms: Net 30  
 Shipping Terms: FOB Destination  
 Valid Through: 3/10/2018  
 Estimated Delivery: 3 Weeks ARO

E.H. Wachs is pleased to offer the following quotation.

Item Number	Description	Qty	U/M	Unit Price (USD)	Line Total (USD)
1	17-000-22 Wachs Standard Duty VITALS™-Ready TM-7, (Without Data Logger) Valve Operator, Exercisor and Rehabilitator. Standard duty hydraulic drive VITALS™-Ready Truck-Mounted Valve Exerciser with Wachs Patented Automation Computer Control. 1,500 ft. lb. torque system with electronic torque and direction control, electronic revolution counter, integral 2000 PSI auxiliary hydraulic circuit (add 17-401-00 for HTMA Class II cooler), pressure gauge, 8' long valve key with 2" universal socket and operating/installation manual. Requires Ruggedized TM-7 Controller/Datalogger (Part#79-422-01/02). Domestic destination and freight charges included.  Installation Note: Failure to use an ASE Certified E1-E3 technician or Factory Authorized Servicer (FAS) will void warranty.	1	EA	15,750.00	15,750.00
2	79-419-00 Bluetooth Adapter for ERV or TM-7. Allows connection between machine and controller to function either wirelessly or tethered.	1	EA	525.00	525.00
3	SPART Vitals Ready slides to be fitted with the following enhancements and modifications: * Pressure guage for confirmation of torque output when manually operating machine * Counter for capturing both positive and negative turning counts when manually operating machine.	1	EA	875.00	875.00
4	17-401-00 Hydraulic Cooler, required to add Class 2 Circuit.	1	EA	1,575.00	1,575.00
5	17-402-00 Wachs Utility 16 H.P. Gas Engine Driven HTMA Class II Frame Mounted Power Pack: Briggs & Stratton electric start V-Twin engine (12 kW) with hydraulic pump, capable of 8 GPM (30.3 LPM) @ 2,000 PSI (138 bar). Engine controls are operated at the front panel of the TM-7 reservoir.  Note: when used with the TM-7 SD output RPM is 5-25 and when used with TM-7 HD output RPM is 3-16.	1	EA	4,375.00	4,375.00
6	<del>79-422-01 Wachs HC-100 (North America) ruggedized Controller/Datalogger to operate and collect data (including GPS) during the operation of ERV-750, TM7 and TM-6 machine (includes PDA style PC, 12v vehicle charger kit, AC charging kit, USB sync cable, machine control cable, screen protector &amp; preloaded with Vitals Mobile software). Already GPS enabled, however adding option 79-412-02 (Trimble R2 GNSS receiver) provides survey grade centimeter accuracy.</del>	<del>1</del>	<del>EA</del>	<del>2,990.00</del>	<del>2,990.00</del>

→ USE CURRENT UNIT

Total (USD) ~~\$26,090.00~~

\$23,100.-



**Water Utility Products**  
600 Knightsbridge Pkwy | Lincolnshire IL 60069  
T +1 847 537 8800 | F +1 847 520 1147  
ehwachs.com

# Quotation

Page 2 of 2

TO: John Wiatt

Date: 1/9/2018  
Quotation Number: KR107146

Thank you for the opportunity to quote your application needs. If you have any questions or if I may be of any further assistance to you please do not hesitate to notify me.

(SALES TAX!!!!) We collect sales tax in all but the following states: AK, DE, MT, OR and NH. If you are tax exempt please supply your identification number and certificate with your order. If your exempt number is not on file, tax will be added to your order.

Ken Redding  
Utility Technical Sales Rep  
815-943-4785 x2773  
kredding@ehwachs.com

Sales of E.H. Wachs products and services are expressly limited to and made conditional on acceptance of its current Terms and Conditions of Sale, found at [www.ehwachs.com](http://www.ehwachs.com) ("Terms"). Any additional or different terms are hereby rejected. Commencement of work by E.H. Wachs or acceptance of delivery of products by you constitutes your acceptance of the Terms.



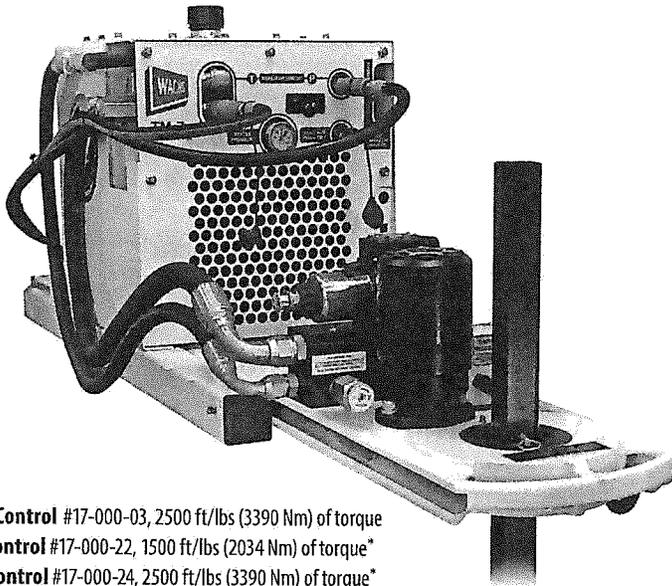
**E.H. WACHS®**

A Division of ITW

Superior Equipment. Complete Support.™

**TM-7**

**MOUNTED VALVE OPERATORS**



**HD Manual Control** #17-000-03, 2500 ft/lbs (3390 Nm) of torque  
**SD VITALS Control** #17-000-22, 1500 ft/lbs (2034 Nm) of torque\*  
**HD VITALS Control** #17-000-24, 2500 ft/lbs (3390 Nm) of torque\*

Truck Mounted Valve Exerciser. Designed with a hydraulic drive system for torque control and direction of rotation. Equipped with an automatic cut off if preset torque limit is reached, electronic revolution counter and integral auxiliary hydraulic circuit, 8ft (2.4M) key. The TM-7 allows a single operator to quickly and safely exercise valves from 4in (100mm) and larger.

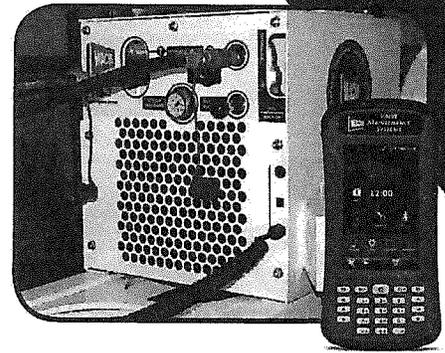
**FEATURES**

- 2500/ft lbs (Heavy Duty)/1500/ft lbs (Standard Duty) of torque with hands free, “no assumption” operation
- Includes 8ft valve key and 2in AWWA adapter. Low clearance keys optional
- Designed with a hydraulic drive system for torque control & direction of rotation
- 21 inch reach from frame to center of head; 27 inch maximum reach
- HTMA class II hydraulic tool circuit with 10 gal reservoir
- Power supply requirements: SD: 2-20 GPM @2,000 PSI (8 GPM recommended)  
HD: 2-30 GPM @ 2,000 PSI (12 GPM recommended)
- Fully compatible with VITALS software which enables full data logging and sync between the HC-100 and your desktop GIS. Requires Ruggedized HC-100 controller/data logger with built in GPS\*
- Allows a single operator to exercise valves from 6in to 60in (DN150 to 1500)

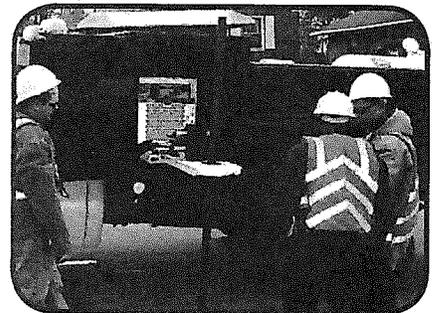
**OPTIONAL FEATURES**

- Bluetooth wireless connectivity to controller
- Swivel Plate
- Hydraulic Cooler
- Steel & Low Clearance Valve Keys
- Sub-meter and Decimeter GPS

\*HC-100 data logger sold separately



Operate the TM-7 to exercise valves with the HC-100 controller & VITALS software



Easily installed in utility vehicles to access valves curb side.

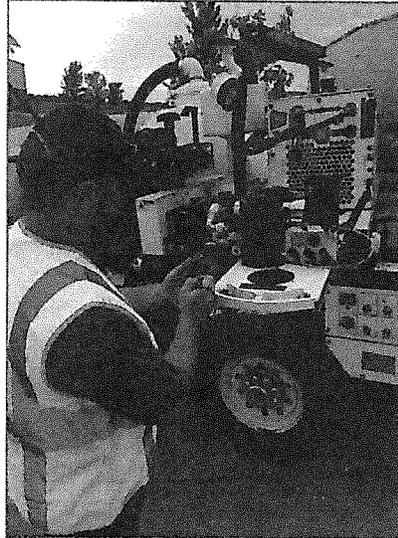


The TM-7 Swivel optional allows up to 15 degrees of valve stem misalignment

**WACHS UTILITY PRODUCTS**

455 Comanche Circle Harvard, Illinois 60033 +1.815.943.4785  
[www.turnvalves.com](http://www.turnvalves.com)

## TM-7 Truck Mounted Valve Exerciser



- Designed with a hydraulic drive system for torque control & direction of rotation
- Automatic cut off if preset torque limit is reached, electronic revolution counter
- Integral auxiliary HTMA class II hydraulic tool circuit with 10 gal reservoir
- 8' (2.4M) valve key
- Newest modular design single hydraulic motor & drive gear on a ball bearing lockable slide offers increased efficiency & compact dimensions
- Allows a single operator to exercise valves from 6 to 60 in (DN150-1500) safely & quickly

Heavy Duty Manual Control 17-000-03, 2500 ft/lbs (3390 Nm) of torque

Standard Duty VITALS Control 17-000-22, 1500 ft/lbs (2034 Nm) of torque\*

Heavy Duty VITALS Control 17-000-24, 2500 ft/lbs (3390 Nm) of torque\*

\*HC-100 with VITALS controller sold separately

### TM-7 Slide Upgrades

Available in both Standard Duty & Heavy Duty models. Includes electronic torque & direction control, electronic revolution counter & operating/installation manual. Require existing TM-7 mounting frame, hydraulic/electric supply & HC-100 controller.

TM-7 VITALS Ready Heavy Duty – 17-000-26

TM-7 VITALS Ready Standard Duty – 17-000-25

HC-100 with VITALS Controller – 79-422-01/02

# STAFF REVIEW SUMMARY

## CITY OF ONALASKA BOARD OF PUBLIC WORKS

February 6, 2018

Agenda Item: #13

Project/Item Name: Two-way radio upgrade

Location: Citywide

Requested Action: Approval of two-way radio upgrades

Staff Report/Description: The current Public Works Department radio system is analog technology. Upgrades will be in digital technology that will be compliant with proposed Federal narrow band mandate. Digital radios will also allow transmission on portable walk units from inside the Public Works Facility and other City buildings. Digital radios will also offer clearer transmission and ability to transmit clearly into coulee areas serviced by the Department. This project was budgeted in the 2018 Equipment budget.

Attachments: Proposals



Brandon Communications  
 800 Central Avenue North  
 Brandon, MN 56315  
 320-524-2283  
 Fax 320-524-2409

[Brancomm@brancomm.com](mailto:Brancomm@brancomm.com)

P&H Services  
 1501 Pearl Street  
 Bangor, WI 54614  
 608-486-2263  
 Fax 608-486-4846

[Brancomm@brancomm.com](mailto:Brancomm@brancomm.com)



**Proposal  
 43104**

Date: 01/04/2018

**Proposal For:**

Name	City of Onalaska- Department of Public Works
Contact	John Wiatt- Utility Crew Leader
Address	252 Mason Street
City, State, Zip	Onalaska, WI 54650
Phone, Fax	608-780-8846 Ext. 406
Email	<a href="mailto:jwiatt@cityofonalaska.com">jwiatt@cityofonalaska.com</a>

Prepared by:  
**Haley Lund**  
[hlund@gardonville.net](mailto:hlund@gardonville.net)

Qty	Model	DESCRIPTION	UNIT PRICE	AMOUNT
30	NX-3720HGK	Kenwood VHF Nexedge Conventional and Trunked Digital Mobile Radio. 50 Watt, Includes Mounting Bracket, Power Cable, Microphone, and Premium 3 Year Warranty. Programming and Setup Included.	\$550.00	\$16,500.00
15	NX-3220K	Kenwood VHF Conventional and Trunked Digital Handheld Radio. Includes 2000 Mah Lithium Ion Battery, Rapid-Charger, Belt-clip, Long Antenna and Premium 3 Year Warranty. Programming and Setup Included.	\$525.00	\$7,875.00
1	NXR-710	Kenwood VHF 50 Watt Nexedge Conventional and Trunked Repeater System. Includes Premium 3 Year Warranty. System Would Utilize The Existing Duplexer, Power Supply, and Antenna System.	\$1,879.95	\$1,879.95
2	DR10	DC Remote Controls Including Level Setting- Wire Routing per TM. Mobile Radio Removal, Reinstallation, Antenna System Check- \$45 Per	\$409.95	\$819.90
30	Rebate	Rebate Valid Through March 31 2018 on NX-3720 \$50 Per Radio -Total listed	(\$1,500.00)	
15	Rebate	Rebate Valid Through March 31 2018 on NX-3220 \$50 Per Radio -Total listed	(\$750.00)	
		Proposal to Upgrade The Existing Analog Radio System To A Nexedge Digital System that Would Provide Superior Audio and Clarity In Contrast To The Quiet and Degraded Audio with the Analog System. The Digital System Would Also Be Compliant With The Next Narrow Band Mandate That the FCC Has Predicted Will Be Issued Sometime After 2018.		

Please call us BEFORE you pay any agency for license work solicitations

Accepted by: \_\_\_\_\_  
 Date: \_\_\_\_\_

**Proposal valid for 30 days**

Total Equipment	\$27,074.85
Sub-total	\$27,074.85
Tax	
Service Call	
Base and antenna installation	
Programming	
SALES TAX	
10 year license including FRN registration, coordination, FCC fees, construction notification	\$375.00
<b>TOTAL</b>	<b>\$27,449.85</b>
<b>TOTAL AFTER REBATE</b>	<b>\$25,199.85</b>

If you have any questions concerning this proposal please contact Haley Lund at 320-524-4184 or 320-491-8489.

**THANK YOU FOR YOUR BUSINESS!**



**Baycom Inc.**  
 3470 Losey Blvd. South  
 La Crosse, WI 54601  
 Phone: (608) 788-8980 Fax: (608) 787-1707 Email: mbohan@baycominc.com

Date: 1/18/2018  
 MCM#:   
 Quotation: Digital Upgrade  
 PO#:

Prepared for: City of Onalaska DPW  
 Attn: John Wiatt  
 Address: 252 Mason St  
 City, State, Zip: Onalaska, WI 54650

Phone: (608) 780-8846 Ex. 406 E-mail: jwiatt@cityofonalaska.com

Qty.	Item ID	Description	Unit Price	Total
30	A	<b>MOTOTRBO XPR2500, VHF, 50W Mobile Radio</b> Includes: Standard Microphone, 10' Power Cable, Ignition Sense Cable, Low Profile Bracket, Radio Programming <b>Warranty: 3 Year</b> <i>Price Based on 30-59 Unit Quantity Discount</i> (Assumes Customer is doing installation and using existing Coax and Antennas)	\$575.00	\$17,250.00
15	B	<b>MOTOTRBO XPR3300e, VHF, Portable Radio</b> Includes: IMPRES Remote Speaker Microphone, IMPRES Battery, Standard VHF Antenna, Single Unit Charger, Radio Programming <b>Warranty: 3 Year</b> <i>Price Based on 10-29 Unit Quantity Discount</i>	\$490.00	\$7,350.00
0	B1	<b>IMPRES Remote Speaker Microphone (Optional)</b>	\$76.50	\$0.00
0	B2	<b>Motorola Multi-Unit Charger (Optional)</b> Includes: Docking Charger that charges (6) Radios in one location	\$535.00	\$0.00
1	C	<b>Motorola XPR2500, VHF, 25W Base Radio (Radio Closet)</b> Includes: Standard Microphone, 10' Power Cable, Low Profile Bracket, Power Supply, Radio Programming <b>Warranty: 3 Year</b> Note: Assumes reuse of existing Coax, and Antenna	\$674.40	\$674.40
1	D	<b>Motorola XPR2500, VHF, 25W Base Radio (Garage)</b> Includes: Desktop Microphone - 10' Power Cable - Low Profile Bracket - Power Supply, VHF Magmount Antenna <b>Warranty: 3 Year</b>	\$765.00	\$765.00
4	E	<b>DC Remote Controls</b> Assumes reusing existing wiring and Tone Remote adapter	\$289.00	\$1,156.00
1	F	<b>Motorola MOTOTRBO™ SLR5700 Repeater*</b> Includes: 1 new SLR5700 50Watt VHF Repeater, Power Cord. <b>Warranty: 2 years</b> <b>*Note: Supports Two Simultaneous Voice Paths in Digital TDMA</b> <i>Price based on utilizing existing duplexer, power supply and antenna system</i>	\$2,600.00	\$2,600.00
1	G	<b>Travel and Labor Estimate</b> Includes: Travel to DPW office and tower sites. On-Site Programming and Leveling of equipment, Installation of Base Radios and DC remotes. Installation of Repeater. Additional labor required beyond scope of work billed at \$95/Hr.	\$815.00	\$815.00
			<b>Item Total:</b>	<b>\$30,610.40</b>
			Shipping:	\$0.00
			Sub Total:	\$30,610.40
If tax exempt, please provide Tax exempt ID			Tax:	\$1,836.62
Price valid 60 days from date of Quote			Total:	\$32,447.03

Quoted by: Mike Bohan

Date: 1/18/2018

Accepted by: \_\_\_\_\_

Date: \_\_\_\_\_

Note: Acceptable forms of payment include check, cash, or ACH transfer

# KENWOOD

## NEXEDGE®

## NX-3720HG/3820HG

### NXDN™ DMR

NEXEDGE VHF/UHF  
MULTI-PROTOCOL DIGITAL AND ANALOG MOBILE RADIOS



This adaptable mobile radio supports both NXDN and DMR digital protocols as well as mixed digital & FM analog operation, enabling it to serve with distinction in a wide range of enterprise- and operation-critical applications. Designed with flexibility in mind, it's packed with convenient features like Bluetooth® for hands-free operation and built-in GPS. And providing greater freedom of installation, the radio's front panel can be used as a remote control head (this requires an optional upgrade, to be available in future). Additionally, for expansion capability a software license certification system facilitates extensive customization.

#### ● PRODUCT HIGHLIGHTS

- Multi-protocol digital radio: Designed to operate under an NXDN or DMR digital, and FM analog protocols
- NXDN Conventional and Type-C & Gen2 Trunking
- DMR Tier II & Site Roaming
- Mixed Digital & FM Analog Operation allows gradual migration at your own pace
- 4-line Basic Frame (2-line Main/Sub-LCD, icon, & key guide) / 14 Characters
- 4-Line Text Message Frame (2 Lines of Text, icon & key guide) Note: The number of lines may vary depending on the display language (character set).
- 7-color LED indicator
- External and Internal Speaker Switching
- Built-in GPS Receiver/Antenna for effective fleet management
- Built-in Bluetooth for hands-free operation – Applicable Bluetooth profiles: HSP (Headset Profile provided) and SPP (Serial Port Profile available as an option; availability depends on the model)
- Renowned KENWOOD Audio Quality can be achieved with Active Noise Reduction (ANR) that utilizes built-in DSP
- Software DES and AES Encryptions for NXDN Conventional/Trunking and DMR Conventional protocols
- MIL-STD-810 C/D/E/F/G

#### ● GENERAL FEATURES

- Audio Output Power (4 Watts at 4 ohms)
- 512 CH/128 Zones
- Maximum of 1000 CH/Radio with option
- Paging Call
- Emergency Call
- Status/Text Message
- Remote Stun/Kill/Check

#### ● DIGITAL - NXDN MODE

- NXDN Type-C & Gen2 Trunked
- NXDN Conventional
- 6.25 & 12.5 kHz Channels
- All Group Call
- Over-the-Air Alias (OAA)
- Over-the-Air Programming (OTAP)

#### ● DIGITAL - DMR MODE

- Complies with ETSI DMR Tier II standards
- Two-slot TDMA in 12.5 kHz channels
- Call Interruption
- Dual-slot Direct Mode
- ARC4 Encryption
- Energy Efficient

#### ● ANALOG - FM MODE

- Conventional & LTR Trunking
- FleetSync/II: PTT ID ANI / Caller ID Display, Selective Group Call, Emergency Status / Text Messages
- MDC-1200: PTT ID ANI / Caller ID Display, Emergency, Radio Check / Inhibit
- QT / DQT, 2-Tone
- Built-in Voice Inversion Scrambler



## OPTIONAL ACCESSORIES

- **KMC-59C**  
DESKTOP MICROPHONE

- **KMC-35/36**  
IP54/55 MICROPHONE  
(without/with 12-keypad)

- **KES-3**  
EXTERNAL SPEAKER  
(compact low profile;  
3.5 mm plug)



- **KES-5**  
EXTERNAL SPEAKER  
(40 W max input, requires  
KCT-60)

- **KCT-23**  
DC POWER CABLE

- **KCT-60 CONNECTION**  
CABLE (D-sub 15 to  
Molex 15 Pin Connector)



- **KCT-18**  
IGNITION SENSE  
CABLE  
(requires KCT-60)

- **KLF-2**  
LINE FILTER

- **KMB-10**  
KEY LOCK  
ADAPTER



- **KRA-40G**  
GPS ACTIVE  
ANTENNA

- **KPS-15**  
DC POWER SUPPLY

- **KPG-180AP**  
OTAP MANAGER

- **KMB-34**  
MOUNTING CASE FOR  
KPS-15 AND MOBILE  
RADIOS



All accessories and options may not be available in all markets.  
Contact an authorized KENWOOD dealer for details and complete list of all accessories and options.

## SPECIFICATIONS

GENERAL	NX-3720HG	NX-3820HG
Frequency Range	136-174 MHz	Type 1: 450-520 MHz Type 2: 400-470 MHz
Max. Channels per Radio	Up to 1000 channels with option	
Number of Channels	512	
Number of Zones	128	
Channel Spacing	Analog	12.5/15/25/30* kHz
	Digital	6.25/12.5 kHz
Operating Voltage	13.6 V DC +/-15 %	
Current Drain	Standby	0.45 A
	RX	2.3 A
	TX	12 A
Operating Temperature	-22°F to +140°F (-30°C to +60°C)	
Frequency Stability	± 1.0 ppm (-22°F to +140°F)	
Antenna Impedance	50 Ohms	
Dimensions (W x H x D) Radio with Control Head *Projections not included	6.30 x 1.69 x 6.30 in (160 x 43 x 160 mm)	
Weight (net) Radio with Control Head	2.65 lb (1.2 kg)	
FCC ID	Type 1	K44479200
	Type 2	—
IC Certification	Type 1	282F-479200
	Type 2	—

RECEIVER	NX-3720HG	NX-3820HG
Sensitivity	NXDN 6.25 kHz Digital, 3 % BER	0.20 µV
	NXDN 12.5 kHz Digital, 3 % BER	0.25 µV
	DMR 12.5 kHz Digital, 5 % BER	0.30 µV
	DMR 12.5 kHz Digital, 1 % BER	0.45 µV
Selectivity	Analog, 12 dB SINAD	0.25 µV
	Analog @ 12.5 kHz	70 dB
Intermodulation	Analog @ 25 kHz	80 dB
		70 dB
Spurious Rejection	80 dB	
Audio Distortion	2 %	
Audio Output	4 W/4 Ohms	
TRANSMITTER	NX-3720HG	NX-3820HG
RF Power Output (High / Mid / Low)	50 W / 30 W / 5 W	45 W / 30 W / 5 W
Spurious Emission	-73 dB	-75 dB
FM Hum & Noise	Analog @ 25 kHz	45 dB
	Analog @ 12.5 kHz	40 dB
Audio Distortion	2 %	
Digital Protocol	ETSI TS 102 361-1, -2, -3	
Emission Designator	16K0F3E*, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 7K60FXD, 7K60FXE, 4K00F1E, 4K00F1D, 4K00F7W, 4K00F2D	

\*25 and 30 kHz are not included in the models sold in the USA or US territories.  
Analog measurements made per TIA603. Specifications are measured according to applicable standards.  
Specifications shown are typical and subject to change without notice, due to advancements in technology.

## APPLICABLE MIL-STD & IP

MIL Standards	Methods / Procedures				
	810C	810D	810E	810F	810G
Low Pressure	500.1/ I	500.2/ I, II	500.3/ I, II	500.4/ I, II	500.5/ I, II
High Temperature	501.1/ I, II	501.2/ I, II	501.3/ I, II	501.4/ I, II	501.5/ I, II
Low Temperature	502.1/ I	502.2/ I, II	502.3/ I, II	502.4/ I, II	502.5/ I, II
Temp. Shock	503.1/ I	503.2/ I	503.3/ I	503.4/ I, II	503.5/ I
Solar Radiation	505.1/ I	505.2/ I	505.3/ I	505.4/ I	505.5/ I
Rain*	506.1/ I, II	506.2/ I, II	506.3/ I, II	506.4/ I, III	506.5/ I, III
Humidity	507.1/ I, II	507.2/ II, III	507.3/ II, III	507.4	507.5/ II
Salt Fog	509.1/ I	509.2/ I	509.3/ I	509.4	509.5
Dust	510.1/ I	510.2/ I	510.3/ I	510.4/ I, III	510.5/ I
Vibration	514.2/ VIII, X	514.3/ I	514.4/ I	514.5/ I	514.6/ I
Shock	516.2/ I, II, V	516.3/ I, IV, V	516.4/ I, V	516.5/ I, IV, V	516.6/ I, IV, V
International Protection Standards	IP54 (Radio unit itself)				
Dust & Water*	IP54 (Radio unit itself)				

\*Microphone KMC-35 or KMC-36 must be connected to the radio, and all accessory connectors must be covered.

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• FleetSync® is a registered trademark of JVC/KENWOOD Corporation. • All other trademarks are the property of their respective holders.

**JVC/KENWOOD USA Corporation**  
Communications Sector Headquarters  
3970 Johns Creek Court, Suite 100, Suwanee, GA 30024-1265  
Order Administration/Distribution  
P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745  
<http://www.kenwood.com/usa.com/>  
<http://comms.kenwood.com/en/>

**JVC/KENWOOD Canada Inc.**  
Canadian Headquarters and Distribution  
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8  
<http://www.kenwood.com/ca/com/>  
<http://comms.kenwood.com/en/>



ISO9001 Registered  
Communications Systems Division  
JVC/KENWOOD Corporation

CL863K-E2

# KENWOOD

## NEXEDGE®

## NX-3220/3320

### NXDN™ DMR

### NEXEDGE VHF/UHF MULTI-PROTOCOL DIGITAL AND ANALOG PORTABLE RADIOS



This versatile handheld radio supports both NXDN and DMR digital protocols as well as mixed digital & FM analog operation, enabling it to serve with distinction in a wide range of enterprise- and operation-critical applications. Compact yet designed with durability in mind, it's packed with convenient features like Bluetooth® for hands-free operation and built-in GPS. Three different models are available: Full Keypad model with LCD, Standard Keypad model with LCD and a large 4-way D-pad, and the Basic Model without LCD or keypad. Additionally, for expansion capability a software license certification system facilitates extensive customization.



Full Keypad Model

Standard Keypad Model

Basic Model

#### ● PRODUCT HIGHLIGHTS

- Multi-protocol digital radio: Designed to operate under an NXDN or DMR digital, and FM analog protocols
- NXDN Conventional and Type-C & Gen2 Trunking
- DMR Tier II & Site Roaming
- Mixed Digital & FM Analog Operation allows gradual migration at your own pace
- 4-Line Basic Frame (2-Line Main/Sub-LCD, icon & key guide) / 14 Characters
- 5-Line Text Message Frame (3 Lines of Text, icon & key guide)\*
- 7-color Light Bar Indicator on the top panel
- 4-way Directional-pad (D-pad) for intuitive control and operation
- Built-in GPS Receiver/Antenna for effective fleet management
- Built-in Bluetooth for hands-free operation – Applicable Bluetooth profiles: HSP (Headset Profile provided) and SPP (Serial Port Profile available as an option)
- Renowned KENWOOD Audio Quality can be achieved with Active Noise Reduction (ANR) that utilizes built-in DSP
- Software DES and AES Encryptions for NXDN Conventional/Trunking and DMR Conventional protocols
- Built-in Motion Sensor (Man-down, Stationary and Motion Detection)
- IP54/55/67 and MIL-STD-810 C/D/E/F/G

\*The number of lines may vary depending on the display language (character set).

#### ● GENERAL FEATURES

- 1 Watt Audio Output Power
- UHF: 120 MHz capability
- Available models: Full Keypad (w/ LCD and full keypad), Standard Keypad (w/ LCD and 4-way large D-pad/4 key), and Basic (w/o LCD and keypad)
- 260 CH/128 Zones (64 CH/4 Zones for Basic model)
- Maximum of 1,000 CH/Radio with option
- Intrinsically Safe Option (Available later)
- Paging Call
- Emergency Call
- Status/Text Message
- Remote Stun/Kill/Check

#### ● DIGITAL - NXDN MODE

- NXDN Type-C & Gen2 Trunked
- NXDN Conventional
- 6.25 & 12.5 kHz Channels
- All Group Call
- Over-the-Air Alias (OAA)
- Over-the-Air Programming (OTAP)

#### ● DIGITAL - DMR MODE

- Complies with ETSI DMR Tier II standards
- Two-slot TDMA in 12.5 kHz channels
- Call Interruption
- Dual-slot Direct Mode
- ARC4 Encryption
- Energy Efficient

#### ● ANALOG - FM MODE

- Conventional & LTR Trunking
- FleetSync/II: PTT ID ANI / Caller ID Display, Selective Group Call, Emergency Status / Text Messages
- MDC-1200: PTT ID ANI / Caller ID Display, Emergency, Radio Check / Inhibit
- QT / DQT, 2-Tone
- Built-in Voice Inversion Scrambler

## OPTIONAL ACCESSORIES

- **KNB-55L/57L/78L\***  
Li-Ion BATTERY PACK  
(7.4 V/1480 mAh, 7.4 V/2000 mAh, 7.4 V/2860 mAh)
- **KNB-56N**  
NI-MH BATTERY PACK  
(7.2 V/1400 mAh)
- **KNB-68LC\***  
Li-Ion BATTERY PACK  
(7.4 V/2000 mAh, Intrinsically Safe)  
\*Available Later
- **KBP-5**  
BATTERY CASE (6 AA)
- **KSC-25LS/25S**  
RAPID CHARGER  
(Li-Ion Only/Tri-Chem)
- **KSC-256**  
MULTIPLE CHARGER  
(6-pocket)
- **KMB-30**  
MOUNTING BRACKET (for KSC-25S)
- **KVC-23**  
VEHICULAR CHARGER
- **KRA-22/23**  
VHF/UHF HELICAL ANTENNA  
(Low Profile)
- **KRA-26**  
VHF HELICAL ANTENNA  
(Standard Length)
- **KRA-27**  
UHF WHIP ANTENNA  
(Standard Length)
- **KRA-41/42**  
VHF/UHF STUBBY ANTENNA
- **KRA-25/28**  
HIGH GAIN (Whip)/  
BROADBAND VHF (Whip)
- **KEP-1/2**  
EARPHONE  
(3.5 mm/2.5 mm)
- **KCM-45D**  
SPEAKER MICROPHONE  
(IP54/55 & TDMA)
- **KHS-7/7A/10/22**  
HEADSET (Single Muff / Single  
Muff & In-line PTT / Heavy Duty  
/ Behind-the-Head)
- **KHS-8/9**  
PALM MICROPHONE WITH  
EARPHONE (2-wire/3-wire)
- **KHS-26/27/31C**  
HEADSET (with EAR BUD IN-  
LINE PTT / with D-RING IN-  
LINE PTT / with C-RING)
- **KBH-11**  
BELT CLIP (2.5")
- **KPG-180AP**  
OTAP MANAGER
- **KLH-207**  
NYLON CASE
- **KLH-206**  
LEATHER CASE

All accessories and options may not be available in all markets. Contact an authorized KENWOOD dealer for details and complete list of all accessories and options.

## SPECIFICATIONS

GENERAL	NX-3220	NX-3320
Frequency Range	136-174 MHz	400-520 MHz
Max. Channels per Radio	Up to 1000 channels with option	
Number of Channels	260 (64 for no LCD models)	
Number of Zones	128 (4 for no LCD models)	
Channel Spacing	Analog	12.5/15/20/25*/30** kHz
	Digital	6.25/12.5 kHz
Power Supply	7.5 V DC ±20 %	
Battery Life (FDMA/TDMA) 5-5-90	KNB-55L (1,480 mAh)	Approx. 8 hours/Approx. 9.5 hours
	KNB-56N (1,400 mAh)	Approx. 8 hours/Approx. 9 hours
	KNB-57L (2,000 mAh)	Approx. 11 hours/Approx. 13.5 hours
	Operating Temperature	-22°F to +140°F (-30°C to +60°C)
Frequency Stability	± 2.0 ppm	
Dimensions (W x H x D) <small>*Projections not included</small>	Radio only	2.20 x 4.71 x 1.43 in (56 x 119.6 x 36.4 mm)**
	With KNB-55L (1,480 mAh)	2.20 x 4.71 x 1.43 in (56 x 119.6 x 36.4 mm)**
	With KNB-56N (1,400 mAh)	2.20 x 4.71 x 1.68 in (56 x 119.6 x 42.7 mm)**
	With KNB-57L (2,000 mAh)	2.20 x 4.71 x 1.53 in (56 x 119.6 x 39 mm)**
Weight (net)	Radio only	7.8 oz (220 g)*3
	With KNB-55L (1,480 mAh)	11.1 oz (315 g)*3
	With KNB-56N (1,400 mAh)	14.5 oz (410 g)*3
	With KNB-57L (2,000 mAh)	12.0 oz (340 g)*3
FCC ID	K44479000	K44479100
IC Certification	282F-479000	282F-479100

\*1.25 and 30 kHz are not included in the models sold in the USA or US territories. \*\*Dimensions for Full Keypad/Std Keypad Models \*3 Weight for Full Keypad Model  
Analog measurements made per TIA603. Specifications are measured according to applicable standards.  
Specifications shown are typical and subject to change without notice, due to advancements in technology.

RECEIVER	NX-3220	NX-3320
Sensitivity	NXDN 6.25 kHz Digital, 3% BER	0.20 µV
	NXDN 12.5 kHz Digital, 3% BER	0.25 µV
	DMR 12.5 kHz Digital, 5% BER	0.30 µV
	DMR 12.5 kHz Digital, 1% BER	0.45 µV
	Analog, 12 dB SINAD	0.25 µV
	Analog @ 12.5 kHz	65 dB
Selectivity	Analog @ 25 kHz	72 dB
Intermodulation	70 dB	
Spurious Rejection	70 dB	
Audio Distortion	3%	
Audio Output (Internal Speaker)	3% Distortion	500 mW/8 Ohms
	5% Distortion	1000 mW/8 Ohms
TRANSMITTER	NX-3220	NX-3320
RF Power Output (High / Mid / Low)	5 W / 4 W / 1 W	
Spurious Emission	-70 dB	
FM Hum & Noise	Analog @ 25 kHz	45 dB
	Analog @ 12.5 kHz	40 dB
Audio Distortion	3%	
Digital Protocol	ETSI TS 102 361-1, -2, -3	
Emission Designator	16K0F3E*, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 7K60FXD, 7K60FXE, 4K00F1E, 4K00F1D, 4K00F7W, 4K00F2D	

## APPLICABLE MIL-STD & IP

MIL Standards	Methods / Procedures				
	810C	810D	810E	810F	810G
Low Pressure	500.1/I	500.2/I, II	500.3/I, II	500.4/I, II	500.5/I, II
High Temperature	501.1/I, II	501.2/I, II	501.3/I, II	501.4/I, II	501.5/I, II
Low Temperature	502.1/I	502.2/I, II	502.3/I, II	502.4/I, II	502.5/I, II
Temp. Shock	503.1/I	503.2/I	503.3/I	503.4/I, II	503.5/I
Solar Radiation	505.1/I	505.2/I	505.3/I	505.4/I	505.5/I
Rain*	506.1/I, II	506.2/I, II	506.3/I, II	506.4/I, III	506.5/I, III
Humidity	507.1/I, II	507.2/I, III	507.3/I, III	507.4	507.5/II
Salt Fog	509.1/I	509.2/I	509.3/I	509.4	509.5
Dust	510.1/I	510.2/I	510.3/I	510.4/I, III	510.5/I
Vibration	514.2/VIII, X	514.3/I	514.4/I	514.5/I	514.6/I
Shock	516.2/I, II, V	516.3/I, IV	516.4/I, IV	516.5/I, IV	516.6/I, IV
International Protection Standards	IP54, IP55, IP67				
Dust & Water*	IP54, IP55, IP67				

\*Audio accessory connector must be covered.

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### JVCケンWOOD USA Corporation

Communications Sector Headquarters  
3970 Johns Creek Court, Suite 100, Suwanee, GA 30024-1265

### Order Administration/Distribution

P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745  
<http://www.kenwood.com/usa/com/>  
<http://comms.kenwood.com/en/>

### JVCケンWOOD Canada Inc.

Canadian Headquarters and Distribution  
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8  
<http://www.kenwood.com/ca/com/>  
<http://comms.kenwood.com/en/>



ISO9001 Registered  
Communications Systems Division  
JVCケンWOOD Corporation

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**BOARD OF PUBLIC WORKS  
MONTHLY ESTIMATES  
February 6, 2018**

<u>Contractor</u>	<u>Original Contract Amount</u>	<u>Change Orders</u>	<u>Paid to Date</u>	<u>Due this Estimate</u>
1. <b>STRAND ASSOCIATES</b> S Kinney Coulee Lift Station Construction Estimate #11	\$ 28,300.00	\$ -	\$ 14,407.19	\$ 1,157.54
2. <b>STRAND ASSOCIATES</b> General Engineering Design Estimate #1	\$ 5,000.00	\$ -	\$ -	\$ 411.37
3. <b>STATE OF WI - DOT</b> Riders Club Road Design - State Plan Review (5991-02-56) Estimate #9	\$ 60,000.00	\$ -	\$ 21,542.17	\$ 1,313.37
4. <b>STATE OF WI - DOT</b> PH/Braund Street Design - State Plan Review (5991-02-53) Estimate #9	\$ 50,000.00	\$ -	\$ 20,117.33	\$ 1,288.64