



CITY OF ONALASKA PUBLIC WORKS DEPARTMENT 2018 ANNUAL REPORT



Salt brine application on Main Street prior to a winter storm event to limit snow and ice from sticking to the roadway surface prior to plowing.

DEPARTMENTS

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Public Works Department Mission Statement

To promote the safety and public welfare of the community.
Strive to promote a positive impact on the quality of life for all people.



Message from the City Engineer

To Mayor, Common Council, & residents,

I respectfully submit the 2018 Public Works Department Annual Report on behalf of the dedicated staff that carries out the many functions and duties outlined within. The City of Onalaska continues a tradition of keeping public infrastructure as a cornerstone of the community while delivering outstanding service and quality to the citizens.

Infrastructure investment continues in the community with such large projects in 2018 as Holiday Heights reconstruction, 2018 Utility Project and Riders Club Road, Braund Street, PH, and East Main Street paving projects. Staff worked on funding and design of an ambitious 2019/2020 Capital Improvements plan; investing funds to sustain City infrastructure at a high level. This is made possible with the continued support of the Mayor, Common Council and residents of the City.

Staff has continued to be innovative and incorporate the use of new technologies and ideas such as the increased use of liquid salt brine as a prime example. These items are brought forward by staff and worked into the day to day operations to make the Department more cost effective and efficient.

Please review the 2018 Annual Report highlighting the many tasks and projects the Department performs to carry out our mission statement of: "To promote the safety and public welfare of the community. Strive to promote a positive impact on the quality of life for all people."

Sincerely,

C. Jarrod Holter, P.E.
City Engineer/Director of Public Works

Public Works Department Mission Statement
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CAPITAL PROJECTS

Capital Projects

Every year the City of Onalaska completes projects to maintain the City's infrastructure, welfare, and ensure public safety that are called Capital Projects. The Engineering Department, with assistance from the Public Works Department, provides various degrees of management on the design, bidding, and construction administration phases of each Capital Project. The Capital Projects completed in 2018 are listed below:

<u>Project Name</u>	<u>Construction Costs</u>
• 2018 Utility Project ¹	\$1,637,660.58
• 2018 Pavement Project ¹	\$1,048,121.25
• Main Street and Sand Lake Road/12th Avenue Traffic Signal Improvements ²	\$126,568.57
• 2018 Storm Pond #17 Repairs ¹	\$169,684.00
• 2018 Miscellaneous Concrete Project ¹	\$73,285.85
• 2018 Urban Forestry Program ¹	\$49,077.40
• 2018 Cemetery Fence ¹	\$57,435.00
• Pavement Maintenance	\$250,318.64
• WI Dept. of Transportation Proposed Improvements Braund Street ³	\$280,508.53
• WI Dept. of Transportation Proposed Improvements CTH PH ³	\$264,787.35
• WI Dept. of Transportation Proposed Improvements Riders Club Road ³	\$1,325,983.17

Total Construction Costs = \$5,283,430.34

The Capital Projects all have their own unique impediments and difficulties which are not always apparent to the general public, but can inconvenience many residents. These items can include interruption of utility services, temporary closures of City streets, and irregular access to private driveways. The Public Works Department endeavors to minimize the disturbance to the residents that may live along or near a Capital Project location and the general public. The ensuing pages contain descriptions and photographs of the 2018 Capital Projects.

- 1) Designed, bid and construction administration by the Public Works Department
- 2) Bid and construction administration by the Public Works Department
- 3) City of Onalaska applied for and receive local road improvements grants to cover up to 75% of the project costs.

2018 Utility Project

The 2018 Utility Project reconstructed the Holiday Heights neighborhood to replace undersized and old water main, added brand new storm sewer utilities, and changed the street cross section from a rural section with culverts and ditches to an urban section with concrete curb and gutter. The Holiday Heights neighborhood consists of Medary Lane, Hoffman Place, East Young Drive, and West Young Drive. The project installed over a mile of new water main throughout the neighborhood and almost 0.7 miles of storm sewer pipe with over 30 new storm sewer concrete drainage structures. Once all the utility pipe work was complete the existing roadways were graded for the installation of the new wider urban cross section that included 27' pavement width with 2.5' of concrete curb and gutter on each side for a total 32' wide urban cross section. With the new urban cross section extensive grading was required for private driveways and lawns to match the new roadway. In total 12,000 cubic yards of material was graded for installation of 14,900 tons of crushed aggregate base coarse, 2,700 tons of asphalt pavement, and 10,562 linear feet of 30" concrete curb and gutter. Final restoration was done with 2,000 cubic yards of black dirt topsoil and 16,500 square feet of hydro seeding to restore all of the lawn space disturbed during the project.

The other portion of the 2018 Utility project was around City Hall on King Street (5th - 6th Avenue N) and 6th Avenue North (Main St - Madison St). This portion replaced aging water main on King St and 6th Avenue N, and removed abandoned sanitary sewer on 6th Avenue N. The project also consisted of curb and gutter replacement on both King St and 6th Avenue N, new asphalt pavement, and finally restoration with black dirt topsoil and sod.



Installation of crushed aggregate base coarse over geotextile fabric for new roadway subbase on West Young Drive.



New 30" concrete curb and gutter being installed on West Young Drive for new urban roadway cross section.

2017 Utility Project



New asphalt pavement being placed on East Young Drive.



Manhole casting adjustment being cored for installation of new manhole casting that will be installed in redi mix concrete ring to help with spalling.



Restoration being done by hydro seeding. Mixture of seed, fertilizer, and mulch are mixed in truck and pumped to the end of the hose where a spray nozzle is used to apply the mixture over black dirt topsoil.



New sidewalk ramp with ADA detectable warning fields at the intersection of King St and 6th Avenue North.

2018 Storm Pond #17 Repair

The 2018 Storm Pond #17 Repair project repaired the concrete revetment mat at the 108" outfall pipe to storm water pond #17 that was damaged in a rain storm during July 2017. The rain event in July of 2017 was declared a disaster event and the City of Onalaska applied for and was awarded Federal Emergency Management Agency (FEMA) grant to fund a majority of the cost for this project. The City of Onalaska was required to pay for the construction of the project and will receive reimbursement from FEMA for 75% of the project costs and an additional 12.5% reimbursement coming from the State of Wisconsin. With these reimbursements the City will pay the final cost of only 12.5% of the \$169,684.00 construction costs or \$21,210.50.

The project consisted of removing the existing revetment mat that was heavily damaged during the storm event, excavating for new crushed aggregate support gravel for the mat, installation of geotextile fabric, placement and sewing of the new revetment mat, pumping a concrete slurry between the mat layers, anchor trench backfill around the top of the mat, regrading the rip rap spillway that was used for site access, excavating of excess material from the storm pond bottom that was deposited during the storm event, and finally site restoration.



Water is being pumped out of the existing damaged revetment mat for mat removal. Mat received extensive damage from the July 2017 storm event.



After the old damaged mat was removed grading and excavating began to start establishing the new mat grades and installation of crushed aggregate base coarse for the mat supporting layer.

2018 Storm Pond #17 Repair



Geotextile fabric installed over the supporting gravel.



New revetment mat is being installed. Mat came in four sections and the sections had to be field sewn together.



Concrete slurry is being pumped in between the mat layers.



Final restoration of the site with erosion control blankets on the disturbed slopes above the new revetment mat and the reinstallation of the rip rap spillway leading from the mat to the pond.

2018 Pavement Project

2018 Pavement project replaced asphalt pavement on various streets throughout the City. The project replaced asphalt pavement on high traffic streets of East Main Street (Theater Road to Market Place) and CTH PH (Theater Road to STH 16), and also low volume streets like Tilman Drive, Johnson Drive, and Lincoln Street. The project removed the existing asphalt pavement, spot repaired concrete curb and gutter, graded the existing roadway support gravel to provide proper drainage, and installed new asphalt pavement.

As in previous year the City of Onalaska Public Work Department heavily participate in the 2018 Pavement project. In an effort to reduce costs on the project the Public Works Department removed the existing asphalt pavement on Tilman DR, Johnson DR, and Lincoln St. By the Public Work Department removing the existing pavement the general contractor for the project gave the City a credit back for project costs.



Existing asphalt pavement being removed by milling on East Main Street.



Existing concrete curb on south side of East Main Street was saw cut from 30" to 24" wide to restore curb flag and save cost of replacement.

(Right). New asphalt pavement is being placed at the intersection of Theater Road and CTH PH.



Geographical Information System (GIS)

The Department of Public Works utilizes a Geographic Information System to manage their utility and street assets. The GIS Analyst, Caitlin Hagar, manages the spatial and business data for these and other City assets. Some notable projects stemming from GIS include:

- Developing a public-facing interactive GIS page (see below) to include maps of:
 - ◊ Zoning
 - ◊ Cemetery
 - ◊ School Districts
 - ◊ Voting Information
 - ◊ Visit Onalaska
- Restructuring City's spatial data into single master database following State guidelines for municipalities
- Building a field mobile infrastructure for managing Urban Forestry and Cemetery data
- Designing the database structure to house the City's upcoming street sign inventory
- Updating utility and street assets with final 2018 capital improvement data
- Updating municipal roads with 2019 planned capital improvement projects
- Providing spatial analysis for exploratory salt brine de-icing study
- Deploying 2018 high resolution imagery to field tablets and workstations for Engineering, Inspection, Public Works and Assessor
- Migrating Water Distribution GIS data into a geometric network for the ability to trace hydro flows and open data editing capabilities to field operators



Public Works Department

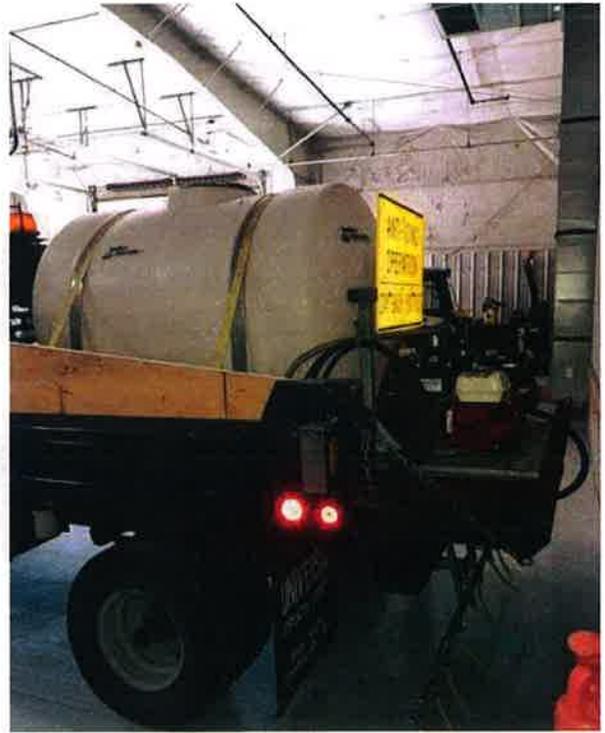
The Public Works Department, is tasked with the responsibility for maintaining the City's utility infrastructure (water distribution, sanitary sewer collection, storm sewer conveyance), streets including snow and ice removal from City streets, alleys, and parking lots, operating and maintaining the City's Cemetery, and an extensive variety of other tasks, duties, and services throughout the City of Onalaska. The Public Works Department regularly provides a variety of services for the City of Onalaska and its residents in part because it manages and receives funding from a variety of financial sources. The Public Works Department receives funding from the City of Onalaska general fund budget for the Street Department, Street Lighting, and Street Signs and Marking. Enterprises funds for the Water Utility, Sanitary Sewer Utility, and Storm Water Utility, and Cemetery fund Public Works operations. The different sources of funding enables the Public Works Department to accomplish a varying amount of yearly tasks. The following pages will go into further detail of the varied work the Public Works Department performed in 2018.

The Public Works Department consistently stays up to date with current trends and new techniques in the field of public works. One of these new trends that the City of Onalaska Public Works Department has begun to implement is new strategy for snow and ice control. Historically, snow and ice control was done in a reactionary manner by allowing the snow or ice event to happen and then removing it with a plow truck and laying down rock salt. The Public Works Department has now started to be proactive in dealing with snow and ice events by using liquid salt brine that is applied to the roadway surface prior to the event, and then following up with conventional plowing and rock salt application during and after the event.

The trend to use the liquid salt brine prior to the event happening provides a multitude of advantages over conventional rock salt as listed below:

- Liquid salt brine decreases the bonding of snow and ice to the roadway surface making physical removal of both snow and ice by the plow truck blade more effective and efficient.
- Can reduce the total amount of salts (chlorides) applied to the roadway surface during a snow or ice event by up to 75%.
- Liquid salt brine is applied by a pump and spray nozzles allowing for a more direct and accurate application.
- By reducing the amount of salt used and more accurate application liquid brine can reduce the amount of total dollars spent during a snow and ice event.

Public Works Department Liquid Brine Equipment



Liquid salt brine tank, pump, and spray nozzle assemblies on two Public Works Trucks.



Liquid brine storage and mixing tanks at the Public Works Department Facility.



Liquid brine being applied to Main Street prior to a winter storm event.

Public Works Department

The Public Works Department handles the operation and management of the Water utility, Sanitary Sewer utility, and Storm Water utility. Each one of these utilities has expansive footage of piping beneath City streets which includes infrastructure such as concrete manholes, vaults, metering, sampling sites, booster stations, lift stations, buildings and land. A building for any one of these utilities may include mechanical pumping equipment, advanced electrical systems for operation, record keeping equipment, real time communication equipment, specialized heating and ventilation equipment, and dedicated rooms for various apparatuses.

There are many routine duties that the Public Works Department performs on a daily, weekly, monthly, and yearly basis for these utilities. As part of the Water Utility the Public Works Department is required by the Wisconsin Department of Natural Resources to complete frequent testing (laboratory and field) of the City of Onalaska public water supply. A regulatory report called Consumer Confidence Report (CCR) is carried out annually detailing the source of water, types of treatments used, and the level of any contaminants found. Below is a list of some of the laboratory testing done by the Public Works Department.

- 20 State coliform bacteriological tests/month
- 10 bacteriological tests of new construction
- 4 Quarters of Nitrate samples
- 4 TTHM samples (disinfection byproducts)
- 4 HAA5 samples (disinfection byproducts)
- 4 raw samples/quarter (Well sites)
- Fluoride, chlorine, phosphate, Fe, Mn, Temperature and hardness sampling daily
- Entry point sampling twice a week (wells)
- 4 Quarterly Volatile Organic sampling
- EMOR (Electronic Monitoring Operating Report) each month of pumping and water quality data submitted to Wisconsin DNR

Additional duties performed by the Public Works Department, as it manages the City's Water Utility, are valve maintenance, fire hydrant flushing and maintenance, cross connection inspections, and water meter testing. The City of Onalaska has over 1,500 valves throughout the water distribution system that are required, by the Public Service Commission, to be operated and checked yearly to ensure proper operation. Each year the Public Works Department flushes over a thousand fire hydrants during the year to confirm correct functionality of the fire hydrant and to confirm/improve water quality within the Water Utility distribution system. Wisconsin Department of Natural Resources required cross connection inspections are performed both by the Public Works Department and a private consultant to confirm that no unwanted connections are present that would allow non-potable water to enter the City of Onalaska Water Utility public drinking water distribution system.

The Sanitary Sewer Utility adds assignments to the Public Works Department such as inspection and cleaning Sanitary Sewer Utility mains and lift stations each year. A sewer cleaning truck (Vactor) is used to clean the sanitary sewer mains with a 600' high pressure water hose. The same Vactor truck is also used to clean all the Sanitary Sewer Utility lift stations five times per year. The Public Works Department inspects the inside of thousands of feet of sanitary sewer mains each year for blockages and sags by using both in house and contracted televising equipment designed for use and mobility inside sanitary sewers.

Public Works Department



Public Works staff working excavation and cleaning of a water valve manhole at the Hauser Street Reservoir.



Public Works operator replacing piping in the water valve manhole hole at the Hauser Street Reservoir.



A Cla-Val pressure relief/sustaining valve having maintenance work done on it at one the water utility well sites.

Public Works Department

The Storm Water utility also heavily contributes to the daily workload of the Public Works Department. The Main Street Storm Water lift station is a complex pumping station with three 300 horsepower submersible pumps, complex electrical equipment including an outdoor emergency generator, and a 22' wide, 45' long, and 25' deep wet well that is completely cleaned two to three times per year. In addition to the work routinely done at the Storm Water lift station, the Public Works Department regularly performs activities that are a benefit to the Storm Water utility. The Public Works Department makes various repairs to storm sewer catch basins and manholes that include concrete work, casting adjustments, street repair, and restoration. It also inspects and maintains the Storm Water Utility storm sewer outfalls and detention ponds. Beginning in late March and ending in October each year the Public Works Department performs street sweeping operations throughout Onalaska. Street sweeping collects small particles and trash that accumulates in the curb line of the street and mechanically removes it from the street so it cannot enter the storm sewer system thus preventing the material from contaminating local waterways.

When all of the maintenance, repairs, and upkeep of the Water, Sanitary Sewer, and Storm Water utilities have been completed the Public Works Department must then send out the billing for these utilities. Bills are mailed on a quarterly basis to over 6,000 customers that include quarterly reads for all water meters, sanitary sewer charges based off of the water meter readings, and the quarterly cost for storm sewer based on the amount of impervious surface and or the zoning of the property.

The Public Works Department is assigned to maintain and operate the City of Onalaska Cemetery. It spends thousands of employee hours each year maintaining the cemetery grounds with grass mowing, grass trimming, tree planting, tree trimming, refuse removal, and infrastructure repairs. The Public Works Department operates the cemetery by preparing the ground for burials, appointments for grave sales, and staking headstones and block corners.

The Public Works Department is also tasked with the wide variety of duties that occur within and along City of Onalaska right of ways. The largest of these duties may be snow and ice control removal during the winter months. The Public Works Department utilizes plow trucks, front end loaders, and pickup trucks to clear snow and ice during winter storm events. Plow trucks perform that largest amount of clearing from City streets, front end loaders are used in cul-du-sac for better mobility, and pickup trucks are used for various parking lots, alleys, and the City Cemetery. Each year the Public Works Department uses close to a thousand tons of salt, hundreds of tons of sand/salt mix, and thousands of gallons of salt brine during winter storm events.

In addition to snow and ice control the Public Works Department provides many urban forestry maintenance needs to the trees within the public right-of-way. These needs include trimming, pruning, tree removal, stump grinding, and inspections. The Public Works Department picks up residential brush monthly at curbside. Staff also maintains, repair, and inventory's the traffic signals and street signs in Onalaska. Annually the Public Works Department renew existing and install new pavement markings to ensure and enhance public safety along streets and intersections.

Finally, the Public Works Department provides fleet maintenance for the over one hundred city owned vehicles and fifty plus miscellaneous pieces of equipment. In any given year the Public Works Department will make over five hundred service repairs to the City of Onalaska fleet.

Public Works Department



Public Works employees setting up the holiday tree in Dash Park.



Public Works IT Technology Coordinator training to use the City of Onalaska drone

Public Works Department



Public Works removing a boulevard tree on Green Street.



Public Works making improvements to a drainage ditch along Green Coulee Road.

Staff modifying a trailer for lawn maintenance equipment at Public Works sites throughout the City.

