#### **PUBLIC WORKS ASSEMBLY UPDATE**

WORK COMPLETED THROUGH FEBRUARY 2020

## <u>Wastewater Treatment Plant (WWTP) Rehabilitation (CONSTRUCTION PHASE)</u> Milestones This Period

- Contractor mobilization and staging area site prep commenced.
- Review and approved initial project submittals.
- WWTP Operators relocated water lab to UAS campus and WWTP office spaces to Sealing Cove Business Center. Relocations will be completed prior to March 6, 2020.

#### **Future Milestones**

- Exterior siding demolition and asbestos abatement (construction) startup early March 2020.
- Reconstruction of administration areas to begin in May or June 2020.
- Mechanical and electrical work to begin March or April 2020.
- Anticipated project Substantial Completion May 20, 2021.

## **Background**

The Wastewater Treatment Plant was built in the early 1980's and many of the building systems, including the building envelope (exterior siding, windows and doors), electrical, plumbing and mechanical, including the HVAC (ventilation air) system, have failed or are past their useful life and require replacement. The air quality within the building is inadequate and corrosive, and as a result the exposed piping and metal within the building have corroded.

Total project cost is currently estimated at \$9,782,000. Funding for this project is provided by the following sources:

\$263,000 – WW Fund Working Capital

(\$218,000) - WW Working Capital moved to the SCADA Control Project

\$9,737,000 - DEC Loans

\$9,782,000 - Total Available Project Funding

Current Contracts: McCool Carlson Green (design)

\$898,284

MCG Constructors, Inc./DCI Joint Venture (w/CO-1)

\$7,432,800

## <u>Crescent Harbor Float Replacement – Phase I (CONSTRUCTION PHASE)</u> Milestones This Period

- Floats 2, 3 and 4 installed.
- Gangways 3 and 4 installed.
- Demolition and disposal of old floats and pilings complete.
- Cathodic protection (anodes) materials arrived.

#### **Future Milestones**

- Cathodic protection (anodes) scheduled for installation, March 2020
- Substantial completion of piles and floats, March 15, 2020. This is also the last day our Corps of Engineers permit allows piling installation.

 Total substantial completion (including electrical and water services) required, per contract, by May 1, 2020.

## Background

The physical condition of Crescent Harbor has deteriorated to point where in-house repairs are no longer sufficient to adequately maintain the facility. Harbor Department staff and Public Works Department engineers have determined the harbor now presents an operational and safety risk due to floats sinking, decay of wooden beams, corrosion of metal fixtures and failure of walk-down ramps to meet ADA accessibility requirements.

The project has an estimated total cost of \$13 million for design and construction. Funding for this project is provided by the following sources:

\$1,000,000 – Harbor Fund Working Capital \$5,000,000 – AK DOT Harbor Matching Grant \$8,025,000 – Harbor Revenue Bonds \$14,025,000 – Total Available Project Funding

Current Contracts: Jacobs (project administrative support) \$315,905

PND, Inc (construction inspection support) \$189,455 Turnagain Marine Design-Build Contract \$13,059,549

## **Thomsen Harbor Anode Replacement (DESIGN PHASE)**

#### **Milestones This Period**

• 95% plans submittal received.

#### **Future Milestones**

- Construction advertisement, April/May 2020.
- Construction planned for Fall 2020. Sacrificial anodes are a long-lead item of potentially 2-5 months and we must account for this variable in our project scheduling.

## Background

Old Thomsen Harbor was originally built in 1976. In 2006, the CBS replaced the Old Thomsen Harbor floats with new timber floats as part of a comprehensive capital improvement program. At the time of construction, a cathodic protection system was considered to prevent future corrosion, but not installed due to financial considerations. Some of the existing steel piles are already showing signs of mild corrosion. This project will install cathodic protection on all of the steel pipe piles in Thomsen Harbor in the form of sacrificial anodes welded to the piles. The new anodes are designed to protect the piles for 20 years, thereby extending the life of this important and expensive harbor facility.

The project has an estimated total cost of \$406,000. Funding for this project is provided by the following sources:

\$203,000 – Harbor Fund Working Capital \$203,000 – AK DOT Harbor Matching Grant \$406,000 – Total Available Project Funding

Current Contracts: PND Engineers, Inc. \$17,870

## Sitka Seaplane Base (SPB) (PLANNING PHASE)

For more information and history on this project, visit the City website at: <a href="https://www.cityofsitka.com">www.cityofsitka.com</a> > Public Works Department > Public Works Projects > New Sitka Seaplane Base – or go directly to:

https://www.cityofsitka.com/government/departments/publicworks/SitkaSeaplaneBaseSitingStudy.htm

#### **Milestones This Period**

All future milestones are in progress.

### **Future Milestones**

- Facility layout stakeholder meeting, Spring 2020.
- Permitting: DRAFT NEPA Environmental Assessment (EA) prepared and ready for Public Review: Fall 2020.
- Planning for land acquisition and business plan: Fall 2020.
- Public Meeting and/or input on drafts EA, facility layout, and business plan:
   Fall 2020
- Prepare and submit AIP grant applications to FAA for next phase Design/Land Acquisition: Fall 2021 (depends on federal funding cycle).

## **Background**

The existing Seaplane Base has been operating for 65 years and is at the end of its useful life. The Assembly passed an action plan to construct a new facility just inside the breakwater on Japonski Island (end of Seward Street) making this a top priority to secure Federal Funding, land, and ultimately construction. Federal funding is anticipated to cover 93.75% of the cost of construction and another \$150k per year in operational maintenance. For this reason it is essential for the project development to follow the required Federal funding process anticipated to span four years.

There are 5 main phases required to complete to be eligible to proceed to the next stage and receive Federal funding:

- Planning and Environmental Review (current funded stage): Complete early 2021
- 2. Layout plan (current funded stage): Complete early 2021
- 3. Land acquisition (not funded until EA is completed and approved): Complete Summer 2022
- 4. Design/Final Permitting (must build or give back FAA funds): Complete Summer 2022
- 5. Construction: 2023-2024

We understand there are concerns over the length of the process especially as it relates to these initial grant phases of work for the Environmental Assessment and completed a kickoff meeting to help clarify and brainstorm options in navigating the required federal process as well as to provide an opportunity to give comments and ask questions, before the project proceeds into the permitting phase.

For detailed meeting notes and presentation materials, visit the project web page at the link above.

The preliminary total project cost is estimated at \$16 million. Funding for this project is provided by the following sources:

\$842,629 – FAA AIP Grant (E/A & Planning Grant) \$56,176 – General Fund Working Capital (Req'd CBS Match @ 6.25%) \$898,805 – Total Available Project Funding

Current Contracts: DOWL (E/A & Aviation Planning) \$707,079

## Sitka Sea Walk Phase 2 (PLANNING & DESIGN PHASE)

## **Milestones This Period**

All future milestones are in progress. .

#### **Future Milestones**

- Additional scoping effort to be performed to explore more affordable alternatives, June 2020.
- Design phase to kick off in late 2020 with plans for multiple meetings throughout the process.
- Construction is estimated to begin in Summer 2021.

#### Background

The project includes extending the Sitka Sea Walk from the Sitka Public Library toward (and under) O'Connell Bridge and terminating at the west end of Lincoln Street at its intersection with Harbor Way. Phase 2 of the Sea Walk, an 8-foot wide handicap accessible multi-use path, will continue the same theme as the first phase of the Sea Walk that extends from Harrigan Centennial Hall East through Crescent Harbor Park toward Sitka National Historical Park. The project is being delivered (managed) by Western Federal Lands (WFL), will be designed in 2020 and construction is expected to begin Summer 2021. Multiple rounds of public involvement are anticipated throughout the design process. The current funding plan is as follows:

\$ 1,674,713 – Grant from Western Federal Lands \$158,060 – CBS GF and/or CPET Funds \$1,832,773 – Total Available Project Funding

Current Contracts: No CBS contracts at this time.

## **Critical Secondary Water Supply (DESIGN PHASE)**

For more information and history on this project, visit the City website at:

www.cityofsitka.com > Public Works Department > Public Works Projects > Critical Secondary Water Supply – or go directly to:

https://www.cityofsitka.com/government/departments/publicworks/projects.html

#### **Milestones This Period**

- Signed contract and issued Notice to Proceed to Pall Water for supply of filtration equipment and support services.
- Provided review comments to design consultant on the 35 percent design package.
- Met with NSRAA to discuss their water needs during penstock shutdown. Met with grant consultant and NSRRA to begin pursuit of grant funding to support construction of a combined water intake in Sawmill Creek.

#### **Future Milestones**

- If Assembly approves, submit grant application to Economic Development Administration to fund CBS-NSRAA water intake in Sawmill Creek, March 2020.
- Facilitate discussion between NSRAA and CBS Administration to establish a project cost sharing structure.
- Negotiate scope, fee and schedule to complete the design work from 35% to bid ready plans.
- Solicit construction bids, November 2020.
- Substantial Completion for secondary water source project anticipated in December 2021.

## Background

The project is for design and construction of a secondary water source, for when the primary water source – Blue Lake water treated with ultraviolet (UV) radiation – is unavailable. Blue Lake water will not be available when the Electric Department inspects and maintains the penstock providing water from the dam to the power plant. Blue Lake water may also require filtration – not just UV treatment – if turbidity levels continue to exceed regulatory thresholds.

Total project cost is estimated at \$18 million. Funding for the project is provided by:

\$150,000 – Working Capital

\$380,000 – transferred from UV Disinfection project Working Capital

\$17,620,000 – Alaska Clean Water Fund Ioan

\$18,150,000 - Total Available Project Funding

Current Contracts: CRW Engineering Group (design) \$362,780

Jacobs (independent design review – contract pending) \$25,000 Uproar Consulting (grant-writing support) \$1,000 Pall Water (supply filtration equipment) \$2,339,350

## Peterson Storm Sewer Rehabilitation (DESIGN PHASE)

#### Milestones This Period

 Requested extension on National Fish & Wildlife Foundation design and construction grant, slated to expire on March 13, 2020. Project development schedule being re-evaluated after retirement of CBS senior engineer managing this project.

## **Future Milestones**

 Pending grant extension approval, project to be bid in Winter/Spring 2021 and constructed in Summer 2021 when public schools are not in session.

## Background

The project includes replacement of deteriorated 60" corrugated metal culvert crossing under Peterson Street, allowing for fish passage. Peterson Street is a collector street that provides critical access to side streets and local residences as well as to Sitka High School.

Total project cost is estimated at \$1,215,000. Funding for the project is provided by:

\$150,000 - General Fund FY2019 Working Capital

\$220,000 – General Fund FY20 Working Capital

(\$50,000) - transferred to Davidoff Street Sewer Rehab project

\$55,000 - National Fish & Wildlife Foundation design grant

\$60,000 – U.S. Fish and Wildlife Service Fish Passage construction grant

\$80,000 – U.S. Fish & Wildlife Service Fish Passage construction grant

\$515,000 – Total Available Project Funding

Note: Additional project funding required. Up to \$700,000 may be requested with upcoming FY21 General Fund Capital Projects Budget.

Current Contracts: DOWL (design) \$78,072

# Brady, Channel and Eagle Way Lift Station Rehabilitation (BIDDING PHASE) Milestones This Period

- Channel and Eagle Way bids opened, February 26, 2020.
- Marble Construction is Apparent Low Bidder with a bid of \$829,237.70
- Removed Brady Lift Station scope of work due to contractors' constructability and schedule concerns.

#### **Future Milestones**

- Channel and Eagle Way construction notice-to-proceed, March 2020.
- Rehabilitate Channel and Eagle Way lift stations, April through August 2020.
- Bid Brady Lift Station as a stand-alone project, May 2020. Budget adjustment needed in FY21 to fully fund Brady.

#### Background

Eagle Way Lift Station is responsible for pumping all sewage east of Eagle Way toward the Wastewater Treatment Plant (WWTP). Brady Lift Station is responsible for all sewage north of Brady Street. Channel Lift Station is responsible for an apartment

complex and one private residence on Halibut Point Road. All three lift stations require excess maintenance due to corrosion and/or outdated pumping equipment. Project will rehabilitate lift stations, re-using existing infrastructure to the extent feasible.

Brady Lift Station is located at the rear of True Value's parking lot. This work must be performed in the Fall/Winter window in order to minimize the impact to True Value's business operations.

The estimated construction cost for the project is approximately \$1.6 million. Funding for the project is provided by:

\$250,000 – DCCED grant (Eagle Way Life Station)

\$220,000 – Wastewater Fund Working Capital (Eagle Way Lift Station)

\$217,400 – ACWF loan (Brady Lift Station)

\$165,000 – Wastewater Fund Working Capital (Brady Lift Station)

\$100,000 – Wastewater Fund Working Capital (Channel Lift Station)

\$350,000 - ADEC loan for Brady and Channel remaining from larger loan

\$550,000 - Wastewater Fund Working Capital remaining from completed projects

\$1,827,400 - Total Available Project Funding

Current Contracts: DOWL (design) \$190,905

DXPE (supply pumps) \$110,444 Boreal Control (supply electric/control equipment) \$194,900

## **Airport Terminal Improvements (DESIGN PHASE)**

## **Milestones This Period**

 None this period. Received communication from TSA in January 2020 the Amendment request is under review by TSA Contracting Division for additional time and costs due to delays caused by the Federal Government Shutdown last year and changes required by TSA to the 30% design.

## **Future Milestones**

- Complete the 35% revisions for the rest of the terminal improvements design and move into the Design Development Phase (65%) where the improvements will be developed and defined in separate phases for construction and funding, Summer 2020.
- Resolve the remaining 30% TSA design submittal issues for the TSA Baggage Screening Area, Summer 2020.
- AK DOT involvement 65%, especially regarding potential FAA AIP funding & Improvement staging Fall 2020.
- Other funding sources for terminal improvements beyond the PFC/Bonding and AIP grant requests are being developed for consideration, including airport terminal user fees and TSA grants for screening/security improvements.
- Phased construction has been delayed to at least 2021 through 2023, due to the Federal Government shutdown at the end of 2018 and the lack of project funding.

• Still awaiting and anticipating the State of Alaska DOT sending the CBS information about the upcoming parking lot management changes and options.

#### **Background**

The Airport Terminal Improvement Project is intended to remedy some of the existing critical problems identified in the Airport Terminal Master Plan 2008-2011, including working conditions in the baggage make-up area and TSA baggage screening area, as well as problems with congested passenger queuing, screening, baggage, fish boxes, waiting areas and passenger flow. CBS accepted a TSA design grant in the amount of \$158,569.25 to design specific improvements to the TSA Baggage Screening Area. Other areas impacted by these design changes are ineligible for the TSA design funding. The Assembly approved moving forward to the 65% Schematic Design Milestone for the preferred concept plan that was presented in the Assembly worksession August 8, 2017. Passenger Facility Charges (PFC) were applied for and approved by ADOT and FAA. Collection of the PFCs began May 1, 2018. The total anticipated revenue collection over the 20-year period of collection is \$6,840,000.00, which will finance the \$4,025,000 revenue bond along with its fees and debt service.

The estimated cost for the project as identified is approximately \$15-million. The current funding plan outlines the following components:

•	Passenger Facility Charge Revenue	\$4,025,000	Bond Secured
•	TSA OTA Grant	\$158,569	Secured
•	TSA Funding	\$3,397,500	Unsecured
•	Eligible AIP Grant Request	\$10,283,954	Unsecured

Current contracts: MCG Architects (design) \$449,069

# <u>Lincoln Street Paving – Harbor Way to Harbor Drive (DESIGN PHASE)</u> Milestones This Period

 None. Project currently on hold, pending direction from Administrator and Assembly.

### **Future Milestones**

Project on hold.

## Background

The project includes replacing non-ADA-compliant curb ramps, failing storm drain, limited curb, gutter and sidewalk and all asphalt pavement on Lincoln Street from approximately Harbor Way to Harbor Drive. Water and sewer utilities will be installed on Cathedral Way, which will also be re-paved. 95% design is complete but not approved to move forward.

Funding for the project is provided by:

\$1,760,000 – General Fund \$105,000 – CPET Funding \$20,000 – Water Fund

## \$20,000 - Sewer Fund \$1,905,000 - Total Available Project Funding

Current Contracts: Professional and Technical Services, Inc.

\$383,290

(Lincoln portion of Lincoln & Katlian contract)

## **Nelson Logging Road Upgrades (CONSTRUCTION PHASE)**

#### Milestones This Period

Easement Survey by North 57 Surveying submitted to DNR for review.

### **Future Milestones**

- Obtain DNR approval of easement drawings, March 2020.
- Utilize remaining State grant funds, approximately \$60,000 to complete additional improvements (emergency phone line to shooting range, guardrail at HPR intersection, turnaround area at new bridge), March 2020.
- Final Project Closeout, Summer 2020.

#### Background

The project includes replacing both inadequate bridges, realignment at HPR intersection to raise the road elevation out of the stream floodplain, upgrading Nelson Logging Road to include drainage improvements, resurfacing, widening, and pedestrian amenities.

Funding for the project is provided entirely by a \$2,343,000 State of Alaska Department of Commerce Community and Economic Development Grant.

Current Contracts: LEI Engineers & Surveying (design)

\$471,120

K & E Alaska, Inc (construction)

\$1,544,280

### **MAINTENANCE ACTIVITIES**

### Streets

- Streets crew and other Public Works Divisions spent most of their time plowing snow, de-icing roads and hauling snow.
- There was a problem with a clogged catch basin on Wolf Drive. Streets crew had to camel out several drains and replace aggregate that had washed away on the shoulder.
- James Town Drive had a clogged catch basin, which the Streets' crew cleaned out with vacuum truck. Much of the clog was caused by road sand.
- Streets used approximately 5 tons of cold patch material in the past 4 weeks filling in potholes.
- Streets ran our grader when weather permitted, to maintain our gravel roads.

#### Central Garage

• 44 different items were repaired, some major, others just routine maintenance.

- We lost the clutch in Unit 344, which is our back up sand truck. This vehicle is a rollover rig bought in 1992. Parts have arrived and Central Garage will make the repair as soon as possible.
- A Hydraulic pump went out on Unit 413, which is a 2010 Freightliner. It was repaired and then the high pressure injector pump went out. We are waiting on those parts.
- We had two major repairs on a 2014 Police Cruiser, Unit 432 with 139,000 miles.
   The first major repair was, we had to replace a \$600.00 alternator and then we spent \$1,200.00 on replacing the rack and pinion steering.

## Scrapyard

 Scrapyard personnel processed 62,350 pounds of scrap material, shipping out 5 Gondolas with an average of 12,470 pounds per Gondola.

#### Construction Debris Landfill

• We received the last of the Crescent Harbor Dock at the construction debris landfill.

## **Grounds Maintenance**

## COMPLETED:

- Winter seasonal rotation/maintenance on grounds and athletic fields.
- Preventive maintenance schedule Normal Operations 7 preventative maintenance (PMs).
- Reactive/Requested Work Orders 18 PMs
- New Grounds Maintenance Specialist Training on operations and duties. Employee Started 12/2/2019.
- Snow, Ice, and Proper Drainage Control around Building, Parks, and Grounds due to weather.
- Snow events, team works with Streets division to help clear road systems, down town, and parking lots. Also conducted normal snow removal operations at grounds parking lots and athletic fields. Work consisted of exposing catch basis, clearing some roof and roof drains on our building facilities to help Building Maintenance.
- Moller Field, report of fireworks lite off. Investigated for possible damage, none found.
- Graffiti at corner of Lake and Lincoln Restrooms and liftstation building. Graffiti removed and some areas re-painted.
- Power washed boardwalk along seal trust portions of sea-walk (between Sitka Science Center & Totem Park).
- 3 hours spent picking up dog waste off of some of the athletic fields and along Sea Walk 2/18/2020. Team will need to clean remaining fields. This was done as the snow melted and exposed a massive amount of dog waste.

## ONGOING:

- Lower Moller East Playground ongoing work to re-open playground Slides being cleaned and sanded down due to graffiti, replacement parts being fabricated with support of public works mechanic shop personnel. Fence in place waiting for staff (vacation/sick) and weather to permit concreate pad at entrance and installation of slides other parts.
- Crescent Harbor Playground defective surfacing being replace March/April 2020. Manufacture shipment expected mid/late March. Contractor working for manufacture under warranty should start work shortly after. Playground will be closed during demo and installation. Updates will follow.
- Looking into option for anti-skid surface along sea-walk's board walk areas.
- Working on security cameras for the Moller Complex on hold due to playground project and winter weather work.
- Crescent Harbor Sea walk sections will be closed due to Harbor Project.
- Mountain Ash and Pine damaged during Harbor project. Contractor removing Ash. Pine will be pruned back once work is completed in that section.
- Sandy Beach Restrooms closed due to frozen pipes. Repairs are underway, working with Building Maintenance.
- Winter damage and clean up underway due to snow removal.
- Goddard Hot Springs needs repair to hot water supply line met with Rotary Club on possible improvements.

## **Building Maintenance**

### COMPLETED:

- Preventive maintenance schedule Normal Operations 68 PMs.
- Reactive/Requested Work Orders 23 PMs
- Snow and Ice Control around buildings.
- Harrigan Hall Grill power problem, issue found and repaired. Installation box shorted out main power supply into unit.
- City/State Main pneumatic controller failed. Bypass was put in place to allow system to operate while quotes come in replacement pneumatic control box. Had to order additional parts due to issues with the aging equipment. Replaced contacts, switches, alternating relay – one out of two motors back running until parts come in.

#### ONGOING:

- Waste oil from fleet ongoing estimate 3 gallons per hour though PSC waste oil boiler (mix 1/3 diesel to 2/3 waste oil). Team managing waste oil boiler as needed.
- City/State office complaints on damaged window with cold weather. Provided estimated cost to replace based off other windows. Reached out to contractor for proposal. State would need to pay for replacing.
- State DOT/PF requesting City/State to no longer being part of their infrastructure. Discussion on option to proceed with City/State 1967 Agreement.

- City/State State DA office would like to have custodial services. Proposal provided under current contract waiting approval from DA/State office.
- Senior Center ice damming on fireplace chimney caused ceiling damage inside the building is currently being patched and painted – February 2020. Chimney will need to be repainted when weather permits.
- Senior Center Roof Leak on 2/10/20. Hard downpour leak showed up along ceiling truss. Team investigating and cannot find problem location. Leak stops under normal rain conditions. Leaked same day as Library during hard downpour.
- Library Roof leak on 2/10/20- seems to be a different issue then wind driven rains. Crew investigating seams and rubber roof areas making temporary repairs to membrane. Team will install permanent repairs of suspect areas once weather permits. Still waiting on weather condition to work on original problem wind driven rain problem.
- Harrigan Centennial Hall Meeting Room 7, not maintaining temp. During 20\*F or lower outside temperatures.
- Tom Young Cabin Reported problems with the oil stove and outhouse door.
- Goddard Hot Springs Reported problem with bottom tub not getting hot water persons felt there is a clogged line.
- Police Department –Original Contractor has not followed through therefore moving onto next in line to replace two broken windows. Contractor waiting on weather/scheduling in work based off other projects.
- Police Department HVAC Plan for short term solution and long term planning.
   Discussion Meeting accrued, moving forward on budget plan.
- Airport luggage cart maintenance.
- Centennial Hall Gutter membrane installation Contractor scheduled spring 2020.
- Library interior LED lighting issues: restroom corridor, bathrooms, and other fixtures some repairs made in house by soldering in replacement relays. Working with manufacture on getting replacement spot lights under warranty.
- Marine Service Center Condenser Replacement received February 18, 2020.
   Contractor starting demo on February 27, 2020 replaced and running by March 1<sup>st</sup> 2020.

#### MONITORING:

- WWTP boiler circulation pump 1 has leaking flanges (we are going to monitor due to renovations). Pump can be isolated, if needed. We have back up circulation using pump 2.
- WWTP fan unit 2 failed and temporary fan was installed (we will continue to monitor until renovation). Fan unit is for storage area exhaust.
- Harrigan Centennial Hall tile floor cracking common areas. January 6, 2020 additional cracks discovered under meeting room 5 carpet tiles.
- Harrigan Centennial Hall Cracks discovered in meeting rooms 5 under floor carpet tiles. Waiting to see what happens with weather changes and activate on plan for repairs if required.

#### Water/Wastewater

Wastewater crews performed much needed maintenance on discharge piping at the landfill liftstation. Collected leachate from the closed Kimsham landfill had caused significant build-up on the pumps and pipes, affecting liftstation performance. Valves and pumps were disassembled and the build-up was removed.



Wastewater from Baranof Island flows to the Thomsen Harbor pump station where it is then pumped over to Japonski Island via two parallel force mains (10 inch and 16 inch) that run under the channel. During a heavy rain event a leak surfaced in the 10 inch force main on Tongass Ave near the SEARHC hospital. Crews from the Wastewater, Water, and Streets Divisions worked together to dig up and replace a 16 foot section of the 10 inch ductile iron pipe. The force main had a 12 inch hole caused by corrosion.



