CITY OF NANAIMO
THE HARBOUR CITY

ENGINEERING & PUBLIC WORKS

Engineering

2021 Business Plan

Engineering

OVERVIEW

The Engineering Department provides infrastructure and systems, planning and management to support critical City services, including: transportation, water distribution, sanitary sewer and drainage. A substantial aspect of the work in Engineering is project management, which often includes projects for other departments.

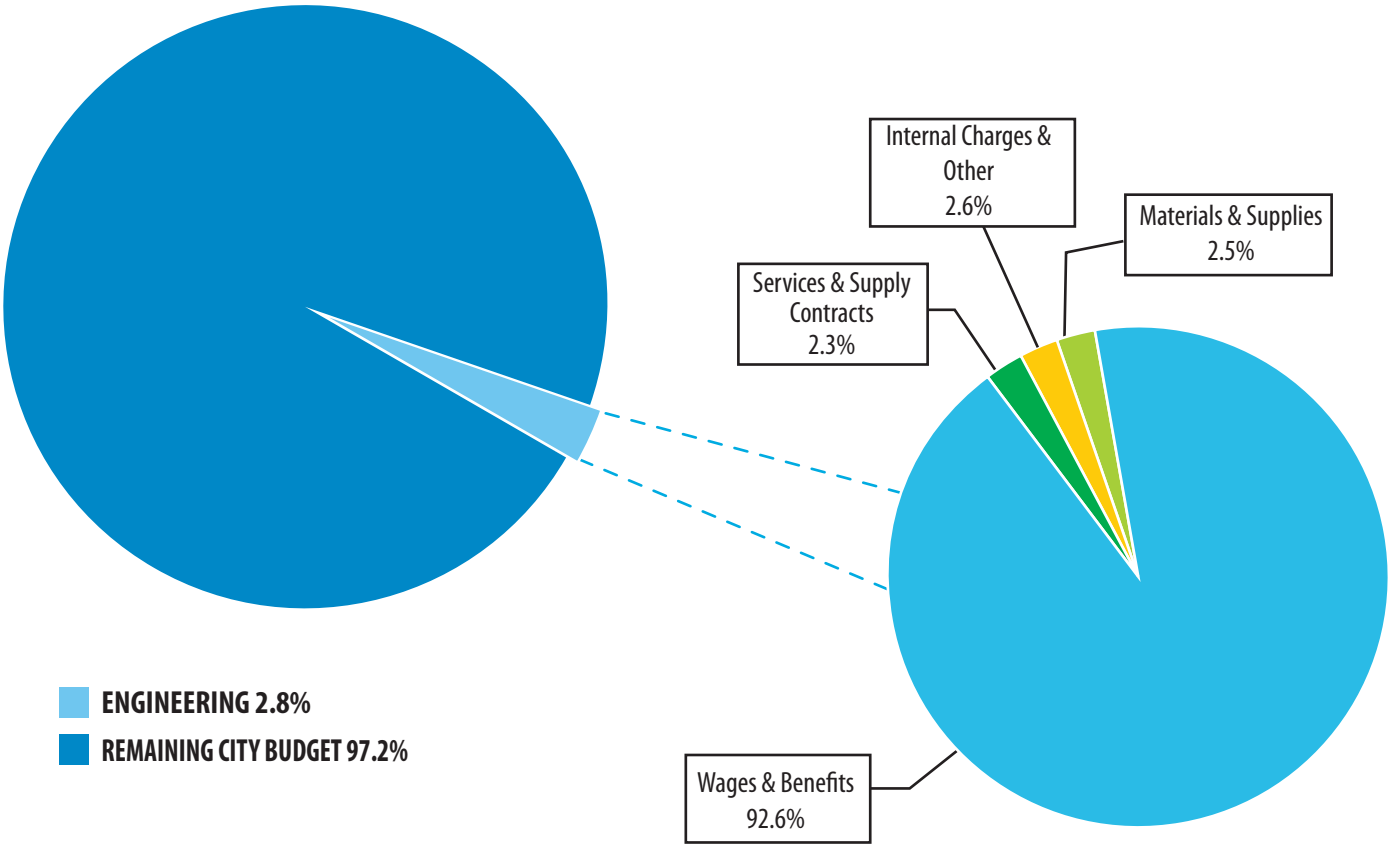
As a result of the COVID-19 pandemic, it was necessary to shift to a business continuity mode in the spring of 2020. This involved staff finding different ways to communicate, share information and make decisions. It also resulted in some uncertainty around what work was possible to continue with and what would need to be delayed, cancelled or suspended.

Over time, the business continuity mode was refined and evolved into an effective means to getting the department work complete. Staff to staff face time was reduced, as well as face to face contact with external consultants, contractors and stakeholders; however, there was minimal, if any, impact on productivity, and we were able to maintain the considerable ongoing workload. The primary negative impact from operating this way, is the reduction in informal collaboration. Moving forward, we are looking for ways to enhance this collaboration should the pandemic continue to impact the operation.

The Engineering Department is currently composed of four primary groups: Administration, Transportation, Infrastructure Planning and Projects. New to 2021 will be the addition of the corporate Facilities Asset Management group, approved as part of the reorganization in 2019.

DEPARTMENT'S SHARE OF CITY'S OPERATING EXPENDITURE BUDGET

Operating Expenditure Budget:
$4,285,785



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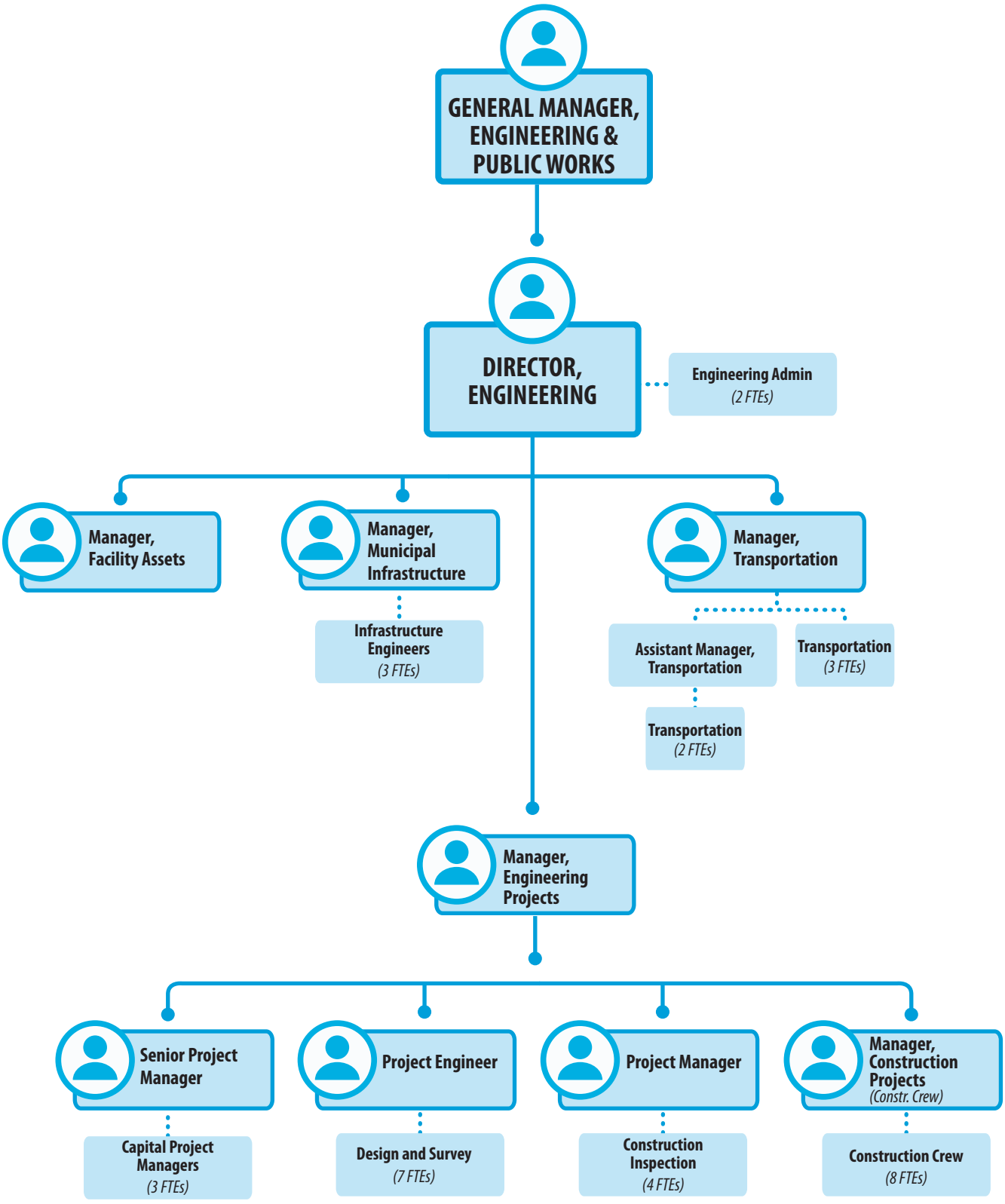

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ADMINISTRATION

The Administration of Engineering provides essential support to the department. These are front line staff that interact with the public, provide financial and clerical support, records management, organize, and ensure that other staff have the day-to-day resources they need.

Administrative services for the Engineering Department is provided by 2 staff members located at the Service and Resource Center (SARC).

Background and Level of Service:

- A front counter is available at SARC for the public to access and reach staff in Engineering during normal working hours (noting that during the pandemic, this has been suspended).
- Permit processing and approvals including trucking, film, street use, third party utility construction, etc.
- Clerical support for Council and Committee reports.
- Records management for the department is maintained.
- Assistance for financial transactions and processing of invoices.

Administration for Engineering is primarily internally focused and supports matters relating to infrastructure planning, technical and project standards, capital project design and construction.

2020 Accomplishments

- Over 200 permits have been processed in 2020 so far.
- Cancelled coop student position in an effort to reduce the financial impact of the pandemic, suspended travel and reduced training.

2021 Opportunities and Initiatives

The public-facing level of service in this area is high. Each resident who calls is able to speak with a member of the admin team. Residents are accustomed to this service. It is increasingly rare in cities of this size. Many cities have opted to move to an automated answering service. In 2021, staff will continue with this level of service; however, use the voicemail box to provide information during periods of high call volumes.

TRANSPORTATION

Apart from Provincial Highway 19 and Trans-Canada Highway 1, the City owns and maintains its road network, including pavement management, winter clearing, signage, and pedestrian and cycling facilities. For the past five years, using the Transportation Master Plan as a guide, efforts are being made to reduce reliance on the automobile and increase the number of trips taken by transit, bicycle or on foot.

In 2020, there were:

- 645 km of roads, 445 km of sidewalks, 101 km of bicycle lanes.
- 53 signalized intersections, four roundabouts, 26,114 traffic signs.
- 1,576 pay parking spaces (285 on street and 1291 off street).
- 18 bridges, 28 railroad crossings.
- 4,504 City owned streetlights, and 4,258 lights leased from BC Hydro.
- 1,318 marked crosswalks, and 56 pedestrian activated crosswalk-warning beacons.

Background and Level of Service:

- In an effort to efficiently manage the City's Transportation infrastructure, two models are maintained; one to monitor travel demand, the other to monitor condition of the infrastructure. Each of these models play an instrumental role in guiding, planning and maintaining the City's over $300 Million Transportation assets.
- Safety, accessibility, efficiency, and sustainability are key goals of the transportation system. In order to achieve or maintain these goals, the City is constantly gathering data and analysing the system.
- In addition to the hard infrastructure the City plans and maintains, Transportation also provides support for strategic initiatives to promote, educate, empower, and encourage our residents to find ways to move through our City. These include, Go By Bike, Commuter Challenge and Active Routes to School events.

2020 Accomplishments

- Renewed over 49,221 m2 of asphalt road surface, including major patching on Wakesiah Avenue and Fifth Street.
- Added 3.0 kilometers of bike lanes.
- Added 0.5 km of sidewalks.
- Added 0.9 km of multiuse path (Haliburton Street)
- Responded to changing needs of street space in response to the COVID-19 pandemic.

TRANSPORTATION, cont'd

- Constructed several major projects including upgrades to Bowen Road and Haliburton Street. Completed site preparation for the Boxwood Connector in anticipation of construction in 2023.
- Utilised Pedestrian Unallocated Funding to enhance five pedestrian crossings within the City:
  1. Uplands at McRobb Avenue
  2. Waddington Road at St. George Crescent
  3. Hammond Bay Road at Nottingham Drive
  4. Victoria Road at Esplanade
  5. Front Street at Port Drive
- Advanced multiple Traffic Calming projects:
  1. Departure Bay Road – Loat Street to Bay Street
  2. Bay Street – Departure Bay Road to Glenayr Drive
  3. Lost Lake Road – Rutherford Road to Laguna Way
  4. Extension Road – City limits to Cranberry Avenue
- Filled two long-standing vacant staff positions:
  - Active Transportation Project Specialist
  - Engineering Traffic Technologist
- Completed 72 Development reviews so far, to assess impacts of proposed development on transportation infrastructure.
- Manual of Engineering Standards and Specifications (MoESS) (Transportation Section) won the Transportation Association of Canada Sustainable Urban Transportation Award.

2021 Opportunities and Initiatives

- Transportation had several projects planned for 2020 which included public or stakeholder engagement; Transit system/Bus Rapid Transit Study, Active Transportation Plan, Stewart Avenue Complete Street Concept, etc. Staff advanced these projects where possible, but much of the engagement was hampered by the COVID-19 pandemic. As a result, most of these projects have been delayed while new engagement strategies are being developed and will continue into 2021.
- Transportation is one of the most forward facing functions of the City. Staff receive upwards of 300 requests for action annually, which result in a technical review and response to the individual requestor. Unfortunately, this information is not widely available or easily accessible to the community as a whole. Staff are embarking on a task to address this. The aspiration is to create a web or app interface which would enable a broader sharing of information.
- In 2019, there was an unusually high number of Motor Vehicle Accidents in the City, many of which were exacerbated by speed. In 2020 there was an unprecedented number of requests for traffic calming studies. It is anticipated that residents will continue to expect swift and effective action in response to road safety concerns, particularly as they relate to speed and dangerous driving. Staff, in collaboration with the RCMP and ICBC, will be focusing efforts on effective actions for speed management.
- Trends in transportation planning and design were changing rapidly prior to the global pandemic. The onset of COVID in 2020 has disrupted this change and has introduced more unknowns, leaving transportation professionals unsure of what the long term impacts may be. 2021 will be a learning year for the industry. Some emerging trends are:
  - Decline in mass transit usage.
  - Disruption to typical daily travel patterns (reduction in commuter travel but increases in recreational travel).
  - Increasing demand for short duration parking/loading (Skip the Dishes, Amazon, etc.).
- The City and Regional District of Nanaimo (RDN) Transit have been working together to develop plans to enhance each of the formal transit exchanges within the City. These plans have progressed to a point that BC Transit has indicated that they feel it would be appropriate for all three parties to enter into an agreement which would become the foundation of an implementation strategy which would result in a plan to upgrade each facility over the next five years. The conditions of this agreement will be formalized through 2021.
- It has been well documented that if the City wishes to maintain its' roads at current conditions, road renewal funding needs to be increased significantly. In 2021, staff will be undertaking a Level of Service Study to seek feed back from the community on this. The goal will be to gain a greater understanding of community interest and support for investments in road asset renewal, which will ultimately guide asset renewal planning.

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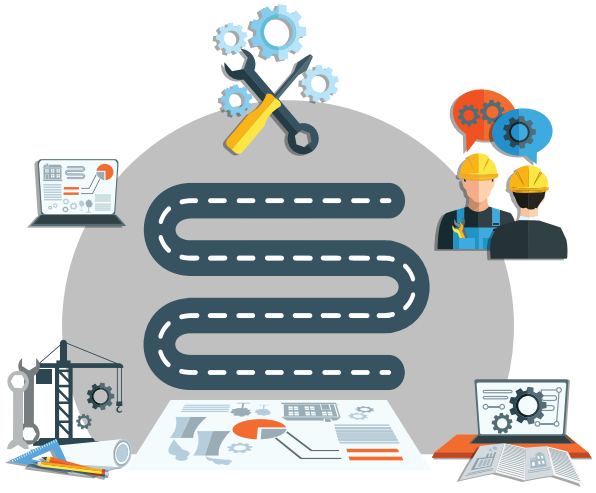
INFRASTRUCTURE GROUP

The Infrastructure Group completes the planning necessary to provide a safe and efficient water distribution, sanitary sewer collection, and storm drainage infrastructure to support existing needs and future growth. The group includes three technical staff and one manager.

Background and Level of Service:

- Oversee the development and implementation of the City's Infrastructure Modeling programs for water distribution, sanitary sewer and storm drainage systems.
- Oversee the Sanitary Sewer Flow, Storm Drainage Flow and Rainfall Monitoring programs.
- Manage annual program that employs Closed Circuit Television (CCTV) inspection of critical sanitary sewers and storm drainage.
- Manage yearly inspection program of critical watermains.
- Complete master plans and studies for water distribution, sanitary sewer collection, and storm drainage infrastructure.
- Develop scope of projects to renew infrastructure based on network models, condition assessments, operational input and studies.
- Coordinates the capital works program on behalf of the Engineering and Public Works (E&PW) group for inclusion into the City's Five-Year Financial Plan.
- Coordinates the review and issue of the City's MoESS.
- Engage with RDN, through participation in Liquid Waste Monitoring Committee.
- Develops policy and approach to climate change, storm water management, and asset management.



2020 Accomplishments

- Continued major update of the city wide water model, pressure testing all City fire hydrants.
- Continued pilot program to collect watermain condition information as part of routine operations.
- Completed two utility master plans and one drainage study.
- Maintained yearly Sewer Flow, Storm Drainage Flow and Rainfall Monitoring program for city wide sewer and storm drainage model calibration.
- Overseeing construction of sewer monitoring station to monitor flows from the Linley Valley sewer catchment.
- Oversaw video inspection and condition assessment of 40km of sewer pipe and of 15km of drainage pipe.
- Concluded the largest revision of MoESS in 25 years, Edition No. 13, adopted in September.
- Began major review of water meter products for inclusion in Approved Products List (APL).
- Completed 72 Development reviews so far, to assess impacts of proposed development on underground utilities.

2021 Opportunities and Initiatives

- Undertake City Wide Master Plan with rebuilt City Wide Water Model.
- Construction of sewer monitoring station to monitor flows from the Cilaire and Northfield sewer catchments.
- Update CCTV Management Software – Software system needed to allow Engineering and Public Works to manage and do analysis from the extensive library of pipe inspection videos.
- To complete a Sanitary Sewer Master Plan of Brechin catchment.
- To start VIU/DND Sewer Routing Study to identify sewer catchment (Millstone or Chase River) for sewage collection.
- To complete a Drainage Master Plan of Cottle Creek catchment to identify pipes with deficient capacities.
- To start review of creating Storm Water Utility as a means of alleviating general revenue funding demand for the purpose of fairly charging users of drainage system and ensure it is financially sustainable.

CAPITAL PROJECTS

The planning, design and construction of the City's infrastructure is a major aspect of the Asset Management program.

Each project has a dedicated project manager who takes the project through the design, procurement, construction and closeout stages. Projects are designed by the City's professional engineers or by external engineering consultants, in accordance with a robust Project Management Framework (PMF).

The City's construction crew completes several million dollars' worth of projects each year, and primarily focuses on projects that would be difficult to tender, such as smaller projects, short notice projects or projects that require a high degree of engagement with the public during construction. The construction crew is also tasked with emergency work.

The remainder of the projects are tendered and completed by external contractors. Tendering, construction management and inspection is overseen by the project manager and is completed by staff inspectors and contract administrators or by external engineering consultants.

Background and Level of Service:

- Project governance is undertaken in alignment with the Project Management Framework and Project Management Policy.
- Projects are generally underway in the year they are budgeted.
- Budgets are set with high quality cost estimates prepared by professionals.
- The Public is well informed about work that may affect them or their neighbourhood.
- Project risks are identified early in the project and appropriate risk mitigation measures are put into place.

2020 Accomplishments

Overall, 52 projects with a value of $50 million are expected to be completed or under construction by the end of 2020, a high level, similar to 2019. An additional 25 projects with a value of $40 million are being prepared for construction in 2021.

- 16 construction tenders were prepared and released by Sept 1.
- While COVID-19 caused some disruption to the Capital Projects, the adjustments made by staff to adapt to the changes within their own work environments or in the project management process, went fairly smoothly.
- An update of the City's standard tender document is now underway.

Major projects that were started in 2019 and completed in 2020 include:

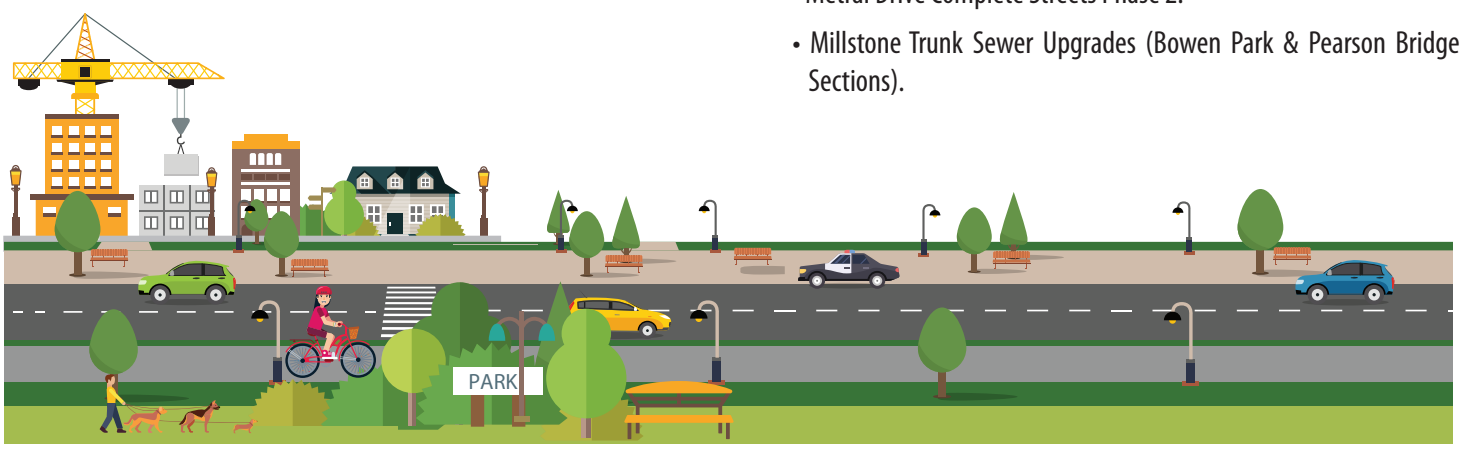
- Bastion Bridge Seismic Upgrade.
- 7th Street Pumpstation & Forcemain.
- Hammond Bay Road Upgrades.
- Chase River Forcemain & Haliburton Street Road Upgrades.

Major projects that got started in 2020 and will be completed or underway by the end of the year include:

- Metral Drive Complete Streets Phase 1.
- Millstone Trunk Sewer Replacement (Pryde Golf Course and Comox Road Sections).
- Bowen Road Upgrades.

Major Projects that were designed in 2020 and will start construction in 2021 include:

- Front Street Rehab and Cycle Track.
- Metral Drive Complete Streets Phase 2.
- Millstone Trunk Sewer Upgrades (Bowen Park & Pearson Bridge Sections).



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CAPITAL PROJECTS, cont'd

2021 Opportunities and Initiatives

- COVID-19 caused some delays in the permitting for some projects and price escalation for certain types of projects. It is expected that by 2021 these variations in the market will stabilize and the market will settle out.
- The Professional Governance Act comes into effect in November 2020. The Act covers all engineering entities in the private and public sector that practice professional engineering. This new act requires entities to have an organizational quality management system in place to be able to practice engineering. The Engineering Projects department will need to develop a quality management system and become certified by the Engineers and Geoscientists of BC (EGBC).
- The newly adopted revision of the MoESS is in place, and the projects constructed in 2021 will see these design standards applied.
- Enhance engagement with Snuneymuxw First Nation (SFN) to build a strong relationship and mutual trust.

FACILITIES ASSET MANAGEMENT

As part of the long term City reorganizational plans established in 2019, corporate Facilities Asset Management responsibility will transfer from Parks, Recreation and Culture to the Engineering Department in 2021. This includes the addition of a new management position with responsibility for the group. Several Parks, Recreation and Culture staff, with expertise in facilities, will transfer to Engineering and the group will form a corporate Facilities Asset Management team.

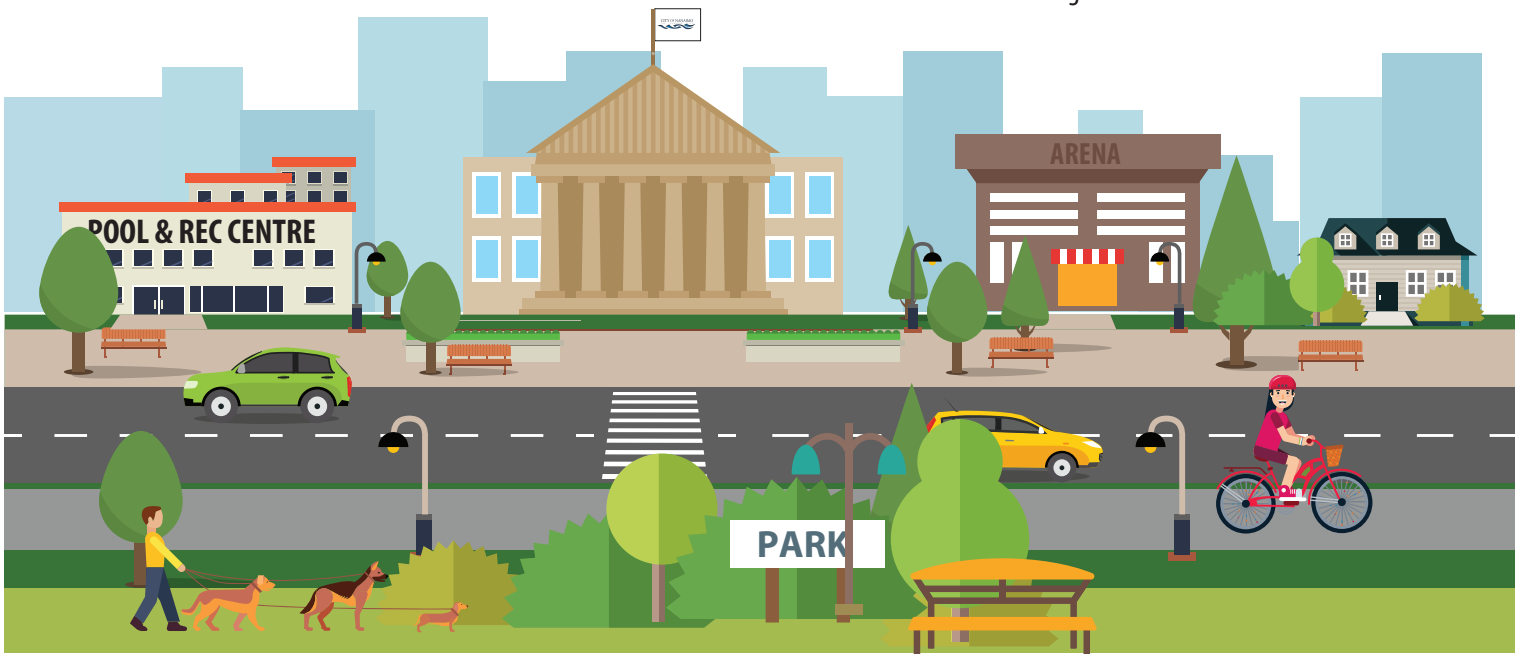
Given the considerable number of aging corporate facilities and the important service they provide the community, the establishment and additional resourcing of this group will vastly improve the City's ability to plan and budget for facility needs.

2020 Accomplishments

- As listed in Parks, Recreation and Culture – Facilities.

2021 Opportunities and Initiatives

- To onboard and grow the corporate Facilities Asset Management team.
- To embark on the creation of a corporate Facilities Asset Management Plan. The plan could include the detailed condition assessment information currently underway, as well as identification and prioritization of renewal or new facilities needs expected over the next decade. One of the primary goals of the study will be to assess the financial sustainability of the City's facilities stock with an aim to informing future renewal or upgrade decisions. One of the secondary goals of the plan would be to evaluate long-term facilities funding needs and determine strategies to meet that need.



PROPOSED OPERATING BUDGET - ENGINEERING AND PUBLIC WORKS

	2020	2021	2022	2023	2024	2025
Revenues	Approved Budget	Draft Budget	Draft Budget	Draft Budget	Draft Budget	Draft Budget
Engineering & Public Works Admin	$ -	$ -	$ -	$ -	$ -	$ -
Engineering Support	6,300	6,300	6,363	6,427	6,491	6,556
Transportation	-	-	-	-	-	-
Infrastructure Planning	-	-	-	-	-	-
Construction Management	-	-	-	-	-	-
Annual Operating Revenues	$ 6,300	$ 6,300	$ 6,363	$ 6,427	$ 6,491	$ 6,556
Expenditures						
Engineering & Public Works Admin	$ 248,431	$ 248,260	$ 254,423	$ 259,511	$ 264,700	$ 269,994
Engineering Support	434,012	502,694	604,989	617,089	629,430	642,018
Transportation	840,085	856,540	882,828	900,481	918,490	936,859
Infrastructure Planning	487,758	493,392	504,278	514,363	524,648	535,142
Construction Management	2,158,604	2,184,899	2,230,374	2,274,733	2,319,967	2,366,114
Annual Operating Expenditures	$ 4,168,890	$ 4,285,785	$ 4,476,892	$ 4,566,177	$ 4,657,235	$ 4,750,127
Net Annual Operating Expenditures	**$ 4,162,590**	**$ 4,279,485**	**$ 4,470,529**	**$ 4,559,750**	**$ 4,650,744**	**$ 4,743,571**
Staffing (FTEs)	42.0	43.0	43.0	43.0	43.0	43.0

Includes ENGPW Admin - General Manager

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PROPOSED OPERATING BUDGET - ENGINEERING AND PUBLIC WORKS

Expenditure Summary	2020 Approved Budget	2021 Draft Budget	2022 Draft Budget	2023 Draft Budget	2024 Draft Budget	2025 Draft Budget
Wages & Benefits	$ 3,857,938	$ 3,967,378	$ 4,146,671	$ 4,229,603	$ 4,314,198	$ 4,400,479
Services & Supply Contracts	74,400	96,816	99,120	101,101	103,123	105,184
Materials & Supplies	122,190	108,525	115,793	117,854	119,961	122,108
Utilities	-	-	-	-	-	-
Internal Charges & Other	114,362	113,066	115,308	117,619	119,953	122,356
Debt Servicing	-	-	-	-	-	-
Grants & Subsidies	-	-	-	-	-	-
Annual Operating Expenditures	**$ 4,168,890**	**$ 4,285,785**	**$ 4,476,892**	**$ 4,566,177**	**$ 4,657,235**	**$ 4,750,127**

Includes ENGPW Admin - General Manager

PROPOSED CHANGES

The 2021 – 2025 Draft Financial Plan includes an increase in staffing for Engineering as included in the approved 2020 -2024 Financial Plan. Proposed staffing change:

•Manager, Facility Assets (effective September 1, 2021)

Manager, Facility Assets

As part of the new organizational structure approved in July 2019 a Manager, Facility Assets was added to Engineering starting in 2021. This position will lead the Facilities Asset Management team and allow for a more rigorous and complete corporate approach to long term management of facilities.