Technical Appendix to Development Cost Charge Bylaw 1394

Town of Osoyoos

April 2025

Project No. 302-185

ENGINEERING ■ PLANNING ■ URBAN DESIGN ■ LAND SURVEYING

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Report Submission

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List of Acronyms

ALR	Agricultural Land Reserve
BPG	Development Cost Charge Best Practices Guide' (3rd edition dated 2005)
DCC	Development Cost Charge
DU	Dwelling Unit
EDU	Equivalent Drainage Unit
EF	Equivalence Factor
EFP	Equivalent Population Factors
ENR	Engineering News Record
GFA	Gross Floor Area
MBBR	Moving Bed Biofilm Reactor
MDD	Maximum Day Demand
MWWPS	Main Wastewater Pump Station
MS	Market Share
49	Official Community Plan
OIB	Osoyoos Indian Band
RDOS	Regional District of Okanagan Similkameen
RV	Recreational Vehicle
RWSM	Raw Water Supply Main
SFR	Single Family Residential
SSMUH	Small-scale, multi-unit housing
TRUE	TRUE Consulting
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Units of Measure

Ha	Hectare
km	kilometre
L/s	Litres per second
m	metre
mm	millimetre

Referenced Documents

Bylaw 1395, 2024	Town of Osoyoos, “Zoning Bylaw”, Updated September 24, 2020
Bylaw 1085, 1998	Town of Osoyoos, “Zoning Bylaw”, Updated August 19, 2020
Bylaw 1322, 2016	Town of Osoyoos, “Development Cost Charges Bylaw No. 1332, Technical Appendix,” October 2016
Bylaw 1375.04, 2024	Town of Osoyoos, “Official Community Plan Amendment Bylaw” (Small-Scale, Multi-Unit Housing (SSMUH) Implementation)
Bylaw 1375, 2021	Town of Osoyoos, “Official Community Plan,” Adopted April 2022
	Town of Osoyoos, “2025 Capital Budget”
Stantec, 2017	Stantec, “Osoyoos Parks and Trails Master Plan”, 2017
TRUE File: 302-1354	TRUE Consulting, “Wastewater Treatment Long Term Plan” April 2021
TRUE File: 302-2051	TRUE Consulting, “2023 Osoyoos Sanitary System Infrastructure Plan,” September 2023
TRUE File: 302-2061	TRUE Consulting, “2023 Osoyoos Water System Infrastructure Plan” July 2023
TRUE File: 302-185	TRUE Consulting, “Domestic Water and Community Sewerage System Capacity Update for Small-scale, Multi-unit Housing” December 2024
	Province of British Columbia, “Development Cost Charge Best Practices Guide (Third Edition),” 2005
	Province of British Columbia “Development Cost Charges Best Practices Guide”, 2025
Urbanic Consultants	Urbanic Consultants, “Town of Osoyoos Regional District of Okanagan-Similkameen Housing Needs Report 2024”, 2024

1.0 Introduction and Objectives

The Town of Osoyoos (Town) currently collects Development Cost Charges (DCC) in accordance with Bylaw No. 1322. This Bylaw, including its Technical Appendix, was prepared in 2016 by the Town and TRUE Consulting (TRUE). In 2023, TRUE was engaged to complete a DCC bylaw update on behalf of the Town. TRUE has prepared this Technical Appendix to summarize the methods employed to prepare the Technical Appendix for the 2024 DCC Bylaw Update. This technical appendix considers the new Zoning Bylaw No 1395, 2024, and Bill 46 allowing collection for new categories.

In general, the Town of Osoyoos is promoting redevelopment and infill of residential properties to combat a housing shortage where most of the land within the town boundaries has been developed. This is in-line with the provincial requirements of Section 481.3, Zoning Bylaws and small-scale multi-family housing, of the Local Government Act.

As a resort municipality, The Town's populations swells in the summer months during the tourism season and for this reason, densification of the town core is necessary to provide a range of housing types and attainable options for short term and long-term residents.

Furthermore, lands suitable for development within the municipal boundaries are becoming scarce. This is the case because many undeveloped lands are within the Agricultural Land Reserve (ALR) or lands are environmentally sensitive. Development of these lands are strictly discouraged. For these reasons, development in Osoyoos is projected to be predominantly multi-family.

The Province of British Columbia prepared a *Development Cost Charge Best Practices Guide* (3rd edition dated 2005) (BPG) for local governments to reference when preparing DCC bylaws. These documents are intended to standardize the development of DCC's and provide flexibility to accommodate the unique circumstances of each community.

This document was updated in 2025 to include unit projections based on Housing Needs Assessment Reports and additional DCC categories. New DCC categories include solid waste management and recycling facilities, and Protection Services (Fire Protection and Police). This technical appendix includes new DCC categories which is a major update and will require a full review by the Ministry of Municipal Affairs.

As part of this DCC update, the Town will continue to use a *Revolving* DCC program as opposed to a *Build-out* approach. In addition to the BPG, Town documents such as the Official Community Plan (OCP), OCP amendments, Housing Needs Report, online information sources including BC Stats and Statistic Canada, and consultation with Town staff have been utilized to prepare the following:

- Population and development projections in accordance with unit projections in the Housing Needs Assessment Report
- Required infrastructure improvements
- DCC levy format and municipal assist factors
- Resulting DCC's for each infrastructure category

The required infrastructure improvements have been derived from a number of sources including:

- 2023 Water System Infrastructure Plan;
- 2023 Sanitary System Infrastructure Plan;
- 2025 Capital Budget;
- Domestic Water and Community Sewerage System Capacity Update for Small-Scale Multi-Unit Housing (TRUE SSMUH); and
- carry over from DCC Bylaw No. 1322.

Projects are carried over from the previous DCC Bylaw on the basis of the DCC benefitting population being greater than the current population. The DCC recoverable cost for those projects has been recalculated based on the actual population and projected growth in the new 10-year time horizon and was done on a project-by-project basis.

This Technical Appendix is intended to serve as a guiding document for consultation between Town staff and the necessary stakeholders. Upon completion, this document will be submitted to the Ministry of Municipal Affairs as a supporting document for DCC bylaw approval.

2.0 Development Cost Charges Bylaw Development

2.1 General Description

DCCs are special levies imposed by a municipality to help pay for the cost of infrastructure enhancements required to service new development. Although the ongoing cost of maintenance and eventual replacement of existing infrastructure is assessed to the taxpayers, additional burdens for capacity upgrades are placed on existing infrastructure when growth occurs in the community. New residences generate higher demand on municipal services including water, sewer, storm drainage, roads, parks, fire protection facilities, police facilities, and solid waste and recycling facilities. Similarly, new commercial, institutional, and industrial development will generate demand for these infrastructure categories.

When a new development is approved for subdivision or construction, the developer will pay for the direct servicing costs to the property, including extensions to water and sewer mains, and road and sidewalk dedication and construction as needed. However, these direct servicing cost contributions do not address the diminishing capacity of the Town's existing infrastructure. DCCs provide a mechanism for collecting funds to assist financing of infrastructure needs beyond the development location itself.

2.2 Project Eligibility

The *Local Government Act* is specific about which facilities and infrastructure are permitted to have DCCs established. The types of eligible projects are limited to providing, constructing, altering, or expanding facilities related to the municipal roads, sewerage, water, drainage, and parkland acquisition and improvement.

In the fall of 2023, the *Local Government Act* was amended by *Bill 46 – 2023: Housing Statues (Development Financing) Amendment Act* which expanded the number of DCC infrastructure categories. These included fire protection, police, and solid waste and recycling facilities. Project eligibility for these new categories is specified in the "Interim Guidance, Development Finance Tools Updated: Development Cost Charges/Levies and Amenity Cost Charges" provided by the province.

2.3 Exemptions

The *Local Government Act* exempts certain developments from paying DCCs. These exemptions are incorporated in the DCC Bylaw by reference to the *Local Government Act*. This allows changes or amendments to the *Local Government Act* without requiring updates to the DCC bylaw. Under the current regulations, the following exemptions apply to DCCs:

- A building permit that authorizes the construction, alteration, or extension of a building which is solely used for public worship;
- Where the value of work covered by the building permit does not exceed $50,000;
- If it can be proven that the development does not impose a new capital cost burden on the municipality;
- If a DCC was previously paid for the same development; or
- Assistance may be provided by waiving or reducing DCCs for not-for-profit rental housing.

It is confirmed that this technical appendix will apply charges for construction, alteration or extension of a building that will, after the construction, alteration, or extension, contain fewer than four (4) self-contained dwelling units pursuant to Section 561(6) of the *Local Government Act.*

2.4 Calculation of Charges

DCCs are calculated based on the benefit of each project to the projected development in the time-horizon of the DCC Bylaw. An estimate is required for population growth and residential development over the bylaw's timeframe. The exact timeframe or growth rate are not critical because if actual growth is faster or slower than estimated, the listed infrastructure projects may be needed sooner or later, and the rate of DCC collection will vary respectively.

Along with residential growth, an estimate of commercial, institutional, and industrial growth is required. This estimate is used to develop an Equivalent Population Factor which is used to apportion the charges to each land use category.

In each of the infrastructure categories, a list is developed for projects which are required to serve the anticipated new development. For each project, an assessment is made to determine which portion of the project is required to serve new development within the timeframe of this bylaw. The resulting ratio between new development forecast in this bylaw and total benefiting population is identified as the Benefit Factor of the project.

The DCC recoverable cost for each project is the total estimated project cost multiplied by the Benefit Factor. Town Council must set an Assist Factor to each infrastructure category, which represents the portion of the project to be funded by other sources. As described in Section 3.3, Council may set the Assist Factor as low as 1%. Once the Assist Factor is subtracted from the cost of projects in each infrastructure category, the Net DCC Recoverable Cost is converted to an equivalent per capita value.

Using the Equivalent Population Factor, DCCs are distributed amongst each land-use category. Exceptions to this are as follows:

- Storm Drainage uses Drainage Units (DU),
- Municipal Roads use an equivalent Trip Rate, and
- Municipal Parks exclude non-residential land uses except for Tourist Accommodation Units.

For non-residential DCCs, the equivalent population per square meter of gross floor area is used to convert DCCs to a per square meter gross floor area charge. For the purposes of this technical appendix, gross floor area is defined in the 2024 Zoning Bylaw No. 1395.

2.4.1 Tourist Accommodation Units

For the purpose of this technical appendix, a Tourist Accommodation Unit is a temporary accommodation or temporary recreational accommodation for travelling public. This aligns with zoning bylaw uses including but not limited to tourist accommodation, tourist cabin, motel and hotel.

In previous DCC technical appendices, it was determined that the average floor space of units applicable to Tourist Accommodation Units was approximately 40 m^2. For this reason, DCC calculations for a Tourist Accommodation Unit are based on this floor area multiplied by the commercial DCC rate, per unit.

2.5 Collection of Charges

The *Local Government Act* allows the collection of DCCs at the time of subdivision or at building permit depending on the land use. Table 2-1 outlines the timelines of DCC collection for each land use category. For non-residential and multi-family residential developments, DCCs are based on the total floor area and/or number of units. Historically, these DCCs are collected at the building permit stage because the precise floor areas, number of units, or types of units may not be known at the time of subdivision. As there are limited undeveloped lands available for new subdivision, all residential DCCs will be collected at the building permit stage to better suit the approval process for infill development and provide consistency.

TABLE 2-1: DCC COLLECTION SCHEDULE

LAND USE	COLLECTION TIMELINE
Residential	Building Permit
Commercial	Building Permit
Industrial	Building Permit
Administrative/Institutional	Building Permit

2.5.1 Land Use Category Application to Zoning Uses

The DCC Land Use Categories outlined in Table 2-1 (DCC Collection Schedule) are based on the zoning districts established under the Town's Zoning Bylaw. Where a land use permitted by the Zoning Bylaw does not neatly fit into one of the "Land Use" Categories outlined in Table 2-1, the following is intended as a guide and to provide clarification for the purposes of the DCC Bylaw:

- Residential DCC charges apply to:
  - Accessory dwelling;

- Apartment building (per dwelling unit);
- Community care facility (per sleeping unit);
- Duplex dwelling;
- Manufactured home;
- Modular home;
- Resort residential building (per dwelling unit);
- Secondary suite;
- Single detached dwelling;
- Townhouse (per dwelling unit).

- Commercial DCC charges apply to
  - Childcare facilities in residential zones,
  - Common areas of:
    - Tourist accommodation buildings.
  - Tourist Accommodation Units;
  - Uses occurring on a parcel zoned Town Centre (TC), excluding residential (specified above) and Administrative and Institutional uses (specified below).
  - Commercial uses occurring on a parcel zoned under the Parks & Natural Environment Zones category of the Town's Zoning Bylaw;
  - Commercial uses occurring on a parcel zoned Agricultural (AG) which are serviced by utilities corresponding to DCC categories.
- Industrial DCC charges apply to:
  - Uses occurring on a parcel zoned Airport (AP).
- Administrative and Institutional DCC charges apply to
  - Common areas of:
    - Community care facilities in residential zones.
  - Uses occurring on a parcel zoned Town Centre (TC), including:
    - Assembly;
    - Civic facility;
    - Community care facility;
    - Cultural facility;
    - Educational facility.
  - Uses that comply with the definition of "civic facility" under the Town's zoning bylaw, and where permitted by the applicable zone.

2.6 Further Development & Land-use Conversion

Further development or land-use conversion may result in a new capital cost burden on the municipality. While DCCs may have been collected on the existing development, DCCs can be collected on the additional increment of development. This is to be calculated by determining the amount of DCCs applicable to the proposed development and subtracting any DCC's that may have been previously paid in relation to the site. This calculation is done separately for each DCC Infrastructure Category (e.g. water, sewer, etc). No refunds will be given if a land-use conversion results in a net decrease. The following conversion examples are provided to demonstrate expected land-use conversions.

Conversion of a single detached dwelling to a duplex dwelling (two dwelling units) or apartment building are demonstrated in the following two examples. Table 2-2 shows conversion of a single detached dwelling to a duplex dwelling with two units. The calculation determines the Net DCC Payable by calculating the total DCCs for both duplex units and subtracts the current DCC for a single detached unit. This example is not intended for accessory dwellings or secondary suites.

TABLE 2-2: LAND-USE CONVERSION EXAMPLE: SINGLE DETACHED TO DUPLEX DWELLING

DCC Infrastructure Category	Single Detached DCC	Duplex DCC	Units	Total DCCs	Difference	Net DCCs Payable
	A	B	C	D = B × C	E = D - A	
Water System	$10,268	$9,335	2	$18,670	$8,401	$8,401
Sanitary Sewer	$5,400	$4,909	2	$9,818	$4,418	$4,418
Storm Drainage	$1,389	$1,042	2	$2,084	$695	$695
Municipal Roads	$7,289	$6,432	2	$12,863	$5,574	$5,574
Municipal Parks	$8,125	$7,386	2	$14,772	$6,647	$6,647
Recycling and Solid Waste Management	$45	$41	2	$82	$37	$37
					Total	**$25,735**

Table 2-3 shows conversion of two single detached dwellings to an apartment building. The calculation determines the Net DCC Payable by calculating the total DCCs for all apartment building units and subtracts the total current DCC for both single detached dwelling units.

TABLE 2-3: LAND-USE CONVERSION EXAMPLE: SINGLE DETACHED TO APARTMENT MULTIPLE LOTS

DCC Infrastructure Category	Single Detached DCC	Units	Total DCC Credit	Apartment DCC	Units	Total DCCs	Difference	Net DCCs Payable
	A	B	C = A × B	D	E	F = D × E	G = F - C	
Water System	$10,268	2	$20,537	$7,468	48	$358,456	$337,920	$337,920
Sanitary Sewer	$5,400	2	$10,800	$3,927	48	$188,501	$177,701	$177,701
Storm Drainage	$1,389	2	$2,778	$833	48	$40,003	$37,225	$37,225
Municipal Roads	$7,289	2	$14,578	$4,288	48	$205,814	$191,235	$191,235
Municipal Parks	$8,125	2	$16,249	$5,909	48	$283,625	$267,376	$267,376
Recycling and Solid Waste Management	$45	2	$90	$33	48	$1,579	$1,489	$1,489
							Total	**$1,011,458**

Land conversion of a single detached dwelling to a commercial land-use is shown in Table 2-4. An existing single detached dwelling will be converted to a 200 m² daycare (commercial). Based on the proposed DCCs in this bylaw, the calculation for DCCs payable is shown. The DCCs payable for this land-use conversion would be $1,141 and $2,716 for Storm Drainage and

Municipal Roads (the net positive difference). As the difference in all other infrastructure categories is negative, no DCCs are payable for Water System, Sanitary Sewer, Storm Drainage or Municipal Parks and no refund is given.

TABLE 2-4: LAND-USE CONVERSION EXAMPLE: SINGLE DETACHED TO COMMERCIAL SINGLE LOT

DCC INFRASTRUCTURE CATEGORY	SINGLE DETACHED DCC	COMMERCIAL DCC	COMMERCIAL DCC VALUE	DIFFERENCE	NET DCCS PAYABLE
	A	B	C = B × 200 M2	D = C - A	
Water System	$10,268	$29.87	$5,974	-$4,294	$0
Sanitary Sewer	$5,400	$15.71	$3,142	-$2,258	$0
Storm Drainage	$1,389	$12.65	$2,530	$1,141	$1,141
Municipal Roads	$7,289	$50.02	$10,005	$2,716	$2,716
Municipal Parks	$8,125	$0	$0	-$8,125	$0
Recycling and Solid Waste Management	$45	$0	$26	-$19	$0
				Total	**$3,857**

Certain commercial developments allow residential units above the first floor of a commercial development. These types of developments will be charged commercial and residential DCCs as shown in Table 2-5. Commercial DCCs will be calculated based on gross floor area increase (85 m^2 in this example) and residential DCCs will be calculated per unit. In this case, the units would be apartment units with a common entrance. Whereas, this example could be completed for townhouses depending on the unit classification.

TABLE 2-5: LAND-USE CONVERSION EXAMPLE: COMMERCIAL TO COMMERCIAL RESIDENTIAL

DCC INFRASTRUCTURE CATEGORY	COMMERCIAL DCC	NET COMMERCIAL DCCS PAYABLE	APARTMENT DCC	UNITS	TOTAL RESIDENTIAL DCCS	NET DCCS PAYABLE
	A	B = A × 85 M2	C	D	E = C × D	F = E + B
Water System	$29.87	$2,539	$7,468	20	$149,357	$151,896
Sanitary Sewer	$15.71	$1,335	$3,927	20	$78,542	$79,877
Storm Drainage	$12.65	$1,075	$833	20	$16,668	$17,743
Municipal Roads	$50.02	$4,252	$4,288	20	$85,756	$90,008
Municipal Parks	$0	$0	$5,909	20	$118,177	$118,177
Recycling and Solid Waste Management	$0	$11	$33	20	$658	$669
					Total	**$457,701**

2.7 Time Frame

The BPG describes two options for program time frame that may be used as the basis for determining capital project requirements and subsequently DCCs; *Build-Out* and *Revolving.*

The *Build-Out* approach includes all necessary capital projects to service development that is anticipated to occur to the full extent and level defined by the OCP. The OCP identifies future growth areas, land use objectives, smart growth policies and estimates a 20-year *Build-Out* population. Although a 20-year *Build-Out* population is estimated, there are significant challenges with estimate upgrades past a 10-year horizon, due to the following:

- Accurate capital works planning for the 5 to 10 year horizon is difficult due to several variables and factors beyond the direct control of the Town including:
  - Uncertainty of assistance programs from provincial and federal levels of government for roads, water supply, sanitary sewer works, and recycling and solid waste management facilities,
  - Changes by provincial and federal governments to the standards of service for water supply, wastewater treatment and disposal, etc, and
  - Policies by provincial and federal governments which directly impact the feasibility of specific capital projects.
- Preparation of capital cost estimates for projects that may be constructed 10 to 30 years in the future is difficult due to:
  - Inflation,
  - Technology innovation, and
  - policy standards by senior levels of government.

A primary objective of the DCC Bylaw is to clearly describe and justify the derivation of charges to both the public and representatives of the development industry. The *Build-Out* approach and associated uncertainties and variables in preparing capital plans and capital cost estimates for time frames 20 years or longer is inconsistent with this clarity objective.

The *Revolving* approach involves population projections for a defined term, and identification of capital projects necessary to service the projected population in that term. As compared to the *Build-Out* approach, it is more straightforward to derive a realistic design population with a *Revolving* timeline of 5-10 years. It is also more straightforward to accurately describe capital works requirements and cost estimates in a *Revolving* timeframe due to uncertainties in technology, standards, policies, and the economy.

The Town's DCC Bylaw No. 1322, 2016 uses the *Revolving* program approach. In consultation with the Town, the *Revolving* program approach remains as the preferred option for the derivation of DCCs and a timeframe of 10-years has been used this DCC Technical Appendix.

2.8 DCC Levy Format

The Best Practices Guide recommends that DCC's should be established on a municipal-wide basis unless there is a significant disparity between those who pay and the benefiting users. A municipal-wide charge means that the same DCC rate is applied for a particular land use throughout the municipality regardless of the specific location and benefiting area of a capital project. The BPG presents the following as potential advantages of the municipal-wide approach:

- The complexity and costs of administration associated with numerous Sector area charges is eliminated.
- Municipal-wide charges *"keep it short and simple"* and thereby reduces confusion.
- There is no inequity in development potential between different areas of the municipality.
- Even in the Sector approach there is some "averaging" in the derivation of charges.

Furthermore, impacts of SSMUH infill was considered as it may give reason to area specific DCC levies if localized development is experienced. These impacts will be minimal for the following reasons in order of importance.

1. Provincial mandate for 3 to 4 units on single detached lots has been deferred to 2029 which will significantly reduce localized development.
2. Population growth modelling assumed an even infilling distribution throughout the municipal boundary give that single detached housing is present in all major areas of the Town.
3. Infrastructure upgrades required by SSMUH infill on average benefit the community as a whole.

For these reasons, a municipal-wide DCC levy was used in this DCC Technical Appendix.

2.9 Assist Factors

Section 559 (2) of the *Local Government Act* states that the purpose of DCC's is to provide funds to 'assist' local government to construct infrastructure and provide and improve parks. As such, there is a requirement for municipalities to provide a portion of the project funding required to facilitate the anticipated community growth. This portion is known as the Assist Factor and is determined considering the following:

- May be set as low as 1%,
- Generally, reflects Council's desire to encourage development and is therefore largely a political decision,
- May occasionally be adjusted by Council by way of a Bylaw amendment to ensure that DCC's do not deter development, and
- May vary by DCC category (For example 5% for sewer, 10% for roads, 25% for water supply, etc.).

The Council of the Town of Osoyoos has reviewed the estimated capital cost associated with the projects required to facilitate community growth and has set the following Assist Factors for each infrastructure category:

TABLE 2-6: MUNICIPAL ASSIST FACTORS

INFRASTRUCTURE CATEGORY	ASSIST FACTOR
Water System	1%
Sanitary Sewer	1%
Storm Drainage	1%
Municipal Roads	1%
Municipal Parks	1%
Recycling and Solid Waste Management	1%

The proposed Municipal Assist Factors above are consistent with those in DCC Bylaw 1322, 2016 with the addition of Recycling and Solid Water Management. It should be noted that the Assist Factor for each infrastructure category is applied to the gross DCC recoverable cost before subtraction of the current DCC reserve balance. This method of calculation is in accordance with the BPG.

3.0 Population Development Projections

3.1 Population Projections

Historical population data from Statistics Canada for the Town is presented in Table 4-1. While the annual average growth between data sets has ranged from 0.4% to 2.0% since 2021, the average population growth rate from the 2001 to 2021 census is 1.3% annually.

TABLE 3-1: TOWN OF OSOYOOS – RECENT HISTORICAL POPULATION GROWTH

YEAR	CENSUS POPULATION WITHIN MUNICIPAL BOUNDARY	5-YEAR GROWTH RATE	5-YEAR ANNUAL AVERAGE POPULATION GROWTH RATE
*2001	4,295	6.8%	
*2006	4,752	10.6%	2.0%
*2011	4,845	2.0%	0.4%
*2016	5,050	4.2%	0.9%
*2021	5,556	9.7%	1.9%

*Source: Statistics Canada for Census Population

In DCC Bylaw No.1322 in 2016, the Town had a projected growth rate of 1.0% until 2025. This rate was selected based on low growth market projections (below 1.0%) with signs that the real estate market was becoming more active. The selected 1% growth rate estimated that the Town's population would be 5,251 in 2021; whereas the actual population from Statistic Canada in 2021 was 5,556. This resulted from the 5-year annual average population growth rate of 1.9% from 2016 to 2021.

Future population projections are based on housing unit projections provided in the Town of Osoyoos Housing Needs Assessment Report. It is projected that the Town will require 542 within the 10-year horizon. This results in a 10- year average growth rate of 1.6% which is comparable to the Town's OCP median growth rate of 2% annually. Population projections and new residents are shown in Table 3-2.

TABLE 3-2: PROJECTED GROWTH AND NEW DEVELOPMENT POPULATION

YEAR	PROJECTED POPULATION WITHIN MUNICIPALITY	CUMULATIVE POPULATION FROM NEW DEVELOPMENT
2023	5,737	
2024	5,830	93
2025	5,924	187
2026	6,020	283
2027	6,117	380
2028	6,216	479
2029	6,316	579
2030	6,419	681
2031	6,522	785
2032	6,628	891
2033	6,735	998
2034	6,844	1,107
2035	6,954	1,217
2036	7,067	1,330
2037	7,181	1,444
2038	7,297	1,560
2039	7,415	1,678
2040	7,535	1,798
2041	7,657	1,920
2042	7,780	2,043
2043	7,906	2,169
2044	8,034	2,297

3.2 Projected Residential Development

Residential development categories were updated based on the Zoning Bylaw No. 1395 and the 2024 amendment of the OCP Bylaw 1375, 2021. These documents categorize residential development into two categories being low-density and medium-density development, but also include residential development (dwelling units) in other zones like the Town Centre zone. For the purposes of this bylaw, residential development is categorized based on Zoning Bylaw 1395 permitted uses for dwelling units being:

- Accessory dwelling
- Apartment building
- Duplex dwelling
- Manufactured home
- Modular home
- Secondary suite
- Single detached dwelling
- Townhouse

This approach ensure consistency with the Town's Official Community Plan (OCP) and Zoning Bylaws, as amended, in early 2025. It is advised that changes to either bylaw may require updates to the DCC bylaw.

3.2.1 Equivalent Population Factor and Market Share Values

The projected population growth in Section 4.1 has been converted to projected residential development per land use category based on "Market Share" (MS) and equivalent population values, as shown in Table 3-3.

TABLE 3-3: LAND USE CATEGORY – EQUIVALENT POPULATION FACTORS & MARKET SHARES

LAND-USE CATEGORY	ACCESSORY DWELLING & SECONDARY SUITE	SINGLE DETACHED DWELLING	DUPLEX DWELLING (ONE UNIT)	TOWNHOUSE	APARTMENT	MANUFACTURED HOME SPACE	AVERAGE DWELLING OCCUPANCY
EQUIVALENT POPULATION FACTOR	1.75	2.75	2.50	2.25	2.00	1.75	**2.1**
ESTIMATED MARKET SHARE	10%	5%	5%	10%	70%	0%	

Equivalent Population Factors (EPF) were selected with consideration for the Town's former DCC Bylaw (No. 1322) and Zoning Bylaw (No.1085). The single detached dwelling and duplex dwelling (one unit) categories were selected to be similar to the previous low-density factor. The townhouse category was selected to be similar to the previous medium-density factor. This factor was also increased slightly in consideration of townhouses becoming a more common option for families. The apartment category was selected to reflect the previous high-density. This factor was slightly increased in consideration of families living in high density housing and apartment developments predominantly consisting of 2-bedroom apartments. Of the remaining categories only accessory dwellings and secondary suites are projected to have a market share. It is anticipated that these forms of housing will become more prevalent as regulations promote this form of housing.

The Market Share values were determined based on analysis of historic building permit records and 2023 development permit records. These records were categorized based on the previous Zoning Bylaw (No. 1085) since all these records corresponded to that zoning. The past 10 years of building permit data showed that Single Family Residential (SFR) development dominated the market until 2021 (low-density). From 2021 onward, high-density development and some medium density development had provided most new residential units. This upward trend in multi-family/high density housing is supported by the OCP growth development objectives and development permit applications received by the Town of Osoyoos (as of 2023).

These Development Permits were distributed approximately 85% high density, 10% medium density, and 5% low density. This data is considered partially skewed with high-density developments being pursued but not all will likely proceed. For these reasons, the market share values presented in Table 3-3 were assigned accordingly.

3.2.2 Projected Residential Units

As seen in Table 3-4, approximately 542 new residential dwelling units will be required to meet the projected population growth to 2034 (1,107). It is shown that most of these units will be apartment units which aligns with the current development analysis. The second largest unit increase corresponds to accessory dwellings and secondary suites which is anticipated based on the new SSMUH regulations. Townhouses follow this category as the next development category with high density development. Lastly, single detached and duplex housing are expected to have the least increase as other forms of higher density housing are projected.

TABLE 3-4: PROJECTED RESIDENTIAL DEVELOPMENT BY LAND-USE CATEGORY

YEAR	ADDED POPULATION	ADDED DWELLING UNITS (CUMULATIVE)					TOTAL ADDED DWELLING UNITS
		ACCESSORY DWELLING & SECONDARY SUITE	SINGLE DETACHED DWELLING	DUPLEX DWELLING (ONE UNIT)	TOWNHOUSE	APARTMENT	
2024	93	5	2	2	4	32	45
2025	187	11	3	4	8	65	92
2026	283	16	5	6	13	99	138
2027	380	22	7	8	17	133	186
2028	479	27	9	10	21	168	235
2029	579	33	11	12	26	203	284
2030	681	39	12	14	30	239	334
2031	785	45	14	16	35	275	385
2032	891	51	16	18	40	312	436
2033	998	57	18	20	44	349	489
2034	1,107	63	20	22	49	387	542

3.3 Projected Non-Residential Development

Table 3-5 below provides estimates of non-residential development in the 10-year horizon. The equivalent population factors per square meter of gross floor area of non-residential use. The OCP provides values for total floor area for non-residential development for a 20-year period based on historic building permit records and the 2% population projection. Thus, the equivalent floor area to a 10-year period was used. This results in a total non-residential development of

13,177 m² which is distributed between commercial, institutional, and industrial development in accordance with the OCP and shown in Table 3-5.

TABLE 3-5: PROJECTED NON-RESIDENTIAL DEVELOPMENT

LAND USE	PERCENTAGE OF NON-RESIDENTIAL DEVELOPMENT	ESTIMATED NEW DEVELOPMENT (M² GFA)
Commercial	75%	9,836
Institutional	9%	1,214
Industrial	16%	2,127
	Total	**13,177**

4.0 Water System

4.1 New Infrastructure Requirements

On behalf of the Town, TRUE conducted a comprehensive review of the municipal water supply in 2023. The *2023 Water System Infrastructure Plan* included a hydraulic model (capacity assessment), asset management review, capital plan, and implementation plan for the entire system. This plan was updated in 2024 by TRUE SSMUH to align with current system goals and the 2025 Water Capital Plan. As such, TRUE SSMUH describes the list of water capital projects which aligns with costs in the 2025 Water Budget.

Water supply improvements are designed for a 2044 build out population. The total service population includes users within the Town's municipal boundaries and within the Electoral Area "A" of the Regional District of Okanagan-Similkameen. This partition is shown in Table 4-1.

TABLE 4-1: WATER SYSTEM 2043 BUILD-OUT POPULATION PARTITION

	TOWN OF OSOYOOS	ELECTORAL AREA "A"	TOTAL DESIGN POPULATION
2024	5,830	869	6,699
2044	8,034	1,197	9,231
Difference	2,204	328	2,533

For the purposes of this DCC Bylaw Technical Appendices, only the population within the Town boundary is considered. The Town's population growth is 1,107 representing new development within the ten year DCC timeframe, as outlined in Section 3.1. The following percentages will be used to allocate apportionment of project values in the following Sections.

Percentage of 2044 total design population: (1,107 ÷ 9,231) x 100% = 12.0%

Percentage of Population increase: (1,107 ÷ 2,533) x 100% = 43.7%

The percentage of the 2044 total design population is applied to projects that benefit the existing and future service population equally. The percentage of population increase is applied to projects that solely benefit future populations. Furthermore, it is recommended that connection fees be applied to developments outside the municipal boundaries that would be proportionate to a DCC.

The following water system projects are planned to be constructed in the next 20 years, in accordance with the Water Capital Plan and in consultation with Town staff. Project Figures and Detailed Cost Estimates are provided by Project Sheets in Appendix A.

Project W5: 74th Ave. Watermain Upsizing, Heron Lane and Loon Crescent Replacement, and Loon Crescent Looping

A continuous large diameter trunk main does not currently exist between the East and West portions of the Town. This limits distribution capacity for fire flows and conveyance. This project will upgrade the trunk main on 74th Avenue to enhance flows to the Town core and east of Osoyoos Lake. This will allow flows to gravity flow more effectively from the 340 reservoirs (under non-pumping conditions). Also, this upgrade will be critical to improve system performance when the water treatment plant is implemented. Specifically, pumping from the WTP to the 340 reservoirs would be severely constricted.

The work includes supply and installation of approximately 180 m of 300 mm pipe with applicable appurtenances and connection to the existing water system. Works also include re-instating impacted road surfaces, curb and gutters, and side walks. The estimated project cost is $713,525. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

W10: Water Conservation

The water conservation plan is an engineering assignment to assess water demand data from the implementation of water meters throughout the Town. This analysis supports future development by improving water demand projections which provides lower system supply requirements. In this way, more development can be supported by fewer water supply upgrades. The estimated project cost is $100,000 and includes one routine update (Project W36 in the Capital Budget). This work will benefit the community's future populations more than the existing population as this plan heavily focus on water conservation to improve future servicing requirements. For this reason, the apportionment is set at 43.7% for the total build out population.

W11: East Osoyoos Reservoir – Design

This project is the design portion of Project W23: East 340 Reservoir – Construction. As such, it follows the same DCC application. The project cost is estimated to be $200,000 after considering 50% cost sharing with the OIB. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project W16: Surface Water Treatment Plant

The Town of Osoyoos is planning to implement a Surface Water Treatment plant. These works include a source water intake in Osoyoos lake, conveyance piping and a Water Treatment Plant. The total estimated project cost is $64,000,000 with grant funding being pursued for $42,00,000. This results in a net project value of $22,000,000 that the Town will fund. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

Project W20: Watermain Upgrades on 89th St. from 78th Ave. to Main St.

A continuous large diameter trunk main does not currently exist from the town core to the residential neighborhoods North of Main Street. This limits distribution capacity for fire flows and system looping resiliency. The proposed trunk main would connect 89th St. (North of Main St.) to the upgraded section of 74th Avenue. This would increase flows to the North more directly from the 340 reservoirs supply main, improving fire flows and allowing alternative distribution pathways. Furthermore, development in this area would be supported by enhanced fire flows and additional water supply for increased demands from densification.

Works include installing 115 m of 350 mm, and 26 m of 150 mm PVC watermain including a hydrant assembly and appurtenances. The estimated project cost is $165,387. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

This project will be completed simultaneously with Roads Project R9. A joint detailed cost estimate for these projects is included in Appendix D with the Roads Project Cost Estimates.

Project W21: Watermain Upgrades on 89th St. from Main St. to 70th Ave.

Increased distribution is required throughout the municipal pressure zone to accommodate flows from the future water treatment plant, flows to the east reservoir, and increased water demand from proposed developments (development referrals) and infilling to the North, South and East. Upgrades to the 89th St. corridor achieve an efficient and harmonious solution to accommodate these multiple dynamics. This corridor ties into the 74th Ave watermain upsizing which provides a large trunk main connected to the 340 Reservoir that will direct flows to upgrades Northwards and Southwards of this project. Northwards, it is intended to cross Main Street to create a large trunk main to the northern area of the municipal pressure zone. Southwards, increased flows may support water treatment plant distribution and will support increased water demand, but most importantly flows to the east to support the east reservoir (in conjunction with upgrades to Kingfisher Dr.).

Works include installing 300 m of 350 mm PVC watermain on 89th St. and roughly 90 m of 150 - 300 mm PVC watermain to tie-into connecting watermains. All works include replacing hydrants, services, valves and other appurtenances. It is recommended that this work be completed simultaneously with S12 to confirm the sanitary main does not need to be reconstructed. The estimated project cost is $605,675. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

This project will be completed simultaneously with Roads Project R10. A joint detailed cost estimate for these projects is included in Appendix D with the Roads Project Cost Estimates.

Project W22: Watermain Upgrades on 89th St. from 70th Ave. to Kingfisher Dr.

This project is intended to be completed in conjunction with upgrades on 89th St. from the 74th Ave. connection to support southwards distribution in the municipal pressure zone. The current watermain on 89th St. decreases from 250 mm to 200 mm between Kingfisher Drive and 70th Ave. which limits system capacity to provide fire flow. This impacts flows from Well #1 under pumping conditions, potential future water treatment plant flows, and eastward distribution. Connection to the east is intended to be achieved in conjunction with upgrades on Kingfisher Drive from 89th St. to the lake crossing.

Works include installing 440 m of 400 mm PVC watermain on 89th St. and roughly 60 m of 150 - 300 mm PVC watermain to tie-into connecting watermains including the future Kingfisher Drive watermain. All works include replacing hydrants, services, valves and other appurtenances. It is recommended that this work be completed simultaneously with S13 to confirm the sanitary main does not need to be reconstructed. The estimated project cost is $852,725. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

This project will be completed simultaneously with Roads Project R11. A joint detailed cost estimate for these projects is included in Appendix D with the Roads Project Cost Estimates.

Project W23: East 340 Reservoir – Construction

The east sector reservoir project will implement a potable water reservoir on the east side of Osoyoos to service existing a future development for the Osoyoos Indian Band (OIB) and the Town. This reservoir is intended to service the projected *Build-Out* of properties on the East side of Osoyoos Lake, chiefly among them the OIB's Osoyoos 1, IR1 lands. For the purpose of this DCC Technical Appendix, this project will only consider the benefit to the municipality with the OIB portion of cost subtracted from the total project cost.

This project will benefit the municipality by addressing system deficiencies including a lack of water demand storage, fire flow storage, and fire flows. As reported in the 2023 Osoyoos Water Infrastructure Report and TRUE SSMUH, there is a short fall of total system water demand storage in the system. Other benefits of the reservoir will address deficient fire flow storage and fire flows in the east sector of Osoyoos and improve fire flows in the West Sector. For these reasons, a municipal-wide approach is still considered resulting in an apportionment of 12.0% in accordance with Section 4.1. The project cost is estimated to be $5,097,559 after considering cost sharing with the OIB.

Project W29: Watermain Upgrade on Kingfisher Dr. from 89th St. to the Gyro Park

Increased hydraulic connectivity is required to convey flows between the West and East sectors of the municipal pressure zone to support infilling development east of the lake crossing and the implementation of the East Reservoir. The system currently has a 300 mm diameter through the

town core to the lake crossing, but a second pathway is required to provide additional flows. Kingfisher Dr. achieves this with several other advantages as follows:

- Improve system resilience by providing a large trunk main loop to the lake crossing, in conjunction with upgrades to 89th Street.
- Replacing a high-risk 150 mm asbestos cement (AC) water main which is at the end of its service life.
- Improves hydraulic connectivity to Well #1 and #8.

Supports hydraulic connectivity for the future water treatment plant throughout the municipal pressure zone.

The scope of work includes installing 670 m of 300 mm PVC watermain on Kingfisher Drive from 89th St. to Gyro Park. All works include replacing hydrants, services, valves and other appurtenances. Notably, a highway crossing is included for crossing Main St. at Gyro Park. Road works are included for surface restoration. The estimated project cost is $1,078,038. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

This project will be completed simultaneously with Roads Project R13. A joint detailed cost estimate for these projects is included in Appendix D with the Roads Project Cost Estimates.

Project W30: Watermain Upgrades and Replacement on 89th St. from Kingfisher Dr. to Oleander Dr. and 62nd Ave. Tie-in to 89th St. (Chute Intersection)

There is currently no connection between the watermains along 89th and 62nd avenue which limits system capacity to provide fire flow. This would be significantly improved with this connection creating a looped water system in this area. Additionally, replacement of the existing 250 mm asbestos cement (AC) watermain on 89th St. would improve system reliability to the south sector of the municipal pressure zone. This would allow two large diameter watermains to feed this area. Furthermore, it supports hydraulic connectivity for future water treatment plants and eastward conveyance to the lake crossing.

This scope includes replace existing asbestos cement watermains on 89th St. from Kingfisher drive to Oleander Drive, and on 62nd St. East of Osprey Pl. and tie-in 62nd St. to 89th Street. New watermains include 320m of 300 mm, and 100 m of 250 mm PVC watermains including, hydrants, services, an air release valve, and all other appurtenances. The estimated project cost is $453,466. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 22.2% in accordance with Section 4.1.

This project will be completed simultaneously with Roads Project R12. A joint detailed cost estimate for these projects is included in Appendix D with the Roads Project Cost Estimates.

Project W31: 340 Reservoir Watermain Upgrades

This project implements the distribution watermains that corresponds to Project W23: East 340 Reservoir – Construction. Work includes installing a 700 m length of 300 mm PVC watermain from the East Sector Reservoir to 45th street, along the boundary of the OIB lands and the potential RDOS expansion area. From this point, two watermains deliver flows to the Town and OIB lands, being the Cottonwood Drive Loop and the Nk'Mip Corner Water connection.

Work for the Cottonwood Drive Loop includes extending the watermain from 45th Street to Cottonwood Drive (total length of 570m) and installing a back flow prevention Chamber. This option is the most cost effective to connect the east sector reservoir to the domestic water system.

Work for the Nk'Mip Corner water connection includes installing an 850 m, 300 mm PVC watermain on 45th Street and connecting to the existing system at the south end of 45th Street. This additional connection would provide beneficial system looping.

The estimated cost for this project is $2,502,441 after considering cost Sharing with the OIB. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 22.2% in accordance with Section 4.1.

Project W34: Watermain Upgrade and Replacement on Main St. from the East Lake Crossing to Cottonwood Dr., and on Cottonwood Drive from Main St. to Maple Dr.

The domestic water system is restricted by undersized water mains east of the lake crossing when considering fire flows and implementation of the East Reservoir. For these reasons, a large diameter water main is required to optimally convey flows from the West to the East. This configuration has several advantages including:

- Improve system resilience by providing a large trunk main from the lake crossing into the core of the east sector.
- This will negate the replacement of the 300 mm water main in the beach line which is not expected to be feasible for environmental concerns in the future.
    - In the short term, this watermain may be used as a raw water supply line if groundwater treatment is pursued.
- Improves hydraulic connectivity to Well #3, #4, #5, #9 and #10.
- Supports hydraulic connectivity for the future water treatment plant throughout the municipal pressure zone.

This work includes upsizing the watermain on Main Street from the lake crossing to Cottonwood Dr. to enhance flow capacity from the lake crossing. A 500 mm water main will replace the existing 200 mm AC watermain on Main St., and a new section of 500 mm main will be installed between Cottonwood Dr. and Ponderosa Drive. Also, a 350 mm watermain is included from Main St. to Maple Dr. to tie into recent upgrades to improve flows from the source wells in this area. The estimated project cost is $3,027,674. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

W35: Master Plan Review

The Master Plan review is an engineering planning project to update system demand projections and to confirm/determine capital upgrades to service future demand. This will be important to consider the impacts of water conservation. The estimated project cost is $75,000. This work will benefit the community's future populations more than the existing population as Master Plans heavily focus on future servicing requirements. For this reason, the apportionment is set at 43.7% for the total build out population.

Project W38: Watermain Connecting Nighthawk Dr. and 89th St, adjacent to 89th St and Kingfisher Dr. Intersection

The current system layout in susceptible to service interruption because the 74th Ave. and 89th St. watermains provide major flows from the existing 340 Reservoirs eastwards to the lake crossing. Without an additional large diameter watermain, flows to the town core and east sector would be severely impacted in any case where these mains would be out of commission. For this reason, a 300 mm connection between Nighthawk Dr. to 89th St. is recommended to allow the proposed upgraded Kingfisher watermain to provide an alternative flow pathway. This configuration has several other advantages including:

- An existing right-of-way is present at the project location which corresponds to the proposed alignment.
- Supports hydraulic connectivity for the future water treatment plant throughout the municipal pressure zone.
- Supports hydraulic connectivity for Eastward conveyance from the 340 reservoir to the east sector.

This work includes trenching 40 m of 300 mm PVC watermain through the Right of Way (ROW) from 89th St. to Osprey Pl. and trenching 60 m of 300 mm PVC watermain in the ROW from Osprey Pl. to Nighthawk drive. Tie-ins will be completed at 89th St., Osprey Pl. and Nighthawk Drive. The estimated project cost is $294,775. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

Project W39: Watermain Upgrades on 74th Ave. from 97th St. to Nighthawk Dr.

The existing 350 mm watermain on 74th St. from 97th St. to Nighthawk Dr. is undersized to provide flows to the East Sector and it is unlikely that it will provide adequate hydraulic connectivity for the future Water Treatment Plant. For these reasons, it is proposed to twin this watermain with another 350 mm watermain. Furthermore, this will improve system resilience and mitigate the effects of increased demand from residential infilling and densification. This work includes installing 180 m of 350 mm PVC watermain on 74th Street. The estimated project cost is $427,050. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 4.1.

Project W55: R33: Oleander Drive Reconstruction 89th Street to Magnolia Place - Water

Water works for Project R33 have been included as a water system project as they represent system expansion for development. Detailed project costs and the project sheet are combined in Project R33. The estimated cost for this project is $526,225. This project will service future populations. As per Section 5.1, 12.0% has been apportioned to DCCs within the Town Boundary.

Project W70: R28: Main St. (Highway 3) and 45th St. Intersection Roundabout Water System Upgrades

Water works for Project R28 have been included as a water system project as they represent system expansion for development. Detailed project costs and the project sheet are combined in Project R28. The estimated cost for this project is $85,300 with 50% cost sharing with OIB. Thus, the Town will fund $42,650 of the project cost. This project will service future populations. As per Section 5.1, 43.7% has been apportioned to DCCs within the Town Boundary.

Project W71: Project R29: 45th St. Extension from Main St. to Lakeshore Dr. Water System Upgrades

Sanitary utility works for Project R5 have been included as a sanitary sewer system project as they represent system expansion. Detailed project costs and the project sheet are combined in Project R29. The estimated cost for this project is $376,500 with 50% cost sharing with OIB. Thus, the Town will fund $188,250 of the project cost. This project will service future populations. As per Section 5.1, 43.7% has been apportioned to DCCs within the Town Boundary.

Project W72: Project R30: 56th Ave. from 51st St. to 45th St. Water System Upgrades

Sanitary utility works for Project R6 have been included as a sanitary sewer system project as they represent system expansion. Detailed project costs and the project sheet are combined in Project R30. The estimated cost for this project is $309,200 with 50% cost sharing with OIB. Thus, the Town will fund $154,600 of the project cost. This project will service future population. As per Section 5.1, 43.7% has been apportioned to DCCs within the Town Boundary.

4.2 DCC Calculations

The calculation for net DCC recoverable costs for the water projects are summarized in Table 4-2. Initially, the DCC recoverable cost is determined by reducing alternate funding (grant subsidies, developer contributions, etc) from the total project cost and multiplying the resulting value by the benefit factors (described in Section 4.1 or as stated in the respective project paragraph). Subsequently, the net DCC recoverable cost is determined by reducing the total DCC recoverable cost by the municipal assist and water DCC reserve balance.

TABLE 4-2: WATER SYSTEM PROJECTS AND NET DCC RECOVERABLE COST

WATER PROJECT	TOTAL ESTIMATED COST	ALTERNATE FUNDING	TOWN FUNDED	BENEFIT FACTOR	DCC RECOVERABLE (10-YEAR HORIZON)
	A	B	C = A - B	D	E = C x D
W5: 74th Ave. Watermain Upsizing, Heron Lane and Loon Crescent Replacement, and Loon Crescent Looping	$713,525	$0	$713,525	12.0%	$85,538
W10: Water Conservation	$100,000	$0	$100,000	43.7%	$43,695
W11: East Osoyoos Reservoir – Design	$200,000	$0	$200,000	12.0%	$23,976
W16: Surface Water Treatment Plant	$64,000,000	$42,000,000	$22,000,000	12.0%	$2,637,366
W20: Watermain Upgrades on 89th St. from 78th Ave. to Main St.	$165,387	$0	$165,387	12.0%	$72,608
W21: Watermain Upgrades on 89th St. from Main St. to 70th Ave.	$605,675	$0	$605,675	12.0%	$102,225
W22: Watermain Upgrades on 89th St. from 70th Ave. to Kingfisher Dr.	$852,725	$0	$852,725	12.0%	$611,097
W23: East 340 Reservoir – Construction	$5,097,559	$0	$5,097,559	12.0%	$129,235
W29: Watermain Upgrade on Kingfisher Dr. from 89th St. to the Gyro Park	$1,078,038	$0	$1,078,038	12.0%	$54,362
W30: Watermain Upgrades and Replacement on 89th St. from Kingfisher Dr. to Oleander Dr. and 62nd Ave. Tie-in to 89th St. (Chute Intersection)	$453,466	$0	$453,466	12.0%	$299,993
W31: 340 Reservoir Watermain Upgrades	$2,502,441	$0	$2,502,441	12.0%	$362,958
W34: Watermain Upgrade and Replacement on Main St. from the East Lake Crossing to Cottonwood Dr., and on Cottonwood Drive from Main St. to Maple Dr.	$3,027,674	$0	$3,027,674	12.0%	$32,771
W35: Master Plan Review	$75,000	$0	$75,000	43.7	$35,338
W38: Watermain Connecting Nighthawk Dr. and 89th St, adjacent to 89th St and Kingfisher Dr. Intersection	$294,775	$0	$294,775	12.0%	$51,195
W39: Watermain Upgrades on 74th Ave. from 97th St. to Nighthawk Dr.	$427,050	$0	$427,050	12.0%	$18,636
W55: Oleander Drive Reconstruction 89th Street to Magnolia Place - Water	$526,225	$0	$526,225	12.0%	$63,084
W70: R28: Main St. (Highway 3) and 45th St. Intersection Roundabout Water System Upgrades	$85,300	$42,650	$42,650	43.7%	$18,636
W71: R29: 45th St. Extension from Main St. to Lakeshore Dr. Water System Upgrades	$376,500	$188,250	$188,250	43.7%	$82,256
W72: R30: 56th Ave. from 51st St. to 45th St. Water System Upgrades	$309,200	$154,600	$154,600	43.7%	$67,553
				Total	**$4,793,713**
				Municipal Assist Factor Value *(1%)*	**$47,937**
				Existing DCC Reserves on October 24, 2023	$243,883
				Net DCC Recoverable Costs	**$4,501,894**

Consistent with the BPG, DCCs are calculated for each land-use category. This is determined by multiplying the equivalent population per land-use category by the net DCC recoverable cost per capita. This per capita value is determined by dividing the net DCC recoverable cost by the total equivalent population for all projected development. The total equivalent population was determined as shown in Table 4-3. Values for non-residential land uses were taken from the BPG.

TABLE 4-3: WATER SYSTEM TOTAL EQUIVALENT POPULATION

LAND-USE CATEGORY	UNIT OF MEASURE	ESTIMATED NEW DEVELOPMENT	EQUIVALENT POPULATION	TOTAL EQUIVALENT POPULATION
Accessory Dwelling & Secondary Suite	DU	63	1.75	111
Single Detached Dwelling	DU	20	2.75	55
Duplex Dwelling (one unit)	DU	22	2.50	55
Townhouse	DU	49	2.25	111
Apartment Building	DU	387	2.00	775
Commercial	GFA	9836	0.008	79
Institutional	GFA	1214	0.008	10
Industrial	GFA	2127	0.005	11
			Total	**1206**

*Equivalent floor area based on 50% site coverage.
Note: Dwelling Unit (DU) and Gross Floor Area (GFA)

Based on the total equivalent population as shown in Table 4-3, the net DCC recoverable cost per capita is $3,733.92 per capita. Thus, this value was used to determine water DCCs as shown in .

TABLE 4-4: WATER SYSTEM DCCS

	LAND-USE CATEGORY	EQUIVALENT POPULATION FACTOR	WATER SYSTEM DCC	UNITS OF MEASURE
RESIDENTIAL	Accessory Dwelling & Secondary Suite	1.75	$6,534.36	Dwelling Unit
	Single Detached Dwelling	2.75	$10,268.28	Dwelling Unit
	Duplex Dwelling (one unit)	2.50	$9,334.80	Dwelling Unit
	Townhouse	2.25	$8,401.32	Dwelling Unit
	Apartment Building	2.00	$7,467.84	Dwelling Unit
NON-RESIDENTIAL	Commercial	0.008	$29.87	m² gross floor area
	Tourist Accommodation Unit	40[1]	$1,194.85	Site
	Institutional	0.008	$29.87	m² gross floor area
	Industrial	0.005	$18.67	m² gross floor area

1. 40 sq. m applied at the commercial DCC rate.

5.0 Sanitary Sewer

5.1 New Infrastructure Requirements

On behalf of the Town, TRUE conducted a comprehensive review of the municipal sanitary sewer in 2023. The 2023 Sanitary System Infrastructure Plan included system characterization, hydraulic model developed with PCSWMM software, asset management review, capital plan, and implementation plan for the entire system. This plan was updated in 2024 by TRUE SSMUH to align with current system goals and the 2025 Sanitary Capital Budget. As such, TRUE SSMUH describes the list of water capital projects which aligns with costs in the 2025 Sanitary Capital Plan.

Sanitary supply improvements are designed for a 2044 build out population. The total service population includes users within the Town's municipal boundaries and within the Electoral Area "A" of the Regional District of Okanagan-Similkameen. This partition is shown in Table 5-1.

TABLE 5-1: WATER SYSTEM 2043 BUILD-OUT POPULATION PARTITION

	TOWN OF OSOYOOS	ELECTORAL AREA "A"	TOTAL DESIGN POPULATION
2024	5,830	869	6,699
2044	8,034	1,197	9,231
Difference	2,204	328	2,533

For the purposes of this DCC Bylaw Technical Appendices, only the population within the Town boundary is considered. The Town's population growth is 1,107 representing new development within the ten-year DCC timeframe, as outlined in Section 3.1. The following percentages will be used to allocate apportionment of project values in the following Sections.

Percentage of 2044 total design population: $(1{,}107 \div 9{,}231) \times 100\% = 12.0\%$

Percentage of Population increase: $(1{,}107 \div 2{,}533) \times 100\% = 43.7\%$

The percentage of the 2044 total design population is applied to projects that benefit the existing and future service population equally. The percentage of population increase is applied to projects that solely benefit future populations. Furthermore, it is recommended that connection fees be applied to developments outside the municipal boundaries that would be proportionate to a DCC.

The following sanitary system projects are planned to be constructed in the next 20 years, in accordance with the Sanitary Sewer System Capital Plan and in consultation with Town staff. Project Figures and Detailed Cost Estimates are provided on Project Sheets in Appendix B.

Project S10: Wastewater Treatment Plant Auxiliary Power

Currently, there is no backup power at the WWTP. This renders the sanitary system highly susceptible to power outages which greatly disrupt the treatment process. This includes loss of aeration, pumping and Scada. This project involves the supply and install of an onsite backup generator, and SCADA integration to eliminate system impacts from power loss. The total project cost is estimated to be $219,000. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project S11: WWTP Upgrade Preliminary Design and Planning

The process selection and preliminary design work is intended to initiate permit requirements and studies required during detailed design of the WWTP. This allocates funds to cover the costs incurred throughout preliminary design. Future and current demand will apply to this project for the total *Build-Out* population. The project cost is estimated to be $250,000. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project S16: Chlorine Contract Chamber Recirculation

In addition to updating the chlorine generation and dosing system, recirculation would be required to help achieve proper contact time for the reclaimed water. This work would include removing obsolete hardware, retrofit the existing system and upgrading the chlorine contact chamber. The total project cost is estimated to be $370,000. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project S19: Starlite Lift Station Pump Capacity Increase

The existing Starlite Lift station is undersized for future conditions. This project upgrades the pump to increase capacity. The total estimated cost is $300,000. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project S24: Reclaimed Wastewater Storage and Extension Study

The 2021 WWTP Long Term Plan discusses treated effluent storage and use, and the requirement for additional storage and irrigation areas. Additionally, a memo titled 2014 Long Range Reclaimed Water Plan discusses the future need for service expansions. The report showed population trends suggesting that there is adequate storage until 2053. This may no longer be the case if 25% infilling is experienced as discussed in TRUE SSMUH which suggests that additional storage may be required as early as 2030. It is recommended that the study is updated to confirm when the service expansions will be required given new factors that may not have been considered in 2014. In general, these factors may include but are not limited to system condition and asset management considerations, hydraulic assessment and upgrade

recommendations, and irrigation demands which could have changed significantly based on changing agricultural practices. This is important to provide security to the service population given that this system provides the majority of effluent disposal.

The total estimated cost is $109,000. This project will be driven by storage requirements for future populations, including Electoral Area A and OIB. As per Section 5.1, 43.7% has been apportioned to DCCs within the Town Boundary.

Project S25: Wastewater Master Plan Review

A new Wastewater Collection and Treatment Master Plan revision will be completed within the DCC timeframe. The total project cost is estimated to be $45,000. A large portion of this report is considering future demand and upgrading projections to accommodate development. For this reason, the weighted cost is considered to be 25% for the current service population and 75% for the increase in service population. The apportionment of the total project cost is then 32.8% (75% multiplied by 43.7%).

Project S29: Forcemain Extension near the Wastewater Treatment Plant

Two 300 mm gravity sanitary sewer mains located at the Main Wastewater Pump Station (MWWPS) have capacity deficiencies. Inadequate capacity arises when the Starlite, Smith and Loveless, and 44th Avenue lift stations are pumping simultaneously. These lift stations pump into a common forcemain which subsequently discharges to the upstream manhole of the deficient sewer mains. These sewer mains constrict the flow causing surcharging in the manhole.

Surcharging is not experienced when two or less of the lift stations are operating. An attempt was made to determine the likelihood that all three lift stations would be pumping simultaneously, however a lack of available data in the 44th avenue lift station made analysis impossible. Although, the likelihood of the three lift stations operating simultaneously is low, flows will increase proportionately to population growth. This will greatly increase the possibility of these circumstance. For this reason, it is recommended that the Town extends the forcemain to the MWWPS. Ongoing monitoring of backflow/ponding in the outlet manhole under high flow conditions should be completed to ensure this project is implemented as necessary. However, it is expected that this project will take place within the DCC timeframe.

The total project cost is estimated to be $300,000. This project is triggered by future growth given that the current system performance is considered acceptable. As per Section 5.1, 43.7% has been apportioned to DCCs within the Town Boundary.

Project S32: Onsite Chlorine Generation

Updating the chlorine gas system for the reclaimed water to an onsite chlorine generation system would provide many advantages and provide sufficient chlorination for the total buildout population. Commonly this technology has been implemented in municipal settings as a safer alternative to chlorine gas and a cheaper alternative to bulk sodium hypochlorite. Currently, the

WWTP uses calcium hypochlorite tablets which are more expensive than bulk sodium hypochlorite. This project would require a bulk solids storage facility, solids conveyance, a generation system, and associated buildings. The total project cost is estimated to be $2,200,000. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project S33: Golf Course Lift Station Screening

Section 4.0 of the 2021 WWTP Long Term Plan requires that additional effluent screening will be required to implement the MBBR. Specifically, effluent from the Golf Course Lift Station would be required because this sewage is not screened but rather ground through the pumps. This project scope includes installing a screening facility at the Golf Course lift station. The total project cost is estimated to be $725,000. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project S44: Cell 1 Moving Bed Biofilm Reactor Conversion

Section 4.0 of the 2021 WWTP Long Term Plan discusses the options for augmenting the treatment process at the WWTP. Of the options discussed, the installation of a Moving Bed Biofilm Reactor (MBBR) greatly improves plant efficiency in a compact footprint. This system will also mitigate impacts to the system experienced by future demand. In general, the existing lagoon system would need to be expanded to increase the pond surface area to provide adequate aeration and biological treatment for the system. This approach requires developing additional land which is not desired. For this reason, the MBBR is the most appropriate approach. Works include construction of concrete tanks, aeration upgrades, and an odour containment building at the WWTP.

The total project cost is estimated to be $7,613,000. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project S45: Wastewater Treatment Plant Design and Planning

The detailed design, permitting, and construction of the WWTP upgrades will be a long-term, intensive project due to the regulatory requirements in place. This allocates funds to cover the costs incurred throughout those processes. Future and current demand will apply to this project for the total *Build-Out* population. The project cost is estimated to be $1,000,000. This work will benefit the community's existing and future populations. For this reason, the apportionment is set at 12.0% in accordance with Section 5.1.

Project S46: R28: Main St. (Highway 3) and 45th St. Intersection Roundabout Sanitary Upgrades

Sanitary utility works for Project R28 have been included as a sanitary sewer system project as they represent system expansion for development. Detailed project costs and the project sheet

are combined in Project R28. The estimated cost for this project is $80,000 with 50% cost sharing with OIB. Thus, the Town will fund $40,000 of the project cost. This project will service future populations. As per Section 5.1, 43.7% has been apportioned to DCCs within the Town Boundary.

Project S47: Project R29: 45th St. Extension from Main St. to Lakeshore Dr. Sanitary Upgrades

Sanitary utility works for Project R29 have been included as a sanitary sewer system project as they represent system expansion. Detailed project costs and the project sheet are combined in Project R29. The estimated cost for this project is $308,000 with 50% cost sharing with OIB. Thus, the Town will fund $154,000 of the project cost. This project will service future populations. As per Section 5.1, 43.7% has been apportioned to DCCs within the Town Boundary.

Project S48: Project R30: 56th Ave. from 51st St. to 45th St. Sanitary Upgrades

Sanitary utility works for Project R30 have been included as a sanitary sewer system project as they represent system expansion. Detailed project costs and the project sheet are combined in Project R30. The estimated cost for this project is $223,750 with 50% cost sharing with OIB. Thus, the Town will fund $111,875 of the project cost. This project will service future population. As per Section 5.1, 43.7% has been apportioned to DCCs within the Town Boundary.

5.2 Previous Infrastructure Projects

Sanitary sewer projects that are carried over from DCC Bylaw No. 1322 are discussed in this section.

Project S49: Reclaimed Water Storage Cell No. 1 Reconstruction

This project was completed in 2010 and included enlargement and a replacement liner in winter storage cell no. 1, a chlorine contact chamber and capacity upgrading of the reclaimed water supply pumphouse. The design population of the Winter Storage Cell No. 1 Reconstruction was 7000; therefore, the DCC recoverable cost remains to be collected from new development. For this reason, the Winter Storage Cell No. 1 Reconstruction project is carried forward from DCC Bylaw No. 1322.

The design population is projected to be reached within this DCC timeframe. For this reason, the remaining project value (corresponding to the remaining design population) will be applied to the population growth in the DCC timeframe. The remaining project value is determined herein. As per DCC Bylaw No. 1322, the original total DCC recoverable cost for this project was $584,446. The applicable portion of this value is determined based on the remaining design population multiplied by the per capita cost presented in Bylaw 1322.

Total DCC Recoverable	$584,446
Recoverable Cost per capita (Bylaw No. 1322)	$277
Design Provision for new Development (Population) 7000 – 6,699* =	301
Project Recoverable Costs – 301 x $277	$83,377

*2024 total service population including municipal and non-municipal population

The design provision for new development population is less than the municipal population within the DCC time-frame (1,107). For this reason, the remaining project value of $83,377 will be apportioned 100% to population growth within the Town Boundary. For detailed cost information, see Bylaw No. 1322.

Project S50: Aerated Cell No. 3 Liner Replacement and Aeration System Upgrading

Aerated Cell No. 3 has been in service since 1978 with no significant improvements except aeration system replacement in 2002. The liners in aerated cell no. 3 are more than 42 years old and well beyond the stated 25-year service life specified by the manufacturer. Components of the project include sludge removal, liner removal and replacement, and aeration system upgrading. The total estimated project cost estimate has been updated to reflect current market conditions which is $1,518,000 (refer to Appendix B for additional component and cost information). The project both addresses existing infrastructure operating beyond its service life and provides capacity for new development. Accordingly, the project is considered as benefitting both the existing service population and new development.

Total Project Cost	$1,518,000
Cost per Capita	$216
Design Provision for new Development (Population) 7000 – 6,699* =	301
Project Recoverable Cost – 301 x $216	$65,016

*2024 total service population including municipal and non-municipal population

On this basis, a calculation of project recoverable costs in the 10-year horizon of this DCC bylaw is presented as follows.

The remaining design provision for new development population is less than the municipal population within the DCC timeframe (1,107). For this reason, the remaining project value of $65,016 will be apportioned 100% to population growth within the Town Boundary. For detailed cost information, see Bylaw No. 1322.

Project S51: Main Lift Station Replacement and Upgrading

The main lift station pumps more than 95% of collected sewage to the treatment system on the Osoyoos West Bench. The station was constructed in 1978 and the pumps upgraded in 2000. Many of the station components constructed in 1978 have reached the end of their service life and are requiring replacement. A capacity assessment study in 2014 of the Town's sanitary

sewer system by KWL Consultants identified a capacity deficiency at the Main Lift Station and recommended that the station be replaced.

The Main Lift Station project will comprise:

- New low lift sewage pumping station and cast in place concrete enclosure,
- Rotary drum screens to remove non-biodegradable solids,
- High lift pumps designed to pump screened sewage to the treatment system, and
- Appurtenances including standby generator and odour control systems.

The estimated capital cost of the main lift station replacement project is $4,988,000. A detailed cost estimate is presented in Appendix B. The design population for the main lift station replacement project is 8628. The project has the objective of upgrading existing infrastructure at the end of its service life, providing influent screening and providing capacity for new development. On this basis, the project is considered to be of general benefit to both the existing service population and new development. The portion of total project costs recoverable by DCC's, within the DCC time frame, is derived as follows.

Total Project Cost	$4,988,000
Cost per Capita	$578
Provision for new Development (Population) 8,628 - 6,699* =	1,929
Project Recoverable Cost – 1,929 x $578	$1,114,962

*2024 total service population including municipal and non-municipal population

The remaining design provision for new development population is greater than the municipal population within the DCC timeframe (1,107). The population within the DCC time frame is 57% of the designated population. For this reason, the remaining project value of $1,114,962 will be apportioned 57% to population growth within the Town Boundary. For detailed cost information, see Bylaw No. 1322.

5.3 DCC Calculations

The calculation for net DCC recoverable costs for the sanitary sewer projects are summarized in Table 5-2. Initially, the DCC recoverable cost is determined by reducing alternate funding (grant subsidies, developer contributions, etc.) from the total project cost and multiplying the resulting value by the benefit factors (described in Section 5.1 or as stated in the respective project paragraph). Subsequently, the net DCC recoverable cost is determined by reducing the total DCC recoverable cost by the municipal assist and sanitary sewer DCC reserve balance.

TABLE 5-2: SANITARY SEWER SYSTEM PROJECTS AND NET DCC RECOVERABLE COST

SANITARY SYSTEM PROJECT	TOTAL ESTIMATED COST	ALTERNATE FUNDING	TOWN FUNDED	BENEFIT FACTOR	DCC RECOVERABLE (10-YEAR HORIZON)
	A	B	C = A - B	D	E = C × D
S10: WWTL Auxiliary Power	$219,000	$0	$219,000	12.0%	$26,254
S11: WWTP Upgrade Preliminary Design and Planning	$250,000	$0	$250,000	12.0%	$29,970
S16: Chlorine Contract Chamber Recirculation	$370,000	$0	$370,000	12.0%	$44,356
S19: Starlite Lift Station Pump Capacity Increase	$300,000	$0	$300,000	12.0%	$35,964
S24: Reclaimed Wastewater Storage and Extension Study	$109,000	$0	$109,000	43.7%	$47,628
S25: Wastewater Master Plan Review	$45,000	$0	$45,000	32.8%	$14,760
S29: Forcemain Extension near the Wastewater Treatment Plant	$300,000	$0	$300,000	43.7%	$131,086
S32: Onsite Chlorine Generation	$2,200,000	$0	$2,200,000	12.0%	$263,737
S33: Golf Course Lift Station Screening	$725,000	$0	$725,000	12.0%	$86,913
S36: Starlite Lift Station Relocation and Upsizing	$3,700,000	$0	$3,700,000	12.0%	$443,557
S44: Cell 1 Moving Base Biofilm Reactor Conversion	$7,613,000	$0	$7,613,000	12.0%	$912,648
S45: Wastewater Treatment Plant Design and Planning	$1,000,000	$0	$1,000,000	12.0%	$119,880
S46: R28: Main St. (Highway 3) and 45th St. Intersection Roundabout Sanitary Upgrades	$80,000	$0	$80,000	43.7%	$34,956
S47: R29: 45th St. Extension from Main St. to Lakeshore Dr. Sanitary Upgrades	$308,000	$0	$308,000	43.7%	$134,581
S48: R30: 56th Ave. from 51st St. to 45th St. Sanitary Upgrades	$223,750	$0	$223,750	43.7%	$97,768
S49: Reclaimed Water Storage Cell No. 1 Reconstruction	$99,166	$0	$99,166	100.0%	$83,377
S50: Aerated Cell No. 3 Liner Replacement and Aeration System Upgrading	$77,328	$0	$77,328	100.0%	$65,016
S51: Main Lift Station Replacement and Upgrading	$1,147,908	$0	$1,147,908	57.0%	$635,528
				Total	**$2,764,423**
				Municipal Assist Factor Value *(1%)*	**$27,644**
				Existing DCC Reserves on October 24, 2023	**$373,550**
				Net DCC Recoverable Costs	**$2,363,229**

Consistent with the BPG, DCCs are calculated for each land-use category. This is determined by multiplying the equivalent population per land-use category by the net DCC recoverable cost per capita. This per capita value is determined by dividing the net DCC recoverable cost by the total equivalent population for all projected development. The total equivalent population was determined as shown in Table 5-3. Values for non-residential land uses were taken from the BPG.

TABLE 5-3: SANITARY SEWER SYSTEM TOTAL EQUIVALENT POPULATION

LAND-USE CATEGORY	UNIT OF MEASURE	ESTIMATED NEW DEVELOPMENT	EQUIVALENT POPULATION	TOTAL EQUIVALENT POPULATION
Accessory Dwelling & Secondary Suite	DU	63	1.75	111
Single Detached Dwelling	DU	20	2.75	55
Duplex Dwelling (one unit)	DU	22	2.50	55
Townhouse	DU	49	2.25	111
Apartment Building	DU	387	2.00	775
Commercial	GFA	9836	0.008	79
Institutional	GFA	1214	0.008	10
Industrial	GFA	2127	0.004	9
			Total	**1204**

*Equivalent floor area based on 50% site coverage.
Note: Dwelling Unit (DU) and Gross Floor Area (GFA)

Based on the total equivalent population as shown in Table 5-3, the net DCC recoverable cost per capita is $1,963.55 per capita. Thus, this value was used to determine sanitary sewer DCCs as shown in Table 5-4.

TABLE 5-4: SANITARY SEWER SYSTEM DCCS

	LAND-USE CATEGORY	EQUIVALENT POPULATION FACTOR	SANITARY SEWER DCC	UNITS OF MEASURE
RESIDENTIAL	Accessory Dwelling & Secondary Suite	1.75	$3,436.22	Dwelling Unit
	Single Detached Dwelling	2.75	$5,399.77	Dwelling Unit
	Duplex Dwelling (one unit)	2.50	$4,908.88	Dwelling Unit
	Townhouse	2.25	$4,417.99	Dwelling Unit
	Apartment Building	2.00	$3,927.10	Dwelling Unit
NON-RESIDENTIAL	Commercial	0.008	$15.71	m² gross floor area
	Tourist Accommodation Unit[1]	40	$628.34	Site
	Institutional	0.008	$15.71	m² gross floor area
	Industrial	0.004	$7.85	m² gross floor area

1. 40 sq. m applied at the commercial DCC rate.

6.0 Storm Drainage

The Town`s subdivision and development servicing standards require all new development to collect stormwater for disposal on site for rainfall events having a return frequency of up to a 10-year event. In general, soils are suitable for onsite disposal to ground with the result that conventional piped stormwater infrastructure services less than 10% of the developed area of the Town. Consistent with historical practices and the BC Stormwater Management Planning Guidebook, the Town intends to continue to require on site stormwater management for all new development.

As a result of climatic change, the Town is experiencing high intensity rainfall events more frequently. It has become necessary for the Town to construct overland flood routes and pipe storm drainage systems for runoff from these high intensity rainfall events to minimize adverse impacts on Town infrastructure and private property.

6.1 New Infrastructure Requirements

For the purposes of this DCC Bylaw Technical Appendices, only the population within the Town boundary is considered. The Town's population growth representing new development within the DCC timeframe is 1,107 as derived in Section 3.1. The following percentage will be used to allocate apportionment of project values in the following Sections.

Percentage of 2034 total design population: (1,107 ÷ 8,034) ˣ 100% = 13.7%

The percentage of the 2034 total design population is applied to projects that benefit the existing and future service population equally, within the DCC time-frame. The following Storm Drainage projects are planned to be constructed in the next 10 years, in accordance with consultation with Town staff. Project sheets and cost estimates are provided in Appendix C.

Project ST1: Storm Drainage Management Master Plan

A Stormwater Management Master Plan will be completed within the DCC timeframe. Currently, the Town does not have a Stormwater Management Master Plan which is necessary for future capital planning. This work includes but is not limited to developing a system composite, determining system capacity, establishing overland flood routes, outfall assessments, asset management plan, capital planning and an implementation plan. This plan would be developed to align with the objectives of the OCP as per Section 7.K.2.4 Storm Drainage Management. In particular item b) states: "Prepare a Storm Drainage Management Plan that provides a strategy to achieve onsite storm water management reduced storm water runoff, peak flows, localized flooding, and waterway degradation."

The total project cost is estimated to be $120,000. A large portion of this report is considering future demand and upgrading projections to accommodate future development. This is especially

important given the affects of densification with higher site coverage allowing less infiltration. For this reason, the weighted cost is 50% for the current service population and 50% for the increase in service population. The apportionment of the total project cost is then 50%.

Project ST2: Stormceptor Treatment System for Stormwater Outfalls

A main action of the OCP under the Storm Drainage Management Section is to assess treatment options for all existing stormwater outfalls into Osoyoos Lake. The Town intends to implement treatment systems at all lake outfalls with a focus on outfalls servicing drainage areas greater than 5 hectares which are not used for single family housing. Treatment options have been implemented at two lake outfalls in the past. This work included implementation of a Stormceptor in-line treatment system which removes suspended solids and hydrocarbons from stormwater prior to discharge.

This project considers the implementation of this system at 13 remaining lake outfalls throughout the Town. Works will include the following.

- Supply and installation of package type stormwater treatment system for removal of both suspended solids and hydrocarbons. Several technology options will be assessed during detailed design.
- Reconstruction of the existing outfall piping including treatment system bypass for flows resulting from a major rainfall event.
- Restoration of disturbed areas including riparian area plantings.

These treatment projects are intended to be implemented within the DCC time frame. Also, the benefit is considered equal to the entire community. Treatment systems will also be sized to accommodate future flows and will service future developments. For these reasons, this overall project is apportioned at 33.0% to represent that population growth within the DCC timeframe. The total project cost is $4,342,000.

6.2 DCC Calculations

The calculation for net DCC recoverable costs for the storm drainage projects are summarized in Table 6-1. Initially, the DCC recoverable cost is determined by reducing alternate funding (grant subsidies, developer contributions, etc.) from the total project cost and multiplying the resulting value by the benefit factors (described in Section 5.1 or as stated in the respective project paragraph). Subsequently, the net DCC recoverable cost is determined by reducing the total DCC recoverable cost by the municipal assist and storm drainage DCC reserve balance.

TABLE 6-1: STORM DRAINAGE PROJECTS AND NET DCC RECOVERABLE COST

STORM DRAINAGE PROJECT	TOTAL ESTIMATED COST	ALTERNATE FUNDING	TOWN FUNDED	PERCENT DCC RECOVERABLE	DCC RECOVERABLE
	A	B	C = A - B	D	E = C × D
ST1: Storm Drainage Management Master Plan	$120,000	$0	$120,000	50.0%	$60,000
ST2: Stormceptor Treatment System for Stormwater Outfalls	$4,342,000	$0	$4,342,000	13.7%	$594,854
				Total	**$654,854**
				Municipal Assist Factor Value (1%)	**$6,549**
				Existing DCC Reserves on October 24, 2023	**$5,563**
				Net DCC Recoverable Costs	**$642,743**

Consistent with the BPG, DCCs are calculated for each land-use category. This is determined by multiplying the Equivalence Factor per land-use category by the net DCC recoverable cost per Equivalent Drainage Unit (EDU). To determine this rate value, the total EDUs for all projected development are determined. EDUs are calculated by multiplying the equivalence factor by the estimated new development.

Equivalence factors (EF) were calculated in accordance with the BPGs. For the purpose of this this Technical Appendix, EFs have been altered compared to the BPG in consideration of lot densities resulting from densification. Furthermore, the Accessory Dwelling and Secondary Suites category has a modified run-off coefficient in consideration for increasing the impermeable surface in addition to the single detached category. These calculations are shown in Table 6-2 in accordance with the procedure presented in the BPG.

TABLE 6-2: STORM DRAINAGE EQUIVALENT DRAINAGE UNITS

LAND-USE CATEGORY	UNIT DENSITY/ SITE COVERAGE	RUNOFF COEFFICIENT	IMPERVIOUS AREA (M^2) / UNIT OF DEVELOPMENT	EQUIVALENCE FACTOR	ESTIMATED NEW DEVELOPMENT	EQUIVALENT DRAINAGE UNITS
	A	B	C = (1 Ha / A) * B	D = C / C_{LD}	E	F = D * E
Accessory Dwelling & Secondary Suite	15	0.2	133	0.5	63	32
Single Detached Dwelling	15	0.4	267	1.0	20	20
Duplex Dwelling (one unit)	20	0.4	200	0.75	22	17
Townhouse	35	0.65	186	0.70	49	34
Apartment Building	50	0.8	160	0.6	387	232
	A	B	C = B / A	D = C / C_{LD}	E	F = D * E
Commercial	0.7	0.85	1.2	0.0091	9836	90
Institutional	0.7	0.85	1.2	0.0091	1214	11
Industrial	0.5	0.85	1.7	0.0128	2127	27
					Total	**463**

Based on the total equivalent drainage units as shown in Table 6-2, the net DCC recoverable cost per EDU is $1,389.01. Thus, this value was used to determine storm drainage DCCs as shown in Table 6-3.

TABLE 6-3: STORM DRAINAGE DCCS

	LAND-USE CATEGORY	EQUIVALENCE FACTOR	STORM DRAINAGE DCC	UNITS OF MEASURE
RESIDENTIAL	Accessory Dwelling & Secondary Suite	0.50	$694.50	Dwelling Unit
	Single Detached Dwelling	1.00	$1,389.01	Dwelling Unit
	Duplex Dwelling (one unit)	0.75	$1,041.75	Dwelling Unit
	Townhouse	0.70	$967.34	Dwelling Unit
	Apartment Building	0.60	$833.40	Dwelling Unit
NON-RESIDENTIAL	Commercial	0.0091	$12.65	m² gross floor area
	Tourist Accommodation Unit	40	$505.99	Site
	Institutional	0.0091	$12.65	m² gross floor area
	Industrial	0.0128	$17.71	m² gross floor area

7.0 Municipal Roads

Municipal Road projects to be constructed have been compiled in this DCC Technical Appendix. These projects have been identified in response to proposed development resulting from densification. In general, these projects require road and intersection upgrades, and expansions to account for increased traffic to areas without adequate infrastructure. Furthermore, active transportation pathway projects have been included in conjunction with roads projects to promote connectivity within the community. These projects have been included in the parks DCC as they form part of the trail system throughout Osoyoos, but costing is combined with the corresponding road project. The partition of these projects are considered for DCC calculations. The following section describes these projects. Detailed capital cost estimates and project sheets for each municipal road project are contained in Appendix D.

7.1 New Infrastructure Requirements

The Town's municipal roads infrastructure only services population within the municipal boundary. The Town's population growth representing new development within the DCC timeframe is 1,107 as derived in Section 3.1. The following percentage will be used to allocate apportionment of project values in the following Sections.

Percentage of 2044 total design population: (1,107 ÷ 8,034) ˣ 100% = 13.7%

Percentage of 2044 Future design population: (1,107 ÷ 2,204) ˣ 100% = 50.0%

The percentage of the 2044 total and future design populations are applied to projects that benefit the existing and future service population equally or future service population.

Project R1: 74th Ave Water Main Upsizing, Heron Lane and Loon Crescent Replacement, and Loon Crescent Looping

This scope corresponds to watermain upgrades in Project W5. Works include complete road restoration including road surfacing, curb and gutters, and sidewalks. This area is located amongst several properties that are in the development permit stage which shows this area will likely be redeveloped with increased density. For this reason, it will support future development. The total estimated project cost is $283,800 and it will service existing and future populations. As per Section 0, 13.7% has been apportioned to DCCs.

Project R4: Roads Condition Assessment

This is an Engineering project to develop a Road Condition Assessment of major travel routes in the Town where densification will be experienced. The scope of this project includes a pavement

that will provide additional information for consideration for capital upgrades. Works for these programs include:

- Network linear referencing
- Pavement surface condition evaluation with Pavement Surface Profiler vehicle
- Pavement distress surveying
- Pavement roughness surveying
- Pavement condition indices (pavement damage, rutting, roughness, composite)
- Conditions assessment
  - Performance modelling
  - Rehabilitation and maintenance strategies
  - Life cycle cost analysis
  - Budget analysis
- Inventory signs, light, drainage facilities and other applicable infrastructure

The total estimated project cost is $100,000 and it will benefit the existing and future population. As per Section 7.1, 13.7% has been apportioned to DCCs.

Project R5: Roads Master Plan and Traffic Analysis

A Municipal Roads Master Plan will be completed within the DCC timeframe. Currently, the Town does not have a Master Plan which is necessary for future capital planning. This plan would be developed to align with the objectives of the OCP as per Section 7.J.2.1, e). This section state that the Town will "Undertake the development of a Master Transportation Plan to develop a long-range vision and actionable plan for all aspects of transportation in Osoyoos. The engineering scope of this comprehensive document is as follows.

- Traffic Analysis (of major route):
  - Review existing traffic counts and collect new traffic counts
  - Develop network models for weekday AM and PM peak hour,
  - Problem and Improvement Identification,
  - Future conditions assessment
- Risk / Criticality Assessment
- Five (5) Year Capital Plan (Ongoing Updates)

This work has a variety of independent deliverables that will feed into future guiding documents including DCC Program, Subdivision / Servicing Bylaw, Active Transportation Network and Capital Planning.

The total project cost is estimated to be $140,000. A large portion of this report is considering future demand and upgrading projections to accommodate future development. This is especially important given the affects of densification with higher unit densities causing more vehicle traffic. For this reason, the weighted cost is 50% for the current service population and 50% for the increase in service population. The apportionment of the total project cost is then 50%.

Project R9, R10, R11: 89th Street Reconstruction - PART A, B and C

These projects service future development on 89th St. for vehicle traffic and provides active transportation with a multi-use path from the town core. This pathway also improves connectivity to Kingfisher Dr. and the SW sector of Osoyoos. Access to Kingfisher Dr. improves vehicle traffic connectivity to Highway 3 at the lake crossing, and active transportation connectivity to the Legion Beach Park with the multi-use pathway. These projects have corresponding Municipal Parks project for the active transportation pathways which are described further in Section 8.1.1. The project is phased over three parts as listed below and correspond to water projects W20, W21 and W22, in that order.

Part A – 78th Avenue to Main Street

- Re-instate gravel road structure
- 7m paved road travel surface
- Concrete curb and gutter both sides
- 3m width multi-use asphalt path on the west side
- Localized storm sewer drainage works
- Street lighting

Part B – Main Street to 70th Avenue

- Re-instate gravel road structure
- 7m paved road travel surface
- Concrete curb and gutter on west side
- 3m width multi-use asphalt path on the west side
- Water system upsizing / replacements of aging AC pipe
- Storm sewer collection system comprising catch basins, manholes and main lines
- Street lighting

Part C – 70th Avenue to Kingfisher Drive

- Re-instate of gravel road structure
- 7m paved road travel surface
- Concrete curb and gutter on west side
- 3m width multi-use asphalt path on the west side
- Water system upsizing / replacements of aging AC pipe
- Storm sewer collection system comprising catch basins, manholes and main lines
- street lighting

The following cost estimated benefit the existing and future population. As per Section 7.1, 13.7% has been apportioned to DCCs.

Part A – 78th Avenue to Main Street: $414,701

Part B – Main Street to 70th Avenue: $1,141,288

Part C – 70th Avenue to Kingfisher Drive: $1,644,398

Project R12: Intersection Improvements at 89th Street and 62nd Avenue

Upgrades to the 89th St. and 62nd Ave. intersection are important to improve traffic flow which will be impacted by future development on 89th St. and the Southeast Sector. Currently, this intersection does not function well in its current layout which creates multiple yielding left turns with three intersections and two road levels limiting visibility. The scope of work includes building up the intersection to create a single intersection with good visibility. Additionally, a new parking lot with access from 89th St. will be implemented at the Legion Beach Park. The multi-use pathway will also access this area and connect the 89th St. multi-use pathway to the Oleander Dr. multi-use pathway extension described in Project R33.

Works include earthworks, aggregates and asphalt, medians, curb and gutter, sidewalks, 3 m wide asphalt multi-use pathway, landscaping, traffic signage, street lighting, retaining walls, storm sewer, and utility works (considered in other projects corresponding to the appropriate utility). The total estimated project cost is $3,220,409 and it will benefit the entire service population. This project will service existing and future populations. As per Section 7.1, 13.7% has been apportioned to DCCs.

Waterworks associated with this project are included in the Project W8 scope.

Project R16, R17, and R18: 92nd Avenue Reconstruction - PART A, B and C

North of the Town core does not have adequate transportation infrastructure to support large scale development. Medium and high-density residential developments are currently proposed in this area which aligns with the Town's densification goals as outlined in the OCP. These developments will increase traffic flows requiring a new collector route. Upgrades to 92nd St. will provide a new collector road with direct access from Highway 97. The Highway 97 and 92nd St. intersection is immediately North of the Highway 97 and Highway 3 Intersection which creates good connectivity for vehicle traffic to the highways. It is anticipated that this will reduce highway commuter traffic through the town core while providing direct access to development.

The scope of the 92nd St upgrades includes road works from Highway 97 to Spartan Dr. which comprises approximately 1000 m of collector roadways and five minor intersections. These works include earthworks, aggregates and asphalt, medians, curb and gutter, sidewalks, landscaping, traffic signage, retaining walls and utility works (considered in other projects corresponding to the appropriate utility). This project has been partitioned into three projects with cost estimates below. These projects will benefit the existing and future population. As per Section 7.1, 13.7% has been apportioned to DCCs.

Part A: R16 – Highway 97 to Jubilee Drive: $1,170,347

Part B: R17 – Jubilee Drive to 87th Street: $1,038,923

Part C: R18 – 87th Street to Spartan Drive: $1,251,947

Project R26: Tamarack to Cottonwood Local Road Linkage

The Highway 3 corridor transportation study prepared in 2005 recommends the construction of several local road linkages in East Osoyoos having the intention of reducing traffic volumes on Highway 3 and improving local road linkages within the sector. This is also supported by future development which will be bordered by this road linkage providing essential access to development. The proposed local road linkage represents a total of 280 m of new road construction. For cost estimate purposes, it is assumed that the Town would obtain the necessary road right of way through a subdivision or development application and that the Town would construct, at its cost, an urban standard road comprising 10m of pavement surface, curb and gutter, sidewalk and street lighting. The total estimated project cost is $1,339,000 and it will benefit the entire service population. This project will service future populations. As per Section 7.1, 50.0% has been apportioned to DCCs.

Project R27: Main St. (Highway 3) and Tamarack Dr. Intersection Upgrades

This project is an intersection upgrade to accommodate increased traffic as a result of the development described in Project R26. Works include traffic lighting to control the intersection, concrete medians including a left turn lane for traffic heading east on Highway 3 and turning left onto Tamarack Dr., upgrading side walks and wheelchair ramps, and stormwater infrastructure within the roadway. The total estimated project cost is $1,284,000 and it will benefit the entire service population. This project will service existing and future populations. As per Section 7.1, 13.7% has been apportioned to DCCs.

Project R28: Main St. (Highway 3) and 45th St. Intersection Roundabout Upgrades

This project is a major intersection upgrade to be completed in conjunction with Projects R29 and R30. The purposes of these projects are to realign 45th St. to improve traffic flow from Lakeshore Dr., provide a lit multi-use path for pedestrians and cyclists, and service development in the SE sector. This aligns with several sections of the OCP which pertain to transportation. Of note, this includes prioritizing active transportation for the well being of all residents. The multi-use path appeases this criterion by significantly improving connectivity in the east sector of Osoyoos.

The scope of this project is for a two lane round about at the intersection of Highway 3 and 45th Street. Road works include a 60 m diameter 2 land round about, approximately 300 m of highway construction, and 10 m of local collector road construction. These works include road and highway upgrades, earthworks, medians, curb and gutter, sidewalks, 3 m wide asphalt multi-use pathway, landscaping, traffic signage, street lighting, and utility works (considered in other projects corresponding to the appropriate utility.

The total estimated project cost is $4,305,700 and it will benefit the entire service population and the OIB. The intersection will provide enhanced access to the lots North of Highway 3 which OIB intends to develop. Preliminary discussions with OIB have established that the cost of this project will be shared. For the purposes of this DCC Technical Appendix, cost sharing is established on a 50% basis. Thus, the portion of the cost to be funded by the Town is $2,152,850. This project

will benefit the 20-year future population. For this reason, 50% has been apportioned for the 10-year time-frame population considered in this report.

Project R29: 45th St. Extension from Main St. to Lakeshore Dr.

This project is for the construction of approximately 500 m of new municipal collector road and a 3 m wide asphalt multi-use pathway which extends from the Highway 3 intersection Southwards to Lakeshore Drive. These works include earthworks, curb and gutter, 3 m wide asphalt multi-use pathway, traffic signage, street lighting, storm sewer and utility works (considered in other projects corresponding to the appropriate utility).

The total project cost is $1,661,790. Preliminary discussions with OIB have established that the cost of this project will be shared. For the purposes of this DCC Technical Appendix, cost sharing is established on a 50% basis. Thus, the portion of the cost to be funded by the Town is $830,895. This project will benefit the 20-year future population. For this reason, 50% has been apportioned for the 10-year time-frame population considered in this report.

The project sheet for this work includes provision for a multi-use pathway. This project is considered as a Municipal Parks project which is described further in Section 8.1.

Project R30: 56th Ave. from 51st St. to 45th St.

This project is for the construction of approximately 365 m of new municipal collector road and 3 m wide asphalt multi-use pathway which extends from Lakeshore Dr. eastward towards the future 45th Street. These works include earthworks, curb and gutter, 3 m wide asphalt multi-use pathway, traffic signage, street lighting, and utility works (considered in other projects corresponding to the appropriate utility).

The total project cost is $1,315,449. Preliminary discussions with OIB have established that the cost of this project will be shared. For the purposes of this DCC Technical Appendix, cost sharing is established on a 50% basis. Thus, the portion of the cost to be funded by the Town is $657,725. This project will benefit the 20-year future population. For this reason, 50% has been apportioned for the 10-year time-frame population considered in this report.

The project sheet for this work includes provision for a multi-use pathway. This project is considered as a Municipal Parks project which is described further in Section 8.1.

Project R32: Main St. (Highway 3) and 89th St. Intersection Upgrades

Intersection upgrades at Main St. and 89th St. are required in response to development South of Main St. on 89th Street. Several medium and high-density developments have been proposed for vacant lots West of 89th St, adjacent to the Osoyoos Elementary School. This intersection will service increased traffic from this development to the town core and access to Highway 3. This project includes utility relocation, road structure and markings upgrading, controlled intersection lighting and street lighting. The total estimated project cost is $962,000 and it will benefit the existing and future populations. As per Section 7.1, 13.7% has been apportioned to DCCs.

Project R33: Oleander Drive Reconstruction 89th Street to Magnolia Place

This project services future development for vehicle traffic and provides active transportation with a multi-use path to the Southwest sector. Completed in conjunction with Project R12, the road upgrades and multi-use path will connect to the 89th St. upgrades and provide direct access to the town core for vehicle and active transportation. Furthermore, the multi-use pathway will connect with future pocket parks providing increased value to the community. The project sheet for this work includes provision for a multi-use pathway. This project is considered as a Municipal Parks project which is described further in Section 8.1.

The scope of the Oleander Dr. project includes road works and a multi-use pathway beginning at the intersection of 89th St. and goes Southwards to the intersection with Magnolia Place. These works include earthworks, aggregates and asphalt, medians, curb and gutter, sidewalks, landscaping, traffic signage, retaining walls, storm sewer, and utility relocation. The total estimated project cost is $867,613 and it will benefit the existing and future populations. As per Section 7.1, 13.7% has been apportioned to DCCs.

7.2 DCC Calculations

The calculation for net DCC recoverable costs for the municipal road projects are summarized in Table 8-1. Initially, the DCC recoverable cost is determined by reducing alternate funding (grant subsidies, developer contributions, etc) from the total project cost and multiplying the resulting value by the benefit factors (described in Section 7.15.1 or as stated in the respective project paragraph). Subsequently, the net DCC recoverable cost is determined by reducing the total DCC recoverable cost by the municipal assist and municipal roads DCC reserve balance.

TABLE 7-1: MUNICIPAL ROADS PROJECTS AND NET DCC RECOVERABLE COST

MUNICIPAL ROADS PROJECT	TOTAL ESTIMATED COST	ALTERNATE FUNDING	TOWN FUNDED	BENEFIT FACTOR	DCC RECOVERABLE (10-YEAR HORIZON)
	A	B	C = A - B	D	E = C × D
R1: 74th Ave Water Main Upsizing, Heron Lan and Loon Crescent Replacement, and Loon Crescent Looping	$283,800	$0	$283,800	13.7%	$38,881
R4: Roads Condition Assessment	$100,000	$0	$100,000	13.7%	$13,700
R5: Roads Master Plan and Traffic Analysis	$140,000	$0	$140,000	50.0%	$70,000
R9: 89th Street Reconstruction - PART A	$414,701	$0	$414,701	13.7%	$56,814
R10: 89th Street Reconstruction - PART B	$1,141,288	$0	$1,141,288	13.7%	$156,356
R11: 89th Street Reconstruction - PART C	$1,644,398	$0	$1,644,398	13.7%	$225,283
R12: Intersection Improvements at 89th Street and 62nd Avenue	$3,220,409	$0	$3,220,409	13.7%	$441,196
R16: 92nd Avenue Reconstruction - PART A	$1,170,347	$0	$1,170,347	13.7%	$160,338
R17: 92nd Avenue Reconstruction - PART B	$1,038,923	$0	$1,038,923	13.7%	$142,332
R18: 92nd Avenue Reconstruction - PART C	$1,251,948	$0	$1,251,948	13.7%	$171,517
R26: Tamarack to Cottonwood Local Road Linkage	$1,339,000	$0	$1,339,000	50.0%	$669,500
R27: Main St. (Highway 3) and Tamarack Dr. Intersection Upgrades	$1,284,000	$0	$1,284,000	13.7%	$175,908
R28: Main St. (Highway 3) and 45th St. Intersection Roundabout Upgrades	$4,305,700	$2,152,850	$2,152,850	50.0%	$1,076,425
R29: 45th St. Extension from Main St. to Lakeshore Dr.	$1,661,790	$0	$1,661,790	50.0%	$415,448
R30: 56th Ave. from 51st St. to 45th St.	$1,315,449	$0	$1,315,449	50.0%	$328,862
R32: Main St. (Highway 3) and 89th St. Intersection Upgrades	$962,000	$0	$962,000	13.7%	$131,794
R33: Oleander Dr. Improvements and Multi-use Pathway	$867,613	$0	$867,613	13.7%	$118,863
				Total	**$4,393,216**
				Municipal Assist Factor Value (1%)	**$43,932**
				Existing DCC Reserves on October 24, 2023	**$840,770**
				Net DCC Recoverable Costs	**$3,508,514**

Consistent with the BPG, trip rates for each land-use category are used as the basis to derive the DCC Recoverable Cost. Utilizing this approach, the Best Practices Guide provides the following peak afternoon trip end rates for DCC apportionment by land use. The commercial rate has been used for Institutional development because it is more representative of the conditions in the town. Also, the guide values have been reduced by 50% for non-residential land uses on the basis that the lower values are more representative. The afternoon peak hour trip end rate for each land-use is used to determine a total number of trip ends from new development as presented in Table 7-2.

TABLE 7-2: MUNICIPAL ROADS TRIP ENDS

LAND-USE CATEGORY	WEIGHTED PEAK HOUR TRIP END	ESTIMATED NEW DEVELOPMENT	TOTAL TRIP ENDS
Accessory Dwelling & Secondary Suite	0.5	63	32
Single Detached Dwelling	1.02	20	21
Duplex Dwelling (one unit)	0.9	22	20
Townhouse	0.75	49	37
Apartment Building	0.6	387	232
Commercial	0.012	9836	118
Institutional	0.012	1214	15
Industrial	0.008	2127	17
		Total	**491**

Based on the total trip ends as shown in Table 7-2, the net DCC recoverable cost per trip end is $7,146.1. This value was used to determine municipal road DCCs as shown in Table 7-3.

TABLE 7-3: MUNICIPAL ROADS DCCS

	LAND-USE CATEGORY	EQUIVALENT POPULATION FACTOR	MUNICIPAL ROAD DCC	UNITS OF MEASURE
RESIDENTIAL	Accessory Dwelling & Secondary Suite	0.5	$3,573.16	Dwelling Unit
	Single Detached Dwelling	1.02	$7,289.24	Dwelling Unit
	Duplex Dwelling (one unit)	0.9	$6,431.68	Dwelling Unit
	Townhouse	0.75	$5,359.73	Dwelling Unit
	Apartment Building	0.6	$4,287.79	Dwelling Unit
NON-RESIDENTIAL	Commercial	0.007	$50.02	m² gross floor area
	Tourist Accommodation Unit	40	$2,000.97	Site
	Institutional	0.007	$50.02	m² gross floor area
	Industrial	0.003	$21.44	m² gross floor area

1. 40 sq. m applied at the commercial DCC rate.

8.0 Municipal Parks

The BPG states that commercial, institutional and industrial land uses do not generally create a demand for parks and therefore should not pay a Parks DCC. In Osoyoos commercial land use that represents accommodation for tourists does create a demand for parks. The demands for parks for tourist accommodation development in a commercial land use zone was first recognized in the DCC prepared in 2000. This application of a Parks DCC for tourist accommodation development was carried forward to the Town's DCC Bylaw 1234, 2007 and Bylaw 1322, 2016. This DCC Bylaw once again derives a Parks DCC for tourist accommodation type commercial development including motels, hotels, campsites, and recreation vehicle parks.

8.1 New Infrastructure

For the purposes of this DCC Bylaw Technical Appendices, only the population within the Town boundary is considered. The Town's population growth representing new development within the DCC timeframe is 2,845 as derived in Section 3.1. The following percentage will be used to allocate apportionment of project values in the following Sections.

Percentage of 2044 total design population: (1,107 ÷ 8,034) ˣ 100% = 13.7%

Percentage of 2044 Future design population: (1,107 ÷ 2,204) ˣ 100% = 50.0%

The percentage of the 2044 total and future design populations are applied to projects that benefit the existing and future service population equally or future service population.

The following municipal parks projects are planned to be constructed in the next 20 years, in accordance with consultation with Town staff. Project sheets and cost estimates are provided in Appendix E. A cost estimate is provided for P3 Kinsmen Park Playground. For the purpose of this technical appendix, costing for P3 Meadowlark Playground are considered the same.

Project P1: Municipal Parks Management Master Plan

A Municipal Parks Master Plan will be completed within the DCC timeframe. Currently, the most recent Parks and Trails Master Plan was updated in 2017. This plan requires realignment with the Town's current plan and goals for the municipal parks. This work includes but is not limited to public and partner engagement, parks and trails inventory, parks and trails classification, capital planning, and implementation. This plan would be developed to align with the objectives of the OCP as per Section 7.H Parks and Recreation.

The total project cost is estimated to be $250,000. A large portion of this report is considering future demand and upgrading projections to accommodate future development. This is especially important given the affects of densification which increases the need for communal outdoor

spaces. For this reason, the weighted cost is 50% for the current service population and 50% for the increase in service population. The apportionment of the total project cost is then 50%.

Project P2: West Bench Pickleball Court

The Town and pickleball club are rebuilding and expanding the West Bench Pickleball courts in response to excessive demand and future prospects of hosting Provincial competitions. Works include four new courts including subgrade, surfacing, park equipment, accessibility pathway and improved parking. This will create needed communal outdoor park facilities for increased population density. The total project cost is estimated to be $400,000 and it will benefit the entire existing and future service population. As per Section 8.1, 13.7% has been apportioned to DCCs.

Project P3: Kinsmen Park Playground

Playground equipment at Kinsmen Park is being improved. Works include installation of playground equipment and rubber fall surfacing. This will create needed communal outdoor park facilities for increased population density within the area. The total project cost is estimated to be $300,000 and it will benefit the entire existing and future service population. As per Section 8.1, 13.7% has been apportioned to DCCs.

Project P4: Meadowlark Playground

Playground equipment is being installed at Meadowlark Park. This will create needed communal outdoor park facilities for increased population density within the medium-high density Meadowlark subdivision. The total project cost is estimated to be $300,000 and it will benefit the entire existing and future service population. As per Section 8.1, 13.7% has been apportioned to DCCs.

Project P5: Gyro Park Improvements

The Town intends to undertake upgrades to Gyro Park within the community core. Facilities will include a Beach Volleyball Court Complex and Gyro Park Pier. The estimated total project cost is $3,561,000 and it will benefit the entire service population. This project will service existing and future populations. As per Section 8.1, 13.7% has been apportioned to DCCs.

The Beach Volleyball Court Complex facility is pursued to support community events and competitions. This will also create needed communal outdoor communal facilities for increased population density in the town core. The project scope includes building 3 beach volleyball courts, prefabricated aluminum spectator seating, court lighting, public washrooms and an equipment building. The estimated project cost is $1,572,000.

In 2016, CTQ produced the Gyro Park Pier Advancement Study. This report outlines the development of a pier at Gyro Park to provide additional park amenities to the community as a whole. Recently, the Town has decided to pursue this project within the DCC timeframe. The original scope of work included construction of an accessibility ramp, 5.0 m wide pier, moorage dock, swim bay, and shelter at the end of the pier. Preliminary costs estimates were provided by

CTQ in the 2016 report. For the purpose of this DCC technical appendix, these costs have been inflated to the current rate. Consulting fees were inflated based on comparable benchmark values in the engineering field. Construction costs were inflated with an average inflation rate between 2016 and 2023 as reported by the Engineering News Record (ENR) index. The estimated project cost is $1,989,000.

8.1.1 Class 1 On-Street Trail Development

The Town has an extensive trail network throughout the municipality. In 2017, a Parks and Trails Master Plan was developed by Stantec which inventoried the trail network, classified trail types, and identified future trail growth. This document influenced the 2020 OCP which affirms the 2017 Parks and Trails Master Plan. The OCP describes land use policies for Parks and Recreations. Specifically, item 7.H.2 e) states that the Town intends to develop additional trails.

In-line with these documents, growth of the on-street network is considered in this DCC Technical Appendix. The following projects consider expansion or improvement of the on-street trail network in conjunction with Municipal Roads Projects. As such, cost estimates for this work are incorporated into the corresponding Municipal Roads Project cost estimates. For reference, the Parks Project title corresponds to the Roads Project number.

Project P6, P7 and P8: 89th Street Reconstruction

These project considers the construction of Class 1 on-street multi-modal corridor (3.0 m width) on 89th Street. These works include earthworks, aggregates and asphalt, medians, curb and gutter, sidewalks, landscaping, traffic signage, retaining walls, and street lighting. These projects will benefit the existing and future populations. As per Section 8.1, 13.7% has been apportioned to DCCs. The following list summarizes the project cost for each project on 89th Street.

Project P6: R9: 89th Street Reconstruction PART A - Active Transportation: $115,888

Project P7: R10: 89th Street Reconstruction - PART B - Active Transportation: $133,575

Project P8: R11: 89th Street Reconstruction - PART C - Active Transportation: $177,075

Project P9, P10, P11: R16: 92nd Avenue Reconstruction

These projects considers the construction of Class 1 on-street multi-modal corridor (3.0 m width) on 92nd Avenue. These works include earthworks, aggregates and asphalt, medians, curb and gutter, sidewalks, landscaping, traffic signage, retaining walls, and street lighting. These projects will benefit the existing and future populations. As per Section 8.1, 13.7% has been apportioned to DCCs. The following list summarizes the project cost for each project on 92nd Avenue.

Project P9: R16: 92nd Avenue Reconstruction - PART A - Active Transportation: $189,378

Project P10: R17: 92nd Avenue Reconstruction - PART B - Active Transportation: $195,196

Project P11: R18: 92nd Avenue Reconstruction - PART C - Active Transportation: $459,240

Project P12: Project R29: 45th St. Extension from Main St. to Lakeshore Dr. Active Transportation

This project considers the construction of Class 1 on-street multi-modal corridor (3.0 m width) in conjunction with Project R29. These works include earthworks, aggregates and asphalt, medians, curb and gutter, sidewalks, landscaping, traffic signage, retaining walls, and street lighting. The total project cost is $712,710. Preliminary discussions with OIB have established that the cost of this project will be shared. For the purposes of this DCC Technical Appendix, cost sharing is established on a 50% basis. Thus, the portion of the cost to be funded by the Town is $356,355. This project will service existing and future populations. As per Section 8.1, 13.7% has been apportioned to DCCs.

Project P13: Project R30: 56th Ave. from 51st St. to 45th St. Active Transportation

This project considers the construction of Class 1 on-street multi-modal corridor (3.0 m width) in conjunction with Project R30. These works include earthworks, aggregates and asphalt, medians, curb and gutter, sidewalks, landscaping, traffic signage, retaining walls, and street lighting. The total project cost is $563,602. Preliminary discussions with OIB have established that the cost of this project will be shared. For the purposes of this DCC Technical Appendix, cost sharing is established on a 50% basis. Thus, the portion of the cost to be funded by the Town is $281,801. This project will service existing and future populations. As per Section 8.1, 13.7% has been apportioned to DCCs.

Project P14: R33: Oleander Drive Reconstruction 89th Street to Magnolia Place - Active Transportation

This project considers the construction of Class 1 on-street multi-modal corridor (3.0 m width) in conjunction with Project R33. These works include earthworks, aggregates and asphalt, medians, curb and gutter, sidewalks, landscaping, traffic signage, retaining walls, and street lighting. The total estimated project cost is $137,838 and it will benefit the entire service population. This project will service existing and future populations. As per Section 8.1, 13.7% has been apportioned to DCCs.

8.2 Land Acquisition

P15: Land Acquisition

As the Town continues to densify, it is important to provide additional park space for the increased population. The OCP outlines the Town's Parks and Recreation land acquisition Policies in Section 7.H.2.2. The policy prioritizes the acquisition and dedication of parkland in areas designated as medium to high density residential and waterfront parklands. In accordance with Bylaw 1322, it is understood that the Town's goal was to provide an additional 4.0 hectares of

park land per 1000 population increase. This ratio has been revised to 1.5 hectare for the 2044 project population growth because the town is pursuing park dedications with development. The Land acquisition in this project considers the 2034 *Build-Out* population.

Costing for land acquisition is based on a representative cost for land acquisition per hectare. It was determined that this value is approximately $2 million per hectare. This was calculated based on the assessed land and improvement values of representative lots within the town boundary. The total cost for this project is $3,653,100. This project considers the 2034 *Build-Out* population. For this reason, this project is apportioned at 100%.

8.3 DCC Calculations

The calculation for net DCC recoverable costs for the municipal parks projects are summarized in Table 9-1. Initially, the DCC recoverable cost is determined by reducing alternate funding (grant subsidies, developer contributions, etc.) from the total project cost and multiplying the resulting value by the benefit factors (described in Section 8.15.1 or as stated in the respective project paragraph). Subsequently, the net DCC recoverable cost is determined by reducing the total DCC recoverable cost by the municipal assist and municipal roads DCC reserve balance.

TABLE 8-1: MUNICIPAL PARKS PROJECTS AND NET DCC RECOVERABLE COST

MUNICIPAL PARKS PROJECT	TOTAL ESTIMATED COST	ALTERNATE FUNDING	TOWN FUNDED	BENEFIT FACTOR	DCC RECOVERABLE (10-YEAR HORIZON)
	A	B	C = A - B	D	E = C x D
P1: Municipal Parks Management Master Plan	$250,000	$0	$250,000	50.0%	$125,000
P2: West Bench Pickleball Court	$400,000		$400,000	13.7%	$54,800
P3: Kinsmen Park Playground	$300,000	$0	$300,000	13.7%	$41,100
P4: Meadowlark Playground	$300,000	$0	$300,000	13.7%	$41,100
P5: Gyro Park Improvements	$3,561,000	$0	$3,561,000	13.7%	$487,857
P6: R9: 89th Street Reconstruction - PART A - Active Transportation	$115,888	$0	$115,888	13.7%	$15,877
P7: R10: 89th Street Reconstruction - PART B - Active Transportation	$133,575	$0	$133,575	13.7%	$18,300
P8: R11: 89th Street Reconstruction - PART C - Active Transportation	$177,075	$0	$177,075	13.7%	$24,259
P9: R16: 92nd Avenue Reconstruction - PART A - Active Transportation	$189,378	$0	$189,378	13.7%	$25,945
P10: R17: 92nd Avenue Reconstruction - PART B - Active Transportation	$195,196	$0	$195,196	13.7%	$26,742
P11: R18: 92nd Avenue Reconstruction - PART C - Active Transportation	$459,240	$0	$459,240	13.7%	$62,916
P12: Project R29: 45th St. Extension from Main St. to Lakeshore Dr. Active Transportation	$712,710	$356,355	$356,355	13.7%	$48,821
P13: Project R30: 56th Ave. from 51st St. to 45th St. Active Transportation	$563,602	$281,801	$281,801	13.7%	$38,607
P14: R33: Oleander Drive Reconstruction 89th Street to Magnolia Place - Active Transportation	$137,838	$0	$137,838	13.7%	$18,884
P15: Land Acquisition	$3,653,100	$0	$3,653,100	100.0%	$3,653,100
				Total	**$4,683,306**
				Municipal Assist Factor Value (1%)	**$46,833**
				Existing DCC Reserves on October 24, 2023	**$1,185,274**
				Net DCC Recoverable Costs	**$3,451,199**

Consistent with the BPG, DCCs are calculated for each residential land-use category and Tourist Accommodation Units. This is determined by multiplying the equivalent population for each land-use category by the net DCC recoverable cost per capita. This per capita value is determined by dividing the net DCC recoverable cost by the total equivalent population for all projected development. The total equivalent population was determined as shown in Table 8-2.

Total equivalent population for Tourist Accommodation Units was determined as follows. It is assumed that 25% of the total estimated new commercial development will be tourist accommodation related which equates to 2,460 m^2 of gross floor area and 62 units based on an average floor area per unit of 40 m^2.

TABLE 8-2: MUNICIPAL PARKS TOTAL EQUIVALENT POPULATION

LAND-USE CATEGORY	ESTIMATED NEW DEVELOPMENT	EQUIVALENT POPULATION	TOTAL EQUIVALENT POPULATION
Accessory Dwelling & Secondary Suite	63	1.75	111
Single Detached Dwelling	20	2.75	55
Duplex Dwelling (one unit)	22	2.50	55
Townhouse	49	2.25	111
Apartment Building	387	2.00	775
Tourist Accommodation Unit	62	1	62
		Total	**1168**

Based on the total equivalent population as shown in Table 8-2, the net DCC recoverable cost per capita is $2,954.43 per capita. This value was used to determine Municipal Park DCCs as shown in Table 8-3.

TABLE 8-3: MUNICIPAL PARKS DCCS

	LAND-USE CATEGORY	EQUIVALENT POPULATION FACTOR	RESULTING PARKS DCC	UNITS OF MEASURE
RESIDENTIAL	Accessory Dwelling & Secondary Suite	1.75	$5,170.25	Dwelling Unit
	Single Detached Dwelling	2.75	$8,124.68	Dwelling Unit
	Duplex Dwelling (one unit)	2.50	$7,386.08	Dwelling Unit
	Townhouse	2.25	$6,647.47	Dwelling Unit
	Apartment Building	2.00	$5,908.86	Dwelling Unit
NON-RESIDENTIAL	Tourist Accommodation Unit	1.00	$2,954.43	Unit

9.0 Recycling Facilities and Solid Waste Management

This is an additional DCC category as per recent legislation. At this point, the BPGs have been supplemented with additional guidelines from the province in response to new DCC categories. These guidelines are presented in the "Interim Guidance, Development Finance Tools Updated: Development Cost Charges/Levies and Amenity Cost Charges", updated June 2024. In short, the interim guidance states that existing general DCC policies should be applied to the new categories as per the BPG with new category project eligibility being specified. DCC principals applied to this category consider:

- A percentage population for project apportionment,
- Project eligibility as per the interim guidelines,
- 1% assist factor, and
- Common application of the BPGs within this report.

9.1 New Infrastructure

For the purposes of this DCC Bylaw Technical Appendices, only the population within the Town boundary is considered. The Town's population growth representing new development within the DCC timeframe is 2,845 as derived in Section 3.1. The following percentage will be used to allocate apportionment of project values in the following Sections.

Percentage of 2034 total design population: (2,845 ÷ 8,625) x 100% = 33.0%

Percentage of 2044 Future design population: (2,845 ÷ 5,729) x 100% = 50.0%

The percentage of the 2034 total design population is applied to projects that benefit the existing and future service population equally, within the DCC time-frame. The percentage of the 2044 future design populations are applied to projects that benefit the future service population within the build out time-frame. The following Recycling And Solid Waste Management projects are planned to be constructed in the next 10 or 20 years, in accordance with consultation with Town staff. Project sheets and cost estimates are provided in Appendix F.

RS1: Osoyoos Landfill Design, Operations, and Closure Plan

A Design, Operations and Closure Plan for the Osoyoos Landfill will be completed within the DCC timeframe. Works includes but are not limited solid waste generation projections, landfill expansions, filling plan updates, and capital planning for future upgrades. The total project cost is estimated to be $40,000. A large portion of this report is considering future demand and upgrading projections to accommodate future development. This is especially important given the

affects of densification which increases the need for solid waste management facilities. For this reason, the apportionment of the total project cost is 50%.

9.2 DCC Calculation

The calculation for net DCC recoverable costs for the recycling facilities and solid waste management projects are summarized in Table 9-1. Initially, the DCC recoverable cost is determined by reducing alternate funding (grant subsidies, developer contributions, etc.) from the total project cost and multiplying the resulting value by the benefit factors (described in Section 9.1 or as stated in the respective project paragraph). Subsequently, the net DCC recoverable cost is determined by reducing the total DCC recoverable cost by the municipal assist and municipal roads DCC reserve balance.

TABLE 9-1: SOLID WASTE MANAGEMENT PROJECTS AND NET DCC RECOVERABLE COST

RECYCLING FACILITIES AND SOLID WASTE MANAGEMENT PROJECT	TOTAL ESTIMATED COST	ALTERNATE FUNDING	TOWN FUNDED	PERCENT DCC RECOVERABLE	DCC RECOVERABLE
	A	B	C = A - B	D	E = C × D
RS1: Osoyoos Landfill Design, Operations, and Closure Plan	$40,000	$0	$40,000	50%	$20,000
				Total	**$20,000**
				Municipal Assist Factor Value (1%)	**$200**
				Existing DCC Reserves on October 24, 2023	**$0**
				Net DCC Recoverable Costs	**$19,800**

Consistent with the BPG, DCCs are calculated for each land-use category. This is determined by multiplying the equivalent population per land-use category by the net DCC recoverable cost per capita. This per capita value is determined by dividing the net DCC recoverable cost by the total equivalent population for all projected development. The total equivalent population was determined as shown in Table 9-2. Values for non-residential land uses were taken from the BPG.

TABLE 9-2: SOLID WASTE MANAGEMENT PROJECTS TOTAL EQUIVALENT POPULATION

LAND-USE CATEGORY	UNIT OF MEASURE	ESTIMATED NEW DEVELOPMENT	EQUIVALENT POPULATION	TOTAL EQUIVALENT POPULATION
Accessory Dwelling & Secondary Suite	DU	63	1.75	111
Single Detached Dwelling	DU	20	2.75	55
Duplex Dwelling (one unit)	DU	22	2.50	55
Townhouse	DU	49	2.25	111
Apartment Building	DU	387	2.00	775
Commercial	GFA	9836	0.008	79
Institutional	GFA	1214	0.008	10
Industrial	GFA	2127	0.004	9
			Total	**1204**

*Equivalent floor area based on 50% site coverage.
Note: Dwelling Unit (DU) and Gross Floor Area (GFA)

Based on the total equivalent population as shown in Table 9-3, the net DCC recoverable cost per capita is $16.45 per capita. Thus, this value was used to determine water DCCs as shown in Table 9-3.

TABLE 9-3: SOLID WASTE MANAGEMENT PROJECTS DCC

	LAND-USE CATEGORY	EQUIVALENT POPULATION FACTOR	WATER SYSTEM DCC	UNITS OF MEASURE
RESIDENTIAL	Accessory Dwelling & Secondary Suite	1.75	$28.79	Dwelling Unit
	Single Detached Dwelling	2.75	$45.24	Dwelling Unit
	Duplex Dwelling (one unit)	2.50	$41.13	Dwelling Unit
	Townhouse	2.25	$37.02	Dwelling Unit
	Apartment Building	2.00	$32.90	Dwelling Unit
NON-RESIDENTIAL	Commercial	0.008	$0.13	m² gross floor area
	Tourist Accommodation Unit[1]	40	$5.26	Site
	Institutional	0.008	$0.13	m² gross floor area
	Industrial	0.004	$0.07	m² gross floor area

1. 40 sq. m applied at the commercial DCC rate.

10.0

10.0 Summary

As described in Section 2.7 of this Technical Appendix for the 2024 Development Charge Bylaw Update, a *"Revolving program"* approach with the time frame established as 10 years (to year 2044) has been used. An average annual growth rate of 3.6% has been used to project population growth in accordance with the Official Community Plan and 25% infilling. The ten-year population projection is 8,625 which represents a population increase of 2,845 for the service population within the municipal boundary. New development is anticipated to comprise the following break-down as shown in Table 10-1 and Table 10-2.

TABLE 10-1: RESIDENTIAL GROWTH PROJECTION SUMMARY

LAND-USE	UNIT OF MEASURE	EQUIVALENT POPULATION FACTOR	ESTIMATE NEW DEVELOPMENT	EQUIVALENT POPULATION
Accessory Dwelling & Secondary Suite	Dwelling Unit	1.75	63	111
Single Detached Dwelling	Dwelling Unit	2.75	20	55
Duplex Dwelling (one unit)	Dwelling Unit	2.50	22	55
Townhouse	Dwelling Unit	2.25	49	111
Apartment Building	Dwelling Unit	2.00	387	775
		New Development	**542**	**1107**

TABLE 10-2: NON-RESIDENTIAL GROWTH PROJECTION SUMMARY

LAND USE CATEGORY	UNIT OF MEASURE	ESTIMATE NEW DEVELOPMENT
Commercial	m^2 GFA	9836
Institutional	m^2 GFA	1214
Industrial	m^2 GFA	2127
	Total	**13,177**

Calculations of DCCs for the following infrastructure categories are presented within this Technical Appendix. Table 10-3 shows the Municipal Assist Factor for each infrastructure category which represents the Town's portion of the project funding.

TABLE 10-3: INFRASTRUCTURE CATEGORIES & MUNICIPAL ASSIST FACTORS

INFRASTRUCTURE CATEGORY	MUNICIPAL ASSIST FACTOR	REFERENCE SECTION	
		PROJECT INFORMATION	DCC CALCULATIONS
Water System	1%	5.1	5.2
Sanitary System	1%	6.1 & 6.2	6.3
Storm Drainage	1%	7.1	7.2
Municipal Roads	1%	8.1	8.2
Municipal Parks	1%	9.1 & 9.2	9.3
Recycling Facilities and Solid Waste Management	1%	10.1	10.2

Table 10-4 summarizes the Net Recoverable Costs for each infrastructure category. This summary can be compared to the DCC fee tables to show the corresponding total project value.

TABLE 10-4: NET DCC RECOVERABLE COST SUMMARY

INFRASTRUCTURE CATEGORY	NET DCC RECOVERABLE COST
Water System	$4,501,893.77
Sanitary System	$2,363,228.98
Storm Drainage	$642,742.76
Municipal Roads	$3,508,513.63
Municipal Parks	$3,451,199.02
Recycling Facilities and Solid Waste Management	$19,800.00

Tables 9-3 and 9-4 below summarize the Development Cost Charges to be levied by the Town for Residential (per dwelling unit) and non-Residential development (per m² GFA).

TABLE 10-5: TOTAL DCCS FOR RESIDENTIAL DEVELOPMENT (PER DWELLING UNIT)

LAND USE	WATER SYSTEM DCC	SANITARY SYSTEM DCC	STORM DRAINAGE DCC	MUNICIPAL ROADS DCC	MUNICIPAL PARKS DCC	RECYCLING FACILITIES AND SOLID WASTE MANAGEMENT DCC	TOTAL DCC PER UNIT
Accessory Dwelling & Secondary Suite	$6,534.36	$3,436.22	$694.50	$3,573.16	$5,170.25	$28.79	$19,437.28
Single Detached Dwelling	$10,268.28	$5,399.77	$1,389.01	$7,289.24	$8,124.68	$45.24	$32,516.22
Duplex Dwelling (one unit)	$9,334.80	$4,908.88	$1,041.75	$6,431.68	$7,386.08	$41.13	$29,144.32
Townhouse	$8,401.32	$4,417.99	$967.34	$5,359.73	$6,647.47	$37.02	$25,830.87
Apartment Building	$7,467.84	$3,927.10	$833.40	$4,287.79	$5,908.86	$32.90	$22,457.90

TABLE 10-6: TOTAL DCCS FOR NON-RESIDENTIAL DEVELOPMENT (PER M² GFA)

LAND USE	WATER SYSTEM DCC	SANITARY SYSTEM DCC	STORM DRAINAGE DCC	MUNICIPAL ROADS DCC	MUNICIPAL PARKS DCC	RECYCLING FACILITIES AND SOLID WASTE MANAGEMENT DCC	TOTAL DCCS PER M² GROSS FLOOR AREA
Commercial	$29.87	$15.71	$12.65	$50.02		$0.13	$108.25
Tourist Accommodation Unit*	$1,194.85	$628.34	$505.99	$2,000.97	$2,954.43	$5.26	$7,284.58
Institutional	$29.87	$15.71	$12.65	$50.02		$0.13	$108.25
Industrial	$18.67	$7.85	$17.71	$21.44		$0.07	$65.67

*DCCs applied per unit

APPENDIX A

Water System Project Sheets

Our File: 302-658
November 28, 2024

2025 Capital Plan

Project W5 and R1: 74th Ave. Water Main Upsizing, Heron Lane and Loon Crescent Replacement, and Loon Crescent Looping

There is not currently a continuous large diameter trunk main between the East and West portions of the Town. This limits distribution capacity for fire flows. This trunk main on 74th Ave. enhances flows to the East side of the Town core and East of Osoyoos Lake, allowing flows to gravity flow more effectively from the 340 reservoirs (under non-pumping conditions). Also, these benefits will be critical to improve system performance when water treatment plants, the East Reservoir, and Small Scall, Multi-unit housing demands (SSMUH) are implemented.

Watermain works on Heron Lane and Loon Crescent replace expired 150 mm asbestos cement pipes with upgraded 200 mm PVC mains. Upsizing these mains ensures compliant fire flows will be achieved when experiencing increased SSMUH demands.

Loon Crescent is being looped to 89th Street with a 200 mm watermain. This addresses concerns of chlorine residual degradation at the end of watermains that only experience low residential demands, resulting in low water turnover. Also, it improves fire flows on Loon Crescent

Scope: All following watermain works include replacement of valves, services, hydrants and all other appurtenances.

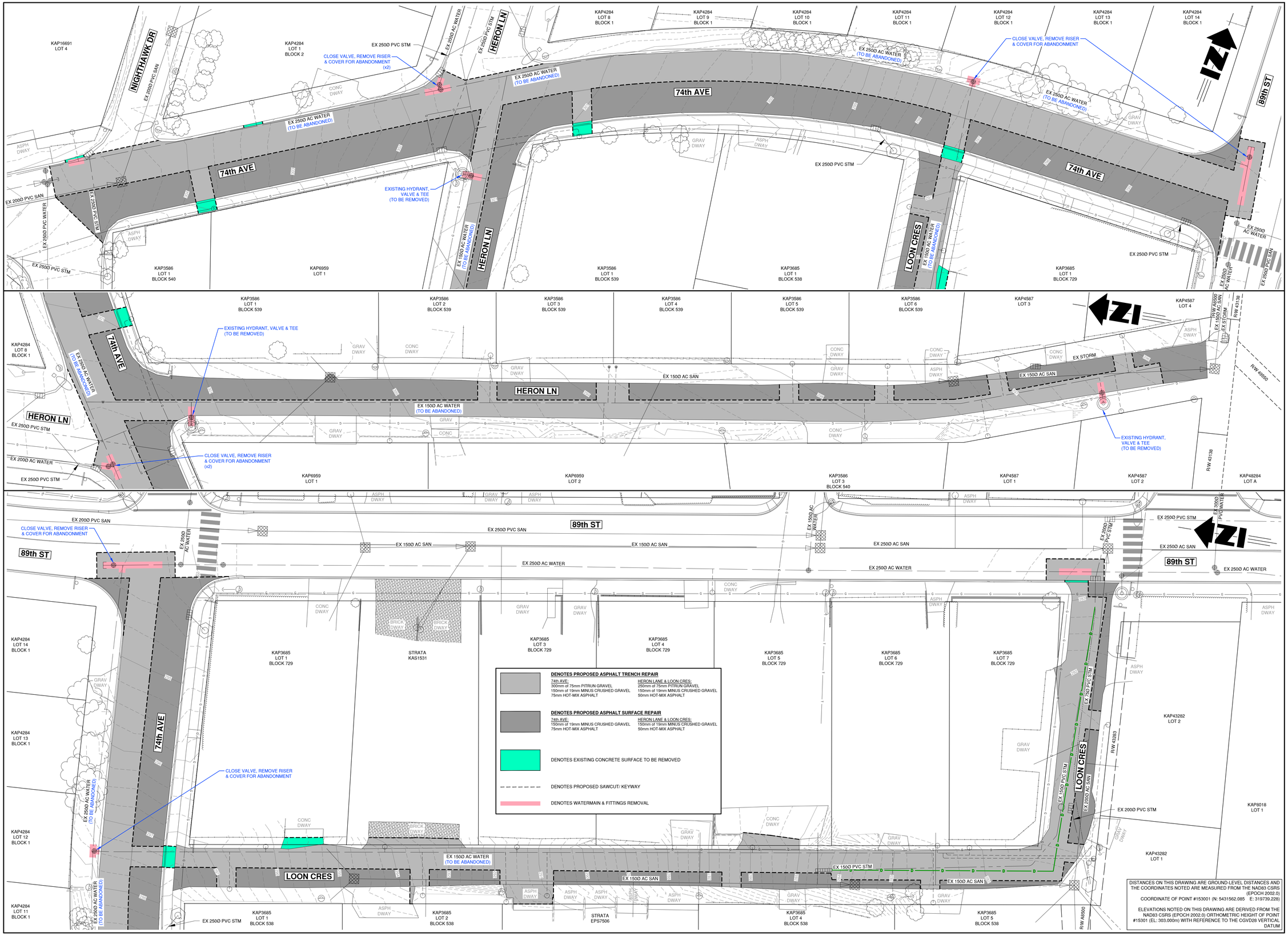
74th Avenue: Supply and install 200 m of 350 mm pipe with applicable appurtenances and connection to the existing water system on 74th Avenue from Nighthawk Dr. to 89th Street.

Heron Lane and Loon Crescent: Supply and install 360 m of 200 mm pipe with applicable appurtenances and connection to the existing water system on 74th Ave for Heron Lane and Loon Crescent, and connection to 89th Street for Loon Crescent.

Road Works: This scope only includes the re-instating of impacted road surfaces from trenching works. The remainder of scope for complete road restoration including replacing road surfaces, curb and gutters, and sidewalks are considered in the Roads Capital Plan Projects.

Capital cost (including 25% contingency, excluding GST) estimate:

$283,800 (Roads)
$713,525 (Water)
$997,325



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		ASPHALT ROAD
		GRAVEL ROAD
S	S	SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		SERVICE & IC
D	D	STORM MAIN
		STORM DITCH
		STORM CULVERT
		SERVICE & IC
		STORM MANHOLE
		CB - STD & SIDE INLET
		DRYWELL
W	W	WATER MAIN
		SERVICE & CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
G	G	GAS
P	P	POWER
T	T	TEL
C	C	CABLE
SL	SL	ST LIGHT CONDUIT
		POLE & ANCHOR
		STREET LIGHT
		CONTROL MONUMENT
		IRON POST
		TRAVERSE HUB

No.	DATE	DESCRIPTION	BY	APPD
3	NOV 11/24	ISSUED FOR TENDER	TT	SU
2	AUG 09/24	RE-ISSUED FOR IHA PERMIT	TT	SU
1	JUNE 26/24	ISSUED FOR IHA PERMIT	TT	SU

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tel 250.828.0881 ≡ fax 250.828.0717
info@TRUE.bc.ca

Osoyoos
Canada's warmest welcome

74th AVE, HERON LANE, LOON CRES WATERMAIN REPLACEMENT

REMOVALS PLAN

SCALE	0 1:250 10
DESIGN BY	TT
DRAWN BY	OWL
DATE	2024-01-24
PROJECT REFERENCE No.	302-2161
DRAWING No.	302-2161 03
SHEET	OF
ISSUE/REV.	3

Project W10: Water Conservation

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map

Scope

The water conservation plan is an engineering assignment to assess water demand data from the implementation of water meters throughout the Town. This analysis supports future development by improving water demand projections which provides lower system supply requirements. In this way, more development can be supported by fewer water supply upgrades. The estimated project cost is $100,000 and includes one routine update (Project W36 in the Capital Budget).

Time Frame

+/- 2 years

Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Engineering Fees					
1.1	Water Conservation Plan	L.S.	1	$100,000	$100,000
				TOTAL	**$100,000**

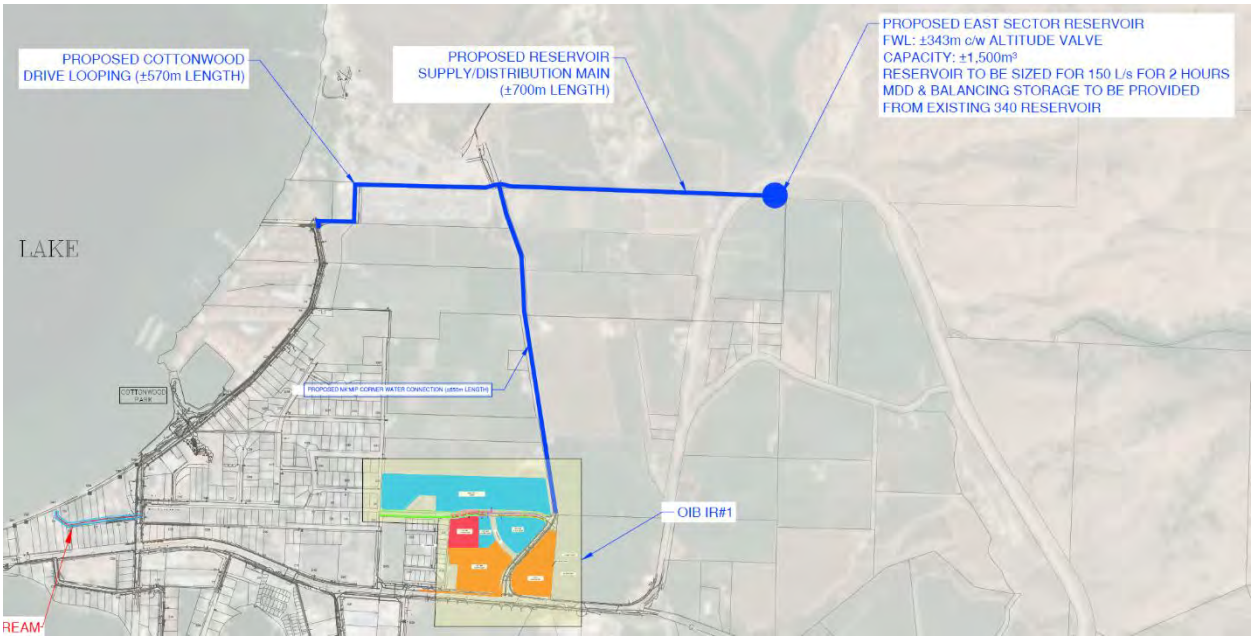
Prepared by:

Project W11: East Osoyoos Reservoir – Design

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map



Scope

This project is the design portion of Project W23: East 340 Reservoir – Construction. The project cost is estimated to be $200,000 after considering 50% cost sharing with the OIB.

Time Frame

+/- 1 years

Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Engineering Fees					
1.1	Water Conservation Plan	L.S.	1	$200,000	$200,000
				TOTAL	**$200,000**

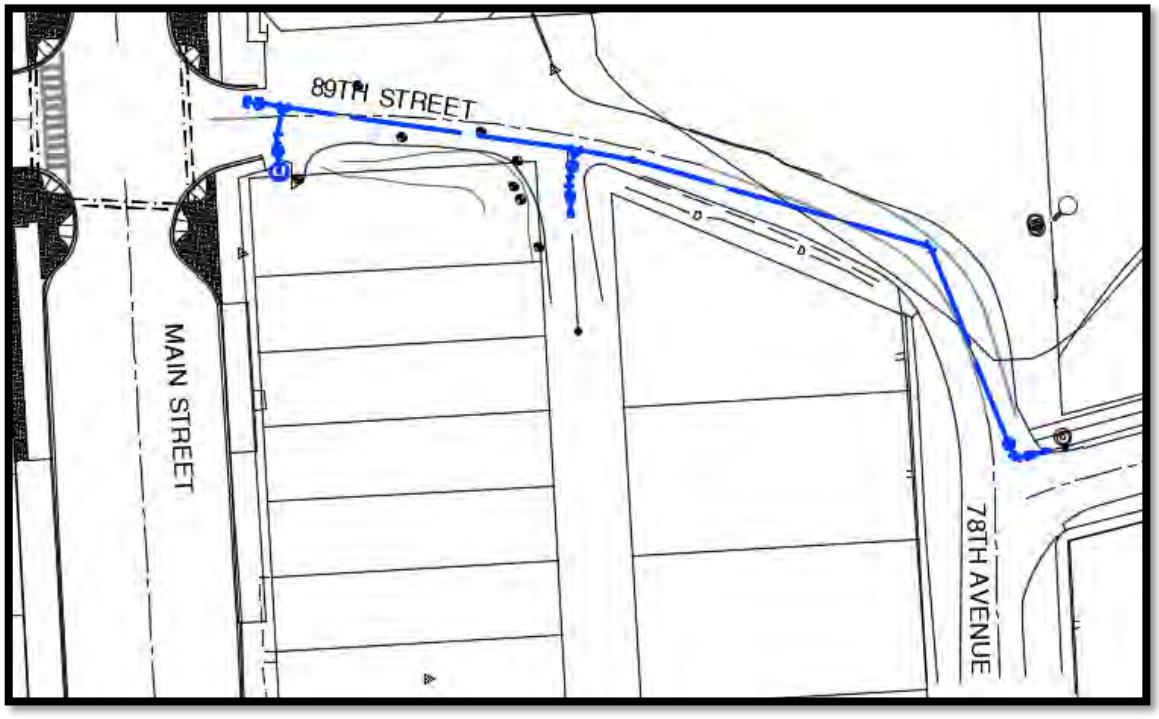
Prepared by:

Project W20 (R9): Watermain Upgrades and Replacement on 89th St. from 78th Ave. to Main St.

Priority: High **Type:** Upgrade, Replacement

Trigger: Growth, Asset Management

Location Map



Issue

There is not currently a continuous large diameter trunk main from the town core to the residential neighborhoods North of Main Street. This limits distribution capacity for fire flows and system looping resiliency. The proposed trunk main would connect 89th St. (North of Main St.) to the upgraded section of 74th Avenue. This would increase flows to the North more directly from the 340 reservoirs supply main, improving fire flows and allowing alternative distribution pathways. Furthermore, development in this area would be supported by enhanced fire flows and additional water supply for increased demands from densification.

Scope

Works include installing 115 m of 350 mm, and 26 m of 150 mm PVC watermain including a hydrant assembly and appurtenances.

Cost Estimate (Class D, see Project R9 for a project sketch and detailed cost estimate)

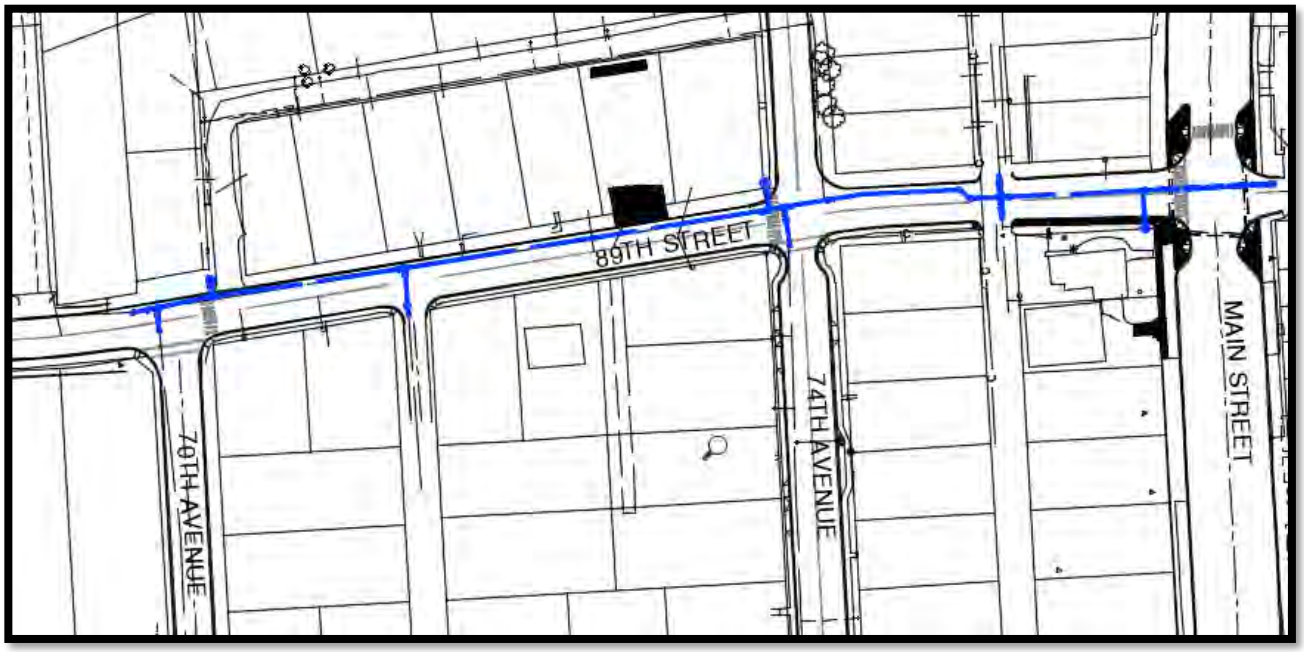
DESCRIPTION	TOTAL PAYMENT
Part 2.0 - Water System	**$132,310.00**
Contingency & Engineering (25%)	**$33,077.50**
Total Contract Sum	**$165,387.50**

Project W21 (R10 and S12): Watermain Upgrades and Replacement on 89th St. from Main St. to 70th Ave.

Priority: High **Type:** Upgrade, Replacement

Trigger: Growth, Asset Management

Location Map



Issue

Increased distribution is required throughout the municipal pressure zone to accommodate flows from the future water treatment plant, flows to the east reservoir, and increased water demand from proposed developments (development referrals) and infilling to the North, South and East. Upgrades to the 89th St. corridor achieve an efficient and harmonious solution to accommodate these multiple dynamics. This corridor ties into the 74th Ave watermain upsizing which provides a large trunk main connected to the 340 Reservoir that will direct flows to upgrades Northwards and Southwards of this project. Northwards, it is intended to cross Main Street to create a large trunk main to the northern area of the municipal pressure zone. Southwards, increased flows may support water treatment plant distribution and will support increased water demand, but most importantly flows to the east to support the east reservoir (in conjunction with upgrades to Kingfisher Dr.).

Also, Watermain works on 89th St. will replace existing 250 mm asbestos cement pipes with expired service lives. Given these pipes are at a high probability of failure (age based) and high system criticality (high flows), replacing them with PVC watermain will improve system reliability.

Scope

Works include installing 300 m of 350 mm PVC watermain on 89th St. and roughly 90 m of 150 - 300 mm PVC watermain to tie-into connecting watermains. All works include replacing hydrants, services, valves and other appurtenances. It is recommended that this work be completed simultaneously with S12 to confirm the sanitary main does not need to be reconstructed.

Cost Estimate (Class C, see Project R10 for a project sketch and detailed cost estimate)

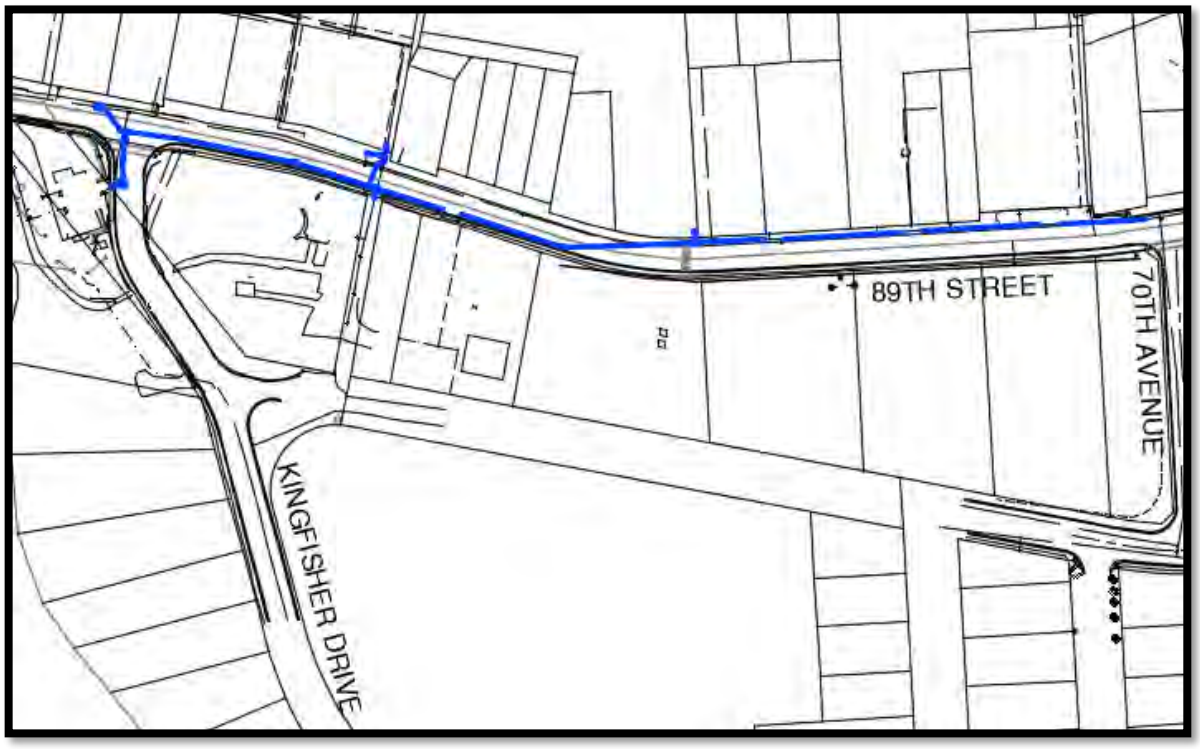
DESCRIPTION	TOTAL PAYMENT
Part 2.0 - Water System	**$484,540.00**
Contingency & Engineering (25%)	**$121,135.00**
Total Contract Sum	**$605,675.00**

Project W22 (R11 and S13): Watermain Upgrades and Replacement on 89th St. from 70th Ave. to Kingfisher Dr.

Priority: High **Type:** Upgrade, Replacement

Trigger: Growth, Asset Management

Location Map



Issue

This project is intended to be completed in conjunction with upgrades on 89th St. from the 74th Ave. connection to support southwards distribution in the municipal pressure zone. The current watermain on 89th St. decreases from 250 mm to 200 mm between Kingfisher Drive and 70th Ave. which limits system capacity to provide fire flow. This impacts flows from Well #1 under pumping conditions, potential future water treatment plant flows, and eastward distribution. Connection to the east is intended to be achieved in conjunction with upgrades on Kingfisher Drive from 89th St. to the lake crossing.

Also, Watermain works on 89th St. will replace existing 250 mm and 200 mm asbestos cement pipes at the end of their service lives. Given that these pipes have a high probability of failure (age based) and high system criticality (high flows), replacing them with PVC will improve system reliability.

Scope

Works include installing 440 m of 400 mm PVC watermain on 89th St. and roughly 60 m of 150 - 300 mm PVC watermain to tie-into connecting watermains including the future Kingfisher Drive watermain. All works include replacing hydrants, services, valves and other appurtenances. It is recommended that this work be completed simultaneously with S13 to confirm the sanitary main does not need to be reconstructed.

Cost Estimate (Class D, see Project R11 for a project sketch and detailed cost estimate)

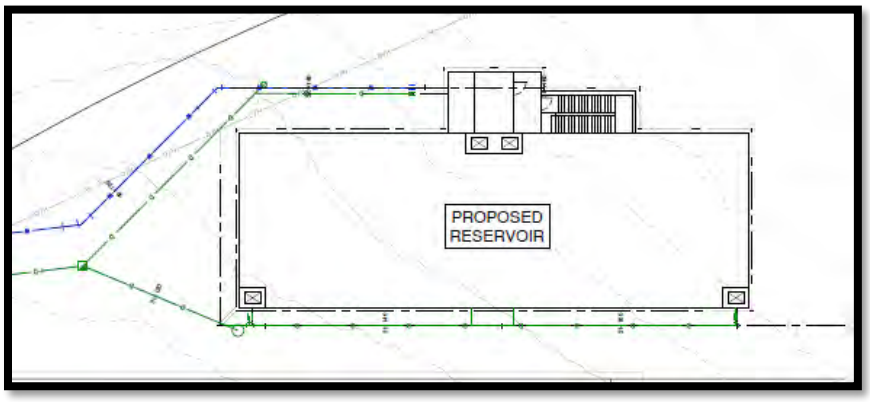
DESCRIPTION	TOTAL PAYMENT
Part 2.0 - Water System	**$682,180.00**
Contingency & Engineering (25%)	**$170,545.00**
Total Contract Sum	**$852,725.00**

Project W23: East 340 Reservoir - Construction

Priority: High **Type:** Upgrade

Trigger: Growth

Location Map



Issue

The east sector of Osoyoos is serviced by the 340 reservoir which is located to the west of the Osoyoos Lake crossing. This is not optimal based on the domestic water system layout. For this reason, an east sector reservoir would provide more efficient and resilient fire flows and emergency storage for the east sector. This is especially critical for fire flows to future high density residential, infill residential and commercial developments, and improving deficient fire flows in the SE sector.

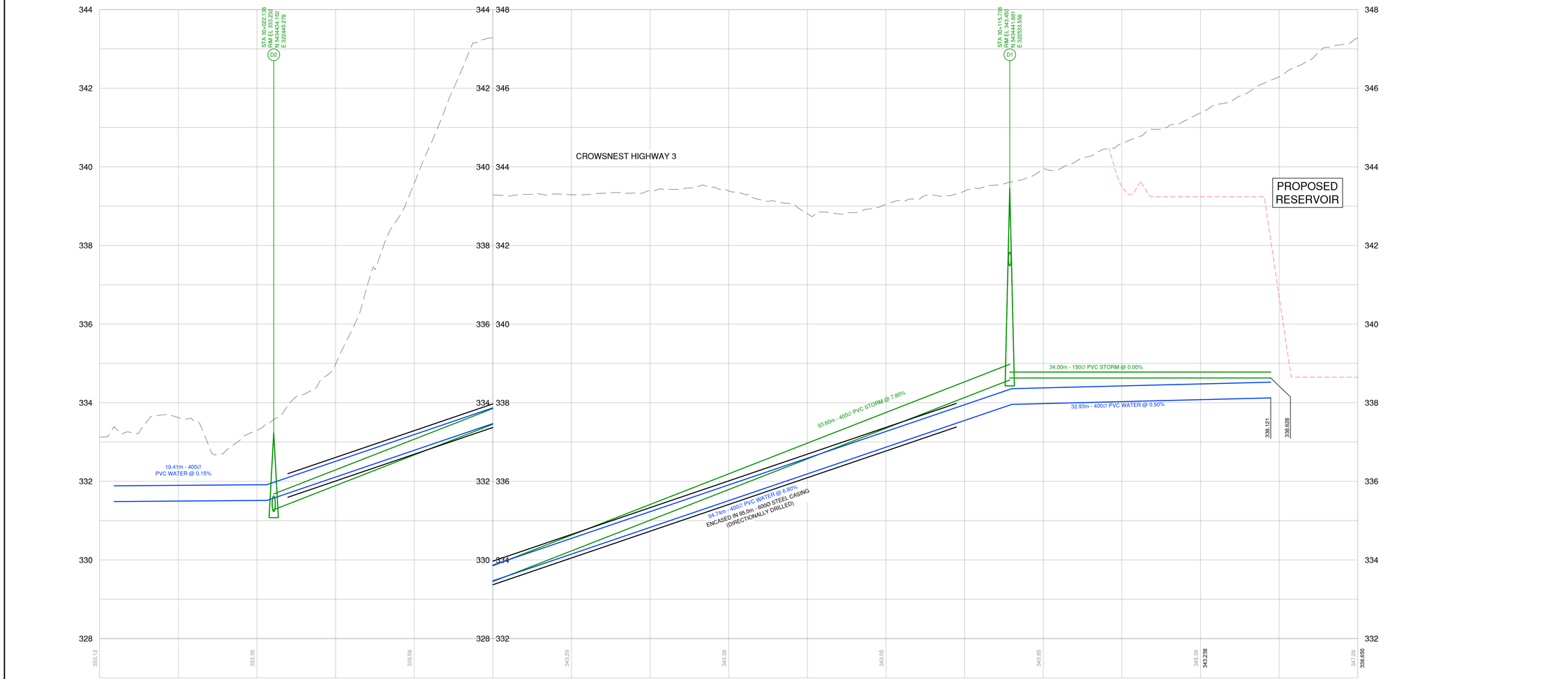
The Osoyoos Indian Band (OIB) is a stake holder in this project because the east reservoir is intended to service OIB development near the south end of Sonora Dunes Golf Course and at Nk'Mips Corner. As such, project implementation will be completed in collaboration with OIB. Also discussed in the East Sector Densification Plan, this reservoir could provide a minimum fire flow of 150 L/s to OIB developments.

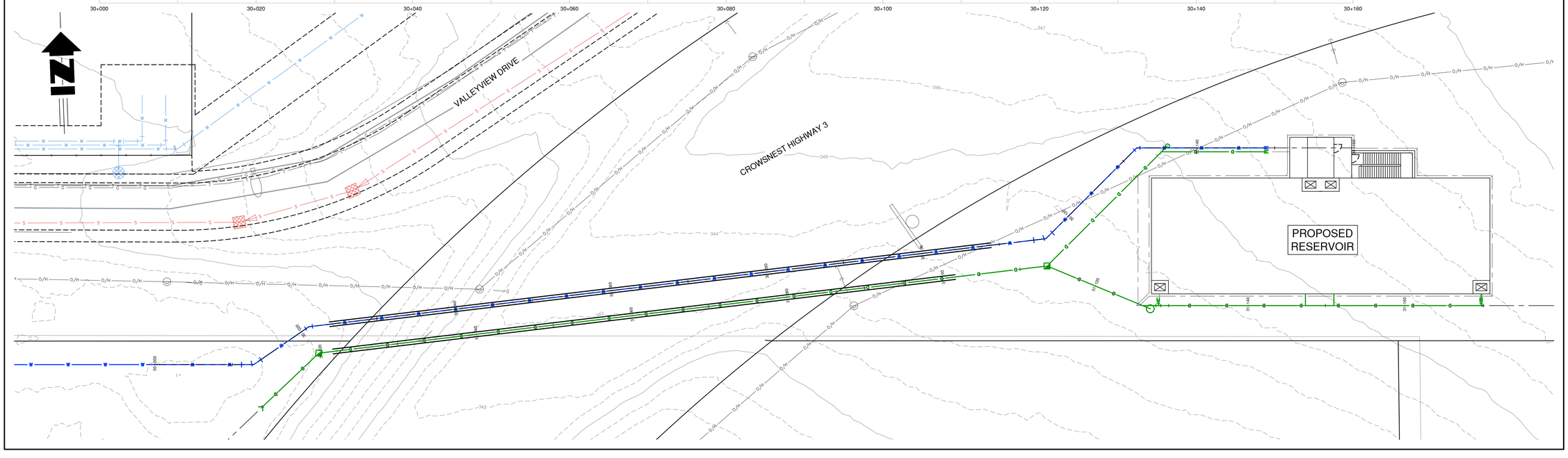
Scope

Construction of a 2,550 m^3 concrete reservoir including flow control valves to ensure even reservoir filling between the West and East 340 Reservoirs.

Budgetary Cost Estimate: $5,097,559

This project cost aligns with the 2025 Capital Budget





No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

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tel 250.828.0881 ■ info@true.ca

Osoyoos Indian Band

OSOYOOS RESERVOIR

WATER SUPPLY AND DISTRIBUTION PLAN & PROFILE

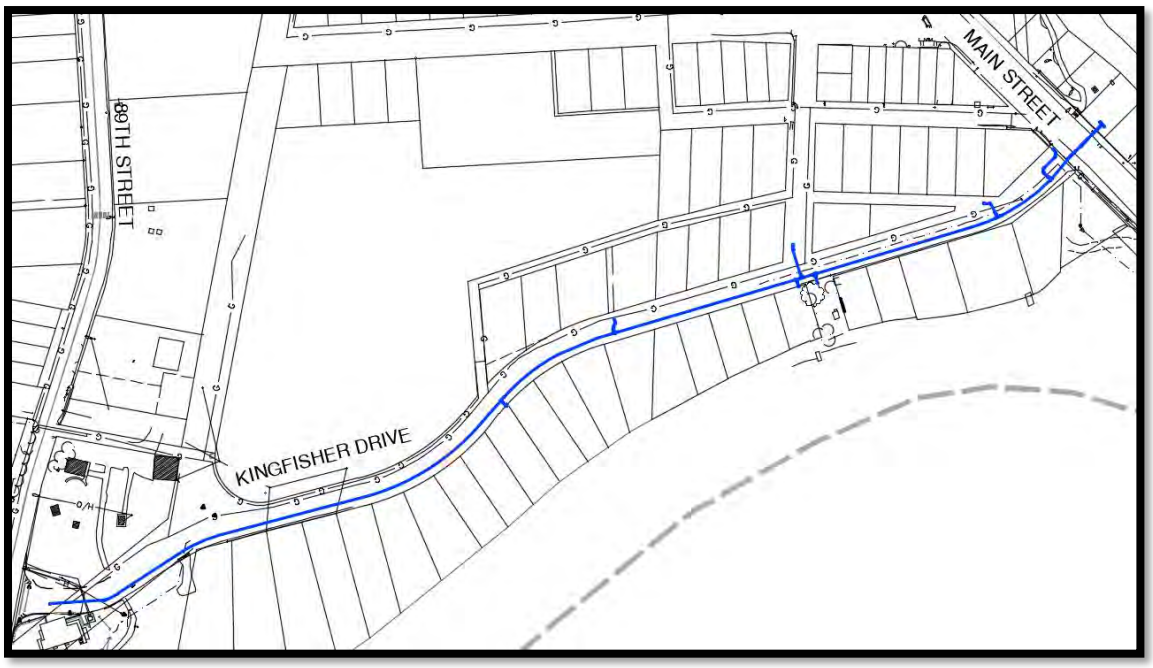
SCALE	0 1:250 10
DESIGN BY	DK
DRAWN BY	SPC
DATE	MAY, 2024
PROJECT REFERENCE No.	797-327
PROJECT No.	797-321
SHEET	1 OF X
DRAWING No.	303
ISSUE/REV.	0

Project W29 & R13: Watermain Upgrade and Replacement on Kingfisher Dr. from 89th St. to Gyro Park

Priority: High **Type:** Upgrade, Replacement

Trigger: Growth, Asset Management

Location Map



Issue

Increased hydraulic connectivity is required to convey flows between the West and East sectors of the municipal pressure zone to support infilling east of the lake crossing and the implementation of the East Reservoir. The system currently has a 300 mm diameter through the town core to the lake crossing, but a second pathway is required to provide additional flows. Kingfisher Dr. achieves this with several other advantages as follows:

- Improve system resilience by providing a large trunk main loop to the lake crossing, in conjunction with upgrades to 89th Street.
- Replacing a high-risk 150 mm asbestos cement (AC) water main which is at the end of its service life.

- Improves hydraulic connectivity to Well #1 and #8.
- Supports hydraulic connectivity for the future water treatment plant throughout the municipal pressure zone.

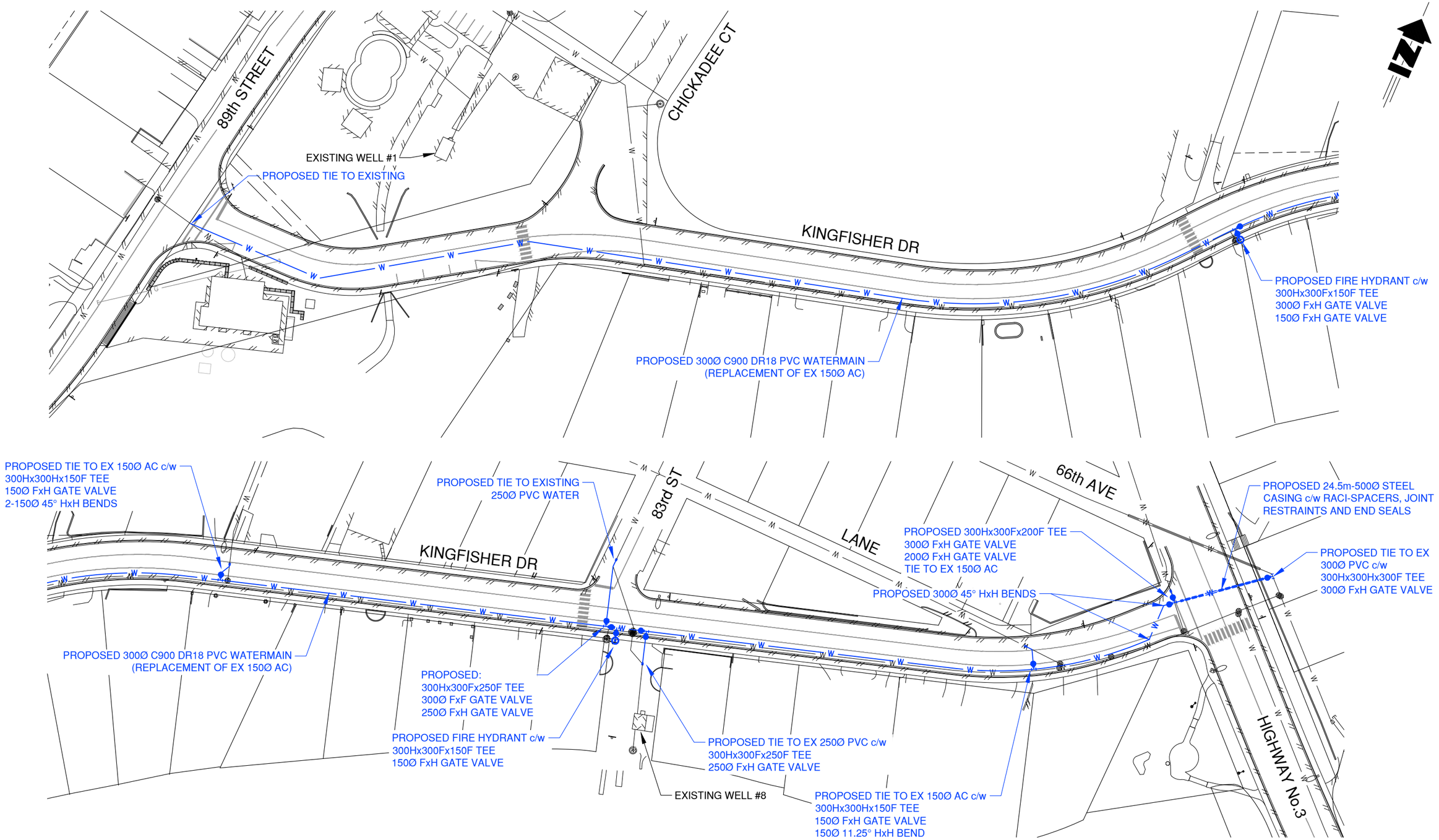
Scope

Works include installing 670 m of 300 mm PVC watermain on Kingfisher Drive from 89th St. to Gyro Park. All works include replacing hydrants, services, valves and other appurtenances. Notably, a highway crossing is included for crossing Main St. at Gyro Park. Road works are included for surface restoration.
Road works include replacing the asphalt structure on Kingfisher Drive, but do not include replacing existing curb and gutter, and sidewalks. This is necessary because recent trucking activity has damaged the pavement structure.

Cost Estimate (Class D)

Water: $ 1,078,038.00

Roads: $ 802,750.00



TOWN OF OSOYOOS
WATERMAIN REPLACEMENTS
KINGFISHER DRIVE

TRUE

DESIGN BY: SU/TT	
SCALE: 1:1000	
DRAWN BY: TT	DWG NO.: SK1 302-2142
DATE: SEPT 2024	REV:

FILE:n:\clients\300-389\302\302-2142\03 drawings\cad\02 design drawings\dn 302-2142.dwg

Town of Osoyoos

Watermain Upgrade and Replacement on Kingfisher Dr. from 89th St. to the Gyro Park

Class D Cost Estimate

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART A1.0 - REMOVALS					
1.1	Asphalt surfaces c/w sawcutting	m^2	6500	$10.00	$65,000.00
1.2	Concrete surfaces c/w sawcutting				
1.2.1	Curbs	m	120	$30.00	$3,600.00
1.2.2	Sidewalks	m^2	170	$30.00	$5,100.00
1.3	Topsoil and sod	m^2	180	$12.00	$2,160.00
1.4	Existing water system				
1.4.1	150Ø AC piping	m	640	$150.00	$96,000.00
				Subtotal Part A1.0	**$171,860.00**
PART A2.0 - WATER SYSTEM					
2.1	Supply and install watermain				
2.1.1	300Ø PVC c/w Class B sand bedding	m	640	$420.00	$268,800.00
2.1.2	250Ø PVC c/w Class B sand bedding	m	35	$320.00	$11,200.00
2.1.3	200Ø PVC c/w Class B sand bedding	m	10	$300.00	$3,000.00
2.1.4	150Ø PVC c/w Class B sand bedding	m	20	$280.00	$5,600.00
2.2	Appurtenances c/w thrust blocks and joint restraints				
2.2.1	300 x 300 x 300 tee	ea.	1	$3,000.00	$3,000.00
2.2.2	300 x 300 x 250 tee	ea.	2	$3,000.00	$6,000.00
2.2.3	300 x 300 x 200 tee	ea.	1	$3,000.00	$3,000.00
2.2.4	300 x 300 x 150 tee	ea.	2	$3,000.00	$6,000.00
2.2.5	300Ø gate valve	ea.	5	$6,000.00	$30,000.00
2.2.6	250Ø gate valve	ea.	2	$4,000.00	$8,000.00
2.2.7	200Ø gate valve	ea.	1	$3,500.00	$3,500.00
2.2.8	150Ø gate valve	ea.	2	$3,000.00	$6,000.00
2.2.9	300Ø bends	ea.	12	$2,000.00	$24,000.00
2.2.10	300 x 250 reducer	ea.	2	$2,000.00	$4,000.00
2.2.11	300 x 200 reducer	ea.	1	$2,000.00	$2,000.00
2.2.12	300 x 150 reducer	ea.	2	$2,000.00	$4,000.00
2.2.13	300Ø Flanged transitions	ea.	2	$3,800.00	$7,600.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART A2.0 - WATER SYSTEM - continued					
2.2.14	Air release chamber	ea.	2	$6,000.00	$12,000.00
2.2.15	Hydrant Assembly	ea.	2	$12,000.00	$24,000.00
2.2.16	Water Service	ea.	28	$2,500.00	$70,000.00
2.3	Locate and tie to existing c/w couplers				
2.3.1	To existing 300Ø PVC @ Gyro Park	ea.	1	$5,000.00	$5,000.00
2.3.2	To existing 300Ø PVC @ 89th St.	ea.	1	$5,000.00	$5,000.00
2.3.3	To existing 250Ø PVC @ Well #8	ea.	1	$5,000.00	$5,000.00
2.3.4	To existing 250Ø PVC @ 83rd St.	ea.	1	$5,000.00	$5,000.00
2.3.5	To existing 200Ø PVC @ Main St.	ea.	1	$4,500.00	$4,500.00
2.3.6	To existing 150Ø PVC @ ROW & Lane	ea.	2	$4,000.00	$8,000.00
2.4	Directional drill c/w 26 m steel casing, casing spacers, joint restraints and end seals	m	26	$4,000.00	$104,000.00
				Subtotal Part A2.0	**$638,200.00**
PART A3.0 - ROADWORKS					
3.1	Standard curb and gutter c/w base gravels	m	120	$280.00	$33,600.00
3.2	Concrete sidewalk c/w base gravels	m²	170	$250.00	$42,500.00
3.3	Asphalt trench repair c/w 75mm hot-mix asphalt and base gravels	m²	6500	$85.00	$552,500.00
3.4	Topsoil and sod	m²	180	$45.00	$8,100.00
				Subtotal Part A3.0	**$636,700.00**

SUMMARY

Subtotal Part A1.0	**$171,860.00**
Subtotal Part A2.0	**$638,200.00**
Subtotal Part A3.0	**$636,700.00**
Subtotal All Parts	**$1,446,760.00**
Contingency and Engineering (30%)	**$434,028.00**
Total Estimate	**$1,880,788.00**

Class D Cost Estimate

Permit to Practice
No. 1000129

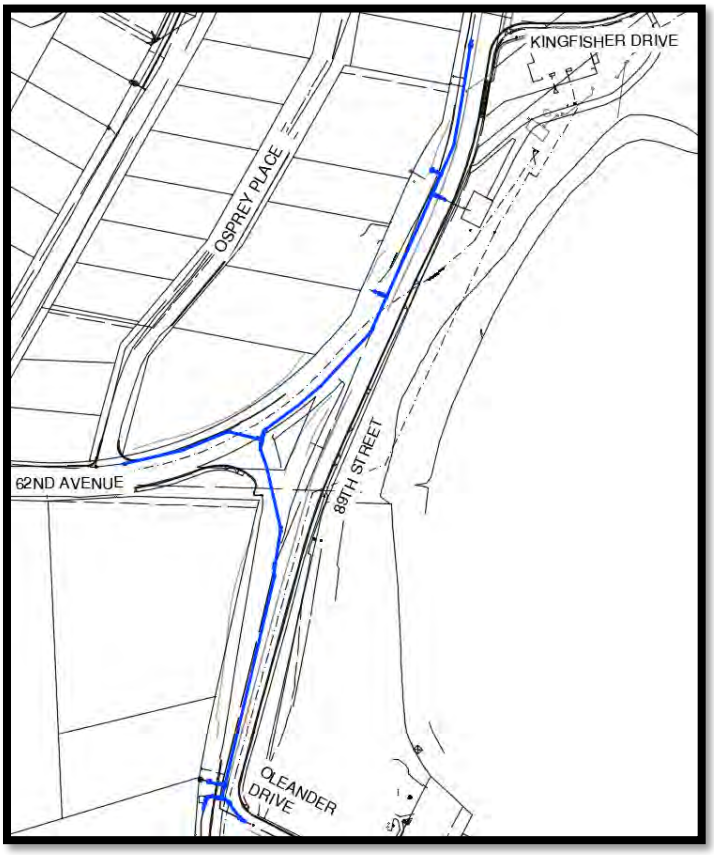
Prepared by: Anthony Martins, P.Eng.

Project W30: Watermain Upgrades and Replacement on 89th St. from Kingfisher Dr. to Oleander Dr. and 62nd Ave. Tie-in to 89th St. (Chute Intersection)

Priority: High **Type:** Upgrade, Replacement

Trigger: Growth, Asset Management

Location



Issue

There is currently no connection between the watermains along 89th and 62nd avenue which limits system capacity to provide fire flow. This would be significantly improved with this connection creating a looped water system in this area. Additionally, replacement of the existing 250 mm asbestos cement (AC) watermain on 89th St. would improve system reliability to the south sector

of the municipal pressure zone. This would allow two large diameter watermains to feed this area. Furthermore, it supports hydraulic connectivity for future water treatment plants and eastward conveyance to the lake crossing.

Scope

This scope includes replace existing asbestos cement watermains on 89th St. from Kingfisher drive to Oleander Drive, and on 62nd St. East of Osprey Pl. and tie-in 62nd St. to 89th Street. New watermains include 320 m of 300 mm, and 100 m of 250 mm PVC watermains including, hydrants, services, an air release valve, and all other appurtenances.

Cost Estimate (Class C, See R12 for detailed cost estimate and project layout)

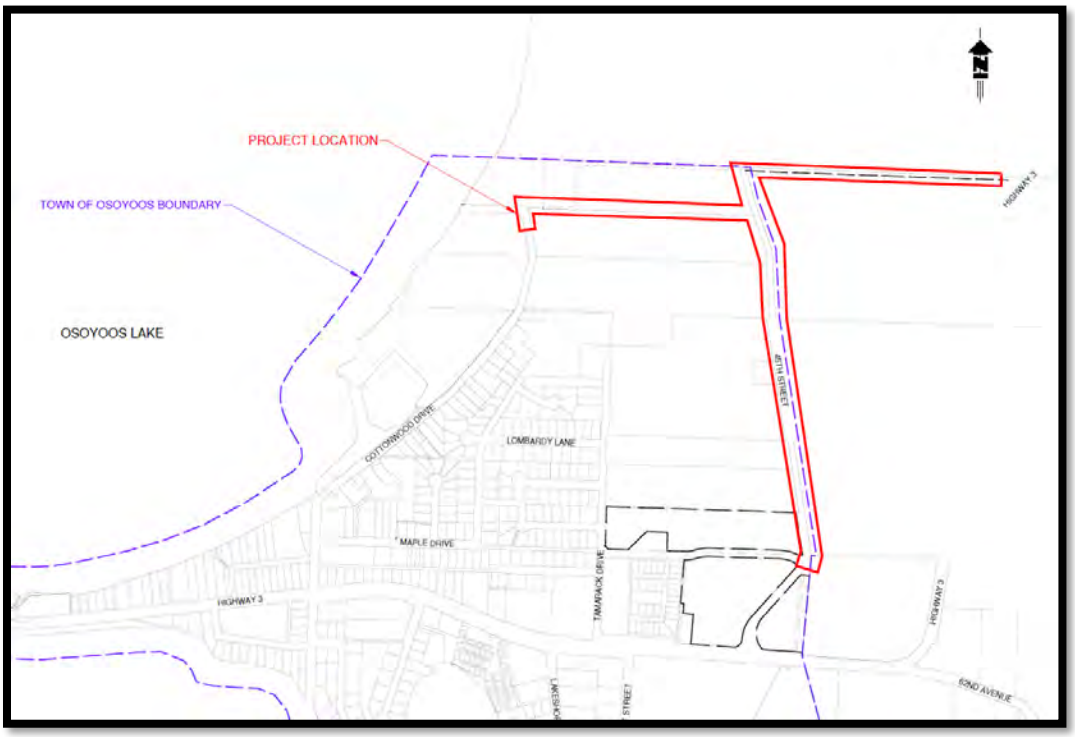
DESCRIPTION	TOTAL PAYMENT
Part 2.0 - Water System	**$348,820.00**
Contingency & Engineering (30%)	**$104,646.00**
Total Contract Sum	**$453,466.00**

Project W31: 340 Reservoir Watermain Upgrades

Priority: High **Type:** Upgrade

Trigger: Growth, Future Planning

Location Map



Issue

Supply to and distribution from the east sector reservoir is required. The above configuration ensures a looped system connection which optimizes hydraulic connectivity for the reservoir and for provision of fire flows to the East sector and Southeast sector.

Scope

Work includes installing a 700 m length of 300 mm PVC watermain from the East Sector Reservoir to 45th street, along the boundary of the OIB lands and the potential RDOS expansion area. This project ends at this location because connection to the domestic system can be achieved in two different pathways from this location. For this reason, this project in conjunction with the

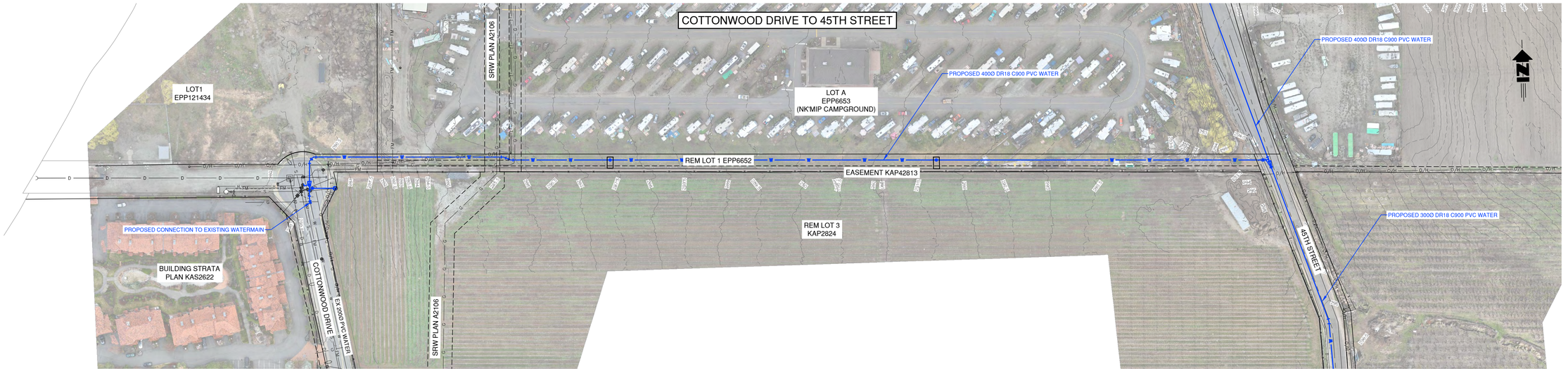
Cottonwood Drive Loop or the Nk'Mip Corner Water connection project must be completed to connect the east sector reservoir to the domestic system.

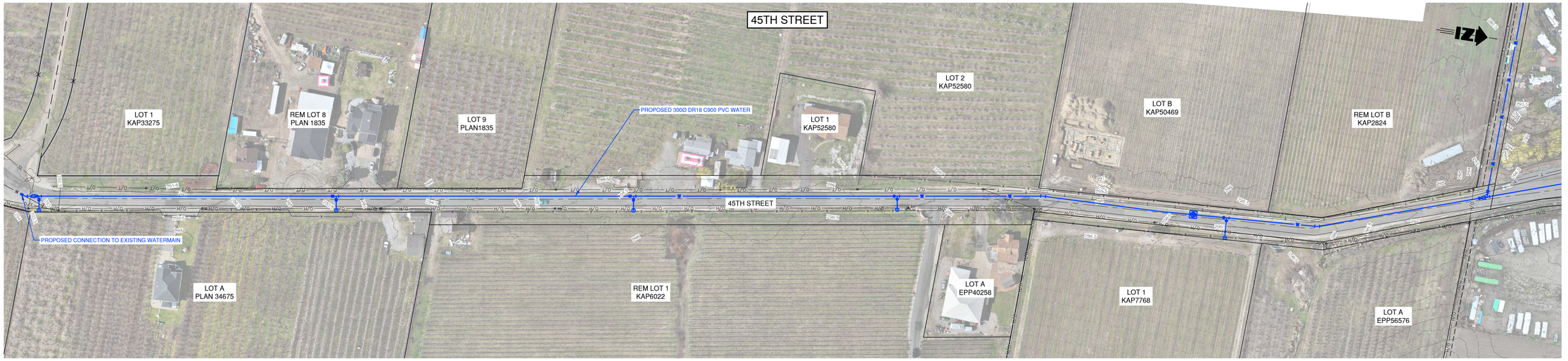
Work includes extending the watermain from 45th Street to Cottonwood Drive (total length of 570 m) and installing a back flow prevention Chamber. This option is the most cost effective to connect the east sector reservoir to the domestic water system.

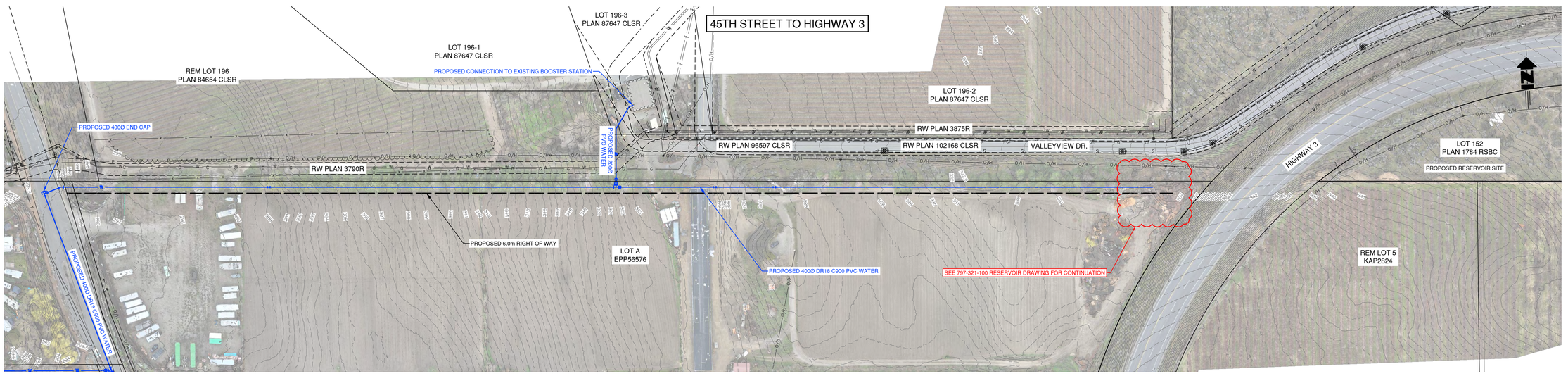
Work includes installing a 850 m, 300 mm PVC water main on 45th Street and connect to the existing system at the south end of 45th Street. This additional connection would provide beneficial system looping.

Cost Estimate (Class D)

DESCRIPTION	TOTAL PAYMENT
Part 1.0 - Removals	**$121,875.00**
Part 2.0 - Water Mains	**$1,414,450.00**
Part 3.0 - Roadworks	**$287,350.00**
Subtotal Parts 1.0 to 3.0	**$1,823,675.00**
Contingency Allowance (30%)	**$547,102.50**
Engineering Services (excluding construction management)	**$12,500.00**
GST (5% of Subtotal and Contingency Allowance)	**$119,163.88**
Total Contract Sum	**$2,502,441.38**







LEGEND

EXISTING	PROPOSED	DESCRIPTION
		ASPHALT ROAD
		GRAVEL ROAD
S	S	SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		SERVICE & IC
D	D	STORM MAIN
		STORM DITCH
		STORM CULVERT
		SERVICE & IC
		STORM MANHOLE
		CB - STD & SIDE INLET
		DRYWELL
W	W	WATER MAIN
		SERVICE & CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
G	G	GAS
P	P	POWER
T	T	TEL
C	C	CABLE
SL	SL	ST LIGHT CONDUIT
		POLE & ANCHOR
		STREET LIGHT
		CONTROL MONUMENT
		IRON POST
		TRAVERSE HUB

No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2089 Falcon Road ≡ Kamloops BC ≡ V2C 4J2
tel 250.828.0881 ≡ info@true.ca

Osoyoos Indian Band

340 RESERVOIR WATERMAINS

OVERALL PLAN

SCALE	0 1:1000 50
DESIGN BY	TT/SU
DRAWN BY	MC
DATE	JUNE 2024
PROJECT REFERENCE No.	797-321
PROJECT No.	797-321
SHEET	OF
DRAWING No.	202
ISSUE/REV.	1

Osoyoos Indian Band
340 Reservoir Water Main Upgrades
Cost Estimate

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 1.0 - REMOVALS					
1.1	Asphalt surface c/w sawcutting	m²	3050	$12.00	$36,600.00
1.2	Concrete curbs c/w sawcutting	m	15	$45.00	$675.00
1.3	Clear and grub to disposal	m²	2800	$18.00	$50,400.00
1.4	Relocation of existing landscaping and features on Nk'mip Campground	m²	730	$40.00	$29,200.00
1.5	Existing water system on Cottonwood Drive consisting of ±24m of 150Ø and 200Ø PVC piping, tee, 2-gate valves, fire hydrant, and reducer	LS			$5,000.00
				Subtotal Part 1.0	**$121,875.00**
PART 2.0 - WATER MAINS					
2.1	Supply and install water main piping				
2.1.1	400Ø DR18 C900 PVC	m	1155	$650.00	$750,750.00
2.1.2	300Ø DR18 C900 PVC	m	740	$450.00	$333,000.00
2.1.3	200Ø DR18 C900 PVC	m	65	$300.00	$19,500.00
2.1.4	150Ø DR18 C900 PVC	m	55	$280.00	$15,400.00
2.2	Appurtenances c/w thrust blocks and Joint Restraints				
2.2.1	400 H x 400F x 400F tee	ea.	3	$7,500.00	$22,500.00
2.2.2	300F x 300H x 150F tee	ea.	5	$3,000.00	$15,000.00
2.2.3	200H x 200F x 150F tee	ea.	1	$2,400.00	$2,400.00
2.2.4	400Ø Gate Valve	ea.	5	$8,000.00	$40,000.00
2.2.5	300Ø Gate Valve	ea.	6	$6,000.00	$36,000.00
2.2.6	200Ø Gate Valve	ea.	2	$2,800.00	$5,600.00
2.2.7	150Ø Gate Valve	ea.	6	$2,500.00	$15,000.00
2.2.8	400Ø bend (11¼° - 90)	ea.	6	$3,000.00	$18,000.00
2.2.9	400Ø 5° PVC bend	ea.	7	$1,500.00	$10,500.00
2.2.10	300Ø bend (11¼° - 90)	ea.	1	$2,100.00	$2,100.00
2.2.11	300Ø 5° PVC bend	ea.	1	$1,200.00	$1,200.00
2.2.12	200Ø bend (11¼° - 90)	ea.	4	$1,800.00	$7,200.00
2.2.13	200Ø 5° PVC bend	ea.	1	$1,000.00	$1,000.00
2.2.14	Fire hydrant assembly	ea.	6	$10,000.00	$60,000.00
2.2.15	Air release chamber	ea.	1	$6,000.00	$6,000.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 2.0 - WATER MAINS - continued					
2.2.16	400F x 300F reducer	ea.	1	$4,000.00	$4,000.00
2.2.17	400F x 200F reducer	ea.	1	$3,700.00	$3,700.00
2.2.18	300F x 200H reducer	ea.	1	$2,000.00	$2,000.00
2.2.19	200F x 400H increaser	ea.	1	$3,700.00	$3,700.00
2.2.20	400Ø blind flange	ea.	1	$3,800.00	$3,800.00
2.2.21	400Ø end cap (temporary)	ea.	1	$1,500.00	$1,500.00
2.2.22	Pipe anchor blocks on the 400Ø main	ea.	14	$1,300.00	$18,200.00
2.3	Locate and tie to existing c/w couplers				
2.3.1	To existing 200Ø PVC water at Cottonwood Drive (STA 20+010) c/w capping for abandonment	LS			$4,000.00
2.3.2	To existing 200Ø PVC water on 45th Street (STA 21+010)	LS			$4,000.00
2.3.3	To existing Booster Station (STA 22+301)	LS			$7,000.00
2.4	Reset existing 200Ø PVC storm stub c/w required fittings (Cottonwood Drive)	m	10	$140.00	$1,400.00
				Subtotal Part 2.0	**$1,414,450.00**
PART 3.0 - ROADWORKS					
3.1	Concrete curb and gutter c/w base gravels	m	15	$280.00	$4,200.00
3.2	Asphalt trench restoration c/w base gravels	m^2	3050	$75.00	$228,750.00
3.3	Utility trench surface restoration c/w hydroseeding	m^2	2800	$10.00	$28,000.00
3.4	Crushed gravel surround at valve locations (±18m^2/ea)	ea.	2	$1,000.00	$2,000.00
3.5	Crushed gravel surface restoration (100mm thickness)	m^2	520	$25.00	$13,000.00
3.6	0.5m width gravel shoulder	l.m.	760	$15.00	$11,400.00
				Subtotal Part 3.0	**$287,350.00**

SUMMARY

Part 1.0 - Removals	**$121,875.00**
Part 2.0 - Water Mains	**$1,414,450.00**
Part 3.0 - Roadworks	**$287,350.00**
Subtotal Parts 1.0 to 3.0	**$1,823,675.00**
Contingency Allowance (30%)	**$547,102.50**
Engineering Services (excluding construction management)	**$12,500.00**
GST (5% of Subtotal and Contingency Allowance)	**$119,163.88**
Total Contract Sum	**$2,502,441.38**

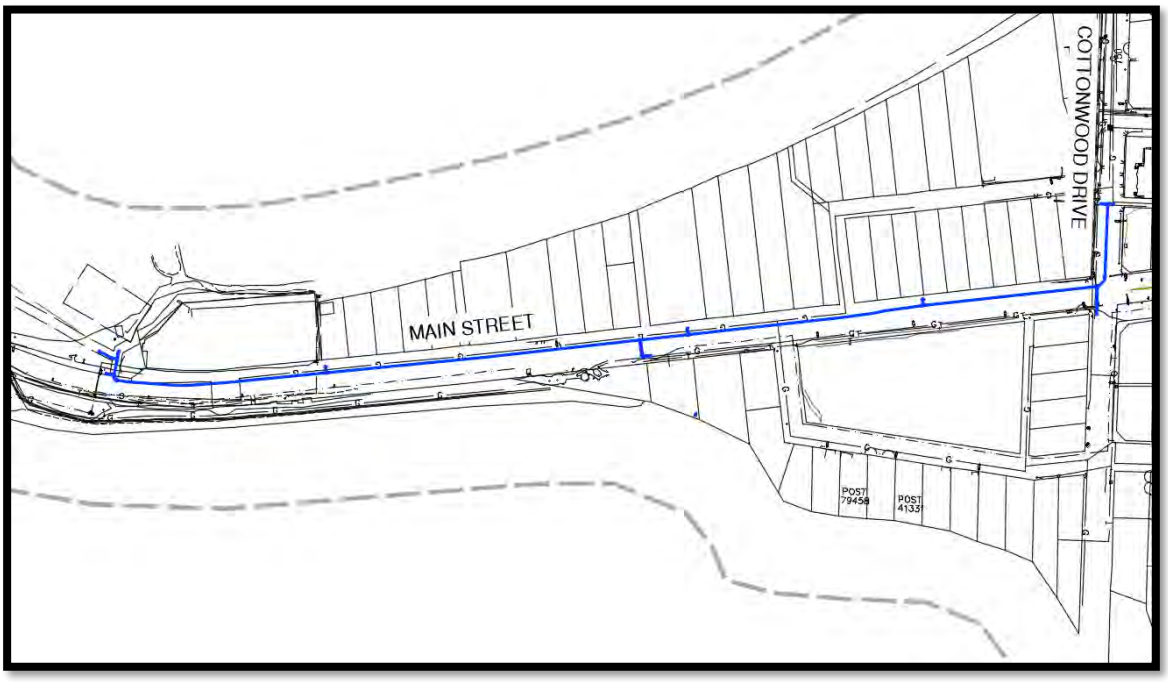
Prepared by: Todd Turnbull, AScT, CPWI 3

Project W34: Watermain Upgrade and Replacement on Main St. from the East Lake Crossing to Cottonwood Dr., and on Cottonwood Drive from Main St. to Maple Dr.

Priority: High **Type:** Upgrade, Replacement

Trigger: Growth, Asset Management

Location Map



Issue

The domestic water system is restricted by undersized water mains east of the lake crossing when considering fire flows and implementation of the East Reservoir. For these reasons, a large diameter water main is required to optimally convey flows from the West to the East. This configuration has several advantages including:

- Improve system resilience by providing a large trunk main from the lake crossing into the core of the east sector.
- This will negate the replacement of the 300 mm water main in the beach line which is not expected to be feasible for environmental concerns in the future.

    - In the short term, this watermain may be used as a raw water supply line if groundwater treatment is pursued.
- Replacing a high-risk 200 mm asbestos cement (AC) water main which is at the end of its service life.
- Improves hydraulic connectivity to Well #3, #4, #5, #9 and #10.
- Supports hydraulic connectivity for the future water treatment plant throughout the municipal pressure zone.

Scope

This work includes upsizing the watermain on Main Street from the lake crossing to Cottonwood Dr. to enhance flow capacity from the lake crossing. A 500 mm water main will replace the existing 200 mm AC watermain on Main St., and a new section of 500 mm main will be installed between Cottonwood Dr. and Ponderosa Drive. Also, a 350 mm watermain is included from Main St. to Maple Dr. to tie into recent upgrades to improve flows from the source wells in this area.

Cost Estimate (Class D)

DESCRIPTION	TOTAL PAYMENT
Part 1.0 - Removals	**$89,580.00**
Part 2.0 - Water System	**$1,512,750.00**
Part 3.0 - Roadworks	**$726,650.00**
Subtotal Parts 1.0 – 3.0	**$2,328,980.00**
Contingency & Engineering (30%)	**$698,694.00**
Total Contract Sum	**$3,027,674.00**

Town of Osoyoos

Highway No.3 And Cottonwood Drive

Class D Cost Estimate

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 1.0 - REMOVALS					
1.1	Asphalt surfaces c/w sawcutting	m²	5720	$10.00	$57,200.00
1.2	Concrete surfaces c/w sawcutting				
1.2.1	Curbs	m	104	$30.00	$3,120.00
1.2.2	Sidewalk and driveways	m²	155	$30.00	$4,650.00
1.2.3	Concrete dump pad	LS	1	$400.00	$400.00
1.3	Strip, clear and grub	m²	30	$8.00	$240.00
1.4	Existing water system				
1.4.1	300Ø D.I. piping	m	15	$180.00	$2,700.00
1.4.2	300Ø PVC piping	m	4	$180.00	$720.00
1.4.3	250Ø D.I. piping	m	35	$170.00	$5,950.00
1.4.4	200Ø AC piping	m	4	$150.00	$600.00
1.4.5	150Ø AC piping	m	30	$150.00	$4,500.00
1.4.6	Valves, tees, hydrants, fittings, c/w capping for abandonment	ea.	19	$500.00	$9,500.00
				Subtotal Part 1.0	**$89,580.00**
PART 2.0 - WATER SYSTEM					
2.1	Supply and install watermain c/w Class B sand bedding				
2.1.1	500Ø C900 DR18 PVC	m	715	$1,300.00	$929,500.00
2.1.2	350Ø C900 DR18 PVC	m	110	$600.00	$66,000.00
2.1.3	300Ø C900 DR18 PVC	m	15	$420.00	$6,300.00
2.1.4	250Ø C900 DR18 PVC	m	5	$320.00	$1,600.00
2.1.5	150Ø C900 DR18 PVC	m	110	$260.00	$28,600.00
2.1.6	100Ø C900 DR18 PVC	m	15	$220.00	$3,300.00
2.1.7	19Ø municipex	m	45	$90.00	$4,050.00
2.2	Appurtenances c/w thrust blocks and joint restraints				
2.2.1	500H x 500F x 250F tee	ea.	1	$8,000.00	$8,000.00
2.2.2	500H x 500H x 150F tee	ea.	6	$8,000.00	$48,000.00
2.2.3	500H x 500F x 150F tee	ea.	2	$14,000.00	$28,000.00
2.2.4	500H x 500H x 100F tee	ea.	3	$8,000.00	$24,000.00
2.2.5	300F x 300F x 300F tee	ea.	1	$3,000.00	$3,000.00
2.2.6	150H x 150H x 150H tee	ea.	1	$1,800.00	$1,800.00
2.2.7	500Ø gate valve	ea.	4	$32,000.00	$128,000.00
2.2.8	350Ø gate valve	ea.	1	$14,000.00	$14,000.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 2.0 - WATER SYSTEM - continued					
2.2.9	300Ø gate valve	ea.	2	$6,000.00	$12,000.00
2.2.10	250Ø gate valve	ea.	1	$4,000.00	$4,000.00
2.2.11	150Ø gate valve	ea.	9	$2,500.00	$22,500.00
2.2.12	100Ø gate valve	ea.	3	$1,500.00	$4,500.00
2.2.13	500Ø bends	ea.	5	$5,000.00	$25,000.00
2.2.14	350Ø bends	ea.	2	$2,500.00	$5,000.00
2.2.15	300Ø bends	ea.	1	$2,000.00	$2,000.00
2.2.16	250Ø bends	ea.	2	$1,700.00	$3,400.00
2.2.17	Hydrant assembly	ea.	7	$10,000.00	$70,000.00
2.2.19	450F x 500F increasor	ea.	1	$4,500.00	$4,500.00
2.2.20	350H x 300F reducer	ea.	2	$2,100.00	$4,200.00
2.2.21	350HxF adapter	ea.	1	$3,800.00	$3,800.00
2.2.23	500FxH adapter	ea.	1	$8,000.00	$8,000.00
2.3	Locate and tie to existing c/w couplers				
2.3.1	To existing 450Ø HDPE domestic water supply (Sta 5+010)	ea.	1	$8,000.00	$8,000.00
2.3.2	To existing 150Ø (AC) on Cottonwood Drive	ea.	2	$4,000.00	$8,000.00
2.3.3	To existing 150Ø AC on Ponderosa Dr (Sta 5+520)	ea.	1	$4,000.00	$4,000.00
2.3.4	To existing 300Ø PVC on beach (Sta 6+240)	ea.	1	$5,000.00	$5,000.00
2.3.5	To existing 250Ø DI (5+032)	ea.	1	$3,500.00	$3,500.00
2.3.6	To existing 100Ø service (typical)	ea.	3	$2,000.00	$6,000.00
2.4	Water services				
2.4.1	500Ø x 19Ø service saddle and 19Ø corp stops	ea.	8	$1,500.00	$12,000.00
2.4.2	19Ø curb stop, service box and connection to existing	ea.	8	$400.00	$3,200.00
				Subtotal Part 2.0	**$1,512,750.00**

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 3.0 - ROADWORKS					
3.1	Standard curb and gutter c/w base gravels	m	100	$280.00	$28,000.00
3.2	Concrete sidewalk c/w base gravels				
3.2.1	Concrete sidewalks	m²	140	$250.00	$35,000.00
3.2.2	Thickened driveway crossover	m²	35	$190.00	$6,650.00
3.3	Asphalt trench repair				
3.3.1	100mm hot-mix c/w base gravels	m²	5000	$120.00	$600,000.00
3.3.2	50mm hot-mix c/w base gravels	m²	760	$75.00	$57,000.00
				Subtotal Part 3.0	**$726,650.00**
				Subtotal Part 1.0 - 3.0	**$2,328,980.00**
				Contingency and Engineering (30%)	**$698,694.00**
				Grand Total	**$3,027,674.00**
				Class D Cost Estimate	

Permit to Practice
No. 1000129

Prepared by: Anthony Martins, P.Eng.

Project W35: Master Plan Review

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map

Scope

The Master Plan review is an engineering planning project to update system demand projections and to confirm/determine capital upgrades to service future demand. This will be important to consider the impacts of water conservation. The estimated project cost is $75,000. This work will benefit the community's future populations more than the existing population as Master Plans heavily focus on future servicing requirements.

Time Frame

4 +/- 1 years

Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Engineering Fees					
1.1	Water Conservation Plan	L.S.	1	$75,000	$75,000
				TOTAL	**$75,000**

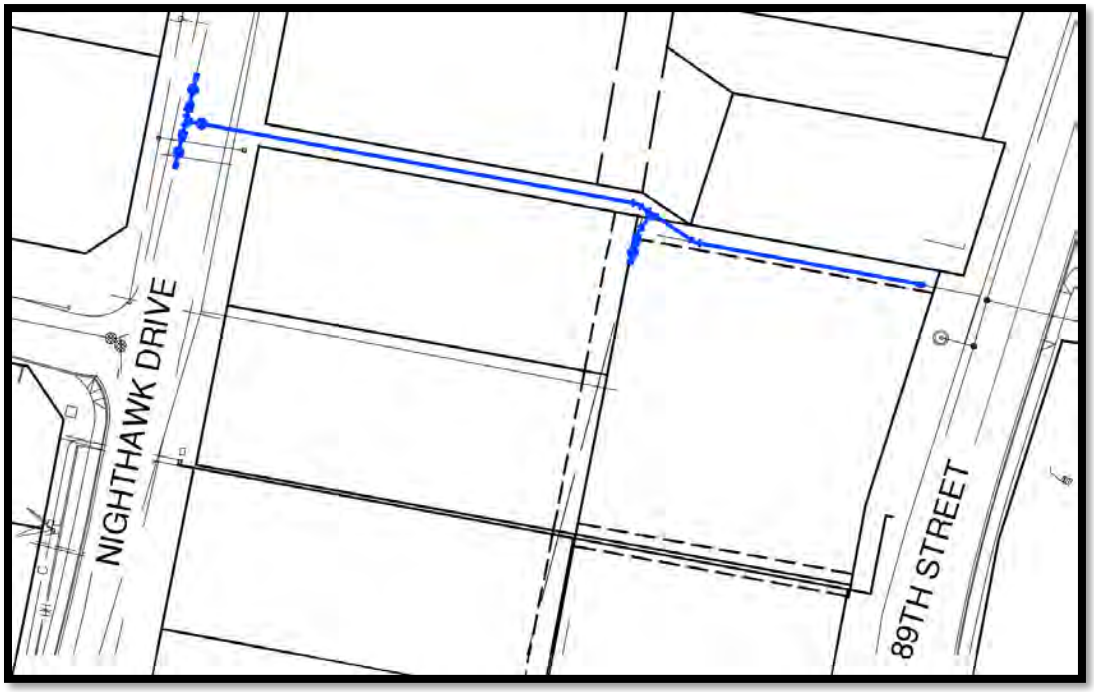
Prepared by:

Project W38: Watermain Connecting Nighthawk Dr. and 89th St, adjacent to 89th St and Kingfisher Dr. Intersection

Priority: High **Type:** Upgrade, Replacement

Trigger: Growth, Asset Management

Location Map



Issue

The current system layout in susceptible to service interruption because the 74th Ave. and 89th St. watermains provide major flows from the existing 340 Reservoirs eastwards to the lake crossing. Without an additional large diameter watermain, flows to the town core and east sector would be severely impacted in any case where these mains would be out of commission. For this reason, a 300 mm connection between Nighthawk Dr. to 89th St. is recommended to allow the proposed upgraded Kingfisher watermain to provide an alternative flow pathway. This configuration has several other advantages including:

- An existing right-of-way is present at the project location which corresponds to the proposed alignment.

- Replacing a 150 mm asbestos cement (AC) water main connecting Osprey Pl. and 89th Street.
- Supports hydraulic connectivity for the future water treatment plant throughout the municipal pressure zone.
- Supports hydraulic connectivity for Eastward conveyance from the 340 reservoir to the east sector.

Scope

This work includes trenching 40 m of 300 mm PVC watermain through the Right of Way (ROW) from 89th St. to Osprey Pl. and trenching 60 m of 300 mm PVC watermain in the ROW from Osprey Pl. to Nighthawk drive. Tie-ins will be completed at 89th St., Osprey Pl. and Nighthawk Drive.

Cost Estimate (Class D)

DESCRIPTION	TOTAL PAYMENT
Subtotal Part 1.0	**$60,900.00**
Subtotal Part 2.0	**$131,700.00**
Subtotal Part 3.0	**$34,150.00**
Subtotal Parts 1.0 - 3.0	**$226,750.00**
Contingency and Engineering (45%)	**$68,025.00**
Total Estimate	**$294,775.00**

Town of Osoyoos
Watermain Connecting Nighthawk Dr. and 89th St, adjacent to 89th St and Kingfisher Dr. Intersection
Class D Cost Estimate

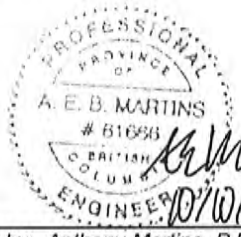
ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 1.0 - REMOVALS					
1.1	Asphalt surfaces c/w sawcutting	m^2	110	$15.00	$1,650.00
1.2	Concrete surfaces c/w sawcutting				
1.2.1	Curbs	m	10	$30.00	$300.00
1.2.2	Sidewalks	m^2	15	$30.00	$450.00
1.5	Tree Removal	l.s.	1	$50,000.00	$50,000.00
1.4	Existing water system				
1.3.1	150Ø AC piping	m	50	$170.00	$8,500.00
				Subtotal Part 1.0	**$60,900.00**
PART 2.0 - WATER SYSTEM					
2.1	Supply and install watermain				
2.1.2	300Ø PVC c/w Class B sand bedding	m	100	$500.00	$50,000.00
2.1.3	250Ø PVC c/w Class B sand bedding	m	10	$380.00	$3,800.00
2.1.4	150Ø PVC c/w Class B sand bedding	m	10	$260.00	$2,600.00
2.2	Appurtenances c/w thrust blocks and joint restraints				
2.2.1	300 x 300 x 300 tee	ea.	1	$4,000.00	$4,000.00
2.2.2	300 x 300 x 150 tee	ea.	1	$1,800.00	$1,800.00
2.2.3	300Ø gate valve	ea.	2	$6,000.00	$12,000.00
2.2.4	250Ø gate valve	ea.	2	$4,000.00	$8,000.00
2.2.5	150Ø gate valve	ea.	1	$2,500.00	$2,500.00
2.2.6	300Ø bends	ea.	2	$2,000.00	$4,000.00
2.2.7	150Ø bends	ea.	2	$1,000.00	$2,000.00
2.2.8	300 x 250 reducer	ea.	2	$2,000.00	$4,000.00
2.2.9	300 x 150 reducer	ea.	1	$2,000.00	$2,000.00
2.2.10	300Ø Watermain anchors	ea.	10	$1,500.00	$15,000.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 2.0 - WATER SYSTEM - continued					
2.3	Locate and tie to existing c/w couplers				
2.3.1	To existing 300Ø PVC @ 89th Street	ea.	1	$5,000.00	$5,000.00
2.3.1	To existing 250Ø PVC @ Nighthawk	ea.	2	$5,000.00	$10,000.00
2.3.2	To existing 150Ø AC @ Osprey	ea.	1	$5,000.00	$5,000.00
				Subtotal Part 2.0	**$131,700.00**
PART 3.0 - ROADWORKS					
3.1	Standard curb and gutter c/w base gravels	m	10	$280.00	$2,800.00
3.2	Concrete sidewalk c/w base gravels	m^2	15	$250.00	$3,750.00
3.3	Asphalt trench repair c/w 75mm hot-mix asphalt and base gravels	m^2	110	$120.00	$13,200.00
3.4	Topsoil and sod	m^2	320	$45.00	$14,400.00
				Subtotal Part 3.0	**$34,150.00**

SUMMARY

Subtotal Part 1.0 - Removals	**$60,900.00**
Subtotal Part 2.0 - Water System	**$131,700.00**
Subtotal Part 3.0 - Roadworks	**$34,150.00**
Subtotal Parts 1.0 - 3.0	**$226,750.00**
Contingency and Engineering (30%)	**$68,025.00**
Total Estimate	**$294,775.00**

Class D Cost Estimae



Permit to Practice
No. 1000129

10/10/2024

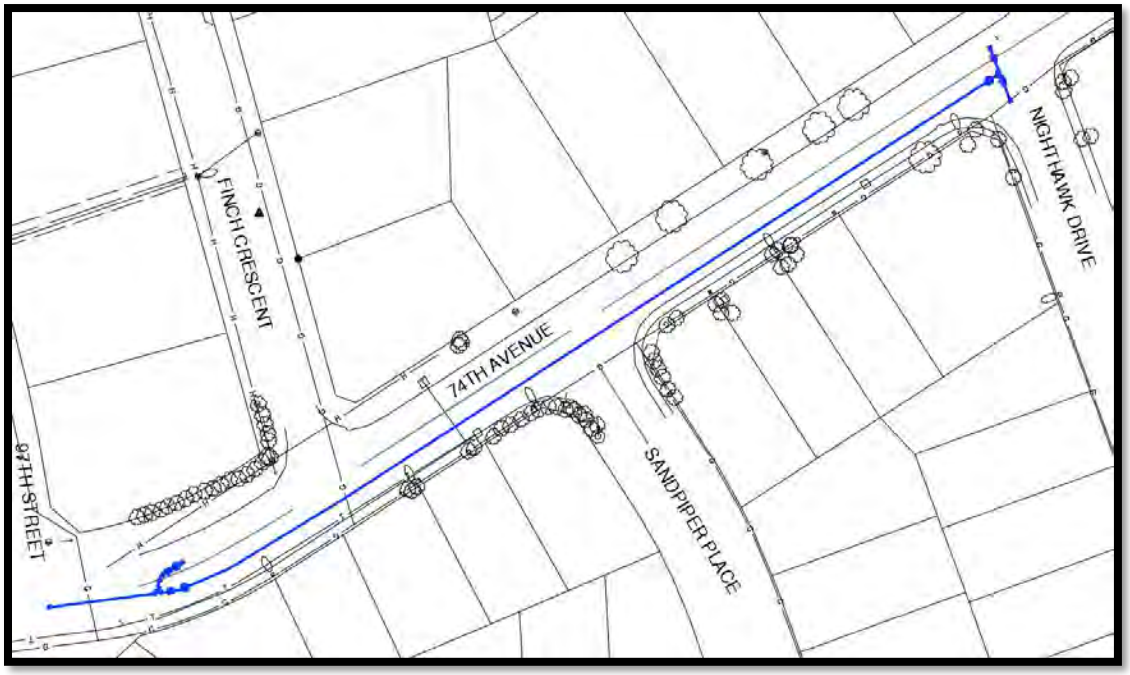
Prepared by: Anthony Martins, P.Eng.

Project W39: Watermain Upgrades on 74th Ave. from 97th St. to Nighthawk Dr.

Priority: Medium **Type:** Upgrade

Trigger: Growth, Future Planning

Location Map



Issue

The existing 350 mm watermain on 74th St. from 97th St. to Nighthawk Dr. is undersized to provide flows to the East Sector and it is unlikely that it will provide adequate hydraulic connectivity for the future Water Treatment Plant. For these reasons, it is proposed to twin this watermain with another 350 mm watermain. Furthermore, this will improve system resilience and mitigate the effects of increased demand from residential infilling and densification.

Scope

This work includes installing 180 m of 350 mm PVC watermain on 74th Street.

Cost Estimate (Class D)

DESCRIPTION	TOTAL PAYMENT
Part 1.0 - Removals	$7,600.00
Part 2.0 – Water System	$206,300.00
Part 3.0 – Roadworks	$114,600.00
Subtotal Parts 1.0 to 3.0	$328,500.00
Contingency and Engineering (30%)	$98,550.00
Total Contract Sum	$427,050.00

Town of Osoyoos

Watermain Upgrades on 74th Ave. from 97th St. to Nighthawk Dr.

Class D Cost Estimate

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 1.0 - REMOVALS					
1.1	Asphalt surfaces c/w sawcutting	m^2	760	$10.00	$7,600.00
				Subtotal Part 1.0	**$7,600.00**
PART 2.0 - WATER SYSTEM					
2.1	Supply and install watermain				
2.1.1	400Ø PVC c/w Class B sand bedding	m	30	$800.00	$24,000.00
2.1.1	350Ø PVC c/w Class B sand bedding	m	180	$550.00	$99,000.00
2.1.2	250Ø PVC c/w Class B sand bedding	m	8	$350.00	$2,800.00
2.2	Appurtenances c/w thrust blocks and joint restraints				
2.2.1	400 x 400 x 400 tee	ea.	1	$8,000.00	$8,000.00
2.2.2	300 x 300 x 350 tee	ea.	1	$7,500.00	$7,500.00
2.2.3	350Ø gate valve	ea.	3	$7,000.00	$21,000.00
2.2.7	400Ø bends	ea.	2	$3,200.00	$6,400.00
2.2.7	350Ø bends	ea.	3	$3,000.00	$9,000.00
2.2.8	400 x 350 reducer	ea.	1	$3,000.00	$3,000.00
2.2.9	350 x 300 reducer	ea.	2	$2,800.00	$5,600.00
2.2.9	300 x 250 reducer	ea.	2	$2,500.00	$5,000.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 2.0 - WATER SYSTEM - continued					
2.4	Locate and tie to existing c/w couplers				
	2.4.3 To existing 400Ø PVC @ 97th St.	ea.	1	$5,000.00	$5,000.00
	2.4.2 To existing 350Ø PVC @ Nighthawk	ea.	1	$5,000.00	$5,000.00
	2.4.2 To existing 250Ø PVC @ Nighthawk	ea.	1	$5,000.00	$5,000.00
				Subtotal Part 2.0	**$206,300.00**
PART 3.0 - ROADWORKS					
3.1	Asphalt trench repair c/w 75mm hot-mix asphalt and base gravels	m^2	760	$85.00	$64,600.00
3.2	Traffic Control	L.S.	1	$50,000.00	$50,000.00
				Subtotal Part 3.0	**$114,600.00**

SUMMARY

Subtotal Part 1.0	**$7,600.00**
Subtotal Part 2.0	**$206,300.00**
Subtotal Part 3.0	**$114,600.00**
Subtotal Parts 1.0 - 3.0	**$328,500.00**
Contingency and Engineering (30%)	**$98,550.00**
Total Estimate	**$427,050.00**

Class D Cost Estimate

Permit to Practice
No. 1000129

10/10/2024

Prepared by: Anthony Martins, P.Eng.

APPENDIX B

Sanitary Sewer Project Sheets

Project S10: WWTP Auxiliary Power

Priority: Medium **Type:** Growth

Trigger: Emergency Preparedness

Location

Issue

There is currently no backup power at the WWTP. In the event of a power outage, the treatment is inoperable and may result in treatment complications.

Scope

Install a sufficiently large generator to provide adequate power to the WWTP in the event of a power outage.

Cost Estimate (Class B)

$ 219,000

302-2051
9-Oct-24

Town of Osoyoos
S10 - WWTP Auxiliary Power
Class 'B' Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
S10 - WWTP Auxiliary Power					
1.1	WWTP Site Work				
	WWTP Sitegrading improvements	L.S.	1	$25,000	$25,000
	Generator Pad	L.S.	1	$10,000	$10,000
	SCADA Integration	L.S.	1	$30,000	$30,000
1.2	Generator Supply				
	Supply	L.S.	1	$110,000	$110,000
				Subtotal	**$175,000**
				Engineering and Contingency (25%)	$44,000
				TOTAL	**$219,000**

Project: S11 – WWTP Preliminary Design and Planning

Priority: Medium **Type:** Study

Trigger: Expansion

Location

Issue

Treatment upgrades will be required at the WWTP as growth proceeds. Permitting and treatment upgrades will be required, therefore the purpose of this project is to start the upgrading process.

Scope

Prior to detailed design and process selection, it is recommended that a full study and design options analysis be completed. This will include options for air piping, process upgrades, and any required cell upgrades.

Cost Estimate (Class B)

$250,000

Project: S16 – Chlorine Contact Tank Recirculation

Priority: Medium **Type:** Upgrade

Trigger: Process Improvements

Location

Issue

As reclaimed WW flows increase, there is insufficient CT in the current contact chamber prior to flowing to the storage basins.

Scope

Expansion and/or recirculation will be needed on the reclaimed WW contact chamber to ensure that the proper CT is being achieved.

Cost Estimate (Class B)

$370,000

302-2051
9-Oct-24

Town of Osoyoos
S16 - Chlorine Contact Tank Recirculation Upgrades
Class 'B' Cost Estimate

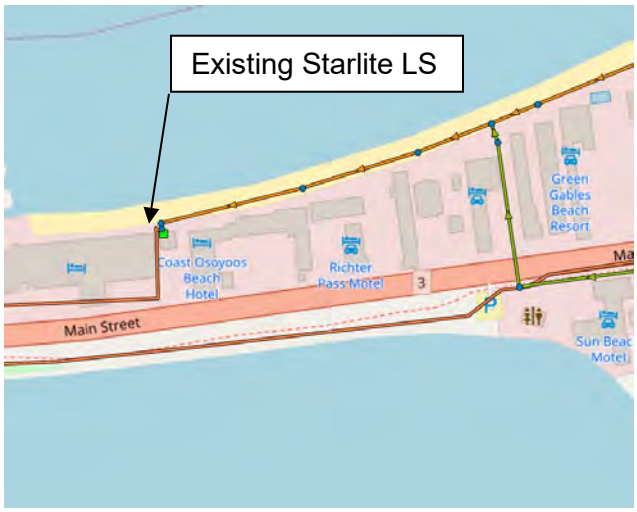
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
S16 - Chlorine Contact Tank Recirculation Upgrades					
1.1	Existing System				
	Existing system removals	L.S.	1	$25,000	$25,000
	Existing system retrofit and upgrades	L.S.	1	$225,000	$225,000
				Subtotal	**$250,000**
				Engineering (15%)	$38,000
				Contingency (30%)	$75,000
				TOTAL	**$363,000**

Project: S19 - Starlite Lift Station Pump Capacity Increase

Priority: Medium **Type:** Upgrade

Trigger: Development

Location Map



Issue

The existing Starlite Lift station is undersized for future conditions. Additionally, the current location is proving to be an ongoing operational issue. TRUE has recently completed an options analysis for the relocation of the lift station, and it is anticipated that one of the options discussed will be chosen. For additional information as well as a more detailed cost estimate please refer to the *2023 Starlite Relocation Assessment.*

Scope

The exact scope of this project will depend on the option chosen as per the *2023 Starlite Relocation Assessment*; however it is anticipated that it will include pump upgrades, and wetwell relocation.

Cost Estimate (Class B)

$300,000

302-2051
9-Oct-24

Town of Osoyoos
S19 - Starlite Lift Station Pumping Capacity Increase
Class 'B' Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
S20 - Starlite Lift Station Pumping Capacity Increase					
1.1	Lift Station Components				
	New Liftstation Pumps	ea	3	$75,000	$225,000
	SCADA Integration	L.S	1	$15,000	$15,000
				Subtotal	**$240,000**
				Engineering and Contingency (25%)	$60,000
				TOTAL	**$300,000**

Project: S24 – Reclaimed WW Storage and Extension Study

Priority: Medium **Type:** Study

Trigger: Expansion

Location

Reclaimed WW Application Area

Issue

A study was completed in 2014 looking at the long-range forecast for the reclaimed WW generation, storage, and application. This plan is now outdated and should be updated to reflect current conditions.

Scope

It is recommended that this study be reviewed and updated as the loading and application forecasts may have changed.

Cost Estimate (Class B)

$109,000

Project: S25 – Wastewater Master Plan Review

Priority: Medium **Type:** Study

Trigger: Expansion

Location

Wastewater collection, treatment, and disposal system.

Issue

The WW Master Plan has not been updated.

Scope

It is recommended to create a Master Plan for the collection, treatment, and disposal of wastewater throughout the entire treatment network.

Cost Estimate (Class B)

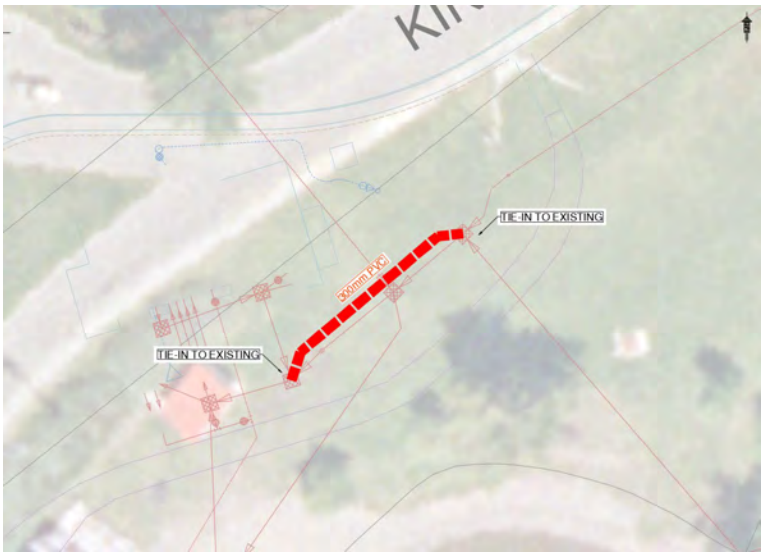
$45,000

Project: S29 - Main Wastewater Pumping station Forcemain Upgrades

Priority: Medium **Type:** Growth

Trigger: Growth

Location Map



Issue

There is the possibility of surcharging above the pipe obvert in the outlet manhole while Smith and Loveless, Starlite, and 44th Ave Lift Stations are pumping due to a constraining section of 300mm gravity pipe.

Scope

The proposed solution to this problem is to extend the 300mm forcemain approximately 25 meters southwest and tie it back into the gravity system beyond the 300mm gravity section.

Cost Estimate (Class B)

$300,000

302-2051
9-Oct-24

Town of Osoyoos
S29 - Main Wastewater Pumping Station Forcemain Upgrades
Class 'B' Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
S29 - Main Wastewater Pumping Station Forcemain Upgrades					
1.1	Wastewater System Components				
	300mm PVC Sanitary Force Main - Supply and Install	lm	25	$1,300	$32,500
	Forcemain bends, thrust blocks, and appurtenances	L.S.	1	$15,000	$15,000
	Tie-in to manhole	L.S.	1	$25,000	$25,000
	Tie-in to forcemain	L.S.	1	$35,000	$35,000
1.2	Other Construction				
	Removals	L.S.	1	$8,000	$8,000
	Site preparation	m²	100	$20	$2,000
	Site restoration	m²	100	$55	$5,500
	Dewatering	L.S.	1	$35,000	$35,000
	Permitting	L.S.	1	$20,000	$20,000
	Vac-truck allowance for tie-ins (3 trucks)	hrs	10	$1,000	$30,000

Subtotal	**$208,000**
Archaeology Allowance	**$40,000**
Engineering and Contingency (25%)	$52,000
TOTAL	**$300,000**

Project: S32 – Onsite Chlorine Generation

Priority: Medium **Type:** Upgrade

Trigger: Aging Infrastructure

Location

Issue

Currently, the Town relies on Chlorine gas to dose the reclaimed wastewater prior to retention in the storage basins.

Scope

The Town would like to replace the existing system with a safer alternative to the chlorine gas, such as onsite chlorine generation. This will require bulk solids handling, a storage facility, as well as a generation system.

Cost Estimate (Class B)

$2,200,000

302-2051
9-Oct-24

Town of Osoyoos
S32 - WWTP Onsite Chlorine Generation
Class 'B' Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
S32 - WWTP Onsite Chlorine Generation					
1.1	Existing System				
	Removal of existing gas system	L.S.	1	$25,000	$25,000
	Disposal and Environmental Fees	L.S.	1	$50,000	$50,000
1.2	New System				
	WWTP Site Improvements	L.S.	1	$225,000	$225,000
	Onsite salt storage facility and handling	L.S.	1	$550,000	$550,000
	Onsite conveyance and generation system	L.S.	1	$650,000	$650,000
				Subtotal	**$1,500,000**
				Engineering (15%)	$225,000
				Contingency (30%)	$450,000
				TOTAL	**$2,175,000**

Project: S33 – Golf Course LS Screening

Priority: Medium **Type:** Upgrade

Trigger: Development

Location

Issue

Existing Golf Course lift station does not have screening, whereas all other wastewater is screened at the MWWPS. Screened effluent is required for the MBBR process therefore this must happen prior to any upgrades at the WWTP.

Scope

Install a primary screening facility at the Golf Course LS to improve effluent quality for the MBBR process.

Cost Estimate (Class B)

$725,000

302-2051
9-Oct-24

Town of Osoyoos
S33 - Golf Course Primary Screening Facility
Class 'B' Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
S33 - Golf Course Primary Screening Facility					
1.1	Lift Station Upgrades				
	Removals	L.S.	1	$25,000	$25,000
	Site Works	L.S.	1	$50,000	$50,000
	Primary Screening Facility	L.S.	1	$350,000	$350,000
	SCADA Upgrades	L.S.	1	$120,000	$75,000

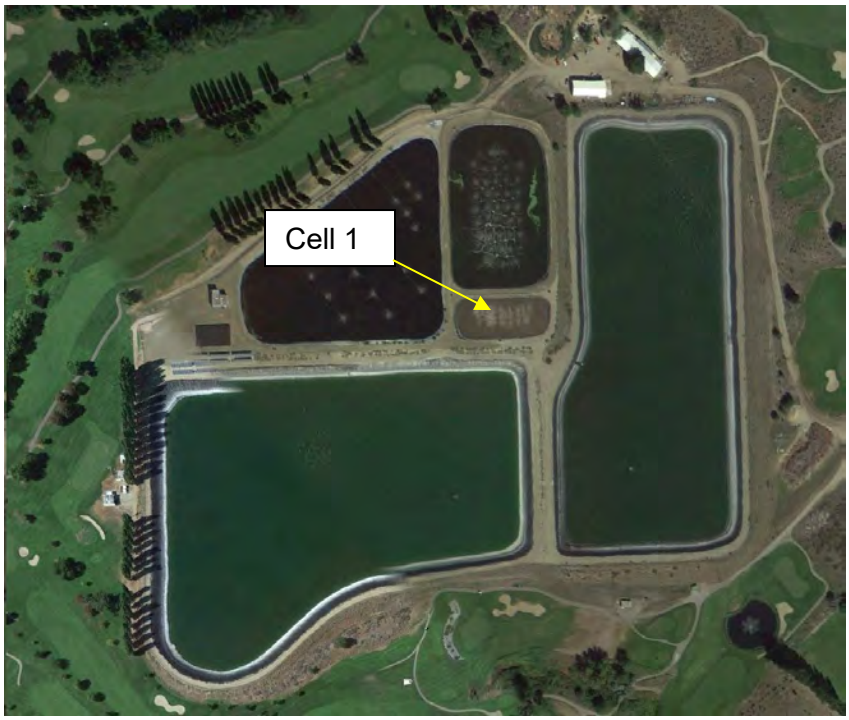
Subtotal	**$500,000**
Engineering (15%)	$75,000
Contingency (30%)	$150,000
TOTAL	**$725,000**

Project: S44 – Cell 1 MBBR Conversion

Priority: Medium **Type:** Upgrade

Trigger: Development

Location



Issue

Future flows and regulatory requirements will require treatment upgrades. Currently, it is anticipated that Cell 1 will be converted into a Moving Bed Biofilm Reactor to limit the need for sludge recirculation, however other processes may be pursued.

Scope

Convert Cell 1 to a MBBR including air piping and supply upgrades.

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
S3 - Cell 1 MBBR Conversion					
1.1	Wastewater System Components				
	400 m³ concrete tanks	L.S.	1	$650,000	$650,000
	Coarse bubble aeration system	L.S.	1	$1,150,000	$1,150,000
	Additional blower capacity	L.S.	1	$250,000	$250,000
	Additional air piping	L.S.	1	$90,000	$90,000
	Additional WWTP pipe network	L.S.	1	$75,000	$75,000
	Allowance for Archaeology	L.S.	1	$35,000	$35,000
1.2	Cell 1 Building				
	Building Construction	sq ft	5000	$500	$2,500,000
	Odour Control	L.S.	1	$500,000	$500,000
				Subtotal	**$5,250,000**
				Engineering (15%)	$788,000
				Contingency (30%)	$1,575,000
				TOTAL	**$7,613,000**

Project: S45 – Wastewater Treatment Plant Preliminary Design and Planning

Priority: Medium **Type:** Study

Trigger: Expansion

Location

Issue

Treatment upgrades will be required at the WWTP as growth proceeds. This process will be will a long-term, intensive project due to the regulatory requirements in place.

Scope

This project scope includes detailed design, permitting, and construction of the WWTP upgrades.

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
S10 - Wastewater Treatment Plant Design and Planning					
1.1	S10 - Wastewater Treatment Plant Design and Planning				
	Consulting Fees	L.S.	1	$700,000	$700,000
	Permitting	L.S.	1	$300,000	$300,000
				TOTAL	**$1,000,000**

APPENDIX C

Storm Drainage Project Sheet

Project: ST1 – Storm Drainage Management Master Plan

Priority: High **Type:** Study

Trigger: Expansion

Issue

There is no Storm Drainage Master Plan which is required to completed a detailed system analysis for capital planning purposes

Scope

This work includes but is not limited to developing a system composite, determining system capacity, establishing overland flood routes, outfall assessments, asset management plan, capital planning and an implementation plan.

Time Frame

+/- 2 years

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
ST1 - Storm Drainage Management Master Plan					
1.1	Storm Drainage Management Master Plan				
	Consulting Fees	L.S.	1	$120,000	$120,000
				TOTAL	**$120,000**

Project: ST2 – Stormceptor Treatment System for Stormwater Outfalls

Priority: Medium **Type:** Construction

Trigger: Expansion

Location

Issue

Stormwater outfalls draining into the lake are not treated prior to discharge.

Scope

This project considers the implementation of this system at 13 remaining lake outfalls throughout the Town. Works will include the following.

- Supply and installation of package type stormwater treatment system for removal of both suspended solids and hydrocarbons. Several technology options will be assessed during detailed design.

- Reconstruction of the existing outfall piping including treatment system bypass for flows resulting from a major rainfall event.
- Restoration of disturbed areas including riparian area plantings.

Time Frame

+/- 5 years

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
	Project ST2: Stormceptor Treatment System for Stormwater Outfalls				
1.0	Supply Stormceptor treatment system	LS	1	$100,000	$100,000
2.0	Installation of treatment system including excavation and dewatering	LS	1	$50,000	$50,000
3.0	Supply and Install Storm Manholes	each	2	$10,000	$20,000
4.0	Storm sewer connections	each	2	$10,000	$20,000
5.0	Storm sewer main re-alignment	m	40	$500	$20,000
6.0	Riparian area planting	LS	1	$20,000	$20,000
				Subtotal	**$230,000**
				Engineering (15%)	$35,000
				Contingency (30%)	$69,000
				TOTAL	**$334,000**

APPENDIX D

Municipal Roads Project Sheets

Our File: 302-658
November 28, 2024

2025 Capital Plan

Project W5 and R1: 74th Ave. Water Main Upsizing, Heron Lane and Loon Crescent Replacement, and Loon Crescent Looping

There is not currently a continuous large diameter trunk main between the East and West portions of the Town. This limits distribution capacity for fire flows. This trunk main on 74th Ave. enhances flows to the East side of the Town core and East of Osoyoos Lake, allowing flows to gravity flow more effectively from the 340 reservoirs (under non-pumping conditions). Also, these benefits will be critical to improve system performance when water treatment plants, the East Reservoir, and Small Scall, Multi-unit housing demands (SSMUH) are implemented.

Watermain works on Heron Lane and Loon Crescent replace expired 150 mm asbestos cement pipes with upgraded 200 mm PVC mains. Upsizing these mains ensures compliant fire flows will be achieved when experiencing increased SSMUH demands.

Loon Crescent is being looped to 89th Street with a 200 mm watermain. This addresses concerns of chlorine residual degradation at the end of watermains that only experience low residential demands, resulting in low water turnover. Also, it improves fire flows on Loon Crescent

Scope: All following watermain works include replacement of valves, services, hydrants and all other appurtenances.

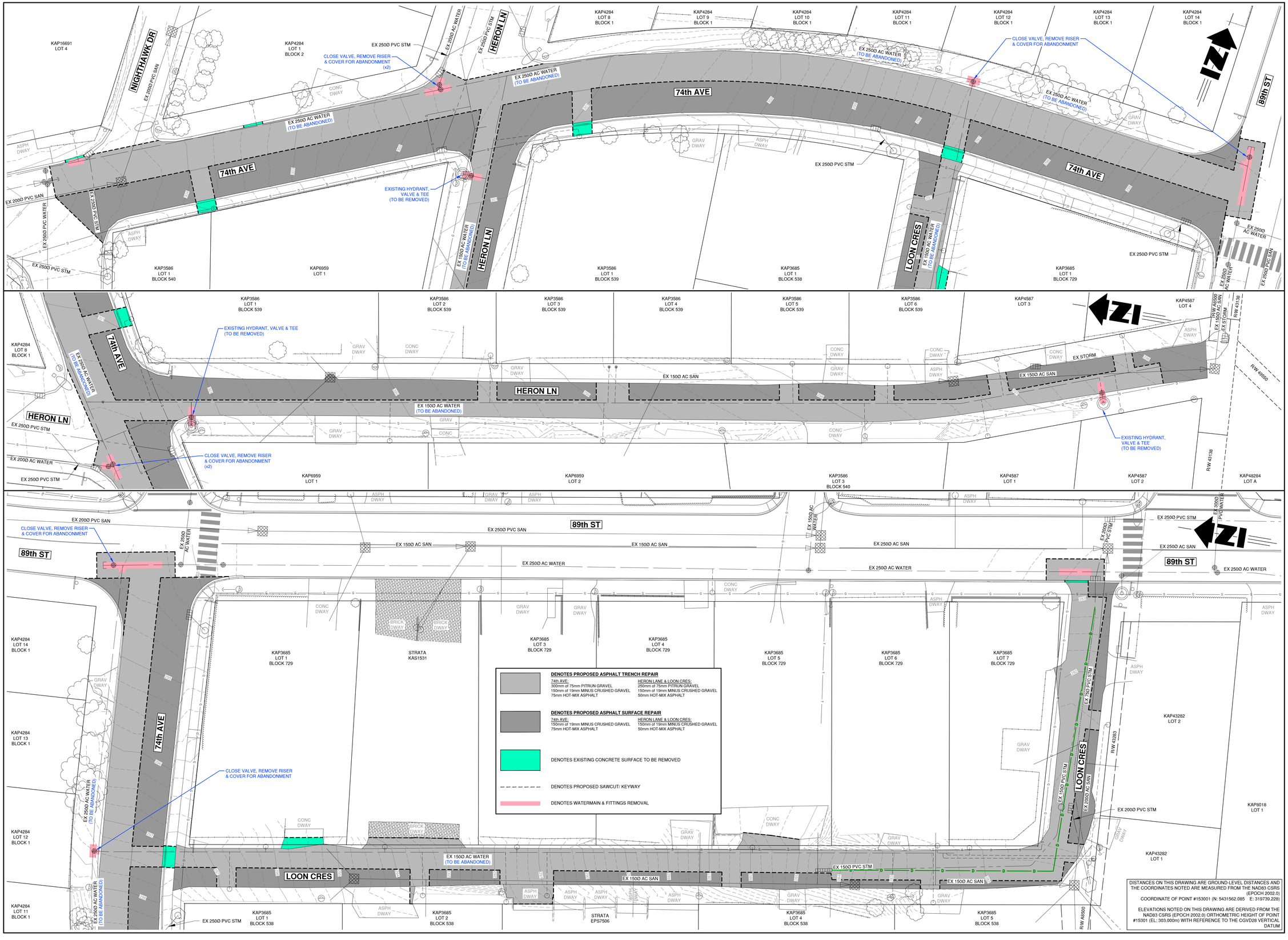
74th Avenue: Supply and install 200 m of 350 mm pipe with applicable appurtenances and connection to the existing water system on 74th Avenue from Nighthawk Dr. to 89th Street.

Heron Lane and Loon Crescent: Supply and install 360 m of 200 mm pipe with applicable appurtenances and connection to the existing water system on 74th Ave for Heron Lane and Loon Crescent, and connection to 89th Street for Loon Crescent.

Road Works: This scope only includes the re-instating of impacted road surfaces from trenching works. The remainder of scope for complete road restoration including replacing road surfaces, curb and gutters, and sidewalks are considered in the Roads Capital Plan Projects.

Capital cost (including 25% contingency, excluding GST) estimate:

$283,800 (Roads)
$713,525 (Water)
$997,325



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		ASPHALT ROAD
		GRAVEL ROAD
S	S	SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		SERVICE & IC
D	D	STORM MAIN
		STORM DITCH
		STORM CULVERT
		SERVICE & IC
		STORM MANHOLE
		CB - STD & SIDE INLET
		DRYWELL
W	W	WATER MAIN
		SERVICE & CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
G	G	GAS
P	P	POWER
T	T	TEL
C	C	CABLE
SL	SL	ST LIGHT CONDUIT
		POLE & ANCHOR
		STREET LIGHT
		CONTROL MONUMENT
		IRON POST
		TRAVERSE HUB

No.	DATE	DESCRIPTION	BY	APPD
3	NOV 11/24	ISSUED FOR TENDER	TT	SU
2	AUG 09/24	RE-ISSUED FOR IHA PERMIT	TT	SU
1	JUNE 26/24	ISSUED FOR IHA PERMIT	TT	SU

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE
201 - 2079 Falcon Road ≡ Kamloops BC ≡ V2C 4J2
tel 250.828.0881 ≡ fax 250.828.0717
info@TRUE.bc.ca

Osoyoos
Canada's warmest welcome

74th AVE, HERON LANE, LOON CRES WATERMAIN REPLACEMENT

REMOVALS PLAN

SCALE	0 1:250 10
DESIGN BY	TT
DRAWN BY	OWL
DATE	2024-01-24
PROJECT REFERENCE No.	302-2161
DRAWING No.	302-2161 03
SHEET	OF
ISSUE/REV.	3

Our File: 302-658
November 28, 2024

2025 Capital Plan

Project R4: Roads Condition Assessment

This is an Engineering project to develop a Road Condition Assessment of major travel routes in the Town. The scope of this project includes a pavement that will provide additional information for consideration for capital upgrades. Works for these programs include:

- Network linear referencing
- Pavement surface condition evaluation with Pavement Surface Profiler vehicle
- Pavement distress surveying
- Pavement roughness surveying
- Pavement condition indices (pavement damage, rutting, roughness, composite)
- Conditions assessment
    - Performance modelling
    - Rehabilitation and maintenance strategies
    - Life cycle cost analysis
    - Budget analysis
- Inventory signs, light, drainage facilities and other applicable infrastructure

Capital cost estimate for Engineering Fees: $100,000

Our File: 302-658
November 28, 2024

2025 Capital Plan

Project R5: Roads Master Plan and Traffic Analysis

This is an Engineering project to develop a Transportation Master Plan which is a comprehensive document including the following scopes.

- Traffic Analysis (of major route):
  - Review existing traffic counts and collect new traffic counts
  - Develop network models for weekday AM and PM peak hour,
  - Problem and Improvement Identification,
  - Future conditions assessment
- Risk / Criticality Assessment
- Five (5) Year Capital Plan (Ongoing Updates)

This work has a variety of independent deliverables that will feed into future guiding documents including DCC Program, Subdivision / Servicing Bylaw, Active Transportation Network and Capital Planning.

Capital cost estimate for Engineering Fees: $140,000

Our File: 302-2031
December 3, 2024

2025 Capital Plan

89th Street Reconstruction 78th Ave to Kingfisher Drive

89th Street is a major municipal road providing local road access to residential areas south of Main Street. 89th Street presently comprises a pavement surface 7m-9.7m in width with limited storm drainage works. Curb/gutter and sidewalk exists on most of the east side. The pavement surface of 89th Street is in poor condition due to age as it was installed in the mid-1990's. There are numerous locations indicating gravel road base failures due to the lack of storm sewer infrastructure.

This project was designed in 2022 to be "shovel ready" and includes multi-use paths. The project is phased over three parts as outlined below and illustrated on the following drawings 302-2031-SK2, SK3, SK4:

Part A – 78th Avenue to Main Street

- Replacement of gravel road structure
- 7m paved road travel surface
- Concrete curb and gutter both sides
- 3m width multi-use asphalt path on the west side
- Water system upsizing / replacements of aging AC pipe
- Localized storm sewer drainage works
- street lighting

Part B – Main Street to 70th Avenue

- Replacement of gravel road structure
- 7m paved road travel surface
- Concrete curb and gutter on west side
- 3m width multi-use asphalt path on the west side
- Water system upsizing / replacements of aging AC pipe
- Storm sewer collection system comprising catch basins, manholes and main lines
- street lighting

Part C – 70th Avenue to Kingfisher Drive

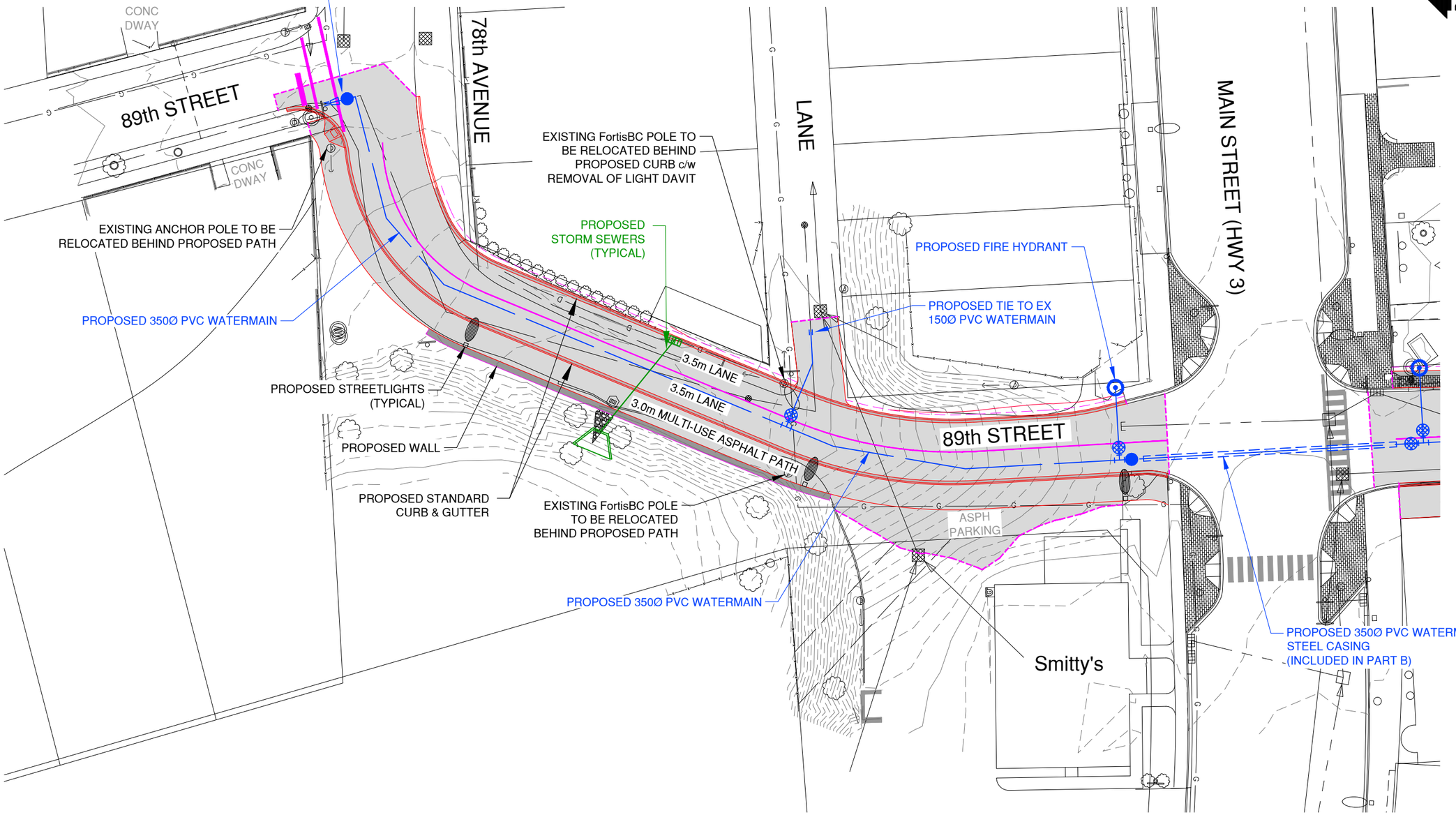
- Replacement of gravel road structure
- 7m paved road travel surface
- Concrete curb and gutter on west side
- 3m width multi-use asphalt path on the west side
- Water system upsizing / replacements of aging AC pipe
- Storm sewer collection system comprising catch basins, manholes and main lines
- street lighting

Capital cost estimates for each phase are presented on the pages following (including 25% contingency and engineering, excluding GST):

Part A – 78th Avenue to Main Street
$414,701 (Roads)
$115,888 (Active Transportation)
$530,588 (Roads Sub-total)
$165,387 (Water)
$695,975 (Total Project)

Part B – Main Street to 70th Avenue
$1,141,288 (Roads)
$133,575 (Active Transportation)
$1,274,863 (Roads Sub-total)
$605,675 (Water)
$1,880,538

Part C – 70th Avenue to Kingfisher Drive
$1,644,398 (Roads)
$177,075 (Active Transportation)
$1,821,473 (Roads Sub-total)
$852,727 (Water)
$2,674,200



DENOTES PROPOSED ASPHALT SURFACE

DENOTES PROPOSED CONCRETE SIDEWALK & CURB

TOWN OF OSOYOOS
89th STREET RECONSTRUCTION
78th AVENUE to MAIN STREET

TRUE CONSULTING

DESIGN BY: TT	
SCALE: 1:500	
DWG NO.: SK2 302-2031	REV:
DRAWN BY: TT	
DATE: SEPT 2024	

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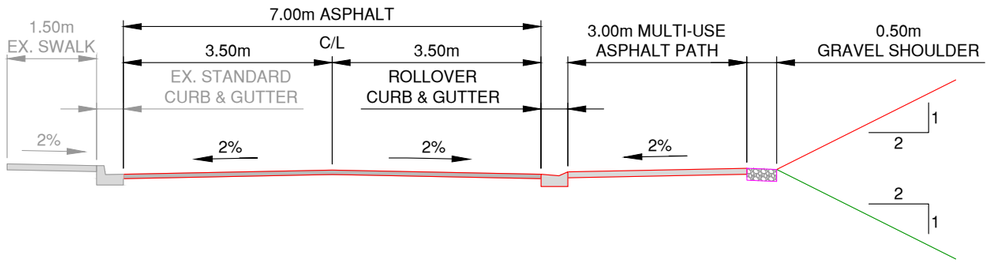
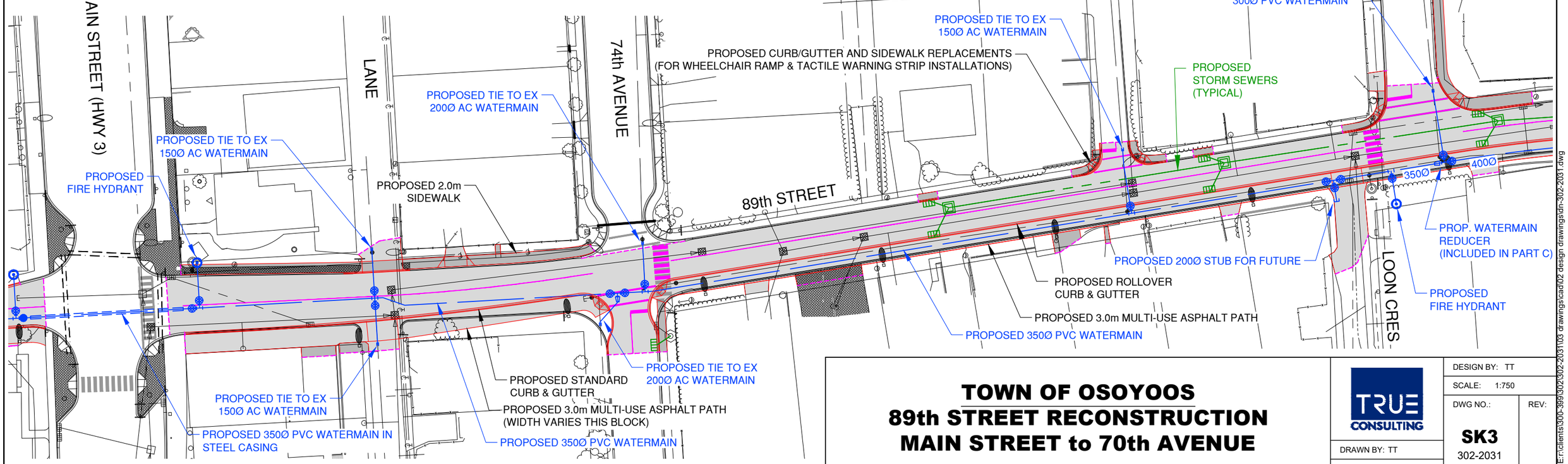


TYPICAL ROAD SECTION

SCALE 1:100

DENOTES PROPOSED ASPHALT SURFACE

DENOTES PROPOSED CONCRETE SIDEWALK & CURB



TOWN OF OSOYOOS
89th STREET RECONSTRUCTION
MAIN STREET to 70th AVENUE

TRUE CONSULTING

DESIGN BY: TT	
SCALE: 1:750	
DWG NO.: SK3 302-2031	REV:
DRAWN BY: TT	
DATE: SEPT 2024	

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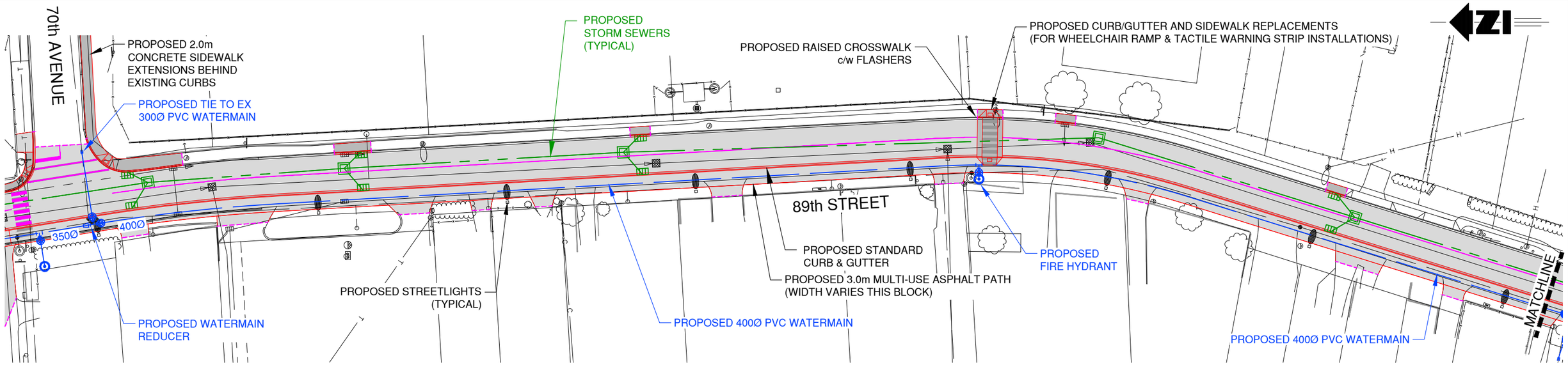

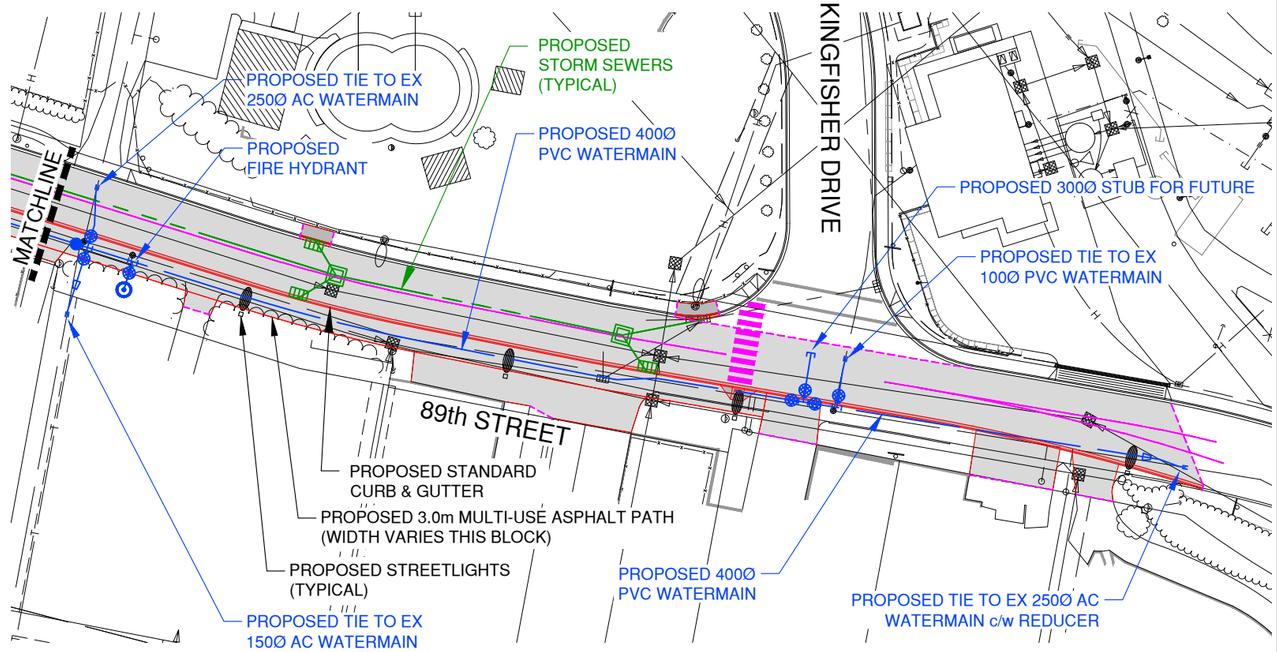

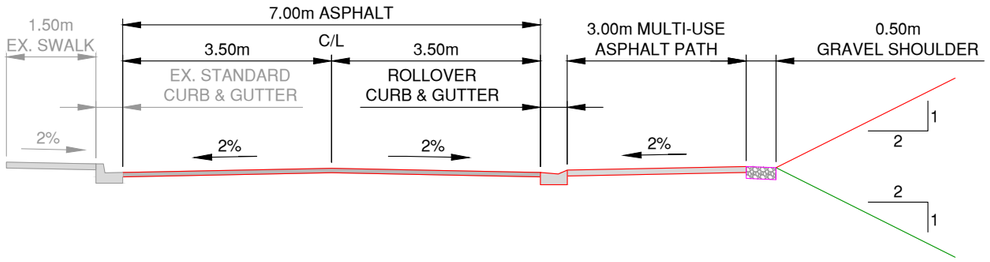

TYPICAL ROAD SECTION

SCALE 1:100

DENOTES PROPOSED ASPHALT SURFACE

DENOTES PROPOSED CONCRETE SIDEWALK & CURB

TOWN OF OSOYOOS
89th STREET RECONSTRUCTION
70th AVENUE to KNIGFISHER DRIVE

TRUE CONSULTING

DRAWN BY: TT

DATE: SEPT 2024

DESIGN BY: TT

SCALE: 1:750

DWG NO.: SK4 302-2031

REV:

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Our File: 302-474
October 1, 2024

2025 Capital Plan

Project R12: Intersection Improvements at 89th Street and 62nd Avenue

This intersection connects 89th Street and 62nd Avenue (two major municipal roads) via a split wye type intersection with very limited visibility. 62nd Avenue was reconstructed in 1996 from 89th Street up to Highway 97 adding curb/gutter, sidewalks, and storm sewers. Very little traffic control exists when entering 89th Street from the west. This intersection is typically called “the chute” by locals.

The design was completed in late 2020 having the cost estimate updated recently to reflect current rates. All vehicular traffic has been designed to congregate at one controlled intersection improving sightlines dramatically without having to look over your shoulder. Legion Beach Park is reconfigured to provide better traffic and pedestrian use. Solar lit multi-use paths and extensive landscaping extend throughout the proposed project. A backlit “Osoyoos” sign is mounted to the proposed wall face which is visible form the lake during the night. Illustrations follow on drawing 302-474-C1. This project comprises of:

- Complete road structure replacements
- 720 m2 of textured concrete block walls
- Curb/gutter and sidewalks
- Asphalt surface road and traffic markings
- Sanitary and Storm sewer relocates
- Water system upsizing / replacements of aging AC pipe
- Street lighting and solar path lighting
- Mature landscape trees and surface treatments

Capital cost estimate:

$3,230,409 (Roads)
$453,466 (Water)
$3,683,875

NIGHTHAWK DR

OSPREY PLACE

89th STREET

62nd AVENUE

LEGION BEACH PARK

SAFARI BEACH RESORT

OLEANDER DR

89th STREET

OSOYOOS LAKE

PROPOSED STREETLIGHT (TYP)

PROPOSED 1.5m SIDEWALK

PROPOSED 1.5m SIDEWALK

PROPOSED STREETLIGHT (TYP)

WASHROOM FACILITY (BY OTHERS)

PROPOSED 2.0m ASPHALT WALKWAY c/w SOLAR BOLLARD LIGHTING

PROPOSED "OSOYOOS" SIGN ON WALL FACE

PROPOSED 2.0m CONCRETE RAMP TO WATER LEVEL @ +/-11%

PROPOSED ASPHALT DRIVEWAY TIE-IN

PROPOSED 2.0m SIDEWALK c/w SOLAR BOLLARD LIGHTING

PROPOSED 1.5m SIDEWALK

PROPOSED 3.0m SIDEWALK c/w SOLAR BOLLARD LIGHTING

PROPOSED CONCRETE RAMP @ 4.9%

PROPOSED RETAINING WALL

PROPOSED LANDSCAPE SURFACE

PROPOSED COLORED CONCRETE

EXISTING ASPHALT SURFACES

PROPOSED CONCRETE CURB / SIDEWALK

PROPOSED TRAFFIC MARKINGS

TOWN OF OSOYOOS
INTERSECTION IMPROVEMENTS at 89th STREET & 62nd AVENUE

TRUE

DESIGN BY: TT

SCALE: 1:1000

DWG NO.: C1 302-474

REV:

DRAWN BY: TT

DATE: SEPT 2024

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Town of Osoyoos
Intersection Improvements at 89th Street and 62nd Avenue
Class D Cost Estimate

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 1.0 - SURFACE REMOVALS					
1.1	Asphalt c/w sawcutting	m²	5200	$10.00	$52,000.00
1.2	Concrete				
1.2.1	Curbs	m	300	$30.00	$9,000.00
1.2.2	Sidewalks	m²	420	$30.00	$12,600.00
1.2.3	No-post barriers	m	93	$20.00	$1,860.00
1.2.4	Cast-in-place walls	m²	265	$45.00	$11,925.00
1.2.5	Cast-in-place steps	m²	3	$45.00	$135.00
1.3	Strip, clear and grub	m²	1100	$5.00	$5,500.00
				Subtotal Part 1.0	**$93,020.00**
PART 2.0 - SANITARY SEWERS					
2.1	Remove and dispose of existing				
2.1.1	200Ø AC main	m	130	$150.00	$19,500.00
2.1.2	Precast manholes	ea.	2	$1,500.00	$3,000.00
2.2	Supply and install 250Ø DR35 PVC piping	m	130	$300.00	$39,000.00
2.3	Supply and install manholes	ea.	3	$8,000.00	$24,000.00
2.4	450Ø steel casing c/w casing spacers, joint restraints and end seals (by open-cut)	m	34	$4,500.00	$153,000.00
2.5	Tie to existing	ea.	2	$4,000.00	$8,000.00
2.6	Adjust existing manholes to final grade	ea.	3	$500.00	$1,500.00
2.7	Service tie-ins	ea.	2	$2,000.00	$4,000.00
2.8	Forcemain relocation (lowering)				
2.8.1	Lower existing 400Ø C905 DR35 PVC	m	45	$300.00	$13,500.00
2.8.2	Fittings c/w thrust blocks and joint restraints	ea.	3	$2,500.00	$7,500.00
2.9	Allowance for by-pass pumping	LS			$15,000.00
				Subtotal Part 2.0	**$288,000.00**
PART 3.0 - STORM SEWERS					
3.1	Remove and dispose of existing				
3.1.1	600Ø PVC	m	46	$320.00	$14,720.00
3.1.2	600Ø concrete	m	20	$500.00	$10,000.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 3.0 - STORM SEWERS - continued					
3.1.3	200Ø / 250Ø PVC	m	72	$150.00	$10,800.00
3.1.4	Manholes	ea.	2	$1,500.00	$3,000.00
3.1.5	Drywells	ea.	2	$500.00	$1,000.00
3.1.6	Catchbasins	ea.	6	$200.00	$1,200.00
3.1.7	Outfalls	ea.	1	$1,200.00	$1,200.00
3.2	Supply and install piping				
3.2.1	600Ø PVC	m	45	$900.00	$40,500.00
3.2.2	375Ø PVC	m	66	$420.00	$27,720.00
3.2.3	250Ø PVC	m	62	$280.00	$17,360.00
3.2.4	200Ø PVC	m	75	$260.00	$19,500.00
3.1	Supply and install manholes				
3.3.1	1500Ø Precast	ea.	3	$10,000.00	$30,000.00
3.3.2	1050Ø Precast	ea.	2	$8,000.00	$16,000.00
3.4	In-line stormceptor STC-2000	ea.	1	$30,000.00	$30,000.00
3.5	Catchbasins	ea.	8	$3,000.00	$24,000.00
3.6	Relocate existing catchbasin	ea.	1	$1,200.00	$1,200.00
3.7	800Ø steel casing c/w casing spacers, joint restraints and end seals (open cut)	m	6	$7,000.00	$42,000.00
3.8	Tie to existing	ea.	3	$3,000.00	$9,000.00
				Subtotal Part 3.0	**$299,200.00**
PART 4.0 - WATER SYSTEM					
4.1	Remove and dispose of existing				
4.1.1	250Ø AC piping	m	320	$150.00	$48,000.00
4.1.2	300Ø AC piping	m	100	$200.00	$20,000.00
4.1.3	Hydrant	ea.	1	$2,000.00	$2,000.00
4.2	Supply and install piping				
4.2.1	300Ø PVC	m	100	$320.00	$32,000.00
4.2.2	250Ø PVC	m	320	$300.00	$96,000.00
4.2.3	150Ø PVC	m	12	$260.00	$3,120.00
4.3	500Ø steel casing c/w casing spacers, joint restraints and end seals (by open cut)	m	8	$4,800.00	$38,400.00
4.4	Appurtenances c/w thrust blocks and joint restraints				
4.4.1	250Ø Tee	ea.	2	$2,500.00	$5,000.00
4.4.2	300Ø Gate Valve	ea.	1	$6,000.00	$6,000.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 4.0 - WATER SYSTEM - continued					
4.4.3	250Ø Gate Valve	ea.	3	$4,000.00	$12,000.00
4.4.4	150Ø Gate Valve	ea.	1	$2,500.00	$2,500.00
4.4.5	300Ø Bends	ea.	3	$2,000.00	$6,000.00
4.4.6	250Ø Bends	ea.	10	$1,800.00	$18,000.00
4.4.7	Reducers	ea.	1	$3,000.00	$3,000.00
4.4.8	Air release valve	ea.	1	$8,000.00	$8,000.00
4.4.9	Hydrant assembly	ea.	1	$10,000.00	$10,000.00
4.5	Locate and tie to existing	ea.	4	$4,000.00	$16,000.00
4.6	Water services complete	ea.	7	$2,400.00	$16,800.00
4.7	Irrigation service	ea.	2	$3,000.00	$6,000.00
				Subtotal Part 4.0	**$348,820.00**
PART 5.0 - STREET LIGHTS					
5.1	Streetlight c/w base, pole, luminaire	ea.	9	$9,000.00	$81,000.00
5.2	Walkway light c/w base	ea.	27	$2,000.00	$54,000.00
5.3	50mm PVC ducting	m	470	$65.00	$30,550.00
5.4	"Osoyoos" illuminated sign mounted to wall	ea.	1	$5,000.00	$5,000.00
5.5	Electrical service kiosk c/w base, meter	ea.	1	$9,000.00	$9,000.00
5.56	Service pilaster from designated pole	ea.	1	$2,000.00	$2,000.00
5.7	Wiring and commissioning c/w dimmable timer	LS			$10,000.00
				Subtotal Part 5.0	**$191,550.00**
PART 6.0 - SHALLOW UTILITIES					
6.1	Lowering of gas mainline	m	60	$200.00	$12,000.00
6.2	Relocating of FortisBC power poles				$0.00
6.2.1	Poles	ea.	2	$15,000.00	$30,000.00
6.2.2	Anchors	ea.	5	$2,000.00	$10,000.00
6.2.3	Service to pumphouse	LS			$1,500.00
6.3	Remove existing streetlight davit	ea.	6	$1,500.00	$9,000.00
				Subtotal Part 6.0	**$62,500.00**
PART 7.0 - RETAINING WALLS					
7.1	Redi-rock block (face area)	m²	720	$600.00	$432,000.00
7.2	Redi-rock caps	m	125	$350.00	$43,750.00
7.3	1.2m high railing	m	290	$160.00	$46,400.00
				Subtotal Part 7.0	**$522,150.00**

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 8.0 - ROADWORKS					
8.1	Construct base grade				
8.1.1	Onsite cut to fill locations	m^3	1700	$25.00	$42,500.00
8.1.2	Import of common fill	m^3	1100	$35.00	$38,500.00
8.2	Concrete curbs c/w base gravels				
8.2.1	Standard type	m	820	$190.00	$155,800.00
8.2.2	Rolled type	m	75	$190.00	$14,250.00
8.2.3	Median c/w epoxy	m	22	$110.00	$2,420.00
8.3	Sidewalks c/w base gravels				
8.3.1	Concrete sidewalk/walkways/ramps	m^2	1010	$160.00	$161,600.00
8.3.2	Driveway crossover (190mm thickness)	m^2	50	$180.00	$9,000.00
8.3.3	Wheelchair ramp c/w tactile warning	ea.	7	$4,200.00	$29,400.00
8.3.4	Island infill	m^2	16	$190.00	$3,040.00
8.3.5	Coloured concrete infill areas	m^2	85	$220.00	$18,700.00
8.3.6	Precast brick paver	m^2	20	$190.00	$3,800.00
8.4	Hot-mix asphalt c/w base gravels				
8.4.1	75mm thickness in roadways	m^2	3150	$85.00	$267,750.00
8.4.2	50mm thickness in parking lot	m^2	1050	$75.00	$78,750.00
8.4.3	50mm thickness in driveways	m^2	260	$65.00	$16,900.00
8.5	Signage				
8.5.1	New c/w post and base	ea.	10	$900.00	$9,000.00
8.5.2	Relocate existing	ea.	3	$400.00	$1,200.00
8.5.3	Remove existing to public works	ea.	10	$200.00	$2,000.00
8.6	0.5m width gravel shouldering	m	320	$15.00	$4,800.00
8.7	Traffic markings	LS			$20,000.00
				Subtotal Part 8.0	**$879,410.00**
PART 9.0 - LANDSCAPING AND IRRIGATION					
9.1	Irrigation vault c/w base, enclosure, piping, backflow preventor, meter	LS			$9,000.00
9.2	Electrical 120V service from streetlight	LS			$500.00
9.3	Allowances for irrigation system	LS			$6,000.00
9.4	Allowances for landscaping	m^2	1370	$80.00	$109,600.00
				Subtotal Part 9.0	**$125,100.00**

PART 10.0 - IMPACT ASSESSMENT/ARCHEOLOGICAL COSTS			
10.1	Section 11 permitting	LS	$5,000.00
10.2	Archeological Report	LS	$10,000.00
10.3	Geotechnical Report	LS	$5,000.00
10.4	Environmental Report	LS	$4,000.00
		Subtotal Part 10.0	**$24,000.00**

SUMMARY	
Part 1.0 - Surface Removals	**$93,020.00**
Part 2.0 - Sanitary Sewers	**$288,000.00**
Part 3.0 - Storm Sewers	**$299,200.00**
Part 4.0 - Water System	**$348,820.00**
Part 5.0 - Street Lights	**$191,550.00**
Part 6.0 - Shallow Utilities	**$62,500.00**
Part 7.0 - Retaining Walls	**$522,150.00**
Part 8.0 - Roadworks	**$879,410.00**
Part 9.0 - Landscaping and Irrigation	**$125,100.00**
Part 10.0 - Impact Assessment / Archeological Costs	**$24,000.00**
Subtotal Parts 1.0 to 10.0	**$2,833,750.00**
Contingency and Engineering (30%)	**$850,125.00**
Total Contract Sum	**$3,683,875.00**

Prepared by: Todd Turnbull, AScT, CPWI 3

Our File: 302-1381-002
October 1, 2024

2025 Capital Plan

92nd Avenue Reconstruction Highway 97 to Spartan Drive, Part A: R16, Part B: R17, Part C: R18

92nd Avenue is a major municipal road providing local road access to residential areas north of Main Street and the downtown core via 87th Street. 92nd Avenue presently comprises a pavement surface 7.4m in width with no storm drainage works, curb, gutter or sidewalk. The pavement surface of 92nd Avenue is in poor condition due to age and trench repair of water distribution system upgrading in the early 1990's.

This project was conceptually designed in 2010. In 2022 it was designed to be "shovel ready" and revised to include multi-use paths. The project is phased over three parts as outlined below and illustrated on the following drawings 302-1381-002-SK1, SK2, SK3:

Part A – Highway 97 to Jubilee Drive & Part B – Jubilee Drive to 87th Street

- Replacement of gravel road structure
- 7m paved road travel surface with 2.5m parking lane on one side
- Concrete curb and gutter both sides
- 3m width multi-use asphalt path on the north side
- drainage works comprising catch basins and drywells
- street lighting
- landscaping

Part C – 87th Street to Spartan Drive

- Replacement of gravel road structure
- 7m paved road travel surface
- Concrete curb and gutter on south sides
- 3m width multi-use asphalt path on the south side
- drainage works comprising catch basins and drywells
- localized precast concrete retaining walls
- street lighting
- landscaping

Capital cost estimates for each phase are presented on the pages following:

Part A: R16 – Highway 97 to Jubilee Drive

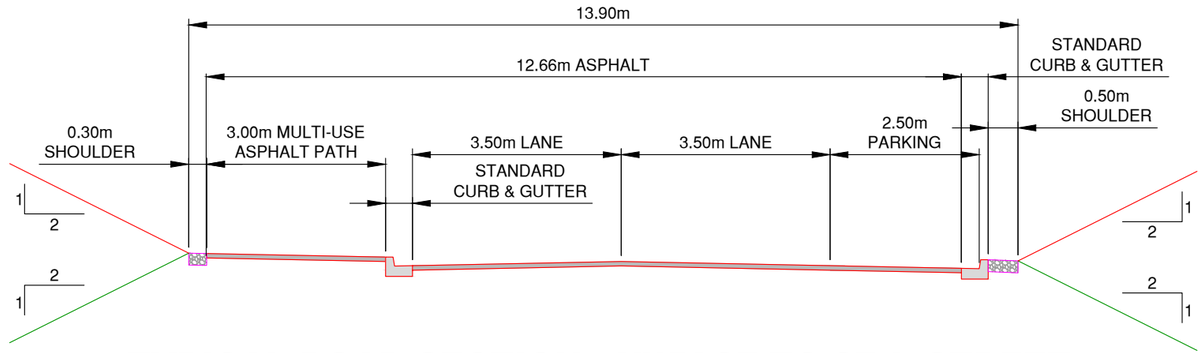
Active Transportation:	$189,378.13
Roads:	$1,170,346.88
Total:	**$1,359,725.00**

Part B: R17 – Jubilee Drive to 87th Street

Active Transportation:	$195,196.25
Roads:	$1,038,922.50
Total:	**$1,234,118.75**

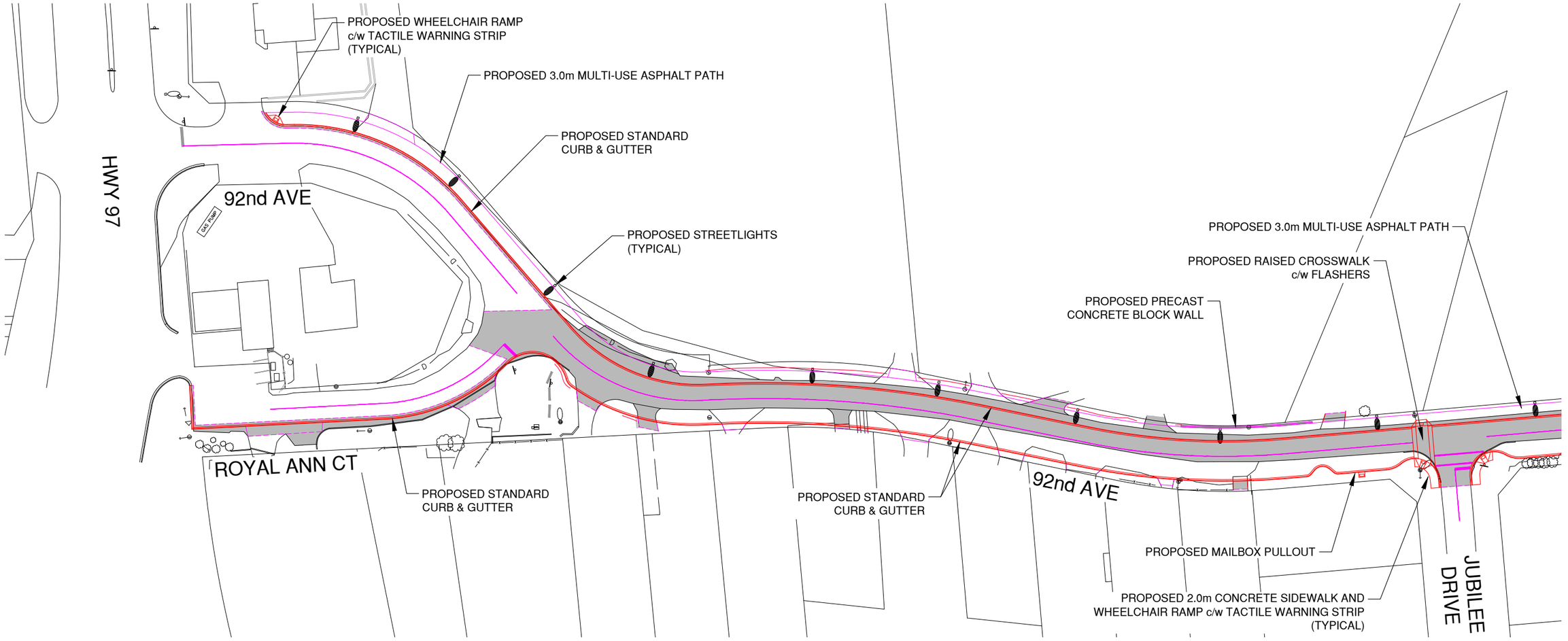
Part C: R18 – 87th Street to Spartan Drive

Active Transportation:	$459,240.00
Roads:	$1,251,947.50
Total:	**$1,711,187.50**



TYPICAL ROAD SECTION - HWY 97 TO 87th STREET

SCALE 1:100



DENOTES EXISTING ASPHALT TO BE REMOVED

TOWN OF OSOYOOS
92nd AVENUE RECONSTRUCTION
HIGHWAY 97 to JUBILEE DRIVE

TRUE

DESIGN BY: TT	
SCALE: 1:1000	
DWG NO.: SK1 302-1381-002	REV:
DRAWN BY: TT	
DATE: SEPT 2024	

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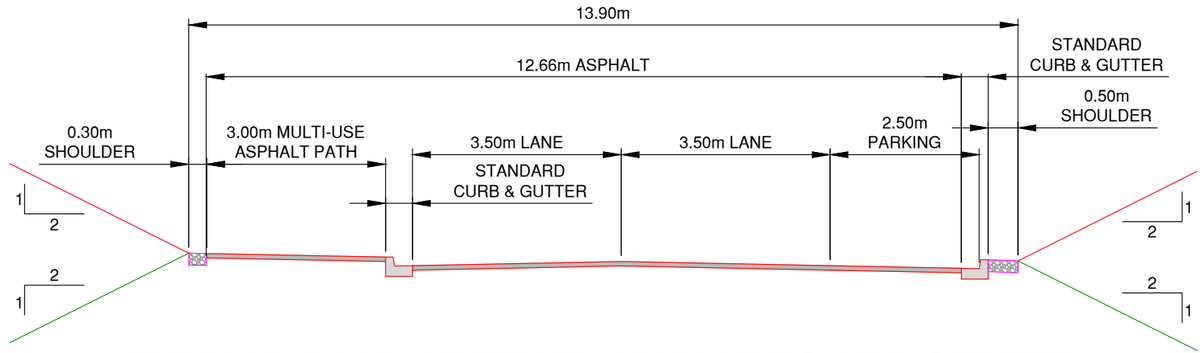
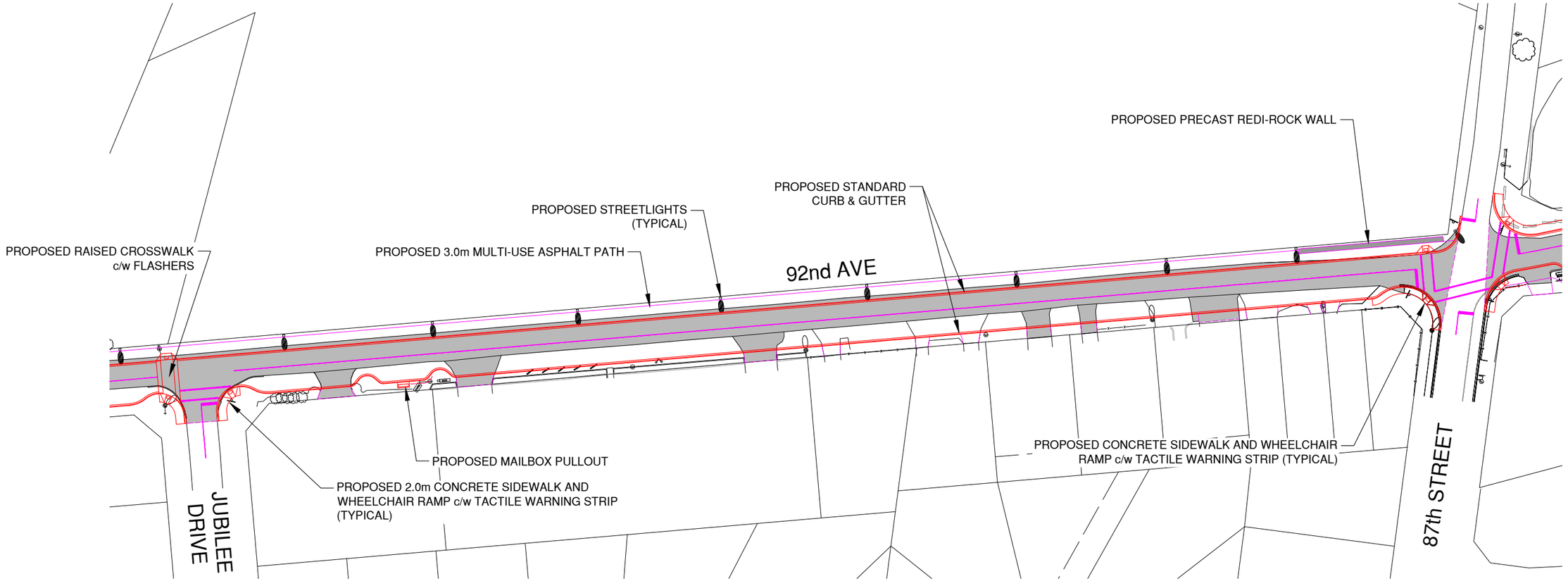


TYPICAL ROAD SECTION - HWY 97 TO 87th STREET

SCALE 1:100



DENOTES EXISTING ASPHALT TO BE REMOVED

TOWN OF OSOYOOS
92nd AVENUE RECONSTRUCTION
JUBILEE DRIVE to 87th STREET

TRUE

DESIGN BY:	TT
SCALE:	1:1000
DWG NO.:	SK2
	302-1381-002
REV:	
DRAWN BY:	TT
DATE:	SEPT 2024

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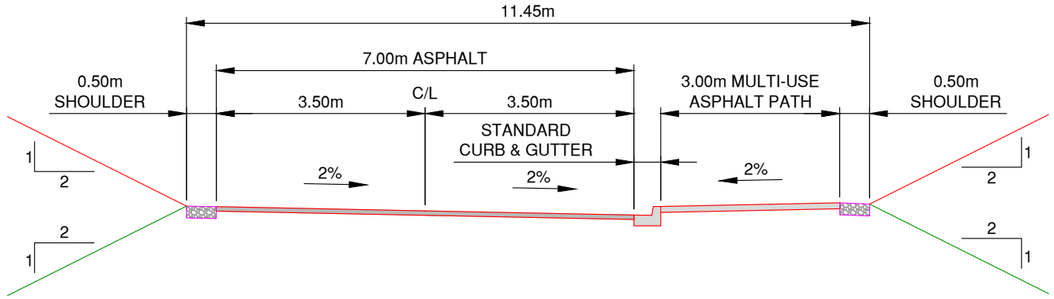
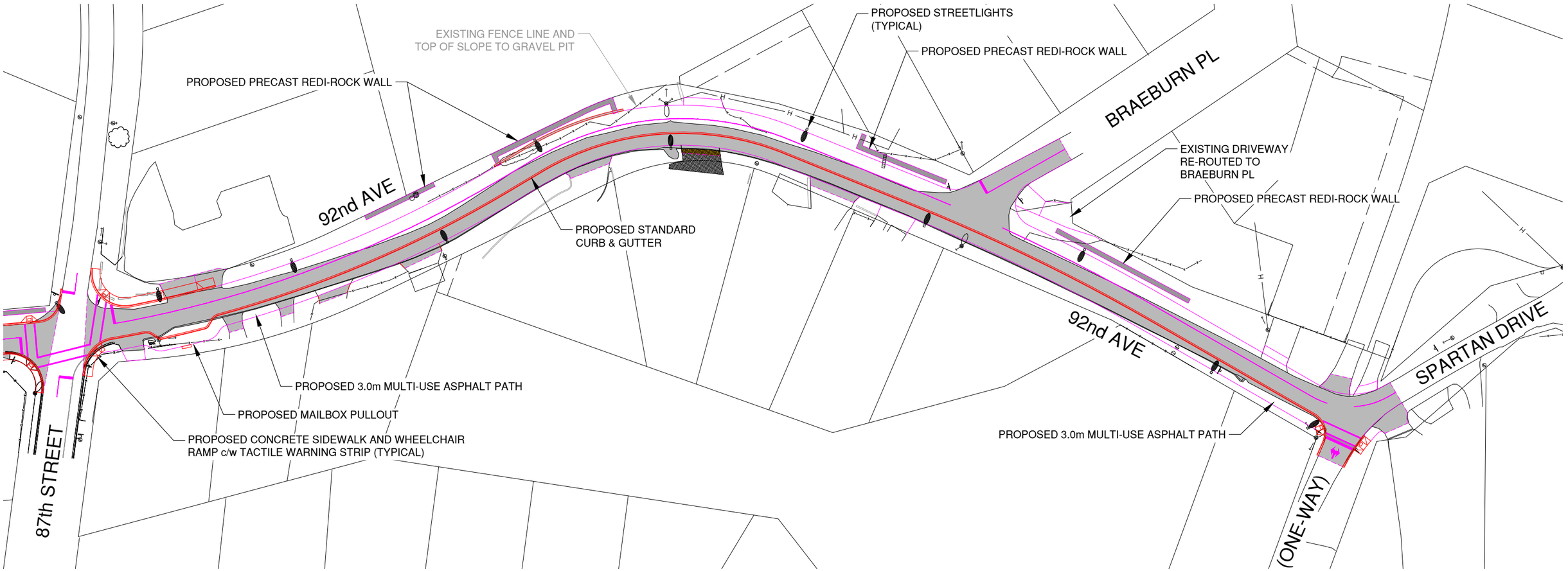


TYPICAL ROAD SECTION - 87th STREET TO SPARTAN DRIVE

SCALE 1:100



DENOTES EXISTING ASPHALT TO BE REMOVED

TOWN OF OSOYOOS
92nd AVENUE RECONSTRUCTION
87th STREET to SPARTAN DRIVE

TRUE

DESIGN BY:	TT
SCALE:	1:1000
DWG NO.:	SK3
	302-1381-002
REV:	
DRAWN BY:	TT
DATE:	SEPT 2024

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Town of Osoyoos
92nd Avenue Reconstruction - PART A
Cost Estimate

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART A - HWY 97 to JUBILEE DRIVE					
A.1-REMOVALS					
1.1	Asphalt surfaces c/w sawcutting	m²	2400	$10.00	$24,000.00
1.2	Concrete surfaces c/w sawcutting				
	1.2.1 Curbs	m	3	$30.00	$90.00
	1.2.2 Sidewalks and driveways	m²	50	$30.00	$1,500.00
1.3	Strip, clear and grub Blvd areas c/w shrubbery	m²	1130	$8.00	$9,040.00
1.4	Remove and salvage ex signs for reinstatement	ea.	2	$150.00	$300.00
1.5	Remove existing storm sewers				
	1.5.1 Drywells	ea.	1	$1,000.00	$1,000.00
	1.5.2 450Ø CSP culvert	m	30	$200.00	$6,000.00
1.6	Remove existing water system				
	1.6.1 Hydrant, tee and valve (STA 0+200)	LS	1	$3,000.00	$3,000.00
	1.6.2 250Ø PVC piping	m	17	$700.00	$11,900.00
1.7	Remove existing FortisBC light davit	ea.	3	$1,500.00	$4,500.00
1.8	Relocate existing FortisBC pole	ea.	2	$8,000.00	$16,000.00
1.9	Relocate existing FortisBC anchor/service pole	ea.	3	$5,000.00	$15,000.00
				Subtotal A.1	**$92,330.00**
A. 2-STORM SEWERS					
2.1	Piping				
	2.1.1 450Ø perforated PVC	m	24	$600.00	$14,400.00
	2.1.2 300Ø PVC	m	45	$480.00	$21,600.00
	2.1.3 250Ø PVC	m	50	$400.00	$20,000.00
	2.1.4 450Ø PVC end caps	ea.	3	$1,000.00	$3,000.00
2.2	Drywells	ea.	3	$6,000.00	$18,000.00
2.3	Standard type catchbasins	ea.	6	$3,000.00	$18,000.00
2.4	Inlet structure c/w grillage	ea.	1	$7,000.00	$7,000.00
				Subtotal A.2	**$102,000.00**

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
A.3-WATER SYSTEM					
3.1	Hydrant, tee, gate valve, couplers, +/-6m-250Ø C900 PVC,+/-8m-150Ø C900 PVC c/w locate and tie to existing (STA 0+182)	LS	1	$15,000.00	$15,000.00
3.2	Mainline interconnect at existing hydrant location c/w +/-6m-250Ø C900 PVC, couplers, and locate/tie	LS	1	$3,000.00	$3,000.00
				Subtotal A.3	**$18,000.00**
A.4-STREET LIGHTING					
4.1	Precast base	ea.	9	$1,800.00	$16,200.00
4.2	RPVC Street light duct	m	300	$65.00	$19,500.00
4.3	Poles and luminaires	ea.	9	$6,000.00	$54,000.00
4.4	Metered kiosk	LS	1	$15,000.00	$15,000.00
4.5	FortisBC service	LS	1	$2,500.00	$2,500.00
4.6	Wiring and commissioning	LS	1	$10,000.00	$10,000.00
4.7	Crosswalk flashers c/w pedestrian signs	ea.	2	$3,000.00	$6,000.00
				Subtotal A.4	**$123,200.00**
A.5- RETAINING WALL					
5.1	Small block precast wall (face area)	m²	33	$400.00	$13,200.00
				Subtotal A.5	**$13,200.00**
A.6 - ROADWORKS					
6.1	Construct base grade c/w hauling				
	6.1.1 Cut to fill	m³	650	$25.00	$16,250.00
	6.1.2 Export of common material	m³	1750	$20.00	$35,000.00
6.2	300mm depth of 75mm minus pitrun	m²	3920	$30.00	$117,600.00
6.3	Concrete curb c/w 150mm crush gravel				
	6.3.1 Standard type	m	660	$290.00	$191,400.00
6.4	Concrete sidewalk c/w 150mm crush gravel				
	6.4.1 Sidewalk areas	m²	30	$350.00	$10,500.00
	6.4.2 Wheelchair ramps c/w tactile warning strip	ea	3	$4,200.00	$12,600.00
6.5	Raised concrete sidewalk c/w rebar, dowel bars, grushed gravels and concrete variations	m²	43	$600.00	$25,800.00
6.6	Adjust ex utilities to final grade				
	6.6.1 Manholes	ea	3	$500.00	$1,500.00
	6.6.2 Valves	ea	10	$500.00	$5,000.00
	6.6.3 Utility vaults	ea	1	$1,500.00	$1,500.00
6.7	75mm hot-mix asphalt c/w 150mm of crushed gravel in roadway	m²	2360	$75.00	$177,000.00
6.8	50mm hot-mix asphalt c/w 150mm of crushed gravel in multi-use path	m²	945	$60.00	$56,700.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
A.6 - ROADWORKS					
6.9	Driveway restoration				
	6.9.1 50mm hot-mix asphalt c/w 100mm crushed gravel	m²	215	$65.00	$13,975.00
	6.9.2 100mm concrete c/w 100mm crushed gravel	m²	22	$350.00	$7,700.00
6.10	0.5m gravel shouldering	m	570	$15.00	$8,550.00
6.11	Reinstate ex signs c/w new concrete base	ea	2	$600.00	$1,200.00
6.12	Relocate mailboxes c/w concrete pad	LS	1	$1,200.00	$1,200.00
6.13	Traffic markings	LS	1	$3,000.00	$3,000.00
				Subtotal A.6	**$686,475.00**
A.7- LANDSCAPING					
7.1	Boulevard restoration	m²	635	$45.00	$28,575.00
7.2	Drought tolerant mature trees (allowance)	ea	20	$1,200.00	$24,000.00
				Subtotal A.7	**$52,575.00**

SUMMARY	
A.1 - Removals	**$92,330.00**
A.2 - Storm Sewers	**$102,000.00**
A.3 - Water System	**$18,000.00**
A.4 - Street Lighting	**$123,200.00**
A.5 - Retaining Wall	**$13,200.00**
A.6 - Roadworks	**$686,475.00**
A.7 - Landscaping	**$52,575.00**
Subtotal Parts A.1 - A.7	**$1,087,780.00**
Contingency & Engineering (25%)	**$271,945.00**
Total Contract Sum	**$1,359,725.00**

Town of Osoyoos
92nd Avenue Reconstruction - PART B
Cost Estimate

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART B - JUBILEE DRIVE TO 87th STREET					
B.1-REMOVALS					
1.1	Asphalt surfaces c/w sawcutting	m²	2450	$10.00	$24,500.00
1.2	Concrete surfaces c/w sawcutting				
	1.2.1 Curbs	m	17	$30.00	$510.00
	1.2.2 Sidewalks and driveways	m²	20	$30.00	$600.00
1.3	Strip, clear and grub areas c/w shrubbery	m²	1270	$8.00	$10,160.00
1.4	Remove and salvage ex signs for reinstatement	ea.	2	$150.00	$300.00
1.5	Remove existing catchbasin	ea.	1	$1,000.00	$1,000.00
1.6	Remove existing FortisBC light davit	ea.	2	$1,500.00	$3,000.00
				Subtotal B.1	**$40,070.00**
B. 2-STORM SEWERS					
2.1	Piping				
	2.1.1 450Ø perforated PVC	m	24	$600.00	$14,400.00
	2.1.2 250Ø PVC	m	80	$400.00	$32,000.00
2.2	Drywells	ea.	3	$6,000.00	$18,000.00
2.3	Standard type catchbasins	ea.	7	$3,000.00	$21,000.00
				Subtotal B.2	**$85,400.00**
B.3-STREET LIGHTING					
3.1	Precast base	ea.	9	$1,800.00	$16,200.00
3.2	RPVC Street light duct	m	310	$65.00	$20,150.00
3.3	Poles and luminaires	ea.	9	$6,000.00	$54,000.00
3.4	Wiring and commissioning	LS	1	$10,000.00	$10,000.00
				Subtotal B.3	**$100,350.00**
B.4- RETAINING WALL					
4.1	Precast Redi-rock concrete wall (face area)	m²	55	$550.00	$30,250.00
4.2	1.2m height safety rail/fence	m	35	$120.00	$4,200.00
				Subtotal B.4	**$34,450.00**

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
B.5 - ROADWORKS					
5.1	Construct base grade c/w hauling				
	5.1.1 Cut to fill	m^3	500	$25.00	$12,500.00
	5.1.2 Export of common material	m^3	1800	$20.00	$36,000.00
5.2	300mm depth of 75mm minus pitrun	m^2	4240	$30.00	$127,200.00
5.3	Concrete curb c/w 150mm crush gravel				
	5.3.1 Standard type	m	620	$290.00	$179,800.00
5.4	Concrete sidewalk c/w 150mm crush gravel				
	5.4.1 Sidewalk areas	m^2	57	$350.00	$19,950.00
	5.4.2 Wheelchair ramps c/w tactile warning strip	ea	3	$4,200.00	$12,600.00
5.5	Adjust ex utilities to final grade				
	5.5.1 Manholes	ea	3	$500.00	$1,500.00
	5.5.2 Valves	ea	1	$500.00	$500.00
5.6	75mm hot-mix asphalt c/w 150mm of crushed gravel in roadway	m^2	2750	$75.00	$206,250.00
5.7	50mm hot-mix asphalt c/w 150mm of crushed gravel in multi-use path	m^2	870	$60.00	$52,200.00
5.8	Driveway restoration				
	5.8.1 50mm hot-mix asphalt c/w 100mm crushed gravel	m^2	165	$65.00	$10,725.00
5.90	0.5m gravel shouldering	m	510	$15.00	$7,650.00
5.10	Reinstate ex signs c/w new concrete base	ea	2	$600.00	$1,200.00
5.11	Relocate mailboxes c/w concrete pad	LS	1	$1,200.00	$1,200.00
5.12	Traffic markings	LS	1	$3,000.00	$3,000.00
				Subtotal B.5	**$672,275.00**
B.6- LANDSCAPING					
6.1	Boulevard restoration	m^2	950	$45.00	$42,750.00
6.2	Drought tolerant mature trees (allowance)	ea	10	$1,200.00	$12,000.00
				Subtotal B.6	**$54,750.00**

SUMMARY

B.1 - Removals	**$40,070.00**
B.2 - Storm Sewers	**$85,400.00**
B.3 - Street Lighting	**$100,350.00**
B.4 - Retaining Wall	**$34,450.00**
B.5 - Roadworks	**$672,275.00**
B.6 - Landscaping	**$54,750.00**
Subtotal Parts B.1 - B.6	**$987,295.00**
Contingency & Engineering (25%)	**$246,823.75**
Total Contract Sum	**$1,234,118.75**

Town of Osoyoos
92nd Avenue Reconstruction - PART C
Cost Estimate

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART C - 87th STREET to SPARTAN DRIVE					
C.1-REMOVALS					
1.1	Asphalt surfaces c/w sawcutting	m²	3200	$10.00	$32,000.00
1.2	Concrete surfaces c/w sawcutting				
1.2.1	Curbs	m	13	$30.00	$390.00
1.2.2	Sidewalks and driveways	m²	45	$30.00	$1,350.00
1.2.3	Concrete piece wall (Lot 2, Plan EPP51973)	LS	1	$1,000.00	$1,000.00
1.2.4	Concrete steps	LS	1	$1,000.00	$1,000.00
1.3	Strip, clear and grub areas c/w shrubbery	m²	1670	$8.00	$13,360.00
1.4	Remove and salvage ex signs for reinstatement	ea.	8	$150.00	$1,200.00
1.5	Remove existing storm sewers				
1.5.1	Drywells	ea.	3	$1,000.00	$3,000.00
1.5.2	Catchbasins	ea.	2	$1,000.00	$2,000.00
1.5.3	Leads	m	30	$700.00	$21,000.00
1.6	Remove existing water system				
1.6.1	Hydrant, tee and valve (STA 0+820)	LS	1	$3,000.00	$3,000.00
1.6.2	150Ø PVC piping	m	15	$700.00	$10,500.00
1.7	Remove existing FortisBC light davit	ea	3	$1,500.00	$4,500.00
1.8	Relocate existing FortisBC pole	ea.	2	$8,000.00	$16,000.00
				Subtotal C.1	**$110,300.00**
C.2-STORM SEWERS					
2.1	Piping				
2.1.1	450Ø perforated PVC	m	24	$600.00	$14,400.00
2.1.2	250Ø PVC	m	43	$400.00	$17,200.00
2.2	Drywells	ea.	5	$6,000.00	$30,000.00
2.3	Standard type catchbasins	ea.	6	$3,000.00	$18,000.00
				Subtotal C.2	**$79,600.00**

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
C.3-WATER SYSTEM					
3.1	Hydrant, tee, gate valve, couplers, +/-17m-150Ø C900 DR18 PVC, and locate and tie to existing 150Ø PVC main	LS	1	$15,000.00	$15,000.00
3.2	Hydrant, tee, gate valve, couplers, +/-15m-150Ø C900 DR18 PVC, +/-6m-200Ø C900 DR18 PVC and locate and tie to existing 200Ø PVC main	LS	1	$17,000.00	$17,000.00
				Subtotal C.3	**$32,000.00**
C.4-STREET LIGHTING					
4.1	Precast base	ea.	10	$1,800.00	$18,000.00
4.2	RPVC Street light duct	m	400	$65.00	$26,000.00
4.3	Poles and luminaires	ea.	10	$6,000.00	$60,000.00
4.4	Metered Kiosk	LS	1	$15,000.00	$15,000.00
4.5	FortisBC service	LS	1	$2,500.00	$2,500.00
4.6	Wiring and commissioning	LS	1	$12,000.00	$12,000.00
				Subtotal C.4	**$133,500.00**
C.5- RETAINING WALLS					
5.1	Precast Redi-rock concrete wall (face area)	m²	280	$550.00	$154,000.00
5.2	1.2m height safety rail/fence	m	125	$120.00	$15,000.00
				Subtotal C.5	**$169,000.00**
C.6 - ROADWORKS					
6.1	Construct base grade c/w hauling				
	6.1.1 Cut to fill	m³	750	$25.00	$18,750.00
	6.1.2 Export of common fill	m³	1750	$20.00	$35,000.00
6.2	300mm depth of 75mm minus pitrun	m²	4770	$30.00	$143,100.00
6.3	Concrete curb c/w 150mm crush gravel				
	6.3.1 Standard type	m	420	$290.00	$121,800.00
6.4	Concrete sidewalk c/w 150mm crush gravel				
	6.4.1 Sidewalk areas	m²	110	$350.00	$38,500.00
	6.4.2 Extra to units for reinforced crossover	m²	22	$350.00	$7,700.00
	6.4.3 Wheelchair ramps c/w tactile warning strip	ea	4	$4,200.00	$16,800.00
6.5	Adjust ex utilities to final grade				
	6.5.1 Manholes	ea	6	$1,000.00	$6,000.00
	6.5.2 Valves	ea	11	$1,000.00	$11,000.00
6.6	75mm hot-mix asphalt c/w 150mm of crushed gravel in roadway	m²	3050	$75.00	$228,750.00
6.7	50mm hot-mix asphalt c/w 150mm of crushed gravel in multi-use path	m²	1040	$60.00	$62,400.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
C.6 - ROADWORKS					
6.8	Driveway restoration				
	6.8.1 50mm hot-mix asphalt c/w 100mm crushed gravel	m²	310	$65.00	$20,150.00
	6.8.2 100mm concrete c/w 100mm crush gravel	m²	40	$300.00	$12,000.00
	6.8.3 Brick paver c/w 100mm crush and sand	m²	22	$350.00	$7,700.00
6.9	Precast concrete roadside barriers	m	37	$350.00	$12,950.00
6.10	0.5m gravel shouldering	m	630	$15.00	$9,450.00
6.11	Reinstate ex signs c/w new concrete base	ea.	8	$600.00	$4,800.00
6.12	Relocate mailboxes c/w concrete pad	LS	1	$1,200.00	$1,200.00
6.13	Traffic markings	LS	1	$4,000.00	$4,000.00
				Subtotal C.6	**$762,050.00**
C.7- LANDSCAPING					
6.1	Boulevard restoration	m²	1300	$45.00	$58,500.00
6.2	Drought tolerant mature trees (allowance)	ea	20	$1,200.00	$24,000.00
				Subtotal C.7	**$82,500.00**

SUMMARY	
C.1 - Removals	**$110,300.00**
C.2 - Storm Sewers	**$79,600.00**
C.3 - Water System	**$32,000.00**
C.4 - Street Lighting	**$133,500.00**
C.5 - Retaining Wall	**$169,000.00**
C.6 - Roadworks	**$762,050.00**
C.7 - Landscaping	**$82,500.00**
Subtotal Parts C.1 - C.7	**$1,368,950.00**
Contingency & Engineering (25%)	**$342,237.50**
Total Contract Sum	**$1,711,187.50**

Project: R26 – Tamarack to Cottonwood Local Road Linkage

Priority: Medium **Type:** Construction

Trigger: Expansion

Location

Issue

The Highway 3 corridor transportation study prepared in 2005 recommends the construction of several local road linkages in East Osoyoos having the intention of reducing traffic volumes on Highway 3 and improving local road linkages within the sector.

Scope

The proposed local road linkage represents a total of 280 m of new road construction. For cost estimate purposes, it is assumed that the Town would obtain the necessary road right of way through a subdivision or development application and that the Town would construct, at its cost, an

urban standard road comprising 10m of pavement surface, curb and gutter, sidewalk and street lighting.

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Project R26: Tamarack to Cottonwood Local Road Linkage					
1.0	Clear and Grub Roadway	m^2	5000	$8.00	$40,000
2.0	Grade and Prepare Subgrade			Allow	$25,000
3.0	Storm Drainage				
	3.1 *Catch Basin Assemblies*	each	6	$6,000	$36,000
	3.2 *250mm dia. Catch Basin Lead*	l.m.	60	$400	$24,000
	3.3 *Drywell Assemblies*	each	3	$8,000	$24,000
4.0	Pitrun Gravel Subbase	m^2	3400	$20	$68,000
5.0	Crushed Gravel Base Course	m^2	3400	$30	$102,000
6.0	Curb and Gutter	l.m.	560	$290	$162,400
7.0	Sidewalk	m^2	420	$350	$147,000
8.0	Asphalt	m^2	3000	$60	$180,000
9.0	Street Lighting				
	9.1 Street Lights c/w Base	each	8	$10,000	$80,000
	9.2 Street Light Duct	l.m.	280	$100	$28,000
	9.3 Electrical Service & Wiring Connection to Cottonwood and			Allow	$30,000.00
10.0	Miscellaneous			Allow	$10,000.00
				Subtotal	**$956,000**
				Engineering (10%)	$96,000
				Contingency (30%)	$287,000
				TOTAL	**$1,339,000**

Project: R27 – Main St. (Highway 3) and Tamarack Dr. Intersection Upgrades

Priority: Medium **Type:** Construction

Trigger: Expansion

Location

Issue

This project is an intersection upgrade to accommodate increased traffic as a result of the development.

Scope

Works include traffic lighting to control the intersection, concrete medians including a left turn lane for traffic heading east on Highway 3 and turning left onto Tamarack Dr., upgrading side walks and wheelchair ramps, and stormwater infrastructure within the roadway.

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
R27 - Main St. (Highway 3) and Tamarack Dr. Intersection Upgrades					
Part 1.0	**Removals**				
1.1	*Sawcutting along white line and tie points*	l.m.	550	$15.00	$8,250.00
1.2	*Asphalt removal*	sq. m.	2000	$15.00	$30,000.00
1.3	*Clear and grub boulevards*	sq. m.	1000	$8.00	$8,000.00
1.4	*Eradicate existing traffic markings*	LS	allow		$5,000.00
1.5	*Relocate existing utility poles*				
1.5.1	*Hydro*	ea.	3	$15,000.00	$45,000.00
1.5.2	*Telus*	ea.	6	$7,500.00	$45,000.00
1.5.3	*Metered Kiosk*	ea.	1	$5,000.00	$5,000.00
Part 2.0	**Utilities**				
2.1	Water System				
2.1.1	*Relocate existing hydrant*	LS	allow		$6,000.00
2.1.2	*Hydrant assembly complete*	LS	allow		$15,000.00
2.1.3	*Adjust existing valves*	ea.	6	$1,000.00	$6,000.00
2.2	*Storm Drainage*				
2.2.1	*Catch basin assemblies c/w lead*	ea.	3	$6,000.00	$18,000.00
2.2.2	*Drywell assemblies*	ea.	2	$8,000.00	$16,000.00
2.2.3	*Remove and replace existing CSP*	l.m.	50	$450.00	$22,500.00
2.2.4	*Inlet structure*	LS	allow		$7,500.00
2.2.5	*Connections to existing manholes*	LS	allow		$2,500.00
Part 3.0	**Street Lighting**				
3.1	*MOTI street light bases*	ea.	5	$2,500.00	$12,500.00
3.2	*Street light duct*	l.m.	150	$80.00	$12,000.00
3.3	*Electrical services*	LS	allow		$10,000.00
3.4	*Street lights*	ea.	5	$6,000.00	$30,000.00
Part 4.0	**Roadworks**				
4.1	Excavate and construct subgrade	sq. m.	1400	$10.00	$14,000.00
4.2	Construct Ministry Road structure c/w gravels and 100mm asphalt	sq. m.	1300	$110.00	$143,000.00
4.3	Median/Island concrete curb	l.m.	410	$290.00	$118,900.00
4.4	Median/island concrete infill	sq. m.	300	$250.00	$75,000.00
4.5	MOTI curb and gutter	l.m.	130	$290.00	$37,700.00
4.6	Sidewalk	sq. m.	260	$350.00	$91,000.00
4.7	Wheelchair ramps	ea.	4	$5,000.00	$20,000.00
4.8	0.5m shoulder	l.m.	500	$20.00	$10,000.00

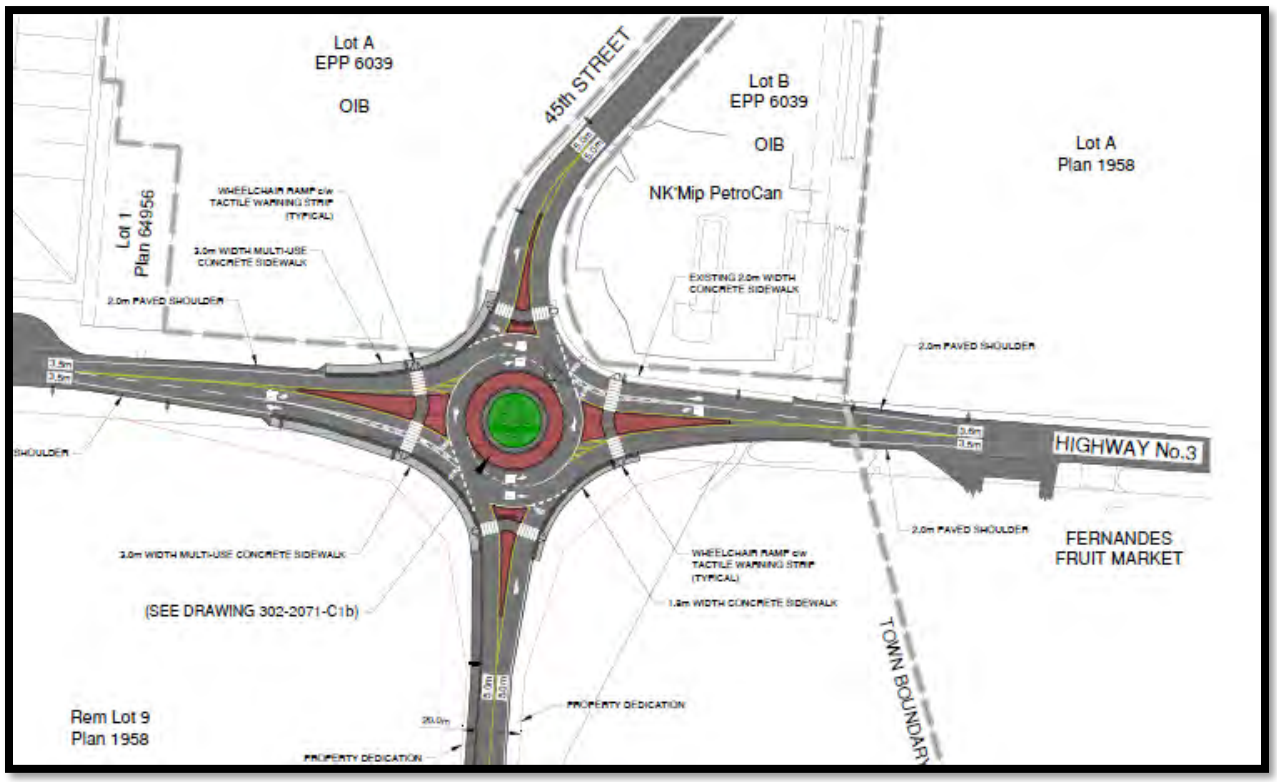
4.9	Traffic markings		LS	allow		$6,000.00
4.10	Signage					
	4.10.1	Relocate c/w new base and post	ea.	10	$1,000.00	$10,000.00
	4.10.2	New complete	ea.	15	$1,500.00	$22,500.00
4.11	Boulevard restoration		LS	allow		$15,000.00
4.12	Traffic Control			allow		$50,000.00
					Subtotal	**$917,000**
					Engineering (10%)	$92,000
					Contingency (30%)	$275,000
					TOTAL	**$1,284,000**

Project: R28 – Main St. (Highway 3) and 45th St. Intersection Roundabout Upgrades

Priority: Medium **Type:** Construction

Trigger: Expansion

Location



Issue

This project is a major intersection upgrade to be completed in conjunction with Projects R5 and R6. The purposes of these projects are to realign 45th St. to improve traffic flow from Lakeshore Dr., provide a lit multi-use path for pedestrians and cyclists, and service development in the SE sector.

Scope

The scope of this project is for a two lane round about at the intersection of Highway 3 and 45th Street. Road works include a 60 m diameter 2 land round about, approximately 300 m of highway construction, and 10 m of local collector road construction. These works include road and highway upgrades, earthworks, medians, curb and gutter, sidewalks, 3 m wide asphalt multi-use pathway, landscaping, traffic signage, street lighting, and utility works (considered in other projects corresponding to the appropriate utility.

Class D Cost Estimate

Roads: **$4,305,700**

Water: **$85,300**

Sewer: **$80,000**

Total: **$4,441,000**

ITEM NO.		DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
		R28 - Main St. (Highway 3) and 45th St. Intersection Roundabout Upgrades				
Part 1.0		**Removals**				
1.1		*Sawcutting along white line and tie points*	l.m.	1000	$15.00	$15,000.00
1.2		*Asphalt removal*	sq. m.	5700	$15.00	$85,500.00
1.3		*Clear and grub*	sq. m.	3500	$8.00	$28,000.00
1.4		*Eradicate existing traffic markings*	LS	allow		$10,000.00
1.5		*Relocate existing utility poles*				
	1.5.1	*Hydro*	ea.	4	$15,000.00	$60,000.00
	1.5.2	*Telus*	ea.	4	$7,500.00	$30,000.00
	1.5.3	*Metered Kiosk*	ea.	1	$5,000.00	$5,000.00
Part 2.0		**Utilities**				
2.1		Water System				
	2.1.1	*200Ø PVC Water Main - Supply and Install*	l.m.	110	$380.00	$41,800.00
	2.1.2	*200Ø Gate Valve*	ea.	1	$3,000.00	$3,000.00
	2.1.3	*Hydrant assembly complete*	ea.	1	$15,000.00	$15,000.00
	2.1.4	*Adjust existing valves*	ea.	1	$1,500.00	$1,500.00
2.2		Sanitary Sewer				
	2.2.1	*250mm PVC Sanitary Force Main - Supply and Install*	l.m.	110	$400.00	$44,000.00

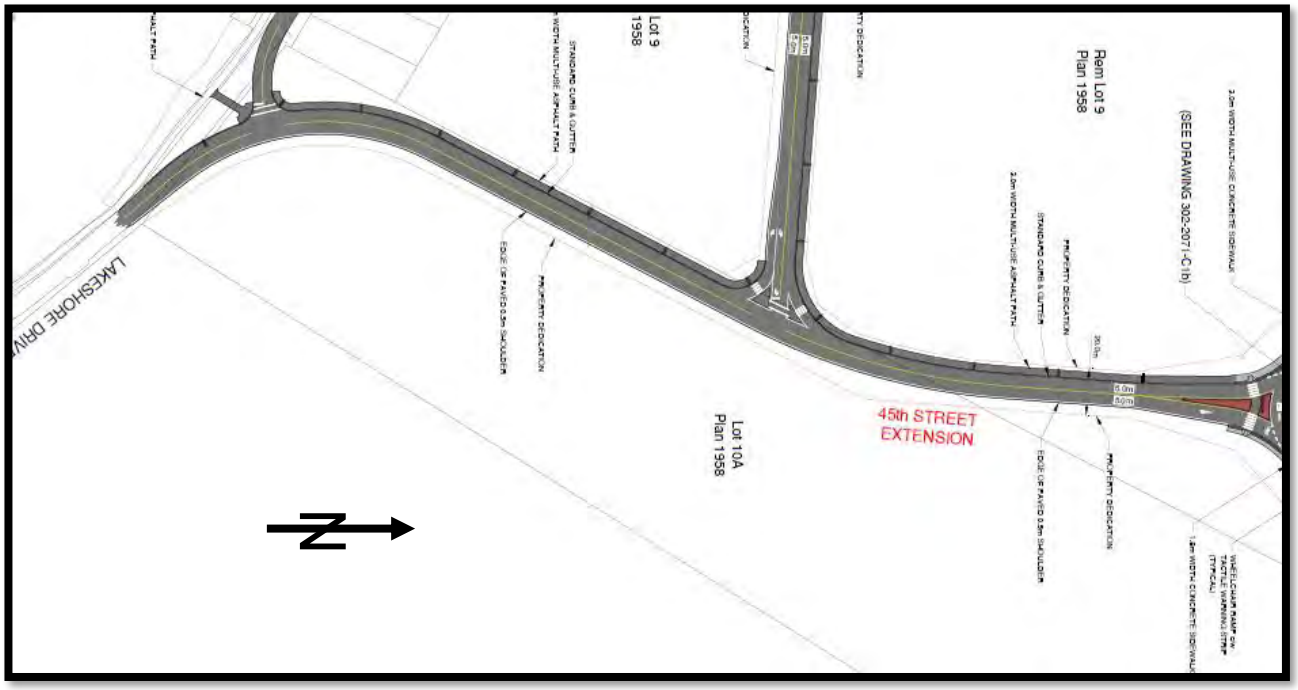
		1050 mm Sanitary				
	2.2.2	*Manhole*	ea.	1	$8,000.00	$8,000.00
		Adjust existing				
	2.2.3	*manhole rim*	ea.	2	$2,500.00	$5,000.00
2.3	*Storm Drainage*					
		Catch Basin				
	2.3.1	*Assemblies*	each	10	$6,000.00	$60,000.00
		200mm dia. Catch				
	2.3.2	*Basin Lead*	l.m.	80	$350.00	$28,000.00
		250mm dia. Catch				
	2.3.3	*Basin Lead*	l.m.	50	$400.00	$20,000.00
	2.3.4	*Drywell Assemblies*	each	5	$6,500.00	$32,500.00
Part						
3.0	**Street Lighting**					
3.1	*MOTI street light bases*		ea.	14	$2,500.00	$35,000.00
3.2	*Street light duct*		l.m.	650	$100.00	$65,000.00
3.3	*Electrical services*		LS	allow		$25,000.00
3.4	*Street lights*		ea.	14	$7,500.00	$105,000.00
Part						
4.0	**Roadworks**					
	Excavate and construct					
4.1	subgrade		LS	Allow		$100,000.00
	Construct Ministry Road					
	structure c/w gravels and					
4.2	100mm asphalt		sq. m.	8800	$140.00	$1,232,000.00
4.3	Median/Island concrete curb		l.m.	643	$290.00	$186,458.98
4.4	Median/island concrete infill		sq. m.	1250	$250.00	$312,500.00
4.5	MOTI curb and gutter		l.m.	340	$290.00	$98,600.00
4.6	Sidewalk		sq. m.	600	$350.00	$210,000.00
4.7	Wheelchair ramps		ea.	8	$4,200.00	$33,600.00
4.8	Asphalt Multi-use Pathway		sq. m.	130	$115.00	$14,950.00
4.9	0.5m shoulder		l.m.	500	$15.00	$7,500.00
4.10	Traffic markings		LS	allow		$20,000.00
4.11	Signage					
		Relocate c/w new				
	4.11.1	base and post	ea.	4	$1,000.00	$4,000.00
	4.11.2	New complete	ea.	20	$1,500.00	$30,000.00
4.13	Traffic Control			allow		$200,000.00
					Subtotal	**$3,172,000**
					Engineering (10%)	$317,000
					Contingency (30%)	$952,000
					TOTAL	**$4,441,000**

Project: R29 – 45th St. Extension from Main St. to Lakeshore Dr.

Priority: Medium **Type:** Construction

Trigger: Expansion

Location



Scope

This project is for the construction of approximately 500 m of new municipal collector road and a 3 m wide asphalt multi-use pathway which extends from the Highway 3 intersection Southwards to Lakeshore Drive. These works include earthworks, curb and gutter, 3 m wide asphalt multi-use pathway, traffic signage, street lighting, storm sewer and utility works (considered in other projects corresponding to the appropriate utility).

Class D Cost Estimate

Roads: **$1,661,790**

Water: **$376,500**

Sewer: **$308,000**

Parks: **$712,710**

Total: **$3,057,000**

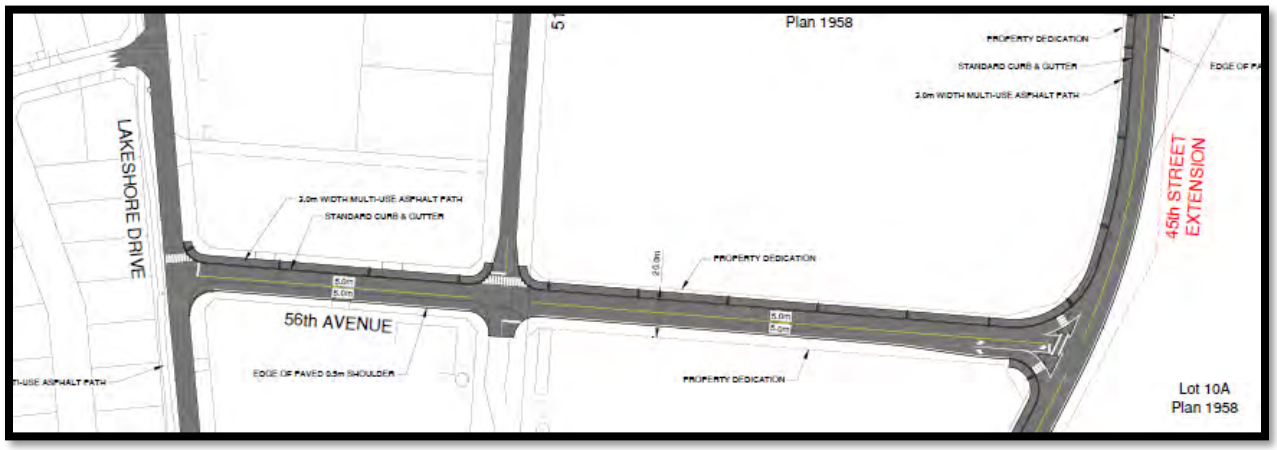
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Project R29: 45th St. Extension from Main St. to Lakeshore Dr.					
1.0	Clear and Grub Roadway	m^2	7000	$6.60	$46,200
2.0	Grade and Prepare Subgrade			Allow	$120,000
3.0	Water System				
	200Ø PVC Water Main and Fittings -				
3.1	*Supply and Install*	l.m.	500	$330.00	$165,000
3.2	*200Ø Gate Valve*	ea.	3	$4,500.00	$13,500
3.2	*Hydrant assembly complete*	ea.	6	$15,000.00	$90,000
4.0	Sanitary Sewer				
	250mm PVC Sanitary Force Main -				
4.1	*Supply and Install*	l.m.	500	$350.00	$175,000
4.2	*1050 mm Sanitary Manhole*	ea.	6	$7,500.00	$45,000
5.0	Storm Drainage				
5.1	*Catch Basin Assemblies*	each	16	$4,500	$72,000
5.1	*200mm dia. Catch Basin Lead*	l.m.	80	$300	$24,000
5.1	*250mm dia. Catch Basin Lead*	l.m.	500	$400	$200,000
5.1	*Drywell Assemblies*	each	8	$6,500	$52,000
6.0	Pitrun Gravel Subbase	m^2	7000	$20	$140,000
7.0	Crushed Gravel Base Course	m^2	7000	$20	$140,000
8.0	Curb and Gutter	l.m.	1000	$250	$250,000
9.0	Median/Island concrete curb	l.m.	50	$180	$9,000
10.0	Median/island concrete infill	sq. m.	50	$150	$7,500
11.0	Asphalt Multi-use Pathway	m^2	1500	$100	$150,000
12.0	Asphalt	m^2	5000	$60	$300,000
13.0	Street Lighting				
13.1	Street Lights c/w Base	each	12	$10,000	$120,000
13.2	Street Light Duct	l.m.	500	$100	$50,000
13.3	Electrical Service & Wiring			Allow	$15,000.00
				Subtotal	**$2,184,000**
				Engineering (10%)	$218,000
				Contingency (30%)	$655,000
				TOTAL	**$3,057,000**

Project: R30 – 56th Ave. from 51st St. to 45th St.

Priority: Medium **Type:** Construction

Trigger: Expansion

Location



Scope

This project is for the construction of approximately 365 m of new municipal collector road and 3 m wide asphalt multi-use pathway which extends from Lakeshore Dr. eastward towards the future 45th Street. These works include earthworks, curb and gutter, 3 m wide asphalt multi-use pathway, traffic signage, street lighting, and utility works (considered in other projects corresponding to the appropriate utility).

Class D Cost Estimate

Roads:	**$1,315,449**
Water:	**$309,200**
Sewer:	**$223,750**
Parks:	**$563,602**
Total:	**$2,412,000**

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Project R30: 56th Ave. from 51st St. to 45th St.					
1.0	Clear and Grub Roadway	m^2	5110	$8.00	$40,880
2.0	Grade and Prepare Subgrade			Allow	$90,000
3.0	Water System				
	200Ø PVC Water Main and Fittings -				
3.1	*Supply and Install*	l.m.	365	$380.00	$138,700
3.2	*200Ø Gate Valve*	ea.	5	$4,500.00	$22,500
3.2	*Hydrant assembly complete*	ea.	4	$15,000.00	$60,000
4.0	Sanitary Sewer				
	250mm PVC Sanitary Force Main -				
4.1	*Supply and Install*	l.m.	365	$350.00	$127,750
4.2	*1050 mm Sanitary Manhole*	ea.	4	$8,000.00	$32,000
5.0	Storm Drainage				
3.1	*Catch Basin Assemblies*	each	12	$6,000	$72,000
3.2	*200mm dia. Catch Basin Lead*	l.m.	60	$300	$18,000
3.2	*250mm dia. Catch Basin Lead*	l.m.	365	$400	$146,000
3.3	*Drywell Assemblies*	each	6	$8,000	$48,000
6.0	Pitrun Gravel Subbase	m^2	5110	$20	$102,200
7.0	Crushed Gravel Base Course	m^2	5110	$30	$153,300
8.0	Curb and Gutter	l.m.	730	$290	$211,700
9.0	Asphalt Multi-use Pathway	m^2	1095	$65	$71,175
10.0	Asphalt	m^2	3650	$65	$237,250
11.0	Street Lighting				
11.1	Street Lights c/w Base	each	10	$10,000	$100,000
11.2	Street Light Duct	l.m.	365	$100	$36,500
11.3	Electrical Service & Wiring			Allow	$15,000.00
				Subtotal	**$1,723,000**
				Engineering (10%)	$172,000
				Contingency (30%)	$517,000
				TOTAL	**$2,412,000**

Project: R32 – Main Street (Highway 3) and 89th St. Intersection Upgrades

Priority: Medium **Type:** Construction

Trigger: Expansion

Location

Issue

Intersection upgrades at Main St. and 89th St. are required in response to development South of Main St. on 89th Street. Several medium and high-density developments have been proposed for vacant lots West of 89th St, adjacent to the Osoyoos Elementary School. This intersection will service increased traffic from this development to the town core and access to Highway 3.

Scope

This project includes utility relocation, road structure and markings upgrading, controlled intersection lighting and street lighting.

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
R32 - Main Street (Highway 3) and 89th St. Intersection Upgrades					
Part 1.0	**Removals**				
1.1	*Sawcutting along white line and tie points*	l.m.	200	$15.00	$3,000.00
1.2	*Asphalt removal*	sq. m.	1300	$15.00	$19,500.00
1.3	*Clear and grub boulevards*	sq. m.	1000	$8.00	$8,000.00
1.4	*Eradicate existing traffic markings*	LS	allow		$5,000.00
1.6	*Relocate existing utility poles*				
	1.6.1 *Hydro*			Allow	$10,000.00
	1.6.2 *Telus*			Allow	$10,000.00
	1.6.3 *Metered Kiosk*			Allow	$10,000.00
Part 2.0	**Utilities**				
2.1	Relocate Water Utilities			Allow	$50,000.00
2.1	Relocated Sanitary System			Allow	$50,000.00
2.2	*Storm Drainage*				
	2.2.1 *Catch basin assemblies c/w lead*	ea.	4	$6,000.00	$24,000.00
	2.2.2 *Drywell assemblies*	ea.	4	$8,000.00	$32,000.00
	2.2.3 *250 mm PVC Lead*	l.m.	50	$400.00	$20,000.00
Part 3.0	**Street Lighting**				
3.1	*MOTI street light bases*	ea.	4	$2,500.00	$10,000.00
3.2	*Street light duct*	l.m.	100	$100.00	$10,000.00
3.3	*Electrical services*	LS	allow		$10,000.00
3.4	*Street lights*	ea.	5	$7,500.00	$37,500.00
Part 4.0	**Roadworks**				
4.1	Excavate and construct subgrade	sq. m.	1400	$10.00	$14,000.00
4.2	Construct Ministry Road structure c/w gravels and 100mm asphalt	sq. m.	1300	$150.00	$195,000.00
4.5	MOTI curb and gutter	l.m.	100	$290.00	$29,000.00
4.6	Sidewalk	sq. m.	100	$350.00	$35,000.00
4.7	Wheelchair ramps	ea.	4	$4,200.00	$16,800.00
4.9	Traffic markings	LS	allow		$6,000.00
4.10	Signage				
	4.10.1 Relocate c/w new base and post	ea.	10	$1,000.00	$10,000.00
	4.10.2 New complete	ea.	15	$1,500.00	$22,500.00

4.12	Traffic Control		allow		$50,000.00
				Subtotal	**$687,000**
				Engineering (10%)	$69,000
				Contingency (30%)	$206,000
				TOTAL	**$962,000**

Our File: 302-2021
October 3, 2024

2025 Capital Plan

R33 Oleander Drive Reconstruction 89th Street to Magnolia Place

This segment of Oleander drive begins at 89th Street and ends at Rose Place for a total length of 530m to be reconstructed. The average pavement width is 8.2m with curb/gutter and sidewalk on the west side. Oleander Drive is a major municipal road providing local road access to residential areas and as a connector to Highway 97. The existing pavement surface was placed in the 1980's having curb/gutter and sidewalk added in the early 1990's. Sanitary sewer CCTV inspections, completed in the fall of 2022, indicate there are no repairs required to the existing pvc piping. Storm sewer infrastructure is lacking through the mid-section of this road segment.

This project was designed to be "shovel ready" in the winter 2022 and includes multi-use paths as illustrated on drawing 302-2021-SK1 and following:

Part A – Highway 97 to Jubilee Drive & Part B – Jubilee Drive to 87th Street

- Replacement of gravel road structure
- 7m paved road travel surface
- Concrete curb and gutter addition on east side
- 3m width multi-use asphalt path on the east side
- Water system replacements of aging AC
- Storm sewer extensions comprising manholes, piping, and catch basins
- street lighting
- landscaping c/w boulevard trees

Capital cost estimate:

$867,613 (Roads, R33)
$137,838 (Active Transportation, P14)
$526,225 (Water, W55)
$2,083,025

Town of Osoyoos
Oleander Drive Restoration
Cost Estimate

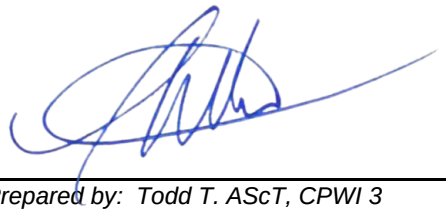
ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 1.0 - REMOVALS					
1.1	Asphalt surfaces c/w sawcutting	m²	6200	$6.00	$37,200.00
1.2	Concrete surfaces c/w sawcutting				
1.2.1	Curbs	m	80	$30.00	$2,400.00
1.2.2	Sidewalks and driveways	m²	200	$30.00	$6,000.00
1.3	Remove concrete walls				
1.3.1	Cinder blocks c/w disposal (lot 9 Plan 15902)	l.m.	20	$50.00	$1,000.00
1.3.2	Cast-in-place concrete (lot 10 Plan 15902) (2.4m L x 0.5m H to bottom of base gravels)	m²	1.2	$1,000.00	$1,200.00
1.4	Strip, clear and grub Blvd areas c/w shrubbery	m²	650	$8.00	$5,200.00
1.5	Remove and salvage ex signs for reinstatement	ea.	4	$150.00	$600.00
1.6	Remove existing storm sewers				
1.6.1	Catchbasins	ea.	4	$200.00	$800.00
1.6.2	Drywells	ea.	1	$500.00	$500.00
1.6.3	Leads	m	54	$100.00	$5,400.00
1.6.4	Capping of abandon leads	ea.	2	$100.00	$200.00
1.7	Remove existing FortisBC light davit	ea.	7	$1,500.00	$10,500.00
1.8	Relocate existing FortisBC pole	ea.	2	$8,000.00	$16,000.00
				Subtotal Part 1.0	**$87,000.00**
PART 2.0 - STORM SEWERS					
2.1	250Ø DR35 PVC piping	m	355	$280.00	$99,400.00
2.2	1050Ø manholes				
2.2.1	Base, lid, frame and cover	ea.	8	$5,000.00	$40,000.00
2.2.2	Precast barrel sections	vm	10	$1,000.00	$10,000.00
2.3	Standard type catchbasins	ea.	8	$3,000.00	$24,000.00
2.4	Extras to units above to:				
2.4.1	Tie to existing CB (STA 0+048)	LS	1		$1,000.00
2.4.2	Tie to ex 250Ø PVC main (MH "ST1")	LS	1		$2,000.00
2.4.3	Tie to existing CB (STA 0+502)	LS	1		$1,000.00

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 2.0 - STORM SEWERS - continued					
2.4.4	Tie to existing MH (STA 0+518)	LS	1		$3,000.00
2.4.5	Tie to existing 250Ø PVC main (Magnolia Place)	LS	1		$2,000.00
				Subtotal Part 2.0	**$182,400.00**
PART 3.0 - WATER SYSTEM					
3.1	Supply and install piping				
3.1.1	200Ø PVC	m	540	$280.00	$151,200.00
3.1.2	150Ø PVC	m	58	$260.00	$15,080.00
3.2	Appurtenances c/w thrust blocks and joint restraints				
3.2.1	200Ø Tee	ea.	7	$2,500.00	$17,500.00
3.2.2	200Ø Gate Valve	ea.	5	$2,800.00	$14,000.00
3.2.3	150Ø Gate Valve	ea.	6	$2,500.00	$15,000.00
3.2.4	200Ø Bends	ea.	20	$1,500.00	$30,000.00
3.2.5	150Ø Bends	ea.	5	$1,400.00	$7,000.00
3.2.6	Reducers	ea.	1	$2,000.00	$2,000.00
3.2.7	Hydrant Assembly	ea.	4	$10,000.00	$40,000.00
3.3	Locate and tie to existing	ea.	5	$4,000.00	$20,000.00
3.4	Water services complete	ea.	38	$2,400.00	$91,200.00
3.5	Abandonment of existing				
3.5.1	Removal of existing appurtenances	ea.	12	$500.00	$6,000.00
3.5.2	Capping of mains	ea.	24	$500.00	$12,000.00
				Subtotal Part 3.0	**$420,980.00**
PART 4.0 - STREET LIGHTING					
4.1	Precast base	ea.	16	$1,800.00	$28,800.00
4.2	RPVC Street light duct	m	520	$65.00	$33,800.00
4.3	Poles and luminaires	ea.	16	$6,000.00	$96,000.00
4.4	Metered kiosk	LS	1	$15,000.00	$15,000.00
4.5	FortisBC service	LS	1	$2,500.00	$2,500.00
4.6	Wiring and commissioning	LS	1	$15,000.00	$15,000.00
				Subtotal Part 4.0	**$191,100.00**
PART 5.0 - RETAINING WALL					
5.1	Redi-Rock wall (face area)	m²	53	$550.00	$29,150.00
5.2	1.2m high chain link fence	m²	28	$120.00	$3,360.00
				Subtotal Part 5.0	**$32,510.00**

ITEM	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PAYMENT
PART 6.0 - ROADWORKS					
6.1	Construct base grade c/w hauling				
6.1.1	Cut to fill	m^3	10	$25.00	$250.00
6.1.2	Export of common material	m^3	2700	$15.00	$40,500.00
6.2	300mm depth of 75mm minus pitrun	m^2	6500	$25.00	$162,500.00
6.3	Concrete curb c/w 150mm crush gravel				
6.3.1	Standard type	m	40	$190.00	$7,600.00
6.3.2	Rollover type	m	550	$190.00	$104,500.00
6.4	Concrete sidewalk c/w 150mm crush gravel				
6.4.1	Sidewalk areas	m^2	60	$160.00	$9,600.00
6.4.2	Extra to units for driveway crossover	m^2	11	$180.00	$1,980.00
6.4.3	Wheelchair ramps c/w tactile strip	ea	6	$4,200.00	$25,200.00
6.5	Adjust ex utilities to final grade				
6.5.1	Manholes	ea	9	$500.00	$4,500.00
6.5.2	Valves	ea	10	$500.00	$5,000.00
6.5.3	Telus vault / J. box	ea	3	$1,500.00	$4,500.00
6.6	75mm hot-mix asphalt c/w 150mm of crushed gravel in roadway	m^2	4400	$40.00	$176,000.00
6.7	50mm hot-mix asphalt c/w 150mm of crushed gravel in multi-use path	m^2	1580	$45.00	$71,100.00
6.8	Driveway restoration				
6.8.1	50mm hot-mix asphalt c/w 100mm crushed gravel	m^2	560	$40.00	$22,400.00
6.8.2	100mm concrete c/w 100mm crushed gravel	m^2	70	$190.00	$13,300.00
6.9	Reinstate ex signs c/w new concrete base	ea	4	$600.00	$2,400.00
6.10	Traffic markings	LS	1	$9,000.00	$9,000.00
6.11	0.5m gravel shouldering	m	400	$15.00	$6,000.00
6.12	Relocate mailboxes c/w concrete pad	LS	1	$1,200.00	$1,200.00
				Subtotal Part 6.0	**$667,530.00**
PART 7.0 - LANDSCAPING					
7.1	Boulevard restoration	m^2	820	$45.00	$36,900.00
7.2	Drought tolerant mature trees	ea	40	$1,200.00	$48,000.00
				Subtotal Part 7.0	**$84,900.00**

SUMMARY

Part 1.0 -Removals	**$87,000.00**
Part 2.0 - Storm Sewers	**$182,400.00**
Part 3.0 - Water System	**$420,980.00**
Part 4.0 - Street Lighting	**$191,100.00**
Part 5.0 - Retaining Wall	**$32,510.00**
Part 6.0 - Roadworks	**$667,530.00**
Part 7.0 - Landscaping	**$84,900.00**
Subtotal Parts 1.0 to 7.0	**$1,666,420.00**
Contingency & Engineering (25%)	**$416,605.00**
Total Contract Sum	**$2,083,025.00**



Prepared by: Todd T. AScT, CPWI 3

APPENDIX E

Municipal Parks Project Sheets

Project: P1 – Municipal Parks Management Master Plan

Priority: High **Type:** Study

Trigger: Expansion

Issue

A Municipal Parks Master Plan will be completed within the DCC timeframe. Currently, the most recent Parks and Trails Master Plan was updated in 2017. This plan requires realignment with the Town's current plan and goals for the municipal parks.

Scope

This work includes but is not limited to public and partner engagement, parks and trails inventory, parks and trails classification, capital planning, and implementation.

Time Frame

+/- 2 years

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Project P1 - Municipal Parks Master Plan					
1.0	Municipal Parks Master Plan				
	Consulting Fees	L.S.	1	$250,000	$250,000
				TOTAL	**$250,000**

Project: P2 – West Bench Pickleball Court

Priority: High **Type:** Study

Trigger: Expansion

Scope

The Town and pickleball club are rebuilding and expanding the West Bench Pickleball courts in response to excessive demand and future prospects of hosting Provincial competitions. Works include four new courts including subgrade, surfacing, park equipment, accessibility pathway and improved parking. This will create needed communal outdoor park facilities for increased population density.

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Project: P2 – West Bench Pickleball Court					
1.0	Pickle Ball Courts and Upgrades				
	Construction Estimate	L.S.	1	$400,000	$400,000
				TOTAL	**$400,000**

Project: P3 – Kinsmen Park Playground

Priority: High **Type:** Construction

Scope

Playground equipment is being installed at Kinsmen Park. This will create needed communal outdoor park facilities for increased population density within the medium-high density Kinsmen area.

Time Frame

+/- 5 years

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Project P4 – Meadowlark Playground Equipment					
1.0	Playground Equipment				
	Site Improvements	L.S.	1	$300,000	$300,000
				TOTAL	**$300,000**

Project: P4 – Meadowlark Playground

Priority: High **Type:** Construction

Scope

Playground equipment is being installed at Meadowlark Park. This will create needed communal outdoor park facilities for increased population density within the medium-high density Meadowlark subdivision. Costing for this project was estimated based on the provided costs for the Kinsmen Park Playground.

Time Frame

+/- 5 years

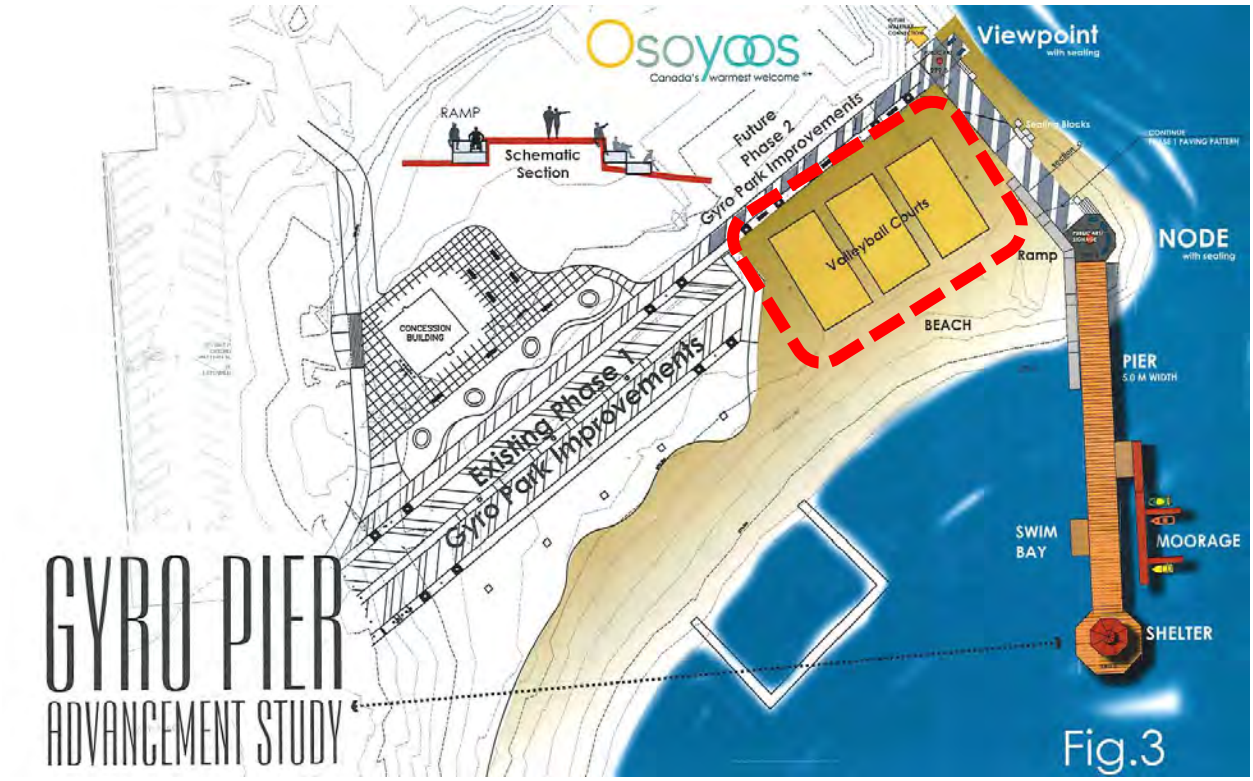
Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Project P4 – Meadowlark Playground Equipment					
1.0	Playground Equipment				
	Site Improvements	L.S.	1	$300,000	$300,000
				TOTAL	**$300,000**

Project: P5 – Gyro Park Improvements: Beach Volleyball Court Complex

Priority: Medium **Type:** Construction

Location



Scope

The Town intends to undertake major upgrades to parks within the community. One of these projects includes building a Beach Volleyball Court Complex to support community events and competitions. This will also create needed communal outdoor communal facilities for increased population density in the town core. The project scope includes building 3 beach volleyball courts, prefabricated aluminum spectator seating, court lighting, public washrooms and an equipment building.

Time Frame

+/- 5 years

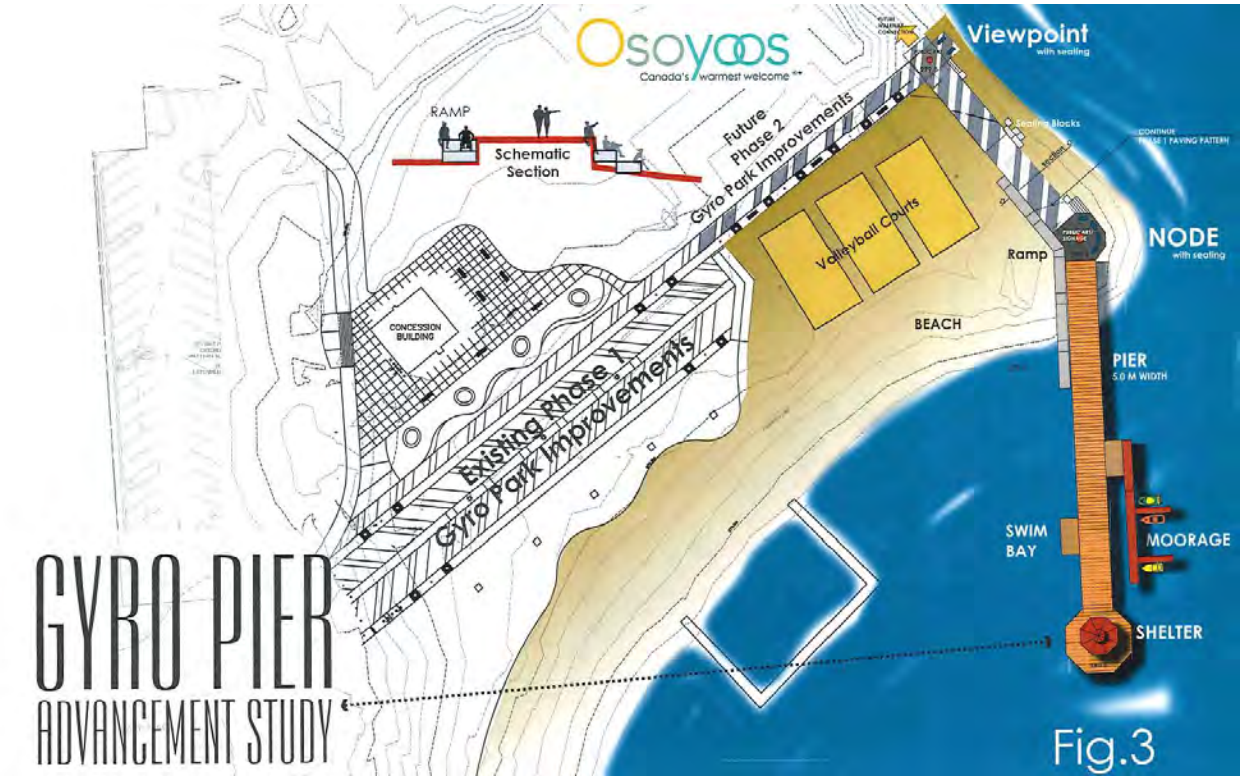
Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
P5 – Gyro Park Improvements: Beach Volleyball Court Complex					
1.0	Earthworks	m^3	802	$25	$20,050
2.0	Concrete court framing and net foundations			Allow	$50,000
3.0	Geotextile seperation layer	m^2	1170	$20	$23,400
4.0	Underdrain System			Allow	$25,000
5.0	Washed Gravel drainage layer (100mm)	m^3	117	$50	$5,850
6.0	Washed Sand Layer (500mm)	m^3	585	$50	$29,250
7.0	Volleyball net harware and appurtenances			Allow	$50,000
8.0	Electrical including ducting and street lighting			Allow	$150,000
9.0	Washroom			Allow	$350,000
10.0	Equipment Building			Allow	$250,000
11.0	Utilities			Allow	$30,000
12.0	Spectator Seating			Allow	$100,000
				Subtotal	**$1,083,550**
				Engineering (15%)	$163,000
				Contingency (30%)	$325,000
				TOTAL	**$1,572,000**

Project: P5 – Gyro Park Improvements: – Gyro Park Pier

Priority: Medium **Type:** Construction

Location



Scope

The scope of work included construction of an accessibility ramp, 5.0 m wide pier, moorage dock, swim bay, and shelter at the end of the pier.

Time Frame

+/- 5 years

Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Project P5: Gyro Park Improvements: – Gyro Park Pier					
1.0	Detailed Design and Environmental Permitting			Allow	$150,000
2.0	Pier/Shelter/Water Play (Tower)/ Small Moorage			Allow	$920,000
3.0	Land based and ramp (for disability access)			Allow	$460,000
				Subtotal	**$1,530,000**
				Contingency (30%)	$459,000
				TOTAL	**$1,989,000**

APPENDIX F

Recycling Facilities and Solid Waste Management Cost Estimates

July 28, 2023 Proposal

Town of Osoyoos
11500 115th Street, Box 3010
Osoyoos, BC

Attn: Jared Brounstein, Director of Operations

RE: Proposal - Osoyoos Landfill, Design, Operations and Closure Plan Update

TRUE is pleased to provide the requested Proposal for the Osoyoos Landfill, Design, Operations and Closure Plan Update. Based on our extensive experience with the site and annual reporting, we believe that our site-specific knowledge will provide cost efficiencies throughout this project. We appreciate this opportunity and trust that the attached scope of work and proposed budget will satisfy your expectations to deliver a successful project.

Project Understanding

As required by the British Columbia Ministry of Environment and Climate Change Strategy (MOE), Landfill Design, Operations and Closure Plans (DOCP) are required to be updated approximately every five years. The Osoyoos Landfill DOCP has come to term as it was last updated in 2018. This proposal details the requirements for the DOCP update as per Operational Certificate (OC) MR 15273. Furthermore, these OC requirements were cross referenced with the corresponding sections of the BC Landfill Design Criteria to ensure that the update is in-line with current best practises.

Task – Fee Schedule

Based on TRUE Consulting's knowledge of the Osoyoos Landfill, we expect the scope of work and associated reporting to include the following components.

Site Characterization

- Physical Summary
  - Physical setting including geology and climatic conditions.
- Hydrogeology and Hydrology Characterization Report
  - This report will be completed by Western Water Associates (WWA) and used to characterize the site hydrogeology and hydrology.
- Regulatory Authorization and Compliance
  - Description of the requirements of MR 15273.
- Authorized Wastes
  - Description of authorized wastes to be landfilled in accordance with MR 15273.
- Historic and Future Waste Stream Characterization
  - This analysis will be completed as part of the landfill annual reporting and incorporated in the DOCP.

Landfill Design

- Site Plan
  - The site plan will include the features as required by the Landfill Design Criteria.
- Landfill Base Design
  - This section will briefly describe and discuss the landfill as a natural attenuation site that is not expanding its footprint.
- Final Cover Design and Contours
  - This section will briefly describe the recommended cover system. The summary will include the thickness and permeability of the barrier layer, topsoil requirements, and vegetation and erosion control measure.
- Lifespan Analysis
  - This analysis will be completed as part of the landfill annual reporting and incorporated in the DOCP. The analysis will be compliant with the Landfill Design Criteria.
- Leachate Management
  - This includes a simplified leachate generation assessment and recommendations for site leachate management. It is understood that leachate generation is minor because of the arid environment. For this reason, this section is not anticipated to be extensive.
- Landfill Gas Management
  - Based on the received tonnage and LFG generation, this site does not require LFG collection. However, this section will provide a brief discussion regarding LFG management for impermeable soil covers.
  - This section will also reference the separate landfill gas generation report which has been completed separately.
- Stormwater Management
  - The stormwater management plan will demonstrate that the landfill is compliant with the performance criteria in the Landfill Design Criteria. In general, this will include segregation of clean run-off from contaminated run-off.
  - A figure will be produced to accompany this plan.

Operating Plan

- Receiving and Screening Plan
  - Description of current receiving and screening practices at the landfill site.
- Landfilling of Waste
  - In accordance with the OC, this section will describe the requirements and procedures for accepting waste and hazardous waste (as applicable).
- Filling Plan and Cell Development
  - This analysis will be completed as part of the landfill annual reporting and incorporated in the DOCP. The analysis will be compliant with the Landfill Design Criteria.
- Compaction and Cover Applications
  - This section will discuss compaction practises and a brief methodology discussion. It will also discuss cover applications and best practices.

- Nuisance Controls
  - This section will address dust, noise, litter, and odour controls.
- Vector and Wildlife Control Plan
  - This section will discuss measures taken at the landfill to control wildlife.
- Perimeter Fence
  - As required by the OC, fencing at site is required. Maintenance requirements for the fence will be described in the DOCP.
- Operator Training and Contact Information
  - This section will provide contact information and training requirements. Training requirements for landfill operators will be in-line with recommendations from the Solid Waste Associate of North America (SWANA).
- Record Keeping
  - This section will outline record keeping requirements and practices.
- Landfill Fire Management and Response Plan
  - This section will detail a Landfill Fire Management Plan, including landfill fire Emergency Response Plan.
- Health and Safety Plan
  - This section will reference the current site Health and Safety Plan.
- Emergency Response Plan
  - This section will detail an Emergency Response Plan (ERP) in accordance with the landfill design criteria. It is assumed that there is already an ERP, which will be provided by the Town.

Environmental Monitoring

- Leachate Monitoring Program
  - This will include brief discussion of visual monitoring requirements.
- Groundwater and Surface Water Monitoring Program
  - This program will be informed by well assessments completed WWA.
  - Surface Water management program summary.
- Landfill Gas Monitoring
  - This will include brief discussion of monitoring requirements.

Landfill Closure

- Closure Plan and Post Closure Activities
  - It is assumed that this section will be similar to the 2018 DOCP.
- Closure and Post Closure Financial Plan
  - It is assumed that this section will be similar to the 2018 DOCP.

Project Requirements

The project assumptions and provisions noted below are integral to TRUE's completion of the proposed scope of work. Should any of these project requirements be incorrect or not comply with the Town's requirements, alteration to the project schedule and budget may be required.

- The following operational and regulatory documents pertaining to the facility are to be provided by the Town:
  - Authorizations and operating procedures,
  - Operator credentials and contact,
  - Record keeping procedures and templates,
  - Tonnage values,
  - Odor management practices,
  - Stormwater management practices,
  - Leachate management practices, and
  - End-use details.
- This scope does not include a contaminating lifespan assessment.

Engineering Services & Deliverables

It is envisioned that a concise report will be produced. Figures that will be included are as follows:

- Site plan,
- Landfill closure cover system detail,
- Leachate management plan,
- Stormwater management plan, and
- Filling plan to include 3 figures.

Budget

TRUE's expected project budget based on the assumptions and deliverables noted above is attached. As outlined in the attached Task Fee Schedule, TRUE's expected project fees and disbursements total $26,639. Should alterations to the design be required, this can be facilitated at our regular hourly rates.

Thank you for the opportunity to provide a proposal for this project. We look forward to beginning work upon acceptance of the proposed budget.

Thank you for your time and consideration.

Yours truly,

TRUE CONSULTING

Natalie Alteen

Natalie Alteen, P. Eng.
Project Engineer

NA/am

Enclosures

Task-Fee Schedule
Town of Osoyoos Landfill DOCP Update

	TEAM MEMBER	Sr. Review	Project Engineer	Engineering Technician	AutoCAD Technician	Admin	Sub-Total	Disb.	TOTAL
	PROJECT TASK Hourly Rate	Steve Underwood $235	Natalie Alteen $150	Anthony Martins $128	Technician $128	$86	Fees		Fees & Disb.
1.0	**Site Characterization**								
1.1	Physical Summary			2			$256		$256
1.2	Hydrogeology and Hydrology Characterization Report		1	5			$790		$790
1.3	Regulatory Authorization and Compliance		1	2			$406		$406
1.4	Authorized Wastes			2			$256		$256
1.4	Historic and Future Waste Stream Characterization		3	5			$1,090		$1,090
2.0	**Landfill Design**								
2.1	Site Plan			1	4		$640		$640
2.2	Final Cover Design and Contours		1	4	6		$1,430		$1,430
2.3	Lifespan Analysis		1	2			$406		$406
2.4	Leachate Management		1	3	5		$1,174		$1,174
2.5	Landfill Gas Management		1	3			$534		$534
2.6	Stormwater Management		1	4	4		$1,174		$1,174
3.0	**Operation Plan**								
3.1	Receiving and Screening Plan		1	5	4		$1,302		$1,302
3.2	Landfilling of Waste Overview		1	2			$406		$406
3.3	Filling Plan and Cell Development	1	1	4	4		$1,409		$1,409
3.4	Compaction and Cover Applications	1	1	4	2		$1,153		$1,153
3.5	Nuisance Controls		1	4			$662		$662
3.6	Vector and Wildlife Control Plan		1	4			$662		$662
3.7	Perimeter Fence			1			$128		$128
3.8	Operator Training and Contact Information			2			$256		$256
3.9	Record Keeping			1			$128		$128
3.10	Landfill Fire Management and Response Plan		1	4			$662		$662
3.11	Health and Safety Plan			5			$640		$640
3.12	Emergency Response Plan			1			$128		$128
4.0	**Environmental Monitoring**								
4.1	Leachate Monitoring Program		1	1			$278		$278
4.2	Groundwater and Surface Water Monitoring Program	2	2	6	4		$2,050	$11,000	$13,050
4.3	Landfill Gas Monitoring		1	1			$278		$278

	TEAM MEMBER PROJECT TASK Hourly Rate	Sr. Review Steve Underwood $235	Project Engineer Natalie Alteen $150	Engineering Technician Anthony Martins $128	AutoCAD Technician $128	Admin $86	Sub-Total Fees	Disb.	TOTAL Fees & Disb.
5.0	**Landfill Closure**								
5.1	Closure Plan and Post Closure Activities	1	1	5			$1,025		$1,025
5.2	Closure and Post Closure Financial Plan	1	1	5			$1,025		$1,025
6.0	**Project Meetings**								
6.1	Review Draft Landfill DOCP Update with Town.	2	2				$770		$770
7.0	**Final Report**								
7.1	Preparation of Final Report and Submission to MOE.	3	4	16	8	4	$4,721		$4,721
	Total Hours	**246**	**179**	**232**	**169**	**90**			
	Total Fees	**$57,810**	**$26,850**	**$29,696**	**$21,632**	**$7,740**	**$25,839**		**$25,800**
	Total Disbursements							**$11,000**	**$11,000**
	TOTAL ESTIMATED FEES & DISBURSEMENTS								**$36,800**
									+ GST

Prepared By:

Natalie Alteen

Natalie Alteen, P.Eng.