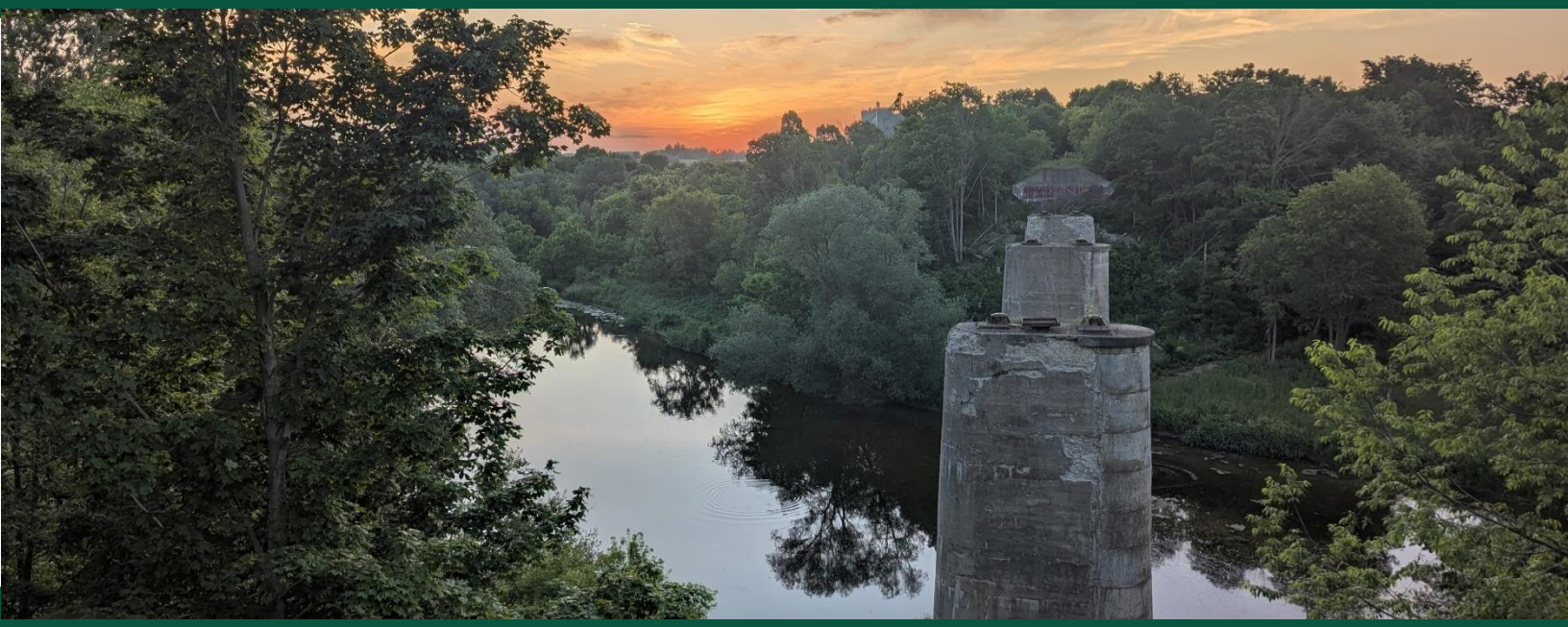
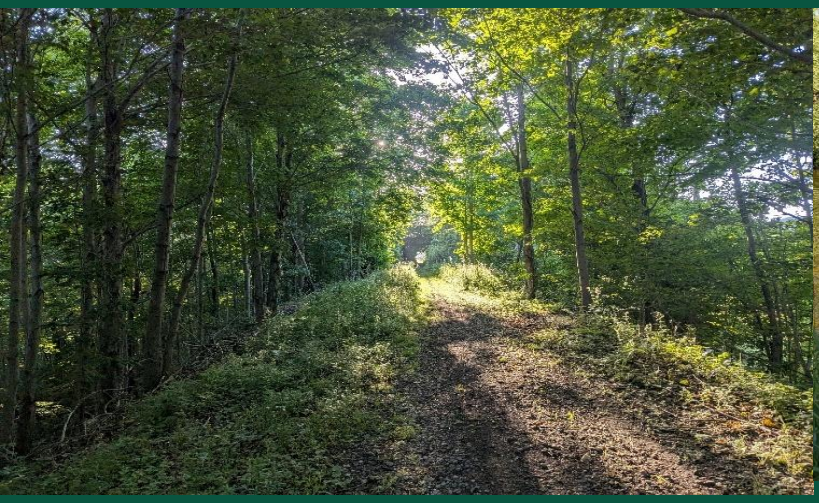
NATURAL HERITAGE REPORT

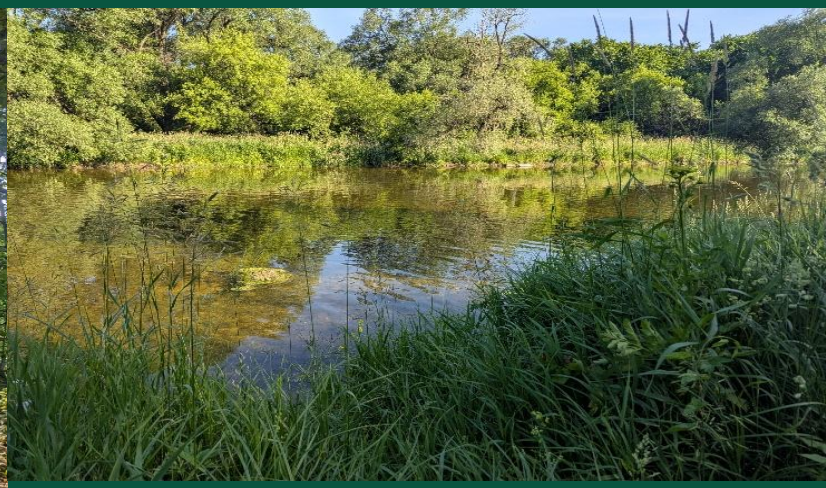


G2G Pedestrian Trailway Bridge Reconstruction

Municipal Class Environment Assessment Schedule B

Prepared for Doug Dixon and Associates





LGL FILE TA2600061

October 2026

NATURAL HERITAGE – EXISTING CONDITIONS & IMPACT ASSESSMENT

G2G Pedestrian Trailway Bridge Reconstruction Wallenstein, ON

Municipal Class Environment Assessment – Schedule B

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1 Introduction

The Regional Municipality of Waterloo (Region of Waterloo) is undertaking a Schedule 'B' Municipal Class Environmental Assessment (Class EA) for the reconstruction of the G2G Pedestrian Trailway Bridge as part of the Goderich to Guelph (G2G) Rail Trail. The proposed bridge reconstruction is located southwest of the village of Wallenstein between Region Line 86/Wellington County Road 86 (Line 86) and Powell Road. Existing piers and abutments of an old railway bridge crossing the Conestogo River, are proposed to be re-purposed and used in support of a pedestrian bridge, reconnecting trail sections on either side of the river. Currently, trail users are forced to detour onto the road system within this section.

In 2023, Len Jewitt from the G2G Rail Trail volunteer group retained GM BluePlan Engineering Limited (GMBP), now GEI, as well as Doug Dixon and Associates Inc. (DDA), to propose a preliminary design to establish a crossing over the Conestogo River. The natural heritage consultants working on the study were Natural Resource Solutions Inc. (NRSI). In 2024, the Region of Waterloo took ownership of the project and has retained DDA to revisit the previous studies and to complete the design under a Schedule B Class EA. LGL Limited (LGL) is providing natural science services support for this study, on behalf of DDA.

Land uses in the vicinity of the Study Area include rural-residential, agricultural fields, and natural heritage features. The Study Area is generally considered to be a 120 m radius from the proposed bridge site and old railbed where the G2G trail will cross the Conestogo River and including the connecting trail section from either road. Natural heritage investigations and background reviews were conducted along the property limits and along proposed construction accesses in order to accurately define indirect impacts and constraints.

While lands within the 120 m study area are not expected to be impacted by the proposed improvements, the study team collected information on these areas as part of the background review. The Study Area is located within the Grand River Conservation Authority (GRCA) jurisdiction and within the Conestogo River subwatershed.

This report summarizes all background and field investigation information collected to date through the EA and Detailed Design Phases.

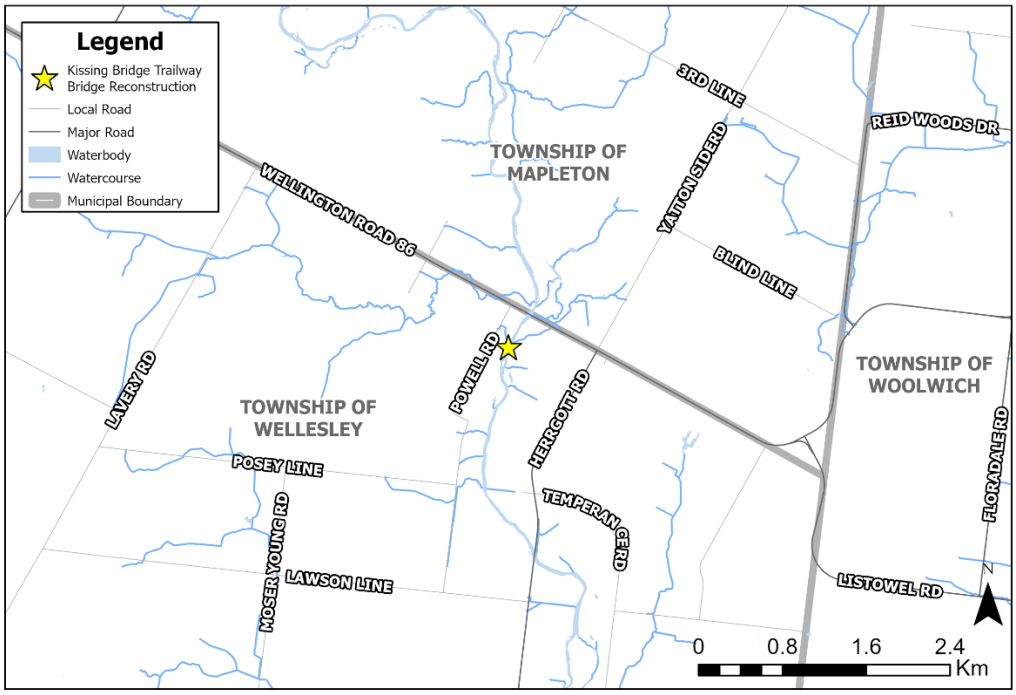


Figure 1. Key Map

2 Policy, Legislation, and Planning Review

This section presents the context for land use and transportation planning applicable to the section of the Conestogo River near Line 86 and Powell Road. The provincial and municipal (regional and local) policies that apply to the Study Area are described in the sections below.

2.1 Migratory Birds Convention Act, 1994

Environment and Climate Change Canada is responsible for implementing the *Migratory Birds Convention Act*, 1994, (MBCA). The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests. While migratory insectivorous and non-game birds are protected year-round, migratory game birds are only protected from March 10 to September 1. Nests of all migratory bird species are protected when they contain a live bird or a viable egg. The *Migratory Birds Regulations, 2022, SOR/2022-105*, changed protection requirements such that 18 species of migratory birds, as identified on Schedule 1, have year-round nest protection until they can be deemed as abandoned. Some of these species include: Great Egret, Great Blue Heron, Green Heron, Black-crowned Night Heron, and Pileated Woodpecker. The MBCA provides for the protection of migratory birds through the Migratory Birds Regulations and the Migratory Birds Sanctuary Regulations. The protection of Migratory Birds is addressed in the Mitigation section of this report.

2.2 Fisheries Act

The *Fisheries Act* was established to manage and protect Canada's fisheries resources. It applies to all waters of Canada and is binding to federal, provincial, and territorial governments.

Changes to the Act were introduced in 2019, as well as 2023. The Department of Fisheries and Oceans (DFO) introduced proposed amendments to restore lost protections and incorporate modern safeguards into the *Fisheries*

Act. In 2019, these changes came into effect and strengthened fish and fish habitat protection provisions under the modernized *Fisheries Act*, as well as regulations that support these provisions.

These changes include:

- The protection for all fish and fish habitats.
- Restoring the previous prohibition against the "harmful alteration, disruption or destruction of fish habitat."
- Restoring a prohibition against causing "the death of fish by means other than fishing."

The amendments address key considerations including prohibitions against causing the death of fish (other than by fishing) and the re-introduction of the concept of harmful alteration, disruption, or destruction (HADD) of fish habitat regulated under the *Fisheries Act*. If a HADD is unavoidable, authorization from DFO under Subsection 35(2) of the *Fisheries Act* may be issued.

In 2023, further tools have been developed to streamline project reviews for low-risk activities, allowing for automatic approval under certain conditions. Efforts continue to promote a sustainable fishery and additional funding for conservation and protection were implemented.

2.3 Species at Risk Act

The *Species at Risk Act* (SARA), 2002 aims to protect wildlife species and their critical habitat in Canada, and to promote the recovery of species that are at risk where these are identified on federal lands. Under the SARA, the definition of federal land includes, but is not limited to, Canada's oceans and waterways; national parks; military training areas; national wildlife areas; some migratory bird sanctuaries; and First Nations reserve lands. Wildlife protection under the SARA is associated with species listed under the registry as extirpated (no longer exist in the wild in Canada), endangered, or threatened. Species identified as special concern are also considered to prevent them from becoming endangered or threatened; however, general prohibitions under the SARA do not apply to species of special concern.

2.4 Provincial Planning Statement, 2024

The Provincial Planning Statement (PPS), 2024 issued under Section 3 of the *Planning Act*, came into effect on October 20, 2024. It replaces the 2014 Provincial Policy Statement and consolidates growth management direction from the Growth Plan for the Greater Golden Horseshoe (2019, as amended). While the new PPS maintains a protection for natural heritage features, its key change is the integration of growth management policies into a single framework. Therefore, this framework places greater emphasis on housing supply and infrastructure delivery, while the core natural heritage protections remain consistent with the 2014 PPS.

Key aspects of the PPS, 2024 relevant to this project include:

- Natural Heritage (Section 4.1): Protection of provincially significant wetlands, valleylands, Areas of Natural and Scientific Interest (ANSIs), fish habitat, and habitat for endangered and threatened species remain unchanged. Development or site alteration within these features is prohibited unless it can be demonstrated that there will be no negative impact.
- Natural Hazards (Section 5.2): Development shall genearlly be directed to areas outside of hazardous lands adjacent to river, steram of small inland lake systems which are impacted by flooding hazards and /or erosion hazards and hazardous sites, and floodways.
- Public Spaces, Recreation, Parks, Trails and Open Space (Section 3.9): The PPS emphasizes active transportation and community connectivity, while minimizing negative impacts on protection areas.

For the Conestogo River crossing, bridge reconstruction and road improvements must avoid or mitigate impacts to regulated natural heritage features and hazardous lands. Environmental Impact Studies (EIS) and consultation with GRCA and the Ministry of the Environment, Conservation and Parks (MECP) are required where project

activities may affect natural heritage features or Species at Risk (SAR). The proposed bridge will be undertaken within the existing rail corridor, as well as access via existing trails, to limit environmental disturbance.

2.5 Species Conservation Act, 2025 (formerly Endangered Species Act, 2007)

The *Species Conservation Act* (SCA), 2025, which replaced the *Endangered Species Act*, 2007, continues to provide protection for species assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO), but it introduces changes to how habitat and recovery are addressed. For this project, the most relevant consideration is that the SCA defines "habitat" more narrowly, focusing on dwelling places such as nests, dens, and their immediate surroundings. Broader ecological functions, such as migration corridors or feeding areas, may not be automatically protected unless prescribed by regulation. This is important for the Conestogo River crossing project where aquatic Species at Risk, such as Silver Shiner, Black Redhorse, and Wavy-rayed Lampmussel, have been identified. While the SCA introduces a more streamlined "registration-first" system for certain activities, compliance obligations remain in place. For the bridge installation works, early screening for SAR remains critical and, if habitat cannot be avoided, mitigation measures must be developed in consultation with the Ministry of the Environment, Conservation and Parks (MECP). Because the new SCA rules are more flexible than the old ESA rules, it's now especially important to clearly show what steps a project will take to avoid or reduce harm to species at risk. This clear documentation helps get regulatory approval and ensures the project has minimal impact on those species.

2.6 GRCA Regulation

Ontario Regulation 150/06 of the *Conservation Authorities Act* (Grand River Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses) attempted to ensure public safety, protect property with respect to natural hazards (including erosion and flooding), and safeguard watershed health by preventing pollution and destruction of sensitive environmental areas such as wetlands, shorelines, watercourses, and valleylands. This regulation provided GRCA with the authority to regulate interference and development within the regulated area in accordance with the *Crown Agency Act*, R.S.O. 1990, C.48, s.1, and the *Conservation Authorities Act*, R.S.O. 1990, C.27.

In September 2025, a new Regulation came into force-*Ontario Regulation 41/24-Prohibited Activities, Exemptions and Permits Regulation*. This Regulation, issued under the CA act replaced all 36 individual Conservation Authority regulations (including Regulation 150/06) with one that is consistent province-wide. This Regulation has a new emphasis on public safety and the "pollution" and "conservation of land' tests for granting permissions have been removed. *Conservation authorities may grant permission for development activities if in the opinion of the Conservation Authority the proposal is not likely to affect the control of flooding, erosion, dynamic beaches, unstable soil or bedrock and when the development activities are not likely to create conditions or circumstances that in the event of a natural hazard might jeopardize the health or safety of persons or result in the damage or destruction of property* (Ontario Regulation 41/24). Development activities may include activities to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland. CA's area of jurisdiction include:

- Hazardous lands,
- Wetlands,
- River or stream valleys with limits of which shall be determined in accordance with the regulations,
- Areas that are adjacent or close to the Great Lakes-St. Lawrence River System or to an inland lake that may be affected by flooding, or dynamic beach hazards, such areas to be further determined or specified in accordance with the regulations, or
- other areas in which development should be prohibited or regulated, as may be determined by the regulations. 2017, c. 23, Sched. 4, s. 25.

The Study Area lies within the jurisdiction of GRCA. GRCA's interactive mapping application and layers were consulted for this study. This mapping includes the Regulation Limits as well as other natural heritage information including watercourses, wetlands, Slope Valley and Slope Erosion, all of which have been mapped (see **Error! Reference source not found.**). Conestogo River and two nearby tributaries of the river are mapped as Regulated. In addition, GRCA wetlands (unevaluated) are mapped within three quadrants of the bridge crossing, located along the limits of the Railway ROW. Work carried out within the Regulated area must be in accordance with the requirements of O.Reg. 41/24. Consultation with GRCA has occurred and a permit has been issued.

2.7 Regional Municipality of Waterloo Official Plan, 2024

The Regional Official Plan (ROP), 2024 Consolidation provides the long-term vision for growth and land use in Waterloo Region with a strong emphasis on protecting environmental features and enhancing sustainable transportation connections. The updated ROP maintains the Region's growth management framework by prioritizing intensification within built-up areas, restricting outward expansion, and protecting significant natural heritage systems, water resources, and hazard lands.

Of direct relevance to the proposed G2G Pedestrian Trailway Bridge, the Greenlands Network policies identify and protect valleylands, watercourses, wetlands, and other core environmental features. The Conestogo River crossing, is recognized within the Greenlands Network as part of the Region's connected trail and natural heritage system, reinforcing the need to protect valleylands, watercourses, and associated environmental features during bridge installation. Recent updates place greater emphasis on connectivity between natural features and the integration of regional trail systems and active transportation corridors. Infrastructure projects that cross or occur adjacent to the Greenlands Network must be supported by an Environmental Impact Study (EIS) to demonstrate avoidance, minimization, and mitigation of impacts on natural heritage features.

For this project, bridge works crossing the Conestogo River corridor must be designed to avoid fragmentation of the Greenlands Network. The ROP's trail and active transportation policies also encourage opportunities to connect with the Region's broader Active Transportation Master Plan and municipal trail systems. Accordingly, coordination with the GRCA and the Region will be required to balance natural heritage protection with improvements to community connectivity across the crossing.

2.8 Township of Wellesley

The Township of Wellesley occupies a largely rural, agricultural landscape in the northern portion of the Region of Waterloo, where farms and open countryside remain predominant. According to the Township's Official Plan (2022), the lands are designated within its Greenlands Network as a 'Significant Valley' and include mapped Environmentally Sensitive Landscapes (ESLs) that correspond with headwaters, watercourse corridors and associated natural features (Township of Wellesley, 2022). Within this context, the proposed bridge crossing along the Goderich-to-Guelph (G2G) Rail Trail, a 132 km long multi-use trailway, traverses the Township north of Line 86 and Powell Road. The Township identifies the trail as a key recreational and active transportation corridor within its parks, open space, and trails system, emphasizing its importance for regional connectivity and community access (Township of Wellesley, 2022). The trail's alignment along the abandoned rail corridor provides both a recreational amenity and a structural linkage through the Township's mapped natural heritage system, underscoring the need to balance agricultural land uses with the protection of valley systems, ecological connectivity, and trail community (Township of Wellesley, 2020; Region of Waterloo, 2015).

3 Background Resources

LGL conducted a desktop-based review of natural heritage constraints for the Study Area. The review was intended to determine if there are any known natural areas (i.e. Areas of Natural and Scientific Interest, Provincially Significant Wetlands, Environmentally Sensitive Areas, Significant Woodlands or Significant Wildlife Habitat) or records of rare

or sensitive species that could be impacted by the project. The databases or references reviewed included the following:

- Aquatic Species at Risk Maps (Fisheries and Oceans Canada)
- Atlas of the Mammals of Ontario
- Atlas of the Breeding Birds of Ontario
- Bat Conservation International Species Profiles
- Butterfly Atlas of Ontario
- eBird
- Grand River Conservation Authority Regulation Limits (O.Reg 41/24)
- iNaturalist
- Land Information Ontario (LIO) (natural areas and species)
- Ontario Reptile and Amphibian Atlas
- Region of Waterloo Official Plan (2024)
- Township of Wellesley Official Plan (2022)
- The Vascular Plants of Ontario (2009)

Error! Reference source not found. outlined all mapped natural heritage boundaries. The background species lists have been incorporated into the Species at Risk and Significant Wildlife Habitat screenings.

3.1 Natural Resource Solutions Inc. (NRSI)

In addition to the background resources search, information collected by Natural Resource Solutions Inc. (NRSI) was reviewed. NRSI was retained by Len Jewitt on behalf of the Goderich to Guelph (G2G) Trail Association and Town of Wellesley to undertake natural heritage studies, including an aquatic assessment, Species at Risk (SAR), Significant Wildlife Habitat (SWH) Assessments and a Bat Acoustics study, to support the proposed pedestrian bridge over the Conestogo River in Wallenstein, Ontario. The information collected is current and has been integrated into the proceeding sections, with in season survey updates provided by LGL, where warranted.

4 Existing Conditions

The following discussion outlines the existing environmental conditions within the Study Area and identifies natural heritage areas and/or features of environmental sensitivity and/or significance based on the review of all background resources and field investigations.

4.1 Physiography and Soils

The Study Area is located on the western edge of the Oxford Till Plain physiographic region. The region is made up of well-marked glacial valleys, surface drumlins and flutings, and kames (Chapman and Putnam, 1984). The region is composed of pale brown till and calcareous loam where Middle Devonian limestone is the dominant material, although grey or pale brown dolostone is also abundant. The dominant soil type is Guelph loam, a typical Grey Brown Luvisol, developed under Maple-Beech forests.

The Study Area is primarily composed of St. Clements silt loam and Grand loam. St. Clements soils have developed on well-drained soil materials composed mainly of silty clay loam and silty clay (Presant, E.W. & R.E. Wicklund, 1971). They are highly erodible and require careful management on slopes. The Grand series soils occur on well-drained alluvial sediments with predominantly loam and silt loam textures, primarily on river floodplains where they are highly susceptible to flooding (Presant, E.W. & R.E. Wicklund, 1971).

4.2 Designated Natural Areas

Designated natural areas include areas identified for protection by the Ministry of Natural Resources, Land Information Ontario (LIO) database, GRCA online mapping and The Regional Municipality of Waterloo Official Plan maps.

4.2.1 Provincial Significant Wetlands

No Provincially Significant Wetlands were identified within one kilometre of the study area as identified in the LIO database.

4.2.2 Unevaluated and Evaluated Wetlands

The LIO database has identified both unevaluated and evaluated wetlands within and near the Study Area and most overlap with the wetlands identified by the GRCA (see Error! Reference source not found.). Evaluated wetlands are shown on both sides of the Conestogo River upstream and downstream of the railway crossing. One evaluated wetland pocket was mapped by LIO south of the railway crossing, on the west side of the Conestogo River but was not identified by GRCA. All wetlands are located within the river floodplain. Several unevaluated wetlands have also been shown within background sources outside the Study Area, north of Line 86 and east of the Conestogo River.

4.2.3 Area of Natural and Scientific Interest

No Areas of Natural and Scientific Interest (ANSI) are present in the vicinity of the Study Area.

4.2.4 LIO Wooded Areas

LIO mapping shows the presence of woodlands. Specifically, there are wooded valleys along both sides of the Conestogo River, south of line 86 and Powell Road. This layer is mapped on Error! Reference source not found..

4.2.5 Environmentally Sensitive Landscapes

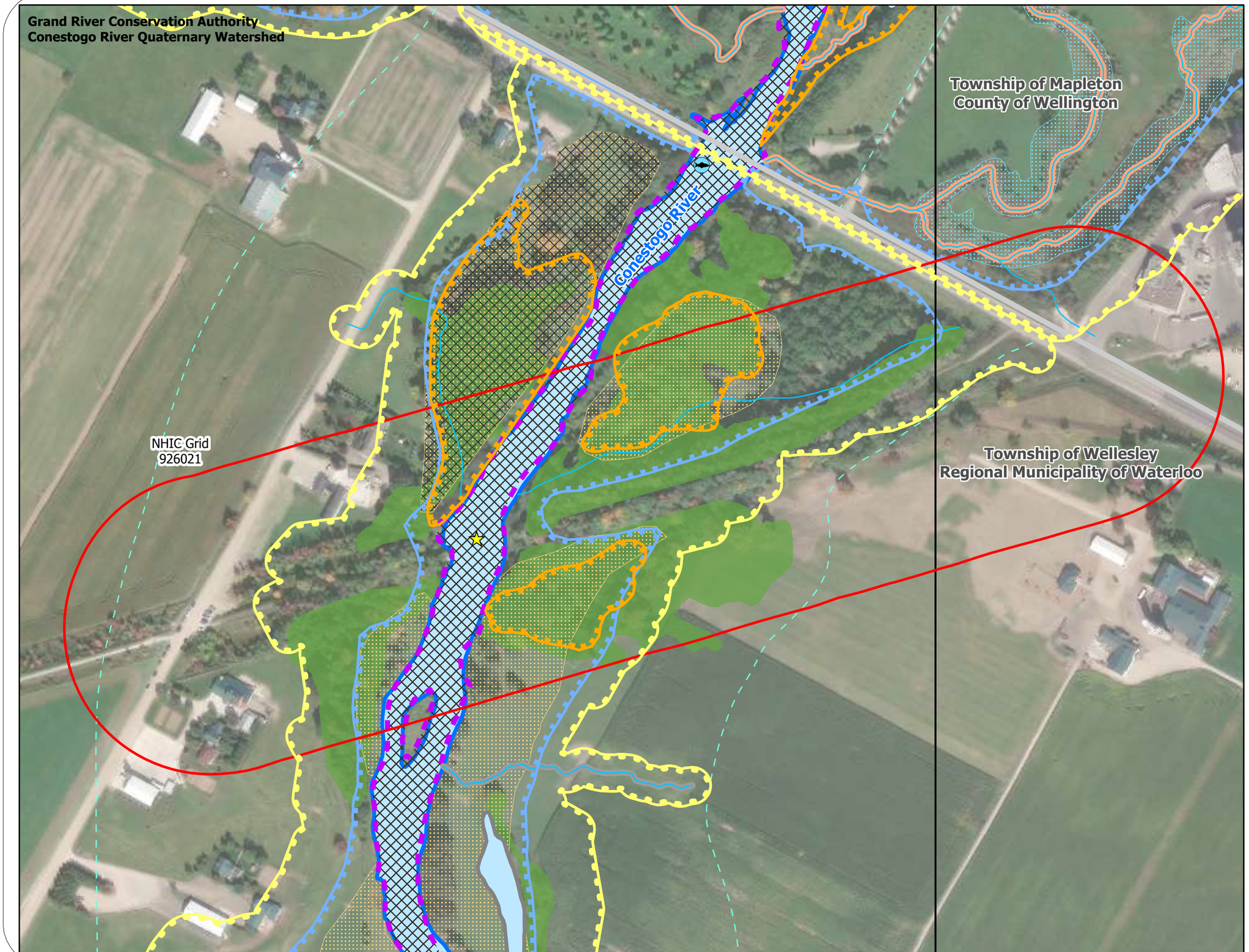
The Region of Waterloo identifies there are no Environmentally Sensitive Landscapes (ESL) present near the Study Area (Region of Waterloo, 2025).

4.2.6 Trail Network

The Goderich-Guelph (G2G) Rail Trail established in 2015, is a 132-kilometre multi-use recreational corridor that follows a former CP rail line between Guelph and Goderich and is managed through a partnership between G2G Rail Trail Inc., local municipalities, and community stewardship groups. G2G Rail Trail Inc. is a not-for-profit, charitable community organization dedicated to enriching quality of life and promoting sustainable community development by advancing and preserving diverse trails and greenways (G2G Rail Trail Inc., 2023).

The trail is open year-round to walkers, runners, and cyclists, offering a smooth and accessible experience along the abandoned rail bed. Through stewardship efforts and community partnerships, the trail has seen continuous improvements (G2G Rail Trail Inc., 2023). It functions as both a regional active transportation spine and a recreational amenity, links numerous rural communities, natural areas, and cultural features.

In the broader regional context, the Goderich–Guelph (G2G) Rail Trail is a key regional multi-use recreational corridor (Region of Waterloo Official Plan, 2024; G2G Rail Trail Inc., 2023). Where projects intersect with or connect to the G2G Trail, special attention should be given to trail continuity, safe access, and construction timing consistent with the Region of Waterloo Official Plan (2024) policies supporting active transportation and recreational connectivity. Within the Study Area, trail function and demand (including recreational use, commuter potential, regional connectivity) has been considered in project planning.



LEGEND

- G2G Pedestrian Trailway Bridge Reconstruction
- Study Area - 120m from Railway Footprint
- ARA Survey Point
- Watercourse
- ARA Watercourse - Unknown Thermal Regime
- ARA Watercourse - Warm Thermal Regime
- Waterbody
- ARA Waterbody - Cold Thermal Regime
- ARA Waterbody - Unknown Thermal Regime
- Municipal Boundary
- Natural Heritage System - Places to Grow Act
- Provincially Tracked Species
  1km by 1km Grid Square
- Species At Risk Act - Critical Habitat
  Silver Shiner
- Species At Risk Act - Risk Distribution
  Black Redhorse, Rainbow, Silver Shiner, Wavy-rayed Lampmussel
- Wetland - Unevaluated as per OWES
- Wetland - Regionally Significant as per OWES
  Conestogo River 2 Wetland Complex
- Wooded Area

Grand River Conservation Authority

- Floodplain - Engineered
- Regulation Limit
- Wetland

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G2G Pedestrian Trailway Bridge Reconstruction

Natural Heritage Screening

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	2
Date	2026-09-18	**Prepared By**	AME
Scale	1:3,000	**Verified By**	EBL

4.3 Field Investigations (2022 – present)

4.3.1 Data Collection and Protocol

Field investigations around the railway crossing have been completed by biologists to quantify the natural heritage features along the Conestogo River. Table 1 provides a summary of the various field investigations that were conducted by NRSI and further by LGL staff between 2022 and 2025. For LGL field investigations, areas within approximately 50 m of the abandoned railway bed/old bridge crossing were completed.

Table 1. Field Investigations Along G2G Pedestrian Trailway Study Area

Visual Ecological Component	Sample Method / Protocol	Field Staff	Survey Dates
Botanical Inventory, Vegetation and vegetation communities	Vegetation community descriptions and mapping using Ecological Land Classification (ELC) methods for Southern Ontario.	NRSI	November 25, 2022
Aquatic Habitat	Aquatic habitat assessment using transects, following *DFO Guidance Document for Assessing SAR Mussel Habitat* (NRSI, 2015)-internal document.	NRSI	November 25, 2022
Wildlife and Wildlife Habitat	Assessment of suitable roosting and maternity colony habitat for SAR bats within the piers and abutments, assessment of any trees within the Study Area, proposed access route, or immediately adjacent, to determine the potential for bat SAR habitat impacts.	NRSI	November 25, 2022 December 12, 2022
Bat Acoustic Survey	Passive Acoustic Monitoring (2 Song Meter Acoustic Recorder) set up on either side of the river, near the railway crossing, monitoring followed guidelines listed in MECP 2022a, 2022b.	NRSI	Monitoring in effect between June 30-July 17, 2023
Aquatic Habitat	Aquatic habitat assessment (one season) within 50m upstream and downstream of the crossing area, Visual Mussel Survey.	LGL	June 26, 2025
Wildlife and Wildlife Habitat	Pedestrian survey for wildlife signs and encounters, Breeding Bird Survey (OBBA standard), SAR habitat review.	LGL	June 24, 2025 July 4, 2025
Botanical Inventory, Vegetation and vegetation communities	Ecological Land Classification (ELC) and vascular flora survey in growing season, SAR flora survey.	LGL	June 24, 2025
Access Design Site Walk	Reviewed all possible access points and reviewed potential tree pruning and removals along the railway ROW.	LGL, DDA	September 12, 2025

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4.4 Aquatic Habitats and Communities

4.4.1 Background

The Study Area is located within the Conestogo River subwatershed and within the Grand River watershed. The Study Area is located within the jurisdiction of GRCA and the Ministry of Natural Resources (MNR), Guelph District.

The Conestogo River is a main tributary of the Grand River. The Conestogo River starts in the Damscus-Kennilworth area of the Township of Wellington North and flows through the towns of Glen Allan, Wallenstein, Hawkesville, and St. Jacobs before joining the Grand River in the Village of Conestogo. Conestogo Lake is a dam-controlled flood management reservoir located at the midpoint of the river system. The Conestogo River supports a cold-water regime as outlined in Land Information Ontario database (ARA, 2019).

4.4.2 Aquatic Field Investigations Summary

It is understood that NRSI biologists conducted a detailed aquatic habitat assessment in 2022, completing habitat transects on the Conestogo River at the proposed pedestrian bridge location. The habitat assessment followed the DFO Guidance Document for Assessing SAR Mussel Habitat (NRSI, 2015) and a modified Ontario Stream Assessment Protocol (OSAP) approach (Stanfield, 2017), as referenced in NRSI 2023a. Their assessment was conducted in possible locations of potential direct impacts to assist agencies in review of SAR fish and mussel habitat present.

Six habitat transects were established on the Conestogo River extending approximately 20 m upstream and 20 m downstream from the proposed pedestrian bridge crossing and across the wetted width of the river. There are two instream piers present at this crossing. Each transect included taking a wetted width (m), water depth (m), water velocity (m/s), substrates present (frequency of size class at each point), and substrate depth (cm). Measurements were recorded along evenly-spaced points along each transect (10 points per transect were taken where depths permitted).

The centre pier lies within approximately 13 m of the right bank (looking upstream) while the west pier is close to the bankfull edge. A review of the transect data indicates that within the vicinity of the bridge piers encompassing transect AHt-003, AHT-004 and AHT-005 (see **Figure 3** below), water depths ranged from 0.18- 1.14 m deep, with non-wadeable sections (>1.2 m deep) located in between the piers. Channel velocity measured between 0.00 to 0.05 m/sec in November (NRSI, 2023a). Substrates throughout the reach were consistent and varied from, silt, sand, gravel, cobble, and boulder depending on flow and water depth. Sand and silt were the most common substrates within backwater habitats; most notably present just upstream of the west pier. Cobble, sand, and boulder were dominant throughout the entire assessment area, with the presence of boulder associated with deposition around the previous bridge piers (NRSI, 2023a).

Substrate depths were taken to determine if there was a suitable amount of the substrate to allow the potential mussels to burrow. Substrate depth appeared to range between 1- 10 cm deep in areas with cobble and up to 30 cm deep in sand/silty areas. The depths were recorded using a meter stick and inserting it into the substrate as far as it could go (NRSI, 2023a).

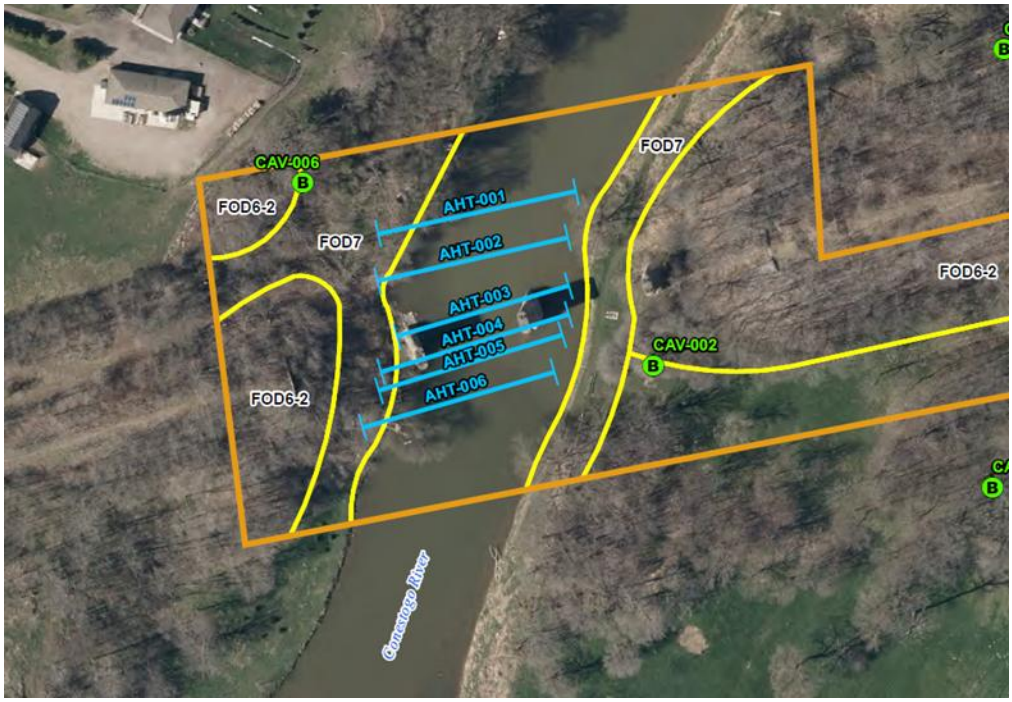


Figure 3. Excerpt from Natural Heritage Screening (Figure 2 of NRSI, 2023a)

4.4.2.1 LGL 2025 Aquatic Habitat Update

LGL conducted an in- season aquatic habitat assessment on June 25, 2025. The assessment focused on confirming instream and riparian habitat conditions within 50 m upstream and downstream of the old railway ROW, with a focus on habitat within the old railway ROW. In June, the water velocities were low (very slow flow/stagnant), and water clarity was slightly murky. Water flow contacted the west pier, which resulted in some backwatering into the ROW reach.

The morphology within the reach is described as a deep flat, with pool habitat (greater than 1.1 m deep) along the east and west banks downstream and in between the piers. Riffles were noted within 150 m upstream and 125 m downstream of the railway crossing (**Figure 5**). Riparian cover is provided by overhanging willows and Manitoba Maple and grasses/forbs growing along the banks but is fairly open (less than 30 % cover) through the reach. There is pasture adjacent to the river on the east and west sides of the river downstream of the ROW and informal trails along the river are notable within the reach.

Along the west bank, sand/silt with some cobble are dominant in the downstream reach, transitioning to boulder, cobble, gravel with sand/silt closer to the piers. Water depth drops off quickly (within 1.5 m of shore) adjacent to the west pier. Boulder substrate is dominant around the pier. Upstream of the pier along the west bank there is a backwater area supporting sand and silts. Instream vegetation grows within 1 m of the shoreline here. The stream was non-wadeable within the ROW east of the west pier.

Along the east bank, within 30 – 50 m downstream of the railway crossing, pool habitat is present measuring between 0.7m and over 1m deep where sand/silt, with some cobble is dominant. Just downstream of the centre pier, boulder, cobble, with sand/silt is present and the water depth measures around 50 – 70 cm deep. Between the pier and the east bank and extending upstream, water depth measures between 25 cm to 60 cm deep (shallower habitat as identified on **Figure 5**). Around the base of the piers are concrete ledges that measures 65 cm deep, surrounded by boulders. There is a 4 m wide gravel shoal immediately downstream of the pier which measured 50 – 70 cm deep and extends approximately 15 m downstream (**Figure 5**). Instream vegetation grows within 1 m of the

shoreline just downstream of the pier, comprised of arrowhead, rushes, blue flag iris. Riparian vegetation is comprised of herbaceous species and grasses including bedstraw, angelica, joe pye-weed, wild parsnip, reed canary grass and jewelweed.

Young of the year fish (species unknown) were observed along both banks downstream of the bridge. Crayfish were also abundant in the river.

4.4.2.2 Visual Mussel Survey

An underwater viewer was used to survey the wadable substrate during the June 26, 2025 survey. The substrate in between the centre pier and the bank (proposed in water access area) was scanned over for over 20 minutes. No evidence of live mussels or empty shells were found along the shoreline. Water clarity was slightly murky at the time of survey. It is assumed mussels are present, regardless of the lack of confirmed presence.

4.4.3 Fisheries

LGL conducted a secondary source review of fisheries, which included a review of the Aquatic Resource Area (ARA) database available through LIO and the Ministry of Natural Resources Fish online database. A list of fish species obtained from these background sources is found below in **Table 2**. Both data sources are species lists encompassing the whole system (i.e., Conestogo River). The review also included fish species detected incidentally by NRSI biologists during field assessments. Although not included in the list below, Brown Trout (*Salmo trutta*) a coldwater species, are also present in the 'tailwaters' below Conestogo Lake, which includes this reach. This species is stocked each spring by the MNR however it is understood that they have limited success in spawning in the river (GRCA website, 2026).

Table 2. Fish Species List for the Conestogo River

Common Name	Scientific Name	Thermal Regime/Tolerance*	ARA	MNR	NRSI
Black Crappie	*Pomoxis nigromaculatus*	Coolwater/tolerant			X
Blacknose Dace	*Rhinichthys atratulus*	Coolwater/intermediate	X		
Blackside Darter	*Percina maculata*	Coolwater/intermediate	X		
Bluntnose Minnow	*Pimephales notatus*	Warmwater/intermediate	X		
Brook Stickleback	*Culaea inconstans*	Coolwater/intermediate	X		
Brown Bullhead	*Ameiurus nebulosus*	Warmwater/intermediate		X	
Golden Redhorse	*Moxostoma erythrurum*	Warmwater/intermediate	X		
Hornyhead Chub	*Nocomis biguttatus*	Coolwater/intermediate	X		
Largemouth Bass	*Micropterus nigricans*	Warmwater/tolerant		X	
Least Darter	*Etheostoma microperca*	Warmwater/intolerant	X		
Pumpkinseed	*Lepomis gibbosus*	Warmwater/intermediate		X	
Rainbow Darter	*Etheostoma caeruleum*	Coolwater/intolerant	X		
Rock Bass	*Ambloplites rupestris*	Coolwater/intermediate	X	X	
Smallmouth Bass	*Micropterus dolomieu*	Coolwater/intermediate		X	X
White Sucker	*Catostomus commersonii*	Coolwater/tolerant	X	X	
Yellow Perch	*Perca flavescens*	Coolwater/intermediate	X	X	

*Thermal regime and tolerance information obtained from the Ontario Freshwater Fisheries Database (Eakins 2019).

4.4.3.1 Aquatic Species at Risk

Although not identified in the fish species list above, according to aquatic Species at Risk mapping (DFO, 2025) and the Natural Heritage Information Centre (NHIC) database (MNR, 2025), there are records for four aquatic Species at Risk in the Conestogo River:

- Silver Shiner (*Notropis photogenis*), Threatened (SARA/SARO)
- Black Redhorse (*Moxostoma duquesnei*), Threatened (SARA/SARO)
- Rainbow mussel (*Villosa iris*), Special Concern (SARA/SARO)
- Wavy-rayed Lampmussel (*Lampsilis fasciola*), Special Concern (SARA), Threatened (SARO)

The DFO SAR mapping also identified critical habitat for Silver Shiner in this reach of the Conestogo River. Critical habitat has recently been defined for Silver Shiner as the following: the entire bankfull channel width, the meander belt width and the associated riparian vegetation extending 30m out from the meander belt width is habitat necessary to support the life processes of the Silver Shiner (DFO, 2022).

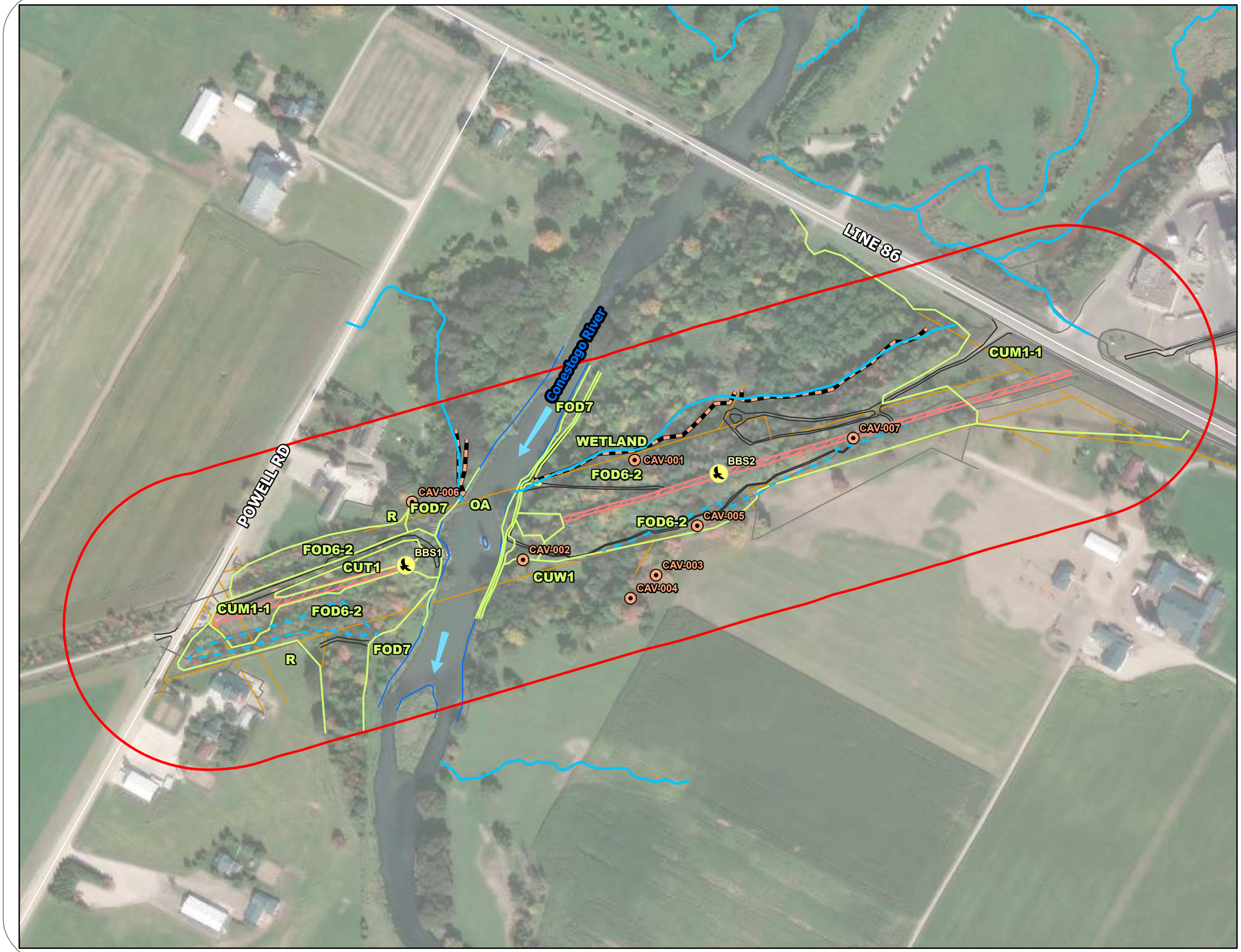
4.5 Vegetation and Vegetation Communities

In 2023, as part of the Species at Risk Habitat and Significant Wildlife Habitat Assessment (NSRI, 2023a) a terrestrial investigation was completed which included ELC. LGL confirmed and refined the boundaries previously delineated with a focus on the areas immediately adjacent to the future rail trail and the proposed bridge staging area; the updated results are provided in the following sections. An in-season flora survey was also completed. An ELC summary is included in Table 3 below.

Consistent with the ELC completed by NRSI in 2023, the Study Area is largely characterized by deciduous forest communities situated adjacent to the Conestogo River. Low-lying portions support a Fresh-Moist Lowland Deciduous Forest (FOD7) with wetland inclusions, while upland sections associated with the former railway corridor contain Fresh-Moist Sugar Maple – Black Maple Deciduous Forest (FOD6-2) (Figure 4 and Figure 5).

Within the FOD7 community, the canopy is primarily composed of Manitoba Maple (*Acer negundo*) and Willow (*Salix* spp.), with scattered Bur Oak (*Quercus macrocarpa*). The sub-canopy reflects this composition, dominated by Manitoba Maple and including Black Walnut (*Juglans nigra*), Green Ash (*Fraxinus pennsylvanica*), and Bur Oak. The understory is heavily influenced by Common Buckthorn (*Rhamnus cathartica*), indicative of anthropogenic disturbance linked to the historical railway bridge, trail use, and surrounding agriculture. Ground vegetation during the survey period consisted mainly of Dame's Rocket (*Hesperis matronalis*), Tall Goldenrod (*Solidago altissima*), Canada Goldenrod (*Solidago canadensis*), and sedges (*Carex* spp.).

The FOD6-2 community is dominated in both canopy and sub-canopy layers by Sugar Maple (*Acer saccharum*), with Black Maple (*Acer nigrum*) and American Elm (*Ulmus americana*) also well represented. The understory is characterized by Choke Cherry (*Prunus virginiana*) alongside extensive Common Buckthorn, while the ground layer is primarily composed of Avens (*Geum* spp.) and Dame's Rocket, with lesser amounts of Goldenrod (*Solidago* spp.).



LEGEND

- Study Area - 120m from Railway Footprint
- Abandoned Railway Bed
- Breeding Bird Survey (LGL)
- Cavity Tree (NSRI / LGL)
- Drainage Feature (From Survey)
- Flow Direction (LGL)
- Watercourse (LIO)
- Vegetation Community Boundary (LGL)
- GRCA Wetland Limit (June 2026)

Field Survey - 2025 (Tulloch)

- Existing Infrastructure
- Existing Trail
- Property Boundary
- Water's Edge

Ecological Land Classification (LGL)

- CUM1-1: Dry-Moist Old Field Meadow Type
- CUT1: Mineral Cultural Thicket Ecosite
- FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest Type
- FOD7: Fresh - Moist Lowland Deciduous Forest Ecosite
- M: Manicured
- OA: Open Water
- R: Residential

0 40 80 120 M

N

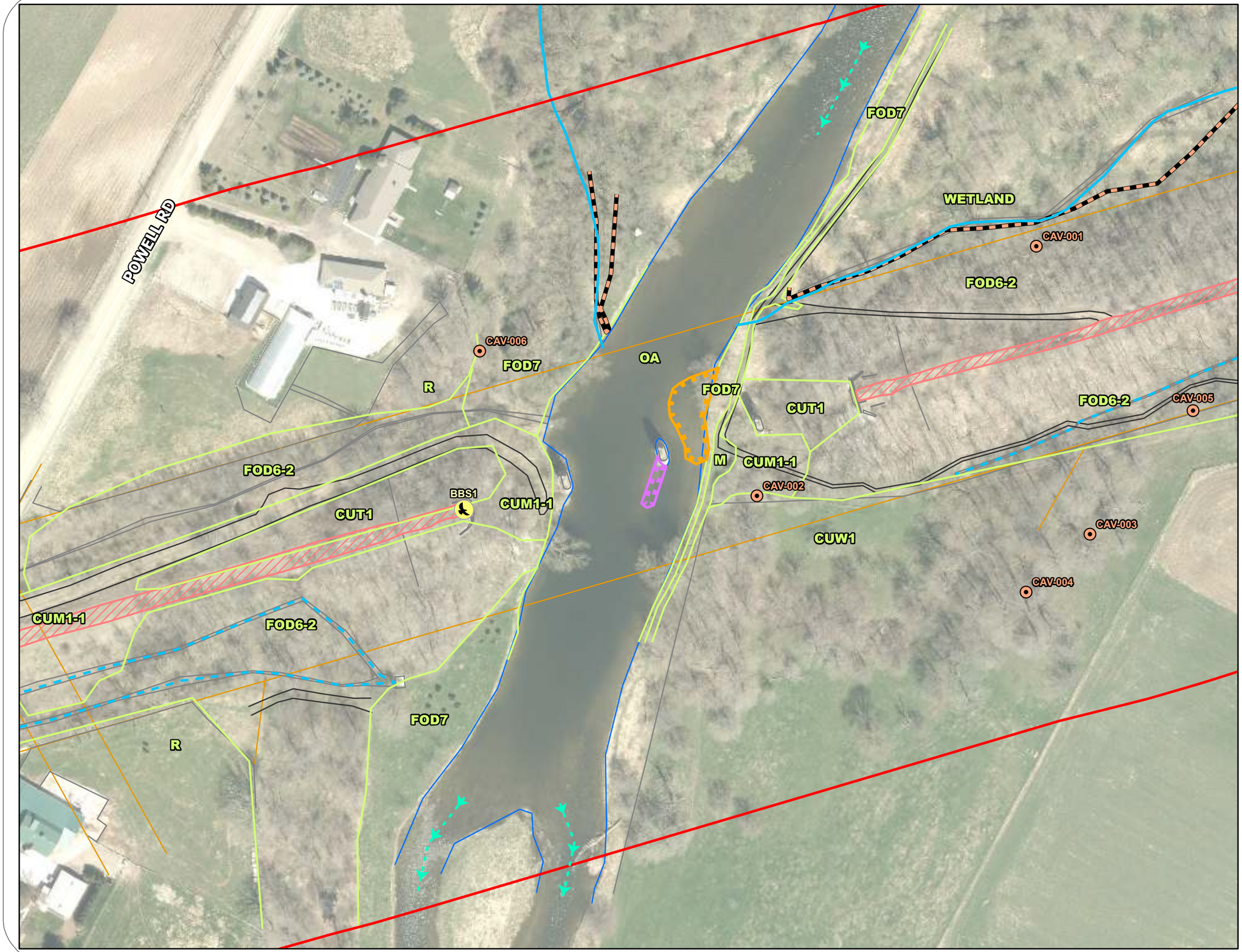
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Imagery credits: Microsoft, Vantor.

G2G Pedestrian Trailway Bridge Reconstruction

Existing Conditions

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	4
Date	2026-09-18	**Prepared By**	AME
Scale	1:3,000	**Verified By**	EBL



LEGEND

- Study Area - 120m from Railway Footprint
- Abandoned Railway Bed
- Breeding Bird Survey (LGL)
- Cavity Tree (NSRI / LGL)
- Drainage Feature (From Survey)
- GRCA Wetland Limit (June 2026)
- Watercourse (LIO)
- Vegetation Community Boundary (LGL)
- Riffles (LGL)
- Shallow Aquatic Habitat - 25 - 50cm Depth (LGL)
- Shoal (LGL)

Field Survey - 2025 (Tulloch)

- Existing Infrastructure
- Existing Trail
- Property Boundary
- Water's Edge

Ecological Land Classification (LGL)

- CUM1-1: Dry-Moist Old Field Meadow Type
- CUT1: Mineral Cultural Thicket Ecosite
- FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest Type
- FOD7: Fresh - Moist Lowland Deciduous Forest Ecosite
- M: Manicured
- OA: Open Water
- R: Residential

0 10 20 30 M

N

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Imagery credits: Region of Waterloo, Microsoft, Vantor.

G2G Pedestrian Trailway Bridge Reconstruction

Existing Conditions

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	5
Date	2026-09-18	**Prepared By**	AME
Scale	1:1,200	**Verified By**	EBL

Table 3. Summary of Vegetation Communities

ELC Code	Vegetation Type	Species Association	Community Characteristics
NATURAL/SEMI-NATURAL – TERRESTRIAL			
FO	Forest		
FOD7	Fresh – Moist Lowland Deciduous Forest	**Canopy**: white willow (*Salix alba*), crack willow (*Salix fragilis*), Black Walnut (*Juglans nigra*) **Sub Canopy**: White willow, crack willow, Manitoba maple (*Acer negundo*) **Understory**: Common buckthorn (*Rhamnus cathartica*), Tartarian honeysuckle (*Lonicera tatarica*) **Ground Layer**: Canary Reed Grass (*Phalaris arundinacea*), smooth brome (*Bromus inermis ssp. inermis*), purple loosestrife (*Lythrum salicaria*)	• deciduous tree species >75% of canopy (FOD) • lower slopes with seepage and bottomlands (7) • dominated by willow and Manitoba Maple (-3)
FOD6-2	Fresh-Moist Sugar Maple-Black Maple Deciduous Forest	**Canopy**: Sugar Maple, Black Maple, American Elm **Sub Canopy:** Sugar Maple **Understory**: Common buckthorn, Choke Cherry **Ground Layer**: Jack-in-the-pulpit (*Arisaema triphyllum*), Avens, Horsetail (*Equisetum* spp.)	• deciduous tree species >75% of canopy (FOD) • moist yet well drained sites, often along floodplains • dominated by Sugar Maple and Black Maple
CULTURAL– TERRESTRIAL			
CU	Cultural		
CUM1-1	Dry-Moist Old Field Meadow	**Ground Layer:** Smooth brome, Canada goldenrod (*Solidago canadensis*), Canada thistle (*Cirsium arvense*), orchard grass (*Dactylis glomerata*) **Emergent Trees/Shrubs**: White willow, common buckthorn, Manitoba maple, Tartarian honeysuckle	• Tree cover < 25%; shrub cover <25% (CUM) • parent or mineral soil (1)
CUT1	Cultural Thicket	**Canopy**: Manitoba maple **Sub Canopy**: Common Buckthorn, Manitoba maple **Understory**: Common buckthorn, Tartarian honeysuckle. **Ground Layer**: Quackgrass (*Elymus repens*), Garlic mustard (*Alliaria petiolata*)	• 35%-60% tree cover (CUW) • mineral soil (1) • dominated by Common Buckthorn
CUW1	Cultural Woodland	Manitoba maple, Sugar Maple, American Elm	Treed pasture, dominated by a mixture of species.

A total of 72 vascular plant taxa were recorded within the Study Area. Of the 72 plant species, 37 (55%) are native to Ontario and 33 (45%) are introduced and non-native to Ontario. A list of vascular plants is presented in Appendix B. Definitions of the acronyms and species ranks used are also described in Appendix B.

4.6 Wetland Delineation

Background natural heritage layers identified wetland habitat in all four quadrants of the proposed bridge. LGL and GRCA attended a site visit in June 2026, to confirm wetland presence/absence in these areas. Wetland habitat was confirmed present along the base of the railway embankment slope on the northeast side of the proposed bridge crossing. This floodplain area may support a mix of lowland terrestrial (FOD7) and wetland habitats, however the area closest to the project, along the base of the slope was surveyed as wetland, as shown on **Figure 4, Figure 5** and **Figure 7**. There was also a narrow wetland feature confirmed northwest of the proposed bridge. This area corresponded to a drainage feature located with the FOD7 habitat. Wetland habitat was confirmed as absent in the southeast and southwest quadrants.

4.7 Wildlife and Wildlife Habitat

Within the Study Area the forested communities (FOD7 and FOD6-2) represent higher quality natural habitat for wildlife, while the cultural communities are most suitable for urban-tolerant species. All of the communities within the area afford shelter, habitat and food opportunities. The FOD communities represent a linkage opportunity for plants and wildlife as they connect to a contiguous forest that extends beyond the limits of the Study Area. This linkage function connects to areas of sensitivity including Conestogo River and floodplain communities.

Trees with diameter >10 cm with sloughing bark or cavities have the potential to support maternal roosting habitat for bats (MNRF Guelph District, 2017). Bat maternal roosting is identified as a type of significant wildlife habitat (SWH) to be considered in Ecoregion 6E (OMNRF, 2015). The criterion for significance is that a minimum of 10 cavity/snag trees per hectare of wooded habitat be present. In addition, there are several species of bats in southern Ontario that are designated as Endangered (provincially).

NRSI determined that several features present in the Study Area may provide suitable habitat for SAR bats, including Maple trees, potential roost trees containing cavities, crevices or exfoliating bark, and the crevices present in the existing piers (NRSI 2023a). A leaf off assessment was completed by NRSI, and a total of six trees were identified as supporting potential SAR bat roosting habitat. These trees are mapped on **Figure 4** and **Figure 5**.

LGL completed wildlife habitat surveys during leaf on conditions and confirmed these trees within the property boundary and documented incidental snags outside of the original footprint.

4.8 Breeding Birds

4.8.1 Survey Methodology

Breeding bird surveys were conducted by LGL on June 24 and July 4, 2025 to document breeding bird habitat and occupancy in the Study Area. On June 24, the survey was conducted between 5:40–7:10 AM, with clear skies, temperature of 24–25°C, and calm conditions. On July 4, the survey was conducted between 6:05 –6:57 AM, with clear skies, temperature of 9–12°C, and calm conditions.

The surveys followed the *Ontario Breeding Bird Atlas* (OBBA) protocol (Birds Canada, 2021). Each survey consisted of a 10-min point count during the most active period of bird vocalizations between 30 min before sunrise and five hours after sunrise. Surveyors identified all bird species seen or heard within a 200 m radius during each 10-min

period, and documented any wildlife observed outside of the count period as incidental observations. Two-point count stations were surveyed on each visit, one on the west side of the Conestogo River near the railway bridge abutment (BBS-1) and one in the forested area east of the river (BBS-2) (**Figure 4** and **Figure 5**).

Breeding bird evidence such as territorial songs or nesting activity was categorized according to the OBBA survey methodology (Birds Canada, 2021). The following criteria were applicable to the Study Area based on field observations:

Observed: **X:** Species observed in its breeding season, but no breeding evidence found.

Possible Breeding: **H:** Species observed in its breeding season in suitable nesting habitat.

S: Singing male present in its breeding season in suitable nesting habitat.

Probable Breeding: **T:** Presumed territory based on presence of adult birds (e.g., territorial song) on at least two days, one week or more apart, at the same place.

P: Pair observed during breeding season in suitable nesting habitat.

4.8.2 Survey Results

Thirty-three (33) bird species were detected in the Study Area (**Table 4**). Most species were detected in forested habitat, either at BBS-2 or to the west of the bridge abutment near BBS-1 (**Figure 4**). Wetland and watercourse-associated species including Belted Kingfisher (*Megaceryle alcyon*), Great Blue Heron (*Ardea herodias*), and Osprey (*Pandion haliaetus*) were detected at BBS-1.

Breeding bird evidence was documented for 26 of the 33 species, including 10 probable and 16 possible breeding species (**Table 4**). Probable breeders included eight species where territorial males were singing during both visits at the same BBS point. A pair of Osprey were observed flying along the river near the abutment during the June 26 site visit, and a pair of Downy Woodpeckers (*Dryobates pubescens*) were seen at the BBS-2 point on July 4. No confirmed breeding (e.g., occupied nests, adults carrying food) was observed at BBS points.

One probable breeder, Eastern Wood-Pewee (*Contopus virens*), is listed as Special Concern under SARA and SARO. Twenty-five species are regulated under the MBCA and three others under the *Ontario Fish and Wildlife Conservation Act* (FWCA). Two species are considered area-sensitive: Hairy Woodpecker (*Dryobates villosus*) which inhabits forest with tall trees and snags >25 cm DBH and White-breasted Nuthatch (*Sitta carolinensis*) which uses 10 ha continuous forest patches. Hairy Woodpecker was detected in the forested habitat near BBS-2, and White-breasted Nuthatch was heard in the forest >100 m west of BBS-1.

Table 4. Breeding Bird Species Observed at G2G Pedestrian Trail in June and July, 2025

Common Name	Scientific Name	SARA/ SARO	MBCA/ FWCA[1]	Breeding Status[2]	Highest Breeding Code[2]	BBS-1 Point[1]	BBS-2 Point[1]	Incidental Obs[1]
American Goldfinch	*Spinus tristis*		x	Possible	S	x	x	x
American Robin	*Turdus migratorius*		x	Probable	T	x	x	x
Belted Kingfisher	*Megaceryle alcyon*		x*	Possible	H	x		x
Black-capped Chickadee	*Poecile atricapillus*		x	Possible	S	x	x	x
Blue Jay	*Cyanocitta cristata*		x*	Possible	H		x	x
Brown-headed Cowbird	*Molothrus ater*			Observed	X			x
Cedar Waxwing	*Bombycilla cedrorum*		x	Observed	X			x
Common Grackle	*Quiscalus quiscula*			Observed	X			x
Downy Woodpecker	*Dryobates pubescens*		x	Probable	P		x	x

Common Name	Scientific Name	SARA/ SARO	MBCA/ FWCA[1]	Breeding Status[2]	Highest Breeding Code[2]	BBS-1 Point[1]	BBS-2 Point[1]	Incidental Obs[1]
Eastern Wood-Pewee	*Contopus virens*	SC/SC	x	Probable	T	x	x	x
European Starling	*Sturnus vulgaris*			Observed	X			x
Gray Catbird	*Dumetella carolinensis*		x	Possible	S	x		x
Great Blue Heron	*Ardea herodias*			Possible	H	x		
Great Crested Flycatcher	*Myiarchus crinitus*		x	Observed	X			x
Hairy Woodpecker	*Dryobates villosus*		x	Observed	X			x
Indigo Bunting	*Passerina cyanea*		x	Probable	T	x	x	x
Killdeer	*Charadrius vociferus*		x	Observed	X			x
Mallard	*Anas platyrhynchos*		x	Possible	H	x		
Mourning Dove	*Zenaida macroura*		x	Probable	T	x	x	x
Mourning Warbler	*Geothlypis philadelphia*		x	Possible	S			x
Northern Cardinal	*Cardinalis cardinalis*		x	Possible	S	x	x	x
Northern Flicker	*Colaptes auratus*		x	Possible	H		x	x
Northern House Wren	*Troglodytes aedon*		x	Probable	T	x	x	x
Orchard Oriole	*Icterus spurius*		x	Possible	S			x
Osprey	*Pandion haliaetus*		x*	Probable	P			x
Red-bellied Woodpecker	*Melanerpes carolinus*		x	Possible	H		x	x
Red-eyed Vireo	*Vireo olivaceus*		x	Probable	T	x	x	x
Red-winged Blackbird	*Agelaius phoeniceus*			Possible	S	x		x
Rose-breasted Grosbeak	*Pheucticus ludovicianus*		x	Probable	T	x		
Song Sparrow	*Melospiza melodia*		x	Probable	T	x	x	x
Warbling Vireo	*Vireo gilvus*		x	Possible	S	x		x
White-breasted Nuthatch	*Sitta carolinensis*		x	Possible	H	x		x
Yellow Warbler	*Setophaga petechia*		x	Possible	S	x		

[1] 'x' indicates species detected or MBCA/FWCA protected species. *FWCA species. [2] See Section 4.7.1 for definitions.

Other wildlife incidental observations included Green Frog (*Lithobates clamitans*) heard calling near BBS-1 on the June 24 and 26 visits, and Eastern Chipmunk (*Tamias striatus*) seen at BBS-2 on June 24.

4.9 Significant Wildlife Habitat

NRSI completed a preliminary screening for Significant Wildlife Habitat (SWH) at the site based on habitat information from 2022 site visits and the *Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E* (OMNRF, 2015). This screening indicated that most SWH types were not present in the area, although a number of candidate SWH were flagged for verification during the appropriate seasonal window, including:

- Bat Maternity Colonies
- Colonially Nesting Bird Breeding Habitat (Bank and Cliff)
- Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat
- Special Concern and Rare Wildlife Species

NRSI conducted bat acoustic surveys in July 2023 to help determine the presence of bat maternity colonies, as outlined further below. No breeding bird surveys were completed during their work. As such, LGL updated the SWH screening using field data from the ELC ecosite, an in-season vegetation survey and wildlife surveys (including a breeding bird survey) conducted in June and July 2025 (Section 4.10 Appendix C).

The site was confirmed as SWH for Species of Conservation Concern during the LGL's 2025 field visits. A singing male Eastern Wood-Pewee, a Special Concern species, were detected at both BBS points on two LGL visits in 2025, indicating this species is a probable breeder in the forested areas surrounding the bridge. Wood Thrush (*Hylocichla mustelina*) was not detected on 2025 field visits, although there is potential for the species at the site. Ontario Breeding Bird Atlas (OBBA) records from 2022–2024 confirmed presence of singing males in the forested areas <500 m from BBS-1.

SWH was not confirmed for Colonially Nesting Bird Breeding Habitat (Bank and Cliff), as no swallow or other bird nests were found on the bridge piers, abutments, or surrounding slopes along the riverbank during field visits. No swallows were detected during field visits either, including SWH species Cliff Swallow (*Petrochelidon pyrrhonota*) and Northern Rough-winged Swallow (*Stelgidopteryx serripennis*) or Bank Swallow (*Riparia riparia*) and Barn Swallow (*Hirundo rustica*). Recent (i.e. <5 years) OBBA and eBird records confirmed presence of all four swallow species near the site, including Cliff Swallow nesting at the Wallenstein Bridge crossing at Highway 86 north of the site in 2023. However, the 50 m radius buffer around the nest area (as defined in SWH description) does not overlap with proposed bridge works further downstream along the river.

During 2025 field visits, a pair of Osprey were seen flying along the river near the bridge abutment. Although no nests or territorial behaviour were observed during the site visits, both Bald Eagle and Osprey were reported on recent (i.e. <5 years) OBBA and eBird records. Therefore, although SWH for Bald Eagle and Osprey Habitat could not be confirmed, evidence suggests that these species are foraging nearby and may be nesting elsewhere along the river. A 300 m buffer around these species' nests is considered SWH (OMNRF 2015). Large scale tree removal along the river is not planned as part of the bridge works and excessive disturbance to nesting raptors is therefore unlikely.

The existing piers do not qualify as SWH for Bat Maternity Colonies, as buildings and manmade structures are not included in the criteria. However, SWH is considered separately from potential habitat for SAR bats, which is potentially present and discussed in more detail in the section below. SWH for bat maternity colonies is only applicable to forests containing a high density of suitable wildlife trees ≥25 cm in diameter. This density of suitable wildlife trees is not present within the Study Area. Information relating to SAR bat acoustic studies conducted, is outlined below in Section 4.10.1.

4.10 Species at Risk Screening

A desktop screening for wildlife Species at Risk using secondary source data, such as wildlife atlas programs and citizen science databases, was conducted by NRSI for their 2023 report. The purpose of this screening was to determine the potential for SAR and SWH within the study area (see Appendix I in NRSI 2023a). Species designated as provincially or federally Endangered, Threatened or Special Concern were screened.

In September 2025, LGL conducted a similar screening exercise to incorporate updated species records into the current report, using the following data sources:

- MNR Natural Heritage Information Centre (NHIC) database
- Ontario Breeding Bird Atlas
- Ontario Reptile and Amphibian Atlas
- Ontario Butterfly Atlas
- eBird
- iNaturalist
- DFO Aquatic SAR mapping

In order to include the most relevant species records, LGL applied date and geographical area search filters for each data source used. For all sources providing the year of observation, we only included species records from 2006–2025 (i.e., <20 years old). We also filtered for records within 500 m latitude and longitude boundaries of major roads

bordering the Study Area and for atlas squares overlapping with these boundaries. A table of potential SAR species (**Table 5**) has been compiled using information from these sources as well as LGL's summer 2025 field survey results.

A total of 19 species were screened for the study area. Of the 19 species, two species were confirmed to be present in immediate area surrounding proposed bridge crossing, as determined by site investigations. Eastern Wood Pewee and Little Brown Myotis (*Myotis lucifugus*) were confirmed as present.

Formal fish sampling and tactile mussel surveys were not completed for this study, however as noted further above, the DFO mapping shows the potential presence of four additional SAR. Silver Shiner (threatened provincially and federally) and critical habitat, Black Redhorse (threatened provincially and federally), Wavy-rayed lampmussel (threatened provincially and special concern federally), and Rainbow mussel (special concern provincially and federally).

4.10.1 SAR Bats and Bat Habitat

Little Brown Myotis, Northern Myotis (*Myotis septentrionalis*), Eastern Small-footed Myotis (*Myotis leibii*), and Tri-colored Bat (*Perimyotis subflavus*) are all listed as Endangered provincially and federally. In addition, three migratory bat species have been recently uplisted to Endangered provincially; Eastern Red Bat (*Lasiurus borealis*), Hoary Bat (*Lasiurus cinereus*), and Silver-haired bat (*Lasionycteris noctivagans*). Habitats for all of these bat species are protected under the provincial ESA (2007). Habitat requirements in Ontario vary by season and consist of overwintering habitat, summer habitats and swarming habitats (EC, 2018). Overwintering and swarming habitats are not present within the Study Area. However, summer habitats including maternity colony habitat, male or non-reproductive female day roosting habitat, and foraging habitat may be present.

Maternity habitat for Eastern Small-footed Myotis primarily consists of open, sunny, rocky habitats, and may include a variety of concrete manmade structures, such as the failing piers and abutments present within the Study Area (EC 2018, Humphrey and Fotherby 2019). Similarly, the crevices within the piers and abutments may offer suitable day roosting habitat for males or non-reproductive females of Eastern Small-footed Myotis or Little Brown Myotis.

Several trees containing cavities, crevices or exfoliating bark may also provide roosting habitat (maternity and/or day roosting for males or non-reproductive females) for Little Brown Myotis, Northern Myotis (EC 2018, Humphrey and Fotherby 2019, MNRF 2017), Hoary Bat and Silver-haired Bat (BCI 2026).

A number of Maple trees (*Acer* spp.) are present within the Study Area which may also provide roosting habitat for Tri-colored Bat and Eastern Red Bat in the form of hanging leaf clusters (MNRF, 2017; BCI 2026).

4.10.1.1 NRSI Cavity Survey and Acoustic Summary Results

Given the potential for bats to be present within the Study Area, and the detection of several potential roosting trees within the forested habitat as well as the characteristics of the existing piers, acoustic surveys were completed by NRSI in July, 2023. Two acoustic monitoring stations were placed on either side of the river near potential bat roosting habitat and in a location to capture potential foraging habitat, to assess the potential presence of SAR bats. The detectors were active for a total of 17 nights between June 30 and July 17, 2023. As per MECP, 2022a, acoustic data is required from at least 10 monitoring nights supporting favourable weather conditions (10 °C, low wind, no precipitation).

A total of five bat species were documented during the passive acoustic surveys. Four SAR species, Little Brown Myotis, Hoary Bat, Silver-haired Bat and Eastern Red Bat were identified as well as species from the Myotis genus (which includes Little Brown Myotis, Eastern Small-footed Myotis, Northern Myotis). Bat activity peaked on July 7 and July 9, 2023. Research suggests that maternity colonies of bats are likely to emerge from roosts between 20 – 60 minutes after sunset and return to roost after initial foraging and drinking between 100 – 230 minutes after sunset (Henry et al., 2022 as cited in NRSI 2023b). Based on the review of the patterns of detections, it was

determined by NRSI that maternity roosts do not appear present near the proposed bridge. The recordings appear to suggest that the area supports foraging/commuting habitat, as few calls were documented within 60 minutes of sunset.

4.10.2 Eastern Wood-pewee

The Eastern Wood-pewee is designated as Special Concern provincially. This species inhabits a wide variety of wooded upland and lowland habitats but is most commonly associated with the mid-canopy of forest clearings, and edge habitat in deciduous and mixed forests. It also occurs in anthropogenic habitats that provide an open forested aspect such as parks and suburban neighborhoods. It prefers intermediate-age mature forest stands with little understory vegetation. This species was documented within the study limits as a probable breeder based on LGL's breeding bird survey results.

4.10.3 Silver Shiner

Silver Shiner are designated as threatened provincially and federally. This fish species is found in moderately-flowing sections of larger streams with clear water and moderate currents, usually supporting gravel, cobble, boulder, and sand substrates. The Silver Shiner most frequently occurs in deep, swift riffles and faster currents of pools below riffles. Spawning habitat is suggested to occur in relatively deep riffles. Under SARA, the habitat for this species includes the wetted width of the watercourse with appropriate habitat to support life stages, with the addition of the meander belt width and an additional 30 m of terrestrial habitat (DFO, 2022). DFO has mapped this reach of the Conestogo River as Critical Habitat for this species. Critical habitat is defined as the habitat that is necessary for the survival or recovery of a listed species. Suitable riffle and pool habitats with appropriate substrates are present in the Conestogo River within the crossing area and vicinity. However, at the crossing location, it is notable that the swift water preference is not present, therefore spawning habitat does not appear present.

4.10.4 Black Redhorse

Black Redhorse is designated as threatened provincially and federally. This fish species is typically found in moderately sized to large rivers and streams with moderate to fast flows. It is rarely found associated with aquatic vegetation. Preferred substrates include rubble, gravel, sand, boulders and silt. In summer, this fish species generally prefers pools, and they overwinter in deeper pools. Spring spawning has been observed in riffle habitats, over substrates ranging from fine gravel to large cobble (MECP, 2024). Suitable riffle and pool habitats present in the Conestogo River. At the crossing location, preferred spawning habitat is not present however potential for overwintering habitat (deeper water) is present in the pool habitat downstream of the crossing.

4.10.5 Wavy-rayed Lampmussel

Wavy-rayed Lampmussel is designated as Special Concern federally and Threatened provincially. According to O.Reg. 832/21 habitat for Wavy-rayed Lampmussel is any part of a river, stream or watercourse, other than the St.Clair River, that is being used or has been used at any time in the past and including the watercourse segment that encompasses the river reach, for stream orders greater than two. It also includes the area adjacent to the watercourse that consist primarily of vegetation that occurs naturally or with minimal human intervention, extending within 30 m of the high-water mark Wavy-rayed Lampmussel inhabits clear, medium-sized rivers and streams, with steady flow and stable substrate. It is typically found in clean sand or gravel substrates, often stabilized with cobble or boulders, in and around riffle areas up to 1 m in depth (Metcalfe-Smith et al., 2005). Mussel larvae, called glochidia must attached to a fish host to complete development Two host fish, Smallmouth Bass and Largemouth Bass have been identified for this species (COSEWIC, 2010). Aquatic habitat with appropriate substrates is present in the Conestogo River and at the crossing area. Larval host species (Bass) are also present.

4.10.6 Rainbow

The Rainbow mussel is designated as Special Concern federally and provincially. This mussel is found in shallow, well-oxygenated waters of small to medium-sized rivers (often near emergent vegetation) and sometimes lakes. It is most abundant in waters less than 1 m deep. Preferred substrates are cobble, gravel, sand and occasionally mud or boulder. Mussel larvae, called glochidia must attach to a fish host to complete development. A variety of fish hosts, including Striped shiner, Smallmouth Bass, Largemouth Bass, Green sunfish, Greenside darter and Yellow perch have been documented (MECP, 2021). Aquatic habitat with appropriate substrates is present in the Conestogo River and at the crossing area, for this species. There is some instream vegetation along banks downstream of the bridge.

Table 5. Species at Risk Screening

Group	Species	COSEWIC status	SARA status	SARO status	Background Source - Desktop Review	Habitat Description	Suitable Habitat Present at Site	Detected - Desktop Review	Detected - Site Visits	Recommendations
Birds	**Bank Swallow** *Riparia riparia*	THR	THR	THR	eBird 2025; OBBA 2025	The Bank Swallow breeds in a variety of natural and anthropogenic habitats, including lake bluffs, stream and riverbanks, sand and gravel pits, and roadcuts. Nests are generally built in a vertical or near-vertical bank. Breeding sites are typically near open foraging sites such as rivers, lakes, grasslands, agricultural fields, wetlands and riparian woods. Forested areas are generally avoided.	The Site contains suitable foraging habitat for the species, including open areas such as meadows. No suitable nesting habitat was observed during site visits. No nests were found at bridge piers or abutments.	Yes	No	Stockpiled materials from construction activities should be covered or graded during the nesting season to deter nesting. Disturbance, clearing, or disruption of vegetation where birds may be nesting should be completed outside the breeding window of April 1 to August 31 to comply with MBCA regulations.
Birds	**Barn Swallow** *Hirundo rustica*	SC	THR	SC	eBird 2025; OBBA 2025	The Barn Swallow breeds in areas that contain a suitable nesting structure, open areas for foraging, and a body of water. This species nests in human-made structures including barns, buildings, sheds, bridges, and culverts. Preferred foraging habitat includes grassy fields, pastures, agricultural cropland, lake, and river shorelines, cleared right-of-ways, and wetlands. Mud nests are fastened to vertical walls or built on a ledge underneath an overhang. Suitable nests from previous years are reused.	The Site contains suitable foraging habitat for the species, including open areas such as meadows. No suitable nesting habitat was observed during the site visit.	Yes	No	Disturbance, clearing, or disruption of vegetation where birds may be nesting should be completed outside the breeding window of April 1 to August 31 to comply with MBCA regulations.
Birds	**Bobolink** *Dolichonyx oryzivorus*	SC	THR	THR	eBird 2025; OBBA 2025	The Bobolink breeds in grasslands or graminoid dominated hayfields with tall vegetation. Bobolink prefers grassland habitat with a forb component and a moderate litter layer. They are most abundant in established, but regularly maintained, hayfields, but also breed in lightly grazed pastures, old or fallow fields, cultural meadows, and newly planted hayfields.	Potential habitat present in agricultural fields beyond the study area, but areas near bridge and access points unlikely to provide habitat for the species.	Yes	No	Disturbance, clearing, or disruption of vegetation where birds may be nesting should be completed outside the breeding window of April 1 to August 31 to comply with MBCA regulations.
Birds	**Chimney Swift** *Chaetura pelagica*	THR	THR	THR	eBird 2025; OBBA 2025)	Chimney Swift breeding habitat is varied and includes urban, suburban, rural, and wooded sites. They are most commonly associated with towns and cities with large concentrations of chimneys. Preferred nesting sites are dark, sheltered spots with a vertical surface to which the bird can grip. Unused chimneys are the primary nesting and roosting structure, but other anthropogenic structures and large diameter cavity trees are also used.	Potentially suitable habitat at the Site. Chimneys are not present, but large diameter cavity trees are. Suitable foraging habitat is present along the Conestogo River.	Yes	No	Disturbance, clearing, or disruption of vegetation where birds may be nesting should be completed outside the breeding window of April 1 to August 31 to comply with MBCA regulations.
Bird	**Eastern Meadowlark** *Sturnella magna*	THR	THR	THR	eBird 2025; OBBA 2025	The Eastern Meadowlark breeds in pastures, hayfields, meadows and old fields. Eastern Meadowlark prefers moderately tall grasslands with abundant litter cover, high grass proportion, and a forb component. It prefers well-drained sites or slopes, and sites with different cover layers.	Potential habitat present in agricultural fields beyond the study area, but areas near bridge and access points unlikely to provide habitat for the species.	Yes	No	Disturbance, clearing, or disruption of vegetation where birds may be nesting should be completed outside the breeding window of April 1 to August 31 to comply with MBCA regulations.
Birds	**Eastern Wood-Pewee** *Contopus virens*	SC	SC	SC	eBird 2025; OBBA 2025	The Eastern Wood-Pewee inhabits a wide variety of wooded upland and lowland habitats but is most commonly associated with the mid-canopy of forest clearings, and edge habitat in deciduous and mixed forests. It also occurs in anthropogenic habitats that	The Site contains deciduous forest habitat which is suitable for the species. Species was detected on 2025 site visit,	Yes	Yes	Disturbance, clearing, or disruption of vegetation where birds may be nesting should be completed outside the breeding window of April 1 to August 31 to comply with MBCA regulations. Habitat

Group	Species	COSEWIC status	SARA status	SARO status	Background Source - Desktop Review	Habitat Description	Suitable Habitat Present at Site	Detected - Desktop Review	Detected - Site Visits	Recommendations
						provide an open forested aspect such as parks and suburban neighborhoods. It prefers intermediate-age mature forest stands with little understory vegetation.	and multiple recent (<5 year) records from OBBA and eBird.			impacts minimal, as only select trees will be removed to accommodate construction access/staging.
Bird	**Wood Thrush** *Hylocichla mustelina*	THR	THR	SC	eBird 2025; OBBA 2025; MNR 2025	The Wood Thrush breeds in moist, deciduous hardwood or mixed stands that are often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches. This species selects nesting sites with the following characteristics: lower elevations with trees less than 16 m in height, canopy cover of >70%, a high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter.	The Site contains deciduous forest habitat which is suitable for the species. Species not detected on site visits but there are multiple recent (<5 year) records from NHIC, OBBA, and eBird.	Yes	No	Disturbance, clearing, or disruption of vegetation where birds may be nesting should be completed outside the breeding window of April 1 to August 31 to comply with MBCA regulations. Habitat impacts minimal, as only select trees will be removed to accommodate construction access/staging.
Fish	**Black Redhorse** *Moxostoma duquesnei*	THR	THR	THR	DFO 2025	Black Redhorse is typically found in moderately sized to large rivers and streams with moderate to fast flows. It is rarely found associated with aquatic vegetation. Preferred substrates include rubble, gravel, sand, boulders and silt. In summer, this fish species generally prefers pools, and they overwinter in deeper pools. Spring spawning has been observed in riffle habitats, over substrates ranging from fine gravel to large cobble.	Suitable riffle and pool habitats present in the Conestogo River. At the crossing location, preferred spawning habitat not present however potential for overwintering habitat present.	Yes	No	LGL did not conduct fish sampling and species not listed in background ARA data, however species presumed to be present based on DFO mapping. Conduct works during the construction timing window.
Fish	**Silver Shiner** *Notropis photogenis*	THR	THR	THR	MNR 2025, DFO 2025	In Ontario, the Silver Shiner is found in moderately-flowing sections of larger streams with clear water and moderate currents. Usual substrates include gravel, rubble, boulder, and sand. Aquatic vegetation may be present or absent. The Silver Shiner most frequently occurs in deep, swift riffles and faster currents of pools below riffles. Spawning habitat is suggested to occur in relatively deep riffles.	Suitable riffle and pool habitats with appropriate substrates present in the Conestogo River for this species. At crossing location, swift water preference is not present and spawning habitat does not appear present.	Yes (Critical habitat noted)	No	LGL did not conduct fish sampling and species not listed in background ARA data, however species presumed to be present based on DFO mapping. Conduct works during the construction timing window.
Freshwater Mussels	**Wavy-rayed Lampmussel** *Lampsilis fasciola*	SC	SC	THR	DFO 2025	In Ontario, Wavy-rayed Lampmussel inhabits clear, medium-sized rivers and streams, with steady flow and stable substrate. It is typically found in clean sand or gravel substrates, often stabilized with cobble or boulders, in and around riffle areas up to 1 m in depth. It may also be found in large creeks and rivers.	Aquatic habitat with appropriate substrates present in the Conestogo River and at the crossing area, for this species. Larval host species (Bass) present.	Yes	No	Minimize the instream work area required to restore the center pier. Conduct a mussel salvage and relocation within the footprint of the proposed instream work area. Follow up with DFO and MECP required.
Freshwater Mussels	**Rainbow** *Villosa iris*	SC	SC	SC	DFO 2025	The Rainbow mussel is found in shallow, well-oxygenated waters of small to medium-sized rivers (often near emergent vegetation) and sometimes lakes. It is most abundant in waters less than 1 m deep. Preferred substrates are cobble, gravel, sand and occasionally mud or boulder.	Aquatic habitat with appropriate substrates present in the Conestogo River and at the crossing area, for this species. Some instream vegetation along banks downstream of the bridge.	Yes	No	Minimize the instream work area required to restore the east pier. Conduct a mussel salvage and relocation within the footprint of the proposed instream work area. Follow up with DFO and MECP required.

Group	Species	COSEWIC status	SARA status	SARO status	Background Source - Desktop Review	Habitat Description	Suitable Habitat Present at Site	Detected - Desktop Review	Detected - Site Visits	Recommendations
Herpetofauna	**Snapping Turtle** *Chelydra serpentina*	SC	SC	SC	Ontario Nature 2025b	The Snapping Turtle utilizes a wide range of waterbodies, but shows preference for areas with shallow, slow-moving water, soft substrates, and dense aquatic vegetation. Hibernation takes place in soft substrates underwater. Nesting sites consist of sand or gravel banks along waterways or roadways.	Aquatic habitat present near the Conestogo River is likely not suitable for this species, as few basking, nesting, and overwintering areas appear available.	Yes	No	Construction areas (i.e. staging areas) should be fenced off during the breeding season to deter wildlife from entering area.
Insects	**Monarch** *Danaus plexippus*	END	END	SC	Ontario Nature 2025a	The Monarch is found wherever there are milkweed plants (*Asclepias* sp.) for its caterpillars and wildflowers that supply a nectar source for adults. It is often found on abandoned farmland, meadows, open wetlands, prairies and roadsides, but also in city gardens and parks. Important staging areas during migration occur along the north shores of the Great Lakes.	Potentially suitable habitat in meadows near the river and adjacent to site. Milkweed plants observed in the study area during NRSI field visits. Species recorded in multiple years from Ontario Butterfly Atlas up and including 2024.	Yes	No	Minimal impact is predicted. Any reseeding required in staging areas to support native species, including milkweed. Milkweed confirmed as present within CUM 1-1 areas.
Mammals	**American Badger** *Taxidea taxidea jacksoni*	END	END	END	Dobbyn 1994	The American Badger's preferred habitats include undisturbed grasslands, shrubby areas and open woodlands, but the species will also use old fields, pastures, edges of agricultural fields and roadsides. The key factor for habitat suitability for this species is presence of prey, comprised mainly of woodchuck and eastern cottontail in southern Ontario.	Suitable grassland and open woodland habitat is not present for this species at the Study Area.	Yes	No	No measures recommended at this time.
Mammals	**Eastern Small-footed Myotis** *Myotis leibii*			END	Dobbyn 1994 BCI 2026	This species is not known to roost within trees, but there is very little known about its roosting habits. The species generally roosts on the ground under rocks, in rock crevices, talus slopes and rock piles. It occasionally inhabits buildings. Areas near the entrances of caves or abandoned mines may be used for hibernacula.	Potentially suitable roosting habitat in crevices at piers.	Yes	No	No measures recommended at this time. Species not specifically detected in NRSI's acoustic study (October 2023).
Mammals	**Little Brown Myotis** *Myotis lucifugus*	END	END	END	Dobbyn 1994 BCI 2026	Little Brown Myotis will roost in both natural and man-made structures. They require several large dead trees, in specific stages of decay and that project above the canopy in relatively open areas. May form nursery colonies in the attics of buildings within 1 km of water. Caves or abandoned mines may be used for hibernacula, but high humidity and stable above freezing temperatures are required. This species forages over water, consuming aquatic insects including mayflies, midges, mosquitoes, caddisflies. They also feed over upland habitats (i.e. forest trails, meadows), consuming mostly beetles, crane flies and moths	Potentially suitable habitat, including maternity roost trees, may be present in wooded areas adjacent to Conestogo River.	Yes	Yes	Disturbance, clearing, or disruption of vegetation should be completed outside the window of March 15-November 30 (window to be confirmed by MECP) to avoid disturbance to individual bats during roosting or migration. Species was detected in NRSI's acoustic study and patterns indicate that this species is likely foraging along the river. It is most likely that anthropogenic structures located outside of the study area, are serving as maternity roosts in this agricultural setting. (October 2023).
Mammals	**Northern Myotis** *Myotis septentrionalis*	END	END	END	Dobbyn 1994 BCI 2026	The Northern Myotis will usually roost in hollows, crevices, and under loose bark of mature trees. Roosts may be established in the main trunk or a large branch of either living or dead trees. Female bats of this species use roost networks, frequently switching between a collection of different tree roosts. Caves or abandoned mines may be used for	Potentially suitable habitat, including maternity roost trees, may be present in wooded areas adjacent to Conestogo River.	Yes	No	No measures recommended at this time. Species not specifically detected in NRSI's acoustic study (October 2023).

Group	Species	COSEWIC status	SARA status	SARO status	Background Source - Desktop Review	Habitat Description	Suitable Habitat Present at Site	Detected - Desktop Review	Detected - Site Visits	Recommendations
						hibernacula, but high humidity and stable above freezing temperatures are required.				
Mammals	**Tri-colored Bat** *Perimyotis subflavus*	END	END	END	Dobbyn 1994 BCI 2026	Tri-colored Bats may roost in foliage, clumps of old leaves, hanging moss, or squirrel nests. They typically feed over aquatic areas with an affinity to large-bodied water and will likely roost in close proximity to these. Hibernation sites are found deep within caves or mines in areas of relatively warm temperatures. These bats have strong roost fidelity to their winter hibernation sites and may choose the exact same spot in a cave or mine from year to year.	Potentially suitable habitat, including maternity roost trees, may be present in wooded areas adjacent to Conestogo River. However, no leaf clusters were observed during NRSI's leaf off study.	Yes	No	Species not detected in NRSI's acoustic study (October 2023). No measures recommended at this time.
Mammals	**Eastern Red Bat** *Lasiurus borealis*	Not at Risk	Not at Risk	END	BCI 2026	Eastern Red Bats are North America's most abundant tree bats. These bats roost in foliage of deciduous and sometimes evergreen trees. These bats are mostly solitary. In the summer months, they are the earliest evening fliers, typically feeding on moths. These bats undergo seasonal migration, moving from their summer ranges, along the Atlantic seaboard, as many birds. These bats do hibernate.	Potentially suitable habitat, including maternity roost trees, may be present in wooded areas adjacent to Conestogo River. However, no leaf clusters were observed during NRSI's leaf off study.	Yes	Yes	Disturbance, clearing, or disruption of vegetation should be completed outside the window of March 15-November 30 (window to be confirmed by MECP) to avoid disturbance to individual bats during roosting or migration. Species was detected in NRSI's acoustic study and patterns indicate that this species is likely foraging along the river.
Mammals	**Hoary Bat** *Lasiurus cinereus*	Not at Risk	Not at Risk	END	BCI 2026	Hoary bats roost solitarily in trees, with preference towards maple, oak, ash, elder, hemlock and redwood trees. These bats feed primarily on mothers, and also eat beetles, flies, crickets and true bugs. These bats undergo seasonal migration, moving from their summer ranges to coastal winter habitats. These bats will also hibernate for short periods.	Potentially suitable habitat, including maternity roost trees, may be present in wooded areas adjacent to Conestogo River.	Yes	Yes	Disturbance, clearing, or disruption of vegetation should be completed outside the window of March 15-November 30 (window to be confirmed by MECP) to avoid disturbance to individual bats during roosting or migration. Species was detected in NRSI's acoustic study and patterns indicate that this species is likely foraging along the river.
Mammals	**Silver-haired bat** *Lasionycteris noctivagans*	Not at Risk	Not at Risk	END	BCI 2026	Silver-haired bats are closely associated with coniferous, mixed coniferous and deciduous forests, particularly old growth forests. They use tree cavities or small hollows for the maternal roosts and switch roosts throughout the maternity season. These species required 21 snags per hectare. These bats feed on soft-bodied insects and often forage along small clearings, roadways and watercourses. Hibernation habitats are typically winter forest sites comprised of small tree hollows, under exfoliating bark, in wood piles and in crevices of cliffs.	Potentially suitable habitat, including maternity roost trees, may be present in wooded areas adjacent to Conestogo River.	Yes	Yes	Disturbance, clearing, or disruption of vegetation should be completed outside the window of March 15-November 30 (window to be confirmed by MECP) to avoid disturbance to individual bats during roosting or migration. Species was detected in NRSI's acoustic study and patterns indicate that this species is likely foraging along the river.
Mammals	**Woodland Vole** *Microtus pinetorum*	SC	SC	SC	Dobbyn 1994	In southern Ontario, Woodland Vole is associated with mature deciduous forests with soft, often sandy soils and a deep litter and humic layer, suitable for burrowing. Common associates include oaks, hickory, black walnut, American beech and tulip tree. This species is often found at woodland edges near roads, railway tracks and field edges.	Suitable mature forest habitat is not present for this species at the Study Area.	Yes	No	No measures recommended at this time.

5 Proposed Works- Preferred Alternative

Bridge alternatives were reviewed for a new pedestrian bridge crossing the Conestogo River. The Schedule B EA, evaluated three bridge options, and evaluation criteria including: Environmental Impacts, Sustainability, Constructability, Costs, Durability, Risk and Heritage. The three alternatives/options were:

- New superstructure on a new substructure on the same alignment as the old railway bridge piers
- New Two span bridge on a rehabilitated centre pier
- New three span bridge on a rehabilitated centre and west pier.

The highest ranked alternative, considering all criteria ranked equally, was the **New two span bridge on the rehabilitated centre pier.** Further to this, all three designs considered similar components (timber deck, weathering steel). The two span bridge will be a truss design, supporting a timber deck. The EA project file and Structural Design Report provide more details on the evaluation results.

The rehabilitation of the centre pier will consist of fixing existing spalling areas by installing a jacket of new concrete 150mm thick. The concrete work would be cast-in-place and use self consolidation concrete with reinforcing steel. There be a minor extension of the concrete at the top (by approximately 3m) to increase the elevation of this pier to support the new pedestrian bridge. In order to access this pier for the restoration works, a temporary rock fill causeway is being proposed from the east bank of the river. This rock fill causeway will be elevated above the water level.

The erection of the bridge is currently being proposed by 'launching'. This method involves sliding or pushing the bridge into place from one side of the river to another. In order to accomplish this, temporary rollers will be installed on top of the three piers. The concept is illustrated on the attached Drawings 7 and 8 (**Appendix D**). The project team have determined that the preferred launching side is the abandoned railway section on the west side of the river, extending out from Powell Road. This is a shorter trail section, is 3-4m wide (slightly wider and less overgrown than the east side) and does not initiate at a major arterial road. In the final design, the east and west piers will be below the bridge elevation, with the bridge weight on the centre pier only (see Drawing OP7, **Appendix D**).

The floodplain will be accessed on the east side of the river, in order to access the pier rehabilitation works on the east side. In addition, small vehicular access may also be required from the west side in order to conduct the minor west pier work (installation for rollers required for launching). Access road locations are discussed further below. Based a site walk review in September 2025, only select tree removals and pruning would be required along these floodplain access routes. The old railway footprint measures approximately between 3-4m wide and on stone base.

6 Impact Assessment

The following section discusses the impact assessment, based on the preferred bridge design and construction methodologies being considered to date.

There will be no additional permanent instream footprint associated with the preferred bridge design. The two span bridge will extend over the river on the centre pier. The west and the east piers will remain as is and not be incorporated into the final bridge design. The delaminated outer surface of the centre pier will be removed and concrete restored to match the existing pier footprint.

In order to access the pier to conduct the concrete works, it is currently proposed that a temporary rock fill causeway be built instream between the centre pier and the eastern shoreline of the Conestogo River, at a 1:1 slope. Geotextile will be present along the bottom of the rock fill, to aid in the removal of the material and minimize disturbing existing substrates upon removal. The causeway footprint will measure approximately 3 m wide (road

base) and extend out on a 1:1 slope to ensure a stable access and elevated approximately 30 cm above the water level (see Drawing 3, **Appendix D**). Turbidity curtains will be installed instream upstream and downstream of the work area to keep existing substrates undisturbed, within the work area.

Additional temporary fill will extend around the pier, within 3 m of the base, at a 1:1 slope. As water depth varies, total temporary rock fill area (causeway and pier) is estimated to measure approximately **240 m²** (below the high-water mark).

The east access road will be constructed along a private property located southeast of the future bridge crossing, in order to access the floodplain. This road will be located within a pasture, following an existing trail and positioned to avoid tree loss, to the extent possible. This road access is required in order to access a temporary staging area, and the river, for the pier concrete works and will be temporary, using gravel or timber mats over top of geotextile depending on ground conditions. The staging area will measure 13m x 15m and will be used to store concrete and restoration materials and to provide a small parking area.

The west access road is a narrow road /wide path which extends down the slope on the north side of the future bridge crossing, towards the west pier. The path is mostly vegetated with grasses with some overhanging trees and supports more rocky substrates closer to the pier.

6.1 Impacts to Fish and Fish Habitat

The habitat present within the **240 m²** area of the temporary instream works supports a mix of cobble, boulder and gravel substrates overlain by silt. The habitat impacted is characterized as flat morphology, with a transition to pool habitat downstream of the crossing. There is some instream vegetation growing along the bank edge and the banks support herbaceous species and grasses. Impacted herbaceous vegetation will be restored with a native seed mix after construction.

Within the work areas identified, there is potential for two SAR fish species, Silver Shiner and Black Redhorse to be present. Turbidity curtains will be installed instream to limit downstream impacts during pier rehabilitation. The instream habitat (below the highwater mark) encompassed by the curtains is estimated to be **345 m²**. This area will not be available for fish use during construction. A fish relocation will be required within this work zone to ensure no fish are trapped. The affected habitat does not appear to support spawning habitat for the SAR species and Silver Shiner prefers faster water, which is not present at this location. However, conducting instream work outside of spawning window for these species will further mitigate potential indirect impacts to all fish species in the Conestogo River.

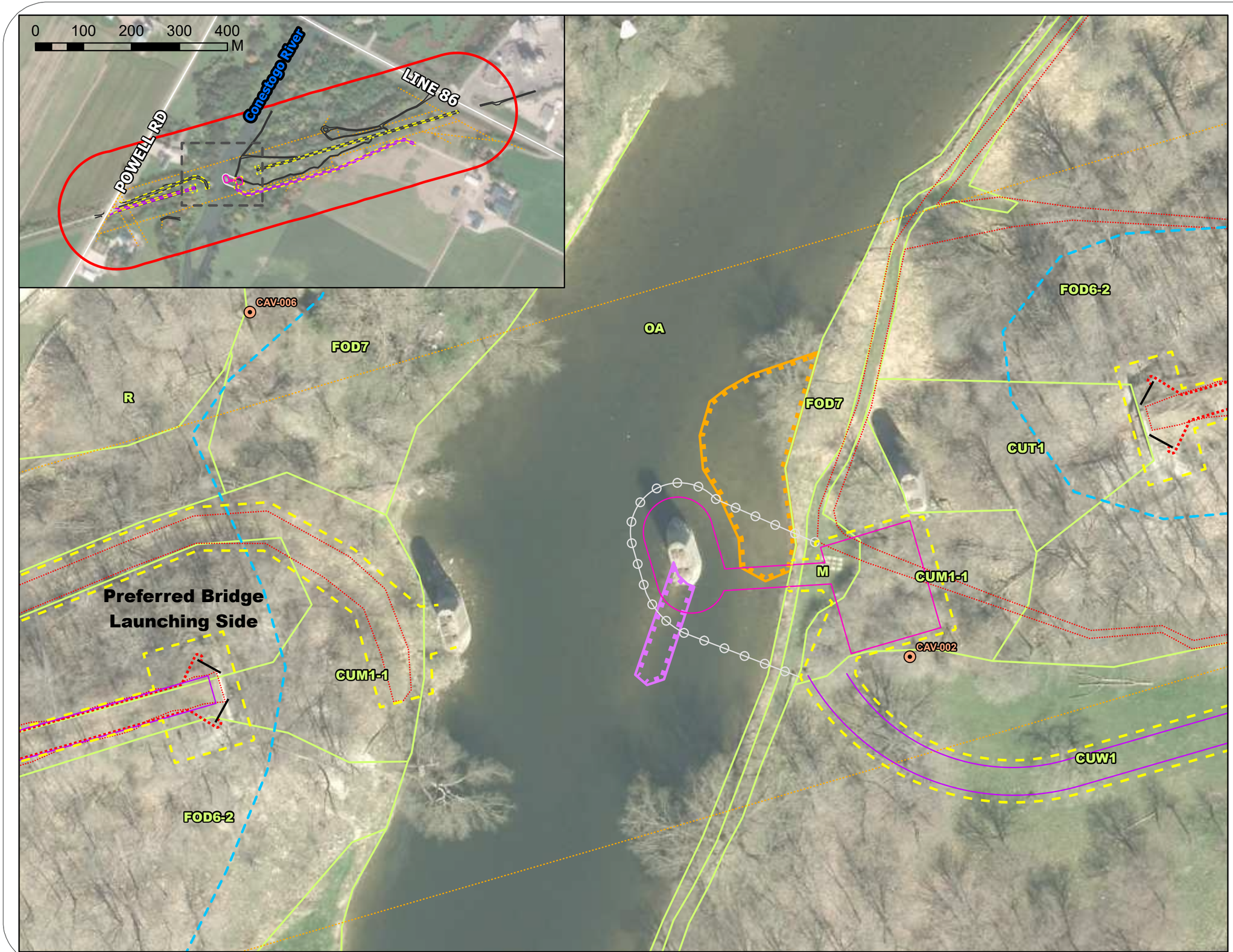
The habitat for Silver Shiner includes the wetted width of the watercourse with the addition of the meander belt width and an additional 30 m of terrestrial habitat. Meander belt width was estimated at this location- based on the outer limit of the upstream and downstream meanders. It was determined that approximately 3254m^2 of habitat above the highwater mark will be temporarily impacted by the project works within the limits of the Silver shiner habitat. Accounting for both habitats below and above the highwater mark, the total impacts to access road habitat is quantified as 3599m^2. Limited permanent impacts are anticipated within the habitat area and no permanent increase in footprint is proposed below the high-water mark as the pier will be repaired like-for-like. Although there will be a loss of riparian and floodplain vegetation anticipated temporarily, these areas will be reseeded and planted within the same growing season. The two mussel species identified by DFO may also be present in the instream work area and vicinity. Although mussels have not been observed by LGL, appropriate substrates for these species are present and as such, minimizing the instream work area was recommended. A mussel relocation will be required prior to laying down the rock fill around the pier and for the temporary causeway. The detailed mussel relocation plan will be defined in future reporting required under provincial SCA.

6.2 Impacts to Vegetation and Vegetation Communities

There will be both temporary and permanent impacts to vegetation as some tree pruning will be required along the abandoned railway bed alignment to accommodate the trail and bridge works, as well as along the temporary access roads described above. Tree growth underneath the bridge ends will be removed permanently or cut back on a regular basis. Access from the east side of the river is required to complete the pier rehabilitation work. Several options for access were evaluated. The abandoned railway bed is elevated with steep slopes, and although trails are present at the base of the slope, reaching them would require traversing the steep, treed embankment through mature maple forest. Additional fill would also be required to establish safe access from this approach.

The landowner managing the property immediately south of the railway right-of-way has offered access through their pasture, which is characterized as cultural woodland (Figure 6). This option minimizes tree removals and follows an existing disturbed area where vegetation has already been impacted by cattle and vehicular activity. The approximate area of cultural woodland affected is estimated to be 772 m^2 however the access route will be aligned to avoid tree removals and pruning to the extent possible.

Near the river crossing at the end of the proposed access route, a laydown area is proposed to store concrete and restoration materials and to provide a small parking area. The working pad is estimated to measure approximately 13 m × 15 m (195 m^2), resulting in impacts to cultural meadow habitat. Two trees may require removal near the east end of the laydown area; however, the most open portion of the floodplain was selected to minimize tree disturbance. No sensitive or rare vegetation species were identified within the proposed work area. To facilitate site restoration following construction, geotextile fabric overlain with granular material will be placed within the working pad footprint to allow for easier removal after completion of works.



LEGEND

- Inset Mapped Extent
- Study Area - 120m from Railway Footprint
- Cavity Tree (NSRI / LGL)
- Shallow Aquatic Habitat - 25 - 50cm Depth (LGL)
- Shoal (LGL)
- Vegetation Community Boundary (LGL)

Field Survey - 2025 (Tulloch)

- Existing Trail
- Property Boundary

Proposed Design (Aug 2026)

- Turbidity Curtain
- Access Road - 3.5m Wide Gravel Access Road - 3.5m Wide Gravel - To be Field Fit to Avoid Existing Trees
- Work Platform
- Silt Fence
- Retaining Wall

Ecological Land Classification (LGL)

- CUM1-1: Dry-Moist Old Field Meadow Type
- CUT1: Mineral Cultural Thicket Ecosite
- FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest Type
- FOD7: Fresh - Moist Lowland Deciduous Forest Ecosite
- M: Manicured
- OA: Open Water
- R: Residential

0 5 10 15 20 M

N

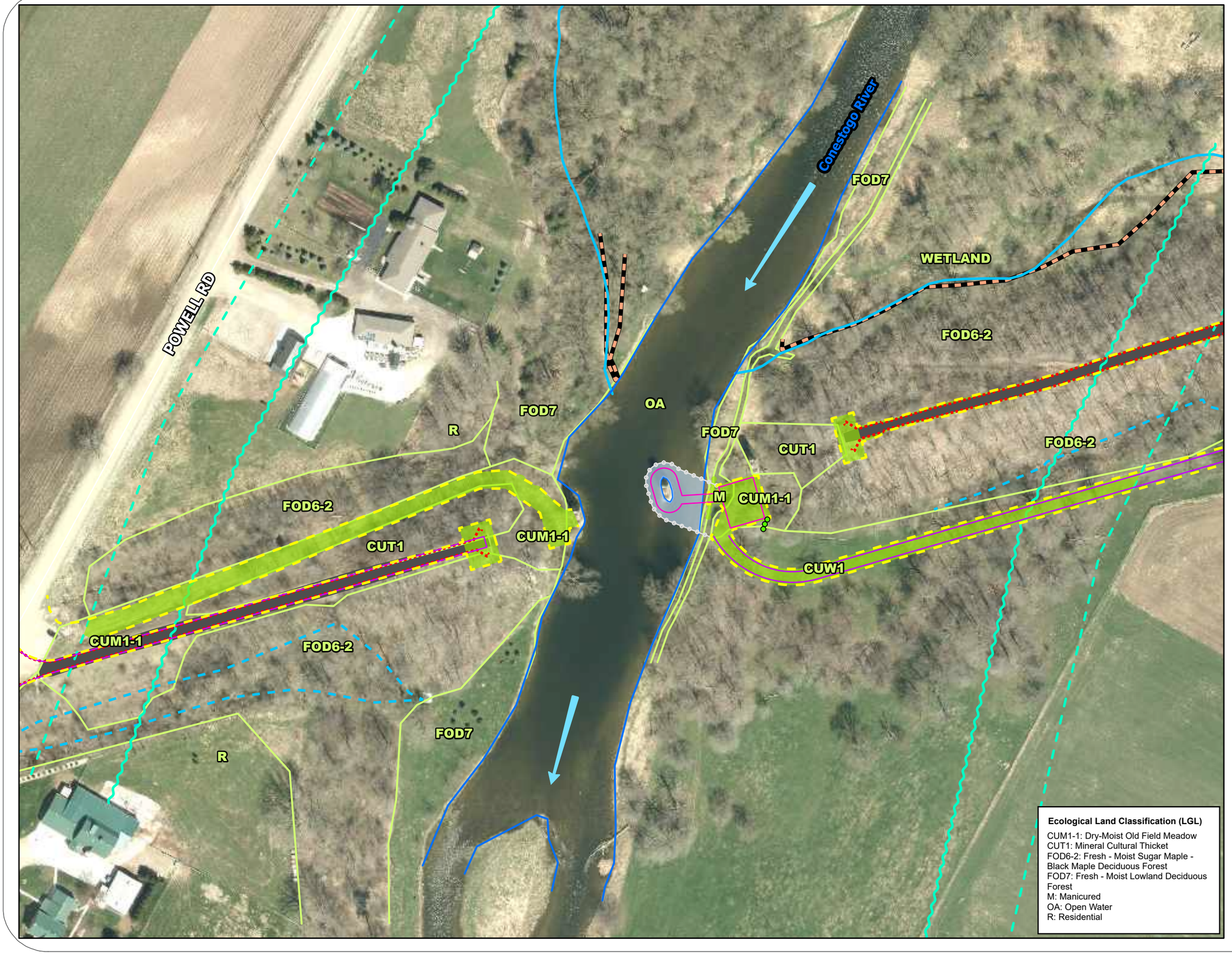
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G2G Pedestrian Trailway Bridge Reconstruction

Proposed Design and Restoration Areas

LGL LIMITED
Est. 1971
environmental research associates

Project	TA2600061	**Figure**	6
Date	2026-09-18	**Prepared By**	AME
Scale	1:500	**Verified By**	EB



Ecological Land Classification (LGL)

CUM1-1: Dry-Moist Old Field Meadow
CUT1: Mineral Cultural Thicket
FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest
FOD7: Fresh - Moist Lowland Deciduous Forest
M: Manicured
OA: Open Water
R: Residential

LEGEND

- Approximate Meander Belt 115m from Water's Edge
- 30m from Meander Belt / Silver Shiner Habitat
- Flow Direction (LGL)
- Drainage Feature (From Survey)
- GRCA Wetland Limit (June 2026)
- Watercourse (LIO)
- Water's Edge (Tulloch, 2025)
- Vegetation Community Boundary (LGL)
- Abandoned Railway Bed
- Impact Area (above HWM)
- Impact Area (below HWM)
- Grading

Proposed Design (Aug 2026)

- Turbidity Curtain
- Access Road - 3.5m Wide Gravel - To be Field Fit to Avoid Existing Trees
- Work Platform
- Silt Fence
- Tree Resource (LGL)

0 20 40 60 M

N

LGL Field Survey. Produced under Licence with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2026. Contains information licensed under the Open Government Licence – Ontario. Contains information from Tulloch - 2025.
Imagery credits: Region of Waterloo, Microsoft, Vantor.

G2G Pedestrian Trailway Bridge Reconstruction

Silver Shiner Impacts

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	7
Date	2026-09-18	**Prepared By**	AME
Scale	1:1,300	**Verified By**	EBL

6.3 Impacts to Wildlife and Wildlife Habitat

Some habitat will be removed along the already disturbed railway footprint and along the temporary access roads required for construction as discussed above. These impacts are considered minor and are primarily associated with edge management (pruning, cultural meadow). No permanent impacts to floodplain vegetation are expected.

There is potential for impacts to wildlife during the construction stage due to increase traffic, noise, and disturbance to wildlife habitat. To minimize risks, all construction areas and access roads should be cordoned off with fencing to reduce wildlife collisions and encounters within the work zone.

To protect nesting birds during the breeding season, vegetation removal should be avoided between April 1 and August 31 of any given year. If clearing is necessary during this period, nest sweeps should be conducted by a qualified avian biologist. No clearing may occur if active nests are identified.

Based on surveys conducted to date, the existing piers are not anticipated to support bird nests or roosting bats. To protect bats in the maternal roosting period, all cavity tree removals should be avoided between March 15-November 30 of any given year as identified by MECP (March 20, 2026 correspondence).

6.4 Displacement of Rare, Endangered Wildlife or Significant Wildlife Habitat

Although one potential bat maternal roosting tree was noted in the previous study by NRSI near the laydown area, it does not appear that this tree will require removal; this will be confirmed prior to any tree removals occurring.

Eastern Wood Peewee (Special Concern species) are considered a probable breeder within the forest in the Study Area. Limiting impacts to treed habitats and conducted removals outside of the MBCA has been recommended.

7 Mitigation Measures

LGL has reviewed the information available for the project to date against the natural heritage information compiled above to make the following recommendations to reduce impacts on natural features.

7.1 Project Planning and General Mitigation

Construction related impacts can first be mitigated by minimizing the extent of disturbance wherever possible through coordination of all project related planning, including design, staging, and scheduling. Mitigation related to staging of construction includes prioritizing project components in such a way that disturbance within the same construction area would be minimized (i.e. coordination of all disturbance activities in a manner that reduces the impact at these locations).

- Minimize vegetation and tree removals through construction extents through strategic positioning of the design footprint and storage/laydowns areas within cultural/previously disturbed or open areas to the extent feasible;
- Minimize construction area to the extent possible;
- Use appropriate tree protection/ESC measures for any work around tree resources within the project area to help protect trees identified to be retained;
- No vegetation removal should occur between April 1 to August 31 of any given year in order to protect birds afforded protection under the Migratory Birds and Convention Act (MBCA);
- No instream work should occur between October 1- July 15 to protect both spring and fall spawners (OMNR 2013; DFO 2013). This window will be confirmed with agencies prior to works;
- The initiation of instream work should occur when freshwater mussels (if present) are easily detected (not burrowed deep in substrate). It is anticipated that agencies will specify that a mussel salvage will be required prior to instream work occurring. Salvage would occur when water temperatures are higher than 16 °C, which

may between June 1-September 30th in Ontario (Mackie et al., 2008), however the timing of this activity is also dependent upon the fisheries window restriction; and,
- To protect bats in the maternal roosting period, all cavity tree removals should be avoided between **March 15-November 30** of any given year as identified by MECP (March 20, 2026 correspondence).

7.2 Construction Mitigation Measures

The extent of construction related activity should be effectively isolated and secured from adjacent natural lands through the installation of erosion and sediment control measures to mitigate the potential for silt and sediment entry into the river and adjacent lands. The erection of silt fencing around the laydown area will also discourage the entry of wildlife using the floodplain area (i.e. turtles, amphibians, small mammals) into the work zone, thereby minimizing incidental encounter and the risk of incidental mortality during construction.

A standalone Erosion and Sediment Control (ESC) Plan should be developed and implemented for the site that minimizes risk of sediment transport into adjacent retained vegetation communities or to the aquatic habitat of the Conestogo River during all phases of the project. This plan should include:

- Methods to isolate the construction area;
- Timing of effective ESC measures, where ESCs shall be installed before starting work to prevent the entry of sediment into the watercourse or adjacent areas. Inspect regularly during the course of construction and conduct regular maintenance and repairs as necessary;
- Clearly identified stockpiling and staging areas; and,
- Develop a plan to dispose of any water accumulated onsite from pooled stormwater.

The following construction notes are recommended for the ESC plan:

Tree Protection

- Trees shall be felled to avoid damaging standing trees that are to be preserved. No trees shall be felled into or across the river;
- Any canopy and root pruning required should be completed in accordance with good arboricultural practices; and
- Tree protection perimeter ESC control should be installed to protect preserved trees along the access and laydown areas.

Instream/near stream works

- No fording of the Conestogo River shall occur, with the exception of accessing the river via the temporary causeway for the pier restoration works;
- All activities, including maintenance procedures, shall be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the water;
- Vehicular refueling and maintenance shall be conducted a minimum of 30 metres from the water. Recommend that a dedicated fueling area be shown on the ESC plan;
- A turbidity curtain shall be installed around the instream work area (upstream and downstream) and tie into the existing east bank. The curtain is to be installed prior to any instream work commencing and removed only after instream materials have been removed from the river;
- Ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse;
- Ensure that all equipment which comes in contact with water is free of fluid and leaks and is externally cleaned / degreased and fuel lines covered.
- For machinery used on the causeway, these vehicles should be using biodegradable lubricating oils;

- The proponent/contractor shall monitor the weather several days in advance of the onset of the project to ensure that the works will be conducted during favourable weather conditions. Should an unexpected storm arise, the contractor will remove all unfixed items from the Regional Storm Flood Plain that would have the potential to cause a spill or an obstruction to flow, e.g., fuel tanks, porta- potties, machinery, equipment, construction materials, etc.
- Fish and Mussels stranded within the instream work area (defined by the upstream and downstream limits of the turbidity curtain) shall be captured and released live in suitable habitat outside of the work area under the supervision of a qualified aquatic biologist. *A License to Collect Fish for Scientific Purposes* (MNR) and a *Species at Risk Permit* (SARA) from the DFO are both required in order to conduct this work given the presence of SAR fish species.[1]
- Mussel relocation methods will be defined further in the *Conservation Plan*; a requirement under the provincial Species Conservation Act Registration, which will occur prior to construction commencing.

Other ESC and Protection Measures

- Heavy duty non-woven filter fabric (Terrafix 270R fence or equivalent) is recommended as a sediment control around the laydown area;
- For access roads, existing trails will be used to the extent possible. Where access road upgrades are required (i.e. addition of granular material), this material shall be removed at the end of construction;
- All dewatering/unwatering shall be treated and released to the environment at least 30 metres from the river and allowed to drain through a well-vegetated area. No dewatering effluent shall be sent directly to a natural area or allowed to drain onto disturbed soils within the work area. These control measures shall be monitored for effectiveness and maintained or revised to meet the objective of preventing the release of sediment laden water;
- Ensure that a Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, and emergency contact numbers) is on-site at all times for implementation in event of an accidental spill during construction. An emergency spill kit shall be kept on site. A response plan shall also be developed that is to be implemented immediately in the event of a sediment release.
- All decommissioned construction materials and debris shall be disposed of offsite in accordance with all federal, provincial and municipal regulations;
- All disturbed areas shall be restored to grade and re-vegetated with native seed mixes; and
- An Environmental Monitor shall be on site and provide advice, to ensure that activities that could have a negative impact to the natural environment are effectively mitigated as construction proceeds, as defined in future permits and approvals.

8 Restoration

All areas impacted by the construction works will be restored to existing condition or better. Native seed with a cover crop will be applied to all disturbed areas. Native shrubs and trees will be installed within the floodplain within the vicinity of the staging area and along the banks near the instream work area on the east side of the river. A few trees will be planted on the west side, below the bridge. To date, a draft restoration plan has been completed, but subject to agency review. A formal tree inventory has not been completed for this project, however the

[1] DFO had confirmed that this permit would be required in preliminary consultation between NRSI and DFO.

restoration plan has accounted for the removal of two trees that may require removal along the edge of the staging area. Should additional trees require removal, the restoration plan will have to be updated to compensate for these removals, or cash-in-lieu options be considered. A total of 10 trees and 10 shrubs are shown on the draft restoration plan, as of September 2026. The restoration plan and details are found at the end of this report (Figure 8A-F, 9A-B).

Collaborative consultation has been occurring between the Region of Waterloo and the Six Nations of the Grand River Elected Council (SNGREC), during the completion of this EA. Moving forward, it is anticipated that further consultation will occur with regards to confirming final tree compensation requirements, discussing invasive species management as well as the opportunity for providing bat habitat enhancements on site. As the project moves forward into the final stages of the tender, through construction and the monitoring stages, further collaboration is anticipated with the SNGREC on these items. See Appendix E for a copy of the correspondence.

9 Conclusions and Next Steps

This report constitutes an existing conditions summary of the study area with an impact assessment of proposed works and appropriate mitigation. The main mitigation measure for this construction project was avoidance, and efforts were made to reduce natural heritage footprints where possible.

Through background information review and field investigations, important natural heritage features and species were identified on and adjacent to the study area include:

- GRCA regulated areas (O.Reg. 41/24);
- Warmwater/coolwater sportfish and baitfish as well as the presence of Brown Trout (coldwater);
- Potential presence for two fish SAR (Black Redhorse, Silver Shiner) and Critical Habitat for Silver Shiner;
- Potential presence for one mussel SAR designated as threatened provincially, Wavy-rayed Lampmussel and one designated as special concern, Rainbow;
- High quality upland forest along old rail corridor;
- Confirmed SAR bats (Little Brown Myotis, Eastern Red Bat, Silver-haired Bat, Hoary Bat) foraging area;
- Confirmed Special Concern Bird Species (Eastern Wood Pewee);
- No confirmed wetland at Railway ROW however mapped in provincial and GRCA databases; and
- No SAR flora identified

The project has minimized impacts to the floodplain and adjacent upland natural heritage features. As the proposed design will use the existing piers, no permanent additional footprints will be required instream. Temporary impacts will occur in order to accommodate the pier restoration works. The temporary rock fill/causeway will be removed after construction and turbidity curtains in place prior to and after the removal, to ensure no downstream impacts during construction. The stream bed under the rock fill will be left intact and fish and mussel relocations are anticipated prior to any work occurring in this area.

Table 6 summarizes the permitting and approvals that are anticipated or have been issued and where next steps in in permitting are required.

Table 6: Summary of Potential Environmental Permits or Approvals Required.

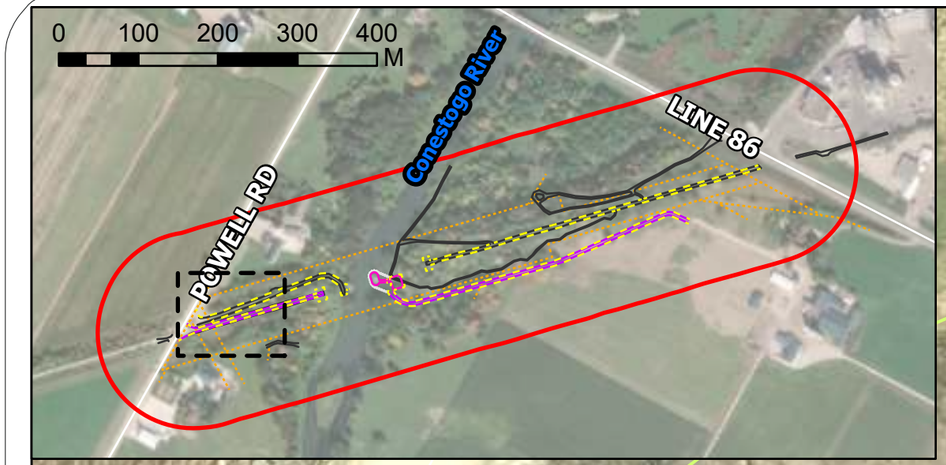
Legislation	Plan/Regulation/ By-law	Permit/Approval/Authorization	Permit or Approval Required	Agency Consultation/ Next Steps
Fisheries Act		Fisheries and Oceans Canada (DFO) administers the Fisheries Act. A Fisheries Act Authorization (FAA) is the main approval. Letters of Advice may be provided when Authorization is not applicable.	Previous agency correspondence indicates that works may be accepted via A Letter of Advice (LoA). However, as Critical habitat for Silver Shiner is present, it is possible that FAA may be required.	A Request for Review (RfR) was updated and has been resubmitted in 2026. At the time of writing this report, it was determined informally that a Letter of Advice would be required (Oct 21 email- DFO)
Migratory Birds Convention Act		Not identified.	Not identified with appropriate mitigation (timing mitigation for tree removals).	
Species at Risk Act		Fisheries and Oceans Canada (DFO) is responsible for administering SARA for aquatic species (fish, mussels) A SARA permit is the main approval. Note: Terrestrial species only protected on Federal lands and permits administered by Environment and Climate Change Canada (ECCC).	Required for in-water works or works below the high-water mark. Also required for any works within meander plus 30m of high-water mark for Silver Shiner. Federal SAR species (THR/END)/ habitat impacted: Silver Shiner, Black Redhorse, **Permit is anticipated.**	A Request for Review (RfR) was updated and has been resubmitted in 2026. SARA permit pending in the Fall of 2026.
Canadian Navigable Waters Act		Conestogo River is considered navigable. Instream temporary works could be described as a Minor Works Order SOR/2021-170.	Approvals/review required to ensure navigation is not unreasonably interfered with by construction activities.	Approval granted on July 21, 2026
Environmental Protection Act	Regulation 63/16 Registrations under Part II of	Administered by the Ministry of the Environment,	Not required for this project.	

Legislation	Plan/Regulation/ By-law	Permit/Approval/Authorization	Permit or Approval Required	Agency Consultation/ Next Steps
	the Act- Water Taking	Conservation and Parks (MECP) Environmental Activity and Sector Registration EASR (Water taking for Construction Site Dewatering) required for groundwater taking over 50,000 Litres on a single day under normal operation. * Permit to Take Water (PTTW) submissions no longer required. All water taking over 50,000 L is registered.	Limited ground excavation.	
Endangered Species Act (2007)	Permit Regulation 242/08	Ministry of the Environment, Conservation and Parks (MECP) administers the Endangered Species Act, 2007 (ESA) in Ontario. ESA permit> Species Conservation Act (transition period)	Potential Provincial SAR species (THR/END)/ habitat impacted: Silver Shiner, Black Redhorse, Wavy-rayed Lampmussel, SAR Bat species.	Follow up with MECP completed in early 2026 via the Information Gathering Form (IGF) ESA process. Permit deemed not required and ESA no longer valid. See below.
Species Conservation Act (2025)	Permit Regulation 75/26: Registerable Activities	MECP administers new SCA which replaced the ESA formally in March 2026. Applicable to this project, Wavy-rayed Lampmussel (THR Provincially and SC federally), will be protected, as well as bat species under the new SCA.	No permit required. Works are considered a 'Registerable Activity'.	Notice of Activity to be filled as well as completion of a Conservation Plan completed prior to construction - for Wavy-rayed Lampmussel.
Conservation Authorities Act	Ontario Regulation:41/24	For project works within a regulated area. GRCA permit Floodplain works, and the instream causeway work to be reviewed with this agency, with regards to flood risk and protections. Wetland impacts also reviewed.	Permit Required	GRCA permit has been issued in 2026

Legislation	Plan/Regulation/ By-law	Permit/Approval/Authorization	Permit or Approval Required	Agency Consultation/ Next Steps
Region of Waterloo	Woodland Conservation Bylaw 08-026	Several permits exist: Good Forestry Practices Permit, Diameter Limit/Basal area Permit, Woodland Removal Permit	By-Law not applicable for this project as municipality activities are exempt from by-law.	No formal arborist report required however inventory of tree removals will occur prior to works.
Public Lands Act (1990)		Permission to construct on known public lands in Ontario	Work Permit to Construct required	MNR was contacted at detailed design. This agency is currently in consultation with Indigenous communities.
Lakes and Rivers Improvement Act		Approval of the bridge design as it relates to water flow	Approval required	MNR was contacted at detailed design. This agency is currently in consultation with Indigenous communities. .
Fish and Wildlife Conservation Act (1997)		Ministry of Natural Resources (MNR) to allow for handling of fish during fish rescue during construction in-stream works	Licence to Collect Fish for Scientific Purposes required	An application for this permit will be submitted to MNR during construction.

To date, a permit via SARA is pending and it appears that the works will be covered under a Letter of Advice; both to be provided by the DFO. Ontario Regulation 75/26 of the SCA is applicable for activities within habitat of Wavy-rayed Lampmussel, where harm to a species at risk or its habitat may be permitted without an SCA permit. The works must be registered via the Species Conservation Registry prior to construction. As part of the Registration process, a Conservation Plan must also be completed that identifies the works, adverse effects, mitigation measures to minimize adverse effect as well as conservation measures to minimize any residual adverse effects, as applicable.

Future natural heritage work on this project will be related to refining tree impacts and compensation, completing all remaining paperwork required under the SCA and securing fish/mussel permits via the MNR. Restoration and compensation plans and monitoring will also be refined as final permitting/approvals with the DFO is completed and follow up with the SNGREC progresses.



Creek Bank Native Seed Mixture (Wet Meadow Type) 8215	Percentage	Tableland Prairie Grass Native Seed Mixture 8155	Percentage
Big Bluestem (Andropogon gerardii)	30	Big Bluestem (Andropogon gerardii)	25
Black Eyed Susan (Rudbeckia hirta)	6	Canada Wild Rye (Elymus canadensis)	20
Bottlebrush Grass (Elymus hystrix)	5	Indiangrass (Sorghastrum nutans)	20
Fowl Bluegrass/Fowl Meadowgrass (Poa palustris)	30	Little Bluestem (Schizachyrium scoparium)	10
Fowl Manngrass (Glyceria striata)	2	Prairie Cordgrass (Spartina pectinata)	5
Fox Sedge (Carex vulpinoidea)	25	Switchgrass (Panicum virgatum)	20
New England Aster (Aster novae-angliae)	2		

Seed Mix rate: 25 kg/ha (500 g per 180 m²).
Nurse crop applied concurrently with the native seed- annual rye or oats applied at a rate of 22–25 kg/ha.



Ecological Land Classification (LGL)

CUM1-1: Dry-Moist Old Field Meadow
CUT1: Mineral Cultural Thicket
FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest
FOD7: Fresh - Moist Lowland Deciduous Forest
M: Manicured
OA: Open Water
R: Residential

N

LEGEND

- Study Area - 120m from Railway Footprint
- Inset Mapped Extent
- Cavity Tree (NSRI / LGL)
- Shallow Aquatic Habitat - 25 - 50cm Depth (LGL)
- Shoal (LGL)
- Vegetation Community Boundary (LGL)
- Tree Resource (LGL)
- Regulatory Floodplain (GRCA)
- Approximate Meander Belt 115m from Water's Edge
- 30m from Meander Belt / Silver Shiner Habitat

Proposed Design (Aug 2026)

- Turbidity Curtain
- Access Road - 3.5m Wide Gravel Access Road - 3.5m Wide Gravel - To be Field Fit to Avoid Existing Trees
- Work Platform
- Silt Fence
- Retaining Wall
- Existing Trail

Restoration Prescription

- Tableland Seed Mix
- Wet Meadow Seed Mix
- Wet Meadow Seed Mix & Shrub Plantings
- Wet Meadow Seed Mix & Tree Plantings

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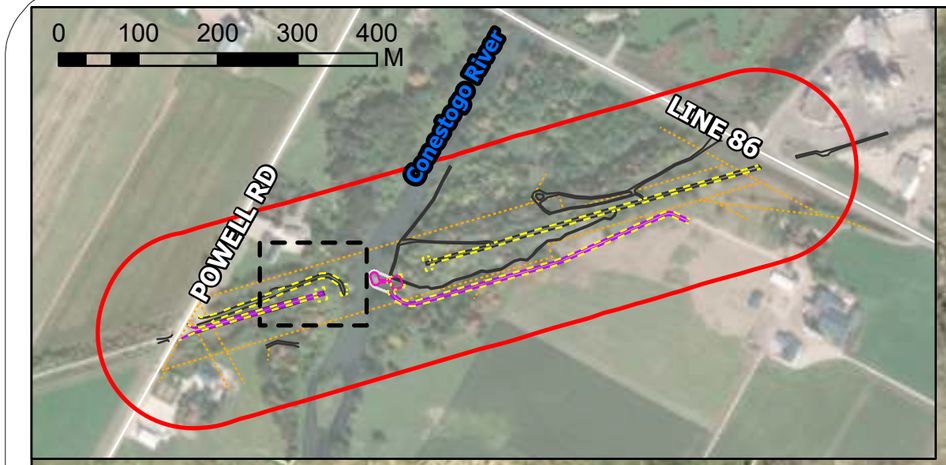
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G2G Pedestrian Trailway Bridge Reconstruction

Proposed Design & Restoration Areas

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	8-A
Date	2026-09-18	**Prepared By**	VLG
Scale	1:400	**Verified By**	EEB



Creek Bank Native Seed Mixture (Wet Meadow Type) 8215	Percentage	Tableland Prairie Grass Native Seed Mixture 8155	Percentage
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New England Aster (Aster novae-angliae)	2		

Seed Mix rate: 25 kg/ha (500 g per 180 m²).
Nurse crop applied concurrently with the native seed- annual rye or oats applied at a rate of 22–25 kg/ha.

3 Trees Total - Black Walnut (Juglans nigra) or Silver Maple (Acer saccharinum). Plant at 5m spacing using 40mm caliper stock and in random fashion.

R

FOD6-2

Preferred Bridge Launching Side

CUT1

CUM1-1

FOD6-2

FOD6-2

Ecological Land Classification (LGL)

CUM1-1: Dry-Moist Old Field Meadow
CUT1: Mineral Cultural Thicket
FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest
FOD7: Fresh - Moist Lowland Deciduous Forest
M: Manicured
OA: Open Water
R: Residential

N

LEGEND

- Study Area - 120m from Railway Footprint
- Inset Mapped Extent
- Cavity Tree (NSRI / LGL)
- Shallow Aquatic Habitat - 25 - 50cm Depth (LGL)
- Shoal (LGL)
- Vegetation Community Boundary (LGL)
- Tree Resource (LGL)
- Regulatory Floodplain (GRCA)
- Approximate Meander Belt 115m from Water's Edge
- 30m from Meander Belt / Silver Shiner Habitat

Proposed Design (Aug 2026)

- Turbidity Curtain
- Access Road - 3.5m Wide Gravel Access Road - 3.5m Wide Gravel - To be Field Fit to Avoid Existing Trees
- Work Platform
- Silt Fence
- Retaining Wall
- Existing Trail

Restoration Prescription

- Tableland Seed Mix
- Wet Meadow Seed Mix
- Wet Meadow Seed Mix & Shrub Plantings
- Wet Meadow Seed Mix & Tree Plantings

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M

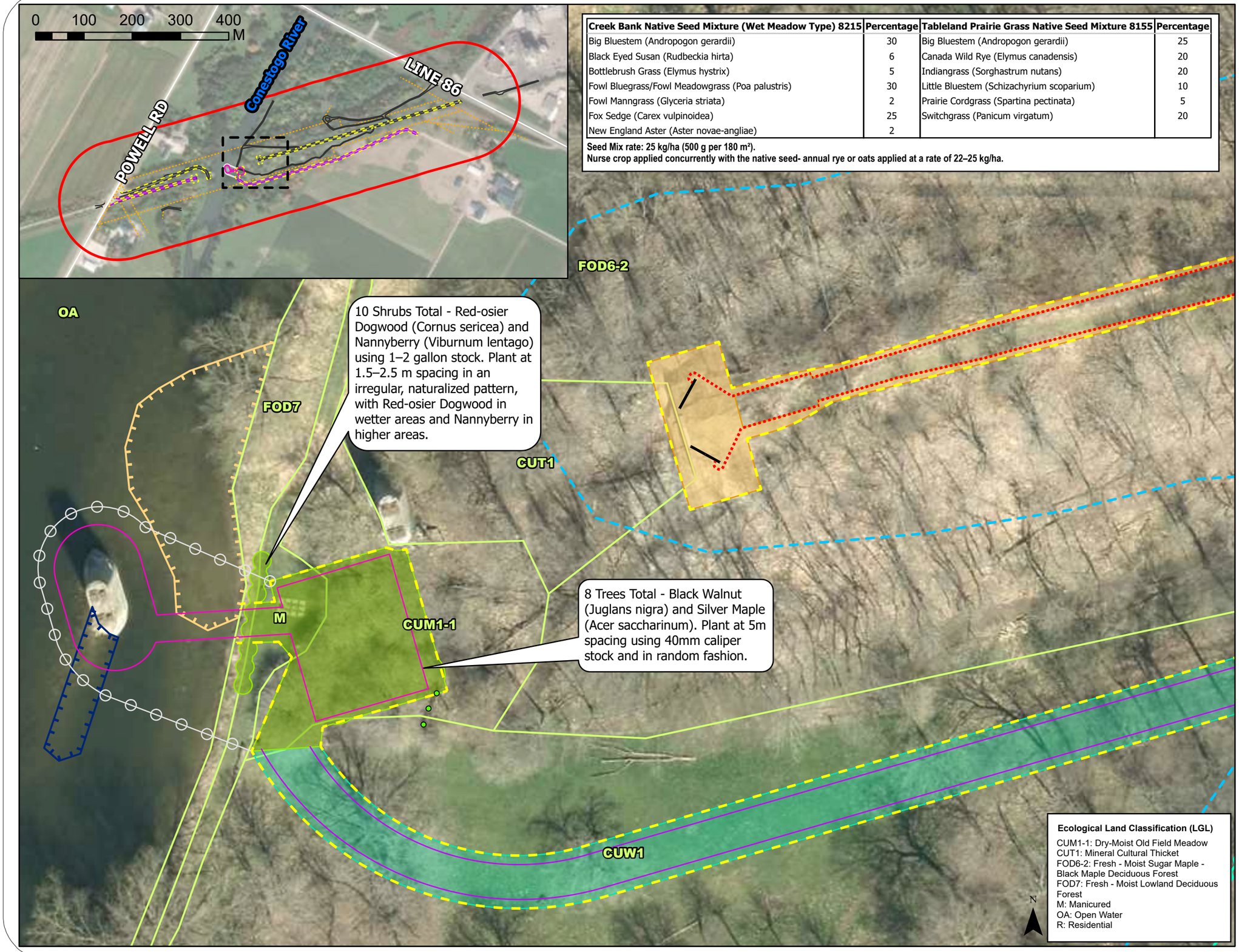
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G2G Pedestrian Trailway Bridge Reconstruction

Proposed Design & Restoration Areas

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	8-B
Date	2026-09-18	**Prepared By**	VLG
Scale	1:400	**Verified By**	EEB



Creek Bank Native Seed Mixture (Wet Meadow Type) 8215	Percentage	Tableland Prairie Grass Native Seed Mixture 8155	Percentage
Big Bluestem (Andropogon gerardii)	30	Big Bluestem (Andropogon gerardii)	25
Black Eyed Susan (Rudbeckia hirta)	6	Canada Wild Rye (Elymus canadensis)	20
Bottlebrush Grass (Elymus hystrix)	5	Indiangrass (Sorghastrum nutans)	20
Fowl Bluegrass/Fowl Meadowgrass (Poa palustris)	30	Little Bluestem (Schizachyrium scoparium)	10
Fowl Manngrass (Glyceria striata)	2	Prairie Cordgrass (Spartina pectinata)	5
Fox Sedge (Carex vulpinoidea)	25	Switchgrass (Panicum virgatum)	20
New England Aster (Aster novae-angliae)	2		

Seed Mix rate: 25 kg/ha (500 g per 180 m²).
Nurse crop applied concurrently with the native seed- annual rye or oats applied at a rate of 22–25 kg/ha.

Ecological Land Classification (LGL)

CUM1-1: Dry-Moist Old Field Meadow
CUT1: Mineral Cultural Thicket
FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest
FOD7: Fresh - Moist Lowland Deciduous Forest
M: Manicured
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LEGEND

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- Shoal (LGL)
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- Tree Resource (LGL)
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Proposed Design (Aug 2026)

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- Access Road - 3.5m Wide Gravel Access Road - 3.5m Wide Gravel - To be Field Fit to Avoid Existing Trees
- Work Platform
- Silt Fence
- Retaining Wall
- Existing Trail

Restoration Prescription

- Tableland Seed Mix
- Wet Meadow Seed Mix
- Wet Meadow Seed Mix & Shrub Plantings
- Wet Meadow Seed Mix & Tree Plantings

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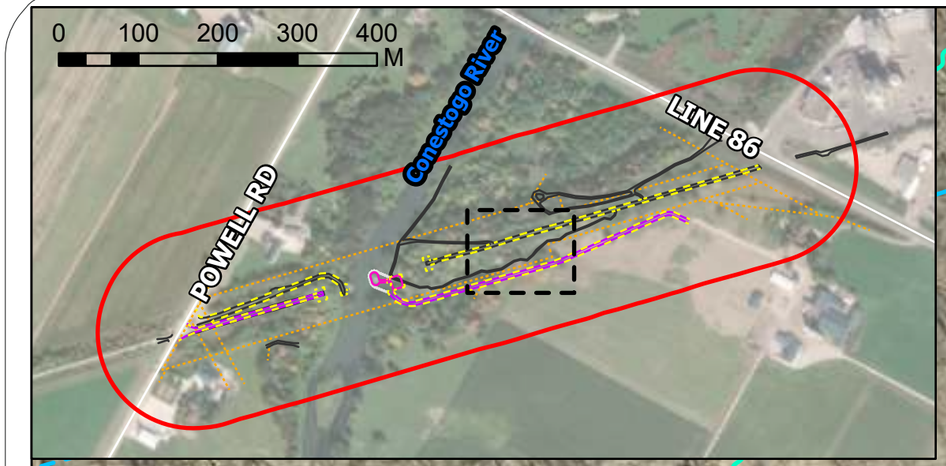
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G2G Pedestrian Trailway Bridge Reconstruction

Proposed Design & Restoration Areas

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	8-C
Date	2026-09-18	**Prepared By**	VLG
Scale	1:400	**Verified By**	EEB



Creek Bank Native Seed Mixture (Wet Meadow Type) 8215	Percentage	Tableland Prairie Grass Native Seed Mixture 8155	Percentage
Big Bluestem (Andropogon gerardii)	30	Big Bluestem (Andropogon gerardii)	25
Black Eyed Susan (Rudbeckia hirta)	6	Canada Wild Rye (Elymus canadensis)	20
Bottlebrush Grass (Elymus hystrix)	5	Indiangrass (Sorghastrum nutans)	20
Fowl Bluegrass/Fowl Meadowgrass (Poa palustris)	30	Little Bluestem (Schizachyrium scoparium)	10
Fowl Manngrass (Glyceria striata)	2	Prairie Cordgrass (Spartina pectinata)	5
Fox Sedge (Carex vulpinoidea)	25	Switchgrass (Panicum virgatum)	20
New England Aster (Aster novae-angliae)	2		

Seed Mix rate: 25 kg/ha (500 g per 180 m²).
Nurse crop applied concurrently with the native seed- annual rye or oats applied at a rate of 22–25 kg/ha.

FOD6-2

CAV-005

Ecological Land Classification (LGL)

CUM1-1: Dry-Moist Old Field Meadow
CUT1: Mineral Cultural Thicket
FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest
FOD7: Fresh - Moist Lowland Deciduous Forest
M: Manicured
OA: Open Water
R: Residential

N

LEGEND

- Study Area - 120m from Railway Footprint
- Inset Mapped Extent
- Cavity Tree (NSRI / LGL)
- Shallow Aquatic Habitat - 25 - 50cm Depth (LGL)
- Shoal (LGL)
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- Tree Resource (LGL)
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Proposed Design (Aug 2026)

- Turbidity Curtain
- Access Road - 3.5m Wide Gravel Access Road - 3.5m Wide Gravel - To be Field Fit to Avoid Existing Trees
- Work Platform
- Silt Fence
- Retaining Wall
- Existing Trail

Restoration Prescription

- Tableland Seed Mix
- Wet Meadow Seed Mix
- Wet Meadow Seed Mix & Shrub Plantings
- Wet Meadow Seed Mix & Tree Plantings

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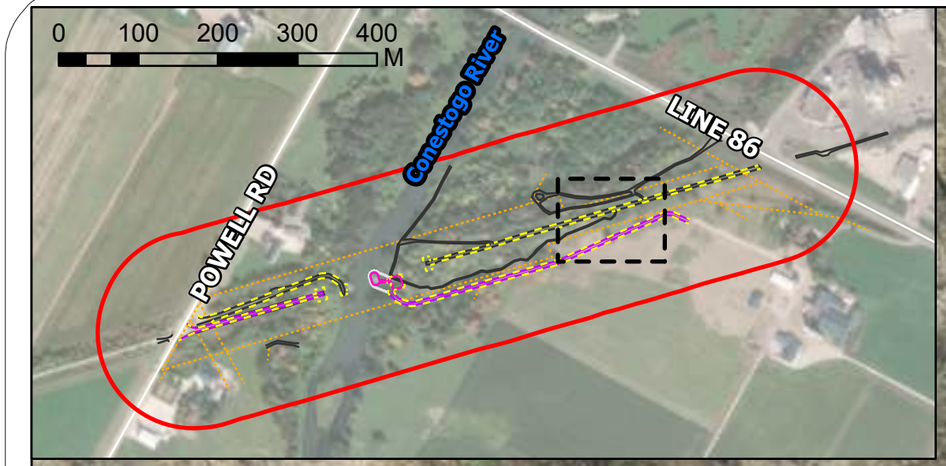
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G2G Pedestrian Trailway Bridge Reconstruction

Proposed Design & Restoration Areas

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	8-D
Date	2026-09-18	**Prepared By**	VLG
Scale	1:400	**Verified By**	EEB



Creek Bank Native Seed Mixture (Wet Meadow Type) 8215	Percentage	Tableland Prairie Grass Native Seed Mixture 8155	Percentage
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Fox Sedge (Carex vulpinoidea)	25	Switchgrass (Panicum virgatum)	20
New England Aster (Aster novae-angliae)	2		

Seed Mix rate: 25 kg/ha (500 g per 180 m²).
Nurse crop applied concurrently with the native seed- annual rye or oats applied at a rate of 22–25 kg/ha.

CAV-007

Ecological Land Classification (LGL)

CUM1-1: Dry-Moist Old Field Meadow
CUT1: Mineral Cultural Thicket
FOD6-2: Fresh - Moist Sugar Maple - Black Maple Deciduous Forest
FOD7: Fresh - Moist Lowland Deciduous Forest
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N

LEGEND

- Study Area - 120m from Railway Footprint
- Inset Mapped Extent
- Cavity Tree (NSRI / LGL)
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- Existing Trail

Restoration Prescription

- Tableland Seed Mix
- Wet Meadow Seed Mix
- Wet Meadow Seed Mix & Shrub Plantings
- Wet Meadow Seed Mix & Tree Plantings

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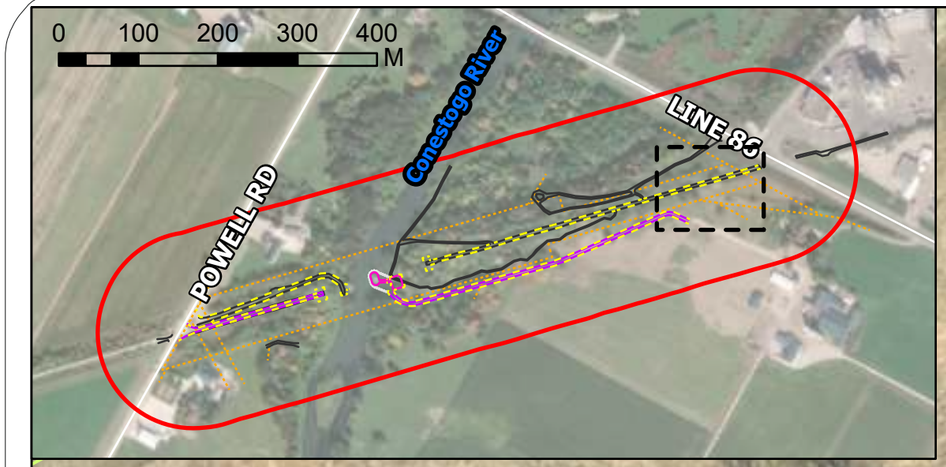
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G2G Pedestrian Trailway Bridge Reconstruction

Proposed Design & Restoration Areas

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	8-E
Date	2026-09-18	**Prepared By**	VLG
Scale	1:400	**Verified By**	EEB



Creek Bank Native Seed Mixture (Wet Meadow Type) 8215	Percentage	Tableland Prairie Grass Native Seed Mixture 8155	Percentage
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Ecological Land Classification (LGL)

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N

LEGEND

- Study Area - 120m from Railway Footprint
- Inset Mapped Extent
- Cavity Tree (NSRI / LGL)
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- Existing Trail

Restoration Prescription

- Tableland Seed Mix
- Wet Meadow Seed Mix
- Wet Meadow Seed Mix & Shrub Plantings
- Wet Meadow Seed Mix & Tree Plantings

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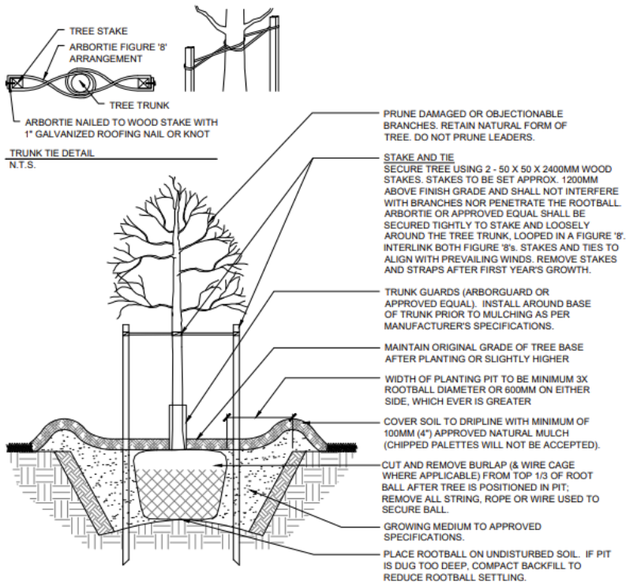
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G2G Pedestrian Trailway Bridge Reconstruction

Proposed Design & Restoration Areas

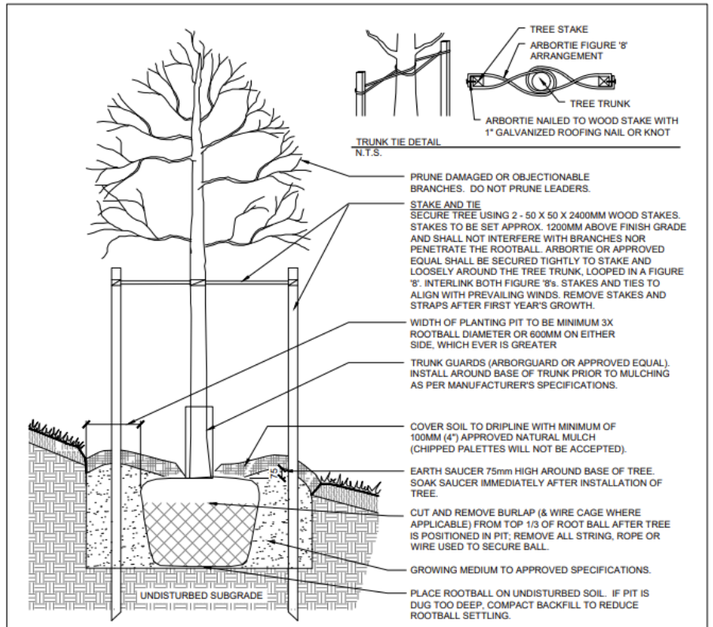
LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	8-F
Date	2026-09-18	**Prepared By**	VLG
Scale	1:400	**Verified By**	EEB



NOTES:
1. PLANT MATERIAL SHALL BE THOROUGHLY WATERED AT TIME OF PLANTING.
2. PLANT MATERIAL SHALL BE SET PLUMB IN THE MIDDLE OF THE PIT.
3. TREE SHALL BEAR SAME RELATION OR SLIGHTLY HIGHER TO FINISHED GRADE AS ORIGINALLY GROWN.
4. PLANT STOCK MOVED WHILE IN LEAF SHALL BE COVERED WHILE IN TRANSIT. ROOTS SHOULD BE KEPT MOIST UNTIL PLANTED. TREES IN LEAF TO BE TREATED WITH ANTI-DESICANT. ALL WRAPPING TO BE REMOVED AFTER PLANTING.
5. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
6. STAKING IS TO OCCUR ONLY AT THE DIRECTION OF THE REGION OF WATERLOO PROJECT MANAGER AND/OR LANDSCAPE ARCHITECT.
7. 100MM HIGH SAUCER EXCEPT WHEN PLANTING IN BED.
8. MYCORRHIZAL (FUNGI-BASED) SOIL INOCULANTS: ENDOMYCORRHIZAL AND ECTOMYCORRHIZAL INOCULANT THAT CONTAINS SEVERAL SPECIES OF FUNGI WHICH ARE TO BE INSTALLED WITH ALL PLANTINGS. REFER TO SPECIFICATIONS AND/OR SPECIAL PROVISIONS FOR INFORMATION.

Region of Waterloo Standard Planting Detail	DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE NOTED.	3.1.1
DECIDUOUS TREE PLANTING (UP TO 80mm CALIPER (B.B/W.B))		Scale: N.T.S.
		Rev No.: 01
	Date: June 2024	Page Size: 8.5" x 11"



NOTES:
1. PLANT MATERIAL SHALL BE THOROUGHLY WATERED AT TIME OF PLANTING.
2. PLANT MATERIAL SHALL BE SET PLUMB IN THE MIDDLE OF THE PIT.
3. PLANT TREE 75 ABOVE EXISTING ADJACENT GRADE TO ACCOMMODATE FOR SETTLEMENT.
4. PLANT STOCK MOVED WHILE IN LEAF SHALL BE COVERED WHILE IN TRANSIT. ROOTS SHOULD BE KEPT MOIST UNTIL PLANTED. TREES IN LEAF TO BE TREATED WITH ANTI-DESICANT. ALL WRAPPING TO REMOVED AFTER PLANTING.
5. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
6. STAKING IS TO OCCUR ONLY AT THE DIRECTION OF THE REGION OF WATERLOO PROJECT MANAGER AND/OR LANDSCAPE ARCHITECT.
7. 100MM HIGH SAUCER EXCEPT WHEN PLANTING IN BED.
8. PROVIDE DRAINAGE FOR PLANTING PIT IN IMPERMEABLE SOIL.
9. MYCORRHIZAL (FUNGI-BASED) SOIL INOCULANTS: ENDOMYCORRHIZAL AND ECTOMYCORRHIZAL INOCULANT THAT CONTAINS SEVERAL SPECIES OF FUNGI WHICH ARE TO BE INSTALLED WITH ALL PLANTINGS. REFER TO SPECIFICATIONS AND/OR SPECIAL PROVISIONS FOR INFORMATION.

Region of Waterloo Standard Planting Detail	DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE NOTED.	3.1.2
DECIDUOUS TREE PLANTING ON SLOPE (UP TO 80mm CALIPER (B.B/W.B))		Scale: N.T.S.
		Rev No.: 01
	Date: June 2024	Page Size: 8.5" x 11"

SITE PREPARATION
REFER TO CONTRACT AND SOIL SPECIFICATIONS FOR DETAILS ON PREPARATION OF DISTURBED AREAS.

DISTURBED AREAS SHALL NOT EXTEND BEYOND THE 'RESTORATION AREAS' IDENTIFIED ON **FIGURE 8-RESTORATION PLAN** AND AS IDENTIFIED IN FUTURE PERMITS.

CARE IS TO BE TAKEN WHEN TILLING TO AVOID THE ROOT ZONE OF ANY EXISTING NATIVE TREES AND SHRUBS. DO NOT TILL IN DRIPLINE AREAS.

RESTORATION AREA TO BE TERRASEEDED AS IDENTIFIED ON **RESTORATION PLAN-FIGURE 8**.

RECOMMENDED INSTALLATION WINDOW FOR NATIVE SEED MIXES OCTOBER 15 AND NOVEMBER 15, TO ALLOW FOR NATURAL COLD STRATIFICATION OVER THE WINTER AND EARLY SPRING.

IF SPRING SEEDING, SEED SHALL BE LIGHTLY PRESSED INTO THE SOIL TO IMPROVE SEED-TO-SOIL CONTACT (MID MARCH-MID MAY).

THE CONTRACTOR SHALL STAKE PLANTING LOCATIONS AND CONFIRM LAYOUT OF ALL TREE PLANTINGS WITH CONTRACT ADMINISTRATOR BEFORE PROCEEDING.

ALL PLANT MATERIAL SHALL COMPLY WITH THE 'CANADIAN STANDARDS FOR NURSERY STOCK'. PUNT MATERIAL SHALL BE STRUCTURALLY SOUND, SHOWING VIGOROUS GROWTH AND FORMATION OF SHOOTS AND BE FREE FROM BLIGHT AND DISEASE OF ANY DESCRIPTION. ANY SUBSTITUTIONS AS TO VARIETY OR GRADE MUST BE ACCEPTED BY THE OWNER.

ALL PLANT MATERIAL SHALL BE CLEARLY IDENTIFIED BY LABELS INDICATING SPECIES, SIZE AND SUPPLIER AND PROVIDED TO THE CONTRACT ADMINISTRATOR ALL TAGS ARE TO BE REMOVED UPON INSTALLATION.

INDIVIDUAL BIODEGRADABLE WEED SUPPRESSION MATS ARE TO BE USED AROUND ALL PLANTINGS.

PLANTING NOTES

RIPARIAN SHRUB PLANTING

RED-OSIER DOGWOOD (CORNUS SERICEA) AND NANNYBERRY (VIBURNUM LENTAGO) TO BE PLANTED APPROXIMATELY 1.5–2.0 M ON CENTRE WITHIN THE LOWER ELEVATION, WETTER PORTION OF THE PLANTING AREA, WHILE NANNYBERRY TO BE PLANTED AT APPROXIMATELY 2.0–2.5 M ON CENTRE WITHIN THE HIGHER, LESS FREQUENTLY AREAS INUNDATED WITH WATER.

SHRUBS SHALL BE ARRANGED IN AN IRREGULAR, NATURALIZED PATTERN RATHER THAN UNIFORM ROWS.

SHRUBS SHALL BE PLANTED AS PER REGION OF WATERLOO SPECIFICATION 3.4.1

INDIVIDUAL BIODEGRADABLE WEED SUPPRESSION MATS ARE TO BE USED AROUND ALL PLANTINGS.

TREE PLANTING

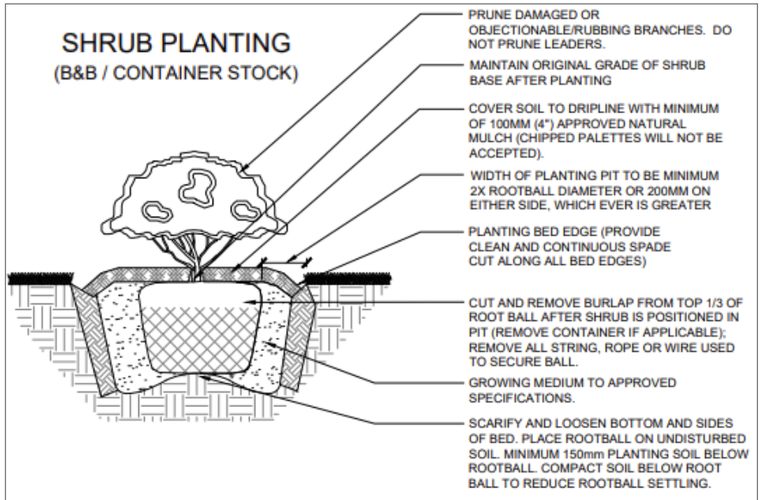
TREES SHALL BE PLANTED AS PER REGION OF WATERLOO SPECIFICATION 3.11, 3.12.

TREE PLANTING TO BE OFFSET 5M ON CENTRE BETWEEN PLANTINGS AND EXISTING WOODY VEGETATION.

TREE PLANTINGS SHALL BE ARRANGED IN AN IRREGULAR NATURALIZED PATTERN, AND INSTALLED IN APPROPRIATE GROUND CONDITIONS.

INSTALL 600 MM HGT. BIODEGRADABLE RODENT PROTECTION AROUND THE BASE OF ALL TREES. IF RODENTS/ RABBITS ARE DETERMINED TO BE AN ISSUE DURING THE MAINTENANCE PERIOD, CONSIDER EXCLUSION OF TRUNK WITH WIRE TREE GUARD, OR USE OF 'BOBBEX' TO DETER PREDATION OF TREES.

INDIVIDUAL BIODEGRADABLE WEED SUPPRESSION MATS ARE TO BE USED AROUND ALL PLANTINGS.



NOTES:
1. SHRUBS ARE TO BE SPACED AS DIRECTED.
2. MYCORRHIZAL (FUNGI-BASED) SOIL INOCULANTS: ENDOMYCORRHIZAL AND ECTOMYCORRHIZAL INOCULANT THAT CONTAINS SEVERAL SPECIES OF FUNGI WHICH ARE TO BE INSTALLED WITH ALL PLANTINGS. REFER TO SPECIFICATIONS AND/OR SPECIAL PROVISIONS FOR INFORMATION.

LEGEND

G2G Pedestrian Trailway Bridge Reconstruction
Restoration
Details & Specs

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	9-A
Date	2026-09-18	**Prepared By**	AME
Scale	1:400	**Verified By**	EEB

MONITORING/MAINTENANCE

RIPARIAN SHRUB PLANTING

PLANT MATERIAL SHALL BE THOROUGHLY WATERED AT THE TIME OF PLANTING

ALL TREES AND SHRUBS PLANTED SHALL BE UNDER WARRANTY FOR A PERIOD OF 24 MONTHS COMMENCING ON THE DATE OF ACCEPTANCE.

PLANTS WHICH HAVE DIED DURING THE PERIOD OF WARRANTY SHALL BE REPLACED AT NO COST TO THE OWNER. DEAD PLANT MATERIAL SHALL BE REMOVED IMMEDIATELY AT NO COST TO THE OWNER. DEAD PLANTS SHALL BE REPLACED TWICE A YEAR (SPRING AND FALL). PLANT MATERIAL REPLACED UNDER WARRANTY SHALL CONFORM TO ALL SPECIFICATIONS OF THE ORIGINAL CONTRACT INCLUDING THE WARRANTY FROM THE DATE OF REPLACEMENT PLANTING.

THE CONTRACTOR SHALL PROVIDE MAINTENANCE IMMEDIATELY AFTER THE PLANTS ARE INSTALLED AND CONTINUE THROUGHOUT THE ENTIRE WARRANTY PERIOD. MAINTENANCE SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

TREES AND SHRUB MAINTENANCE:

i. ADJUST STAKES AND GUYS TO PREVENT GIRDLING.

II. ENSURE RODENT PROTECTION REMAINS IN CONTACT WITH THE GROUND.

III. PRUNE OUT ANY DEAD OR DAMAGED LIMBS.

IV. WATER TREES AS REQUIRED TO MAINTAIN HEALTH IN CONSIDERATION OF METEOROLOGICAL, SOIL AND SITE CONDITIONS AS WELL AS SPECIES REQUIREMENTS.

V. TOP OFF MULCH TO ENSURE SOIL MOISTURE IS MAINTAINED

SEED MAINTENANCE:

i. MONITOR AFTER INITIAL SEEDING TO ENSURE THAT ADEQUATE COVER DENSITY HAS BEEN ACHIEVED.

II. OVERSEED AS REQUIRED TO ELIMINATE BARE PATCHES.

III. REPAIR AND RESEED ANY RILLS OR GULLIES THAT MAY FORM DURING THE GROW-IN PERIOD.

IV. REMOVE WEEDS THAT MAY HAVE BECOME ESTABLISHED DURING THE GERMINATION AND GROW-IN PERIODS.

V. MONITOR TO ENSURE THAT ESTABLISHED SPECIES CORRESPOND WITH SPECIFIED SEED MIX SPECIES COMPOSITION. OVERSEED AS REQUIRED TO ACHIEVE SPECIFIED COMPOSITION AND DISTRIBUTION.

FINAL INSPECTION:

AT THE TIME OF FINAL WARRANTY ACCEPTANCE, ALL MATERIAL MUST BE IN A HEALTHY AND VIGOROUS CONDITION. ALL STAKES, WIRES, HOSE, PLANT TAGS AND OTHER ACCESSORIES MUST BE REMOVED UPON FINAL ACCEPTANCE.

LEGEND

G2G Pedestrian Trailway Bridge Reconstruction

Restoration
Details & Specs

LGL LIMITED
Est. 1971
environmental research associates

Project	TA2600061	**Figure**	9-B
Date	2026-09-18	**Prepared By**	AME
Scale	1:400	**Verified By**	EEB

10 References

Bat Conservation International (BCI). 2026. Batcon.org

Birds Canada. 2021. Ontario Breeding Bird Atlas Instructions for General Atlassing, April 2021. Available at www.birdsontario.org.

Chapman, L.J., and D.F. Putnam. 1984. The Physiography of Southern Ontario; Ontario Geological Survey, Special Volume 2, 270 p.

Committee on the Status of Endangered Wildlife in Canada (COSWEIC). 2010. *COSEWIC Assessment and Status Report on the Wavy-Rayed Lampmussel Lampsilis fasciola in Canada.*

Department of Fisheries and Oceans (DFO). 2025. Online Species at Risk Mapping (updated yearly). https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

Department of Fisheries and Oceans (DFO). 2022. *Silver Shiner (Notropis photogenis): Recovery Strategy and Action Plan.*

Department of Fisheries and Oceans (DFO). 2013. Ontario restricted activity timing windows for the protection of fish and fish habitat. https://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/on-eng.html

Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Don Mills, Federation of Ontario Naturalists.

Environment and Climate Change Canada (ECCC). 2018. Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), the Northern Myotis (Myotis septentrionalis), and the Tricolored Bat (*Perimyotis subflavus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. ix + 172 pp.

G2G Rail Trail Inc. 2023. Goderich–Guelph (G2G) Rail Trail. Available at: https://www.g2grailtrail.com

iNaturalist. 2025. https://www.inaturalist.org/observations. Accessed September 16, 2025.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land *Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.*

NatureCounts database. 2025. eBird Ontario (2006–2025). https://naturecounts.ca. Accessed September 15, 2025.

NatureCounts database. 2025. Ontario Breeding Bird Atlas (2021–2025). https://naturecounts.ca. Accessed September 15, 2025.

Mackie, G., T.J. Morris, D. Ming. 2008. *Protocol for the Detection and Relocation of Freshwater Mussel Species at Risk in Ontario- Great Lakes Areas (OGLA).*

Metcalfe-Smith, J. A., MacKenzie, I. Carmichael, D.McGoldrick. 2005. *Photo field Guide to the Freshwater Mussels of Ontario.* Published by the St. Thomas Field Naturalist Club. ISBN 0-9733179-2-2.

Ministry of Environment, Conservation and Parks (MECP). 2024. *Black Redhorse.* https://www.ontario.ca/page/black-redhorse

Ministry of Environment, Conservation and Parks (MECP). 2022a. *Maternity Roost Surveys (Forests/Woodlands).*

Ministry of Environment, Conservation and Parks (MECP). 2022b. *Bat Survey Standards Note.*

Ministry of Environment, Conservation and Parks (MECP). 2021. *Rainbow.* https://www.ontario.ca/page/rainbow-mussel

Ministry of Natural Resources. 2025. Natural Heritage Information Centre Make-a-Map: Natural Heritage Areas. https://www.lioapplications.lrc.gov.on.ca/Natural_Heritage/index.html?viewer=Natural_Heritage.Natural_Heritage&locale=en-CA

Natural Resource Solutions Inc. 2024. *Goderich to Guelph Trail (G2G) Pedestrian Bridge, Conestogo River. Environmental Studies Summary.*

Natural Resource Solutions Inc. 2023a. *Goderich to Guelph Trail Pedestrian Bridge. Conestogo River Species at Risk Habitat and Significant Wildlife Habitat Assessment.*

Natural Resource Solutions Inc. 2023b. *Goderich to Guelph Trail Pedestrian Bridge. Species at Risk Bat Monitoring Results.*

Oldham, M.J. and S. Brinker. 2009. *Rare Vascular Plants of Ontario*. Fourth edition. Natural Heritage Information Centre, Ontario Ministry of Natural Resources. Peterborough, Ontario. 188 pp.

Ontario Ministry of Natural Resources and Forestry. 2015. *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E.* 38 pp.

Ontario Ministry of Natural Resources. 2013. *In-water Work Timing Window Guideline*s.

Ontario Nature. 2025a. Ontario Butterfly Atlas. https://www.ontarioinsects.org/atlas. Accessed September 18, 2025.

Ontario Nature. 2025b. Ontario Reptile and Amphibian Atlas. https://www.ontarioinsects.org/herp. Accessed September 15, 2025.

Presant, E.W. and R.E. Wicklund. 1971. The Soils of Waterloo County. Report Number 44 of the Ontario Soil Survey. Research Branch, Canada Department of Agriculture, Department of Soil Science, University of Guelph and the Ontario Department of Agriculture and Food.

Region of Waterloo. 2024. *Regional Official Plan 2051. Office Consolidation-October, 2024*.

Township of Wellesley. 2022. *The Corporation of the Township of Wellesley Official Plan*.

Appendix A
Representative Photographs

Project #TA2600061
October 2025

Photo Appendix

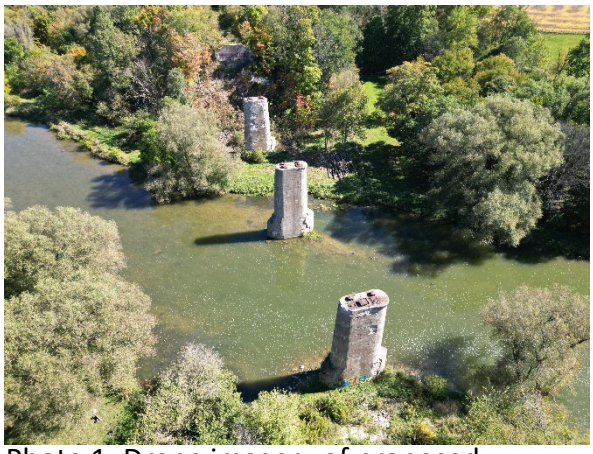


Photo 1: Drone imagery of proposed bridge crossing, easterly view.



Photo 2: Drone imagery of the future trailway connection, westerly view.



Photo 3: Drone imagery of the future trailway connection, westerly view (proposed access).



Photo 4: Drone imagery of proposed bridge crossing, showing proposed staging/ laydown area for pier works.



Photo 5: Drone imagery, showing accesses from Powell Road.



Photo 6: Old railbed section from Powell Road.

Project #TA2600061
October 2025

Photo Appendix

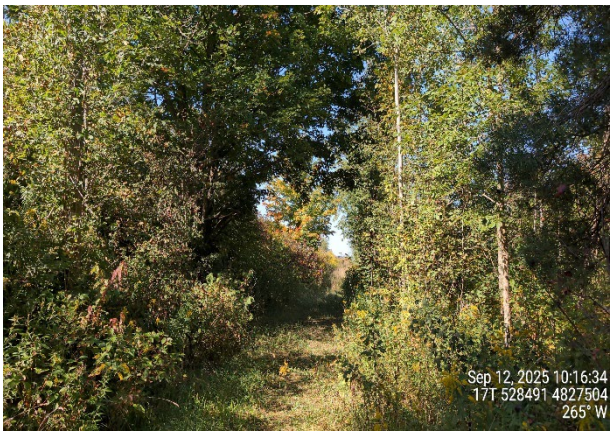


Photo 7: Access/trail just north of old railway bed, on west side of the river.

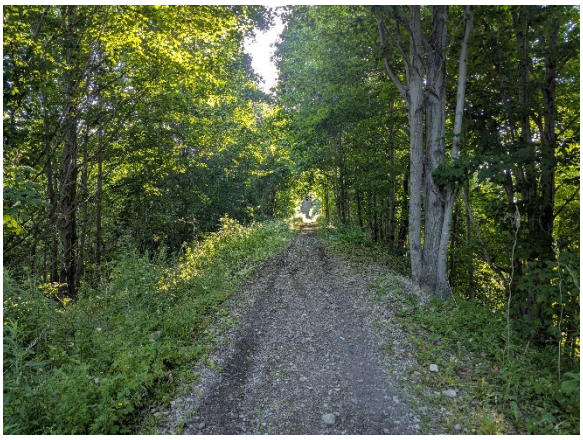


Photo 8: Old railway bed from Highway 86.

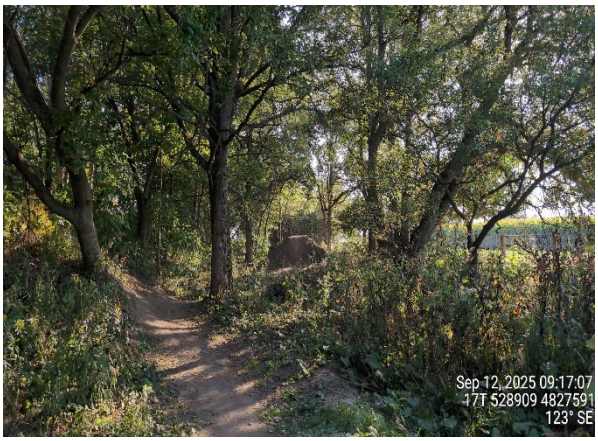


Photo 9: Vegetation present at bottom of maple forest/slope, next to pasture (existing bike paths).



Photo 10: East side of River, near proposed staging/laydown area.



Photo 11: Aquatic habitat conditions between the centre pier and the east bank (proposed causeway).



Photo 12: Aquatic habitat downstream of proposed causeway.

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Photo Appendix



Photo 13: Aquatic habitat present on the upstream side of the centre pier.



Photo 14: Instream habitat next to west pier-boulders dominant.



Photo 15: Instream habitat next to centre pier-boulders dominant.



Photo 16: West side of River, just upstream of piers.



Photo 17: FOD7 Fresh-Moist Lowland Deciduous Forest (along river).



Photo 18: FOD 6-2 Fresh Moist Sugar Maple-Black Maple Deciduous Forest.

Appendix B
Flora list

Introduced	FOIBIS SCIENTIFIC NAME	OPL ST Common Name	GRank	SRank	MNR	COSEWIC
	EQUISETACEAE	HORSETAIL FAMILY				
	Equisetum arvense	field horsetail	G5	S5		
	CUPRESSACEAE	CEDAR FAMILY				
	Thuja occidentalis	eastern white cedar	G5	S5		
	RANUNCULACEAE	BUTTERCUP FAMILY				
	Anemone virginiana var. alba		G5T	SU		
	ULMACEAE	ELM FAMILY				
	Ulmus americana	white elm	G5?	S5		
	URTICACEAE	NETTLE FAMILY				
*	*Urtica dioica ssp. dioica*	European stinging nettle	G5T?	SE2		
	JUGLANDACEAE	WALNUT FAMILY				
	Juglans nigra	black walnut	G5	S4		
	FAGACEAE	BEECH FAMILY				
	Quercus macrocarpa	bur oak	G5	S5		
	CARYOPHYLLACEAE	PINK FAMILY				
*	*Dianthus armeria*	deptford pink	G?	SE5		
*	*Silene vulgaris*	catchfly	G?	SE5		
	POLYGONACEAE	SMARTWEED FAMILY				
*	*Rumex obtusifolius ssp. obtusifolius*	bitter dock	G5	SE5		
	TILIACEAE	LINDEN FAMILY				
	Tilia americana	basswood	G5	S5		
	SALICACEAE	WILLOW FAMILY				
	Populus tremuloides	trembling aspen	G5	S5		
*	*Salix alba*	white willow	G5	SE4		
*	*Salix fragilis*	crack willow	G?	SE5		
	BRASSICACEAE	MUSTARD FAMILY				
*	*Alliaria petiolata*	garlic mustard	G5	SE5		
*	*Erysimum cheiranthoides ssp. cheiranthoides*	wormseed mustard		SE5		
*	*Hesperis matronalis*	dame's rocket	G4G5	SE5		
	ROSACEAE	ROSE FAMILY				
	Geum canadense	white avens	G5	S5		
	Malus sp.	apple				
	Physocarpus opulifolius	ninebark	G5	S5		
*	*Potentilla recta*	rough-fruited cinquefoil	G?	SE5		
	Prunus serotina	black cherry	G5	S5		
	Prunus virginiana var. virginiana	choke cherry	G5T?	S5		
*	*Rubus idaeus ssp. idaeus*	red raspberry	G5T5	SE1		
	Rubus occidentalis	thimble-berry	G5	S5		
	FABACEAE	PEA FAMILY				
	EQUISETACEAE	HORSETAIL FAMILY				
	Equisetum arvense	field horsetail	G5	S5		
	CUPRESSACEAE	CEDAR FAMILY				
	Thuja occidentalis	eastern white cedar	G5	S5		
	RANUNCULACEAE	BUTTERCUP FAMILY				
	Anemone virginiana var. alba		G5T	SU		
	ULMACEAE	ELM FAMILY				
	Ulmus americana	white elm	G5?	S6		
	URTICACEAE	NETTLE FAMILY				
*	*Urtica dioica ssp. dioica*	European stinging nettle	G5T?	SE3		
	JUGLANDACEAE	WALNUT FAMILY				
	Juglans nigra	black walnut	G5	S6		

Introduced	FOIBIS SCIENTIFIC NAME	OPL ST Common Name	GRank	SRank	MNR	COSEWIC
	FAGACEAE	BEECH FAMILY				
	Quercus macrocarpa	bur oak	G5	S7		
	CARYOPHYLLACEAE	PINK FAMILY				
*	*Dianthus armeria*	deptford pink	G?	SE5		
*	*Silene vulgaris*	catchfly	G?	SE5		
	POLYGONACEAE	SMARTWEED FAMILY				
*	*Rumex obtusifolius ssp. obtusifolius*	bitter dock	G5	SE5		
	TILIACEAE	LINDEN FAMILY				
	Tilia americana	basswood	G5	S5		
	SALICACEAE	WILLOW FAMILY				
	Populus tremuloides	trembling aspen	G5	S5		
*	*Salix alba*	white willow	G5	SE4		
*	*Salix fragilis*	crack willow	G?	SE5		
	BRASSICACEAE	MUSTARD FAMILY				
*	*Alliaria petiolata*	garlic mustard	G6	SE5		
	EQUISETACEAE	HORSETAIL FAMILY				
	Equisetum arvense	field horsetail	G5	S5		
	CUPRESSACEAE	CEDAR FAMILY				
	Thuja occidentalis	eastern white cedar	G5	S5		
	RANUNCULACEAE	BUTTERCUP FAMILY				
	Anemone virginiana var. alba		G5T	SU		
	ULMACEAE	ELM FAMILY				
	Ulmus americana	white elm	G5?	S6		
	URTICACEAE	NETTLE FAMILY				
*	*Urtica dioica ssp. dioica*	European stinging nettle	G5T?	SE3		
	JUGLANDACEAE	WALNUT FAMILY				
	Juglans nigra	black walnut	G5	S6		
	FAGACEAE	BEECH FAMILY				
	Quercus macrocarpa	bur oak	G5	S7		
	CARYOPHYLLACEAE	PINK FAMILY				
*	*Dianthus armeria*	deptford pink	G?	SE5		
*	*Silene vulgaris*	catchfly	G?	SE5		
	POLYGONACEAE	SMARTWEED FAMILY				
*	*Rumex obtusifolius ssp. obtusifolius*	bitter dock	G5	SE5		
	TILIACEAE	LINDEN FAMILY				
	Tilia americana	basswood	G5	S5		
	SALICACEAE	WILLOW FAMILY				
	EQUISETACEAE	HORSETAIL FAMILY				
	Equisetum arvense	field horsetail	G5	S5		
	CUPRESSACEAE	CEDAR FAMILY				
	Thuja occidentalis	eastern white cedar	G5	S5		
	RANUNCULACEAE	BUTTERCUP FAMILY				
	Anemone virginiana var. alba		G5T	SU		
	ULMACEAE	ELM FAMILY				
	Ulmus americana	white elm	G5?	S6		
	URTICACEAE	NETTLE FAMILY				
*	*Urtica dioica ssp. dioica*	European stinging nettle	G5T?	SE3		
	JUGLANDACEAE	WALNUT FAMILY				
	Juglans nigra	black walnut	G5	S6		
	FAGACEAE	BEECH FAMILY				
	Quercus macrocarpa	bur oak	G5	S7		
	CARYOPHYLLACEAE	PINK FAMILY				

Introduced	FOIBIS SCIENTIFIC NAME	OPL ST Common Name	GRank	SRank	MNR	COSEWIC
*	*Dianthus armeria*	deptford pink	G?	SE5		
*	*Silene vulgaris*	catchfly	G?	SE5		
	POLYGONACEAE	SMARTWEED FAMILY				
*	*Rumex obtusifolius ssp. obtusifolius*	bitter dock	G5	SE5		
	TILIACEAE	LINDEN FAMILY				
	EQUISETACEAE	HORSETAIL FAMILY				
	Equisetum arvense	field horsetail	G5	S5		
	CUPRESSACEAE	CEDAR FAMILY				
	Thuja occidentalis	eastern white cedar	G5	S5		
	RANUNCULACEAE	BUTTERCUP FAMILY				
	Anemone virginiana var. alba		G5T	SU		
	ULMACEAE	ELM FAMILY				
	Ulmus americana	white elm	G5?	S6		
	URTICACEAE	NETTLE FAMILY				
*	*Urtica dioica ssp. dioica*	European stinging nettle	G5T?	SE3		
	JUGLANDACEAE	WALNUT FAMILY				
	Juglans nigra	black walnut	G5	S6		
	FAGACEAE	BEECH FAMILY				
	Quercus macrocarpa	bur oak	G5	S7		
	CARYOPHYLLACEAE	PINK FAMILY				
*	*Dianthus armeria*	deptford pink	G?	SE5		
*	*Silene vulgaris*	catchfly	G?	SE5		
	POLYGONACEAE	SMARTWEED FAMILY				
*	*Rumex obtusifolius ssp. obtusifolius*	bitter dock	G5	SE5		
	TILIACEAE	LINDEN FAMILY				
	Tilia americana	basswood	G5	S5		
	SALICACEAE	WILLOW FAMILY				
	Populus tremuloides	trembling aspen	G5	S5		
*	*Salix alba*	white willow	G5	SE4		
*	*Salix fragilis*	crack willow	G?	SE5		
	BRASSICACEAE	MUSTARD FAMILY				

Appendix C
Significant Wildlife Habitat Table

Table 1.1 Seasonal Concentration Areas of Animals

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale:** Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid-March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl; and, • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. • <u>Information Sources:</u> • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence; • Reports and other information available from Conservation Authorities; • Sites documented through waterfowl planning processes (eg. EHJV implementation plan); • Field Naturalist Clubs; • Ducks Unlimited Canada; and, • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area.	Small area of CUM1 and CUT1 present at site but no seasonally flooded agricultural fields. No Candidate SWH present.	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects: • Any mixed species aggregations of 100 or more individuals required; • The flooded field ecosite habitat plus a 100 - 300m radius area, dependant on local site conditions and adjacent land use is the significant wildlife habitat; • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates); and, • SWHMiST Index #7 provides development effects and mitigation measures.	Only one of the listed species was documented within the Study Area; no SWH present.
Waterfowl Stopover and Staging Areas (Aquatic) **Rationale:** Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify; and, • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). <u>Information Sources:</u> • Environment Canada; • Naturalist clubs often are aware of staging/stopover areas; • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging;	The Conestogo River is likely not large enough at the site to support large aggregations of migrating waterfowl. No Candidate SWH present.	Studies carried out and verified presence of: • Aggregations of 100 or more of listed species for 7 days, results in >700 waterfowl use days; • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH; • The combined area of the ELC ecosites and a 100m radius area is the SWH; • Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat; • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”; • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded); and,	None of the listed species were documented within the Study Area; no SWH present.

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
	Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck		• Sites documented through waterfowl planning processes (eg. EHJV implementation plan); • Ducks Unlimited projects; • Element occurrence specification by Nature Serve: http://www.natureserve.org; and, • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area.		• SWHMiST Index #7 provides development effects and mitigation measures.	
Shorebird Migratory Stopover Area **Rationale:** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats; • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October; and, • Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources:</u> • Western hemisphere shorebird reserve network; • Canadian Wildlife Service (CWS); • Ontario Shorebird Survey; • Bird Studies Canada; • Ontario Nature; • Local birders and naturalist clubs; and, • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area.	The Conestogo River and riparian habitat are likely not large enough at the site to support large numbers of migrating shorebirds.	Studies confirming: • Presence of 3 or more of listed species and >1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period); • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant; • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area; • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"; and, • SWHMiST Index #8 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area; no SWH present.
Raptor Wintering Area **Rationale:** Sites used by multiple species, a high number of individuals and used annually are most significant.	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl **Special Concern:** Short-eared Owl Bald Eagle	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW.	• The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors; • Raptor wintering sites (hawk/owl) need to be >20ha with a combination of forest and upland; • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands; • Field area of the habitat is to be wind swept with limited snow depth or accumulation; and,	FOD, CUM, CUT vegetation communities located at the site but do not meet the size criteria. No Candidate SWH present.	Studies confirm the use of these habitats by: • One or more Short-eared Owls, or one or more Bald Eagles, or at least 10 individuals and two of the listed hawk/owl species; • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds; • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area; • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" and,	None of the listed species were documented within the Study Area; no SWH present.

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
		Bald Eagle: Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	• Eagle sites have open water, large trees and snags available for roosting. Information Sources: • OMNRF Ecologist or Biologist; • Field Naturalist Clubs; • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area; • Data from Bird Studies Canada; • Results of Christmas Bird Counts; and, • Reports and other information available from Conservation Authorities.		• SWHMiST Index #10 and #11 provides development effects and mitigation measures.	
Bat Hibernacula **Rationale:** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH).	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts; • Active mine sites should not be considered as SWH; and, • The locations of bat hibernacula are relatively poorly known. Information Sources: • OMNRF for possible locations and contact for local experts; • Natural Heritage Information Center (NHIC) Bat Hibernaculum; • Ministry of Northern Development and Mines for location of mine shafts; • Clubs that explore caves (e.g. Sierra Club); and, • University Biology Departments with bat experts.	No Candidate SWH present.	• All sites with confirmed hibernating bats are SWH; • The habitat area includes a 200m radius around the entrance of the hibernaculum for most development types and 1000m for wind farms; • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”; and, • SWHMiST Index #1 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area; no SWH present.

Bat Maternity Colonies
 	
Rationale:
Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.
	Big Brown Bat
	Silver-haired Bat
		Maternity colonies considered SWH are found in forested Ecosites.
		
		All ELC Ecosites in ELC Community Series:
		FOD
		FOM
		SWD
		SWM
			• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH);
			• Maternity roosts are not found in caves and mines in Ontario;
			• Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees;
			• Female Bats prefer wildlife tree (snags) in early stages of decay, class 1 – 3 or class 1 or 2; and,
			• Silver-haired Bats prefer older mixed or deciduous forest and form
				FOD vegetation communities located at the site.
				
				A few cavity trees present; high densities of mature trees with >25 cm dbh not found.
				
				No Candidate SWH present.
					• Maternity Colonies with confirmed use by;
					  ○ >10 Big Brown Bats
					  ○ >5 Adult Female Silver-haired Bats
					• The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies;
					• Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”; and,
					• SWHMiST Index #12 provides development effects and mitigation measures.
						None of the listed species were documented within the Study Area; no SWH present.

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
			maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred. <u>Information Sources:</u> • OMNRF for possible locations and contact for local experts; and, • University Biology Departments with bat experts.			
Turtle Wintering Areas **Rationale:** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle **Special Concern:** Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles: ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO. Northern Map Turtle: Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen; and, • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources:</u> • EIS studies carried out by Conservation Authorities; • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites; • OMNRF Ecologist or Biologist; • Field Naturalist clubs; and, • Natural Heritage Information Center (NHIC).	OA habitat present at river with mud substrate. However, suitable overwintering sites are not present. No Candidate SWH present.	• Presence of 5 over-wintering Midland Painted Turtles is significant; • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant; • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May); • Congregation of turtles is more common where wintering areas are limited and therefore significant; and, • SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	None of the listed species were documented within the Study Area; no SWH present.
Reptile Hibernaculum **Rationale:** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **Special Concern:** Milksnake Eastern Ribbonsnake **Lizard** **Special Concern:**	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line, such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH; • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line; • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or	Rock crevices not observed but may be present at site.	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or individuals of two or more snake spp; • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct); • <u>Note:</u> If there are Special Concern Species present, then site is SWH; • <u>Note:</u> Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same	None of the listed species were documented within the Study Area; no SWH present.

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
	(Southern Shield population): Five-lined Skink	spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3.	depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover; and, • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures. <u>Information Sources:</u> • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells); • Reports and other information available from Conservation Authorities; • Field Naturalists clubs; • University herpetologists; • Natural Heritage Information Center (NHIC); and, • OMNRF ecologist or biologist may be aware of locations of wintering skinks.		individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH. • SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula; • Presence of any active hibernaculum for skink is significant; and, • SWHMiST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff) **Rationale:** Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area; • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles; and, • Does not include a licensed/permitted Mineral Aggregate Operation. <u>Information Sources:</u> • Reports and other information available from Conservation Authorities; • Ontario Breeding Bird Atlas; • Bird Studies Canada; *Nature Counts* http://www.birdscanada.org/birdmon/; and, • Field Naturalist Clubs.	Bridge abutments and steep riverbank present. Small areas of CUM1 and CUT1 located at site. Candidate SWH is present.	Studies confirming: • Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season; • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests; • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”; and, • SWHMiST Index #4 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area during field visit. No nests observed on bridge piers or abutments. Cliff Swallow nesting confirmed at Wallenstein bridge by Highway 86 north of site (OBBA 2023). **Candidate SWH present,** although 50 m radius around nests does not overlap with proposed development activities.
Colonially - Nesting Bird Breeding	Great Blue Heron Black-crowned Night-Heron Great Egret	SWM2 SWM3 SWM5 SWM6	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally	No Candidate SWH present.	Studies confirming: • Presence of 5 or more active nests of Great Blue Heron or other listed species;	One Great Blue Heron observed in Study Area, but no nests found. No SWH present.

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
Habitat (Tree/Shrubs) **Rationale:** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Green Heron	SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	emergent vegetation may also be used; and, • Most nests in trees are 11 – 15m from ground, near the top of the tree. <u>Information Sources:</u> • Ontario Breeding Bird Atlas, colonial nest records; • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF) • Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony; • Aerial photographs can help identify large heronries; • Reports and other information available from CAs; • MNRF District Offices; and, • Local naturalist clubs.		• The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH; • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells; and, • SWHMiST Index #5 provides development effects and mitigation measures.	
Colonially - Nesting Bird Breeding Habitat (Ground) **Rationale:** Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas; and, • Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources:</u> • Ontario Breeding Bird Atlas , rare/colonial species records; • Canadian Wildlife Service; • Reports and other information available from Cas; • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area; • MNRF District Offices; and, • Field Naturalist clubs.	No rocky islands or peninsulas at the site. No Candidate SWH present.	Studies confirming: • Presence of >25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern; • Presence of 5 or more pairs for Brewer's Blackbird; • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant; • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH; • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"; and, • SWHMiST Index #6 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area; no SWH present.
Migratory Butterfly Stopover Areas **Rationale:** Butterfly stopover areas are extremely rare habitats and are	Painted Lady Red Admiral **Special Concern:** Monarch	Combination of ELC Community Series; need to have present one Community Series from each land class:	• A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present and will be located within 5km of Lake Ontario; • The habitat is typically a combination of field and forest, and provides the	FOD, CUM, CUT vegetation communities are located at the site. Wildlife habitat is >10 ha in size, but not within 5 km of Lake Ontario. No Candidate SWH present.	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur;	None of the listed species were documented within the Study Area; no SWH present.

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
biologically important for butterfly species that migrate south for the winter.		Combination of ELC Community Series; need to have present one Series from each land class: <u>Field:</u> CUM CUT CUS <u>Forest:</u> FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	butterflies with a location to rest prior to their long migration south; • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat; and, • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes. <u>Information Sources:</u> • OMNRF (NHIC); • Agriculture Canada in Ottawa may have list of butterfly experts; • Field Naturalist Clubs; • Toronto Entomologists Association; and., • Conservation Authorities.		• Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD; • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant; and, • SWHMiST Index #16 provides development effects and mitigation measures.	
Landbird Migratory Stopover Areas **Rationale:** Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha in size and within 5 km of Lake Ontario. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant; • Sites have a variety of habitats; forest, grassland and wetland complexes; • The largest sites are more significant; and, • Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH. <u>Information Sources:</u> • Bird Studies Canada; • Ontario Nature; • Local birders and naturalist club; and, • Ontario Important Bird Areas (IBA) Program.	FOD vegetation communities are located at the site. Woodlots are <10 ha in size and not within 5 km of Lake Ontario. No Candidate SWH present.	Studies confirm: • Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant; • Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"; and, • SWHMiST Index #9 provides development effects and mitigation measures.	No SWH present.
Deer Yarding Areas **Rationale:**	White-tailed Deer	Note: OMNRF to determine this habitat.	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a	No deer yarding areas identified by OMNRF. No Candidate SWH present.	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths >40cm for more than 60 days in a	No SWH present.

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in “yards” to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.		ELC Community Series providing a thermal cover component for a deer yard would include: FOM, FOC, SWM and SWC. Or these ELC Ecosites: CUP2 CUP3 FOD3 CUT	behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter; • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%; • OMNRF determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual"; and, • Woodlots with high densities of deer due to artificial feeding are not significant.		typically winter are minimum criteria for a deer yard to be considered as SWH; • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO); • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations; • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule; and, • SWHMiST Index #2 provides development effects and mitigation measures.	
Deer Winter Congregation Areas **Rationale:** Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment; • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands; • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule; • Large woodlots >100ha and up to 1500ha are known to be used annually by densities of deer that range from 0.1 – 1.5 deer/ha; and,	FOD vegetation communities are located at the site. Woodlots are <10 ha in size. OMNRF has not identified the property as a deer winter congregation area. No Candidate SWH present.	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF; • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF; • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey; • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule; and,	No SWH present.

Habitat	Species	CANDIDATE SWH			SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
reduce or avoid the impacts of winter conditions.			• Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources:</u> • MNRF District Offices; and, • LIO/NRVIS.		• SWHMiST Index #2 provides development effects and mitigation measures.	

Table 1.2.1 Rare Vegetation Communities

Habitat	CANDIDATE SWH				CONFIRMED SWH	
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Analysis	Defining Criteria	Analysis
Cliffs and Talus Slopes **Rationale:** Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO TAS TAT CLO CLS CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. <u>Information Sources:</u> • The Niagara Escarpment Commission has detailed information on location of these habitats; • OMNRF District; • Natural Heritage Information Center (NHIC) has location information available on their website; • Field Naturalist clubs; and, • Conservation Authorities.	No cliff or talus slopes are located at the site. No Candidate SWH present.	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes; and, • SWHMiST Index #21 provides development effects and mitigation measures.	No SWH present.
Sand Barren **Rationale:** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less than 60%.	A sand barren area >0.5ha in size. <u>Information Sources:</u> • OMNRF Districts; • Natural Heritage Information Center (NHIC) has location information available on their website; • Field Naturalist clubs; and, • Conservation Authorities.	No sand barrens are located at the site. No Candidate SWH present.	• Confirm any ELC Vegetation Type for Sand Barrens; • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.); and, • SWHMiST Index #20 provides development effects and mitigation measures.	No SWH present.
Alvar **Rationale:** Alvars are extremely rare habitats in Ecosregion 6E Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species:** 1) *Carex crawei* 2) *Panicum philadelphicum*	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy	An Alvar site >0.5ha in size. <u>Information Sources:</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists; • Ontario Nature – Conserving Great Lakes Alvars; • Natural Heritage Information Center (NHIC) has location information available on their website; • OMNRF Districts; • Field Naturalist clubs; and, • Conservation Authorities.	No alvars are located at the site. No Candidate SWH present.	• Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is significant; • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.); • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses; and, • SWHMiST Index #17 provides development effects and mitigation measures.	No SWH present.

Habitat	CANDIDATE SWH				CONFIRMED SWH	
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Analysis	Defining Criteria	Analysis
	3) *Eleocharis compressa* 4) *Scutellaria parvula* 5) *Trichostema brachiatum* These indicator species are very specific to Alvars within Ecoregion 6E.	to barren with a less than 60% tree cover.				
Old Growth Forest **Rationale:** Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest. <u>Information Sources:</u> • OMNRF Forest Resource Inventory mapping; • OMNRF Districts; • Field Naturalist clubs; • Conservation Authorities; • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations; and, • Municipal forestry departments.	FOD vegetation communities are located at the site. No woodland areas >30 ha in size or interior habitat >10 ha are present. No Candidate SWH present.	Field Studies will determine: • If dominant trees species of the are >140 years old, then the area containing these trees is Significant Wildlife Habitat; • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present); • The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH; • Determine ELC vegetation types for the forest area containing the old growth characteristics; and, • SWHMiST Index #23 provides development effects and mitigation measures.	No SWH present.
Savannah **Rationale:** Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources:</u> • Natural Heritage Information Center (NHIC) has location information available on their website; • OMNRF Districts; • Field Naturalist clubs; and, • Conservation Authorities.	No candidate vegetation community is located at the site. No Candidate SWH present.	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used. • Area of the ELC Ecosite is the SWH; • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.); and, • SWHMiST Index #18 provides development effects and mitigation measures.	No SWH present.
Tallgrass Prairie **Rationale:** Tallgrass Prairies	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has <25% tree cover.	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.	No TPO1 or TPO2 vegetation communities are located at the site. No Candidate SWH present.	Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note:	No SWH present.

Habitat	CANDIDATE SWH				CONFIRMED SWH	
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Analysis	Defining Criteria	Analysis
are extremely rare habitats in Ontario.			<u>Information Sources:</u> • Natural Heritage Information Center (NHIC) has location information available on their website; • OMNRF Districts; • Field Naturalist clubs; and, • Conservation Authorities.		Prairie plant spp. list from Ecoregion 6E should be used. • Area of the ELC Ecosite is the SWH; • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.); and, • SWHMiST Index #19 provides development effects and mitigation measures.	
Other Rare Vegetation Communities **Rationale:** Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M. The OMNRF/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources:</u> • Natural Heritage Information Center (NHIC) has location information available on their website; • OMNRF Districts; • Field Naturalist clubs; and, • Conservation Authorities.	No S1, S2, or S3 vegetation communities are located at the site. No Candidate SWH present.	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. • Area of the ELC Vegetation Type polygon is the SWH; and, • SWHMiST Index #37 provides development effects and mitigation measures.	No SWH present.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
Waterfowl Nesting Area **Rationale:** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends 120m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120m of each individual wetland where waterfowl nesting is known to occur. • Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests; and, • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources:</u> • Ducks Unlimited staff may know the locations of particularly productive nesting sites; • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat; and, • Reports and other information available from Conservation Authorities.	No candidate wetlands are located at the site. No Candidate SWH present.	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards; • Any active nesting site of an American Black Duck is considered significant; • Nesting studies should be completed during the spring breeding season (April – June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”; • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m from the wetland and will provide enough habitat for waterfowl to successfully nest; and, • SWHMiST Index #25 provides development effects and mitigation measures.	Only Mallard was documented within the Study Area; no SWH present.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **Rationale:** Nest sites are fairly uncommon in Eco-region 6E and are used	Osprey **Special Concern:** Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy; and, • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).	FOD community located at the site; adjacent to Conestogo River. Candidate SWH is present.	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area; • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH;	Osprey pair seen at river during site visit, and several recent (<5 year) OBBA records for Bald Eagle and Osprey nearby. No nests found but nesting probable along river. **Candidate SWH present.** 300 m buffer around nest to be observed if Osprey nesting confirmed during construction phase.

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.			<u>Information Sources:</u> • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario; • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat; • Nature Counts, Ontario Nest Records Scheme data; • OMNRF Districts; • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented; • Reports and other information available from Conservation Authorities; and, • Field Naturalists clubs.		• For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important; • For a Bald Eagle the active nest and a 400 - 800 m radius around the nest is the SWH. Area of the habitat from 400 - 800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat; • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant; • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August; • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”; and, • SWHMiST Index #26 provides development effects and mitigation measures.	
Woodland Raptor Nesting Habitat **Rationale:** Nests sites for these species are rarely	Northern Goshawk Cooper’s Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Cooper’s hawk nest along forest edges sometimes on peninsulas or small off-shore islands; and,	FOD vegetation communities are located at the site. Woodlands are <30 ha with <10 ha of interior habitat. No Candidate SWH present.	Studies confirm: • Presence of 1 or more active nests from species list is considered significant; • Red-shouldered Hawk and Northern Goshawk – a 400m radius around the nest or 28ha area of	None of the listed species were documented within the Study Area; no SWH present

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
identified; these area sensitive habitats and are often used annually by			• In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources:</u> • OMNRF Districts; • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented; • Check data from Bird Studies Canada; and, • Reports and other information available from Conservation Authorities.		habitat is the SWH (the 28ha habitat area would be applied where optimal habitat is irregularly shaped around the nest); • Barred Owl – a 200m radius around the nest is the SWH; • Broad-winged Hawk and Coopers Hawk – a 100m radius around the nest is the SWH; • Sharp-Shinned Hawk – a 50m radius around the nest is the SWH; • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area; and, • SWHMiST Index #27 provides development effects and mitigation measures.	
Turtle Nesting Areas **Rationale:** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle **Special Concern:** Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals; • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH; and, • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources:</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels); • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them;	No candidate vegetation communities at the site. Only narrow gravel areas along riverbank. No Candidate SWH present.	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles; • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH; • The area or collection of sites within an area of exposed mineral soils where the turtles' nest, plus a radius of 30 – 100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH; • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30 – 100m area of habitat;	None of the listed species were documented within the Study Area; no SWH present.

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
			• Natural Heritage Information Center (NHIC); and, • Field Naturalist clubs.		• Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method; and, • SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	
Seeps and Springs **Rationale:** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species. <u>Information Sources:</u> • Topographical map; • Thermography; • Hydrological surveys conducted by Conservation Authorities and MOE; • Field Naturalists clubs and landowners; and, • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Forested vegetation community located at the site with river system present. Candidate SWH is present.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH; • The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat; and, • SWHMiST Index #30 provides development effects and mitigation measures.	No seeps/springs were documented within the Study Area; no SWH present.
Amphibian Breeding Habitat (Woodland) **Rationale:** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat. <u>Information Sources:</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records;	FOD vegetation community present at the site. No permanent ponds present in wooded areas. No Candidate SWH present.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3; • A combination of observational study and call count surveys will be required during the spring (March – June) when	None of the listed species were documented within the Study Area; no SWH present.

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
only breeding habitat for local amphibian populations		distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	• Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property; • OMNRF District; • OMNRF wetland evaluations; • Field Naturalist clubs; • Canadian Wildlife Service Amphibian Road Call Survey; and, • Ontario Vernal Pool Association: http://www.ontariovernalpools.org		amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands; • The habitat is the wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat; and, • SWHMiST Index #14 provides development effects and mitigation measures.	
Amphibian Breeding Habitat (Wetlands) **Rationale:** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bullfrog) may be adjacent to woodlands.	• Wetlands >500m^2 (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats; • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators; and, • Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources:</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases); • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count; • OMNRF Districts and wetland evaluations; and, • Reports and other information available from Conservation Authorities.	No wetlands >500 m^2 are located at the site. No Candidate SWH present.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3 or; Wetland with confirmed breeding Bullfrogs are significant; • The ELC ecosite wetland area and the shoreline are the SWH; • A combination of observational study and call count surveys will be required during the spring (March - June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands; • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined	Green Frog was documented in the Study Area but not in numbers required to qualify as SWH. No SWH present.

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
					in Table 1.4.1 of this Schedule; and, • SWHMiST Index #15 provides development effects and mitigation measures.	
Woodland Area-Sensitive Bird Breeding Habitat **Rationale:** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest songbirds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren **Special Concern:** Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30ha; • Interior forest habitat is at least 200 m from forest edge habitat. <u>Information Sources:</u> • Local bird clubs; • Canadian Wildlife Service (CWS) for the location of forest bird monitoring; • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species; and, • Reports and other information available from Conservation Authorities.	FOD vegetation community located at the site. Woodlots are <30 ha in size with no interior forest habitat. No Candidate SWH present.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species; • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH; • Conduct field investigations in spring and early summer when birds are singing and defending their territories; • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”; and, • SWHMiST Index #34 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area; no SWH present.

Table 1.3 Habitats of Species of Conservation Concern considered SWH

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
Marsh Breeding Bird Habitat **Rationale:** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands; • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present; and, • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources:</u> • OMNRF District and wetland evaluations; • Field Naturalist clubs; • Natural Heritage Information Center (NHIC) Records; • Reports and other information available from Conservation Authorities; and, • Ontario Breeding Bird Atlas.	Small areas of CUM1 and some emergent vegetation present along riverbank. Candidate SWH is present.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species; • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH; • Area of the ELC ecosite is the SWH; • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats; • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”; and, • SWHMiST Index #35 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area; no SWH present.
Open Country Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow **Special Concern:** Short-eared Owl	CUM1 CUM2	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha; • Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years); • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older; and, • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. <u>Information Sources:</u> • Agricultural land classification maps, Ministry of Agriculture; • Local bird clubs; • Ontario Breeding Bird Atlas; and, • Reports and other information available from Conservation Authorities.	No grassland areas >30 ha located at the site. No Candidate SWH present.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species; • A field with 1 or more breeding Short-eared Owls is to be considered SWH; • The area of SWH is the contiguous ELC ecosite field areas; • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories; • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”; and, • SWHMiST Index #32 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area; no SWH present.

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
Shrub/Early Successional Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	<u>Indicator Spp:</u> Brown Thrasher Clay-coloured Sparrow <u>Common Spp.</u> Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	Large field areas succeeding to shrub and thicket habitats>10ha in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years); • Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species; and, • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources:</u> • Agricultural land classification maps, Ministry of Agriculture; • Local bird clubs; • Ontario Breeding Bird Atlas; and, • Reports and other information available from Conservation Authorities.	No shrub or thicket habitats >10 ha located at the site. No Candidate SWH present.	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species; • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat; • The area of the SWH is the contiguous ELC ecosite field/thicket area; • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories; • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”; and, • SWHMiST Index #33 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area; no SWH present.
Terrestrial Crayfish **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crayfish or Meadow Crayfish; (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can’t be too moist. Can often be found far from water; and, • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. <u>Information Sources:</u> • Information sources from “Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF, March 1998.	No Candidate SWH is present.	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites; • Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH; • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult; and, • SWHMiST Index #36 provides development effects and mitigation measures.	None of the listed species were documented within the Study Area; no SWH present.
Special Concern and Rare Wildlife Species	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of	All plant and animal element occurrences (EO) within a 1 or 10km grid.	When an element occurrence is identified within a 1 or 10km grid for a Special Concern or provincially Rare species, linking candidate habitat on the site needs to be completed to ELC Ecosites.	Element occurrence records exist for Special Concern species in the Study Area. Candidate SWH is present.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year	Eastern Wood-Pewee was documented as a Probable Breeder during the field visit. Wood Thrush have potential at the

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
Rationale: These species are quite rare or have experienced significant population declines in Ontario.	these species are tracked by the Natural Heritage Information Centre.	Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	<u>Information Sources:</u> • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data; • NHIC Website “Get Information”: http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas; and, • Expert advice should be sought as many of the rare spp. have little information available about their requirements.		when the species is present or easily identifiable; • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat; and, • SWHMiST Index #37 provides development effects and mitigation measures.	site based on secondary source data (NHIC 2025, OBBA 2025). **SWH confirmed.**

Table 1.4.1 Animal Movement Corridors

Habitat	Species	CANDIDATE SWH			CONFIRMED SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Analysis	Defining Criteria	Analysis
Amphibian Movement Corridors **Rationale:** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	Movement corridors between breeding habitat and summer habitat. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule. <u>Information Sources:</u> • MNRF District Office; • Natural Heritage Information Center (NHIC); • Reports and other information available from Conservation Authorities; and, • Field Naturalist Clubs.	No Amphibian Breeding Habitat (Wetland) is present at the site. No Candidate SWH present.	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites; • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant; • Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m; • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat; and, • SWHMiST Index #40 provides development effects and mitigation measures.	Amphibians documented within the Study Area (Green Frog) were not present in densities indicative of SWH. No SWH present.
Deer Movement Corridors **Rationale:** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion; and, • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>Information Sources:</u> • MNRF District Office; • Natural Heritage Information Center (NHIC); • Reports and other information available from Conservation Authorities; and, • Field Naturalist Clubs.	No Deer Wintering Habitat is located at the site. No Candidate SWH present.	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas; • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas; • Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway. Shorter corridors are more significant than longer corridors; and, • SWHMiST Index #39 provides development effects and mitigation measures.	No SWH present.

Appendix D
Bridge Drawings

Region of Waterloo

DESIGN AND CONSTRUCTION DIVISION,
ENGINEERING AND ENVIRONMENTAL
SERVICES DEPARTMENT

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

IN TOWNSHIP OF WELLESLEY

TOWNSHIP OF WELLESLEY

DOUG DIXON & ASSOCIATES INC

DDA

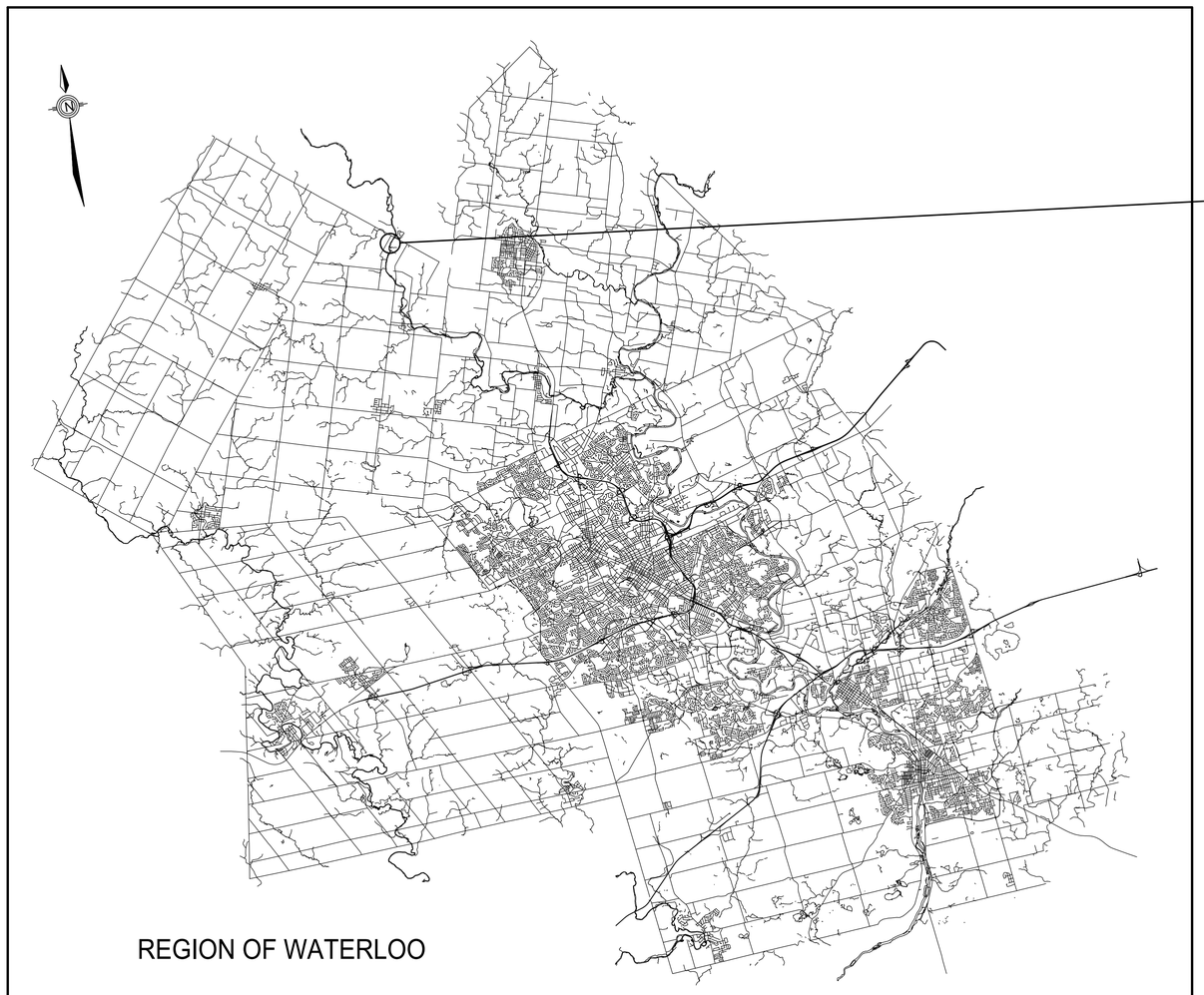
KAREN REDMAN
REGIONAL CHAIR

MATHIEU GOETZKE
COMMISSIONER OF TRANSPORTATION AND
ENVIRONMENTAL SERVICES

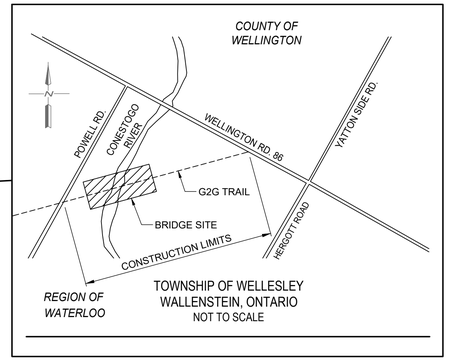
JIM ELLERMAN
HEAD, ENGINEERING, DESIGN & CONSTRUCTION
ENGINEERING AND ENVIRONMENTAL SERVICES

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MODIFIED: 2026-08-17 1:55:04 PM Zhenlin Pan
PLOTTED: 2026-08-17 4:14:35 PM Zhenlin Pan
ROW-2021

Region of Waterloo



KEY PLAN



FILE No. _____ CONTRACT No. _____

WORK OF: G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER Line 3

ROAD No.: N.A. SECTION No.: N.A.

LOCATION: GUELPH TO GODERICH (G2G) RAIL TRAIL

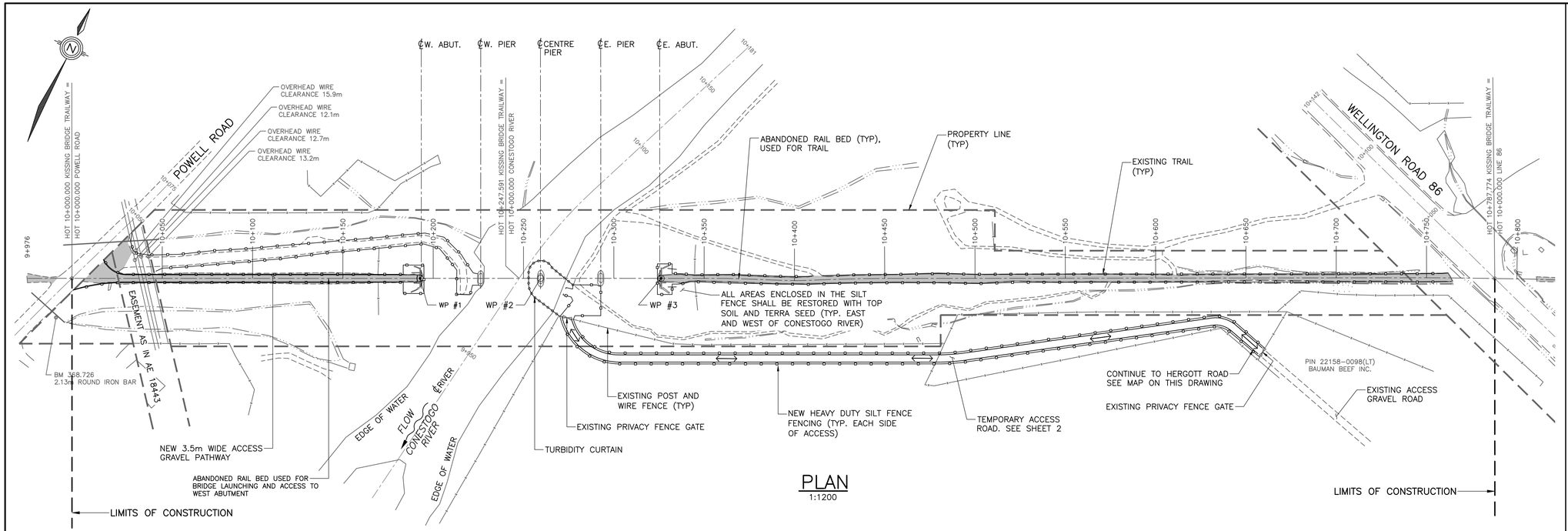
WALLENSTEIN, TOWNSHIP OF WELLESLEY
REGION OF WATERLOO, ONTARIO

LIMITS: STATION 10+000.00 (POWEL ROAD) TO STATION 100+750.00 (WELLINGTON ROAD)

SOILS REPORT: _____

DRAWING INDEX			
SHEET	DESCRIPTION	SHEET	DESCRIPTION
	TITLE PAGE	SP-05	CENTER PIER REMOVALS AND REFACING DETAILS
	INDEX PAGE	SP-06	BEARING DETAILS
		SP-07	TRUSS LAYOUT
C-01	SITE PLAN	SP-08	TRUSS CONNECTIONS
C-02	SITE ACCESS PLAN	SP-09	LAUNCHING NOSE DETAILS
C-03	GRADING OF G2G TRAIL	SP-10	BRIDGE DECK DETAILS
C-04	PROFILE AND SECTIONS OF G2G TRAIL	SP-11	BRIDGE RAILING AND EXPANSION JOINT DETAILS
		SP-12	APPROACH RAILING AND FOUNDATION DETAILS
L-1	LANDSCAPE PROTECTION PLAN	SP-13	POTENTIAL ERECTION AND LAUNCHING DETAILS
		SP-14	PROGRESSIVE LAUNCHING DETAILS
SP-00	GENERAL NOTES	SP-15	EROSION AND SEDIMENT CONTROL PLAN AND DETAILS
SP-01	GENERAL ARRANGEMENT	SP-16	ENVIRONMENTAL CONTROL NOTES AND DETAILS
SP-02	BRIDGE ACCESS BARRIER DETAILS	SP-17	RESTORATION PLAN AND DETAILS
SP-03	EAST AND WEST ABUTMENT REMOVALS		
SP-04	EAST AND WEST ABUTMENT REHABILITATION		

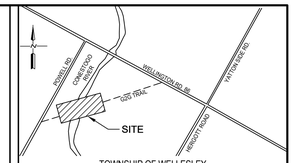
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PLAN
1:1200



MAP



TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

DISCLAIMER:
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LEGEND:

- PROPERTY LINE
- EXISTING FENCE
- HEAVY DUTY SILT FENCE
- TURBIDITY CURTAIN
- EXISTING TRAIL
- PROPOSED ACCESS ROAD

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

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HCP101	368.726	4827430.461	528379.831

FIELD BOOK No.

No.	ISSUE/REVISION	BY	DATE
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	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

SITE PLAN

REGISTERED PROFESSIONAL ENGINEER D. G. DIXON AUG 17/26 PROVINCE OF ONTARIO

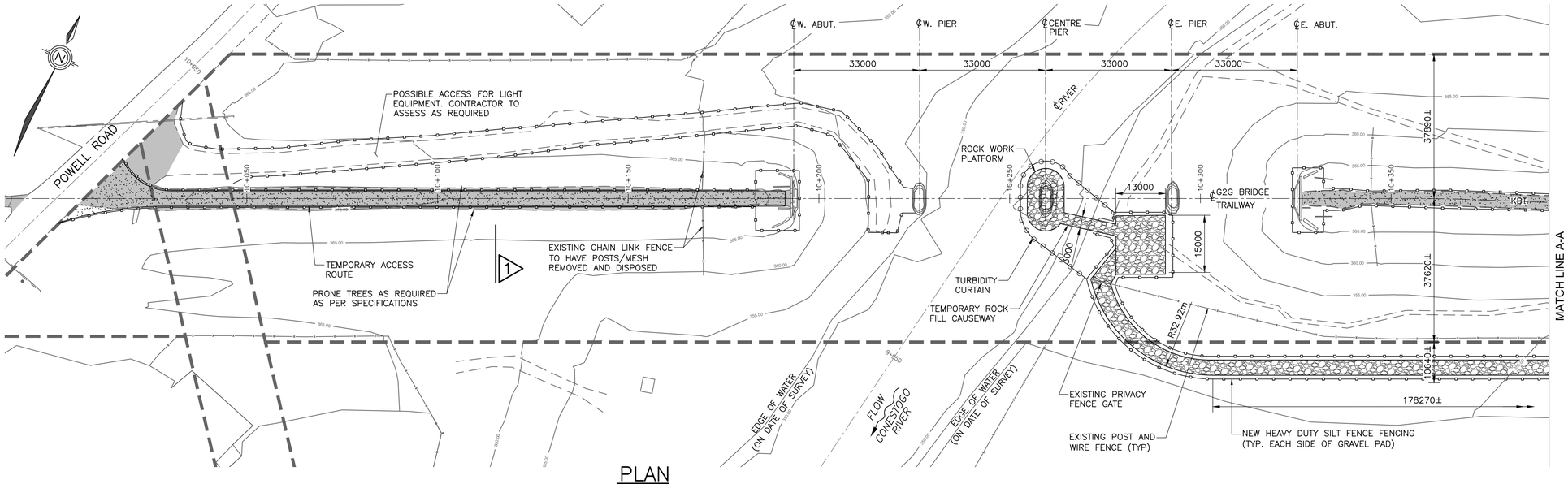
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CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. C-01
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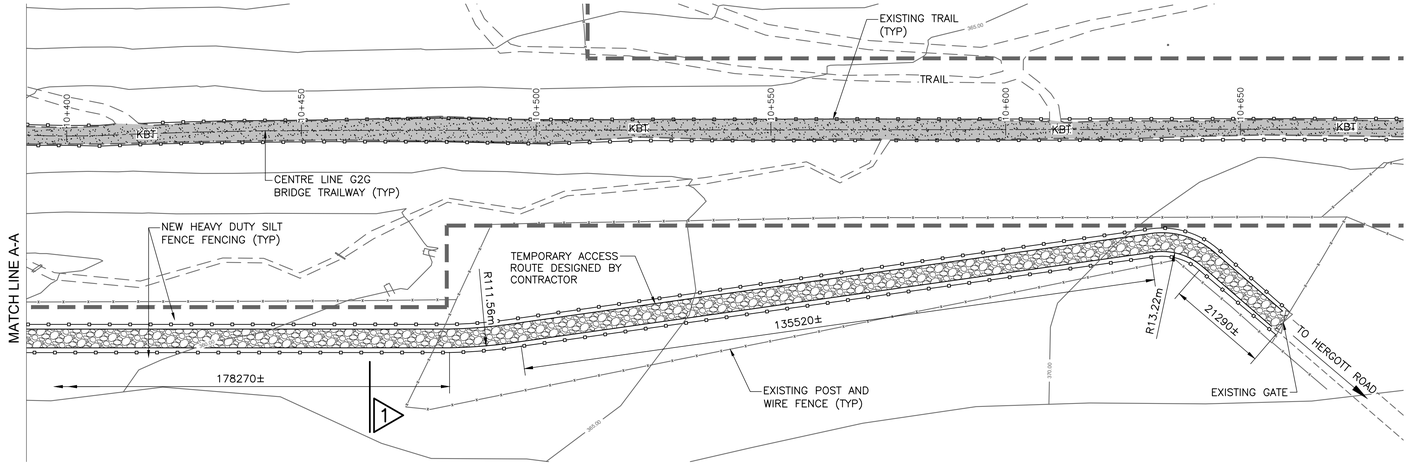
METRIC
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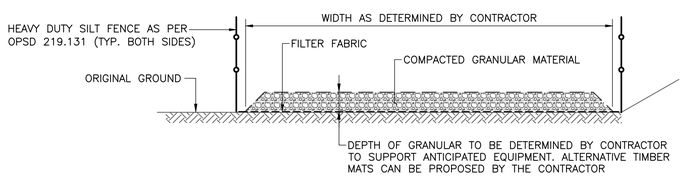
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ltovw2201



PLAN
1:600



PLAN
1:600

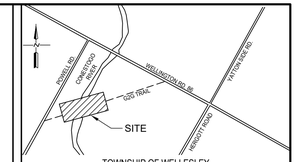


1 TYPICAL FOR TEMPORARY ACCESS DETAIL
1:30
(SCHEMATIC ONLY – TO BE DESIGNED BY THE CONTRACTOR FOR CONSTRUCTION PURPOSE)

CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY CONSTRUCTION ACCESS ROADS REQUIRED FOR THE EXECUTION OF THE WORK.
2. CONTRACTOR IS TO ASSESS REQUIREMENTS FOR THE WIDTH AND STRUCTURE OF THE TEMPORARY ACCESS ROUTE FROM BOTH HERGOTT ROAD AND POWELL ROAD (AND ANY OTHER ACCESS DEEMED NECESSARY).
3. ALL ROUTES USED SHALL BE RETURNED TO PRE-CONSTRUCTION CONDITION AT THE END OF CONSTRUCTION.
4. ALL TEMPORARY ACCESS ROUTES CONSTRUCTED BY THE CONTRACTOR, NOT IDENTIFIED TO REMAIN, SHALL BE REMOVED AND THE GROUND RESTORED IN PRE-CONSTRUCTION CONDITION OR BETTER.
5. ALL ORGANIC MATERIAL, SOFT SPOTS, AND UNSUITABLE MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF GRANULAR MATERIAL.
6. THE CONTRACTOR SHALL MAINTAIN THE ACCESS ROADS.
7. DUST CONTROL MEASURES SHALL BE IMPLEMENTED AS NECESSARY TO COMPLY WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND MUNICIPAL REQUIREMENTS.
8. SURFACE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR SHALL PREVENT PONDING AND DIRECT RUNOFF AWAY FROM ADJACENT PROPERTIES, STRUCTURES, AND WORK AREAS.
9. THE CONTRACTOR SHALL ENSURE THAT CONSTRUCTION ACCESS ROADS DO NOT ADVERSELY AFFECT EXISTING DRAINAGE PATTERNS OR INFRASTRUCTURE.
10. CONSTRUCTION TRAFFIC SHALL BE RESTRICTED TO DESIGNATED ACCESS ROUTES UNLESS OTHERWISE APPROVED BY THE CONTRACT ADMINISTRATOR.
11. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL REQUIRED TRAFFIC CONTROL DEVICES, SIGNAGE, BARRIERS, AND WARNING DEVICES IN ACCORDANCE WITH APPLICABLE REGULATIONS AND STANDARDS.
12. ACCESS ROADS CROSSING EXISTING UTILITIES SHALL BE REVIEWED BY THE CONTRACTOR, AND APPROPRIATE PROTECTION MEASURES SHALL BE IMPLEMENTED TO PREVENT DAMAGE.
13. MUD, DEBRIS, AND CONSTRUCTION MATERIALS TRACKED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY. ROADWAYS SHALL BE KEPT CLEAN AT ALL TIMES.
14. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND APPROVALS REQUIRED FOR TEMPORARY ACCESS ROADS LOCATED OUTSIDE THE PROJECT LIMITS.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING ROADS, CURBS, SIDEWALKS, UTILITIES, LANDSCAPING, OR ADJACENT PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES AND SHALL RESTORE DAMAGED AREAS AT NO ADDITIONAL COST TO THE OWNER.
16. THE LOCATION, ALIGNMENT, AND DIMENSIONS OF TEMPORARY CONSTRUCTION ACCESS ROADS SHALL BE COORDINATED WITH THE CONTRACT ADMINISTRATOR PRIOR TO CONSTRUCTION.
17. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ADEQUACY, SAFETY, PERFORMANCE, AND MAINTENANCE OF ALL TEMPORARY CONSTRUCTION ACCESS ROADS THROUGHOUT THE DURATION OF THE WORK.

METRIC
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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

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LEGEND:

- PROPERTY LINE
- EXISTING FENCE
- HEAVY DUTY SILT FENCE
- TURBIDITY CURTAIN
- EXISTING TRAIL
- ACCESS ROAD
- ROCK WORK PLATFORM

NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

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	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

SITE ACCESS PLAN

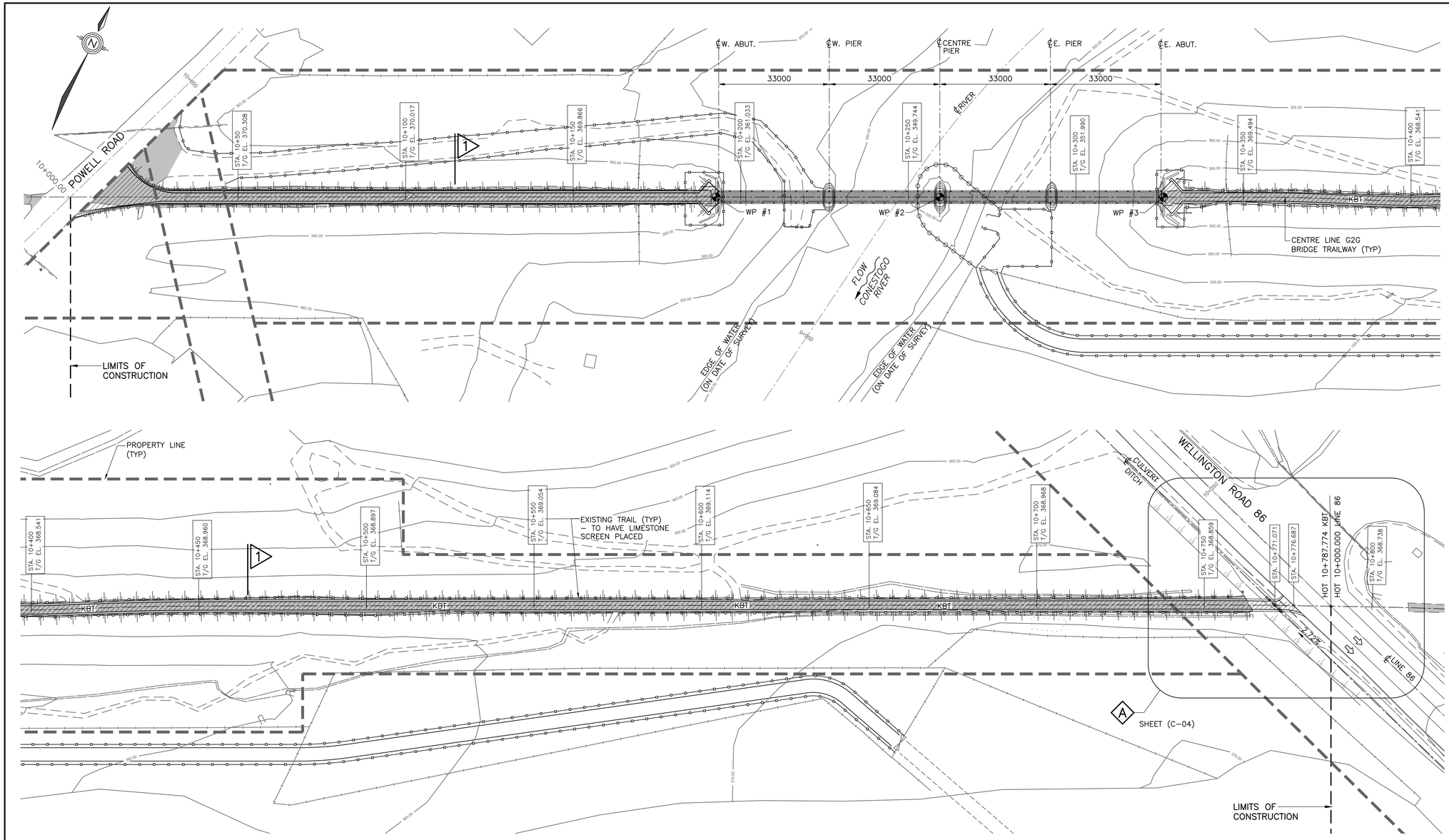
REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER
S. A. KASHF
100078478
AUG 17/26
PROVINCE OF ONTARIO

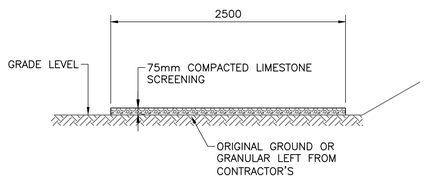
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ROW-2021

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PLAN
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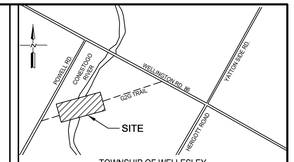


1 FINAL PATHWAY
1:30

WORK POINTS			
POINT#	WP #1 (℄ E.ABUT. BACKWALL)	WP #2 (CENTER PIER)	WP#3 (℄ W.ABUT. BACKWALL)
STATION	10+192.663	10+259.403	10+326.143
TOP OF CONCRETE ELEVATION	370.135	366.255	370.135
FINISHED FLOOR ELEVATION	370.505	370.505	370.505

NOTES
1. THE CONTRACTOR SHALL USE EQUIPMENT TO PLACE AND COMPACT THE LIMESTONE SCREEN SUITABLE FOR THE TRAIL TO MITIGATE THE IMPACT ON THE TREE CONOPY AND MITIGATE PRUNING REQUIREMENT.

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TOWNSHIP OF WELLESLEY
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LEGEND:
- PROPERTY LINE
- EXISTING FENCE
- HEAVY DUTY SILT FENCE
- TURBIDITY CURTAIN
- EXISTING TRAIL
- CENTRE LINE G2G TRAILWAY

NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

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G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

GRADING OF G2G TRAIL

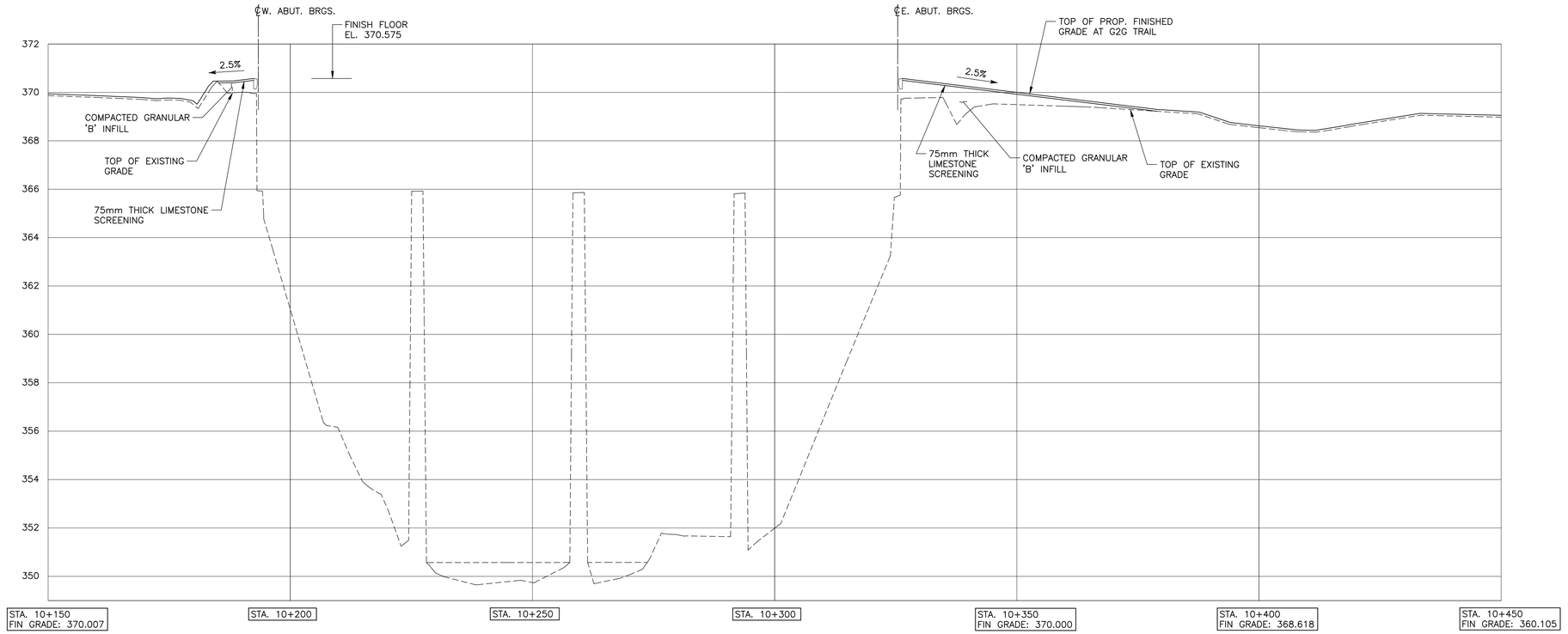
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LICENSED PROFESSIONAL ENGINEER — S. A. KASHF — 100078478 — AUG 17/26 — PROVINCE OF ONTARIO

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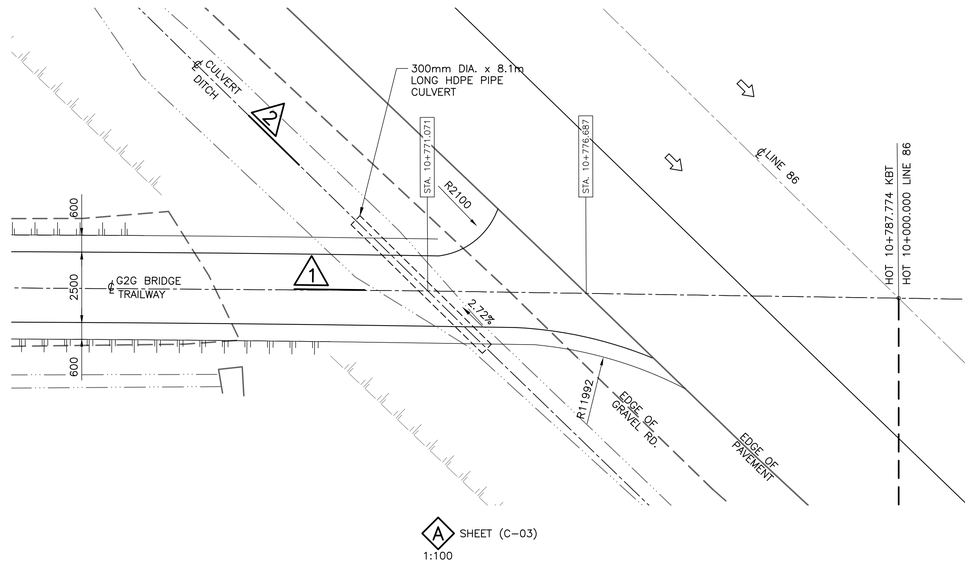
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ADW-201

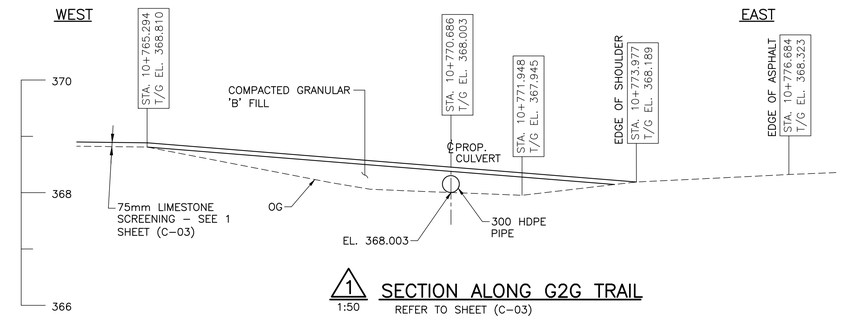


PROFILE G2G TRAIL

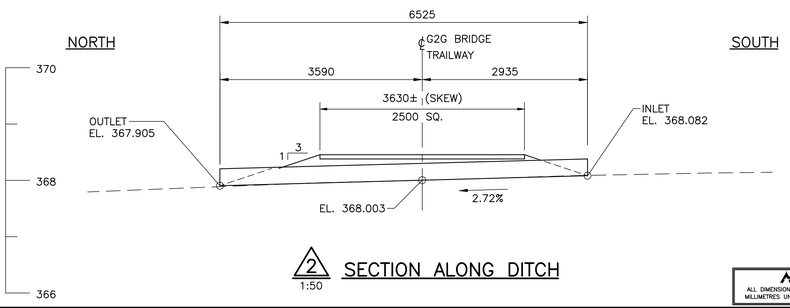
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A SHEET (C-03)
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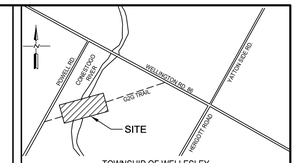


1 SECTION ALONG G2G TRAIL
1:50
REFER TO SHEET (C-03)



2 SECTION ALONG DITCH
1:50

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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
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G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

PROFILE AND SECTIONS OF G2G TRAIL

REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
S. A. KASHIF
100078478
AUG 17/26
PROVINCE OF ONTARIO

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DESIGN

1. DESIGN AND CONSTRUCTION IN ACCORDANCE WITH CHBDC S6:25.
2. DESIGN LOADS:
   a. SUPERIMPOSED DEAD LOAD: 0.5 kPa
   b. LIVE LOAD (PEDESTRIANS): 3.29 kPa
   c. LIVE LOAD (WIND): 5.85 kPa. (HORZ.), 2.02 kPa (VERT.)
   d. LIVE LOAD (ICE ACCRETION) : 0.62 kPa
   e. LIVE (SNOW): 1.60 kPa (NBC)
   f. CONSTRUCTION LOADS: 1.00 MAX.
   g. PEDESTRIAN BARRIER LOAD: 1.5 kN (HORZ. AND VERT.)

LOAD COMBINATION AS PER CHBDC S6:25 (CLAUSE 3.5)

MATERIALS

1. STRUCTURAL STEEL SHALL BE AS FOLLOWS:
   a. CHANNELS AND ANGLES SHALL CONFORMS TO CSA G40.21 GRADE 350A
   b. HSS SECTIONS SHALL CONFORMS TO CSA G40.21 GRADE 350A
2. BOLTS SHALL BE HOT DIP GALVANIZED ASTM F3125 GRADE A325, TYPE 1, M22. ALL BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANES.
3. CONCRETE SHALL HAVE A SPECIFICATION STRENGTH OF 35MPa AT 28 DAYS.
4. ADHESIVE/GROUT SHALL BE EPOXY FROM THE ONTARIO MINISTRY OF TRANSPORTATION DESIGNATED SOURCE MATERIAL (DSM) LIST.
5. REINFORCING STEEL SHALL BE GRADE 500W.
6. WELDED WIRE MESH SHALL MEET CSA G30.5 (LATEST VERSION).
7. GALVANIZING SHALL BE TO ASTM A123 OF CSA G164 (MOST RECENT VERSION).

STRUCTURAL STEEL

1. WELDING OF STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENT OF CAN CSA W59.13 AND SHALL BE UNDERTAKEN BY THE FABRICATOR FULLY APPROVED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA W47.1:19 (R2024).
2. ALL EXPOSED STEEL PIPE ENDS TO BE CAPPED WITH 4mm PLATE.
3. WELD ELECTRODES, TYPE AND GRADE TO MATCH PARENT METAL.

TIMBER

1. DECK BOARDS SHALL BE 50mm THICK ROUGH SAWN 250mm WIDE.
2. DECK BOARDS SHALL BE PRESERVATIVE TREATED AS NOTED IN THE SPECIFICATIONS.
3. TIMBER SHALL BE S-P-F NUMBER 2 GRADE (OR BETTER) OR AN ALTERNATIVE APPROVED BY THE ENGINEER.
4. BOARDS SHALL BE FASTENED USING STAINLESS STEEL FASTENERS.

COATING

COATING ON THE TRUSS SHALL BE AS NOTED IN THE SPECIFICATIONS.

ANCHOR RODS

1. ANCHOR RODS SHALL BE FULLY THREADED.
2. MATERIAL GRADE SHALL MEET REQUIREMENT OF FSTM F1554 GRADE 105 OR APPROVAL EQUIVALENT.
3. ANCHOR BOLTS SHALL BE GALVANIZED TO ASTM A123 OR CSA G164. THIS INCLUDED ALL NUTS AND WASHERS.
4. JAM NUT TO BE INSTALLED ON ALL ANCHOR BOLTS ONCE BOLTS ARE SNUG TIGHT.

CONCRETE

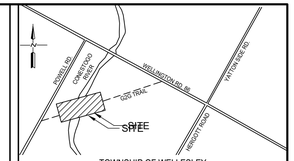
1. COVER TO REINFORCING STEEL SHALL BE 70mm± 10mm.
2. ALL FORM TIED SHALL BE REPAIRED. CONTRACTOR IS TO SUBMIT A PROCEDURE TO THE CONTRACTOR ADMINISTRATOR. REPAIRS ARE TO NOT BE VISIBLE WHEN VIEWED FROM 10m. COLOUR OF CONCRETE IN THE FORM TIE PATCH SHALL MATCH SURROUNDING CONCRETE.

CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO THE COMMENCEMENT OF THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONTRACT ADMINISTRATOR AND THE PROPOSED ADJUSTMENT OF THE WORK TO MATCH THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.
2. THE CONTRACTOR SHALL ENSURE THE STABILITY OF ALL COMPONENTS DURING HANDLING, TRANSPORTATION AND ERECTION AND UNTIL ALL STRUCTURAL STEEL IS IN ITS FINAL LOCATION AND FULLY BOLTED.

ABBREVIATIONS

APP	APPROACH
B.F.	BACK FACE
C.J.	CONSTRUCTION JOINT
CHBDC	CANADIAN HIGHWAY BRIDGE DESIGN CODE
CIP	CAST-IN-PLACE
CLF	CHAIN LINK FENCE
CSA	CANADIAN STANDARD ASSOCIATION
E	EAST
E.J.	EXPANSION JOINT
EXP.	EXPANSION
F.F.	FRONT FACE
F/S	FIELD SPLICE
HP	HYDRO POLE
I.F.	INSIDE FACE
NE	NORTH EAST
NW	NORTH WEST
O.F.	OUTSIDE FACE
S/W	SIDEWALK
SE	SOUTH EAST
SW	SOUTH WEST
T/C	TOP OF CONCRETE
U.N.O	UNLESS NOTED OTHERWISE
W	WEST
WL	WATER LEVEL
WP	WORKING POINT
FIN.	FINISH
FL.	FLOOR
EL.	ELEVATION



TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

DISCLAIMER:
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NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

FIELD BOOK No.

No.	ISSUE/REVISION	BY	DATE
	ISSUED TO REGION FOR COMMENTS	DD	AUG. 17/26
	ISSUED FOR GRCA PERMIT	DD	JUL. 9/26
	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE
OVER CONESTOGO RIVER

GENERAL NOTES

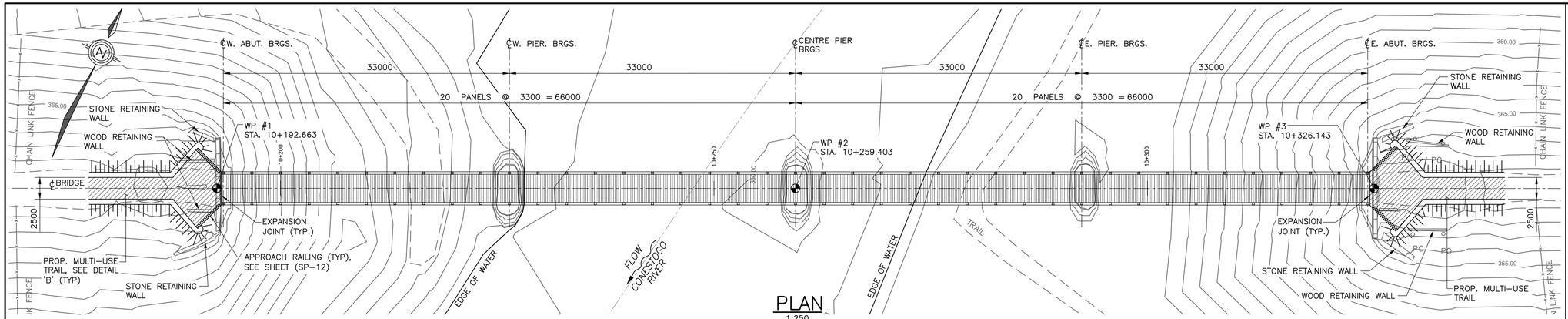
REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
S. A. KASHF
100078478
AUG 17/26
PROVINCE OF ONTARIO

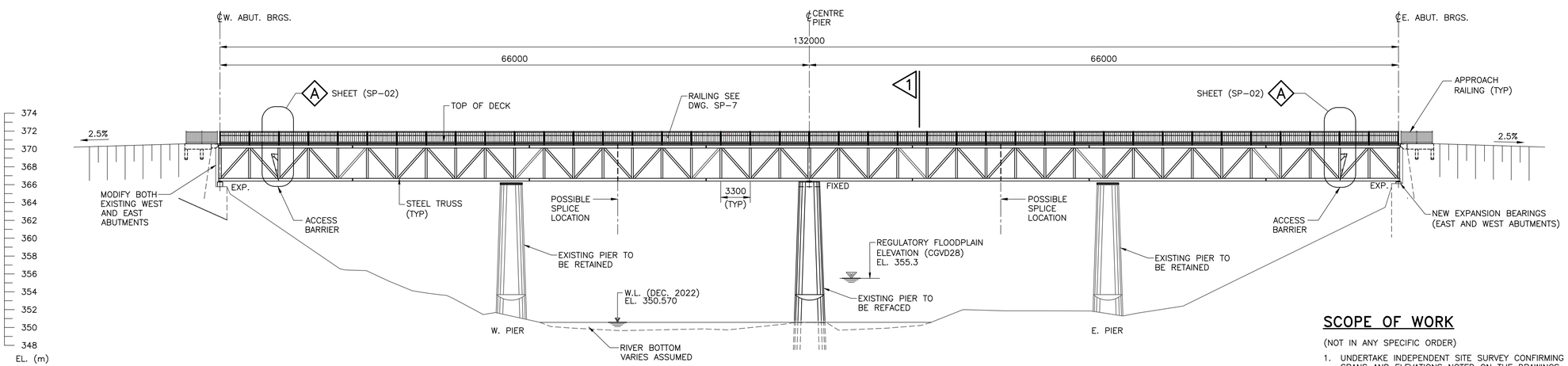
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CHECKED BY: DD	FILE No. 24-243
DATE: FEB. 26, 2026	DRAWING No. SP-00
SCALE AS SHOWN	SHEET No. 5 OF 22
LAYOUT NAME:	

METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

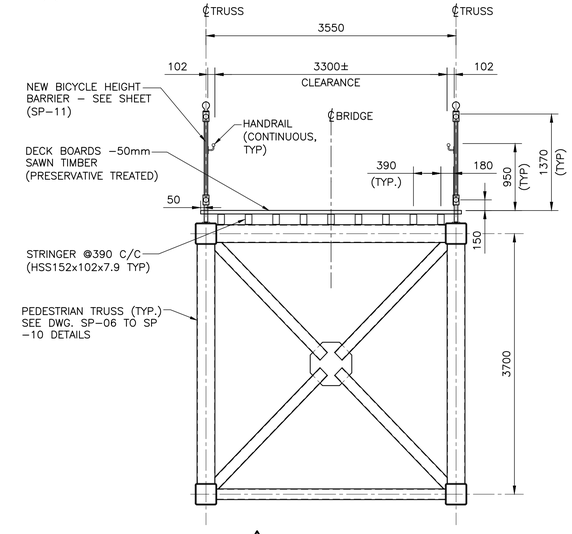
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MDW-2021



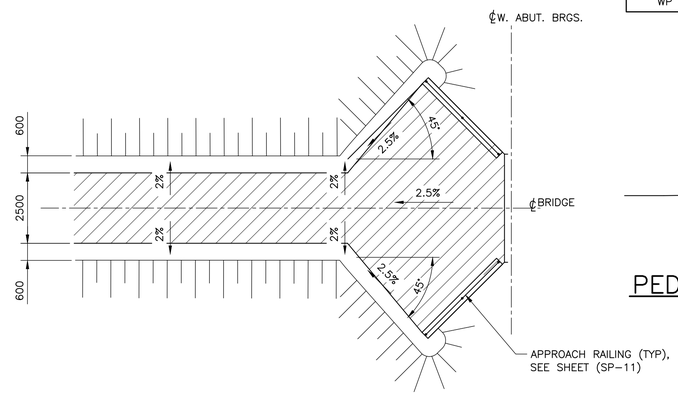
PLAN
1:250



ELEVATION
1:250

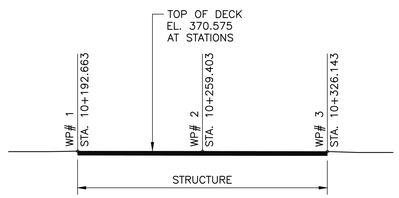


1 CROSS SECTION
1:40 (PIER NOT SHOWN FOR CLARITY)



B PROPOSED MULTI-USE TRAIL
1:100 (WEST END SHOWN, EAST END SIMILAR)

WORK POINTS			
POINT#	STATION	NORTHING	EASTING
WP #1	10+192.663	4827507.453	528567.355
WP #2	10+259.403	4827525.649	528631.570
WP #3	10+326.143	4827544.535	528695.580

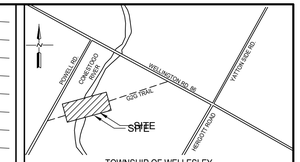


PEDESTRIAN BRIDGE PROFILE
NTS

SCOPE OF WORK

(NOT IN ANY SPECIFIC ORDER)

1. UNDERTAKE INDEPENDENT SITE SURVEY CONFIRMING SPANS AND ELEVATIONS NOTED ON THE DRAWINGS.
2. INSTALL ACCESS TO SITE AS SHOWN SCHEMATICALLY ON THE DRAWINGS.
3. INSTALL ENVIRONMENTAL PROTECTION CONSISTING OF, BUT NOT LIMITED TO, HEAVY DUTY SILT FENCE AND TURBIDITY CURTAIN.
4. COMPLETE NECESSARY CLEARING AND GRUBBING AND ESTABLISH LAYDOWN AREA.
5. PLACE ROCK CAUSEWAY TO ACCESS CENTER PIER FOR REHABILITATION.
6. REFACE THE CENTER PIER AND THE TOP OF THE PIER.
7. REMOVE THE ROCK CAUSEWAY AND THE TURBIDITY CURTAIN.
8. MODIFY THE ABUTMENTS TO ACCEPT THE PEDESTRIAN BRIDGE.
9. FABRICATE, DELIVERY AND ERECT THE PEDESTRIAN BRIDGE.
10. COMPLETE THE BRIDGE BY INSTALLING THE TIMBER DECK AND RAILINGS.
11. INSTALL RAILING AND AND SECURITY FENCE ON THE ABUTMENTS.
12. GRADE PATH AT ABUTMENT AS REQUIRED.
13. GRADE PATH FROM POWELL ROAD TO ROAD 86.
14. PRUNE/REMOVE TREES AS NECESSARY.
15. ALL OTHER WORK AS MAY BE SHOWN OR IMPLIED ON THE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS.



TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
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DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

HCP100	368.597	4827669.461	529112.489
HCP101	368.726	4827430.461	528379.831

FIELD BOOK No.

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G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

GENERAL ARRANGEMENT

REGISTERED PROFESSIONAL ENGINEER — D. G. DIXON — AUG 17/26 — PROVINCE OF ONTARIO

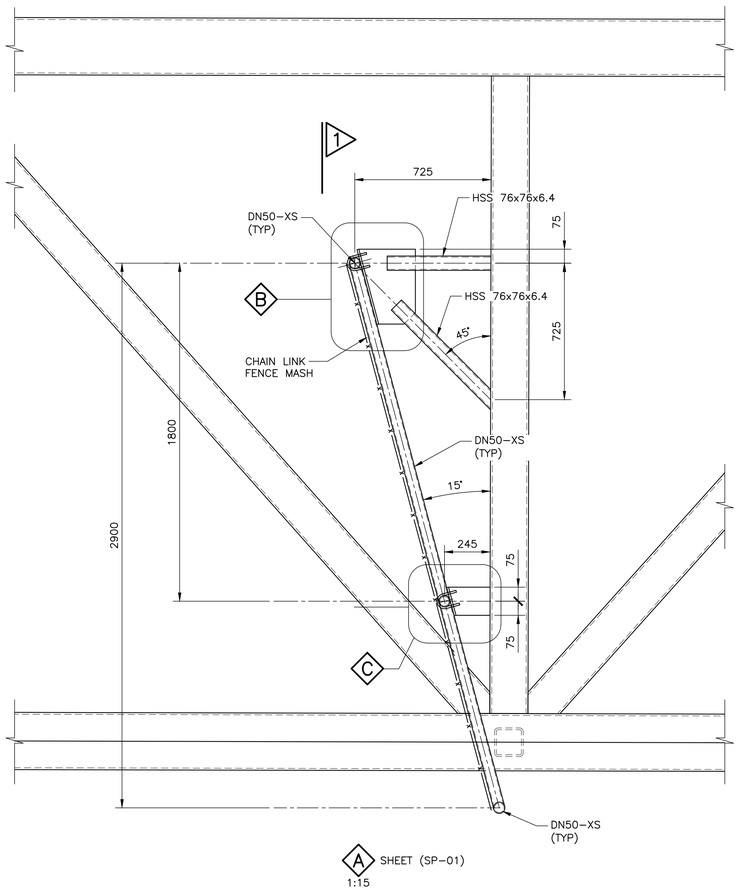
LICENSED PROFESSIONAL ENGINEER — S. A. KASHF — 100078478 — AUG 17/26 — PROVINCE OF ONTARIO

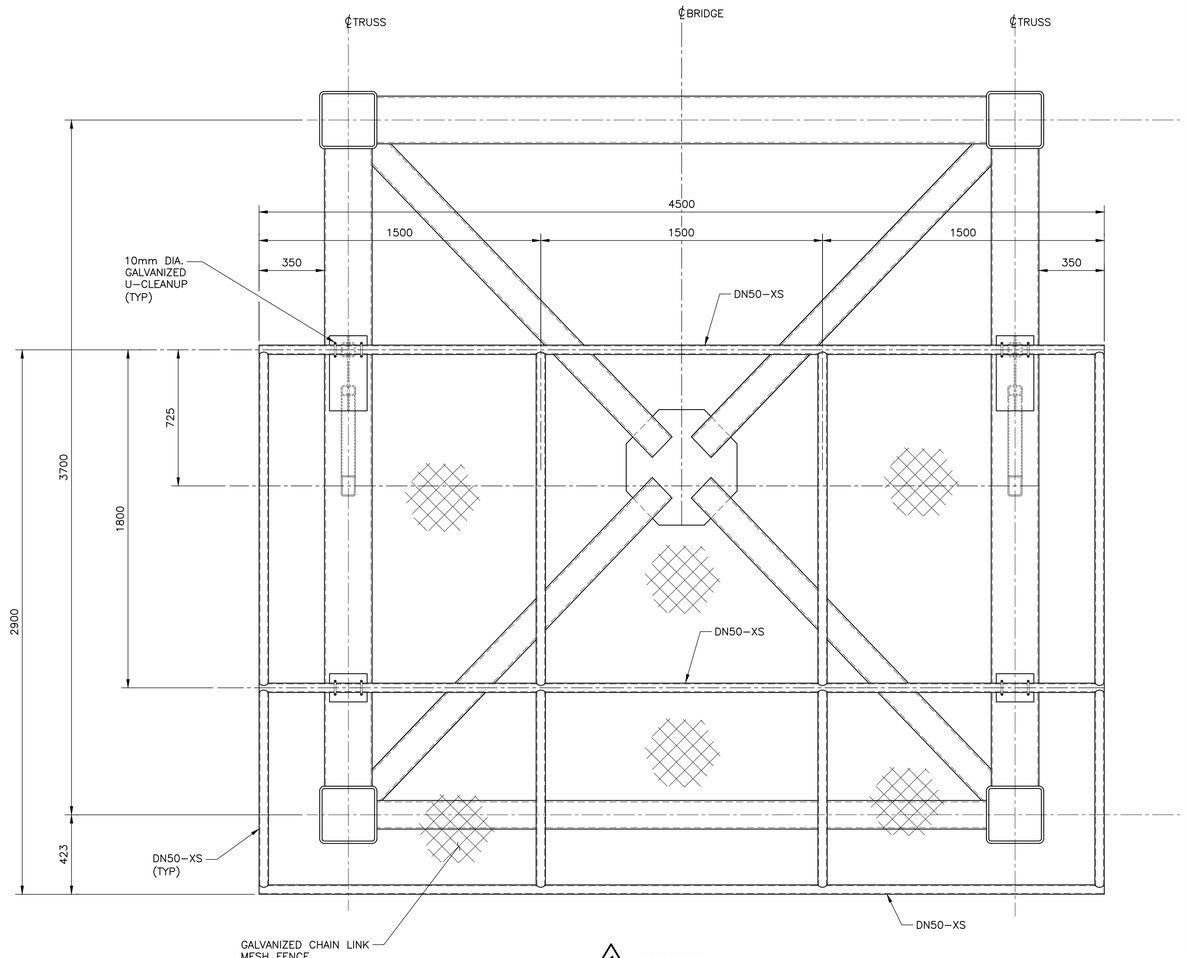
DRAWN BY: AZ	CONTRACT No.
CHECKED BY: DD	FILE No. 24-243
DATE: FEB 26, 2026	DRAWING No. SP-01
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LAYOUT NAME:	

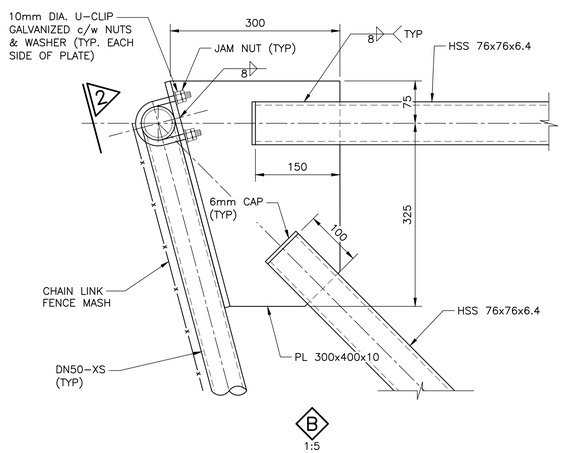
METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

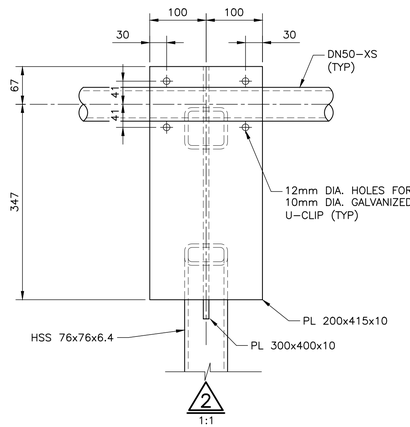
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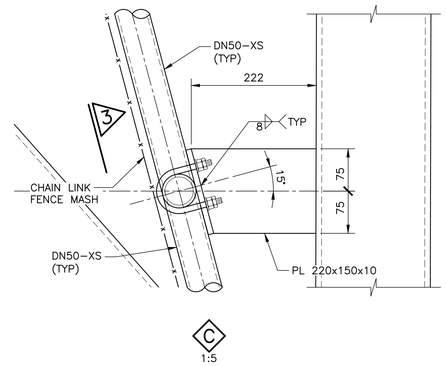
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BGW-2301

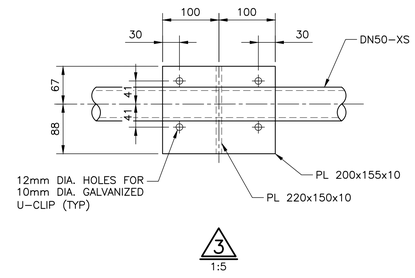


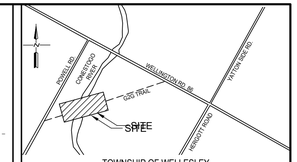












TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

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G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

BRIDGE ACCESS BARRIER DETAILS

REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

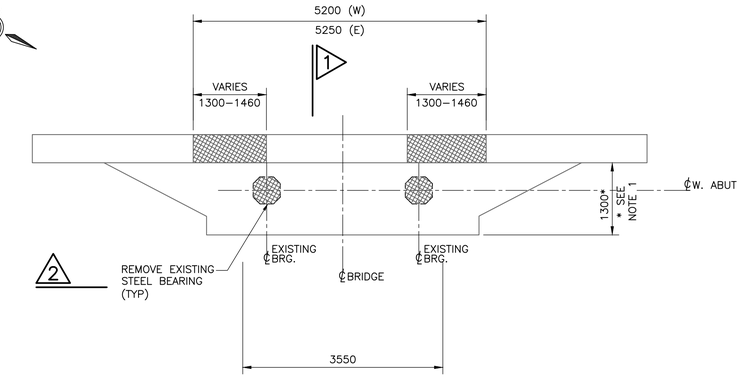
LICENSED PROFESSIONAL ENGINEER
S. A. KASHF
100078478
AUG 17/26
PROVINCE OF ONTARIO

DRAWN BY: ZP	CONTRACT No.
CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. SP-02
SCALE AS SHOWN	SHEET No. 7 OF 22
LAYOUT NAME:	

METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

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BDW-2021

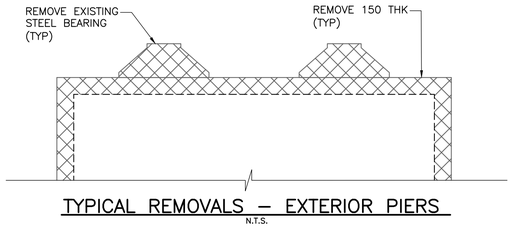
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REMOVALS – PLAN

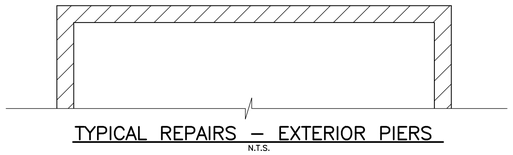
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(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)



TYPICAL REMOVALS – EXTERIOR PIERS

N.T.S.

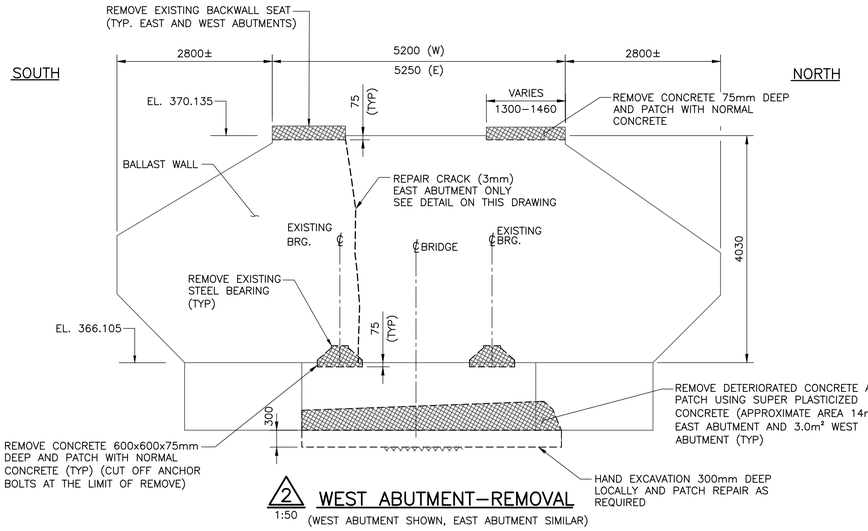


TYPICAL REPAIRS – EXTERIOR PIERS

N.T.S.

NOTES

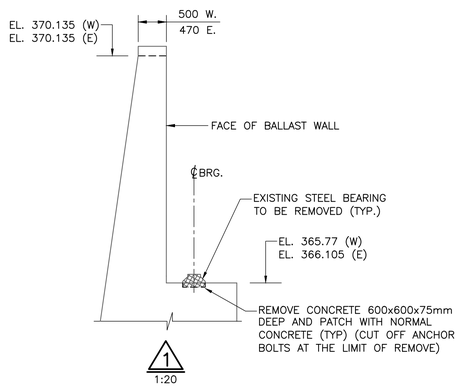
1. CONTRACTOR TO VERIFY WITH OF BEARING SEAT AT EACH ABUTMENT AND BEARING LAYOUT PRIOR TO PREPARING SHOP DRAWINGS FOR THE PEDESTRIAN BRIDGE.
2. CONCRETE PATCH TO BE IN ACCORDANCE WITH OPSS 930 AND THE SPECIFICATION.
3. CONTRACTOR SHALL HAND EXCAVATION 300mm DEEP AT GROUND IN FRONT OF ABUTMENT AND EXTERNAL PATCHING UP TO 300mm DEEP.



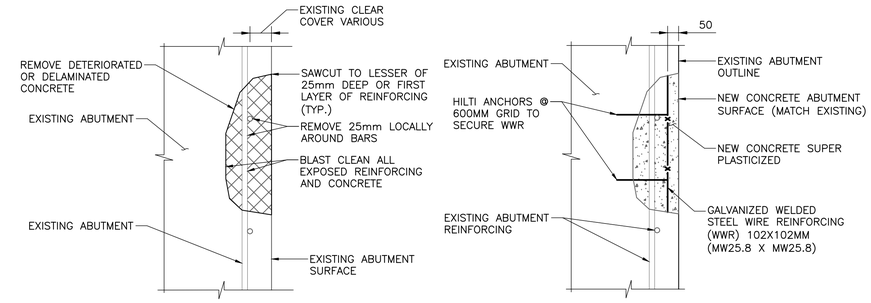
2 WEST ABUTMENT–REMOVAL

1:50

(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)



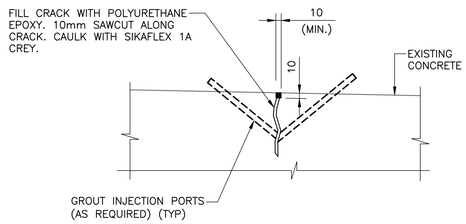
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EXISTING/REMOVAL REHABILITATED

TYPICAL ABUTMENT PATCH REPAIR DETAILS

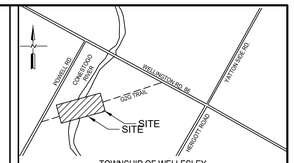
N.T.S.



TYPICAL VERTICAL WIDE CRACK (>1.0mm) REPAIR DETAIL

N.T.S.

METRIC
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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO

KEY PLAN

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G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

EAST AND WEST ABUTMENT REMOVALS

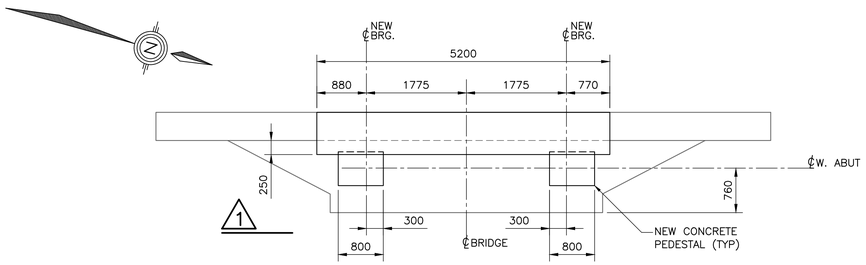
REGISTERED PROFESSIONAL ENGINEER D. G. DIXON AUG 17/26 PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER S. A. KASHIF 100078478 AUG 17/26 PROVINCE OF ONTARIO

DRAWN BY: NT	CONTRACT No.
CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. SP-03
SCALE AS SHOWN	SHEET No. 8 OF 22
LAYOUT NAME:	

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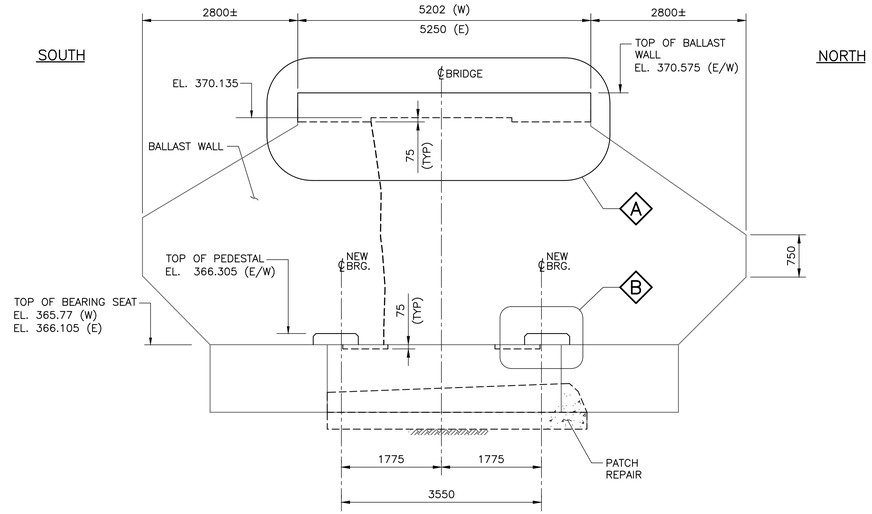
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PLOTTED: 2026-08-17 4:15:13 PM Zhenlin Pan
ROW:2021



ABUTMENT REHABILITATION – PLAN

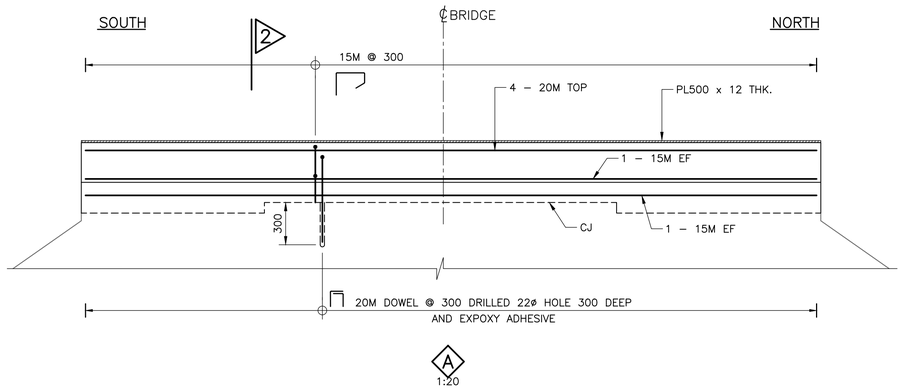
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(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)

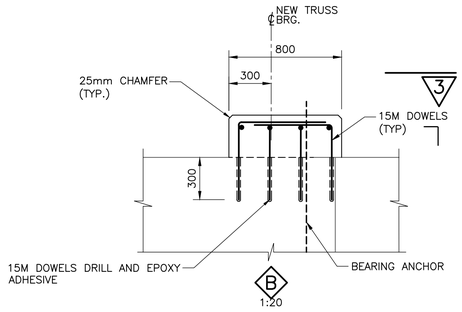


1 WEST ABUTMENT REHABILITATION–ELEVATION

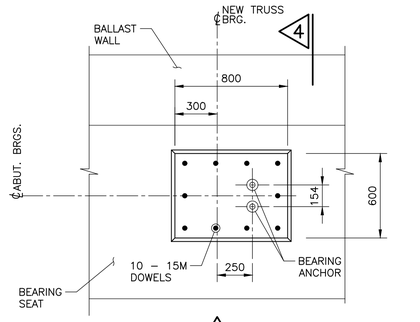
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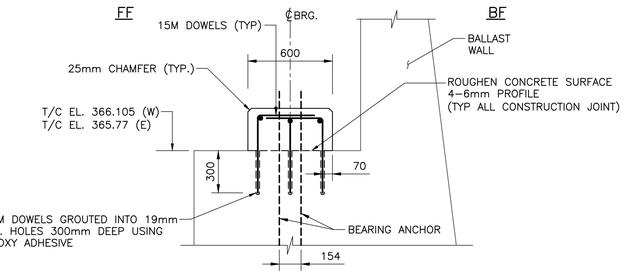
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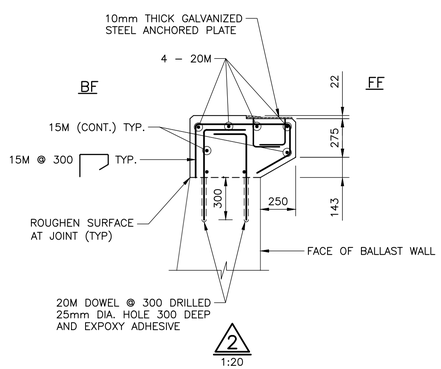
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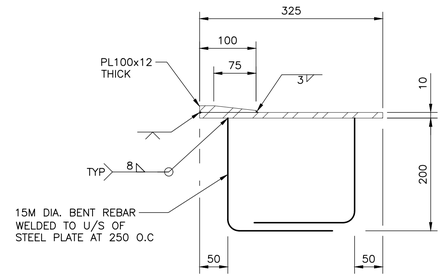
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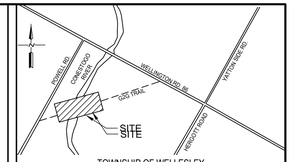
1:20



GALVANIZED STEEL ANCHORED PLATE

1:5

METRIC
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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO

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G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

EAST AND WEST ABUTMENT REHABILITATION

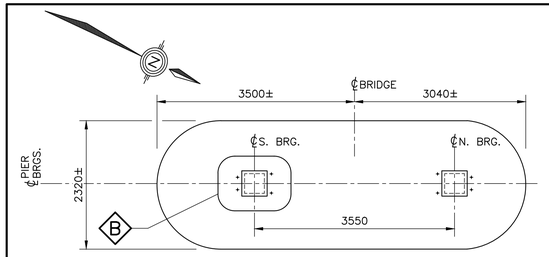
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AUG 17/26
PROVINCE OF ONTARIO

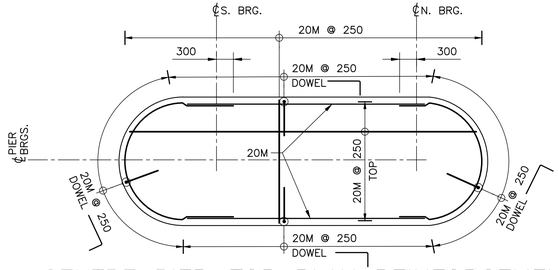
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CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. SP-04
SCALE AS SHOWN	SHEET No. 9 OF 22
LAYOUT NAME:	

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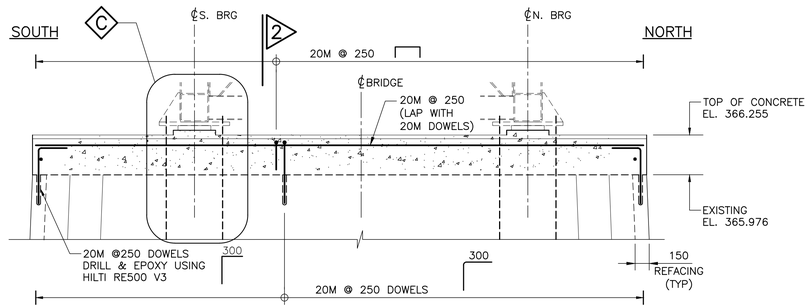
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CENTRE PIER–TOP PLAN
1:50

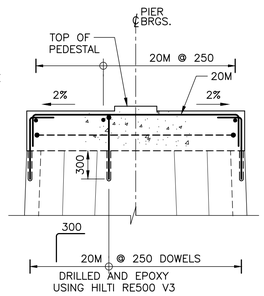


CENTRE PIER–TOP PLAN REINFORCEMENT
1:50



A
1:30

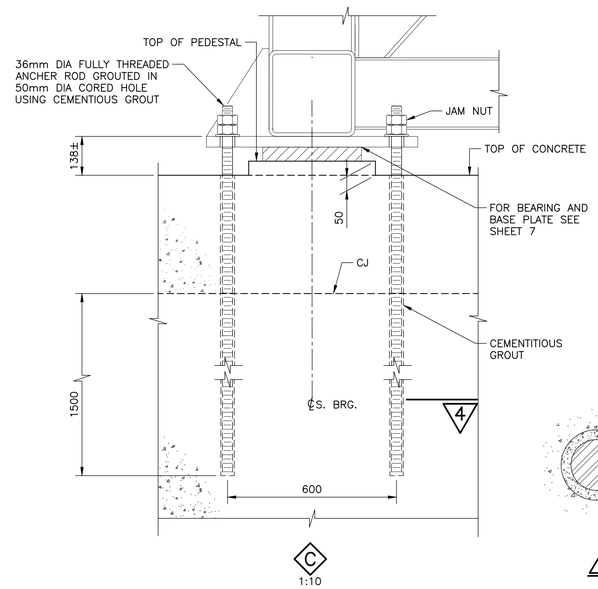
REINFORCEMENT
NEW CONCRETE PEDESTAL (CENTRE PIER)



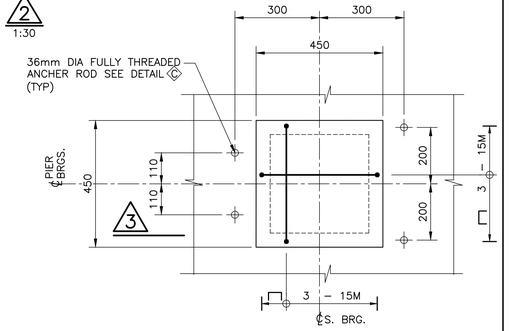
2
1:30

CONSTRUCTION NOTES

1. NEW REINFORCING STEEL IN REFACING SHALL BE CONTINUOUS AND LAP AT ALL SPLICES IN REINFORCING STEEL.
2. CONTRACTOR SHALL NOT REMOVE MORE THAN 150mm OF EXISTING CONCRETE WITHOUT THE APPROVAL OF THE CONTRACT ADMINISTRATOR.
3. TESTING OF DOWELS SHALL BE COMPLETE AS DESCRIBED IN THE SPECIFICATIONS.
4. CONTRACTOR SHALL VERIFY ALL ELEVATION AND DIMENSIONS PRIOR TO CONSTRUCTION.

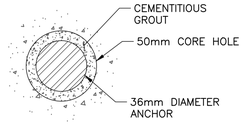


C
1:10

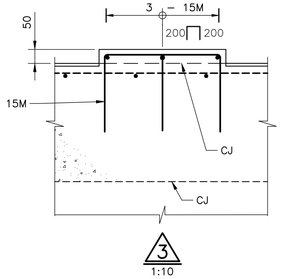


B
1:10

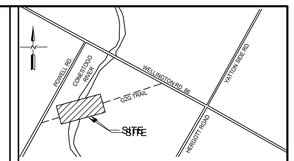
PEDESTAL DETAIL



4
1:2



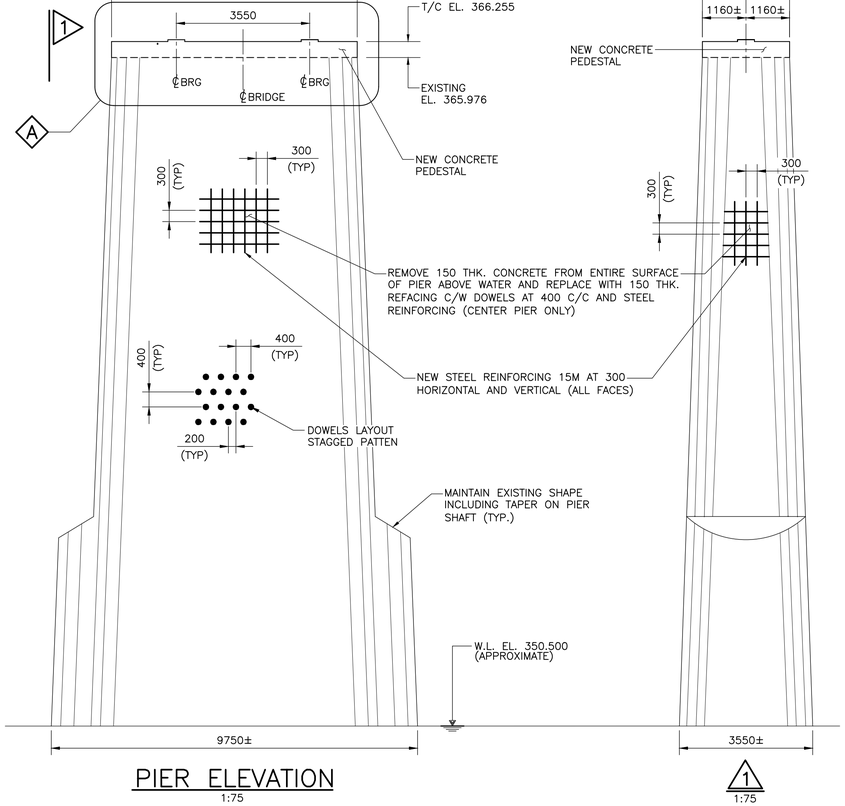
3
1:10



KEY PLAN
NOT TO SCALE

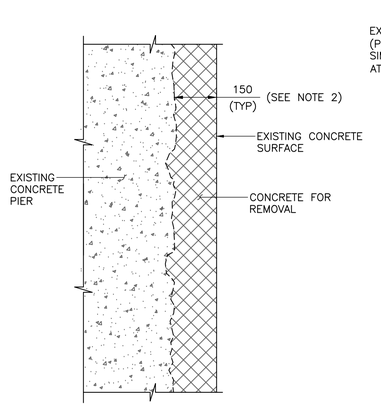
DISCLAIMER:
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NOT FOR CONSTRUCTION

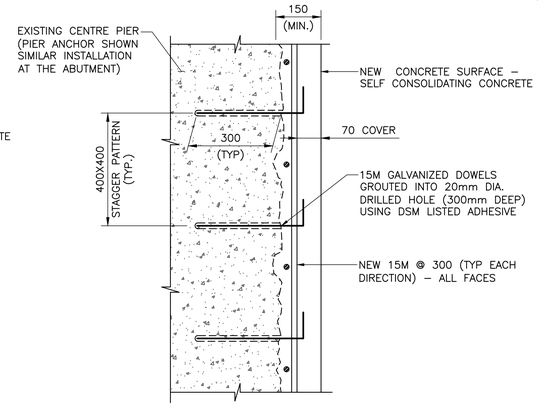


PIER ELEVATION
1:75

1
1:75



CONCRETE REMOVAL



NEW CONCRETE SURFACE

METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

FIELD BOOK No.

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	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE
OVER CONESTOGO RIVER

CENTER PIER REMOVALS
AND REFACING DETAILS

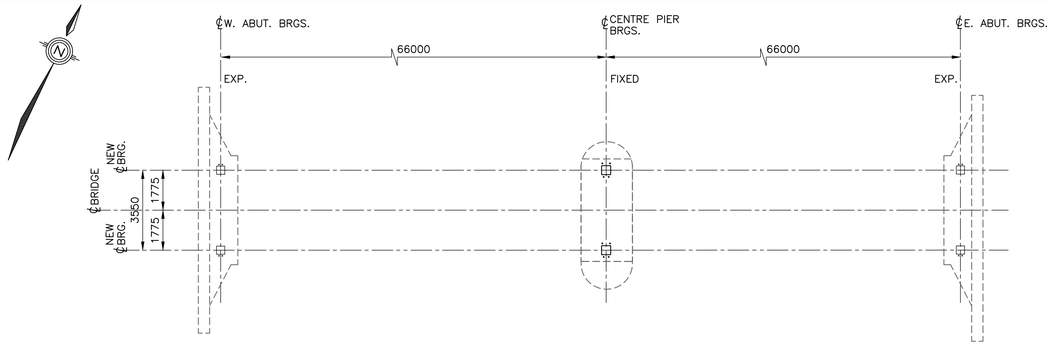
REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
S. A. KASHF
100078478
AUG 17/26
PROVINCE OF ONTARIO

DRAWN BY: NT	CONTRACT No.
CHECKED BY: SAK	FILE No. WO24-243
DATE: MAY 27, 2026	DRAWING No. SP-05
SCALE AS SHOWN	SHEET No. 10 OF 22
LAYOUT NAME:	

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RDW-2021

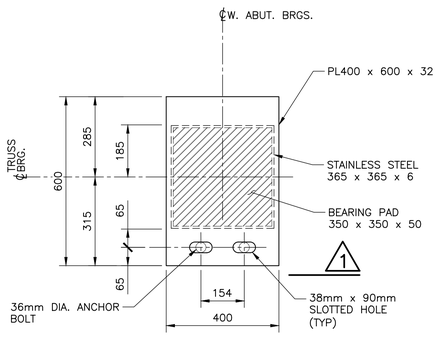


PLAN
1:125

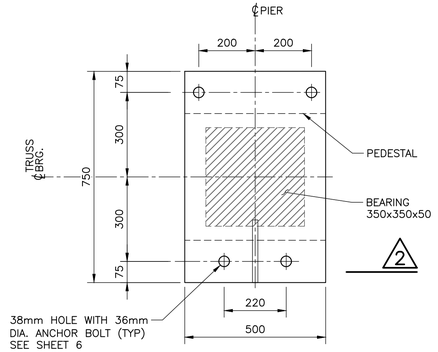
ELASTOMERIC BEARING DATA		
LOCATION	ABUTMENT	PIERS
TYPE	LAMINATED ELASTOMERIC	SLIDING
SIZE (mm)	350X350X50	350X350X50
NUMBER REQUIRED	4	2
SERVICEABILITY LIMIT STATES		
PERMANENT LOAD (kN)	202	572
TOTAL LOAD (kN)	352	1000
MOVEMENT (mm)	±60	±0
ROTATION (RADIAN)	0.00539	0.000644
SHEAR RATE AT 20°C (kN/mm)	3.2	3.2

CONSTRUCTION NOTES

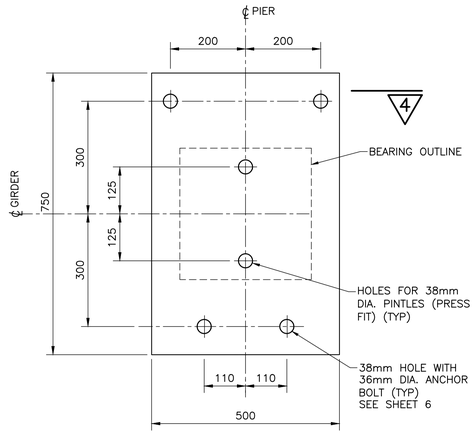
1. BEARING PLATES TO BE FIELD WELDED TO BOTTOM CHORDS.
2. ANCHOR RODS SHALL CONFORM TO ASTM F1554 GRADE 105.
3. ANCHOR RODS AND BEARING PLATES SHALL BE HOT DIP GALVANIZED IN CONFORMANCE TO ASTM A123.
4. TOUCH UP DAMAGED AREAS OF GALVANIZING AFTER WELDING WITH TWO COATS OF A ZINC RICH PAINT FROM DSM LIST 9.20.90. FOLLOWING PROPER METAL PREPARATION (SEE SPECIFICATIONS)
5. THE BEARINGS SHALL BE IN ACCORDANCE WITH DSM 9.15.25.
6. NON-SHRINK CEMENTITIOUS GROUT FOR ANCHOR ROD INSTALLATION SHALL BE AS PER DSM 9.15.35.
7. THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESS FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESS ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL IN THE BEARING SEAT TO SUIT.
8. THE BEARING DESIGN SHALL ALLOW FOR FUTURE JACKING OF BRIDGE AND BEARING REPLACEMENT.
9. STEEL KEEPER ANGLES HAVE BEEN USED TO MINIMIZE BENDING IN ANCHOR BOLTS UNDER LATERAL LOAD.



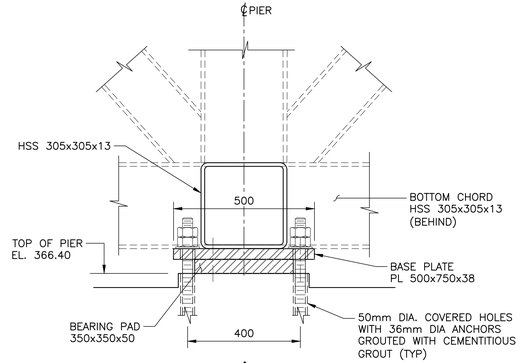
PLAN AT ABUTMENT–EXPANSION BEARING DETAIL
1:10



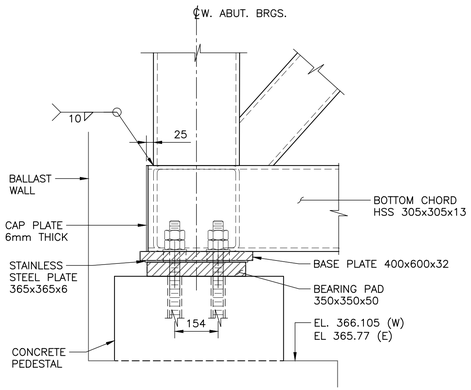
PLAN AT PIER–FIXED BEARING DETAIL
1:10



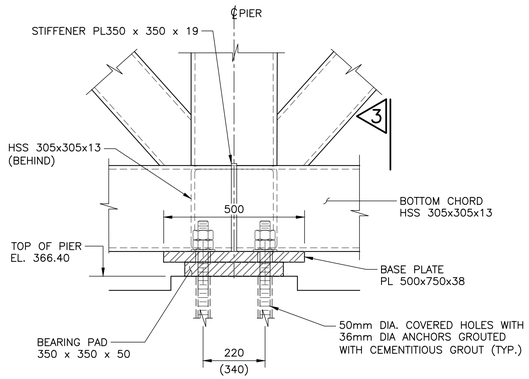
BEARING PLATE
1:7.5



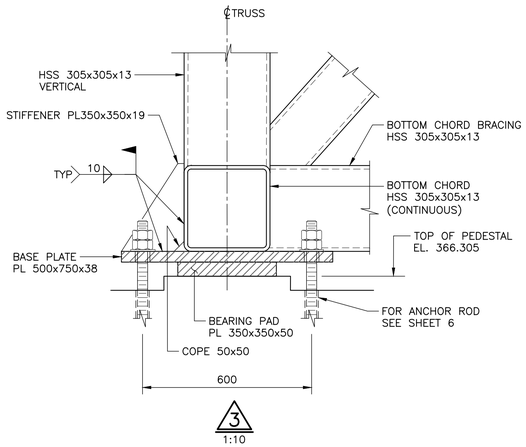
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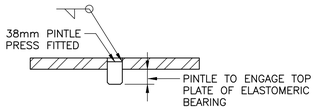
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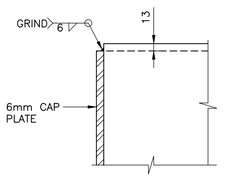
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1:10

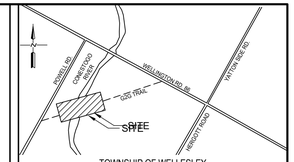


PINTLE DETAIL
1:7.5



CAP PLATE DETAIL
1:5

METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED



KEY PLAN
NOT TO SCALE

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NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

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	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

BEARING DETAILS

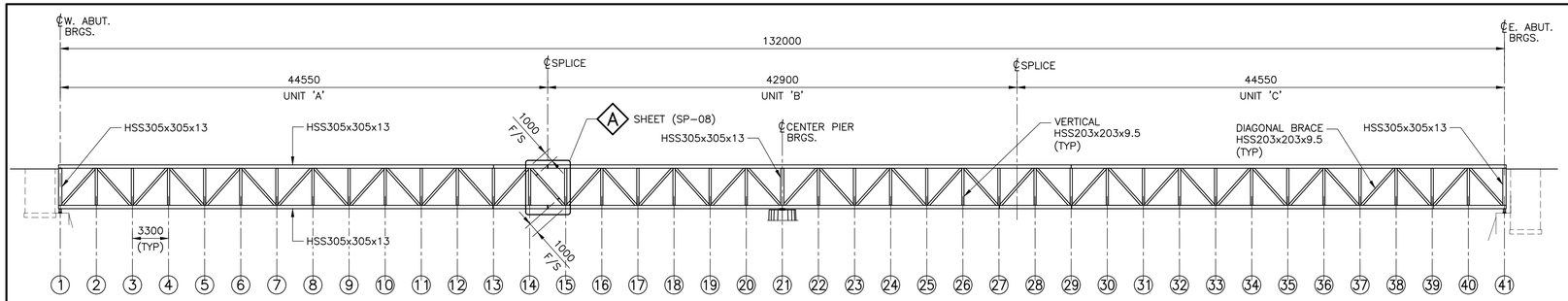
REGISTERED PROFESSIONAL ENGINEER D. G. DIXON AUG 17/26 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER S. A. KASHF 100078478 AUG 17/26 PROVINCE OF ONTARIO

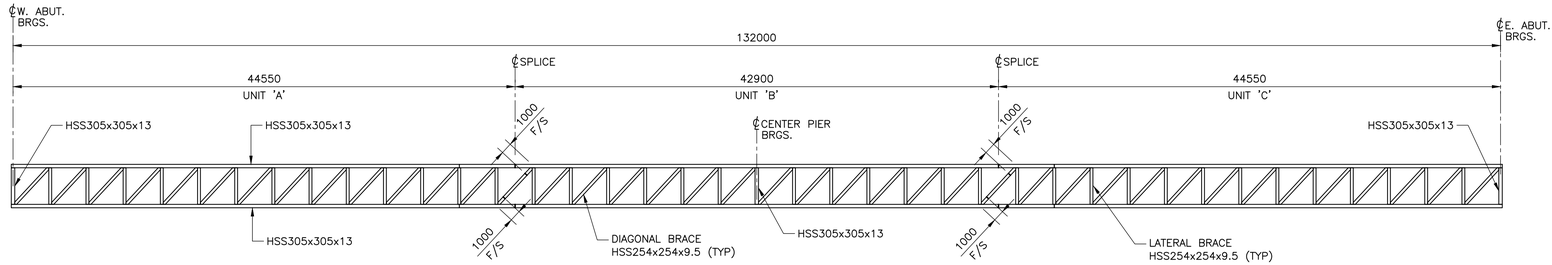
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LAYOUT NAME:	

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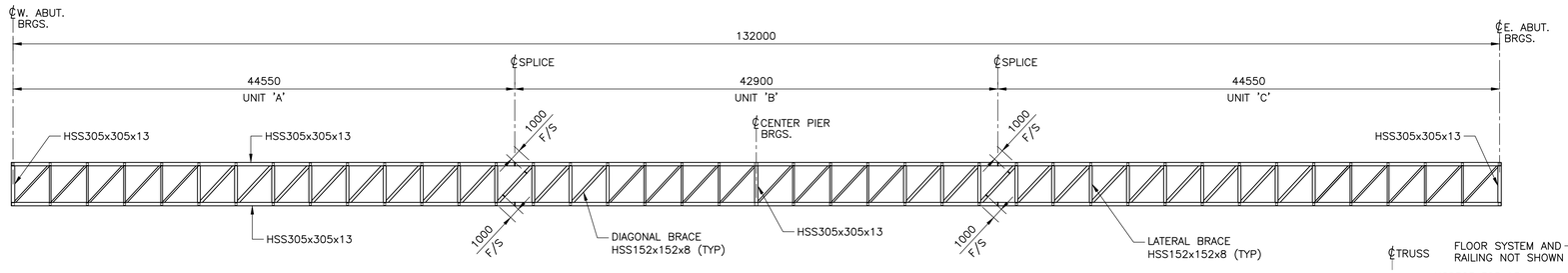
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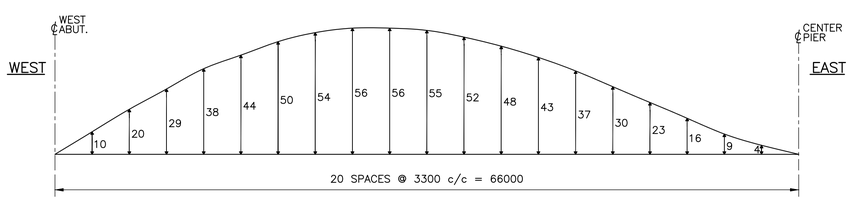
ELEVATION
1:250



PLAN – TOP CHORD
1:250



PLAN – BOTTOM CHORD
1:250



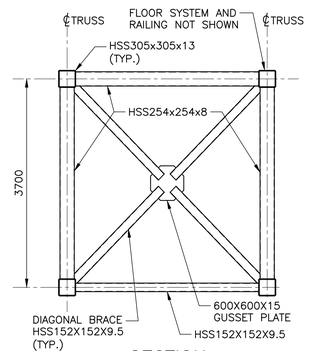
RELAXED CAMBER DIAGRAM
1:250
(WEST SPAN SHOWN, EAST SPAN SIMILAR BUT OPPOSITE HAND)

NOTES
1. FOR GENERAL MATERIAL AND FABRICATION NOTES SEE SHEET 3.
2. CONTRACTOR'S ENGINEER, RESPONSIBLE FOR THE LAUNCHING DESIGN(ERECTION) THE BRIDGE SHALL CALCULATE THE CAMBER PROFILE REQUIRED FOR LAUNCHING.
3. SPLICE LOCATIONS ARE SHOWN ON THE DRAWINGS. THE CONTRACTOR MAY PROPOSE ALTERNATE LOCATIONS FOR SPLICES TO SUIT TRANSPORTATION AND ERECTION.
4. ALL LENGTHS SHOWN ARE IN THE HORIZONTAL PLANE AND MEASURED AT 20° C.
5. TRUSSES SHALL BE CAMBERED TO VALUES SHOWN IN THE RELAXED CAMBER DIAGRAM AS MODIFIED BY NOTE 2.
6. RELAXED CAMBER ORDINATES SHOWN ON THIS DRAWING INCLUDE ALL ALLOWANCE FOR TRUSS SELF-WEIGHT. TIMBER DECK, SUPERIMPOSED DEAD LOADS AND PROFILE OF BRIDGE.
7. THE ENDS OF TRUSSES SHALL BE TRULY VERTICAL UNDER FULL DEAD LOAD.
8. ALL BUTT WELDS IN FLANGE AND WEB SPLICES OR IN HSS MEMBERS SHALL BE FINISHED FLUSH OR SMOOTH AS INDICATED BY GRINDING WHERE GRINDING IS NECESSARY IT SHALL BE IN THE DIRECTION OF APPLIED STRESSES FOR SHOP OR FIELD SPLICES. THEIR LOCATION SHALL BE APPROVED BY THE ENGINEER.
9. WELDS AROUND HSS MEMBERS AT CONNECTIONS AND SPLICES SHALL START AND STOP WITHIN MIDDLE THIRD OF FLAT SURFACES OF HSS, AVOID WELD STARTS/STOPS AT CORNER LOCATIONS.
10. UNLESS OTHERWISE NOTES, THE MINIMUM FILLET WELD SHALL BE AS FOLLOW:

MATERIAL THICKNESS OF THICKER PART JOINT (mm)	MIMIMUM SIZE OF SINGLE PASS FILLET WELD (mm)
TO 12 INCLUSIVE	5
OVER 12 TO 20	6
OVER 20 TO 40	8
OVER 40 TO 60	10
OVER 60 TO 120	12

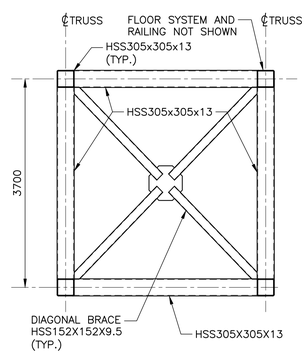
11. THE CONTRACTOR SHALL ENSURE THE STABILITY OF ALL COMPONENTS DURING HANDLING. TRANSPORTATION AND ERECTION UNTIL THE STRUCTURAL STEEL IS IN ITS FINAL LOCATION WITH ALL PERMANENT BRACING, CONNECTIONS AND SUPPORT IN PLACE.
12. ALL STRUCTURAL STEEL SURFACES INCLUDING TRUSSES RAILING, HANDRAILS AND ATTACHMENTS OF TRUSS MEMBERS SHALL BE COATED, THE COLOUR OF THE TOPCOAT SHALL BE BROWN ACCORDING TO FEDERAL STANDARD 595B COLOURS.

ERECTION
1. THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS INCLUDING SIGNED AND SEALED CALCULATIONS WHICH DESCRIBE THE METHOD OF ERECTION FOR REVIEW AND APPROVAL BY THE REGION.
2. THE CONTRACTOR SHALL DESIGN, SUPPLY, INSTALL, MAINTAIN, AND REMOVE ALL TEMPORARY STRUCTURAL STEEL AND ASSOCIATED TEMPORARY WORKS REQUIRED FOR THE LAUNCHING, ERECTION, STABILIZATION, AND COMPLETION THE WORK.



SECTION WITH CROSS BARACING
1:50

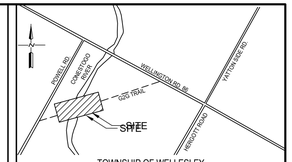
NOTES:
1. FOR JOINT DETAILS SEE DWG. S5.
2. SECTION WITH CROSS BRACING AT GRID LINES:
   (3) (5) (7) (9) (11) (13) (15) (17) (19) (20)
   (22) (23) (25) (27) (29) (31) (33) (35) (37) (39)



SECTION AT PIER AND ABUTMENTS
1:50

NOTES:
1. SECTION WITH CROSS BRACING AT GRID LINES:
   (1) (21) (41)

METRIC
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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

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	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

TRUSS LAYOUT AND DETAILS

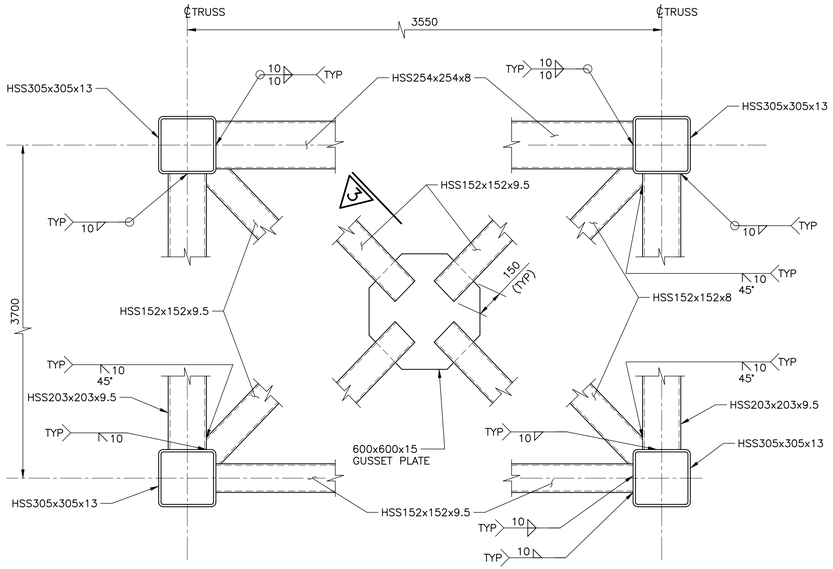
REGISTERED PROFESSIONAL ENGINEER D. G. DIXON AUG 17/26 PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER S. A. KASHIF 100078478 AUG 17/26 PROVINCE OF ONTARIO

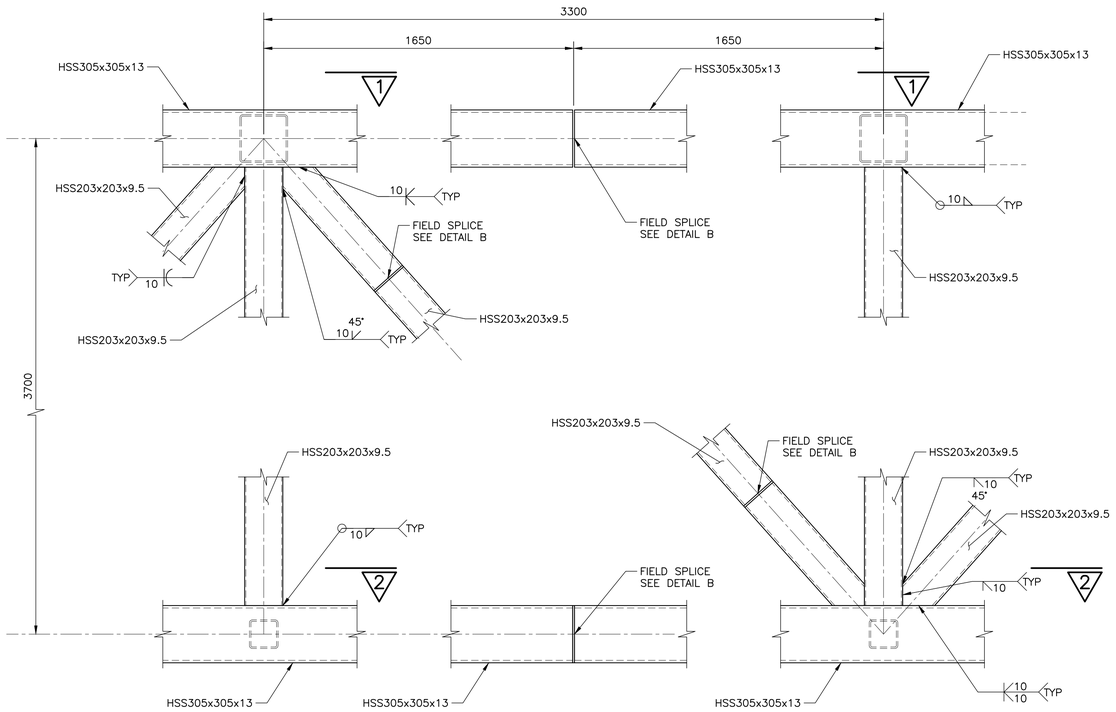
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DATE: FEB 26, 2026	DRAWING No. SP-07
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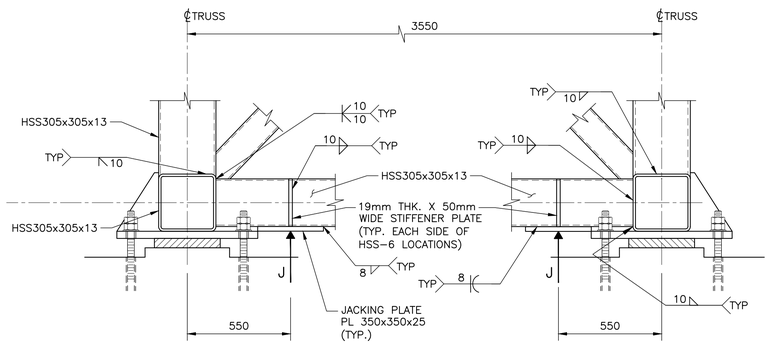
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PLOTTED: 2026-08-17 4:15:25 PM Zhenlin Pan
ROW.dotm



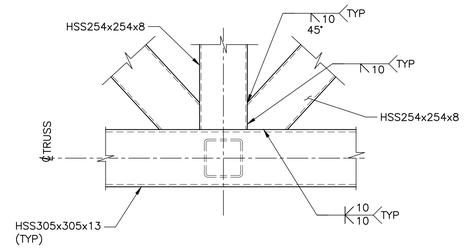
TYPICAL BRIDGE TRUSS SECTION – DETAILS
1:20



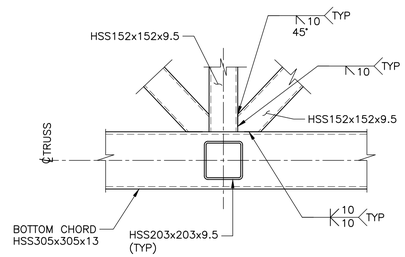
A 1:15 FIELD SPLICE DETAILS
SHEET (SP-07)



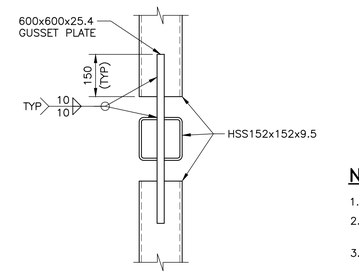
BOTTOM CHORD TRUSS SECTION – DETAILS AT ABUTMENT AND PIER
1:15



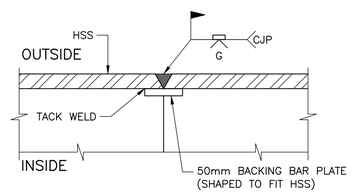
1 1:20 TYPICAL TOP JOINT DETAIL–PLAN



2 1:20 TYPICAL BOTTOM JOINT DETAIL–PLAN



3 1:10



FILED WELD SPLICE DETAIL
B NTS

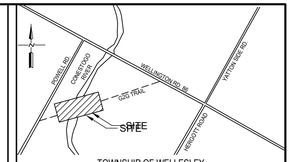
NOTES

1. FOR GENERAL NOTES SEE SHEET (SP-00).
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH SHEETS (SP-07), (SP-09).
3. JACKING LOAD INCLUDES SELF WEIGHT AT SERVICEABILITY LIMIT STATES.

JACKING LOAD (J)

ABUTMENTS (kN)	350
PIER (kN)	1000

METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED



TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

DISCLAIMER:
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NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

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	ISSUED FOR GRCA PERMIT	DD	JUL. 9/26
	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

TRUSS CONNECTIONS AND DETAILS

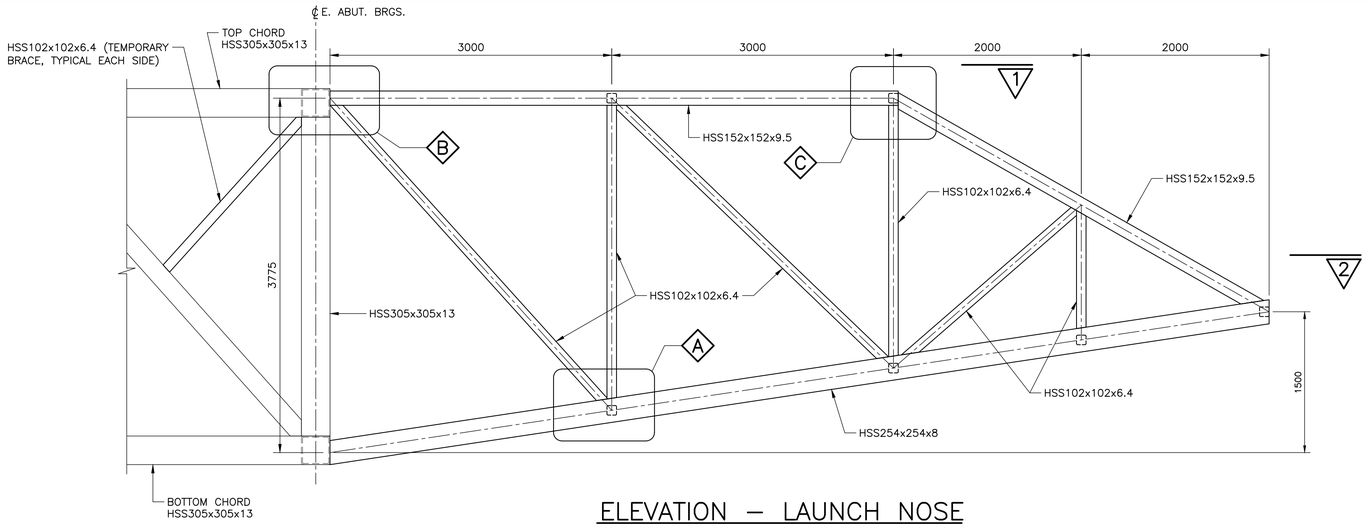
REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
S. A. KASHIF
100078478
AUG 17/26
PROVINCE OF ONTARIO

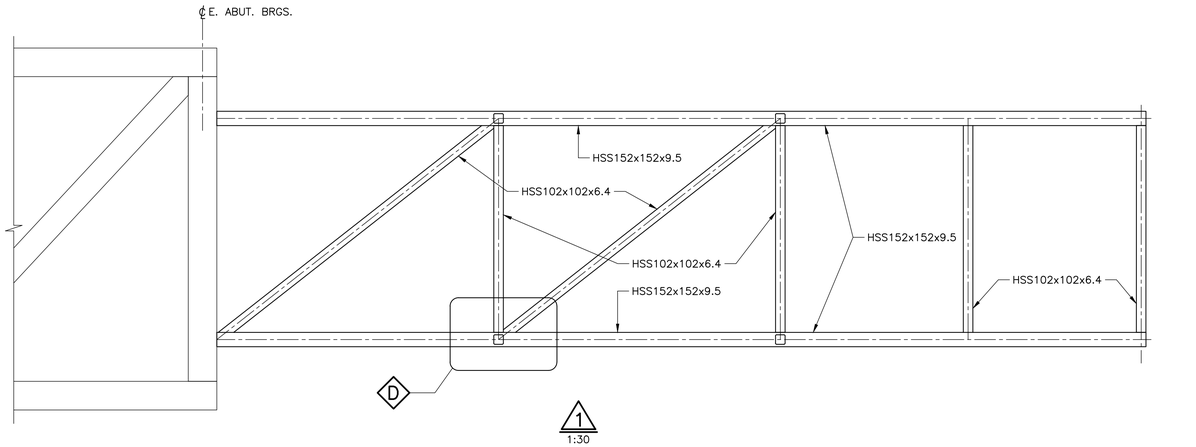
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DATE: FEB 26, 2026	DRAWING No. SP-08
SCALE AS SHOWN	SHEET No. 13 OF 22
LAYOUT NAME:	

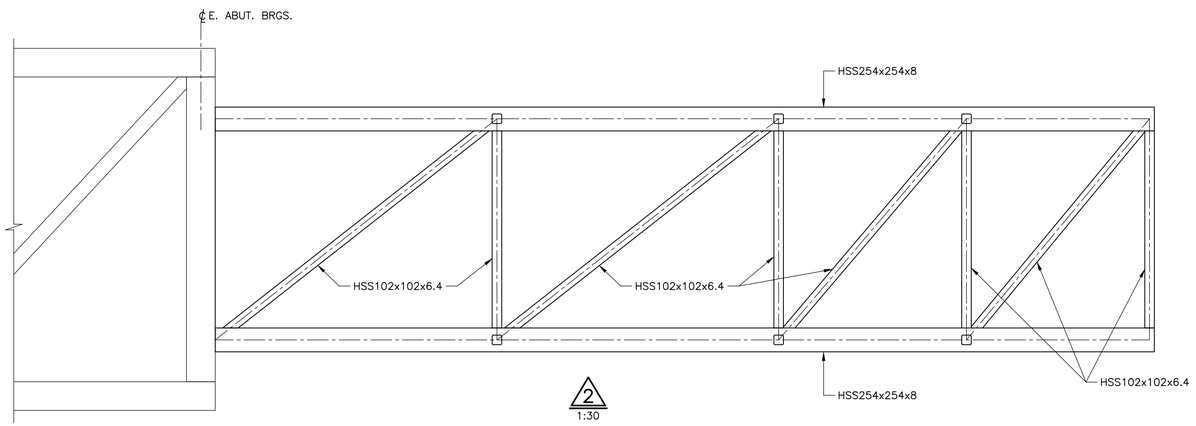
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CAD FILE: P:\Projects\24-243 Region of Waterloo - Conestoga River Ped Bridge EA and detailed design\DDA CAD files\24-243-SP_08SS.dwg
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RDW.ctb01



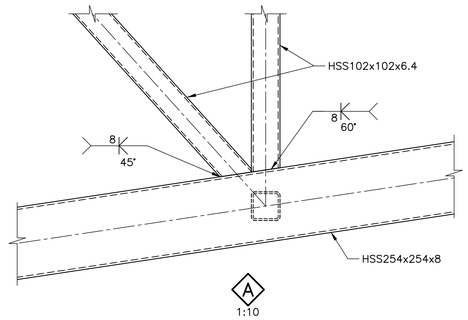
ELEVATION – LAUNCH NOSE
1:30

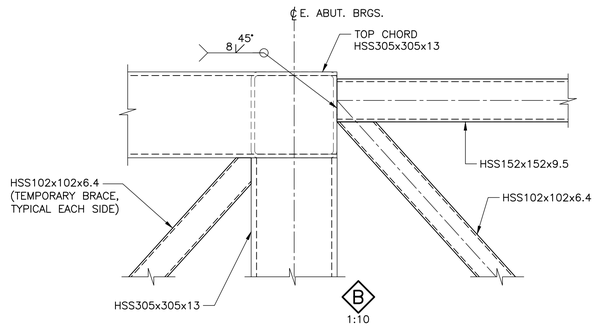


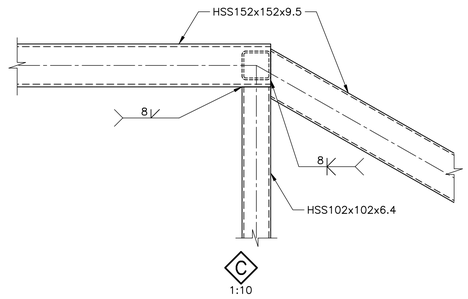


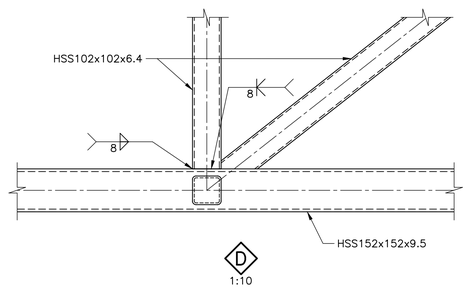
NOTES

1. THE LAUNCHING NOSE DETAIL SHOWN MAY BE SUBSTITUTED WITH AN EQUIVALENT DESIGN. THE CONTRACTOR SHALL SUBMIT ANY PROPOSED DESIGN DETAILS FOR THE ENGINEERS'S REVIEW.

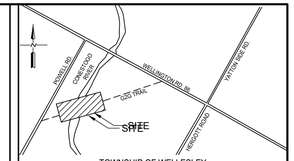








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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

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Region of Waterloo

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G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

LAUNCHING NOSE DETAILS

REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER
S. A. KASHIF
100078478
AUG 17/26
PROVINCE OF ONTARIO

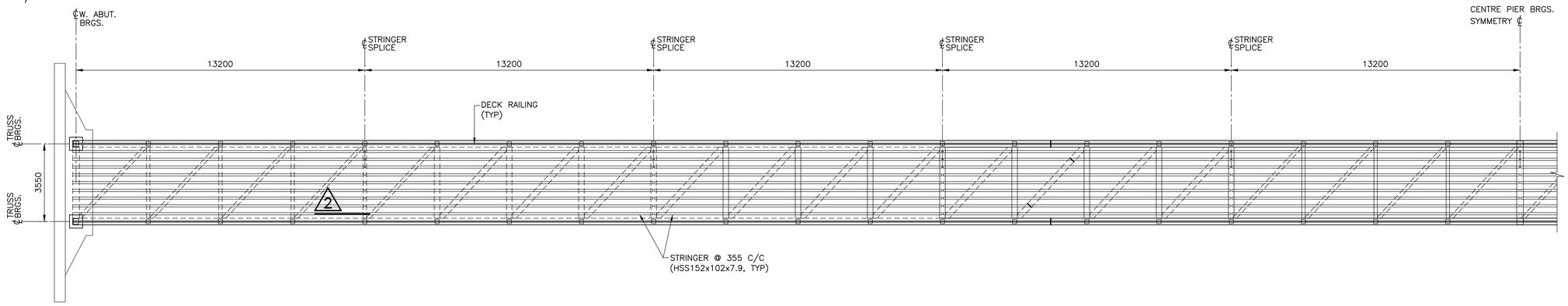
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CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. SP-09
SCALE AS SHOWN	SHEET No. 14 OF 22
LAYOUT NAME:	

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CAD FILE: P:\Projects\24-243 Region of Waterloo – Conestoga River Ped Bridge EA and detailed design\DDA CAD files\24-243-SP_09SS.dwg
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RDW.2021

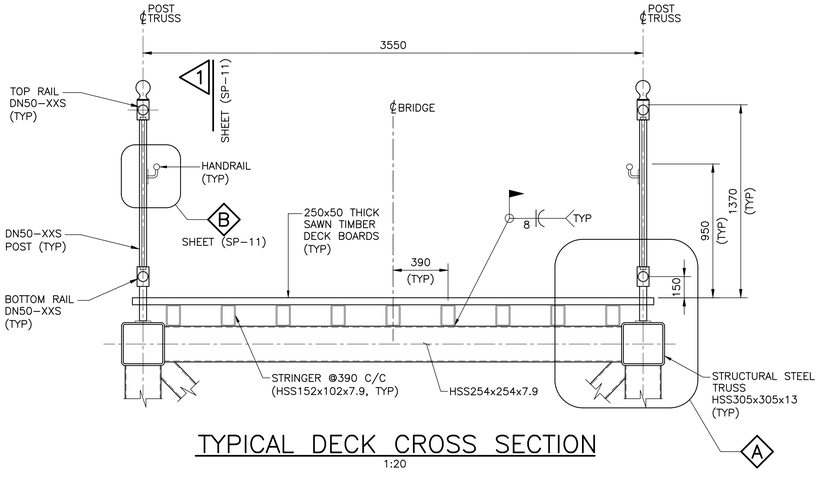
NOTES

1. DECK TIMBER SHOULD BE PLACED BACK SIDE DOWN.
2. FOR TIMBER GRADE SEE SHEET (SP–01) AND THE SPECIFICATIONS.
3. FOR RAILING DETAILS SEE SHEET (SP–11).



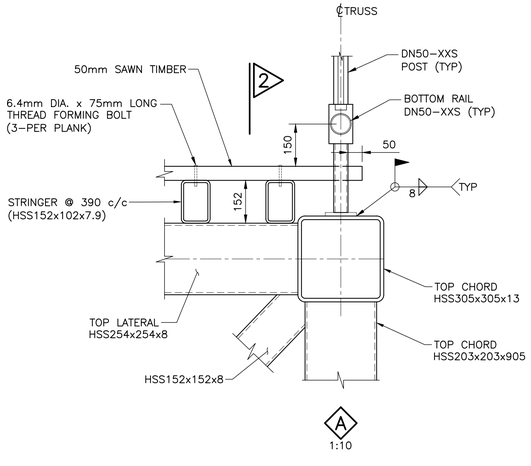
PARTIAL PLAN – BRIDGE DECK WITHOUT TIMBER

1:100

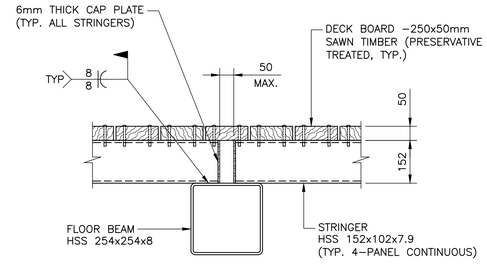


TYPICAL DECK CROSS SECTION

1:20

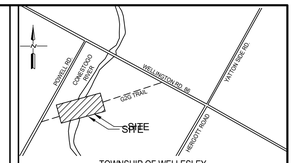


1:10



2 STRINGER JOINT

1:10



TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO

KEY PLAN

NOT TO SCALE

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Region of Waterloo

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	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

BRIDGE DECK DETAILS

REGISTERED PROFESSIONAL ENGINEER D. G. DIXON AUG 17/26 PROVINCE OF ONTARIO

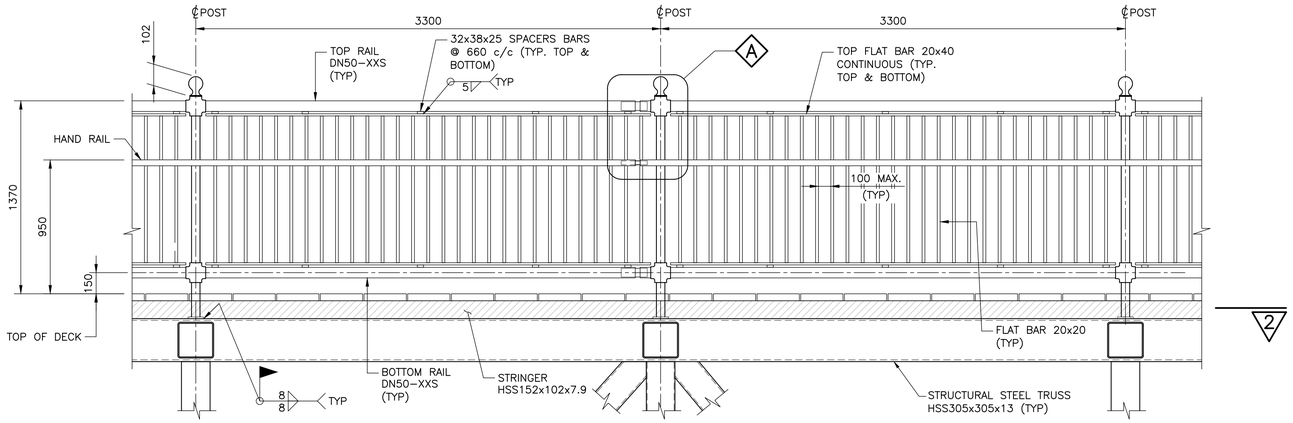
LICENSED PROFESSIONAL ENGINEER S. A. KASHF 100078478 AUG 17/26 PROVINCE OF ONTARIO

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CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. SP-10
SCALE AS SHOWN	SHEET No. 15 OF 22
LAYOUT NAME:	

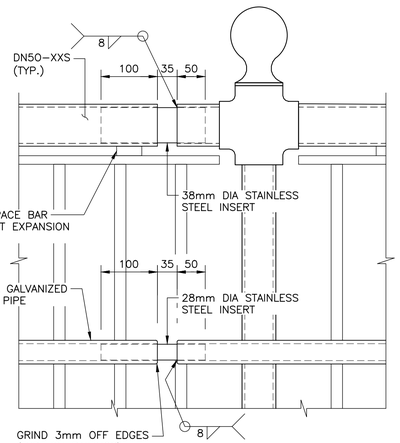
METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

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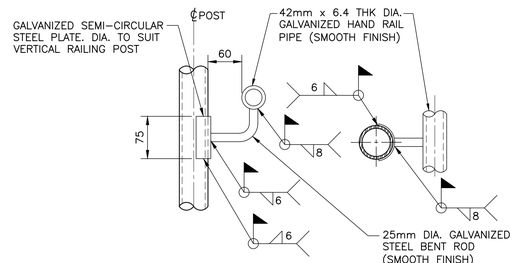
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BDW-2021



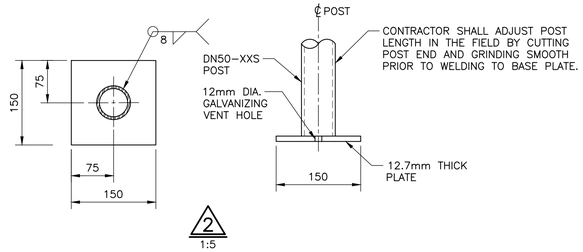
1 ELEVATION–TIYPICAL BRIDGE DECK RAILING
1:20 SHEET (SP–10)



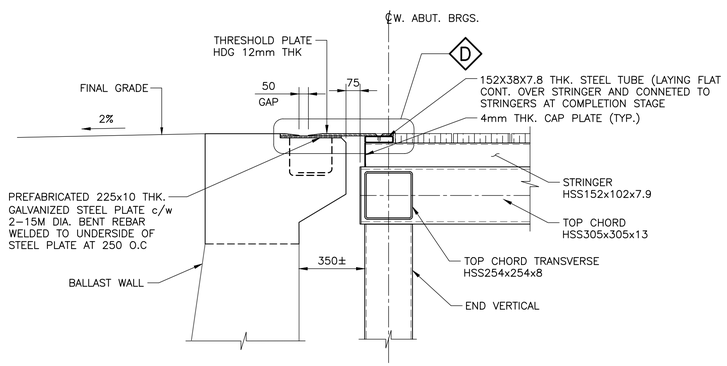
A HANDRAIL EXPANSION JOINT
1:5 (EVERY FIVE PANELS)



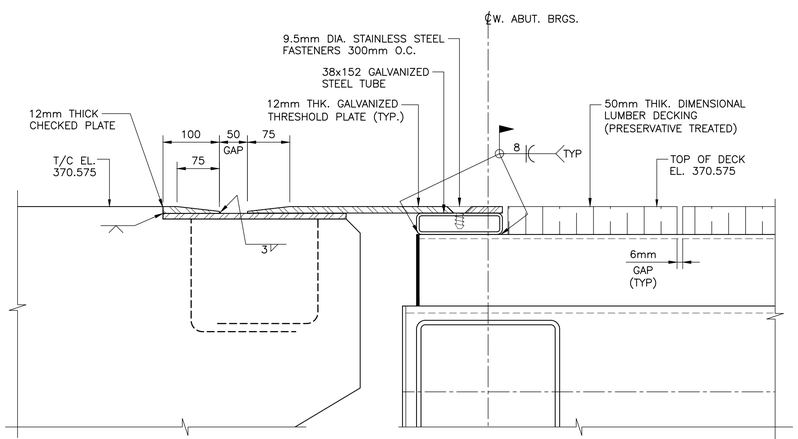
B HANDRAIL DETAIL
1:5 SHEET (SP–10)



2
1:5

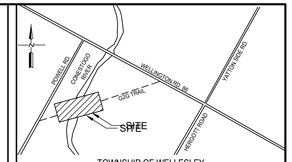


2
1:15
(WEST ABUTMENT SHOWN, EAST SIMILAR)



D
1:5

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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
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	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

BRIDGE RAILING AND EXPANSION JOINT DETAILS

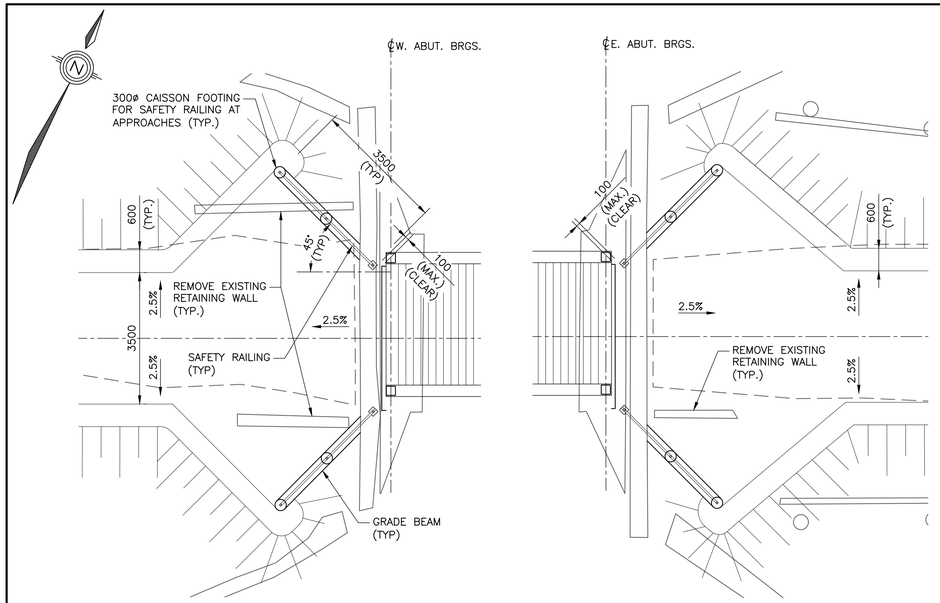
REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER
S. A. KASHIF
100078478
AUG 17/26
PROVINCE OF ONTARIO

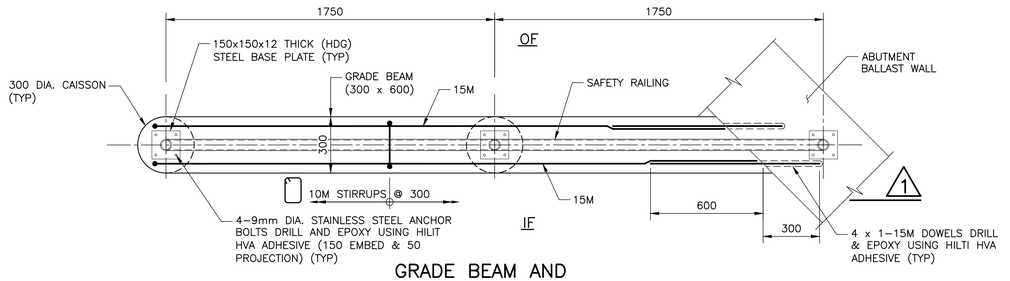
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CHECKED BY: SAK	FILE No. WO24-243
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LAYOUT NAME:	

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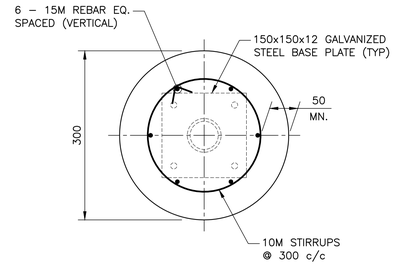
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ROW2021



RETAINING WALL – PLAN
1:75



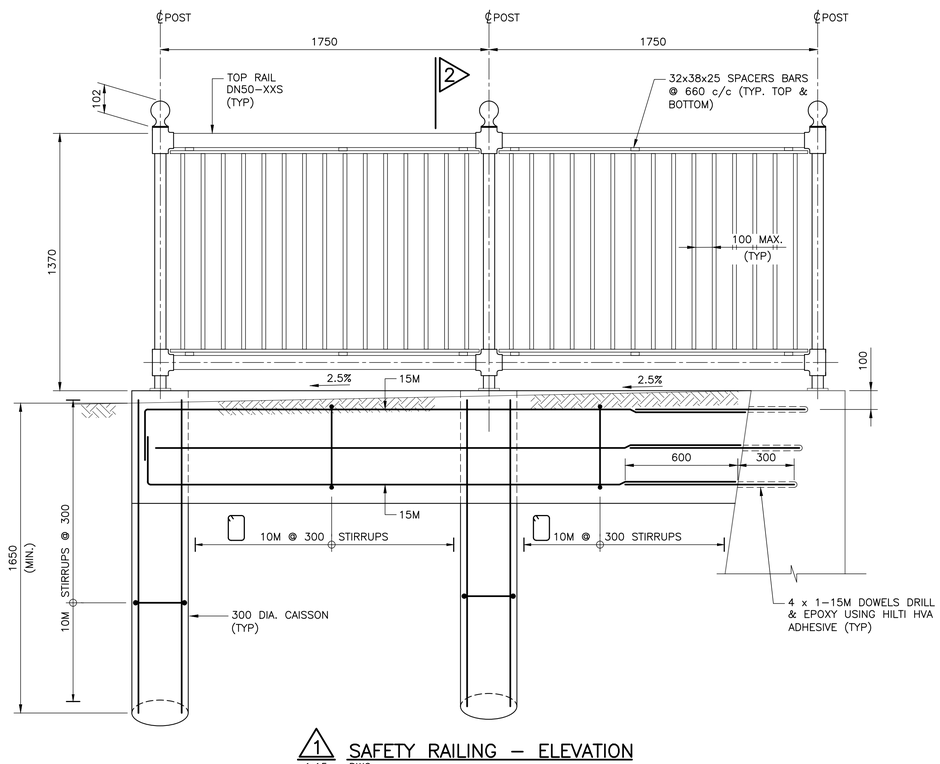
GRADE BEAM AND SAFETY RAILING – PLAN
1:15



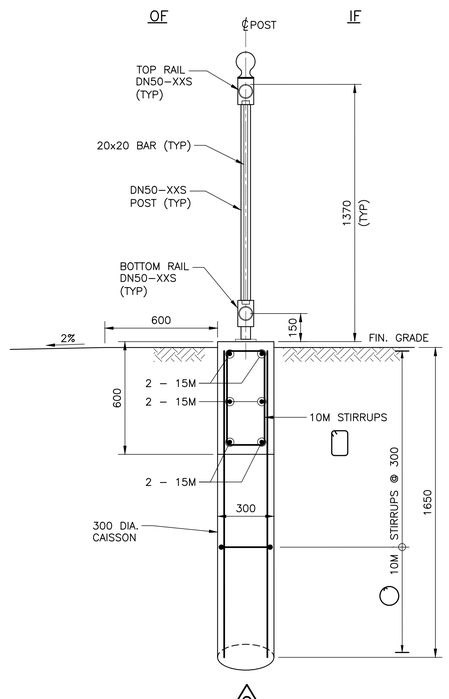
CAISSON REINFORCMENT
1:5

FOUNDATION NOTES

1. THE CAISSONS ARE DESIGN USING MINIMUM SOIL BEARING PRESSURE OF 75kPa AT ULS.
2. THE SUITABILITY OF THE BEARING STRATUM SHALL BE VERIFIED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE INSTALLATION OF SONOTUBE CAISSONS.
3. CLEAR COVER TO REINFORCEMENT = 50mm (MIN.).

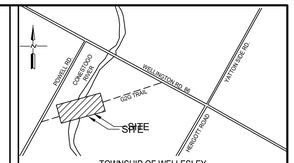


1 SAFETY RAILING – ELEVATION
1:15 DWG



2
1:15

METRIC
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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
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G2G PEDESTRIAN BRIDGE
OVER CONESTOGO RIVER

APPROACH RAILING
AND FOUNDATION DETAILS

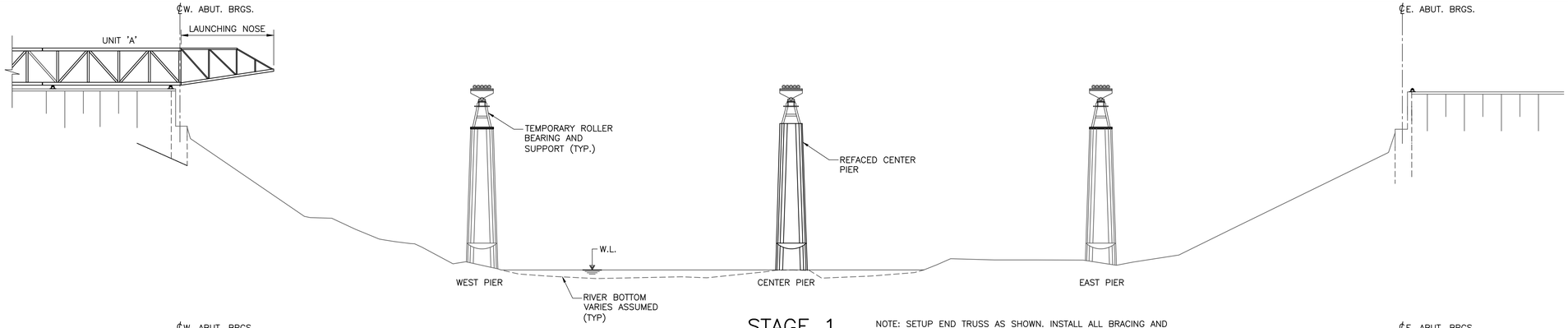
REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
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LICENSED PROFESSIONAL ENGINEER
S. A. KASHF
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PROVINCE OF ONTARIO

DRAWN BY: NT	CONTRACT No.
CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. SP-12
SCALE AS SHOWN	SHEET No. 17 OF 22
LAYOUT NAME:	

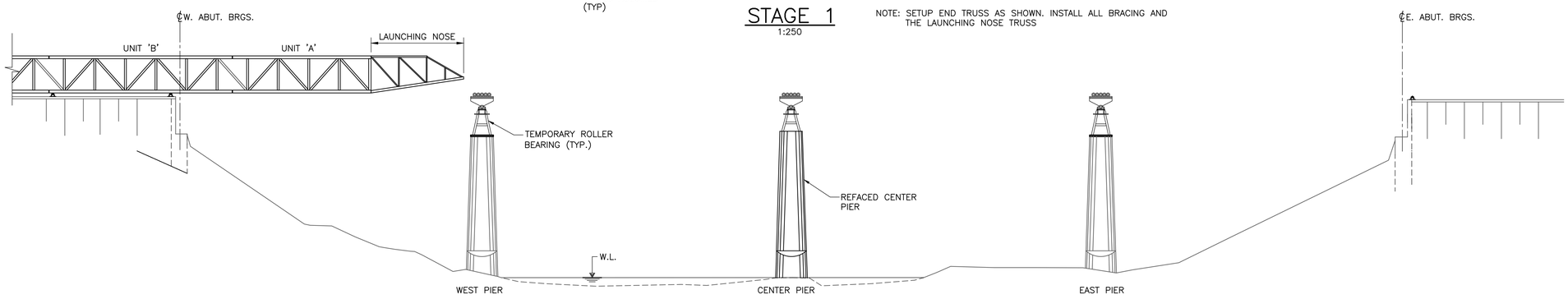
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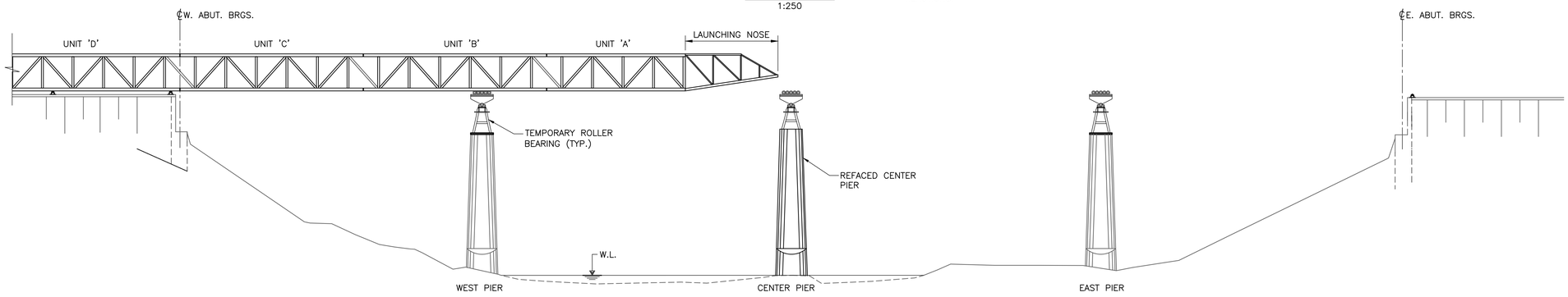
STAGE 1
1:250

NOTE: SETUP END TRUSS AS SHOWN. INSTALL ALL BRACING AND THE LAUNCHING NOSE TRUSS



STAGE 2
1:250

NOTE: ADVANCE TRUSS TO CENTER PIER. SPLICE UNIT 'B'. CHECK REACTIONS.



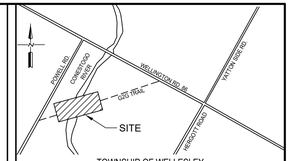
STAGE 3
1:250

NOTE: ADVANCE TRUSS TO CENTER PIER. SPLICE UNIT 'C' AND UNIT 'D'. CHECK REACTIONS.

NOTES & LAUNCH PROCEDURE

1. LAUNCHING METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR MAY USE ALTERNATE PROCEDURES IF APPROVED BY THE REGION.
2. ROLLER GROUPS ARE TO BE DESIGNED BY THE CONTRACTOR. CONTRACTOR MUST PROVIDE A MINIMUM FACTOR OF SAFETY OF 2.0 FOR THE LAUNCHING ROLLERS.
3. PREPARE THE LAUNCH PAD AS SHOWN.
4. CONTRACTOR IS RESPONSIBLE FOR SELECTING APPROPRIATE EQUIPMENT FOR LAUNCHING.
5. CONTRACTOR SHALL PLACE THE LOCK BLOCK COUNTERWEIGHT EVENLY FROM THE CENTERLINE OF THE LAUNCHING DIRECTION.
6. MAXIMUM PERMITTED ROLLER FRICTION AT ANY ONE PIER TO BE 5% OF THE VERTICAL REACTION.
7. THE CONTRACTOR SHALL PRUNE TREES ON THE APPROACH TO THE WEST ABUTMENT TO PROVIDE CLEARANCE FOR THE TRUSS.
8. THE CONTRACTOR SHALL PREPARE A TEMPORARY GRANULAR LANDING AREA TO SUIT HIS NEEDS AND REMOVE SOIL GRANULAR AFTER CONSTRUCTION.
9. THE CONTRACTOR SHALL HAVE ONE WIND MONITORING DEVICE. CONTRACTOR'S ENGINEER SHALL STATE THE MAXIMUM WIND SPEED THAT THE BRIDGE WAY BE EXPOSED TO DURING THE ENTIRE DURATION OF LAUNCHING. TECHNIQUES TO DESPITE THE TRANSVERSE WIND/LOADS SHALL BE PROVIDED IN THE CONTRACTOR'S DESIGN.
10. ALL TEMPORARY ROLLER FRAMES AND OTHER COMPONENTS SHALL BE DESIGNED BY THE CONTRACTOR.
11. DURING LAUNCHING OF BRIDGE TO FINAL BEARING ELEVATION, WIND LOADS SHALL BE RESISTED BY THE CONTRACTORS DESIGN. THE MAXIMUM DIFFERENCE IN THE ABUTMENT TO CENTER PIER ELEVATION SHALL BE LIMITED TO 25mm.

METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED



TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

DISCLAIMER:
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NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

FIELD BOOK No.

No.	ISSUE/REVISION	BY	DATE
	ISSUED TO REGION FOR COMMENTS	DD	AUG. 17/26
	ISSUED FOR GRCA PERMIT	DD	JUL. 9/26
	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

POTENTIAL ERECTION AND LAUNCHING DETAILS

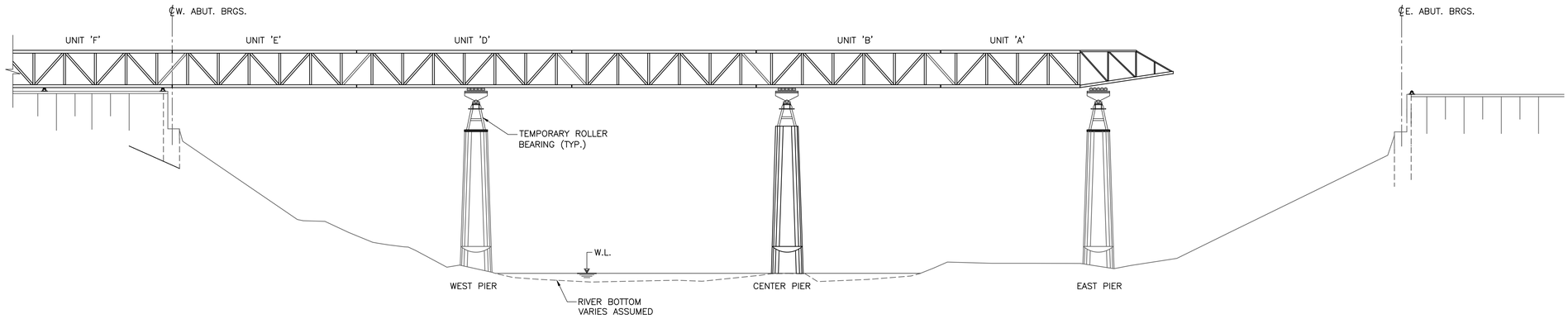
REGISTERED PROFESSIONAL ENGINEER — D. B. DIXON — AUG 17/26 — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — S. A. KASHIF — 100078478 — AUG 17/26 — PROVINCE OF ONTARIO

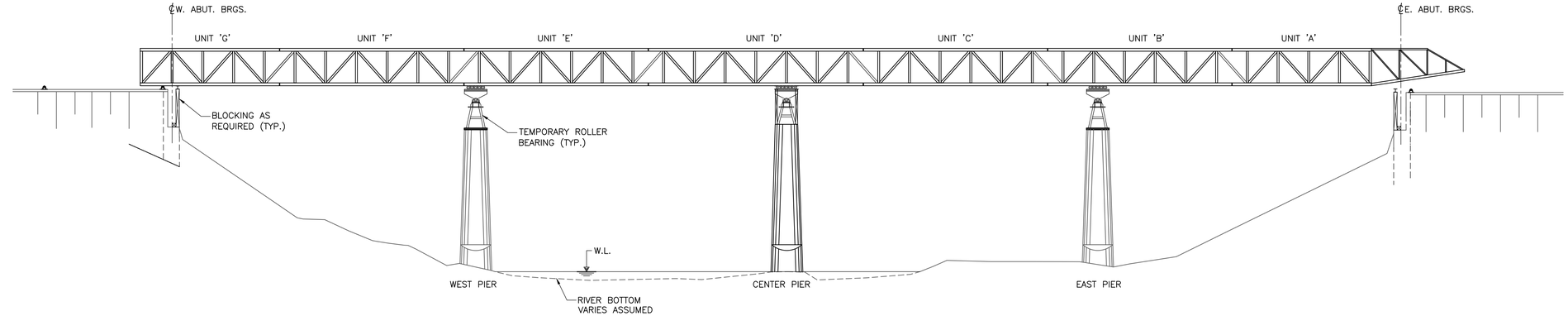
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DATE: FEB 26, 2026	DRAWING No. SP-13
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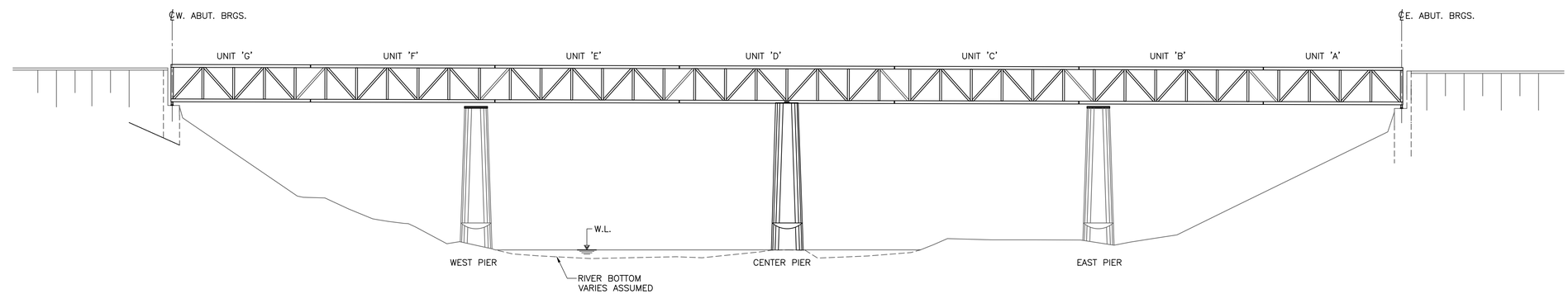
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PDW-2021



STAGE 4
1:250



STAGE 5
1:250

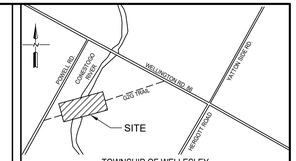


STAGE 6
1:250

NOTES & LAUNCH PROCEDURE
LAUNCHED STAGING CONTINUED

STAGE 4 – ADVANCE TRUSS TO WEST PIER. CHECK REACTIONS.
STAGE 5 – ADVANCE TRUSS TO WEST ABUTMENT. CHECK REACTIONS.
STAGE 6 – REMOVE NOSING. LOWER TRUSS INTO FINAL CONFIGURATION

METRIC
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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

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DOUG DIXON & ASSOCIATES INC

Region of Waterloo

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	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE
OVER CONESTOGO RIVER

PROGRESSIVE
LAUNCHING DETAILS

REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

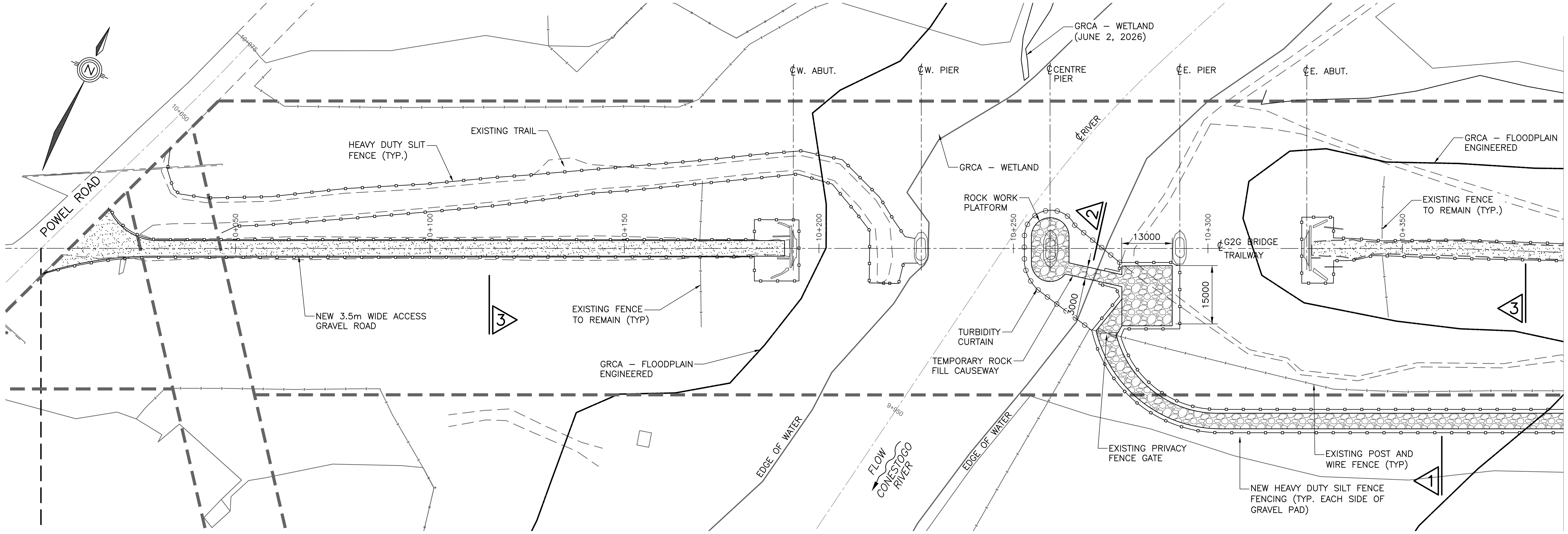
LICENSED PROFESSIONAL ENGINEER
S. A. KASHIF
100078478
AUG 17/26
PROVINCE OF ONTARIO

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DATE: FEB 26, 2026	DRAWING No. SP-14
SCALE AS SHOWN	SHEET No. 19 OF 22

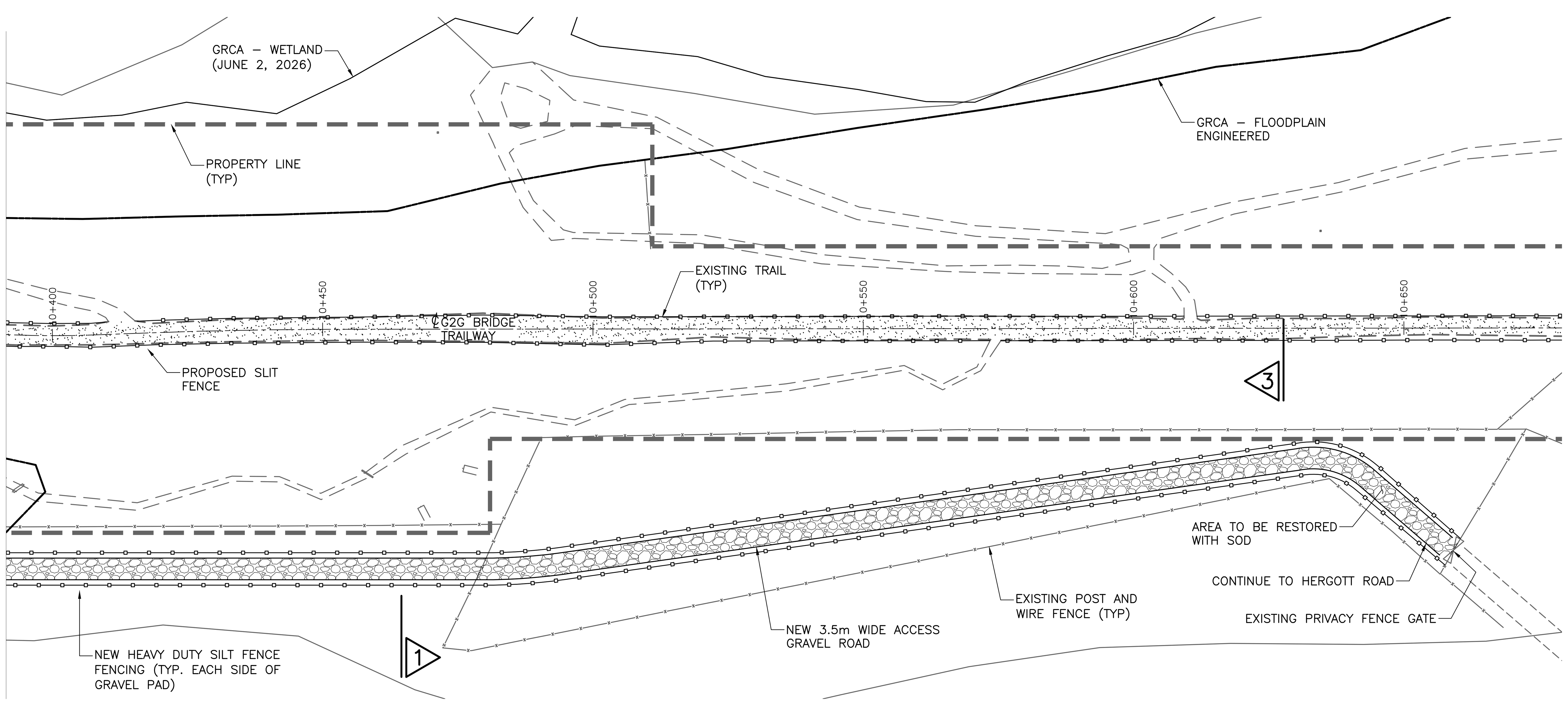
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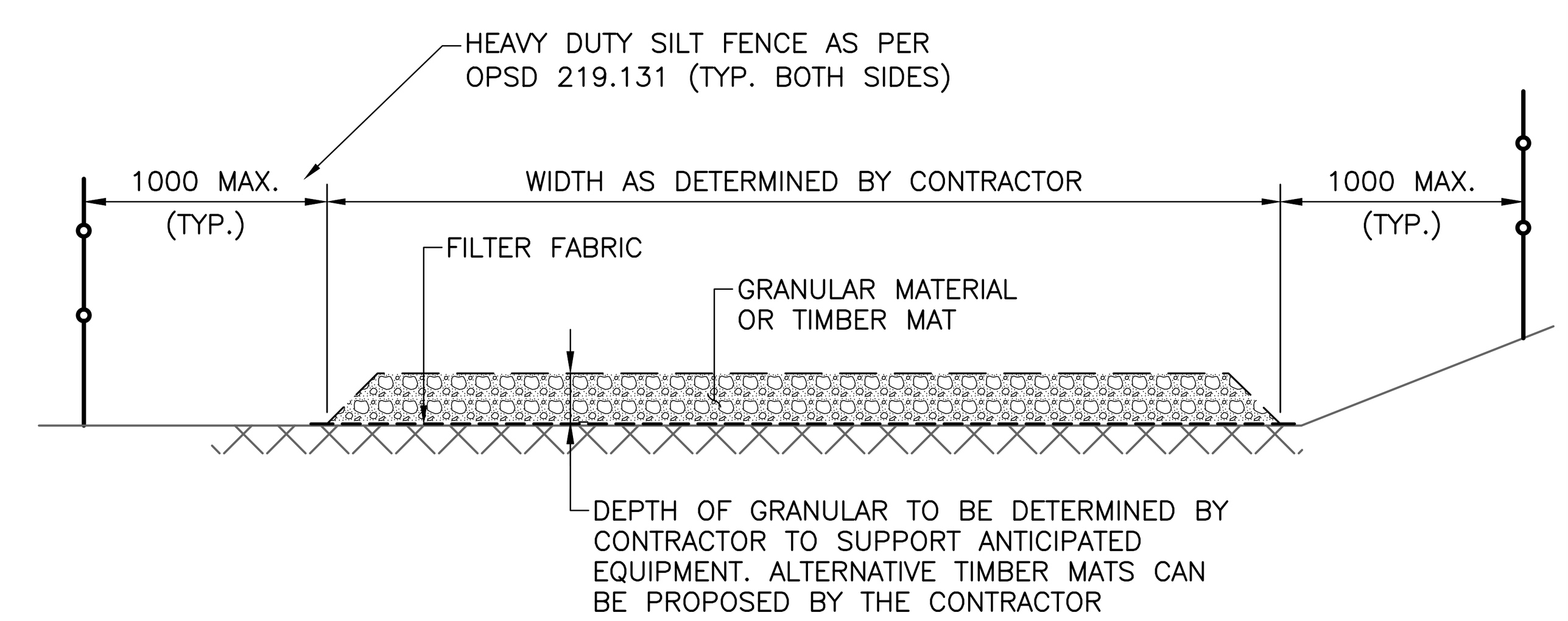
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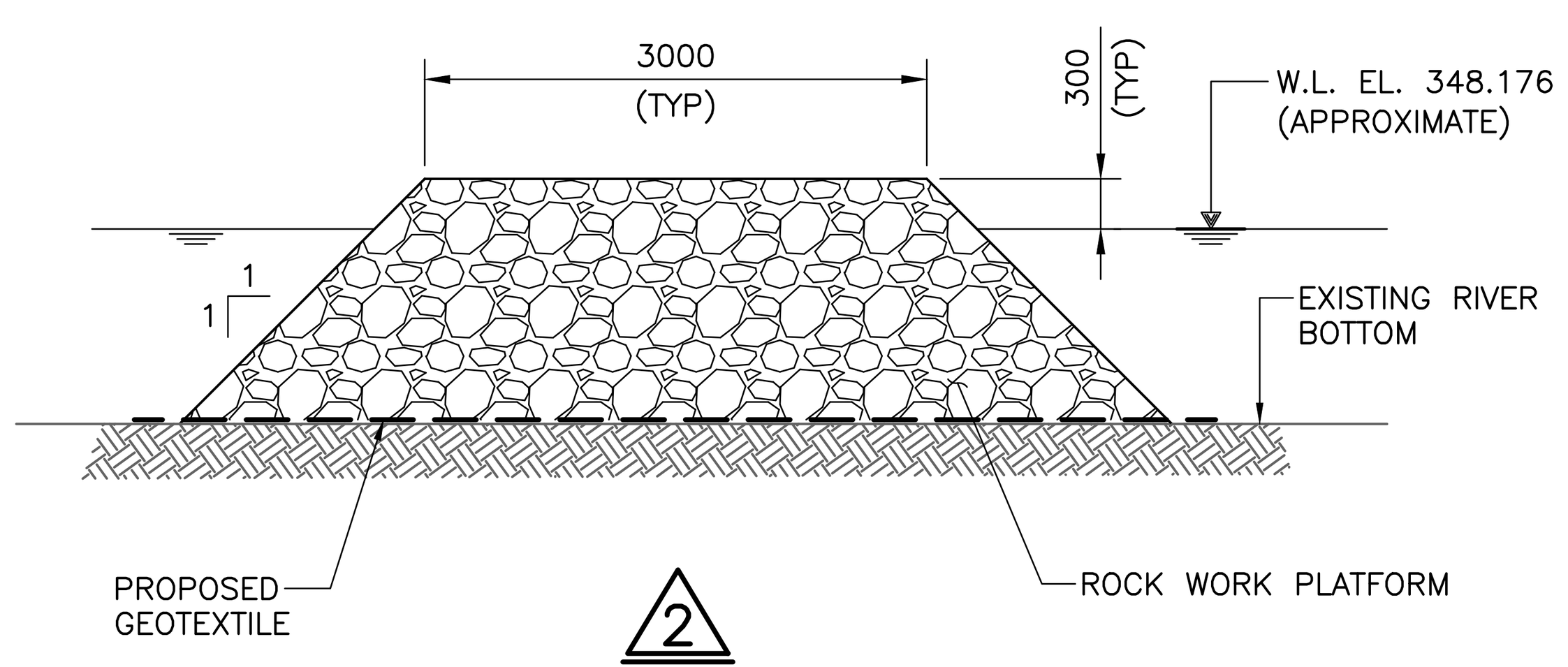
PLAN
1:600



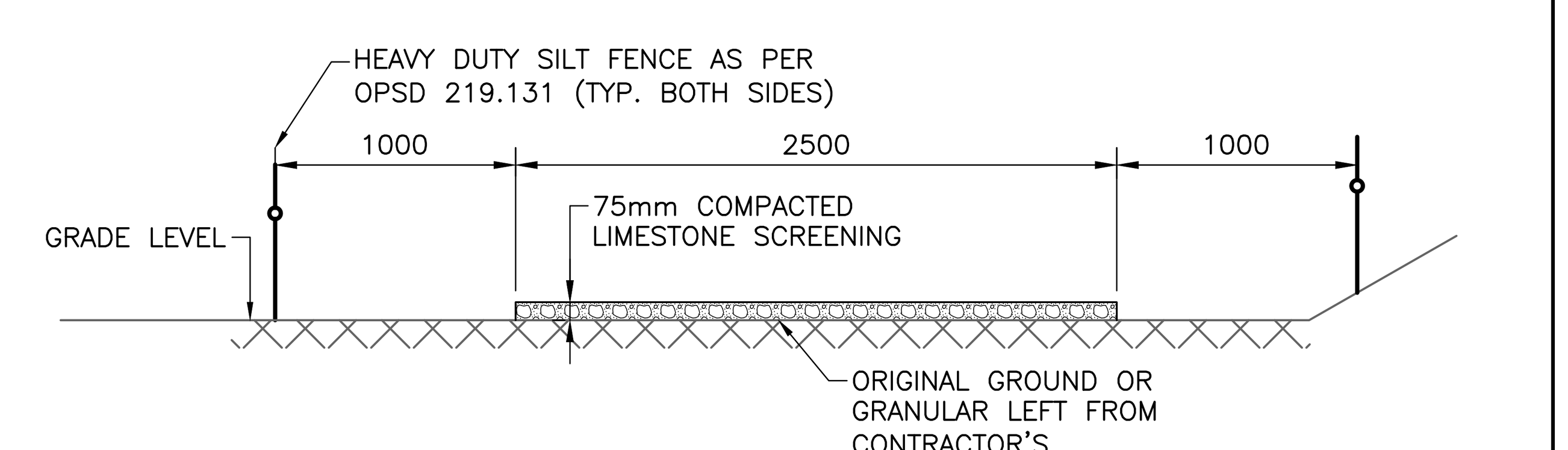
PLAN
1:600



1 TYPICAL FOR TEMPORARY ACCESS DETAIL
1:30
SCHEMATIC – DESIGN BY CONTRACTOR

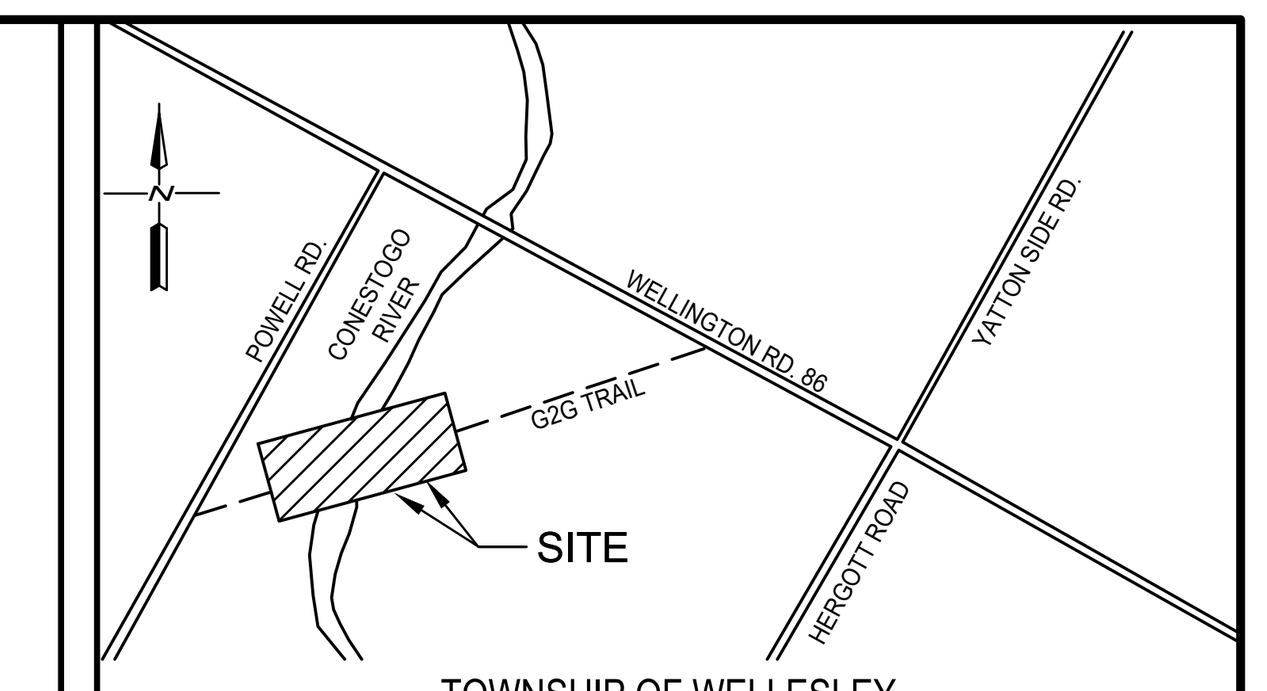


2
1:50



3 FINAL PATHWAY
1:30

METRIC
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TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
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LEGEND:

- PROPERTY LINE
- EXISTING FENCE
- HEAVY DUTY SILT FENCE
- TURBIDITY CURTAIN
- EXISTING TRAIL
- GRCA – WETLAND BOUNDARY
- GRCA FLOODPLAIN (ENGINEERED)

NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

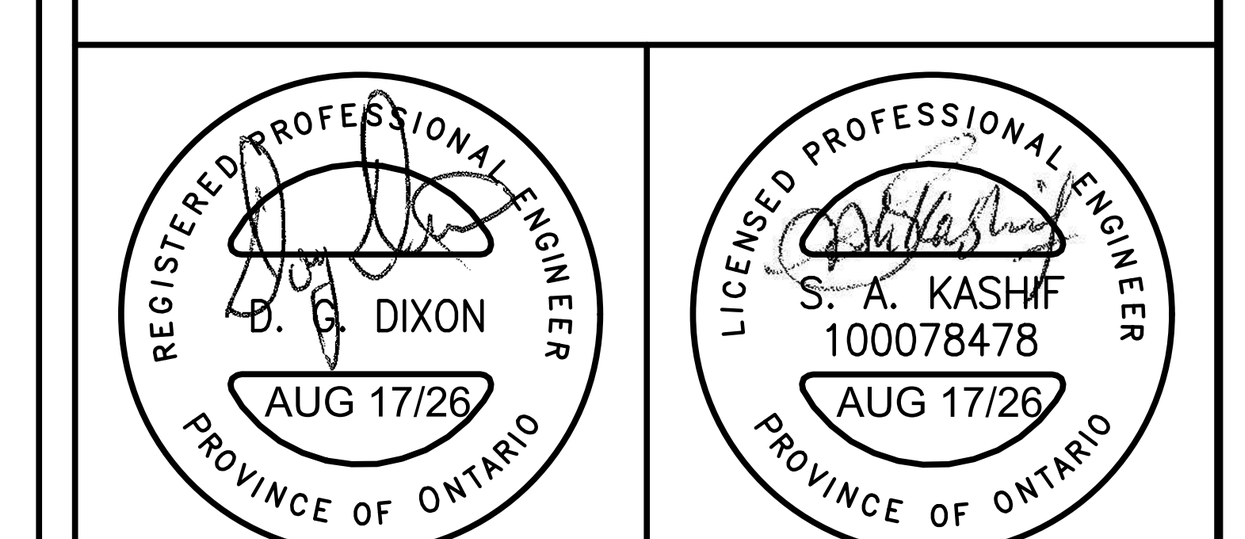
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G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

EROSION AND SEDIMENT CONTROL PLAN AND DETAILS



DRAWN BY: AZ	CONTRACT No.
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DATE: FEB 26, 2026	DRAWING No. SP-15
SCALE AS SHOWN	SHEET No. 20 OF 22
LAYOUT NAME:	

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GENERAL NOTES

1. IN-WATER WORKS SHALL ONLY BE CONDUCTED JULY 15TH TO SEPTEMBER 30TH.
2. THIS DRAWING TO BE READ IN-CONJUNCTION WITH "EROSION AND SEDIMENT CONTROL PLAN 1".

EROSION AND SEDIMENT CONTROL (ESC) MITIGATION MEASURES PLAN

VARIOUS MITIGATION MEASURES WILL BE EMPLOYED DURING CONSTRUCTION TO REDUCE THE RISK OF IMPACTS TO NATURAL ENVIRONMENTAL FEATURES. MITIGATION MEASURES FOR EROSION, SEDIMENT, AND DUST CONTROL WILL BE IMPLEMENTED TO PREVENT SEDIMENT AND DUST FROM ENTERING SENSITIVE NATURAL FEATURES, INCLUDING THE CONESTOGO RIVER AND ASSOCIATED WETLANDS.

THE PRIMARY PRINCIPLES OF THE EROSION AND SEDIMENTATION PROTECTION MEASURES ARE TO: RETAIN EXISTING VEGETATION, WHERE FEASIBLE; REPLACE/RESTORE VEGETATION; AND TRAP SEDIMENT AS CLOSE TO THE SOURCE AS POSSIBLE.

IN ORDER TO ACHIEVE THESE PRINCIPLES, THE FOLLOWING MITIGATION MEASURES ARE PROPOSED:

1. WIRE-BACKED SILT FENCING WITH NON WOVEN GEOTEXTILE FABRIC WILL BE USED TO CONTAIN ALL CONSTRUCTION AREAS: ALONG THE EDGE OF THE ACCESS PATH; ALONG THE EDGES OF NATURAL AREAS; AND TO DELINEATE SITE BOUNDARIES IN ADDITION TO CONSTRUCTION FENCING. NON-WOVEN GEOTEXTILE FABRIC TO BE TERRAFIX 270R OR APPROVED EQUIVALENT.
2. DUST FROM THE CONSTRUCTION AREA WILL BE CONTROLLED WITH REGULAR APPLICATION OF SUPPRESSANT TO AVOID TRANSPORT AND POTENTIAL IMPACT TO SENSITIVE NATURAL AREAS.
3. ALL AREAS OF EXPOSED SOIL WILL BE STABILIZED AND REVEGETATED THROUGH THE APPLICATION OF SEED AND BONDED FIBRE MATRIX (OR SOD), WITHIN ONE MONTH OF TIME FOLLOWING THE COMPLETION OF GRADING ACTIVITIES IN THE AREA.
4. NO EQUIPMENT WILL BE PERMITTED TO ENTER ANY NATURAL AREA BEYOND THE SILT FENCING (SITE BOUNDARIES) DURING CONSTRUCTION.
5. ALL MATERIALS REQUIRING STOCKPILING WILL BE CONTAINED (SURROUNDED WITH SILT FENCE), AND KEPT AT LEAST 30m AWAY FROM SENSITIVE NATURAL FEATURES AND WATER BODIES.
6. REFUELING OF EQUIPMENT WILL BE CARRIED OUT AWAY FROM ANY SENSITIVE NATURAL FEATURES TO AVOID POTENTIAL IMPACTS IN THE EVENT THAT AN ACCIDENTAL SPILL OCCURS.
7. A CONTINGENCY SUPPLY OF FILTER CLOTH, SILT FENCE, WILL BE KEPT AVAILABLE ON SITE, IN THE EVENT OF AN EMERGENCY.
8. ALL ESC SHALL BE PROPERLY MAINTAINED AND MONITORED ON A REGULAR SCHEDULE AND BEFORE ANY FORECASTED RAIN EVENTS. ESCS ARE TO BE REMOVED ONLY AFTER THE SOILS OF THE CONSTRUCTION AREA HAVE BEEN STABILIZED AND COVERED IS RE-ESTABLISHED.
9. THE CONTRACTOR WILL BE REQUIRED TO RESTORE ANY DISTURBED NATURAL AREAS TO PRE-CONSTRUCTION (OR BETTER) CONDITIONS (SEE RESTORATION PLAN).
10. DURING REMOVAL OF CONCRETE FROM THE EXISTING BRIDGE SUBSTRUCTURE, CARE WILL BE TAKEN TO REMOVE THE MATERIAL IN A MANNER SUCH THAT NO DEBRIS WILL BE PERMITTED TO FALL INTO THE WATERCOURSE OR OTHER SENSITIVE NATURAL AREAS.
11. WORKING PLATFORMS WILL BE SUSPENDED FROM THE SUBSTRUCTURE OR ERECTED ON THE ROCK WORK PLATFORM TO CONTAIN THE DEMOLITION DEBRIS (I.E. CONCRETE PIECES FROM THE PIER). THE DESIGN, INSTALLATION AND MAINTENANCE OF THE WORKING PLATFORM SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
12. CONCRETE CHIPPING AND/OR SAWING ACTIVITIES WILL BE CONDUCTED BEHIND A FILTER CLOTH CURTAIN SO THAT NO DUST OR DEBRIS MAY ESCAPE THE CONSTRUCTION AREA.
13. THE CONTRACTOR SHALL NOT COMMENCE THE INSTALLATION OF ROCK WORK PLATFORMS UNTIL A PERMIT TO CARRY OUT MUSSEL RELOCATION HAS BEEN OBTAINED AND MUSSEL RELOCATION HAS BEEN COMPLETED. SEE THE CONTRACT DOCUMENTS FOR DETAILS ON MUSSEL RELOCATION.
14. AS NOTED ABOVE MUSSEL RELOCATION WILL TAKE PLACE WITHIN THE LIMITS OF THE TURBIDITY CURTAIN AS SHOWN.
15. ANY FISH STRANDED IN THE AREA CONTAINED BY TURBIDITY CURTAIN SHALL BE CAPTURED USING APPROPRIATE TECHNIQUES BY LICENSED PERSONNEL AND RELEASED DOWNSTREAM WITHOUT HARM. CAPTURE AND RELEASE OF STRANDED FISH SHALL BE CARRIED OUT BY A QUALIFIED BIOLOGIST RETAINED BY THE CONTRACTOR.
16. WHERE APPLICABLE, ALL DISTURBED WATERCOURSE BED AND BANK AREAS ARE TO BE RESTORED IN ACCORDANCE WITH DETAILS PROVIDED ON THE CONTRACT DRAWINGS OR TO PRE-CONSTRUCTION CONDITIONS.
17. TURBIDITY MONITORING IS REQUIRED TO BE COMPLETED BY THE CONTRACTOR ON A DAILY BASIS, BOTH UPSTREAM AND DOWNSTREAM OF THE PROJECT AREA. THE RESULTS ARE TO BE PROVIDED TO THE REGION'S CONTRACT ADMINISTRATOR.
18. THE CONTRACTOR SHALL DEVELOP AN EMERGENCY SPILL PLAN AND KEEP AN EMERGENCY SPILL KIT ON SITE.

CONSTRUCTION MONITORING PLAN

1. THE CONTRACT ADMINISTRATOR SHALL BE RESPONSIBLE FOR MONITORING FOR ENVIRONMENTAL COMPLIANCE DURING ALL STAGES OF CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO REPAIRS OF CONCRETE ABUTMENTS AND PIER.
2. ALL ESC MEASURES (AS IDENTIFIED IN THE CONTRACTOR'S ESC MITIGATION MEASURES PLAN) SHALL BE INSPECTED REGULARLY TO ENSURE PROPER INSTALLATION, MAINTENANCE AND DECOMMISSIONING. THE SITE AS A WHOLE SHALL ALSO BE REVIEWED TO ENSURE SEDIMENT AND DUST GENERATED BY CONSTRUCTION ACTIVITIES ARE RESTRICTED FROM ENTERING SENSITIVE NATURAL FEATURES, INCLUDING THE CONESTOGO RIVER AND NEARBY WETLANDS. ESC MONITORING SHALL OCCUR DAILY BASIS AND PRIOR TO ANY MAJOR FORECASTED PRECIPITATION.

WILDLIFE PROTECTION PLAN

THE CONTRACTOR SHALL MINIMIZE THE IMPACT ON WILDLIFE OVER THE COURSE OF CONSTRUCTION:

1. A QUALIFIED BIOLOGIST SHALL BE RETAINED BY THE CONTRACTOR. THE QUALIFIED BIOLOGIST SHALL BE ON CALL AND MONITOR THE SITE DURING CONSTRUCTION AS NOTED IN THE CONTRACT DOCUMENTS.
2. THE QUALIFIED BIOLOGIST SHALL CONDUCT A NEST SURVEY PRIOR TO CONSTRUCTION IF THE COMMENCEMENT IS DURING NESTING SEASON.
3. VEGETATION CLEARING SHALL ENSURE NO HARM TO NESTS OR NESTING BIRDS.
4. WILDLIFE ENCOUNTERED DURING CONSTRUCTION SHALL NOT KNOWINGLY BE HARMED AND SHALL BE ALLOWED TO MOVE AWAY FROM THE CONSTRUCTION AREA ON ITS OWN.
5. IF AN ACTIVE BIRD, OR BAT NEST IS IDENTIFIED WITHIN OR ADJACENT TO THE CONSTRUCTION SITE AND HAS THE POTENTIAL TO BE HARMED, THE CONTRACT ADMINISTRATOR SHALL BE NOTIFIED. THE CONTRACTOR SHALL NOT DESTROY THE PROTECTED MIGRATORY BIRDS AND/OR AND NESTS. WORK SHALL NOT PROCEED IN THE AREA UNTIL A QUALIFIED BIOLOGIST DEFINES AND MARKS AN APPROPRIATE SETBACK WITHIN WHICH NO CONSTRUCTION ACTIVITIES WILL OCCUR.
6. ANY WILDLIFE ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED BY THE QUALIFIED BIOLOGIST. PERMIT TO HANDLE WILDLIFE IS REQUIRED FROM THE APPROPRIATE REGULATORY AGENCIES.
7. IF A SPECIES-AT-RISK (SAR) OR POTENTIAL SAR IS ENCOUNTERED WITHIN OR ADJACENT TO THE CONSTRUCTION AREA, THE CONTRACTOR SHALL CONTACT MECP FOR DIRECTION. SAR OR POTENTIAL SAR SHALL NOT BE HANDLED OR HARMED DURING CONSTRUCTION WORKS.

CONSTRUCTION NOTES

SEED AND COVER:

1. ALL DISTRIBUTED SOILS WITHIN THE CONSTRUCTION LIMITS WILL BE RESTORED TO GRADE, TOPSOIL TO A MINIMUM 150mm, AND GIVEN A SURFACE TREATMENT OF SEED AND BONDED FIBRE MATRIX (BFM) OR SOD.
2. THE SEED MIX USED SHALL BE PER REGION SPECS (RWSSP 804). PERMANENT SEED MIX SHALL BE STANDARD ROADSIDE MIX AS PER TABLE 1 OF OPSS 804.

INVASIVE SPECIES MANAGEMENT

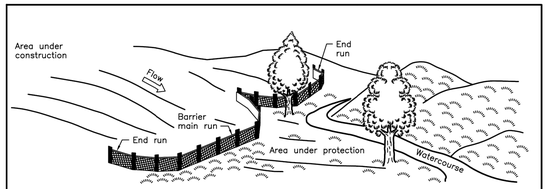
THE CONTRACTOR SHALL ADHERE TO GUIDELINES IN THE ONTARIO INVASIVE PLANT COUNCIL DOCUMENT: CLEAN EQUIPMENT PROTOCOL FOR INDUSTRY (OIPC 2013) TO LIMIT THE SPREAD OF INVASIVE SPECIES. GENERAL MEASURES INCLUDE:

1. THERE SHALL BE NO EQUIPMENT IN THE RIVER UNLESS APPROVED BY THE CONTRACT ADMINISTRATOR.
2. CLEAN EQUIPMENT PRIOR TO ENTERING
3. CLEAN EQUIPMENT ON A MUD-FREE GRAVEL-COVERED AND HARD SURFACE
4. EQUIPMENT MUST BE CLEANED AT LEAST 30m AWAY FROM ANY WATERCOURSE, WATER BODY OR NATURAL VEGETATION
5. USE COMPRESSED AIR WHERE APPROPRIATE (E.G. RADIATORS AND GRILLS) AND HIGH-PRESSURE HOSE IN COMBINATION WITH A STIFF BRUSH TO FURTHER REMOVE DIRT, MUD AND PLANT PARTS.
6. EMPHASIS SHALL BE PLACED ON THE UNDERSIDE OF THE VEHICLE, WHEEL ARCHES, GUARDS AND RADIATORS.
7. AVOID DRIVING THROUGH WASTEWATER.

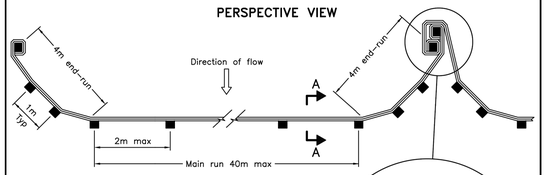
CONTINGENCY PLAN FOR UNANTICIPATED STORM EVENTS

THE WATERCOURSE IS SUBJECT TO SUDDEN INCREASES IN WATER LEVELS DURING STORM EVENTS. IN PREPARATION OF AN UNANTICIPATED STORM EVENT, THE FOLLOWING MEASURES SHALL BE INCLUDED IN THE CONTRACTORS CONTINGENCY PLAN:

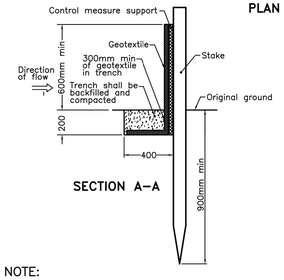
1. ADDITIONAL SEDIMENT AND EROSION CONTROL MATERIALS SHALL BE STOCKPILED ON SITE FOR USE DURING AND AFTER AN UNANTICIPATED STORM EVENT.
2. THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT, MATERIALS AND DEBRIS FROM THE WATERCOURSE PRIOR TO LEAVING THE SITE AT THE END OF EACH DAY.
3. ANY EQUIPMENT OR MATERIALS WITHIN THE FLOOD PLAIN SHALL BE REMOVED IF POSSIBLE. IF EQUIPMENT/MATERIAL REMOVAL IS NOT POSSIBLE, THEN APPROPRIATE PROTECTION MEASURES WILL BE IMPLEMENTED. THE CONTRACTOR SHALL PREPARE A CONTINGENCY PLAN THAT IDENTIFIES THE SPECIFIC REMOVAL/PROTECTION PLAN THAT IDENTIFIES THE SPECIFIC REMOVAL/PROTECTION MEASURES IF EQUIPMENT AND/OR MATERIAL IS WITHIN THE FLOOD PLAIN LIMITS DURING A STORM EVENT.
4. EQUIPMENT AND/OR MATERIALS NOT BEING USED SHALL BE STORED INSIDE DESIGNATED STAGING AREA AND OUTSIDE THE FLOOD PLAIN
5. THE CONTRACTOR SHALL MONITOR EROSION PROTECTION MEASURES AND ENSURE THEY ARE MAINTAINED THROUGHOUT THE STORM EVENT. ANY NEEDED REPAIRS SHOULD BE MADE AS SOON AS CONDITIONS ALLOW.
6. THE CONTRACTOR SHALL PROVIDE MONITORING DURING NON-WORKING HOURS AS WELL AS AN EMERGENCY CONTACT.



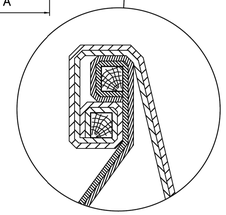
PERSPECTIVE VIEW



PLAN



SECTION A-A



JOINT DETAIL

NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
HEAVY-DUTY SILT FENCE BARRIER		OPSD 219.130

SPILL CONTAINMENT PLAN

1. PRIOR TO MOBILIZATION, THE CONTRACTOR SHALL SUBMIT FOR REVIEW A SPILL CONTINGENCY PLAN TO THE CONTRACT ADMINISTRATOR AND THE GRAND RIVER CONSERVATION AUTHORITY.
2. THE CONTRACTOR SHALL ENSURE THAT ALL REQUIRED CONTAINMENT AND CLEAN-UP MATERIALS REMAIN ON-SITE AT ALL TIMES DURING THE CONTRACT WITH APPROPRIATE INSTRUCTIONS FOR USE (SPILL KIT).
3. THE SPILL CONTINGENCY PLAN MUST INCLUDE CONTACT INFORMATION FOR THOSE TO BE CONTACTED IN THE EVENT OF A DELETERIOUS SUBSTANCE SPILL INTO THE RIVER (SPILL ACTION CENTER AND GRAND RIVER CONSERVATION AUTHORITY) AS WELL AS THE CONTACT INFORMATION FOR THE ON-SITE SUPERVISOR/CONTACT, EMERGENCY SPILL RESPONSE EQUIPMENT TO BE MAINTAINED ONSITE AS WELL AS A RESPONSE PROCEDURE TO BE IMPLEMENTED.

METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED



TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

DISCLAIMER:
THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS, AND OTHER UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

FIELD BOOK No.

No.	ISSUE/REVISION	BY	DATE
	ISSUED TO REGION FOR COMMENTS	DD	AUG. 17/26
	ISSUED FOR GRCA PERMIT	DD	JUL. 9/26
	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

ENVIRONMENTAL CONTROL PLAN AND DETAILS

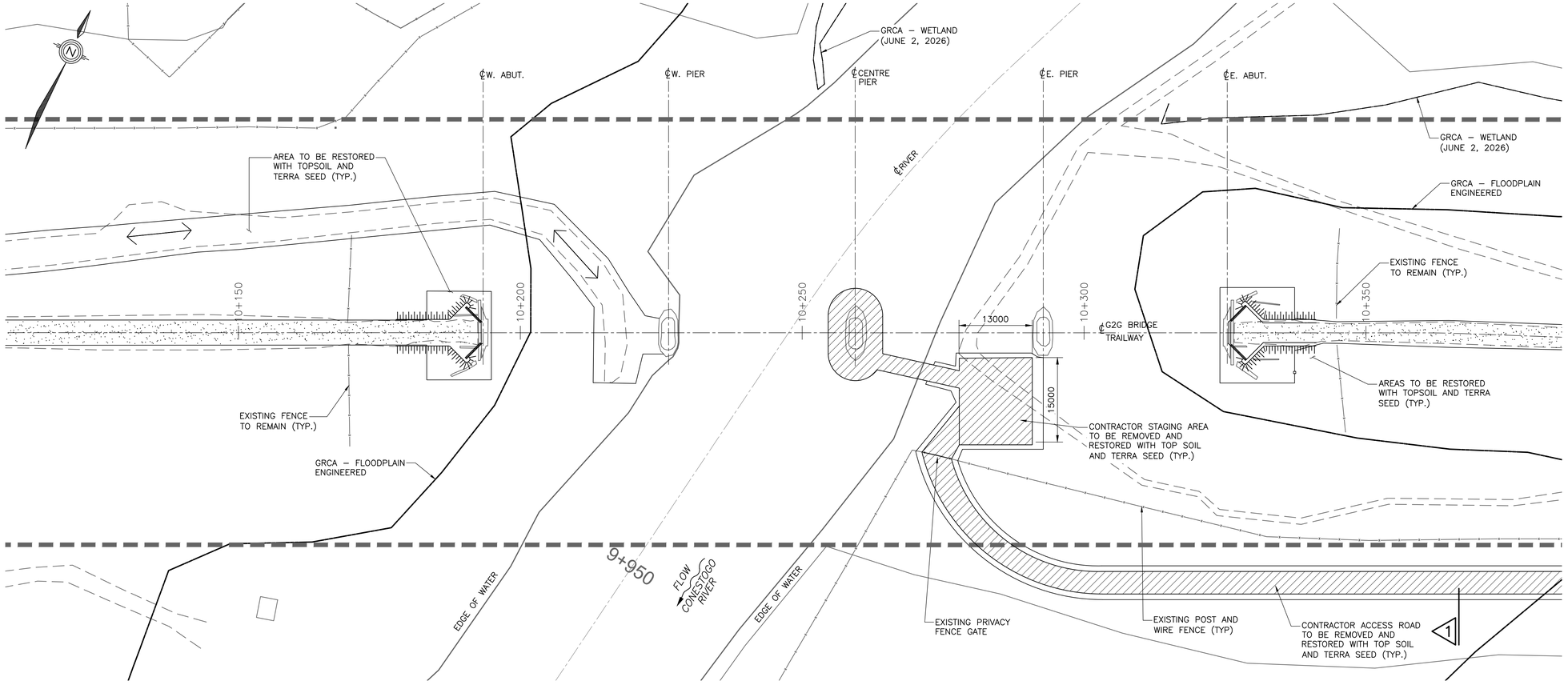
REGISTERED PROFESSIONAL ENGINEER
D. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER
S. A. KASHF
100078478
AUG 17/26
PROVINCE OF ONTARIO

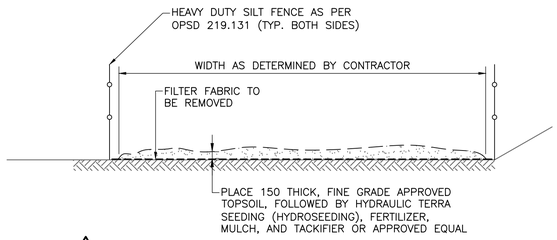
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CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. SP-16
SCALE AS SHOWN	SHEET No. 21 OF 22
LAYOUT NAME:	

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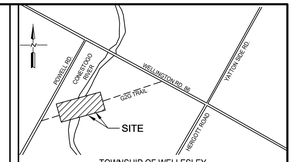
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MODIFIED: 2026-08-17 4:12:45 PM Zhenlin Pan
PLOTTED: 2026-08-17 4:15:58 PM Zhenlin Pan
REVISED 2021



PLAN
1:400



1
1:30 TYPICAL RESTORATION DETAIL



TOWNSHIP OF WELLESLEY
WALLENSTEIN, ONTARIO
KEY PLAN
NOT TO SCALE

DISCLAIMER:
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LEGEND:

- PROPERTY LINE
- EXISTING FENCE
- TURBIDITY CURTAIN
- EXISTING TRAIL
- GRCA – WETLAND BOUNDARY
- GRCA FLOODPLAIN (ENGINEERED)

NOT FOR CONSTRUCTION

DOUG DIXON & ASSOCIATES INC

Region of Waterloo

CONTROLLING B.M.

FIELD BOOK No.

No.	ISSUE/REVISION	BY	DATE
	ISSUED TO REGION FOR COMMENTS	DD	AUG. 17/26
	ISSUED FOR GRCA PERMIT	DD	JUL. 9/26
	ISSUED FOR 100% REVIEW	DD	JUL. 9/26

G2G PEDESTRIAN BRIDGE OVER CONESTOGO RIVER

RESTORATION PLAN AND DETAILS

REGISTERED PROFESSIONAL ENGINEER
B. G. DIXON
AUG 17/26
PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER
S. A. KASHF
100078478
AUG 17/26
PROVINCE OF ONTARIO

DRAWN BY: NT	CONTRACT No.
CHECKED BY: SAK	FILE No. WO24-243
DATE: FEB 26, 2026	DRAWING No. SP-17
SCALE AS SHOWN	SHEET No. 22 OF 22
LAYOUT NAME:	

METRIC
ALL DIMENSIONS SHOWN HERE ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

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CAD FILE: P:\Projects\24-243 Region of Waterloo - Conestoga River Ped Bridge EA and detailed design\DDA CAD files\24-243-SP_17EC.dwg
MODIFIED: 2026-08-17 4:12:40 PM Zhenlin Pan
PLOTTED: 2026-08-17 4:16:02 PM Zhenlin Pan
RPP/V.2021

Appendix E
Correspondence

From: Gordan Glavovic <gglavovic@regionofwaterloo.ca>
Sent: October 6, 2026 9:08 AM
To: Emmett Vanson <LRLUST@sixnations.ca>
Cc: Peter Graham <LRCS@sixnations.ca>; Frank Kosa <FKosa@regionofwaterloo.ca>; Jim Ellerman <JEllerman@regionofwaterloo.ca>
Subject: Re: SNGREC Environmental Comments Regarding G2G EA

Hello Emmett,

Thank you for your email and for providing these additional comments and suggestions. We appreciate SNGREC's continued review and involvement in the project.

With respect to financial compensation, we acknowledge SNGREC's position regarding rights associated with the Grand River and the broader discussions that may be taking place with the Region and other proponents. However, any potential financial implications or compensation matters are not within the scope of this project and are not something that can be finalized through the current Environmental Assessment (EA) process. The focus of the EA process is on addressing and mitigating project-specific environmental effects associated with the proposed undertaking.

With respect to the tree replacement ratio, we will be happy to replace based on your request, as long as there is sufficient space to do so. If there are constraints within the site that don't allow for the 10:1 ratio, as we've done on other recent projects, we will explore nearby opportunities for additional plantings with our Urban Forestry team in collaboration with SNGREC. As for the invasive species management, native species planting, and opportunities to enhance bat habitat, we appreciate these recommendations and look forward to continuing discussions with SNGREC and the project team as restoration and mitigation measures are further refined.

We value the collaborative approach that has been established through this consultation process and look forward to discussing these matters further, including opportunities for SNGREC participation in environmental monitoring and restoration planning.

Thank you again for your feedback. We intend on including all correspondence with SNGREC in the EA filing report.

Kind regards,

Gordan

From: Emmett Vanson <LRLUST@sixnations.ca>
Sent: Thursday, October 01, 2026 12:03 PM
To: Gordan Glavovic <gglavovic@regionofwaterloo.ca>
Cc: Peter Graham <LRCS@sixnations.ca>; Frank Kosa <FKosa@regionofwaterloo.ca>; Jim Ellerman <JEllerman@regionofwaterloo.ca>
Subject: Re: SNGREC Environmental Comments Regarding G2G EA

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Hello Gordan,

Thank you for this response. The additional context of the bat report is truly essential to the review of this EA.

Regarding financial compensation, while one could imagine limited impacts on hunting impacts, SNGREC has always asserted that they have never given up rights to the Grand River, or the air above it. Thus any bridge. SNGREC seeks compensation for bridges across the Grand River, and is currently engaged with other proponents on this issue for other bridges.
Additionally, any environmental impacts do impact hunting, foraging, fishing ability as it degrades the habitat which contributes to those species used by SNGR (any level of the food chain impacts others!).

Regarding tree replacement ratio, you have not made any commitment or clarification on what ratios will be followed. Since you have asserted that impacts will be minimal, it should be easy to commit to a 10:1 tree replacement ratio. SNGREC seeks commitment now rather than later.
Additionally, SNGREC requests that invasive species management and native species planting is completed along any work paths to prevent the ingress of invasive species on disturbed areas.

Since the central pier is the one to be modified and is the post appropriate for a bat maternity colony, SNGREC requests that structures are built into the pier refurbishment, following Best Management Practices for bat habitat structures. Including bat guano from the target species, applied below openings, seems to be a great way to attract species to a built habitat feature.
Please ensure that existing crevises are removed during the bat off-season prior to other potentially harmful acts.

I'm looking forward to discussing this further, and can potentially bring in a member of our wildlife team to discuss the bat habitat creation if needed.

Niá:wen (thank you),

Emmett Vanson, BSc., Grad. Cert. (he/him)
Land Use and Stewardship Technician

Six Nations of the Grand River Elected Council - Lands and Resources Department - Consultation and Accommodation Process Team

lrlust@sixnations.ca

Confidentiality Notice: This email, including any attachments, is for the sole purpose of the intended recipients and may contain private, confidential, and privileged information. Any unauthorized review; use, disclosure or distribution is prohibited. If you are not the intended recipient or this information has been inappropriately forwarded to you, please contact the sender by reply email and destroy all copies of the original.

From: Gordan Glavovic <gglavovic@regionofwaterloo.ca>
Sent: Wednesday, September 23, 2026 3:25 PM
To: Emmett Vanson <LRLUST@sixnations.ca>
Cc: Peter Graham <LRCS@sixnations.ca>; Frank Kosa <FKosa@regionofwaterloo.ca>; Jim Ellerman <JEllerman@regionofwaterloo.ca>
Subject: [External] Re: SNGREC Environmental Comments Regarding G2G EA

Hello Emmitt,

Please find reviewed comments in red below as well as supporting documents.

I look forward to continuing our collaboration throughout the project.

Thank you.

Kind regards,
Gordan Glavovic

From: Emmett Vanson <LRLUST@sixnations.ca>
Sent: Tuesday, August 18, 2026 8:52 AM
To: Gordan Glavovic <gglavovic@regionofwaterloo.ca>
Cc: Peter Graham <LRCS@sixnations.ca>; Frank Kosa <FKosa@regionofwaterloo.ca>; Jim Ellerman <JEllerman@regionofwaterloo.ca>
Subject: SNGREC Environmental Comments Regarding G2G EA

CAUTION! EXTERNAL SENDER
Were you expecting this email? TAKE A CLOSER LOOK. Is the sender legitimate?
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Shé:kon [say-goh] (Hello) Gordan,

Included are my environmental comments on behalf of Six Nations of the Grand River Elected Council (SNGREC) Lands and Resources Department's Consultation and Accommodation Process (CAP) Team regarding the Guelph to Goderich Kissing Bridge Reconstruction EA.

Please confirm receipt of these comments.

Haldimand Tract and 1701 Nanfan Treaty Preamble

Six Nations of the Grand River (SNGR) Territory is within the most highly urbanized land in Canada. Development has occurred on Six Nations' traditional territory without consultation or consent of SNGR. The cumulative effects of this intense development has contributed to significant environmental degradation and, as a result, Six Nations has experienced severe impacts on its ability to exercise Aboriginal and Treaty Rights that are not only set out in the treaties themselves but are also recognized and affirmed in Section 35 of the Constitution Act, 1982. These treaty lands are subject to unresolved litigation and any infringement upon our treaty rights must be fully mitigated by the proponent. The 1701 Nanfan Treaty guarantees SNGR's right to harvest and hunt on this property for perpetuity, but this proposal undermines those rights. SNGR must be accommodated to mitigate any harm to its treaty rights caused by the proponent.

As described in the report, the scope of the project is to install a pedestrian bridge over the Conestogo River utilizing the existing piers from the previous train bridge constructed in the early 1900s and there do not appear to be any impacts on treaty rights to harvest or hunt.

Treaty Rights Accommodation and Compensation

Further development of the land infringes on Six Nations Aboriginal and Treaty Rights by essentially guaranteeing land will not be returned to a natural state and by negatively impacting the environment through emissions and use of resources. Developments on this land fall under the Duty to Consult and Accommodate, meaning Six Nations of the Grand River must be consulted with and accommodated for impacts to their rights.

As described in the report, the scope of the project is to install a pedestrian bridge over the Conestogo River utilizing the existing piers from the previous train bridge constructed in the early 1900s. The pedestrian bridge is for pedestrian and non-motorized vehicles use only, therefore no new permanent impacts to the natural state are expected. Executed Review and Assessment Agreements are in place to accommodate any costs associated with the review of the Environmental Assessment (EA) and it is anticipated that an additional Agreement will be executed to have the Six Nations provide field representatives for environmental monitoring during construction of the pedestrian bridge as well.As described in the report, the scope of the project is to install a pedestrian bridge over the Conestogo River utilizing the existing piers from the previous train bridge constructed in the early 1900s. The pedestrian bridge is for pedestrian and non-motorized vehicles use only, therefore no new permanent impacts to the natural state are expected. Executed Review and Assessment Agreements are in place to

accommodate any costs associated with the review of the Environmental Assessment (EA) and it is anticipated that an additional Agreement will be executed to have the Six Nations provide field representatives for environmental monitoring during construction of the pedestrian bridge as well.

SNGREC requires that this development is paired with compensation for impacts to these rights and to the environment. Compensation should include environmental enhancement, financial compensation, and other forms of compensation such as increased numbers of affordable units and discounts for Six Nations members. Please contact lrlust@sixnations.ca to schedule a meeting to collaborate on determining compensation.

The project is to install a pedestrian bridge over the Conestogo River utilizing the existing piers from the previous train bridge constructed in the early 1900s. No new permanent impacts to the natural state are expected and construction does not involve the development of any residential housing. Executed Review and Assessment Agreements are in place to accommodate any costs associated with the review of the Environmental Assessment (EA) and it is anticipated that an additional Agreement will be executed to have the Six Nations provide field representatives for environmental monitoring during construction of the pedestrian bridge as well.

Six Nations of the Grand River Environmental Levy Policy

In accordance with the Six Nations Environmental Levy Policy, proponents are required to ensure that all project-related environmental impacts are appropriately avoided, minimized, and, where unavoidable, fully addressed through restoration, habitat replacement, monitoring, and other forms of compensation. These requirements are intended to ensure that ecological systems, including lands, waters, and species within Six Nations of the Grand River territory, are protected and sustained. Proponents are expected to incorporate these obligations into all stages of project planning, design, and implementation, and to engage in meaningful consultation to ensure that impacts to Six Nations of the Grand River rights and interests are appropriately recognized and addressed.

Please consult the attached SNGREC Levy Policy, approved by Six Nations of the Grand River Elected Council.

Section 9 of the EA Conclusions and Next Steps identifies that, during construction, the proposed undertaking is anticipated to result in minimal impacts to the floodplain and adjacent natural heritage features. All applicable environmental protection measures and mitigation requirements will be implemented throughout the construction period to minimize potential impacts and protect ecological systems, including terrestrial resources, wildlife species, aquatic environments, and water resources.

We welcome and encourage representatives of Six Nations to participate in site meetings, field visits, inspections, and other relevant construction related activities, as appropriate, throughout the duration of the work. Their participation will provide an opportunity to observe the implementation of environmental protection measures, raise any concerns or observations, and to help ensure that environmental commitments are being appropriately addressed.

Tree Compensation

SNGREC requires a 10:1 tree replacement ratio for all trees removed regardless of DBH and 1:1 for any dead trees/snags removed as these are an important habitat feature. SNGREC seeks commitment to this tree replacement ratio. A high tree replacement ratio helps to restore lost ecological function and considers time for regrowth and reduced survivability due to deer browsing and tree die-off. The goal of an increased tree replacement ratio is also to create habitat and strengthen ecological resilience.

Further, the higher tree replacement ratio better compensates for the long lasting, permanent impact of the development on the land which will no longer be able to be used by Indigenous people. The removal of or damage to the natural environment has an immense negative impact to Six Nations of the Grand River Aboriginal and Treaty Rights in this area. Planting additional trees and improving the environment helps make up for the negative impacts from development on these rights.

Planted trees must be site-specific native species and should be planted as close to the site as possible without impacting existing natural features and ecosystems.

The 10:1 ratio can be achieved by planting plugs or other earlier-growth trees, and they do not all need to be full street-tree size. Planting earlier-growth trees will require protection (i.e. herbivore browsing guards) and minor maintenance. Planting a variety of tree sizes can promote a healthier ecosystem. SNGREC requires planting best practices are used and suggests collaboration with Kayanase Plant Nursery for recommendations and guidance.

Please be advised, if tree offset is not feasible onsite, SNGREC expects offset plantings to take place as close as reasonably possible to the impacted site. SNGREC encourages collaboration with the Grand River Conservation Authority, Region of Waterloo, or the Township of Wellesley to achieve these offset plantings. Lastly, the Six Nations of the Grand River Environmental Levy may be considered should closer sites be unavailable, allowing SNGREC to purchase land and plant trees on behalf of the proponent. SNGREC's Environmental Levy is a cash-in-lieu option that is more financially feasible than other cash-in-lieu options as SNGREC will plant trees that are not full caliber, resulting in a cost of about $35 per tree planted.

SNGREC expects that the tree replacement is paired with a robust and complete monitoring and maintenance plan complete with contingency actions to ensure successful establishment of the trees for long term success.

The tree removal works on this project will be entirely related to temporary measures to accommodate the work. We expect that the number of trees requiring removal will be limited but agree that replacement tree stock size should be tolerant to herbivore browsing as you noted and that smaller stock could be used to infill the area. As we've done on other Regional projects, once removal requirements have been confirmed, we welcome and encourage representatives of Six Nations to participate in field visits and meetings to collaboratively establish an appropriate restoration plan.

Mussel Relocation

SNGREC requires that mussel relocation sites accurately reflect the habitat they removed from, including substrates, water depth, flow conditions, proximity to human impacts, debris, and evidence of predation.

SNGREC requests to have environmental monitors onsite for this process. Please connect with Tanya Hill-Montour tanyahill-montour@sixnations.ca to organize environmental monitors.

Yes, the relocation site would consider these attributes. We will connect with Tanya to coordinate field representatives for this work.

Bats – Pier usage

SNGREC requests analysis of the piers for bat usage prior to construction works. The EIS explains that the cracks in the piers are appropriate for bat use, but no explicit analysis (bat exit surveys) were completed for these features. While the acoustic monitors did not suggest extensive bat usage in the area, this cannot be fully ruled out without explicit bat exit surveys.

To this end, SNGREC requests that these piers have habitat features built into them, appropriate for the use of bats and other species such as birds (i.e. swallows).

A copy of the report prepared by the consultant who completed the bat analysis is attached for your information. The consultant found that there were cracks in the piers that the consultant deemed appropriate for bat use, however the acoustic study confirmed bat usage was not a concern at this location.

The centre pier will have the cracks sealed as part of the restoration works. The other two piers will be left as is, as they will not be part of the bridge structure. We would be happy to meet with Six Nations to review any suggestions for other potential habitat features that could be added.

Thank you for taking my comments. I look forward to hearing and collaborating more on this project. Please do not hesitate to reach out if you have any questions or concerns.

Niá:wen (thank you),

Emmett Vanson, BSc., Grad. Cert. **(he/him)**
Land Use and Stewardship Technician

Six Nations of the Grand River Elected Council - Lands and Resources Department - Consultation and Accommodation Process Team

lrlust@sixnations.ca

From: Hancock, Hannah (DFO/MPO)
To: Erin Blenkhorn
Cc: Doug Dixon; gglavovic@regionofwaterloo.ca
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status
Date: Wednesday, October 21, 2026 9:21:10 AM
Attachments: image001.png
image002.png
image003.png
image004.png
image005.png
image006.png

Unclassified - Non-Classifié

Good morning Erin,

Just like a boomerang this project is back on my desk! I have reviewed all the project documents, of which are all still relevant despite the changes to the regulations under the *Fisheries Act*, and I do not need any further information to complete my review. I am recommending a Letter of Advice with a stand-alone SARA permit for the handling and relocation of Silver Shiner. I am aiming to have the signed documents on your desk by the end of 2026 at the latest, but it shouldn't take that long.

If I have any questions as my review progresses I will be in touch and please always feel free to reach out.
Cheers,
Hannah

Hannah Hancock (she/her | elle/leur)
Biologist | Biologiste
Fish and Fish Habitat Protection Program | Programme de protection du poisson et de son habitat
Ontario and Prairie Region | Région de l'Ontario et des Prairies
Fisheries and Oceans Canada | Pêches et Océans Canada
Hannah.Hancock@dfo-mpo.gc.ca
Tel | Tél: 289-527-4265

From: Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Sent: Tuesday, October 20, 2026 2:07 PM
To: Erin Blenkhorn <eblenkhorn@lgl.com>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; gglavovic@regionofwaterloo.ca; Hancock, Hannah (DFO/MPO) <Hannah.Hancock@dfo-mpo.gc.ca>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Unclassified - Non-Classifié

Hi Erin,

Apologies for the delay in responding. We are reviewing your project through the original process and will update once the review is finalized. Please note that Hannah Hancock has taken the file back on as I am going on assignment with another federal department and my last day is tomorrow. If you have any questions in the meantime, please reach out to her directly.

Thanks, and have a great afternoon,

Jessica Mantha
(she/her|elle/la)

Biologist | Biologiste
Fisheries and Oceans Canada| Pêches et Océans Canada
Fish and Fish Habitat Protection Program | Programme de Protection du Poisson et de Son Habitat
Email/Courriel: Jessica.Mantha@dfo-mpo.gc.ca / Tel: 416-476-1684

From: Erin Blenkhorn <eblenkhorn@lgl.com>
Sent: Tuesday, October 20, 2026 9:22 AM
To: Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; gglavovic@regionofwaterloo.ca
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Hello Jessica,

Just another follow up from this end, to inquire how the SARA application and review is coming along for this project?
We realize that there have been recent changes to the DFO review process however, the material I have sent is still relevant I assume.

Thank you for your time and please feel free to follow up at any point.

Erin

Erin Blenkhorn, Hons. B.Sc.
Senior Aquatic Biologist/Ecologist
CAN-CISEC Inspector #0617
LGL Limited, environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Email: eblenkhorn@lgl.com
Mobile: 519-239-5129

From: Erin Blenkhorn
Sent: Tuesday, October 6, 2026 11:20 AM
To: 'Mantha, Jessica (DFO/MPO)' <Jessica.Mantha@dfo-mpo.gc.ca>
Cc: 'Doug Dixon' <ddixon@dougdixonassociates.com>; 'gglavovic@regionofwaterloo.ca' <gglavovic@regionofwaterloo.ca>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Hello Jessica,
Following up on this file. I wanted to ensure you received everything you needed here, with regards to our Request for Review materials and SARA application for HCAA-00500.
I emailed the engineering drawings after this email below was sent out, on Sept 10 at 11:06 am.

If you have a chance, could you update us on timelines for this? Although the instream works will not progress until next year, there may be some portions of the project that will initiate this winter, including tree pruning and select removals.

We look forward to hearing from you.

Erin Blenkhorn

Erin Blenkhorn, Hons. B.Sc.
Senior Aquatic Biologist/Ecologist
CAN-CISEC Inspector #0617
LGL Limited, environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Email: eblenkhorn@lgl.com
Mobile: 519-239-5129

From: Erin Blenkhorn
Sent: Thursday, September 10, 2026 11:04 AM
To: 'Mantha, Jessica (DFO/MPO)' <Jessica.Mantha@dfo-mpo.gc.ca>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; gglavovic@regionofwaterloo.ca
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Hello Jessica,

We have finalized our reporting and drawings at this end and we have provided the following answers to your questions further below in red.

We have attached the following to assist in your review.
-Silver Shiner impact map
-Series of restoration figures and details.

I will send the Engineering drawings in a separate email shortly.

There has been a small modification to the staging area/east access road connection since our original submission. We are hopeful that we can save 1-2 trees with this shift. See the commentary further below.

We would be happy to meet with you to determine permitting requirements. Previous submissions on this file suggested a Letter of Advice.
We have sent along the SARA permit application already for your use/information for this permit.
As you have probably determined, the project has been delayed. Instream work in particular would not be commencing until 2027.

Thank you for your time. We apologize for the hiatus as we completed these last few design details.
Please note that Six Nations and the Mississauga of the Credit First Nations have been engaged in recent studies.

We are happy to provide you with our Natural Heritage Report for this project if needed. Please let me know if that would be of assistance.

Regards,

Erin Blenkhorn, Hons. B.Sc.
Senior Aquatic Biologist/Ecologist
CAN-CISEC Inspector #0617
LGL Limited, environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Email: eblenkhorn@lgl.com
Mobile: 519-239-5129

From: Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Sent: Wednesday, July 15, 2026 10:38 AM
To: Erin Blenkhorn <eblenkhorn@lgl.com>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; gglavovic@regionofwaterloo.ca; Heather Polan <hpolan@lgl.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Unclassified - Non-Classifié

Hi Erin,

It was great meeting you briefly at the Mussel ID training! Thanks for providing the information; I am hoping to clarify a few things to make sure I'm interpreting the information correctly.

- For the riparian areas considered "not 'impacted' area for silver shiner habitat", are they not considered habitat because it is not vegetated at all and a man-made structure (gravel trail, etc.)? If there is vegetation (even manicured lawn) in any of those areas, can you please provide those footprints, if they will be cleared. We have highlighted areas in green, within the Silver Shiner habitat area (defined as meander belt plus 30m) that will be disturbed by construction activities on the attached Figure 7. We have omitted the existing rail trail footprint which is comprised of a limestone base and does not support natural vegetation. As an update to our previous submission, we have included a sliver of habitat along the existing trail to encompass minor disturbances along the trail edge for the installation and removal of silt fence and tree pruning. At the end of the trail sections on either side of the river (where the bridge will be present in the future), we have also included working areas to accommodate some abutment work and the bridge launching. Please note that the trail is located over 20m above the water on the old rail line embankment (see drawing C-04).

  The access trails have been highlighted as impacted (as noted in our previous submission). The idea is that the eastern access (required for the centre concrete pier restoration work) will be field fit to avoid tree loss. It is mostly pastured vegetation impacted temporarily here. The western access will be used on an as-needed basis by smaller truck(s) to access the western most pier (example: to install rollers for the bridge launching).
  FINAL IMPACT #s (Silver Shiner):
  Below Highwater Mark:
  240m2 for temporary rock fill causeway, **345m2** Total (including proposed turbidity curtain area surrounding causeway)
  Above Highwater Mark, within regulated Silver shiner habitat: **3254m2**
  TOTAL IMPACT: 3599m2
  No permanent impacts below the highwater mark and very minimal permanent impacts of riparian and floodplain vegetation. Restoration plan includes reseeding and replanting.

- If you can provide the restoration plan at your earliest convenience, we do need a good idea of what is planned (number of shrubs, trees, species, timing (mentioned fall), etc.) in order to complete our review. Please see attached. Fall timing for seed and planting have been recommended.
- I assume the pruning area is not included in the values below? If not, would you be able to provide an approximate footprint which we will take note of in the review, distinct from the clearing footprint. Pruning is difficult to determine, but we can confirm that any tree pruning required will be along the existing trail (encompassed in impact area above). We also note that tree pruning occurs routinely by the trail association along this section of the Guelph to Goderich Trail. No vegetation providing direct overhanging cover over the river will be pruned.

Happy to schedule a call as well to ensure we are on the same page.
Sounds good.

Thanks again,

Jessica Mantha
Biologist, Fish and Fish Habitat Protection Program
Fisheries and Oceans Canada

From: Erin Blenkhorn <eblenkhorn@lgl.com>
Sent: Thursday, June 25, 2026 5:09 PM
To: Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; gglavovic@regionofwaterloo.ca; Heather Polan <hpolan@lgl.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Hi Jessica, thank you very much for your feedback.

We would love to be able to provide a more accurate meander belt width but we just don't have the capacity or expertise to do that currently. We did some mapping at this end (averaged MBW upstream and downstream of highway 85) and came up with a similar width from bank (-10m). We will go with your estimate to be more conservative.

IMPACT REVIEW

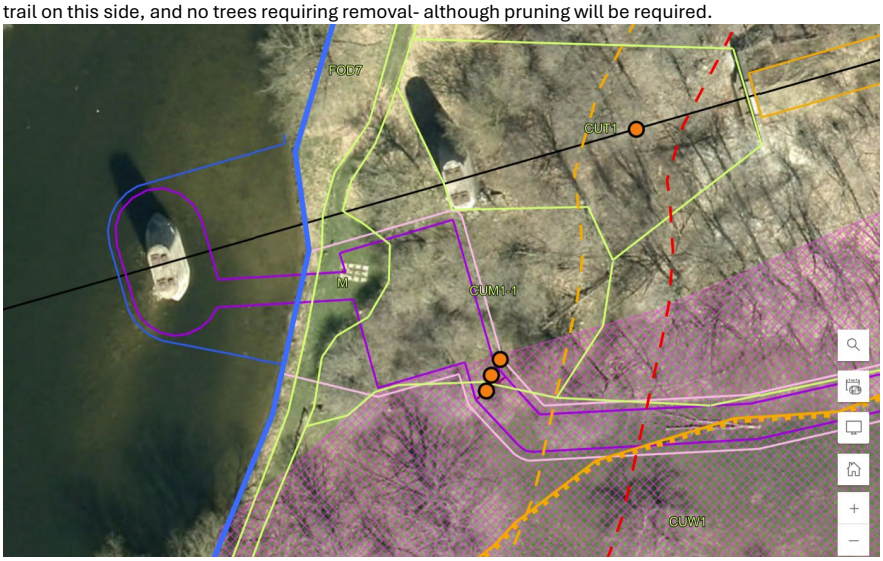
We have attached an updated figure that shows the estimated meander belt with (116m from bank) +30m (denoting Silver shiner habitat).

We have determined the following based on this recent calculation.
We have **1154 m2** of Silver Shiner Impacts.

- Meander Belt
  - 594 m2
  - 641 m2
- 30m offset
  - 164 m2
  - 155 m2

The Silver shiner habitat impacted areas are hatched in pink in the figure. There are up the 3 trees that may have to be removed that are also shown (see zoomed in location below) . These trees grow within approximately 25m of the river banks. There are no trees to be removed along the river bank.

The access road through the pasture and cultural meadow habitat on the east side will be comprised of wooden mats. This road will be restored with topsoil and seed upon completion of the works. The road will follow an existing pasture trail and will avoid trees to the extent possible. There is limited work required along the access road on the west side, as it is understood that only a smaller vehicle may access this informal trail, in order to place and remove a roller on top of the westerly most pier, for the bridge installation works. There is an informal dirt trail on this side, and no trees requiring removal- although pruning will be required.



Please note that we have not specifically noted the railbed as 'impacted' area for silver shiner habitat. The reason for this is two-fold.

1. There is already a gravel trail that exists
2. The railway is not within the floodplain.

As noted earlier, there will be some pruning of trees required, in order for the bridge installation to occur, from the west (from Powell Road). We do not anticipate much work occurring on the east portion of the railway trail.

RESTORATION

Unfortunately, we don't have our restoration plan completed as of yet. The project has been delayed a little bit. The Engineers are working on this plan and we have provided feedback on native seed.

We plan to get this plan to you shortly. As we have an instream window ending Sept 30, we would replant after the works are completed, and the staging area within the floodpain (for the instream pier rehabilitation works) will no longer be required anyway. So we will make vegetating, at least the seeded areas in the fall season. We are hoping to install some native shrubs (for stability and overhead cover), along the bank and trees further back from the bank. If there are any other restoration requests, we can certainly incorporate into the plans. The trees will most likely be planted within the railway ROW.

Hope this information helps.

Erin

Erin Blenkhorn, Hons. B.Sc.
Senior Aquatic Biologist/Ecologist
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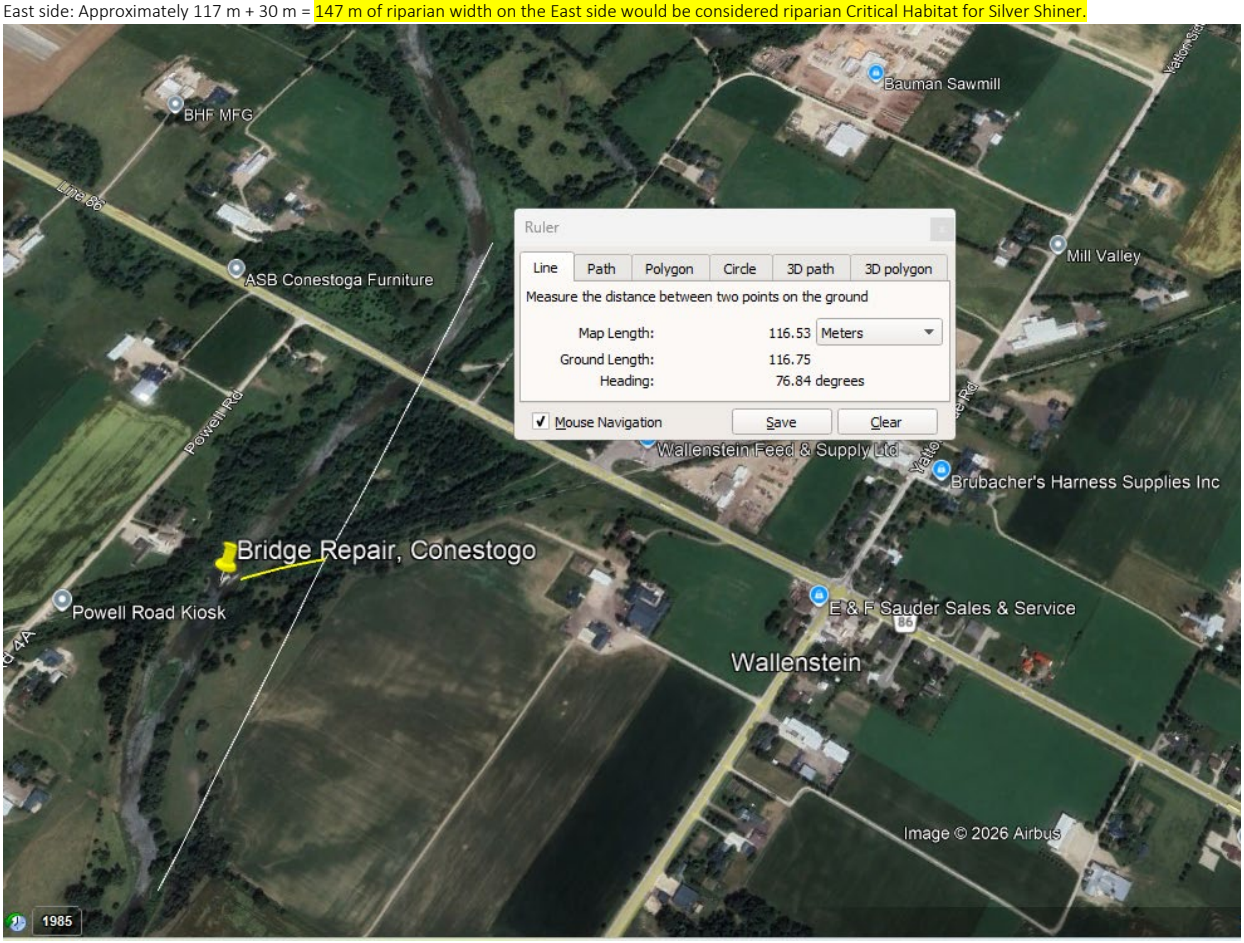
From: Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Sent: Thursday, May 28, 2026 2:05 PM
To: Erin Blenkhorn <eblenkhorn@lgl.com>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; gglavovic@regionofwaterloo.ca; Kyle Swanson <kswanson@lgl.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Unclassified - Non-Classifié

Hi Erin,

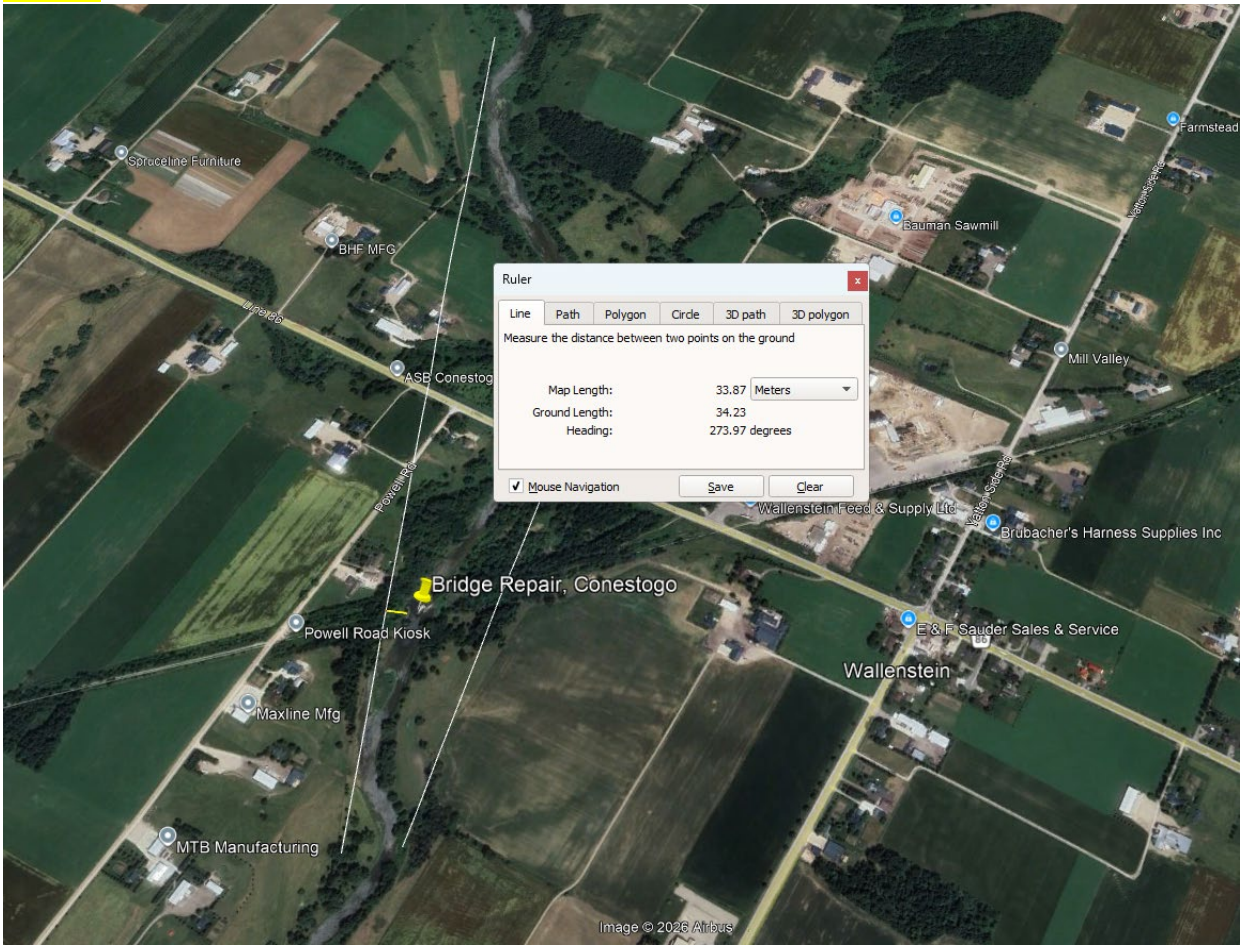
Meander belt width can be estimated using Google Earth and drawing a line from one meander to the next (done separate for each side of the watercourse), as opposed to digging into more complex calculations and evaluations of stream geomorphology. Below is my rough calculation of each meander belt width measured from the bank to the meander line, which you then add an additional 30 m to, from the meander belt. These values may seem quite large; however this is guidance provided by our Species at Risk Program and more information can be found in the Recovery Strategy for Silver Shiner, which provides details including but not limited to, "*The second element of habitat includes the meander belt width of the stream and associated riparian habitat that is a minimum of 30 m from the meander belt (measured horizontally).The inclusion of the meander belt width and associated riparian habitat recognizes the naturally dynamic nature of riverine systems and the importance of riparian areas to highly sensitive stream ecosystems that support Silver Shiner.*"

East side: Approximately 117 m + 30 m = 147 m of riparian width on the East side would be considered riparian Critical Habitat for Silver Shiner.



West side: Approximately 34 m from the meander to the bank + 30 m = 64 m of riparian width on the West side would be considered riparian Critical Habitat for

Silver Shiner.



- Can you please provide updated footprints for each side of the watercourse and the associated riparian works, in what is considered riparian Critical Habitat? You are welcome to re-calculate and provide a modified width.
- In order for us to assess the impacts we do need to understand all the vegetation and footprints that will be cleared and/or die back. We also need specifics on the number of trees to be removed. Some of this has been provided below but may need modification based up footprint updates required.
- We then need detailed information for the replanting program (number of shrubs, trees, species, timing, etc.).
    - Ideally vegetation should be replanted as soon as possible (in the fall) and available by the following spring, otherwise it would be viewed as loss of vegetation for more than one season as it wouldn't be established and able to provide proper function for that season.
    - If the replanting plan is robust and/or more than what is being removed, this may meet the conditions of a Letter of Advice (with SARA permit), however, the plan will need to be provided in order for us to adequately assess if a Fisheries Act Authorization is required.

Please let me know if you have any questions and if you would like any clarification or further discussion, I would be happy to schedule a call as well.

Thanks,

Jessica Mantha
(she/her|elle/la)

Biologist | Biologiste
Fisheries and Oceans Canada| Pêches et Océans Canada
Fish and Fish Habitat Protection Program | Programme de Protection du Poisson et de Son Habitat
Email/Courriel: Jessica.Mantha@dfo-mpo.gc.ca / Tel: 416-476-1684

From: Erin Blenkhorn <eblenkhorn@lgl.com>
Sent: Monday, April 27, 2026 11:56 PM
To: Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; gglavovic@regionofwaterloo.ca; Kyle Swanson <kswanson@lgl.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Hi Jessica,
Apologize the delay and thanks so much for the follow up. Please see our answers below in red. Hopefully, the impact areas are a bit clearer now. Admittedly we were focusing on the instream impact area in the request for review.

Thank you for the confirmation on Silver Shiner habitat (30m+ from bank). I have attached some photos and impact area calculations for 30m and 40m from the bank *we don't have meander belt width information.

I will be available to answer any questions more quickly moving forward.

Thanks, Erin

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CAN-CISEC Inspector #0617
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Mobile: 519-239-5129

From: Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Sent: Monday, April 27, 2026 10:33 AM
To: Erin Blenkhorn <eblenkhorn@lgl.com>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; gglavovic@regionofwaterloo.ca; Kyle Swanson <kswanson@lgl.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

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Good morning Erin,

I hope you're doing well. I wanted to follow up with the below email and see if you've have the chance to review as of yet.

Thanks,

Jessica Mantha
Biologist, Fish and Fish Habitat Protection Program
Fisheries and Oceans Canada

From: Mantha, Jessica (DFO/MPO)
Sent: Friday, April 10, 2026 5:06 PM
To: 'Erin Blenkhorn' <eblenkhorn@lgl.com>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Good afternoon Erin,

As Hannah mentioned, I've taken over the review of this project. Apologies if it has previously been provided, but I am looking to confirm a few details about the riparian work.

1. What is the footprint (in m^2) of riparian area that will be cleared/impacted by the works.
    a. This includes understanding any access routes within the 30 m buffer zone (detailed below).

The staging area will measure ~ 195m2 and will be sited in the floodplain within 4.5m of the bank edge (at its closest point), as shown on our figure 6 in the RfR. This staging area is required for the pier restoration works in particular. There will be a short access connecting to the river (for the temporary rock fill area) from this staging area. Access from the highway will be via a private pasture. The bridge will be installed via launching from the railway bed, above the river. There will be access by a small vehicle and lift required on the west side as well to install rollers on top of the western pier. This access is present (is a small road) and no vegetation removal is required, although some pruning of vegetation may be required.

We do not have access to the meander belt boundary however we have quantified impacts within **30m** and **40m** from the bank edge.

East side:
Within 30m buffer (orange hashed line): Area impacted for staging/access would measure ~345 m2 (we will move the silt fence on the south side line up next to the staging area box) to ensure additional bank area is unnecessarily impacted.
Within 40m buffer (red hashed line): Area impacted for staging/access would measure ~411 m2 area.

West side:
Within 30m buffer: 142m2 on gravel on an existing access road/disturbed area
Within 40m buffer: 181m2 on gravel on an existing access road/disturbed area

2. Can you provide a habitat description of the riparian area to be impacted.

The access will be located through a farm (private) property that is pastured and will avoid trees to the extent possible. The pasture has been defined as 'Cultural woodland' and supports mostly open grown Manitoba Maple, Sugar Maple and American Elm. Short grasses present and well used by cattle. There will be wooden mats used along this access to minimize ground disturbance.

Although the air photo (Figure 6) shows treed area within the staging area, the area is quite open and only two trees that may require removal along the east side of the boxed staging area. Riparian species (bank edge): bedstraw, angelica, joe pye-weed, wild parsnip, reed canary grass and jewelweed. Further back from the bank (in floodplain): smooth brome, orchard grass, wild parsnip, burdock. There will be no trees removed along the river bank. Vegetation will not be removed in the staging area, but it is anticipated that the vegetation will die back as it will be cut back and covered by geotextile and gravel through the summer and fall. Along the existing access on the west side, limited riparian habitat will be impacted as there is an existing path that will be used by smaller vehicle(s). Again, geotextile and gravel will be brought in on top of the existing pathway and removed at the end of construction. See attached photo- 'westerly view of west access route down slope'. Assume some pruning of trees along this access. Immediately at the pier on west side, there is open (bare) soil and weedy vegetation. See attached photo- 'disturbed habitat next to west pier'

3. If you also have specific photos depicting the area and type of vegetation (trees/shrubs, etc.) to be cleared, that would be helpful.

The 'Easterly view of staging area', the 'pasture access from staging area' and the 'Approx. staging area from above' photos provide the best photos of the habitat within the staging area.

4. Can you provide details on if it will be a permanent loss of riparian or if it will be reinstated/revegetated.
    a. If it will be reinstated/revegetated, please provide details on plantings and timelines.

There will be no permanent loss of riparian vegetation. We do not have a planting plan completed yet, however can provide to you as soon as it is ready. Restoration plan will be comprised of native shrubs, trees and native seed. In terms of timelines, there may be a lag between construction demobilization of staging area and planting time (i.e. planting may be delayed till Spring season after area demobilized in fall).

I wanted to note that since the area is mapped as Critical Habitat for Silver Shiner, Critical Habitat for this species includes a 30 m riparian buffer. As a result, any impacts to the riparian area will need greater consideration. Critical habitat includes the entire bankfull channel width, the meander belt width and the riparian vegetation within it, and associated riparian vegetation extending 30 m out from the meander belt width. More information on this can be found in the Recovery Strategy for Silver Shiner.

Happy to schedule a call if you would like to discuss further.

Thank you,

Jessica Mantha
(she/her|elle/la)
Biologist | Biologiste
Fisheries and Oceans Canada| Pêches et Océans Canada
Fish and Fish Habitat Protection Program | Programme de Protection du Poisson et de Son Habitat
Email/Courriel: Jessica.Mantha@dfo-mpo.gc.ca / Tel: 416-476-1684

From: Erin Blenkhorn <eblenkhorn@lgl.com>
Sent: Wednesday, April 8, 2026 12:15 PM
To: Hancock, Hannah (DFO/MPO) <Hannah.Hancock@dfo-mpo.gc.ca>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Thank you Hannah, appreciate the follow up.

Erin

Erin Blenkhorn, Hons. B.Sc.
Senior Aquatic Biologist/Ecologist
CAN-CISEC Inspector #0617
LGL Limited, environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Email: eblenkhorn@lgl.com
Mobile: 519-239-5129

From: Hancock, Hannah (DFO/MPO) <Hannah.Hancock@dfo-mpo.gc.ca>
Sent: Wednesday, April 8, 2026 8:10 AM
To: Erin Blenkhorn <eblenkhorn@lgl.com>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>; Mantha, Jessica (DFO/MPO) <Jessica.Mantha@dfo-mpo.gc.ca>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

Good morning Erin,

This project is now under the review of my colleague, Jessica Mantha, copied on this e-mail. Please get in touch with Jessica for project updates moving forward.

Cheers,
Hannah

Hannah Hancock (she/her | elle/leur)
Biologist
Fish and Fish Habitat Protection Program, Fisheries and Oceans Canada
Email: Hannah.Hancock@dfo-mpo.gc.ca
Tel: 289-527-4265

From: Erin Blenkhorn <eblenkhorn@lgl.com>
Sent: Thursday, March 12, 2026 8:47 AM
To: Hancock, Hannah (DFO/MPO) <Hannah.Hancock@dfo-mpo.gc.ca>
Cc: Doug Dixon <ddixon@dougdixonassociates.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township RfR and SARA application status

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Hi Hannah, hope you are well. Just following up on this project to ask for status of review. If there is anything else we need to provide, please let us know!

Thank you.

Erin

Erin Blenkhorn, Hons. B.Sc.
Senior Aquatic Biologist/Ecologist
CAN-CISEC Inspector #0617
LGL Limited, environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Email: eblenkhorn@lgl.com
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From: Erin Blenkhorn
Sent: Friday, March 6, 2026 2:40 PM
To: Hancock, Hannah (DFO/MPO) <hannah.hancock@dfo-mpo.gc.ca>
Cc: 'Schimmens, Elyjah (DFO/MPO)' <Elyjah.Schimmens@dfo-mpo.gc.ca>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township- Fisheries Timing Window Confirmation

Hello Hannah,
Not sure if you have had a chance to review the updated Request for Review for this project as of yet.

We decided to get a move on with the SARA permit application given that the client would like to go ahead with construction this summer, provided all permits are in hand. And we know that a SARA permit is required at this point, based on previous correspondence with NRSI (the last consultant).

We have filled out the application, assuming that LGL will be conducting the fisheries and mussel work associated with this project. If the Region decides to go with a different vendor for this work, the application will have to be amended.
Just wanted to get this in DFO's hands for technical review and comment and works are not anticipated to change at this point.

Please let us know if you need anything else.

I have attached the application.
In the link below are LGL CVs, the Natural Heritage report (with figures and drawings appended) as well as the draft Structural Design Report.
HCAA-00500 SARA appl attachments

Thank you for your time and please do not hesitate to follow up.

Erin

Erin Blenkhorn, Hons. B.Sc.
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From: Schimmens, Elyjah (DFO/MPO) <Elyjah.Schimmens@dfo-mpo.gc.ca>
Sent: Tuesday, February 17, 2026 2:02 PM
To: Erin Blenkhorn <eblenkhorn@lgl.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township- Fisheries Timing Window Confirmation

Unclassified - Non-Classifié

Hi Erin,

Thanks for passing it along. Hannah should be back this week and will be in touch once she's had a chance to review the information that has been submitted.

Best,

Elyjah Schimmens
He/Him | Il/Lui
Fish and Fish Habitat Protection Program Biologist | Biologiste du Programme de protection du poisson et de son habitat
Ontario and Prairie Region | Région de l'Ontario et des Prairies
Fisheries and Oceans Canada | Pêches et Océans Canada
867 Lakeshore Road | 867, rue Lakeshore
Burlington, ON L7S 1A1
elyjah.schimmens@dfo-mpo.gc.ca
M: (289) 795-7437

From: Erin Blenkhorn <eblenkhorn@lgl.com>
Sent: Tuesday, February 17, 2026 1:45 PM
To: Schimmens, Elyjah (DFO/MPO) <Elyjah.Schimmens@dfo-mpo.gc.ca>
Subject: FW: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township- Fisheries Timing Window Confirmation

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Hello Elyjah, also sending this onto you in case Hannah is away beyond this week. We will be following up with a SARA permit application later on this week.

Thanks, Erin

Erin Blenkhorn, Hons. B.Sc.
Senior Aquatic Biologist/Ecologist
CAN-CISEC Inspector #0617
LGL Limited, environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Email: eblenkhorn@lgl.com
Mobile: 519-239-5129

From: Erin Blenkhorn
Sent: Tuesday, February 17, 2026 1:40 PM
To: 'Hannah.Hancock@dfo-mpo.gc.ca' <Hannah.Hancock@dfo-mpo.gc.ca>
Cc: Kyle Swanson <kswanson@lgl.com>; Sowel Kang <skang@lgl.com>
Subject: FW: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township- Fisheries Timing Window Confirmation

Hello Hannah, hope you are well!

A colleague of mine (Kyle Swanson) had some recent correspondence with you, regarding the confirmation of the fish timing window for this project. LGL took over from NRSI on the natural heritage component of the pedestrian bridge (24-HCAA-00500).

We are working directly for Doug Dixon and Associates (the structural engineer), as the project is now a formal EA, with the end client being the Region of Waterloo.

We understand that NRSI completed a Request for Review for this project. Given the change in the end client as well as our company, we have filled out again. There have been some slight tweaks in the design, but overall the bridge construction methodology remains the same.

We received information that this project will follow a Letter of Advice but that a Species at Risk (SARA) permit would be required. We have started the SARA application and will submit later on this week.

We did have some hold ups on this project, as we went through formal EA processes. An EA is not formally completed however we are in the end stages.
We were originally anticipating a 2027 construction start but it looks like funding may be available, and as such, the client would like to get the ball rolling on a potential 2026 construction window. Of course, this doesn't leave us with much time.

Please let us know if we are missing anything from this RfR package.

I have attached our Natural heritage report information- including photos, bridge plans, figures. If you wish to peruse the whole report, I can send this along as well.

Thank you for your time, and we look forward to hearing from you.

Erin Blenkhorn, Hons. B.Sc.
Senior Aquatic Biologist/Ecologist
CAN-CISEC Inspector #0617
LGL Limited, environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Email: eblenkhorn@lgl.com
Mobile: 519-239-5129

From: Hancock, Hannah (DFO/MPO) <Hannah.Hancock@dfo-mpo.gc.ca>
Sent: Monday, February 9, 2026 9:21 AM
To: Kyle Swanson <kswanson@lgl.com>
Subject: RE: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township- Fisheries Timing Window Confirmation

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Good morning Kyle,

My apologies for the delay in my response. I would agree with you about applying the cold/cool-water fisheries timing window to this project.

Please let me know how things progress on your end, as this is still an active file under DFO File Number 24-HCAA-00500. Given the SAR species you listed below, this project will likely require a *Species at Risk Act* Permit, so I look forward to hearing about the new project timeline and if there have been any modifications to the design as it was submitted in the original Request for Review form.

Any further questions, please let me know.
All the best,
Hannah

Hannah Hancock (she/her | elle/leur)
Biologist | Biologiste
Fish and Fish Habitat Protection Program | Programme de protection du poisson et de son habitat
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www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html

From: Kyle Swanson <kswanson@lgl.com>
Sent: Wednesday, February 4, 2026 2:33 PM
To: Hancock, Hannah (DFO/MPO) <Hannah.Hancock@dfo-mpo.gc.ca>
Subject: 24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township- Fisheries Timing Window Confirmation

You don't often get email from kswanson@lgl.com. Learn why this is important

Hi Sheeva,

I am an Ecologist with LGL limited and I was hoping to get some confirmation from you regarding a project I believe you were assigned to (24-HCAA-00500, Bridge Repair, Conestogo River, Wellesley Township).
The proposed bridge reconstruction is located southwest of the village of **Wallenstein** between **Region Line 86/Wellington County Road 86 (Line 86)** and **Powell Road**.

We are advising the client on mitigation measures and constraints and I was hoping to get any indication on thermal regime or which timing window there was a preference to use? MNRF ARA point and line data do not indicate a thermal regime. Below is a species list for this location:

Table 2. Fish Species List for the Conestogo River

Common Name	Scientific Name	Thermal Regime/Tolerance*	ARA	MNR	NRSI
Black Crappie	*Pomoxis nigromaculatus*	Coolwater/tolerant			X
Blacknose Dace	*Rhinichthys atratulus*	Coolwater/intermediate	X		
Blackside Darter	*Percina maculata*	Coolwater/intermediate	X		
Bluntnose Minnow	*Pimephales notatus*	Warmwater/intermediate	X		
Brook Stickleback	*Culaea inconstans*	Coolwater/intermediate	X		
Brown Bullhead	*Ameiurus nebulosus*	Warmwater/intermediate		X	
Golden Redhorse	*Moxostoma erythrurum*	Warmwater/intermediate	X		
Hornyhead Chub	*Nocomis biguttatus*	Coolwater/intermediate	X		
Largemouth Bass	*Micropterus nigricans*	Warmwater/tolerant		X	
Least Darter	*Etheostoma microperca*	Warmwater/intolerant	X		
Pumpkinseed	*Lepomis gibbosus*	Warmwater/intermediate		X	
Rainbow Darter	*Etheostoma caeruleum*	Coolwater/intolerant	X		
Rock Bass	*Ambloplites rupestris*	Coolwater/intermediate	X	X	
Smallmouth Bass	*Micropterus dolomieu*	Coolwater/intermediate		X	X
White Sucker	*Catostomus commersonii*	Coolwater/tolerant	X	X	
Yellow Perch	*Perca flavescens*	Coolwater/intermediate	X	X	

*Thermal regime and tolerance information obtained from the Ontario Freshwater Fisheries Database (Eakins 2019).

Conestogo River is mostly a coolwater and warmwater fisheries as shown above. As indicated in the RfR submitted these SAR are mapped in this area.

- Silver Shiner (*Notropis photogenis*), Threatened (SARA/SARO)
- Black Redhorse (*Moxostoma duquesnei*), Threateneneded (SARA/SARO)
- Rainbow mussel (*Villosa iris*), Special Concern (SARA/SARO)
- Wavy-rayed Lampmussel (*Lampsilis fasciola*), Special Concern (SARA), Threatened (SARO)

MNR stocks Brown Trout upstream of this location closer to the Conestoga reservoir. It doesn't appear that this reach supports spawning. The previous consultant on this project noted a coldwater window, but we are not sure what resource they used. Based on the fish species present we assume a cool-water window would be applicable here, but hoping to get some input or confirmation.

Thanks so much!

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