



Pier Safety Report





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Executive Summary

There are hazards associated with the Great Lakes, including dynamic conditions at the beaches. Dangerous currents and breaking waves are common along the Great Lakes, and currents found near piers are extremely dangerous for swimmers and can lead to drowning.¹

Kincardine's waterfront along Lake Huron is bisected by the Penetangore River where two piers exist for the purpose of safe water entry to the lake for marine craft. The piers are also used for recreation, including walking and fishing. Swimming near the piers and jumping off the piers is prohibited; however, these activities do occur. Deaths by drowning and near-miss drownings have occurred in the lake close to the piers.

Following a drowning and a near-miss in the summer of 2023, Council struck a Pier Safety Ad Hoc Committee (the committee or PSAC) to provide recommendations in reducing hazards associated with the use of the north and south piers located at the Kincardine waterfront. This report is the result of the work of the Pier Safety Ad Hoc Committee and provides recommendations for Council's consideration related to drowning hazards at the municipality's waterfront near the piers.

This report details the summary of the presentations and research presented to the ad hoc committee. The committee has prioritized its recommendations:

High Priority Recommendations:

- ➔ New ladder installations phased in over 1-4 years.
- ➔ Enhance access signs to the piers that depict no jumping from piers.

¹ <https://www.weather.gov/safety/great-lakes>

- Enhanced signage be installed to reflect risks and 911 address.
- The perimeter of the piers should be painted bright yellow.
- Lifesaving stations be increased from 2 to 4.
- Non-swimming area located south of the south pier be increased from 100 metres to 200 metres.
- With the above recommendations implemented and with additional education both piers remain open to the public.

Medium Priority Recommendations:

- Gate design and installation at the entrance of the piers. The gates should be designed in keeping with the aesthetics of the area and have the function of being locked to close gates as required.
- Consider fines for patrons who use the piers contrary to approved uses.
- Parking pilot project for 2024 and additional directional signs identifying parking locations based on patron usage.
- Remove the existing large, blue, decorative chairs located at the northern section of Station Beach
- Install mitigations to reduce members of the public from parking in the assigned Emergency Parking locations.
- Consider a volunteer supported Beach Patrol (Ambassador) program for a one-year trial in collaboration with other Community Partners and that the existing beach education program be enhanced to provide continual education opportunities for patrons at the waterfront.

Additional considerations are provided to Council which align with existing recommendations within the Waterfront Master Plan or proposed Boardwalk Design Plans.

The committee acknowledges that there are significantly greater costs associated with maintaining piers for recreational purposes and not solely for the structures to serve as a break wall for marine craft and note that without investments to support the recreational aspect of the piers that one or both could be closed by Council in the future due to financial constraints.

Committee Membership

Members of the Committee

- Councillor Rory Cavanagh (Committee Chair)
- Dr. Chris Houser, Smart Beach Representative
- Jim Cooper, Community Member Representative
- Kristin Beaton, Community Member Representative
- Matt Cottrill, Kincardine Emergency and Fire Services
- Rolf Jedemann, Kincardine Marina
- Kent Padfield, Bruce County Paramedic Services
- David Hackney, Ontario Provincial Police
- Ash Adams, BIA Representative

Staff Members

- Jayne K. Jagelewski, Director of Community Services
- Tracey Guy, Deputy Clerk

Associated Contributors

- Scott Ruddle, Open Water Safety Expert
- Dr. Elizabeth Urbantke,
Regional Advisor London's Coroner's Office
- Dr. Jaime Blackwood



Preface

Since 2008, a total of 13 drownings and near-miss incidents have occurred in the water near the Kincardine piers. In response to these incidents, reviews have been undertaken seeking opportunities for safety improvements.

These reviews include:

- ➔ October 2015- Lifesaving Society Audit Station Beach and Piers – Director of Parks and Recreation
- ➔ January 25, 2016 – Aquatic Safety Audit Report: Station Beach Kincardine – Lifesaving Society
- ➔ March 1, 2016 – Aquatic Safety Audit Report and Letter from National Defense
- ➔ July 2016 – Update on Implementation of Safety Audit Recommendations – Director of Parks and Recreation
- ➔ April 26, 2021 – Beach Safety Report – Director of Parks and Recreation

In 2023, there were four (4) drownings in Lake Huron, and over 80 across all the Great Lakes.¹ Across all of the Great Lakes, researchers noted to the committee that most victims are male and under 30 years old.

While drownings can occur under any conditions; offshore waves, rough surf, rip currents, and structural rips from jetties and piers are all aggravating factors.

¹ Great Lakes Drownings in 2023 – Great Lakes Surf Rescue Project. <https://glsrp.org/statistics/>

Introduction

A drowning and a near miss occurred on August 12, 2023, in Lake Huron near the piers in Kincardine.

On September 13, 2023, Council for the Municipality of Kincardine established a Pier Safety Ad-hoc Committee made up of stakeholders and subject matter experts.

Mandate

The mandate of the Pier Safety Ad-hoc Committee is to provide Council with practical recommendations in reducing the hazards associated with usage of the north and south piers located at the Kincardine Waterfront.

To provide recommendations to Council, the committee has undertaken the following:

- ➔ Reviewed existing data associated with incidents at the piers;
- ➔ Researched best and next practices;
- ➔ Received input from key subject experts;
- ➔ Considered community engagements input that has been provided; and
- ➔ Developed recommendations with associated costs and timelines based on the committee's findings for Council's consideration.

Pier Safety Ad Hoc Committee Composition

The composition of the Pier Safety Ad-hoc Committee includes one council member along with:

1. Kincardine Emergency and Fire Services
2. Bruce County Paramedic Services
3. Ontario Provincial Police
4. Marina Staff
5. BIA member
6. Smart Beach Representative
7. Two members at large

Two staff members have served as resources to the committee.



Pier Safety Ad Hoc Committee Meetings

The members of the PSAC have participated in 5 meetings in developing the recommendations presented in this report.

Meeting 1

- Review of reports received to date and an environmental scan.

Meeting 2

Presentations from

- Dr. Chris Houser – Smart Beach
- Scott Ruddle – Open Water Safety
- Dr. Elizabeth Urbantke, Regional Advisor London’s Coroner’s Office
- Dr. Jaime Blackwood – On scene of August 12 incident

Meeting 3

- Review of information gathered and developed recommendations for Council

Meeting 4

- Ladder design presentation.
- Review draft of the Pier Safety Plan

Meeting 5

- Review second draft of report



Summary of Delegations

The committee received information through the delegations related to the local drowning profile, water safety, and how individuals assess risks was provided to the committee to help inform its decision-making. Below are brief summaries of some of what the committee heard:

- A vast majority of users who frequent waterfronts have indicated they will enter the water whether lifeguards are present or not. Users who have traveled a further distance to get to the beach are less familiar with local hazards and more prone to swimming regardless of onsite conditions, choosing to enter the water despite strong winds, large waves, and dangerous rip or structural currents.
- Care must be taken to ensure that warning signs are accurate and visible to users from multiple directions. However, even when maintained by competent staff or volunteers, users are prone to ignore signage.
- In contrast to signage, warning flags are more likely to be obeyed by users. An effective flag program requires users to be educated in the flag system and staff able to identify the real-world conditions that warrant flags to be raised.

This experience isn't easily learned through training alone but acquired through years of beach usage and understanding.¹

- People tend to view other users' behavior as the key to their own safety. This is called Confirmation Bias. Beach users are more likely to make decisions based on actions of others, rather than posted warning signs. This means they are less likely to follow warnings and obey rules if they see other users already in the water.
- Likewise, people will also ignore warnings if they believe that the hazard assessment is too restrictive or not updated based on existing conditions.²
- Warnings need to be dynamic, local, and established to users that they are based on real threats to their safety.

In addition, the committee heard about the Smart Beach project and general information about structural currents.

1 Correspondence of Beach User Perception, Lifesaving Strategies and Rip Currents: Implications for Beach Management. Author Summer Locknick and Chris Houser

2 Correspondence of Beach User Perception, Lifesaving Strategies and Rip Currents: Implications for Beach Management. Author Summer Locknick and Chris Houser

Smart Beach

A university-research project received funding to examine the potential to use technology at Station Beach to provide information to beachgoers about the conditions of the water, including rough surf and the presence of rip currents. The goal of the Smart Beach program is to develop, implement and test an integrated sensor network to provide a real-time and locally calibrated risk and hazard warning system for beach users and local authorities that guides the behaviour of beach users through a dynamic warning system.

Dr. Houser is leading the Smart Beach research project and has presented some findings to date, and other information regarding drownings within Great Lakes to the committee.

Structural Currents

The committee reviewed drowning hazards in general, including that of structural currents through its deliberations.

Structures like piers focus strong currents and create a condition where water has nowhere else to go but out along the pier. The current is often too strong to swim back towards the beach and swimming out of the current sideways is likely to send swimmers into oncoming large waves. This is the main reason why swimming along piers at a Great Lake beach is prohibited or not recommended.

Drowning Profile

Drowning Deaths at Kincardine Station Beach since 2008

- The age of decedents ranges from 16-73 with the Median of 42.
- Five males and one female.
- One decedent lived in Kincardine and five decedents were non-residents based on their primary address.
- Three of the victims entered the water from the beach and three of the victims entered the water from the pier.
- Of the six victims, half entered the water for the purpose of recreation, while the other half entered the water in attempts to rescue others in distress.³



Previous Recommendations

In June 2016, The Lifesaving Society presented an Aquatic Safety Audit Report to Council with an anticipated goal of maximizing the safety of participants at Station Beach. Derived from the Audit were several recommendations.

They included:

Install at least one lifesaving station on each pier – Completed prior to July 1, 2016 – the installation of one lifesaving station on both the north and south piers containing buoyant throwing aids and reaching poles. Signage was also installed on the new lifesaving stations indicating the purpose of the equipment and warnings related to equipment misuse.

Regularly Inspect Station Beach – Form completed prior to June 1, 2016. An inspection schedule was established, and written records of these inspections kept on file.

Designate non-swimming areas – Signage posted to indicate “No Swimming” was installed in the summer of 2016 in the area by the pier and former volleyball courts.

Designate a safe swimming area – In 2014, Council approved the designation of a “No Watercraft Zone” and a “No Wake Zone” to fulfill a requirement for Blue Flag. These areas have been in place since the 2014 swimming season.

The Kincardine Yacht Club has installed buoys to help mark a designated safe swimming area for away from the piers.

Additional recommendations put forward after another tragic drowning in September 2020.

They included:

Implement a public education campaign – Staff distributed information to beach goers that referenced safe swimming areas and rip current information. Additional information was also on the municipal website.

Install new safety signage – New rip current signage was installed and located at beach entrances to increase or increased visibility.

As recommended staff painted “No Jumping/ Swimming” at various spots on both piers.

Update Current Blue Flag Signage – The Municipality had been part of the voluntary Blue Flag program, but in 2021 opted to not seek this designation. The Blue Flag program includes criteria for beaches, marinas, and tourism boats and is related to environmental and safety efforts. Even though the Municipality is not a designated Blue Flag site there are various tools and resources available which can be used to support community educational efforts. Some of the existing information currently available for Kincardine beachgoers is based on Blue Flag resources and the most current information can be accessed and used to update local efforts.

Recommendations

The PSAC reviewed many aspects of the operation, built environment and existing practices of the waterfront as they considered recommendations. A number of the recommendations identified within this report were discussed at great length, as the members were cognizant of the impact they have on the users of the beach.

The report identifies **“High Priority”** as recommendations that were of high importance to initiate immediately. Subsequent **“Medium Priority”** are also included and are recommendations that should be initiated and considered within the next 1-5 years these can be concurrent with High Priority items.

Other considerations have also been provided for Council’s future deliberations.



High Priority Recommendations

Ladders

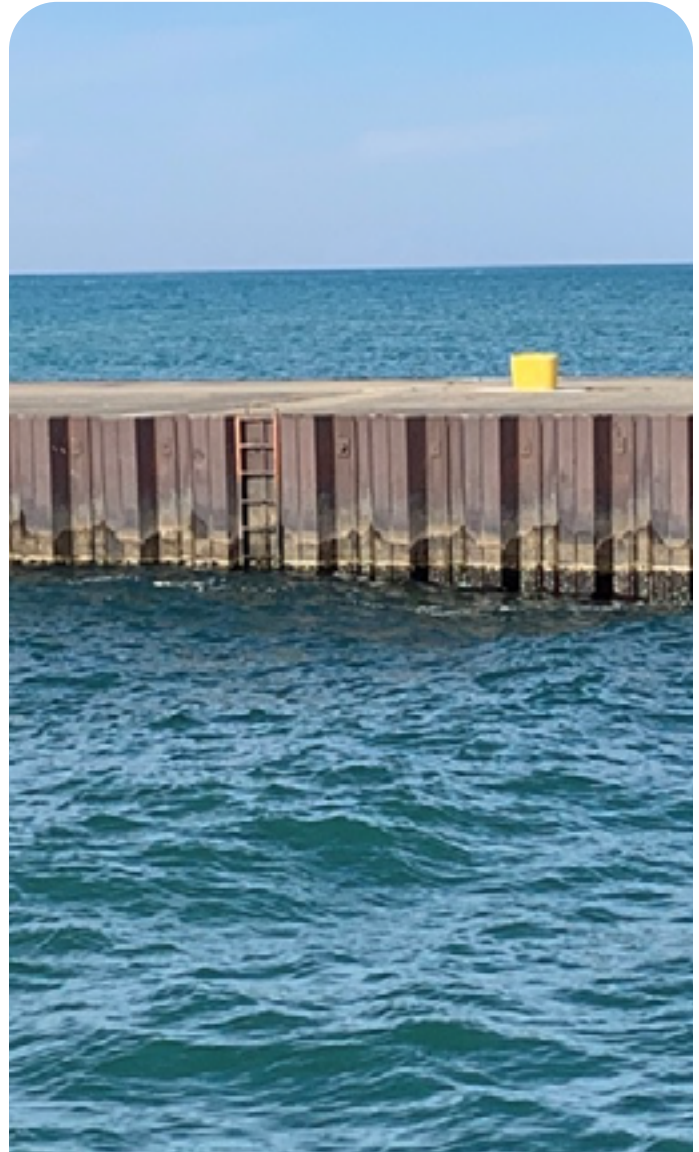
Recommendation – New ladder installations on the North and South Piers over the next 1-4 years.

It is difficult to determine when many of the existing ladders were originally installed. Previous ladder extensions installations have been undertaken in cooperation with both the former Public Works Department and Parks and Recreation staff and required equipment.

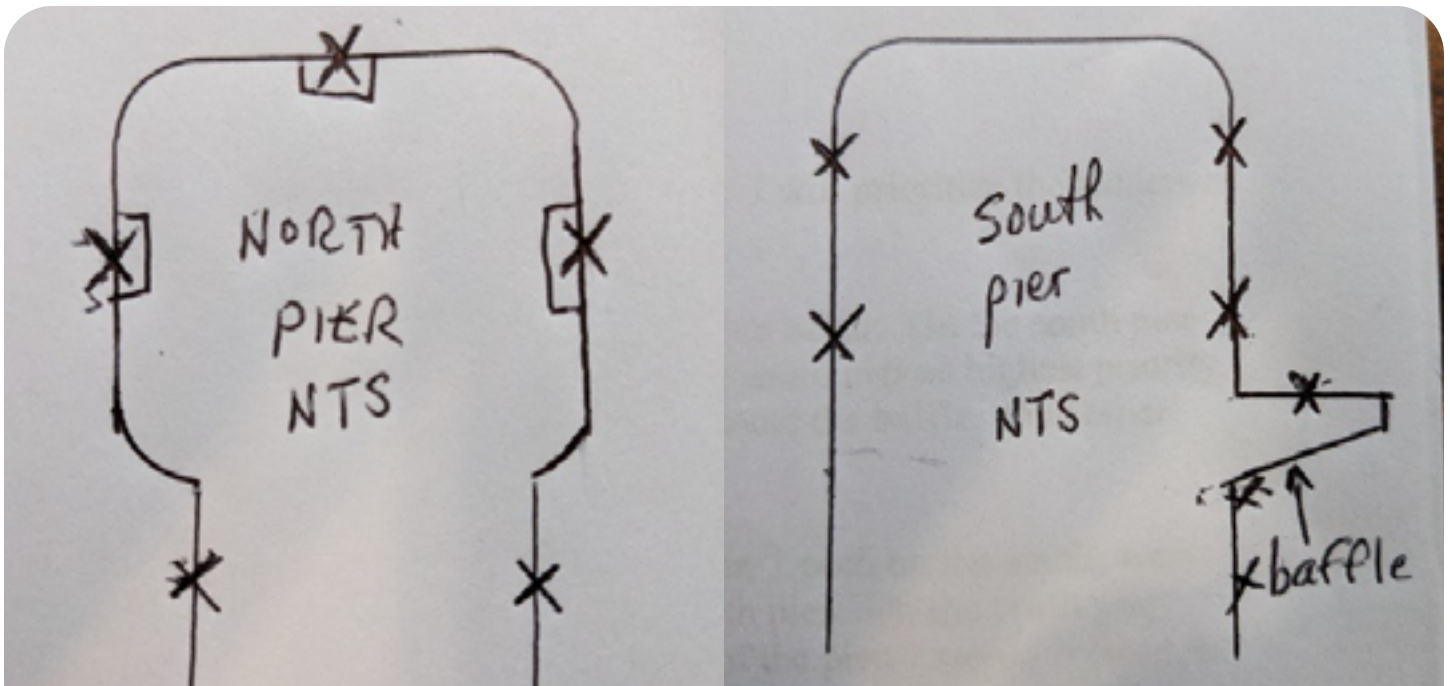
Additional assistance beyond staff was required and provided by volunteers from the Marina who were situated in the water on a vessel while the extensions were lowered with machinery operated by a member of staff with volunteers assisting from vessels situated in the water. This practice is not recommended moving forward.

The preferred ladder solution considers local weather conditions and staff resources. Additionally, the design is accessible for immediate repair which is in part why it is the preferred option.

The preferred ladders are clearly visible from both the deck of the piers and from within the water. Consideration was given to fluctuating water levels as well as suitable railings along the deck that provide an aid for those utilizing the ladders and removing themselves from the water.



Current ladder on north pier.



Recommended High Priority Locations for Ladder Installation.

Combined, there are a total of 37 ladders on the north and south piers, however it should be noted that not all ladders require immediate replacement. The south side of the south pier is where most of the drowning and near-miss incidents have occurred. The south pier currently has 8 ladders. The two ladders located on the south side of the south pier are of highest priority for replacement, followed by two ladders on the north side of the south pier plus three ladders on the baffle.

The north pier has 10 ladders that should be replaced that are deemed a priority. The remaining 17 ladders could be substituted over the next three years until all are replaced.

Although there does not appear to be any guidelines on the spacing between ladders affixed to piers and wharfs, for the purposes of the north and south piers, the committee recommends that ladders should be spread

30 metres apart to ensure sufficient coverage is available. This is also in keeping with the existing spacing of the ladders on the piers. In the area along the south side of the south pier, Council may wish to consider decreasing the distance between the ladders to 20 metres.

Currently there are no usable ladders on the north wall in the marina between the bridge and the existing cottage, and consideration should be given to installing some along this wall.

The north pier has an electrical conduit that currently poses an obstruction, and the design format should consider this when installing ladders.

Fluctuating water levels in the Great Lakes due to climate change will continue to be a concern, and consideration should be

given to ensure an exaggerated length of the ladders to be installed to provide coverage during low water level years.

The cost of the installation will involve the purchase of the ladders as well as installation of brackets and a riser at the top of a ladder that will assist individuals being able to self-pull themselves to safety. This installation cannot be installed in-house and will require the expertise of a welder. Procuring a contractor will take time to have this project completed for summer 2024.

The PSAC have sourced out a suitable ladder that can be constructed quickly and replaced by staff if damaged. These ladders can also be extended for fluctuating water levels. Solar lighting is also a component of this product and could be considered as part of the purchase. The solar light option can be affixed to the top step for easy identification of the location of the ladders.



Example of new ladder system.

Signage and Hazard Warning

Recommendation - Enhance signs to the piers to communicate dangers of jumping and diving from the piers and the risk of swimming near the piers.

Recommendation - Perimeter surface of the piers painted bright yellow.

Existing signs that depict where not to swim or jump off the piers have been in place since 2016, however, it is likely that some individuals ignore these caution signs or simply do not see them. The placement of signage can assist in ensuring people see the risks associated with certain activities.

Messages to the public about beach safety from Central Elgin and Lambton Shores could be used to help communicate risks:

No Jumping or Diving

Jumping and Diving from the Pier is a dangerous activity.

The pier has the potential to create dangerous structural currents.

Do not put yourself, or first responders at risk.

Since 2008, [6] people have lost their lives.

Ski Resorts do an excellent job of placing risk signs in areas that require the skier to ski around them before getting on a chair lift and when a user gets off a chair lift.



Typical sign at ski resorts.

The colour of red on a sign warns of a hazard that could cause serious injury or death. Yellow depicts caution. These colours combined on a sign in appropriate locations can provide immediate attention and warning to those individuals.

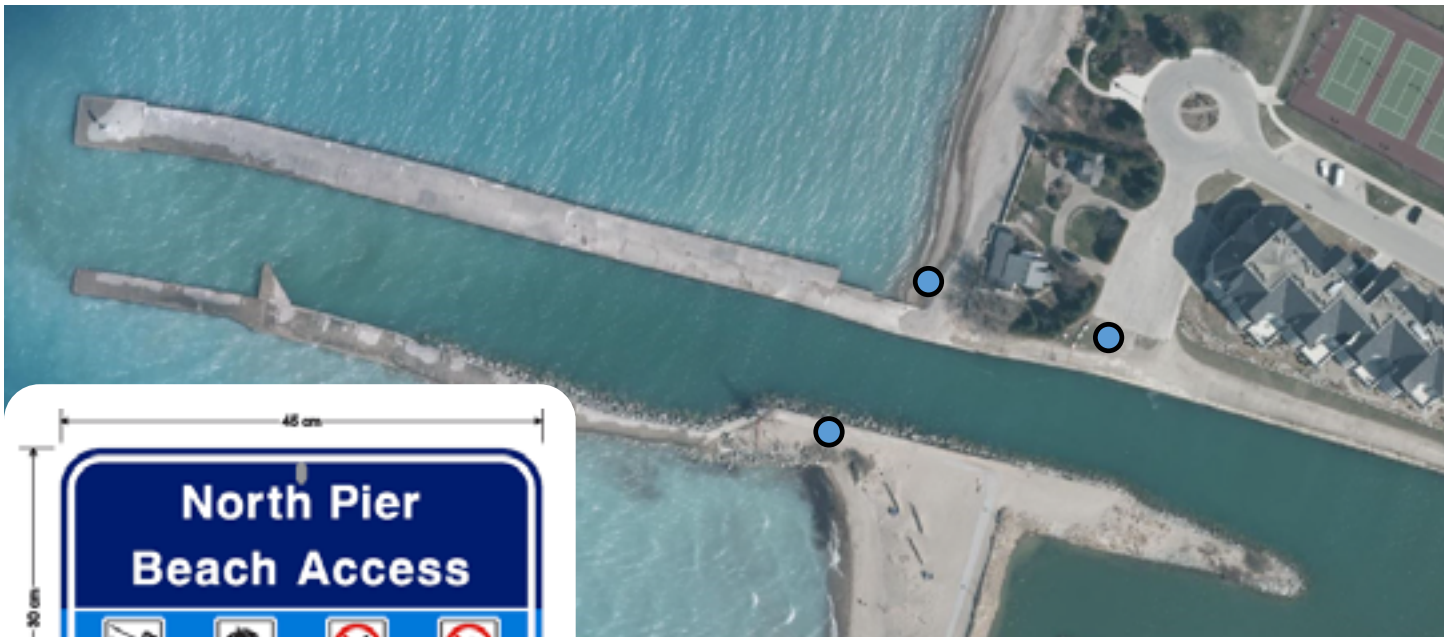
Clear large signs should be installed at the entrance of the piers that identify "No Jumping off Pier" to ensure that the signs are in the path of pier users.

The Municipality should seek advice from their insurance provider to ensure appropriate language is clearly articulated on these signs and that they identify the proposed risk associated with activities at and around the piers. It is recommended that Council seek legal and insurance advice related to any consideration of enforcing restrictions of no jumping or diving off the pier or swimming around the pier.

Current signs located within the parking facilities, access points, and piers have been added over the years based either on demands, situations or in attempts to mitigate user actions. All signs should abide by the branding guidelines as described in the 2009 Wayfinding & Signage Standards Manual and should include by-law numbers if applicable and should be installed at the entrance of the piers as well as at the ends of the piers.

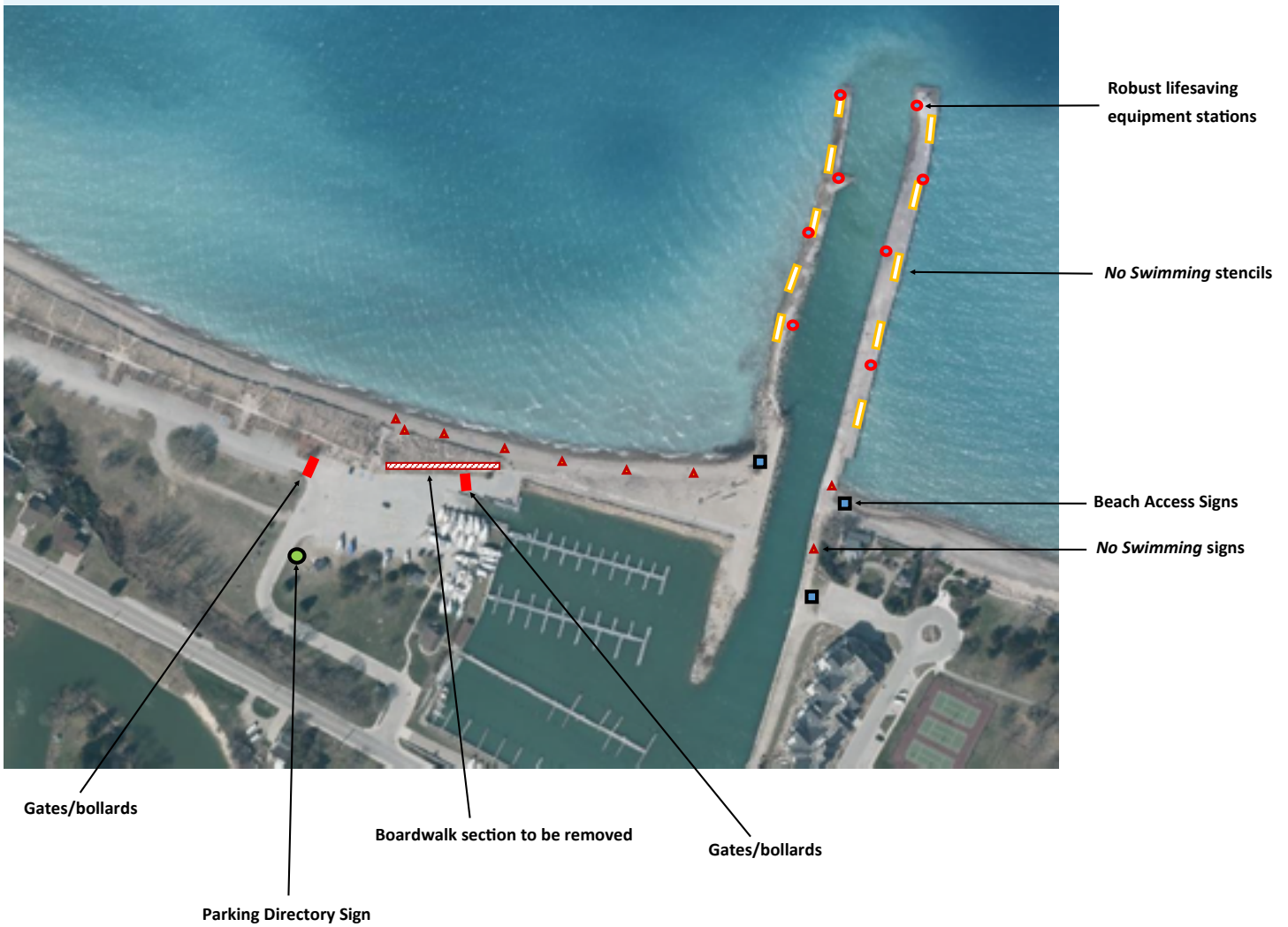


Existing painted stencil on Kincardine Pier to depict No Swimming.



Approximate locations of **Beach Access Signs** for North and South Pier accesses.

Location of signs and warnings.



A bold yellow strip of paint, painted along the perimeter of the surface of the piers is recommended to help identify potential risk for patrons walking on the piers. Staff should consider expanding from a single strip and include additional striping if possible. Gaps in the painting should occur to identify areas in which a ladder is present. This will provide a clear depiction of these locations to avoid responders from having to look over the sides of the piers to find the location of the ladders.



Example of painting to be considered on piers.

Lifesaving Stations and Emergency Information

Recommendation - Existing Lifesaving stations be increased from 2 to 4.

Recommendation - Enhanced signage be installed to reflect:

- use at own risk.
- 911 address

All signage should include location in case of an emergency and be placed in strategic locations. This is particularly important to the signage currently on lifesaving stations on the piers. Quick actions by rescuers who may be first upon an incident should be able to quickly find the address on a sign closest to them or from where they may be retrieving lifesaving equipment.



Lifesaving station equipment should have signage that clearly identifies the location for the purposes of alerting emergency services.

There are currently two lifesaving stations located on each pier with each station situated in the middle of each pier respectively. In the urgency of an emergency when responders are looking quickly for anything that can assist them, these stations can be difficult to access if only one responder is at the scene. Four lifesaving stations are recommended to be installed on each pier with locations strategically placed throughout the piers.

Due to capacity issues, staff currently inspect these stations weekly. Moving forward, consideration should be given to daily inspections during the main swimming season with sufficient staff or volunteer capacity, to ensure that they remain intact. Additionally, the budget should support a durable caliber of equipment to ensure it will be sustainable during extreme weather. This includes casements for ring buoys with extended reaching poles.

Signs located on each lifesaving station should clearly identify the address of the location for the purposes of informing emergency responders to the accurate location to assist with response.



Robust lifesaving equipment for consideration.



*Approximate locations of **robust lifesaving equipment stations**.
Each station to have a sign attached with civic address and AED location.*

No Swimming Areas

Recommendation - Non-swimming area located south of the south pier be increased from 100metres to 200metres.

The PSAC is recommending that the existing non-swimming area (which is 100 metres from the south side of the south pier) be extended an additional 100 metres, for a combined 200 metre non-swimming zone to the south side of the South Pier.

The area would be marked by buoys and signs that depict no swimming. It is suggested that there be multiple signs in a row.

Approximate locations of **No Swimming** signs.
Signs to be triple-sided as to be viewable from both directions.



Pier Usage

Recommendation - Both piers remain open year-round with appropriate signage and education.

Based on the data reviewed related to drownings and near-miss incidents, the committee recommends that both piers remain open to the public with the above-noted increased signage and public education regarding drowning hazards associated with jumping off the piers and swimming around the piers.

Council opted to close the piers from November 1, 2023, to March 31, 2024. As things stand currently, this is not a recommendation that the PSAC makes, except for extenuating circumstances.

The committee acknowledges that there is not staff capacity to open and close gates intermittently based on weather conditions as they arise. As well, it is recognized that most of the emergencies that have occurred at the beach do not transpire during the winter off-season months.

However, it should be noted that challenges exist for inspections of lifesaving stations during winter months. Signage should be installed to identify that lifesaving stations will not be inspected from November 1 to March 31 annually.



North Pier closed September 2023.

Medium Priority Recommendations

Permanent Gates

Recommendation - Permanent closure gate be designed and installed at the entrance of the piers. The gates should be designed in keeping with the aesthetics of the area and have the function to be locked.

Recommendation - Consideration for an approved by-law the poses fines for patrons who use the piers, if they are deemed 'closed' by Council.

Port Stanley Pier with aesthetically pleasing gating system that can open and close when required.

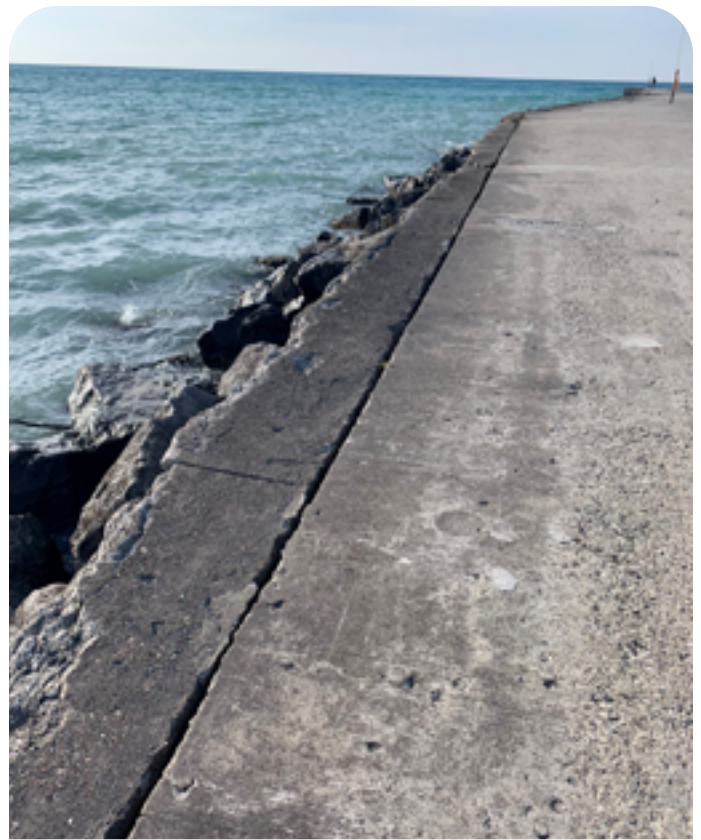


Port Stanley pier gates closed and can stand up to winter conditions.

Although both piers will not be closed as recommended by the PSAC, it is suggested that permanent secondary functioning gates be installed on the piers under extenuating circumstances when they are required to be closed. They should be constructed so that the north pier may be able to still accommodate emergency vehicles when required. Although closures will be infrequent, the gates should be constructed in a manner that will ensure patrons do not enter the piers. Such gates have been successfully installed in other shoreline communities with success. The Council should also consider that a future by-law be passed that imposes fines for patrons who choose to use the pier when the gates are closed.

The surfacing of the south pier has degraded significantly over the years due to the extreme elements it is subjected to. The Municipality should not rule out closing the pier permanently to avoid risk to users and should investigate potential costs to repair it.

When the piers were repaired in 2021, funds did not cover the surfacing improvements on the south pier. These costs can be considerable, and Council will want to weigh the impacts to tourism if the south pier was to permanently be closed.



Existing surface of the South Pier.

Built Enhancements – Parking Enhancements

Recommendation – Install directional signs identifying parking locations based on patron usage and implement a 2024 parking changes as a pilot program.

The built environment at Station Beach directs users to the first parking facility, which is located at the Marina. Amenities such as the washroom and food canteen are ideal for all users to access during their time at the beach. The current built environment locates all these amenities in the north most section of Station Beach. This encourages users to patronize the northern section of Station Beach, which is identified as the most hazardous location for those entering the water.

Through the process of the Smart Beach initial observations, it is recognized that people who sit closest to the piers at Station Beach were users that are occasional visitors, traveling from further away. Local users tended to travel further south along station beach road for more enjoyment.

A Design Nudge is a concept rooted in behavioral science that describes how minor changes in product design can markedly affect individual behaviour.

Mitigation through Built Environment is the application of tactical design and the effective use of the built environment to decrease negative outcomes.

There is a need to provide design nudges that use positive reinforcement and indirect suggestions to try to achieve non-forced

compliance and influence the motives, incentives and decision making of groups and individuals.



Existing location of washroom facilities encourages patrons to park close to these types of amenities.

Consideration should be given to directing all beach users to the southern portions of Station Beach, away from hazards associated with the piers and structural rip currents. This should be activated and piloted for the 2024 season with limited impact on the budget. Staff may determine that a parking island or painted directional signs may also asset direction patrons to the appropriate area.

The existing parking area adjacent to the marina should be signed "Marina Users Only", with vehicle dashboard displays provided for seasonal slip permits as well as paying launch ramp users. Directional signs clearly identifying where daily beach users should park, directing drivers to the south, will help and will provide them with a safer location to enjoy their time at the beach.

Consideration should be given to promoting this as a pilot for the 2024 season to encourage users to start the mindful process of parking further to the south of the beach. Future plans for the waterfront include washroom facilities to the south of the parking facilities which will assist users with having a better sense of the preferred entrance to the waterfront and will provide the feeling of arriving at their destination.



Parking Directory Sign, directing Station Beach traffic to south parking, and Marina traffic to the north lot.

Gates/bollards.



Front

Back

Two-way sign.

Built Enhancements – Removal of Decorative Chairs

Recommendation - Remove the existing large, blue, decorative chairs located at the northern section of Station Beach.

The decorative chairs currently located at the northern end of Station Beach should be removed and relocated to south of Station Beach. The chairs are an attraction and encourage users to migrate to the north portion of Station Beach next to the pier.

This also aligns with the recommendations within the Boardwalk Design Concept that shortens the north end of the boardwalk and provides an accessible lookout area further from the piers so users can enjoy a quiet viewing area.



Existing location of chairs encourages patrons to attend the northern section of Station Beach.

Built Enhancements – Emergency Parking

Recommendation - Install mitigations to reduce members of the public from parking in the assigned Emergency Parking allocation.

Previous efforts to reduce vehicles from parking within the emergency access to Station Beach have been unsuccessful.

Strategically placed bollards should be installed to stop vehicles from parking within the vicinity. These bollards will assist in timely emergency personnel access. Bollards will be keyed so that only select users can access this area, including emergency personnel.



Patrons parking in emergency parking area.



Bollard location to limit vehicles from parking in emergency parking allocation.

Beach Blazers

Recommendation - Consider a volunteer supported Beach Patrol (Ambassador) program for a one-year trial in collaboration with other Community Partners and that the existing beach education program be enhanced to provide continual education opportunities for patrons at the waterfront

A Beach Blazer Program should be considered for awareness and education purposes as well as an additional set of eyes on the waterfront during peak times. The consideration of a hybrid program that utilizes trained volunteers along with paid staff could be a consideration if there are insufficient volunteers. Budget should include uniforms and educational materials for distribution.

This program could be combined with educational days, which would be a collaboration with the Community Emergency Management Coordinator (CEMC) along with Davidson Centre Pool Supervisor. The Davidson Centre Pool operates at reduced hours throughout the course of the summer and consideration could be given to ensuring staff are at the waterfront for purposes of being an added Beach Blazer.

The duties of a Beach Blazer would require they are visible and friendly ambassadors to the waterfront. This includes walking the waterfront, interacting with users, recommending local services, conducting surveys or collecting user feedback, monitoring the area and reporting concerns to By-law or Ontario Provincial Police as appropriate.

The Lifesaving Society has excellent educational information that can be purchased for distribution purposes. A minimum of once-a-week presence from pool staff to educate users on hazards associated with open water swims should be conducted and part of the staff's weekly schedule.

Additional Considerations

The committee recommends additional considerations for Council, some which also align with other proposed and adopted plans and strategies for the waterfront and are based on public feedback and community consultations.

1. Further enhancements to the existing fencing on the south pier should be recommended by staff for future budget considerations. These can be considered to support both safety and beautification of the access to the pier. Many visitors enter through the piers to the Marina, and this can be their first impression of the Municipality.



Entrance to South Pier. Access does not permit emergency vehicles to access.



North side of South Pier. Fencing poorly situated for the purpose of keeping patrons from entering the path of vessels maneuvering the harbour mouth.

2. The existing extension of the boardwalk into an asphalt pathway to the south pier invites thoroughfare to the piers. Occasionally, municipal staff sweeps the sand accumulated on the sidewalk. To align with the proposed new boardwalk and accepted recommendations within the Waterfront Master Plan, consideration should be given to removing the asphalt path and returning the area to a dynamic beach. A dynamic beach undergoes continued change due to natural erosion.

The planting of dune grasses as well as the assistance with recycling expired real Christmas trees, will quickly establish dunes that will assist with the migration of sand landing in the harbour as well as identifying this portion of the beach is not desirable for water

recreational purposes and re-establishing a dynamic beach. This would be a beneficial project completed with the resources and in partnership with the local high school.

Future replacement lighting should not be considered in this area to avoid encouraging patrons accessing this portion of the beach. This will also assist in reducing light pollution which can be hazardous when navigating the marina during evening access.



3. The north end of the new boardwalk should have some form of a viewing platform, and no exit onto the beach. This recommendation is explained further in the Boardwalk Redesign Drawings, presented to Council in March 2024. This recommendation will provide a barrier to users having access to the north section of Station Beach.
4. Extension of the dunes to enhance a dynamic beach effect will also limit users accessing the north portion of Station Beach. Extension of dunes in this area will also reduce sand migration into Marina that contributes towards re-occurring dredging.

5. Beach Access Signs - Signs should be strategically located at beach access points that include the permitted usages on the beach as well as addresses. These signs should be installed both at the access points to the parking facility as well as on the beach side and should be situated so that they can be read from all angles. Signs should depict the preferred Wayfinding & Signage Standards Manual and include similar branding. Each beach access should be named as it relates to the location. This will equally be valuable for emergency awareness, as well as for maintenance purposes.

These signs should be installed at the time of completion of a new boardwalk design as beach access points may be shifted through a redesign.

Zone Identification signage – The current zone identification signage is difficult to see from the parking facility. With the implementation of the new beach access points (see #6 Beach Access Signage), beach zones should be phased out and removed.

The council may wish to erect some form of memorial signage that acknowledges past tragedies at the site, while still providing a sobering realization of the risks inherent to the waterfront. This has been done in neighbouring communities and can have a powerful impact.



Existing signage at Station Beach.



Example of sign of beach access in a neighbouring community following Wayfinding & Signage Standards.



Existing signage at entrance of North Pier. Does not reflect Wayfinding & Signage Standards.



Example of memorial sign in a shoreline community.

- The success of any program is ensuring sufficient representation of trained staff to inspect and maintain the area of Station Beach and the Piers.

This report identifies enhancements to the area in question, which is currently outside the scope of the 2024 Business Plan and staffing capacity. If Council wishes to proceed with these enhancements, then consideration should be given to a dedicated Waterfront staff member to ensure on-going maintenance and inspections are being completed in a timely manner.

Conclusion

Where applicable, several of the recommendations identified within this report can be transferred to other beaches in Kincardine for consideration for enhancements and should not be considered only at Station Beach.

It is important to note, that if the recommendations within this report are approved by Council, it does not preclude the Municipality from any future drownings or near-miss incidents either at the piers or in the water along the beaches. The intent of the recommendations is to ensure that hazards are identified clearly to help reduce the risk of such tragedies.

Staff should ensure review of this report should be an ongoing process with annual upgrades to the waterfront presented to Council during budget deliberations.

Pier Recommendations and Costing

Recommendation	Year 1	Year 2	Year 3	Year 4
High Priority				
Ladders (includes ladders, lighting, installation and materials)	\$39,000- \$46,000	\$40,950- \$48,300	\$42,997- \$50,715	\$45,147- \$53,250
Signs	\$5,000- \$15,0-00			
Lifesaving Stations	\$8,000- \$10,000			
Line painting on piers	\$600- \$1,000			
Replacement of 10 ladders annually	Varies de- pending on imple- mentation schedule			
Medium Priority				
Permanent Gates			\$25,000- \$50,000	
Built Enhancements – Parking Enhancements	\$5,000- \$9,000			
Built Enhancements – Removal of Decorative Chairs	\$0 (performed in house)			
Built Enhancements – Emergency Parking	\$5,000- \$8,000			

Recommendation	Year 1	Year 2	Year 3	Year 4
Beach Blazers	\$1,500- \$3,000			
Dune Grass Plantation		\$500- \$1,200		
Removal of lighting along path (can be completed at time of new boardwalk)		\$500- \$1,200		
Other Considerations				
Pier Fence Repair				\$15,000- \$20,000
Removal of asphalt path (can be completed at time of boardwalk replacement)				
Beach Access Signs		\$5,000- \$8,000		
Total	\$64,100- \$92,000	\$51,950- \$59,500	\$67,147- \$100,715	\$60,147- \$73,250

Costs include a range from low to high.

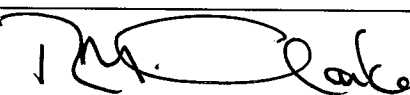
Costs are considered approximate. Additional costs would include when a third party is required to complete these items based on limited capacity of staff.

Appendix 1

Life Saving Society Audit of Station Beach and Piers



Report No:	CAO-2015-10 A
Subject:	Life Saving Society Audit of Station Beach and Piers
Attachments:	Blue Flag letter to Kincardine
Report Summary:	The purpose of this report is to inform Council of the option to undertake a comprehensive aquatic safety audit of Station Beach and the north and south piers, as a measure of exercising due diligence with respect to maximizing the safety of participants in public aquatic recreational facilities at the Municipality's beach.
Origin:	
Existing Policy:	None
Analysis:	<p>Over recent weeks, following several drownings in Lake Huron and neighboring lakes, the Municipality of Kincardine has received inquiries from the public regarding the safety of Station Beach. As a lakeside community, it is important that the Municipality regularly review and improve safety measures to maximize the protection of individuals using the beach/lake in Kincardine.</p> <p>Pursuant to our ongoing commitment to managing risk and identifying and mitigating hazards, the Municipality could consider undertaking a comprehensive aquatic safety audit of Station Beach and the piers. The purpose of this audit, which would be executed by the Lifesaving Society, would be to maximize safe operating standards at the beach and to identify any steps that can be taken to minimize the risk of drowning or serious water-related injuries. The scope of the audit would include an inspection of the beach and the north and south piers, a review of literature of beach operations, and interviews with personnel.</p> <p>On August 25th, the Municipality of Kincardine received a letter from the Blue Flag Program Manager (attached) citing the Blue Flag Beach Criteria and the requirement to follow the Lifesaving Society's recommendations. The letter states that in order to be eligible to apply for a Blue Flag in 2016, the Municipality is required <i>"to undergo a comprehensive safety audit and implement the recommendations of that audit prior to the 2016 swimming season"</i>. The application deadline for the Blue Flag is in January 2016. Staff has confirmed with the program manager that the Municipality could apply for a Blue Flag in January 2016, with a commitment to implement the recommendations before the start of the swimming season.</p>

	<p>The cost of this audit is \$2,200, plus HST and out-of-pocket expenses (total estimate of \$2,500). This cost has not been included in the 2015 operating budget, and therefore if Council decides to undertake this review in 2015, a source of funding would need to be determined. The audit could be undertaken this fall, pending on Council's direction.</p>	
<p>Community Plan and Integrated Community Sustainability Plan (ICSP)</p>		
<p>Considerations:</p>		
<p>Financial Considerations:</p>	<p>If Council directs to undertake this audit in 2015, a funding source would need to be identified, as this cost has not been included in the 2015 operating budget.</p> <p>Staff's recommendation in this case would be that the audit be funded from Recreation Reserve Fund 72 – Parks, which has a balance of \$56K.</p>	
<p>Options:</p> <ol style="list-style-type: none"> 1. THAT Council direct staff to engage the Lifesaving Society to undertake an aquatic safety audit of Station Beach (including the north and south piers) in 2015; <p>AND FURTHER THAT the aquatic safety audit be funded from the Recreation Reserve Fund 72 - Parks at an estimated cost of \$2,500</p> <ol style="list-style-type: none"> 2. THAT Council direct staff to include the proposed aquatic safety audit in the 2016 draft operating budget for deliberation during the 2016 budget process 3. THAT no action be taken at this time 		
<p>Preferred Option:</p>	<p>Council decision</p>	
<p>Date to be considered by Council:</p>	<p>Matter arising</p>	
<p>CAO's Comments:</p>		
<p>Date:</p>	<p>August 24, 2015</p>	
<p>AUTHOR'S SIGNATURE</p>	<p>M. Clarke, CAO </p>	



environmental
defence
INSPIRING CHANGE

August 25, 2015

Karen Kieffer
Recreation Director
Municipality of Kincardine
601 Durham Street
Kincardine, ON N2Z 1L6

Dear Karen,

Re: Comprehensive safety audit

I am writing this letter in response to the drowning that occurred on August 2nd, 2015. I was saddened to learn of this tragedy and I extend my condolences to the family and friends of Lucas Johnson.

One of the four pillars of the Blue Flag program is Safety and Services. Safety has been an ongoing concern at Station Beach in regards to the pier and associated rip currents. Other drownings have occurred in 2008, 2010 and 2013. Past Blue Flag control visit reports identified the need for improved safety signage, the repositioning of signage, and the identification of a designated swimming area. The municipality implemented our recommendations for signage and has also installed buoys; however the recent drowning points to a need for more robust safety precautions.

I recently contacted Michael Shane from the Lifesaving Society, who serves as a Blue Flag jury member. His advice was to insist that the Town of Kincardine undergo a comprehensive safety audit for Station Beach. Although the Lifesaving Society has visited Station Beach in the past and worked together with Blue Flag on safety recommendations, a more comprehensive assessment is necessary. According to Criterion 27 of the Blue Flag Beach Criteria, Blue Flag beaches are required to follow the Lifesaving Society's recommendations. Therefore in order to be eligible to apply for a Blue Flag in 2016, we require the Town of Kincardine to undergo a comprehensive safety audit and implement the recommendations of that audit prior to the 2016 swimming season.

I understand that you have already taken the initiative to contact the Lifesaving Society, and that you will be requesting approval of Council on September 2nd to move forward with the safety audit. Thank you for taking this issue seriously, and I wish you the best of luck. Please let me know if there is any way that Blue Flag can support your efforts.

Sincerely,

Brett Tryon
Blue Flag Program Manager

Appendix 2

Aquatic Safety Audit Recommendations - Station Beach and Piers



11. Cow
MAR 02 2016
COUNCIL
Item # 11.1(A)

March 1, 2016

To: Members of Council:

Following the release of the March 2, 2016 Council agenda which contains report REC 2016-03 Aquatic Safety Audit Recommendations – Station Beach & Piers, new information has surfaced with regards to the timing and implementation of the recommendations contained within the report.

Through conversations with the Recreation Policy Chair, another member of Council, and the author of the Lifesaving Society's Aquatic Safety Audit Report, it has been clearly communicated to us that the Lifesaving Society does not expect the Municipality to implement all the recommendations in 2016, but rather that they be implemented in a reasonable time frame that works with our staffing and financial resources. It is important that we have the proper policies, procedures, and protocols in place for our staff to effectively carry out the recommendations prior to rolling them out.

Mr. Michael Shane from the Lifesaving Society has expressed a willingness to come to Kincardine and sit down and talk with us further about the recommendations contained within the report and how they can be implemented and phased in over time.

Therefore, staff is still planning to present the recommendations contained within the audit report at the March 2nd meeting and will be recommending that we can proceed with the primary recommendations that deal with equipment and signage for the 2016 swimming season, however more detail is required so that we can fully understand the personnel dimension, particularly the role and purpose of the patroller as compared to a lifeguard and this will become clearer after meeting with Mr. Shane.

Sincerely,

Karen Kieffer
Director of Parks & Recreation

Bluefolder

Report No:	REC 2016-03
Subject:	Aquatic Safety Audit Recommendations – Station Beach & Piers
Attachments:	Aquatic Safety Audit Report & Letter from National Defence
Report Summary:	<p>Senior Staff have reviewed the Aquatic Safety Audit Report done by the Lifesaving Society on Station Beach and the North and South Piers and are in agreement that the recommendations presented within the report be phased in over the 2016 – 2017 swimming seasons, and are asking Council to authorize staff to proceed with the implementation of the primary recommendations for the 2016 swimming season at an approximate cost of \$32,500.</p> <p>Further, staff is recommending that Council authorize that a sub-committee of staff and marina/station beach users be established to discuss who requires access to the north or south piers and then to discuss options for limiting access as required for safety purposes.</p>
Origin:	Council Direction
Existing Policy:	Council Direction
Analysis:	<p>In the fall of 2015 Council authorized that a safety audit of Station Beach and the Piers be done by the Lifesaving Society. The purpose of the safety audit was to maximize the safety of participants at Station Beach. The aim of the safety audit was to identify what steps might be taken to minimize the risk of drowning or serious water-related injuries, therefore, this evaluation would only report on those items that require attention and not aspects that were satisfactory or exceptional.</p> <p>Components of the audit included: on-site waterfront tours of Station Beach and the two adjacent piers, interviews with staff at various levels within the Parks & Recreation Department, a review of relevant literature followed by the submission of a draft and then final report.</p> <p>The Report identified two levels of recommendations for consideration by Council:</p> <p>Primary Recommendations: the report presents five Primary Recommendations that were highlighted as requiring focused attention/priority by facility management.</p> <ol style="list-style-type: none"> <u>Institute “patrol supervision” staffing on Station Beach.</u> It is recommended that the Municipality provide at a minimum ‘patrol supervision’ during the swimming season.

The patrollers will have a variety of responsibilities including: response to aquatic rescue and first aid situations, provide public education, inspect and maintain safety equipment, perform maintenance duties, etc.

There should be a Head Patrol member on duty at all times. Every patrol member should be 16 years of age, hold the appropriate certifications, have training in waterfront patrolling and emergency procedures relevant to Station Beach, and be equipped to respond to situations.

At no time are there fewer than two patrol members on duty to respond to the swimming area. This includes the Head patrol member. A cellular phone (inside a waterproof bag) is recommended for communication and emergency purposes.

The patrol members must be readily identifiable and must ensure that safety equipment is available and present and in good working condition, and easily accessible in case of an emergency.

Signs are to be posted and clearly visible to patrons indicating the hours of patrol supervision and whether patrol is on or off duty.

Port Stanley has a patrolled beach in the summer months from July 1st to Labour Day operating Monday to Friday from 10am – 6pm and on Saturdays and Sundays and Statutory Holidays from 10am – 8pm, so we would suggest similar hours for Station Beach for 2016.

Financial considerations for implementation include wages and extra waterfront training for staff which are estimated to be \$25,000.

- 2. Designate the beach area adjacent the south and north piers as non-swimming areas** – due to the presence of strong rip currents, this area is extremely dangerous when winds and waves are high. A “No Swimming” zone should be designated that extends at least 250 metres south of the south pier and north of the north pier. The area should be signed using pictogram signage “No Swimming and Warning – Strong Currents”.

There was some concern from staff that this might have an impact on surfing which is ideal in this area and is a big tourist draw but it is our understanding that surfing is different from swimming and the warning strong currents sign would serve as a sufficient warning to surfers.

Financial considerations for implementation would be for signage indicating "No Swimming and Warning – Strong Currents" on both sides of the South and North Piers estimated to be \$3,000.

3. **Designate a safe swimming area** – the swimming area intended for use by patrons for swimming and wading should be clearly designated through signs, beach flags, and buoy markers. The distance between buoy markers should be no more than 100 meters. These markers should be no more than 150 metres from shore. The north boundary of this designated area should be located at least 250 metres from the south pier.

In addition, beach flags should be installed on the beach at the north and south boundaries of the designated swim area. This will reinforce an understanding by the public of the area as the designated safe swimming area. These flags should be installed and removed daily by the Patrol staff.

The designated swim area would be determined after a spring assessment of the beach. Buoys would then be installed delineating this area. The Lifesaving Society has offered to assist with this assessment.

Financial considerations for implementation include the purchase of buoy markers and beach flags estimated to be \$2,000.

4. **Install at least one lifesaving station on each pier** – equipment located at each additional lifesaving station should include a buoyant throwing aid attached to a 6mm line at least 8m in length and a reaching pole at least 3.65 metres in length. The stations should be installed at the midpoint from shore to the end of the pier. Signage should be installed at each station indicating the purpose of the equipment and warnings relating to misuse.

Financial Considerations for implementation include the purchase of two lifesaving stations and the appropriate buoys and reaching poles estimated to be \$2,500.

5. **Create written policy and procedures for beach patrol operations** – to ensure staff are aware of policies and procedures for the safe operation of the beach a Policy and Procedure manual should be created. Staff who have responsibilities at Station Beach should review this Manual and be familiar with its procedures.

Financial Considerations for implementation would be for staff time to create the document. Wages are already covered within the 2016 operating budget.

Secondary Recommendations: these six recommendations are designed to enhance the safe use of the aquatic facility. Action on secondary recommendations can proceed within the facilities ongoing operations.

The following recommendations can be implemented as time and budget allows within the 2016 - 2017 swimming seasons. With regards to costing for the secondary recommendations staff is currently investing the anticipated costs assigned to each action.

1. **Install new safety signage** - safety signage should be installed as follows:
 - i)at each of our current seven beach access points to Station Beach which would include purpose of patrol service, identification of the designated safe swimming area, identification of the No swimming area, information on rip current formation and self-rescue, AED location and emergency phone location
 - ii)Existing Rip Current safety Sign – this sign should be removed and a newer simplified version of the existing sign should be provided on each access point sign and in other locations along the boardwalk. These signs should explain how a rip current forms and how a bather self-rescues from a rip current.
 - iii)Emergency Phone Sign – The current sign should be enhanced by increasing the size of the signage and using more visible colours to identify the telephone location. In addition, consideration should be given to providing additional emergency phones at the pier, and in closer proximity to the designated safe swim area.

iv) Pier Signage – swimming should not be permitted off the pier because of the boating activity in the immediate area and strong rip currents. No swimming and strong current signage should be installed on the floor of the pier or on vertical posts along the lake and harbour side. Also, in locations where the seasonal water depth is less than 2.75 metres signage should be installed indicating “Shallow Water No Diving”. Also to enhance the visibility of the pier edge, a yellow band approximately 100mm wide should be painted along the entire horizontal edge of the pier, to visually enhance the edge and therefore reduce the likelihood of the public from accidentally falling into the water.

Financial considerations for implementation would be for signage and paint.

2. **Regularly inspect Station Beach** – establish an inspection schedule to check lifesaving stations, the designated swim area, and signage placements. Records of these regular inspections should be kept as well as any pre and post season inspections

Financial considerations for implementation - Staff currently inspect Station Beach but will proceed with a more formal and documented process, with wages included in operating budgets.

3. **Implement a public education campaign** – a public education campaign should be developed and delivered to the residents of the Municipality. This can be done through pamphlets, signs, press releases, etc with information about the level of safety supervision, information on the patrol purpose and schedule, designated swim areas, rip current identification and self-rescue, the purpose and placement of rescue stations, and tips on safe use of the waterfront.

Financial considerations for implementation – staff time to consult with the Lake Huron Centre for Coastal Conservation and the Lifesaving Society to ensure that we develop the most effective and easily deliverable messages to the public on the above listed components, and then costs for producing the materials.

4. **Establish emergency procedures for the beach patrol and marina staff when dealing with the waterfront and beach emergencies** – emergency procedures should be prepared

and the Beach patrol and marina staff should be trained in their application. This should include but not be limited to knowledge of the location and use of emergency communications and rescue equipment. A communication plan should also be established so all staff are able to respond effectively when an emergency situation does occur.

Financial considerations for implementation include staff time to establish the procedures and provide training opportunities, so more wages that would be in the respective operating budgets.

5. **Enhance exit points along pier** – the ladders situated along the sides of the pier should be made more identifiable to bathers, and should be painted bright yellow to make them more identifiable to bathers who may fall into the lake. As well, consideration should be given to adding at least one additional ladder on the south side of the south pier.

Financial considerations for implementation include costs for an additional ladder and paint.

6. **Update current Blue Flag signage** – Once all changes are made the current Blue Flag signage should be updated to reflect these changes (i.e. telephone location, designated swim area, no swimming zone, etc).

Once all the recommendations have been implemented and the Municipality is satisfied, update the current Blue Flag signage situated by the main entrance to Station Beach

The Municipality received a letter from Environmental Defence (Blue Flag) on August 25, 2015 indicating that in order for Station Beach to be eligible to apply for a Blue Flag in 2016, the Municipality of Kincardine is required to undergo a comprehensive safety audit and implement the recommendations prior to the 2016 swimming season.

In consultation with Blue Flag staff, the Municipality did submit an application for Blue Flag status at Station Beach for 2016. However, on February 24th we received a letter informing us that the National Jury did not award Station Beach a Blue Flag for 2016. The National Jury would like the Municipality to work towards implementing the primary recommendations outlined in the Lifesaving Society's safety audit, and have indicated a commitment to working with us as we develop policies, procedures and materials for Station Beach. It is their hope that Station Beach will fly the Blue Flag again in 2017.

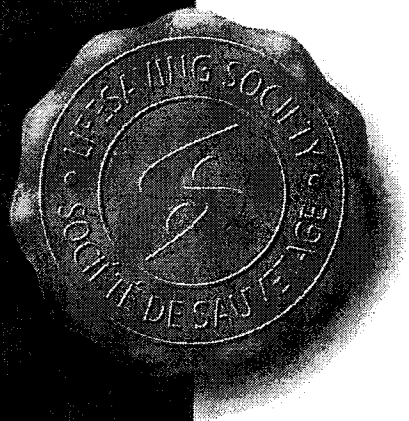
	<p><u>Access to North & South Piers</u> With regards to vehicular access to the south and north piers staff is recommending that a sub-committee of staff and marina/station beach users get together to discuss who requires access to the piers and then options for limiting access as required.</p>	
<p>Community Plan and Integrated Community Sustainability Plan (ICSP)</p>		
Considerations:	<p>To ensure the assets of the Municipality of Kincardine continue to be well promoted, valued, enhanced and supported.</p>	
Financial Considerations:	<p>It is estimated that to implement the primary recommendations from the Aquatic Safety Audit report for the 2016 season it will cost \$32,500. The 2016 budget includes \$20,000, and there is \$4,755 remaining in donation revenue that could be used for this purpose. The remaining \$7,745 could be funded from the Contingency/Capital Reserve.</p>	
Options:	<p>1. That Council authorize staff to proceed with implementation of the primary recommendations listed in the Lifesaving Society Audit Report for Station Beach and the piers for the 2016 swimming season; AND FURTHER THAT \$4,755 in safety equipment purchases be funded from \$4,755 in donation revenue, with the remaining \$7,745 funded from the Contingency/Capital reserve.</p> <p>2. That Council authorize staff to proceed with implementation of the primary recommendations listed in the Lifesaving Society Aquatic Audit Report for Station Beach and the piers for the 2016 swimming season with modifications.</p> <p>3. That Council not act at this time.</p>	
Preferred Option:	<p>Option One</p>	
Date to be considered by Council	<p>March 16, 2016</p>	
CAO Comments:	<p>I concur</p>	
Date:	<p>February 23, 2016</p>	
AUTHOR'S SIGNATURE		

Karen Kieffe

Aquatic Safety Audit Report

Station Beach Kincardine

January 25, 2016



LIFESAVING SOCIETY

The Lifeguarding Experts

Aquatic Safety Audit

On September 4, 2015, The Corporation of the Municipality of Kincardine retained the Lifesaving Society to undertake a safety audit of Station Beach and the two adjacent piers.

An initial meeting was held with Ms. Karen Kieffer, Director of Parks & Recreation, Municipality of Kincardine and Mr. Michael Shane, Safety Management Director of the Lifesaving Society.

It was agreed that the purpose of the aquatic safety audit was to maximize the safety of participants at Station Beach, Kincardine. The safety audit would identify what steps might be taken to minimize the risk of drowning or serious water-related injuries.

It was agreed that the scope of the safety audit would include discussions with management in addition to an evaluation of the aquatic facility's operation. This evaluation would report only on those items that require attention. It would not address aspects that were satisfactory or exceptional.

Aquatic Safety Audit Process

Personnel

The Lifesaving Society appointed Mr. Michael Shane as the Aquatic Safety Management Services Chief Auditor. He has extensive experience in facility evaluation and waterfront operations.

The Lifesaving Society appointed auditors Mr. Scott Ruddle, Ms. Conny Smith, Mr. Roy Warren, and Ms. Shanna Reid. All auditors have extensive experience in aquatics, facility evaluation and waterfront operations.

The Municipality of Kincardine appointed Ms. Karen Kieffer as the primary contact for the safety audit team.

Audit Components

The audit team followed a process that included:

- On-site waterfront tour of Station Beach and the two adjacent piers was conducted on October 8, 2015 and November 24, 2015.
- Interviews with management staff at various levels within the Parks & Recreation Department.
- A review of all relevant literature.
- Draft report submitted and reviewed by the Municipality.
- Completion of a final report.

Site Tour

The safety audit team completed its tour of Station Beach and the two adjacent piers on October 8, 2015. During their inspection the auditors examined the facility applying criteria developed by the Lifesaving Society from sources that include:

- Lifesaving Society standards concerning the operation of public waterfront swimming areas.
- Government of Ontario statutes governing public swimming pools and waterfront operations.
- Recommendations from coroners' inquests.

Photographs were also taken of the sites.

Staff interviews

Ms. Karen Kieffer, Director of Parks & Recreation, Municipality of Kincardine attended the site tours to provide feed back as required. Following the site tours, the safety audit team interviewed with Ms. Karen Kieffer, Mr. Chris Hartwick – Parks Supervisor, and Mr. Barrett Lafortune – Aquatics Supervisor. The members of the audit team asked questions of the interviewees, after which they were invited to share additional thoughts with assurances that specific comments would be unattributed.

Recommendations

Located on the shores of Lake Huron, Station Beach is the main beach in the Municipality of Kincardine. The one kilometer sand and pebble beach is popular among residents and tourists that travel to the area. There are extensive boardwalks, change facilities, free parking, and several lifesaving stations along the beach. Station Beach runs south from the south pier which protects the entrance to Kincardine Marina.

According to data from the Drowning Prevention Research Centre, since 2010 there have been three fatal drownings at Station Beach. In most of these instances it is reported that rip currents had formed and may have contributed to these deaths.

Rip currents may occur at fixed locations such as groins, jetties, piers, or other man-made structures where water can be funneled out to sea in a narrow channel. In coastal areas with structures, rip current may result when currents running parallel to the shore are deflected offshore by the structure. As waves approach the shoreline, they usually break at an angle, generating a longshore current that flows parallel (along) the beach. When the longshore current (moving along the shore) encounters coastal structure (such as a groin, jetty, or pier) it is deflected in an offshore direction. This offshore-directed flow of water is called a rip current.

Station Beach is susceptible to the effect of prevailing winds from the S and SW creating waves that come in on an angle to the shore creating lateral currents. When these currents reach the pier they are deflected creating a rip current parallel to the pier and moving away from shore. As the wind and waves increase in strength and height the speed of the rip current also increases. Similar currents may also form on the north side of the north pier when strong winds and waves are from the N and NW although this area is not as popular for swimming.

The Lifesaving Society directs your attention to the following recommendations which have been categorized into two levels:

Primary Recommendations – The Society's aquatic safety audit presents five Primary Recommendations. Primary Recommendations address situations in contravention of a relevant Province of Ontario statute or the Lifesaving Society's position on what constitutes reasonable safe practices. Primary Recommendations should receive focused attention by facility management.

Secondary Recommendations – The Society's aquatic safety audit presents six Secondary Recommendations which are designed to enhance the safe use of the aquatic facility. Action on Secondary recommendations can proceed within the facilities ongoing operations.

Primary Recommendations

1. Institute 'patrol supervision' staffing on Station Beach.

The Lifesaving Society Waterfront Safety Guidelines list criteria for the determination of supervision a public waterfronts in Ontario. According to these criteria, the Municipality should provide at a minimum 'patrol supervision' during the swimming season (refer to page 9, Waterfront Safety Guidelines, November 2011). This patrol person should be at least 16 years of age, hold at least the Lifesaving Society Bronze Medallion award or higher (Lifesaving Society National Patrol award is preferred), have training in waterfront patrolling and emergency procedures relevant to Station Beach , and be equipped to permit a response to situations.

This person will have a variety of responsibilities including: response to aquatic rescue and first aid situations, provide public education, inspect and maintain safety equipment, perform maintenance duties, etc.



2. Designate the beach area adjacent the south and north piers as a non-swimming areas.

Due to the presence of strong rip currents, this area is extremely dangerous for swimming especially when winds and waves are high. A "No swimming" zone should be designated that extends at least 250 meters south of the south pier and north of the north pier.

The area should be signed using pictogram signage - No swimming and Warning- Strong currents. These signs should be installed on the beach in numerous locations adjacent the piers so that the public will clearly see them when they are in these areas. The Lifesaving Society would be pleased to assist with an on-site visit to identify exact signage installation locations.



3. Designate a safe swimming area.

The swimming area intended for use by patrons should be clearly designated through signs, beach flags, and buoy markers. The distance between buoy markers should be no more than 100 meters. These markers should be no more than 150 m from shore. The north boundary of this designated area should be located at least 250 meters from the south pier. A sample buoy marker is shown below.

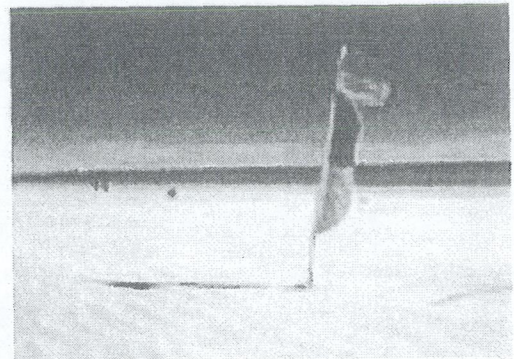
In addition, beach flags should be installed on the beach at the north and south boundaries of the designated swim area. This will reinforce an understanding by the public of the area as the designated safe swimming area. These flags should be installed and removed daily by the Patrol. Pictogram signage with words should be provided explaining the flags purpose.

The designated swim area would be determined after a spring assessment of the beach. Buoys would then been installed delineating this area. The Lifesaving Society would be pleased to assist with this assessment.

Buoy



Beach Flag



4. Install at least one lifesaving station on each pier.

There is a need for these stations to be installed to ensure the public has access to rescue equipment to assist with an in water emergency.

Equipment located at each rescue station should include:

- A buoyant throwing aid attached to a 6mm line at least 8m in length.
- A reaching pole at least 3.65 meters in length.

The stations should be installed at the midpoint from shore to the end of the pier. Signage should be installed at each station indicating the purpose of the equipment and warnings relating to misuse. Appended to this report are photographs of suggested design of these stations and signage wording.

5. Create written policy and procedures for beach patrol operations.

To ensure staff are aware of policies and procedures for the safe operation of the beach a Policy and Procedure Manual should be created. Staff who have responsibilities at this site should review this Manual and be familiar with its procedures. This Manual should include but not limited to the content as listed in the Lifesaving Society Policy and Procedure Manual Table of Contents document appended to this report.

Secondary Recommendations

1. Install new safety signage.

The Municipality should install safety signage as:

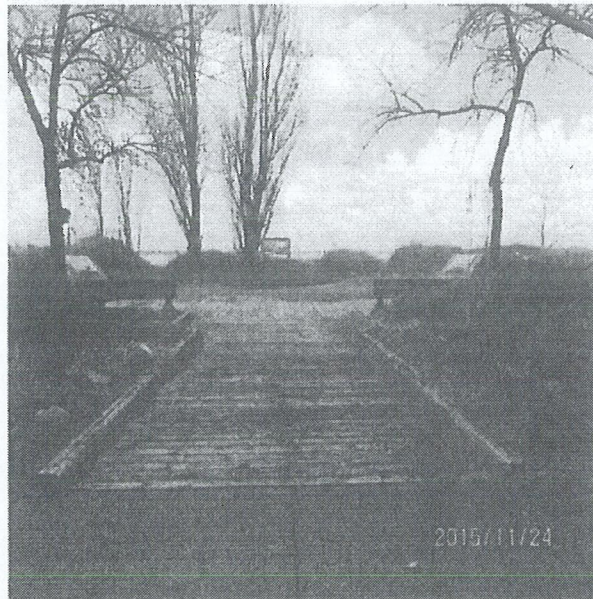
i. Beach access points signage.

The Municipality should install the following signage at each of the current seven access points to Station Beach. The signs should include at a minimum:

- Purpose of the Patrol service
- Identification of the designated safe swimming area
- Identification of the No swimming area
- Information on rip current formation and self-rescue
- AED location
- emergency telephone location

In addition the Municipality should consider restricting other access points to the beach through the dunes.

Existing access point to beach



ii. Existing Rip Current Safety Sign

The existing rip current sign should be removed. It is currently poorly positioned too far from the water's edge and not clearly evident to bathers accessing the beach. This sign does not illustrate the relationship of a rip current to the existing piers.

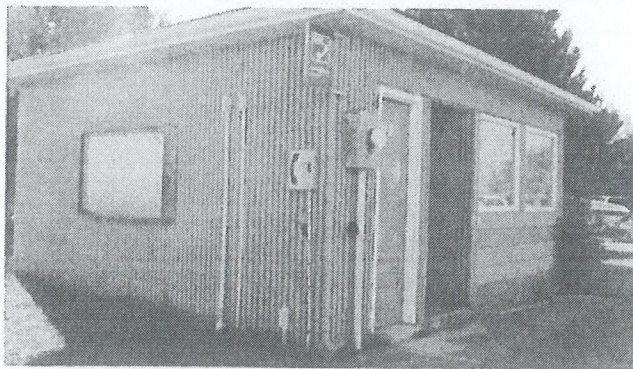
A simplified version of the existing rip current signage should be provided on each access point sign and in other locations along the boardwalk. These signs should explain how a rip current forms and how a bather self-rescues from a rip current.



iii. Emergency Phone Sign

The current emergency telephone is located at the Fish Station. To ensure the public is aware of its location, the current signage should be enhanced by increasing the size of the signage and using more visible colors (e.g. red, orange, or yellow) to identify telephone location. A pictogram is recommended.

In addition, consideration should be given to providing additional emergency telephones at the pier, and in closer proximity to the designated safe swim area.



iv. Pier signage

Presently there are some signs painted on the surface of the pier. Many of these are faded and deliver inconsistent messages.

Swimming should not be permitted off the pier because of the boating activity in the immediate area and strong rip currents. No swimming and strong current signage should be installed on the floor of the pier or on vertical sign posts along the lake and harbor side.

In locations where the seasonal water depth is less than 2.75 m signage should be installed indicating "Shallow Water No Diving."

The use of pictograms is recommended.

Existing signage on pier



Recommended signage on pier



To enhance the visibility of the pier edge, a yellow band approximately 100 mm wide should be painted along the entire horizontal edge of the pier (harbor and lake sides). This will visually enhance the edge and therefore reduce the likelihood of the public from accidentally falling into the water.

2. Regularly inspect Station Beach.

An inspection schedule should be established to check lifesaving stations, the designated swim area and signage placements. This will help to ensure equipment and signage remains in place so that this will be available in an emergency situation and there is a timely follow-up action on repairs and replacements. Records should be kept of regular inspections and of those at the start and end of season.

3. Implement a public education campaign.

A public education campaign should be developed and delivered to all residents of the Municipality of Kincardine. Messages should include information on the: the patrol purpose and schedule, designated swimming area on Station Beach, rip current identification and self-rescue, the purpose and placement of rescue stations, and the consequences of equipment vandalism.

4. Establish emergency procedures for the beach patrol and marina staff when dealing with the waterfront and beach emergencies.

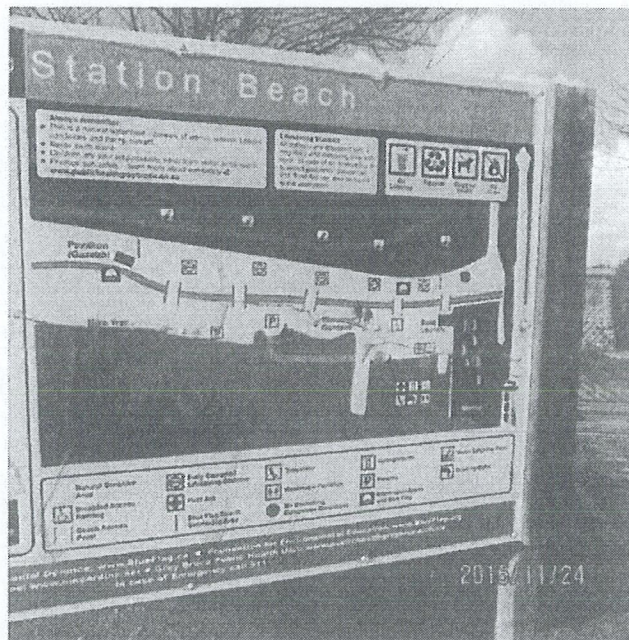
Emergency procedures should be prepared and the Beach patrol and marina staff should be trained in their application. This should include but not be limited to knowledge of the location and use of emergency communications and rescue equipment, as well as guidelines limiting their own risk if exposed to a rescue situation. The Municipality should also establish a communication plan so that all staff are able to communicate and respond effectively when an emergency situation occurs. Simulated emergency training should take place with all staff at least annually.

5. Enhance exit points along pier.

There are ladders situated along the sides of the pier which permit bathers egress from the lake. To make these more identifiable to bathers who accidentally fall into the lake, the ladders should be painted a bright yellow. In addition, consideration should be given to adding at least one additional ladder on the south side of the south pier.

6. Update current Blue Flag signage.

Once all changes are made the current Blue Flag signage should be updated to reflect these changes (i.e.: telephone location, designated swim area, no swimming zone, etc.).



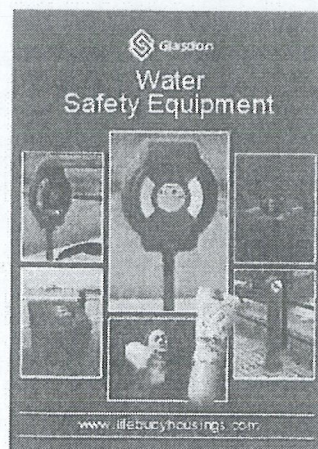
Appendix

Lifesaving station

A good example of a lifesaving station holder is shown below. This has been installed at Port Elgin Main Beach, Port Elgin, Ontario. The Town has provided enclosures for their lifesaving ringbuoys which has helped to both identify their location and reduce the loss from vandalism.



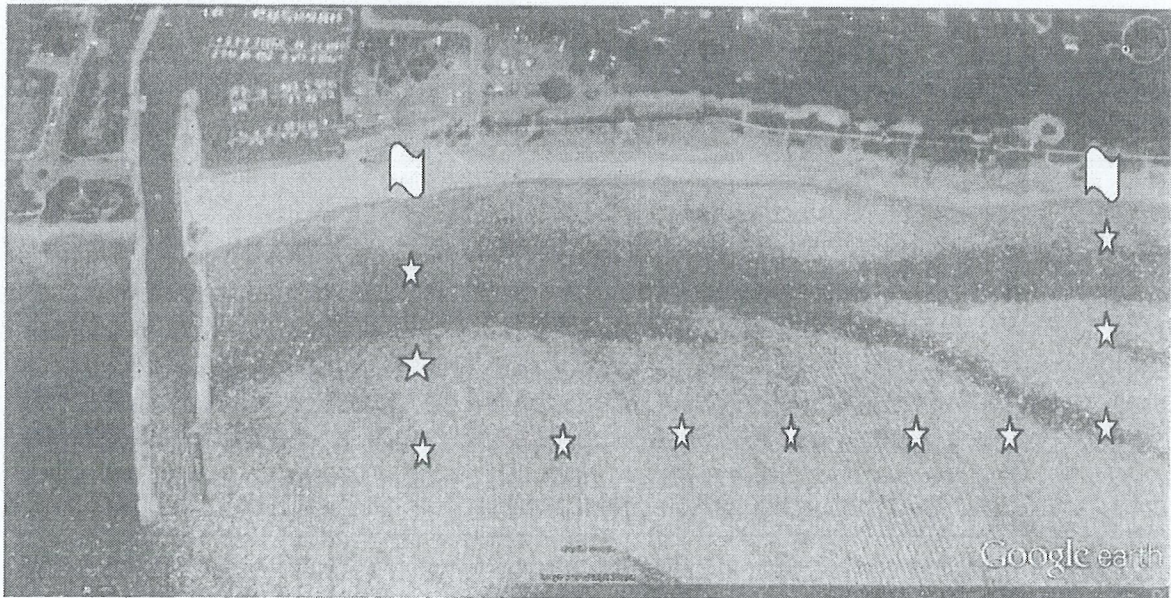
Other types of lifesaving station holders are also available.




Suggested signage at each lifesaving station




Suggested location of designated swim area buoys and flags



Not to scale

Flag 

Buoy 



LIFESAVING SOCIETY®

The Lifeguarding Experts

Aquatic Staff Manual Suggested Contents List November 2014

Overview

The Lifesaving Society takes the position that:

1. Staff Manuals are an effective means of communicating policies, procedures and practices to patrolling, lifeguarding, and instructional staff charged with the responsibility of delivering aquatic programs and ensuring patron safety.
2. Owner/Operators of swimming pools, spas, wading pools and waterfronts must develop a Staff Manual and must distribute that Manual to appropriate staff groups within their organization.
3. Owner/Operators must train staff on the contents of the manual. This training must be sufficiently comprehensive in order that staff become proficient with its contents. Owner/Operators should include testing and must ensure a system wherein staff sign off that they have received and understood this training.
4. Content of the Manual(s) must be consistent with the "Aquatic Staff Manual—Suggested Contents List". (format and style is at the discretion of the owner/operator)
5. Content and format of the Manual(s) must be appropriate for the intended audience, (i.e. Full time staff vs. Part Time staff, Supervisory staff vs. Patrolling, lifeguarding, and Instructional staff).
Owner/operators should consider developing separate manuals for full-time and part-time staff as part-time staff may not require all the information required by full-time staff. The Society recognizes that manuals with too much information of little importance, is a deterrent to staff reading and absorbing relevant and important information.
6. Owner/operators must determine what information is standardized practice for all pools and what information is pool-specific. It is recognized that standardized procedures may have some pool-specific elements.
7. Owner/operators should consider reprinting excerpts from the manual as posters for display in staff areas or as staff handouts. Examples of topics include; emergency procedures, guarding positions etc.
8. Owner/Operators must establish a review process and cycle to ensure that information contained in the Manual(s) is always current.

Resources Available for Creating and Editing Aquatic Staff Manuals

- Lifesaving Society Aquatic Staff Manual Suggested Contents List
- Health Regulations, (Pool, Spa, Waterslides, Waterfront)
- Ontario Building Code
- Lifesaving Society Guides to Pools and Spa
- Lifesaving Society Standards Journals
- ALERT Manual
- Lifesaving Society Instructor Manual

Tips for Excellent Staff Manuals

Excellent Staff Manuals are:

Complete: All necessary topics in the above listed resources are covered.

Technically Accurate: Information is accurate when compared to the above listed resources.

Reader-Friendly: Reader-friendly manuals are more approachable and the information is more readily retained. A number of factors influence the effectiveness of manuals in terms of staff absorption and retention of information. These include: Brevity, Order of Content, Clarity of Language, Format and Use of the Intranet. In addition, lack of clarity may result in incorrect outcomes through misinterpretation or lack of standardized approach among different staff. The following approach is suggested:

Brevity:

- Provide only one manual to patrols, instructors and attendants. Limit the content to the most important job –related items.

Order of Content:

- Put the most relevant safety topics near the beginning of the manual and review order of content to achieve most logical flow from topic to topic.
- Place all parts of a topic, (guidelines, phone numbers, forms), together for easy reference.

Clarity of Language:

- Use simple terms and straightforward language.
- Avoid the use of acronyms.
- Avoid the use of passive sentences (e.g. "Parents on Deck" policy "Parents should receive written information"—change to "the (name of position) *will provide* information. Include timeframe if appropriate.

- Do not use "should" unless the action is clearly optional.

Format:

- Improve the readability, (and therefore the retention), of step-by-step procedures by considering the use of flow charts, forms with text bubbles, sections separated by tabs, colored pages, calendars, FAQ etc.
- Edit "City Council-type format" report or policy documents down to the key parts that staff need to absorb and retain.

Use of the Intranet:

- A reference in a paper manual requesting part time staff to refer to the organization's intranet for further information may cause him/her to not complete this step as he/she may not have approved access, may not be at a computer or may perceive this as a barrier/waste of time. As a result he/she may miss important safety information. Such a reference should be avoided for safety related topics.

Aquatic Staff Manual: Suggested Contents List

Introductory Section

Welcome
Table of Contents
Vision/Mission

Emergency Procedures (Aquatic—Major/Minor Incident)

Rescues
Victim treatment
Crowd supervision and control
Bystander Use Policy
Telephone call to emergency services
Transfer of victim to emergency services personnel
Notification of family (or contact with family if present)
Dealing with the media
Contacting senior staff
Resumption of swim activities as applicable
Staff debrief and accident reporting
Post-event staff counselling (if required)
Follow-up with victim's family
Aquatic Emergency Defibrillation Use/Training

Emergency Procedures (Non-Aquatic)

Missing Person(s)
Fire
Power Failure
Report or witnessing of abuse of a Child or Vulnerable Adult
Theft
Aggressive or Unruly Behavior, Assault, Fighting
Responding to medical emergencies in other areas of the building
Conditions for facility closure

Safety Supervision (Patrol)

Patrol Technique

- Definition
- Role/responsibility of the patrol in this environment
- In uniform
- Opening procedures
- Signals
- Patrol positioning and zones
- Communication/signals
- Rotation (purpose, frequency, technique)
- Patron correction (when/why and without interrupting scanning)

- Discipline
- Waterfront checks (purpose, frequency, how-to)
- Safety in change rooms
- Closing procedure: (pool clear (maintaining supervision, all swimmers out, lock change room doors)

Patrol Technique

- Definition
- Role/responsibility of the patrol in this environment
- Patrol positioning
- Communication/signals among staff
- Rotation

Facility Operational Procedures

Opening Procedure
 Equipment required
 First Aid stations, supplies required
 Daily telephone check
 Closing Procedure
 Record of Safety Checks

Patron Rules

Posted Rules for the Public
 Patron Discipline
 Appropriate Swimming Attire
 Breath Holding
 Breast Feeding Policy
 Customer Service Guidelines

Human Resources and Administration

Staff Conduct
 Position Job Descriptions
 Application
 Tryouts
 Terms of Employment
 Staff Qualifications/record of same
 Staff In-Service training requirement
 Staff Work Attendance-replacements
 Staff Evaluation
 Staff Discipline
 Staff Uniform
 Pay Rates/Payroll procedures
 Time Sheets
 Facility Keys

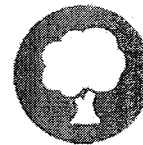
Facility Rental-procedures for booking
Facility Log Book
Corrective Vision
Personal Cell Phone use while on duty
Wearing of City Uniform while off duty
Police Reference Check
Staff Call-out in case of critical incident
Harassment Policy
Smoking, alcohol, drugs
Internet, Social Media policy
Cash/Reception Procedures

Occupational Health

WHMIS
Sun/Heat safety for aquatic staff
Cash/reception robbery
Sharps Handling/Hazardous Waste Disposal
Protective measures to prevent cross contamination (victim to staff)
Safety procedures for working on deck where there is no patrol (wearing of PFD)
Procedure for staff to identify Risk Issues
In house Safety Inspection
Hazardous Waste Disposal
Clean up of Bodily Fluids
Handling of Sharps

Maintenance and Water Treatment

Cleaning Procedures
Equipment Repairs/Annual Shutdown



environmental
defence
INSPIRING CHANGE

February 24, 2016

Karen Kieffer
1475 Concession 5, RR#5,
Kincardine, ON N2Z 2X6

Dear Karen,

On behalf of Environmental Defence, I regret to inform you that the National Jury did not award Station Beach the 2016 Blue Flag. As such, your application will not be forwarded to the International Jury.

The National Jury would like to return Station Beach to Blue Flag "candidate" status for the 2016 season, as the municipality works toward implementing the primary recommendations outlined in the Lifesaving Society's safety audit. Environmental Defence and the National Jury would like to continue to work with the Municipality of Kincardine as it develops policies, procedures, and materials to mitigate drowning risks at Station Beach. It is our sincere hope that Station Beach flies the Blue Flag again in 2017.

In addition, the jury wanted to acknowledge the significant improvement in water quality this year, and commend the municipality on its strong environmental initiatives.

If you have any questions about the above, please do not hesitate to contact me at awallis@environmentaldefence.ca or 416-323-9521 x238.

I'm looking forward to working with you throughout the year to ensure next year's Blue Flag application is successful.

Sincerely,

A handwritten signature in black ink, appearing to read "Ashley Wallis".

Ashley Wallis
Blue Flag Program Manager

* Report No.
REC 2016-03
Amendment

11. COW
MAR 02 2016
COUNCIL
Item # 11.1(A)

March 1, 2016

To: Members of Council:

Following the release of the March 2, 2016 Council agenda which contains report REC 2016-03 Aquatic Safety Audit Recommendations – Station Beach & Piers, new information has surfaced with regards to the timing and implementation of the recommendations contained within the report. *Blue folder*

Through conversations with the Recreation Policy Chair, another member of Council, and the author of the Lifesaving Society's Aquatic Safety Audit Report, it has been clearly communicated to us that the Lifesaving Society does not expect the Municipality to implement all the recommendations in 2016, but rather that they be implemented in a reasonable time frame that works with our staffing and financial resources. It is important that we have the proper policies, procedures, and protocols in place for our staff to effectively carry out the recommendations prior to rolling them out.

Mr. Michael Shane from the Lifesaving Society has expressed a willingness to come to Kincardine and sit down and talk with us further about the recommendations contained within the report and how they can be implemented and phased in over time.

Therefore, staff is still planning to present the recommendations contained within the audit report at the March 2nd meeting and will be recommending that we can proceed with the primary recommendations that deal with equipment and signage for the 2016 swimming season, however more detail is required so that we can fully understand the personnel dimension, particularly the role and purpose of the patroller as compared to a lifeguard and this will become clearer after meeting with Mr. Shane.

Sincerely,

Karen Kieffer
Director of Parks & Recreation

Appendix 3

Update on Implementation of Safety Audit Recommendations Station Beach and Piers



Report No:	REC 2016-07	FYI Report
Subject:	Update on Implementation of Safety Audit Recommendations; Station Beach & Piers	
Attachments:	Revised Aquatic Safety Audit Report (June 2, 2016), maps indicating the 100 m for 'no swimming area'	
Report:	<p>This is an FYI report to Council to provide an update on the status of the implementation of the recommendations contained within the Aquatic Safety Audit Report as prepared by the Life Saving Society. It should be noted that a revised Aquatic Safety Audit Report was sent to the Municipality on June 2, 2016 (which is attached to this report) which addresses the "no swimming area" recommendation.</p> <p>Staff would like to highlight the recommendations that have been completed or will be completed by the July 1st weekend, the recommendations that are currently in progress, and the recommendations that will need to come back to Council at a future date for discussion.</p> <p>Recommendations currently completed or will be by July 1st:</p> <p>i) Install at least one lifesaving station on each pier:</p> <p>Staff have installed one lifesaving station on the south pier and the lifesaving station recommended for the north pier is currently being made with the aim for it to be in place by July 1st. The new lifesaving stations contain the appropriate buoyant throwing aids and reaching poles. Signage has also been installed on these new stations as well as the existing lifesaving stations indicating the purpose of the equipment and warnings relating to misuse.</p> <p>ii) Regularly Inspect Station Beach</p> <p>An inspection schedule has been established and written records of these inspections will be kept on file.</p> <p>ii) Designate non-swimming areas</p> <p>Recommended in the original report for the 'no swimming' zone was that it be designated 250 metres south of the south pier and 250 metres north of the north pier. The revised report from the Life Saving Society recommends that the 'no swimming' zone be designated 100 metres south of the south pier and 100 metres north of the north pier. No swimming signs will be posted and the</p>	

KYC has offered their services to install buoys in the water designating these areas.

iv)Designate a safe swimming area

In 2014 Council approved the designation of a “No Watercraft” Zone and a “No Wake Zone” to fulfill a requirement for Blue Flag. These areas have been in place since the 2014 swimming season thanks to the assistance of the KYC who have put the buoys in the water for us. More will be done to highlight this area on shore so the public is aware.

Also as an update, as suggested at the March 2nd Council meeting, the KYC has installed a camera in the lighthouse that is recording both the south and north piers.

Recommendations in progress:

i)Create written policy and procedures for beach operations

This requires consultation with stakeholders and staff so will take some time to be prepared and finalized.

ii)Install new safety signage

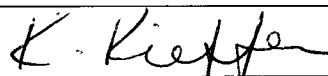
There were several areas where signage was encouraged to be upgraded such as beach access points, AED location, emergency phone location, rip currents, pier signage, etc. Some of these signs and stencils have been ordered and will be installed when appropriate.

lii)Enhance exit points along the pier

Staff are investigating the recommendation to add one additional ladder on the south side of the south pier as well as making the ladders more identifiable to bathers.

iv)Implement a public education campaign

Staff is asking appropriate agencies for the proper information and suggestions on how to display this information on a variety of topics such as rip current identification and self-rescue. Any resources that we can share with the public will be added to the website and signed where possible.

	Recommendations to come back to Council at a future date: i)Institute 'patrol supervision' staffing on Station Beach ii)Establish emergency procedures for the beach patrol and marina staff when dealing with the waterfront and beach emergencies. iii)Update Current Blue Flag signage
CAO's Comments:	I concur
Date:	June 9, 2016
Senior Manager's Signature	

Aquatic Safety Audit Report

Station Beach Kincardine

June 2, 2016 Revised

Aquatic Safety Audit

On September 4, 2015, The Corporation of the Municipality of Kincardine retained the Lifesaving Society to undertake a safety audit of Station Beach and the two adjacent piers.

An initial meeting was held with Ms. Karen Kieffer, Director of Parks & Recreation, Municipality of Kincardine and Mr. Michael Shane, Safety Management Director of the Lifesaving Society.

It was agreed that the purpose of the aquatic safety audit was to maximize the safety of participants at Station Beach, Kincardine. The safety audit would identify what steps might be taken to minimize the risk of drowning or serious water-related injuries.

It was agreed that the scope of the safety audit would include discussions with management in addition to an evaluation of the aquatic facility's operation. This evaluation would report only on those items that require attention. It would not address aspects that were satisfactory or exceptional.

Aquatic Safety Audit Process

Personnel

The Lifesaving Society appointed Mr. Michael Shane as the Aquatic Safety Management Services Chief Auditor. He has extensive experience in facility evaluation and waterfront operations.

The Lifesaving Society appointed auditors Mr. Scott Ruddle, Ms. Conny Smith, Mr. Roy Warren, and Ms. Shanna Reid. All auditors have extensive experience in aquatics, facility evaluation and waterfront operations.

The Municipality of Kincardine appointed Ms. Karen Kieffer as the primary contact for the safety audit team.

Audit Components

The audit team followed a process that included:

- On-site waterfront tour of Station Beach and the two adjacent piers was conducted on October 8, 2015 and November 24, 2015.
- Interviews with management staff at various levels within the Parks & Recreation Department.
- A review of all relevant literature.
- Draft report submitted and reviewed by the Municipality.
- Completion of a final report.

Site Tour

The safety audit team completed its tour of Station Beach and the two adjacent piers on October 8, 2015. During their inspection the auditors examined the facility applying criteria developed by the Lifesaving Society from sources that include:

- Lifesaving Society standards concerning the operation of public waterfront swimming areas.
- Government of Ontario statutes governing public swimming pools and waterfront operations.
- Recommendations from coroners' inquests.

Photographs were also taken of the sites.

Staff interviews

Ms. Karen Kieffer, Director of Parks & Recreation, Municipality of Kincardine attended the site tours to provide feed back as required. Following the site tours, the safety audit team interviewed with Ms. Karen Kieffer, Mr. Chris Hartwick – Parks Supervisor, and Mr. Barrett Lafortune – Aquatics Supervisor. The members of the audit team asked questions of the interviewees, after which they were invited to share additional thoughts with assurances that specific comments would be unattributed.

Recommendations

Located on the shores of Lake Huron, Station Beach is the main beach in the Municipality of Kincardine. The one kilometer sand and pebble beach is popular among residents and tourists that travel to the area. There are extensive boardwalks, change facilities, free parking, and several lifesaving stations along the beach. Station Beach runs south from the south pier which protects the entrance to Kincardine Marina.

According to data from the Drowning Prevention Research Centre, since 2010 there have been three fatal drownings at Station Beach. In most of these instances it is reported that rip currents had formed and may have contributed to these deaths.

Rip currents may occur at fixed locations such as groins, jetties, piers, or other man-made structures where water can be funneled out to sea in a narrow channel. In coastal areas with structures, rip current may result when currents running parallel to the shore are deflected offshore by the structure. As waves approach the shoreline, they usually break at an angle, generating a longshore current that flows parallel (along) the beach. When the longshore current (moving along the shore) encounters coastal structure (such as a groin, jetty, or pier) it is deflected in an offshore direction. This offshore-directed flow of water is called a rip current.

Station Beach is susceptible to the effect of prevailing winds from the S and SW creating waves that come in on an angle to the shore creating lateral currents. When these currents reach the pier they are deflected creating a rip current parallel to the pier and moving away from shore. As the wind and waves increase in strength and height the speed of the rip current also increases. Similar currents may also form on the north side of the north pier when strong winds and waves are from the N and NW although this area is not as popular for swimming.

The Lifesaving Society directs your attention to the following recommendations which have been categorized into two levels:

Primary Recommendations – The Society’s aquatic safety audit presents five Primary Recommendations. Primary Recommendations address situations in contravention of a relevant Province of Ontario statute or the Lifesaving Society’s position on what constitutes reasonable safe practices. Primary Recommendations should receive focused attention by facility management.

Secondary Recommendations – The Society’s aquatic safety audit presents six Secondary Recommendations which are designed to enhance the safe use of the aquatic facility. Action on Secondary recommendations can proceed within the facilities ongoing operations.

Primary Recommendations

1. Institute ‘patrol supervision’ staffing on Station Beach.

The Lifesaving Society Waterfront Safety Guidelines list criteria for the determination of supervision a public waterfronts in Ontario.

According to these criteria, the Municipality should provide at a minimum ‘patrol supervision’ during the swimming season (refer to page 9, Waterfront Safety Guidelines, November 2011). This patrol person should be at least 16 years of age, hold at least the Lifesaving Society Bronze Medallion award or higher (Lifesaving Society National Patrol award is preferred), have training in waterfront patrolling and emergency procedures relevant to Station Beach , and be equipped to permit a response to situations.

This person will have a variety of responsibilities including: response to aquatic rescue and first aid situations, provide public education, inspect and maintain safety equipment, perform maintenance duties, etc.



2. Designate the beach area adjacent the south and north piers as a non-swimming areas.

Due to the presence of strong rip currents, this area is extremely dangerous for swimming especially when winds and waves are high. A “No swimming” zone should be designated that extends at least 100 meters south of the south pier and north of the north pier.

The area should be signed using pictogram signage - No swimming and Warning- Strong currents. These signs should be installed on the beach in numerous locations adjacent the piers so that the public will clearly see them when they are in these areas. The Lifesaving Society would be pleased to assist with an on-site visit to identify exact signage installation locations.



3. Designate a safe swimming area.

The swimming area intended for use by patrons should be clearly designated through signs, beach flags, and buoy markers. The distance between buoy markers should be no more than 100 meters. These markers should be no more than 150 m from shore. The north boundary of this designated area should be located at least 250 meters from the south pier. A sample buoy marker is shown below.

In addition, beach flags should be installed on the beach at the north and south boundaries of the designated swim area. This will reinforce an understanding by the public of the area as the designated safe swimming area. These flags should be installed and removed daily by the Patrol. Pictogram signage with words should be provided explaining the flags purpose.

The designated swim area would be determined after a spring assessment of the beach. Buoys would then been installed delineating this area. The Lifesaving Society would be pleased to assist with this assessment.

Buoy



Beach Flag



4. Install at least one lifesaving station on each pier.

There is a need for these stations to be installed to ensure the public has access to rescue equipment to assist with an in water emergency.

Equipment located at each rescue station should include:

- A buoyant throwing aid attached to a 6mm line at least 8m in length.
- A reaching pole at least 3.65 meters in length.

The stations should be installed at the midpoint from shore to the end of the pier. Signage should be installed at each station indicating the purpose of the equipment and warnings relating to misuse. Appended to this report are photographs of suggested design of these stations and signage wording.

5. Create written policy and procedures for beach patrol operations.

To ensure staff are aware of policies and procedures for the safe operation of the beach a Policy and Procedure Manual should be created. Staff who have responsibilities at this site should review this Manual and be familiar with its procedures. This Manual should include but not limited to the content as listed in the Lifesaving Society Policy and Procedure Manual Table of Contents document appended to this report.

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The Municipality should install safety signage as:

i. Beach access points signage.

The Municipality should install the following signage at each of the current seven access points to Station Beach. The signs should include at a minimum:

- Purpose of the Patrol service
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- Identification of the No swimming area
- Information on rip current formation and self-rescue
- AED location
- emergency telephone location

In addition the Municipality should consider restricting other access points to the beach through the dunes.

Existing access point to beach



ii. Existing Rip Current Safety Sign

The existing rip current sign should be removed. It is currently poorly positioned too far from the water's edge and not clearly evident to bathers accessing the beach. This sign does not illustrate the relationship of a rip current to the existing piers.

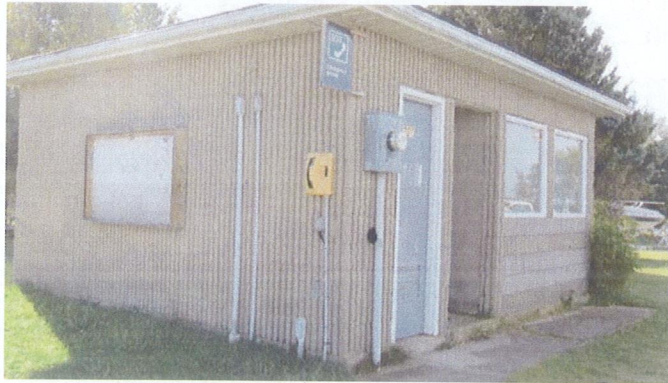
A simplified version of the existing rip current signage should be provided on each access point sign and in other locations along the boardwalk. These signs should explain how a rip current forms and how a bather self-rescues from a rip current.



iii. Emergency Phone Sign

The current emergency telephone is located at the Fish Station. To ensure the public is aware of its location, the current signage should be enhanced by increasing the size of the signage and using more visible colors (e.g. red, orange, or yellow) to identify telephone location. A pictogram is recommended.

In addition, consideration should be given to providing additional emergency telephones at the pier, and in closer proximity to the designated safe swim area.



iv. Pier signage

Presently there are some signs painted on the surface of the pier. Many of these are faded and deliver inconsistent messages.

Swimming should not be permitted off the pier because of the boating activity in the immediate area and strong rip currents. No swimming and strong current signage should be installed on the floor of the pier or on vertical sign posts along the lake and harbor side.

In locations where the seasonal water depth is less than 2.75 m signage should be installed indicating "Shallow Water No Diving."

The use of pictograms is recommended.

Existing signage on pier



Recommended signage on pier



To enhance the visibility of the pier edge, a yellow band approximately 100 mm wide should be painted along the entire horizontal edge of the pier (harbor and lake sides). This will visually enhance the edge and therefore reduce the likelihood of the public from accidentally falling into the water.

2. Regularly inspect Station Beach.

An inspection schedule should be established to check lifesaving stations, the designated swim area and signage placements. This will help to ensure equipment and signage remains in place so that this will be available in an emergency situation and there is a timely follow-up action on repairs and replacements. Records should be kept of regular inspections and of those at the start and end of season.

3. Implement a public education campaign.

A public education campaign should be developed and delivered to all residents of the Municipality of Kincardine. Messages should include information on the: the patrol purpose and schedule, designated swimming area on Station Beach, rip current identification and self-rescue, the purpose and placement of rescue stations, and the consequences of equipment vandalism.

4. Establish emergency procedures for the beach patrol and marina staff when dealing with the waterfront and beach emergencies.

Emergency procedures should be prepared and the Beach patrol and marina staff should be trained in their application. This should include but not be limited to knowledge of the location and use of emergency communications and rescue equipment, as well as guidelines limiting their own risk if exposed to a rescue situation. The Municipality should also establish a communication plan so that all staff are able to communicate and respond effectively when an emergency situation occurs. Simulated emergency training should take place with all staff at least annually.

5. Enhance exit points along pier.

There are ladders situated along the sides of the pier which permit bather egress from the lake. To make these more identifiable to bathers who accidentally fall into the lake, the ladders should be painted a bright yellow. In addition, consideration should be given to adding at least one additional ladder on the south side of the south pier.

6. Update current Blue Flag signage.

Once all changes are made the current Blue Flag signage should be updated to reflect these changes (i.e.: telephone location, designated swim area, no swimming zone, etc.).



Appendix

Lifesaving station

A good example of a lifesaving station holder is shown below. This has been installed at Port Elgin Main Beach, Port Elgin, Ontario. The Town has provided enclosures for their lifesaving ringbuoys which has helped to both identify their location and reduce the loss from vandalism.



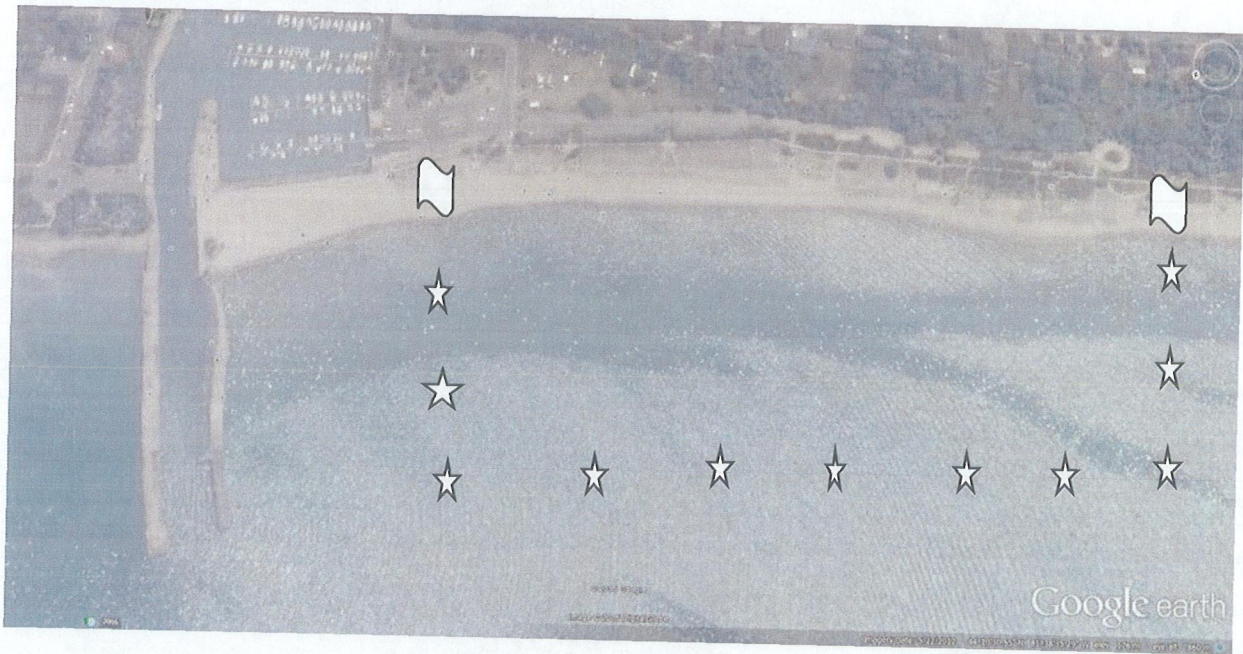
Other types of lifesaving station holders are also available.




Suggested signage at each lifesaving station




Suggested location of designated swim area buoys and flags



Not to scale

Flag 

Buoy 



LIFESAVING SOCIETY®

The Lifeguarding Experts

Aquatic Staff Manual Suggested Contents List November 2014

Overview

The Lifesaving Society takes the position that:

1. Staff Manuals are an effective means of communicating policies, procedures and practices to patrolling, lifeguarding, and instructional staff charged with the responsibility of delivering aquatic programs and ensuring patron safety.
2. Owner/Operators of swimming pools, spas, wading pools and waterfronts must develop a Staff Manual and must distribute that Manual to appropriate staff groups within their organization.
3. Owner/Operators must train staff on the contents of the manual. This training must be sufficiently comprehensive in order that staff become proficient with its contents. Owner/Operators should include testing and must ensure a system wherein staff sign off that they have received and understood this training.
4. Content of the Manual(s) must be consistent with the "Aquatic Staff Manual—Suggested Contents List". (format and style is at the discretion of the owner/operator)
5. Content and format of the Manual(s) must be appropriate for the intended audience, (i.e. Full time staff vs. Part Time staff, Supervisory staff vs. Patrolling, lifeguarding, and Instructional staff).
Owner/operators should consider developing separate manuals for full-time and part-time staff as part-time staff may not require all the information required by full-time staff. The Society recognizes that manuals with too much information of little importance, is a deterrent to staff reading and absorbing relevant and important information.
6. Owner/operators must determine what information is standardized practice for all pools and what information is pool-specific. It is recognized that standardized procedures may have some pool-specific elements.
7. Owner/operators should consider reprinting excerpts from the manual as posters for display in staff areas or as staff handouts. Examples of topics include; emergency procedures, guarding positions etc.
8. Owner/Operators must establish a review process and cycle to ensure that information contained in the Manual(s) is always current.

Resources Available for Creating and Editing Aquatic Staff Manuals

- Lifesaving Society Aquatic Staff Manual Suggested Contents List
- Health Regulations, (Pool, Spa, Waterslides, Waterfront)
- Ontario Building Code
- Lifesaving Society Guides to Pools and Spa
- Lifesaving Society Standards Journals
- ALERT Manual
- Lifesaving Society Instructor Manual

Tips for Excellent Staff Manuals

Excellent Staff Manuals are:

Complete: All necessary topics in the above listed resources are covered.

Technically Accurate: Information is accurate when compared to the above listed resources.

Reader-Friendly: Reader-friendly manuals are more approachable and the information is more readily retained. A number of factors influence the effectiveness of manuals in terms of staff absorption and retention of information. These include: Brevity, Order of Content, Clarity of Language, Format and Use of the Intranet. In addition, lack of clarity may result in incorrect outcomes through misinterpretation or lack of standardized approach among different staff. The following approach is suggested:

Brevity:

- Provide only one manual to patrols, instructors and attendants. Limit the content to the most important job –related items.

Order of Content:

- Put the most relevant safety topics near the beginning of the manual and review order of content to achieve most logical flow from topic to topic.
- Place all parts of a topic, (guidelines, phone numbers, forms), together for easy reference.

Clarity of Language:

- Use simple terms and straightforward language.
- Avoid the use of acronyms.
- Avoid the use of passive sentences (e.g. “Parents on Deck” policy “Parents should receive written information”—change to “the (name of position) *will provide* information. Include timeframe if appropriate.

- Do not use “should” unless the action is clearly optional.

Format:

- Improve the readability, (and therefore the retention), of step-by-step procedures by considering the use of flow charts, forms with text bubbles, sections separated by tabs, colored pages, calendars, FAQ etc.
- Edit “City Council-type format” report or policy documents down to the key parts that staff need to absorb and retain.

Use of the Intranet:

- A reference in a paper manual requesting part time staff to refer to the organization’s intranet for further information may cause him/her to not complete this step as he/she may not have approved access, may not be at a computer or may perceive this as a barrier/waste of time. As a result he/she may miss important safety information. Such a reference should be avoided for safety related topics.

Aquatic Staff Manual: Suggested Contents List

Introductory Section

Welcome
Table of Contents
Vision/Mission

Emergency Procedures (Aquatic—Major/Minor Incident)

Rescues
Victim treatment
Crowd supervision and control
Bystander Use Policy
Telephone call to emergency services
Transfer of victim to emergency services personnel
Notification of family (or contact with family if present)
Dealing with the media
Contacting senior staff
Resumption of swim activities as applicable
Staff debrief and accident reporting
Post-event staff counselling (if required)
Follow-up with victim's family
Aquatic Emergency Defibrillation Use/Training

Emergency Procedures (Non-Aquatic)

Missing Person(s)
Fire
Power Failure
Report or witnessing of abuse of a Child or Vulnerable Adult
Theft
Aggressive or Unruly Behavior, Assault, Fighting
Responding to medical emergencies in other areas of the building
Conditions for facility closure

Safety Supervision (Patrol)

Patrol Technique

- Definition
- Role/responsibility of the patrol in this environment
- In uniform
- Opening procedures
- Signals
- Patrol positioning and zones
- Communication/signals
- Rotation (purpose, frequency, technique)
- Patron correction (when/why and without interrupting scanning)

- Discipline
- Waterfront checks (purpose, frequency, how-to)
- Safety in change rooms
- Closing procedure: (pool clear (maintaining supervision, all swimmers out, lock change room doors)

Patrol Technique

- Definition
- Role/responsibility of the patrol in this environment
- Patrol positioning
- Communication/signals among staff
- Rotation

Facility Operational Procedures

Opening Procedure

Equipment required

First Aid stations, supplies required

Daily telephone check

Closing Procedure

Record of Safety Checks

Patron Rules

Posted Rules for the Public

Patron Discipline

Appropriate Swimming Attire

Breath Holding

Breast Feeding Policy

Customer Service Guidelines

Human Resources and Administration

Staff Conduct

Position Job Descriptions

Application

Tryouts

Terms of Employment

Staff Qualifications/record of same

Staff In-Service training requirement

Staff Work Attendance-replacements

Staff Evaluation

Staff Discipline

Staff Uniform

Pay Rates/Payroll procedures

Time Sheets

Facility Keys

Facility Rental-procedures for booking
Facility Log Book
Corrective Vision
Personal Cell Phone use while on duty
Wearing of City Uniform while off duty
Police Reference Check
Staff Call-out in case of critical incident
Harassment Policy
Smoking, alcohol, drugs
Internet, Social Media policy
Cash/Reception Procedures

Occupational Health

WHMIS
Sun/Heat safety for aquatic staff
Cash/reception robbery
Sharps Handling/Hazardous Waste Disposal
Protective measures to prevent cross contamination (victim to staff)
Safety procedures for working on deck where there is no patrol (wearing of PFD)
Procedure for staff to identify Risk Issues
In house Safety Inspection
Hazardous Waste Disposal
Clean up of Bodily Fluids
Handling of Sharps

Maintenance and Water Treatment

Cleaning Procedures
Equipment Repairs/Annual Shutdown

Google Maps



Imagery ©2016 DigitalGlobe, Map data ©2016 Google 20 m



Imagery ©2016 DigitalGlobe, Map data ©2016 Google 50 m



Appendix 4

Beach Safety Report





THE CORPORATION OF THE MUNICIPALITY OF KINCARDINE

Subject: Beach Safety Report

Report Number: Parks and Recreation-2021-06

Meeting Date: Monday, April 26, 2021

Recommendation: THAT Council approve the recommendations and timelines for the beach safety enhancements contained within the report;

AND FURTHER THAT the South and North Piers remain closed to the public until the required repairs can be completed;

AND FURTHER THAT Council direct staff to work with BM Ross to get the South & North Pier repairs completed and that \$210,000 be approved for the required repair work in 2021 to come from the Contingency Reserve Fund.

Date to be considered by Council: Monday, April 26, 2021

Report Summary:

At the March 1, 2021 Council meeting a delegation presented proposed safety enhancement recommendations for Station Beach. Staff have reviewed the proposed recommendations and are reporting back on the recommendations that they feel can be implemented in time for the 2021 season and comments on other recommendations that will require some additional investigation into operational requirements, further testing, etc and will report back on these at a future date with regards to costs and potential funding strategies.

Further, staff have a recommended path forward with regards to the re-opening of the South and North Piers.

Origin: Delegation to Council

Existing Policy: Council Approval

Background/Analysis: At the March 1, 2021 Council meeting, a delegation appeared before Council highlighting some proposed safety enhancement

recommendations for Station Beach. This report provides staff comments and proposed timing of recommendations for consideration.

Phase 1 – Achievable in 2021:

1)**Automated External Defibrillator** – install an AED machine at a convenient location such as at the Kincardine Marina or at the Fish Cleaning Station.

Staff Recommendation: Currently there is an AED machine located at the Kincardine Marina Office. The marina staff are trained annually by the Kincardine Fire Department on the operation of this machine. Staff do not feel that another AED machine is required at the Fish Cleaning Station due to potential vandalism in an unstaffed area, maintenance upkeep required and the possibility of the confusion of directing tourists to an unknown location in an emergency situation.

The preferred recommendation is to improve the signage for the AED machine located at the Marina Office. Updating the welcome signage at the main access point to Station beach which is being updated in 2021 would include the AED location. Also, adding an AED sign at the Marina Office would be helpful to indicate location as well.

2)**Communication Enhancements** – redesign and replacement of current signage at Kincardine Station Beach with addition of QR codes linked to safety videos or websites.

Staff Recommendation: The signage being referred to at Station Beach has been removed and staff have budgeted \$5,000 for new signage in the 2021 parks operating budget. The plan is to install new educational signage in 2021 with QR codes that will highlight rip currents, designated swimming, no swimming areas, location of AED machine, etc.

3)**No Parking Area** – restrict parking along the area between the boardwalk and boat launch below the south pier. Even though this is a popular location for people to watch the waves and sunset it blocks first responders in the event of an emergency.

Staff Recommendation: In 2021, designate this area as a no parking zone and install no parking signs. This area could be included in any by-law that will be coming forward to address any other no parking areas at Station Beach that Council has asked staff to look at.

4)**Pier Railing** – Installation of a wood and rope railing system along the north and south piers with periodic access points at ladder locations for water access. Ladders to be painted a bright colour for easy identification. Ideally this work would be done in conjunction with future maintenance and repairs.

Staff asked BM Ross to complete a structural review of both the North and South Piers and from this review they have provided the following recommendations:

South Pier: The reinforced concrete slab of the south pier is no longer structurally reliable to support normal pedestrian loads because of the deterioration of the support framing, and therefore BM Ross cannot recommend that the south pier be accessible to the public until repairs are made. The recommendation is to fill the voids with a low-pressure grout, and to patch-repair the deck surface and restore some of the safety ladders. Preliminary budget for this work is \$160,00 + HST.

North Pier: The north pier is in better condition structurally and is deemed safer for normal pedestrian traffic, however, it has been noted that the concrete spalls should be repaired along with the safety ladders within the next 5 years at a current estimated cost of \$50,000. There are also some areas of deck deterioration that should be repaired to restore the original strength and to reduce trip hazards.

Staff Recommendation: Staff feel that before there can be consideration given to installing railings on the piers that the repairs to the South & North Piers need to be completed first in 2021 and then continue to work with BM Ross on designing options for consideration to install any railings on the piers strong enough to withstand the strength of the waves in future capital budgets. The current recommended repairs were not included in the 2021 capital budget as staff have been working on confirming the scope of work and pricing required to complete them.

An example of an option that staff will be exploring further with regards to wave protection on the Piers is something similar to what the Goderich port has installed which is a raised walkway and parapet on their south pier. This feature has extended the use of their pier by pedestrians, especially in these years of high water levels. Staff will continue to investigate this and other options and bring back further information and costs associated as part of the 2022 capital budget.

Phase 2 – 2022:

Staff are proposing that the below recommendations be investigated further in 2021 with regards to operational requirements and testing required before recommending implementation to Council. Staff will report back on the status of these recommendations along with costs and potential funding strategies.

5)**Rescue Board:** Installation of a Rescue Board on the beach on both the North and South sides of the Pier. Rescue board to be mounted to a stand attached with heavy Velcro or additional theft deterrent system.

Staff Recommendation: Along with theft concerns, staff would like to investigate who exactly would be trained to use these rescue boards if one was required for a water rescue, and what the training for this would look like. Staff would also consult our municipal emergency personnel and rescue teams to inquire if there

are any risks or concerns with using and/or having this board available for the general public to use in rough waters.

6)Beach Warning Light: Installation of a Stop Light down at Station Beach that is programmed to use current weather information to automatically update the colour of the light. Additional liability to connect current stop light conditions to tourism websites so conditions can be accessed remotely. Prototype will complete a period of testing to ensure that the light is accurately communicating current conditions. Additional parameters to be set with input from municipal staff and independent organizations such as the Life Saving Society.

Staff Recommendation: As this would be new technology for the municipality, staff would need to work with NPX as they complete their prototype and possibly allow for a period of testing to ensure that the light is accurately communicating current conditions. Staff would also need to investigate how this warning light would work operationally in terms of daily inspections required to ensure equipment is functioning properly, how power outages might affect the equipment, any liability issues the municipality may face, etc.

7)EMILY Remote Operated Rescue Device: EMILY is a remote controlled rescue device that can be operated from the safety of shore by emergency personnel during rough waters which would typically be unsafe to navigate by boat in an emergency. This would allow emergency personnel to expand their reach during an event.

Staff Recommendation: Staff need to investigate the feasibility of this rescue device in rough waters and have discussions with existing rescue agencies to determine usability of this rescue device as well as who exactly would be responsible for the operation of it, training required, etc.

Not Recommended to be Implemented:

8)Beach Patrol: Introduction of beach patrol or lifeguards at the beach during peak tourist season.

Staff Recommendation: Staff did seek a legal opinion and were advised that the staffing of lifeguards on the beach could open up the municipality to liability. Where there is no lifeguard present, the duty of care is to provide signs or other safety devices, as necessary, to keep a beach reasonably safe.

There are very specific waterfront safety standards and qualifications required for lifeguarding at a waterfront versus lifeguarding at a pool. Currently we do not have any existing staff that are waterfront certified. Factors to consider would be costs associated with this certification, having sufficient staff to lifeguard both the waterfront and the pool at the same time, the frequency of how often the beach would need to be lifeguarded and when, what sections of the beach would be guarded, expectations in adverse weather conditions, having to close the beach if no lifeguards available, etc. These are all factors that would require significant consultation and consideration if this option was to be explored further.

Finally, from a staff perspective, there are significant concerns about the safety and well being of our employees and the possibility of putting their lives at danger while on duty guarding a waterfront.

Other Beach Initiatives Staff Currently Working On:

a)Developing beach signage that would include an indicator of where a person or situation is requiring assistance at is located on the beach. For example identify areas as zones so for example when calling 911 the caller could say “I’m at Zone B at Station Beach”.

b)Update educational messaging on our municipal websites and social media platforms that talk about and have pictures of rip currents, designated swimming, no swimming areas, location of AED machine, etc. Share as much information as possible with regards to our municipal beaches and over as many media tools as available in an effort to target as many residents and tourists as possible.

c)Review and update as required the safety equipment and signage at other municipal beaches including Inverhuron Beach, Sunset Beach, etc.

Corporate Strategic Plan 2020-2025: Continually identify infrastructure (hard and soft services) that needs to be maintained and/or upgraded.

Financial Implications: The \$210,000 required to repair the north and south piers come from the Contingency Reserve Fund.

Attachments: N/A

Report Approval Details

Document Title:	Beach Safety Report - Parks and Recreation-2021-06.docx
Attachments:	
Final Approval Date:	Apr 22, 2021

This report and all of its attachments were approved and signed as outlined below:

Roxana Baumann

Sharon Chambers

Appendix 5

Presentations to Pier Safety

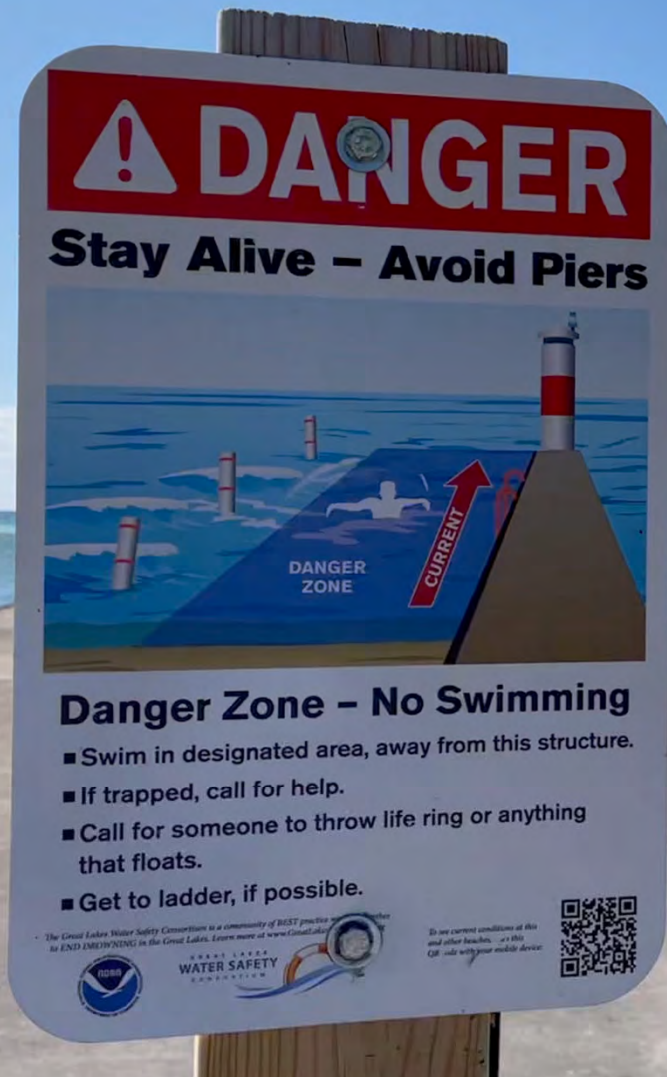
Dr. Houser - SMART Beach

***Dr. Elizabeth Urbantke,
Reginal Advisor London's Coroner's Office***

Dr. Jaime Blackwood



Smart Beach Update

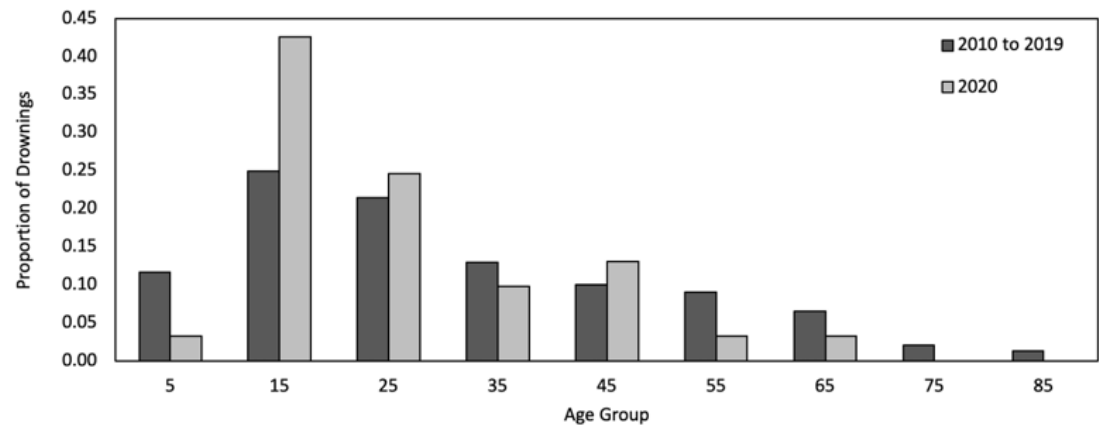
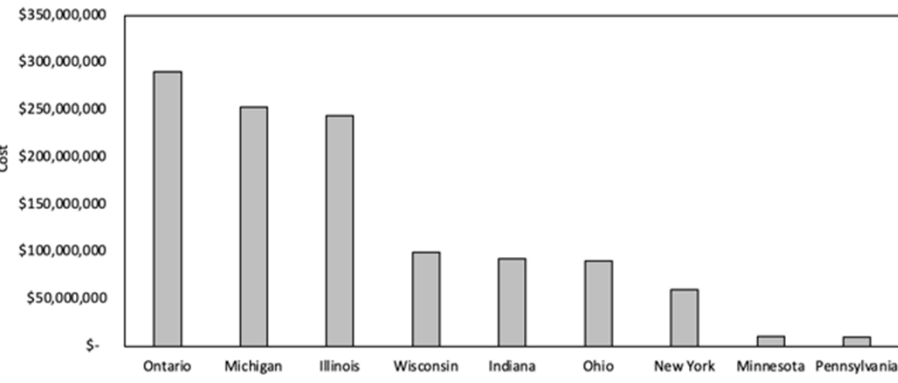
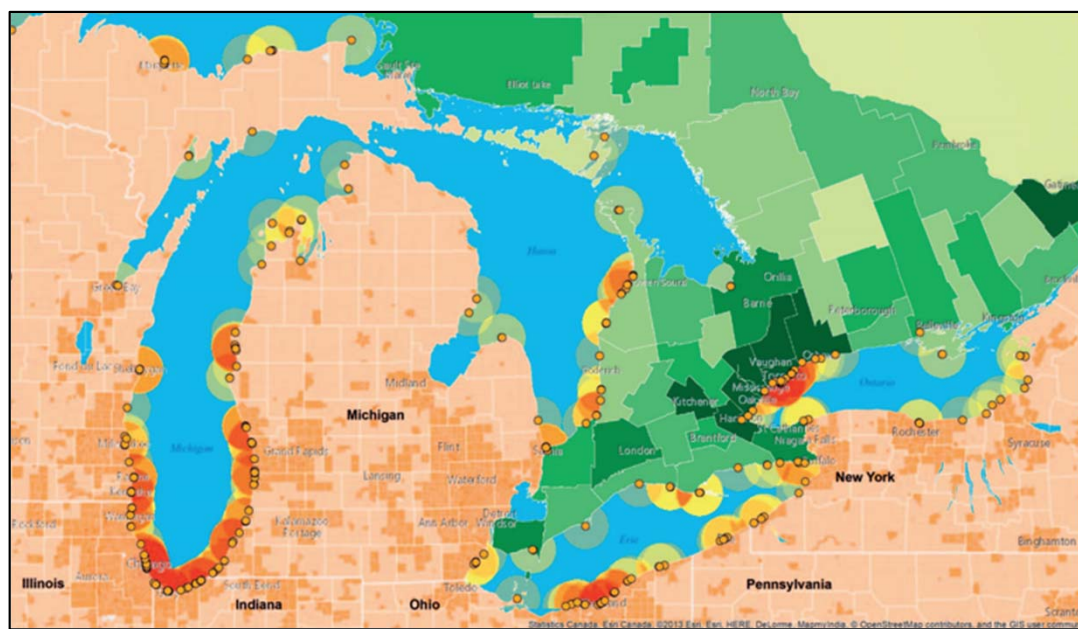


UNIVERSITY OF
WATERLOO

FACULTY
OF SCIENCE

Great Lakes Drowning

- 100,000+ surf-related drowning fatalities/year
- Majority of drowning fatalities: male and <30
- Economic burden >\$1.1 billion (2010-2020)
- Many attributed to rip currents
- Ontario has the highest proportion of drownings



Vlodarchyk, B., Olivito, A. and Houser, C., 2019. Spatial and temporal variation of surf drownings in the Great lakes: 2010–17. *Journal of Coastal Research*, 35(4), pp.794-804.

Houser, C., Arbex, M. and Trudeau, C., 2021. Economic impact of drowning in the Great Lakes Region of North America. *Ocean & Coastal Management*, 212, p.105847.

COVID-19

Impact

Significant increase in drowning fatalities on Lake Ontario, Huron and Michigan



COVID furloughs meant no warning flags on Holland beach as two boys drowned

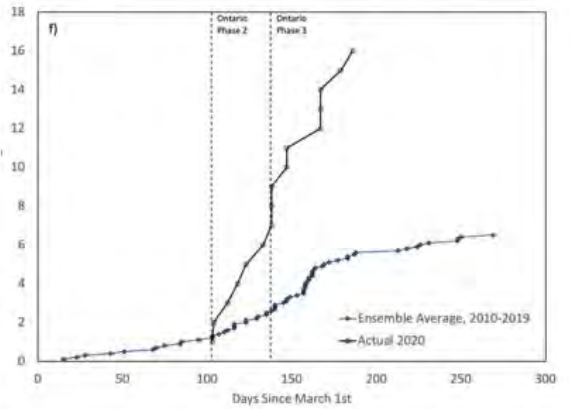
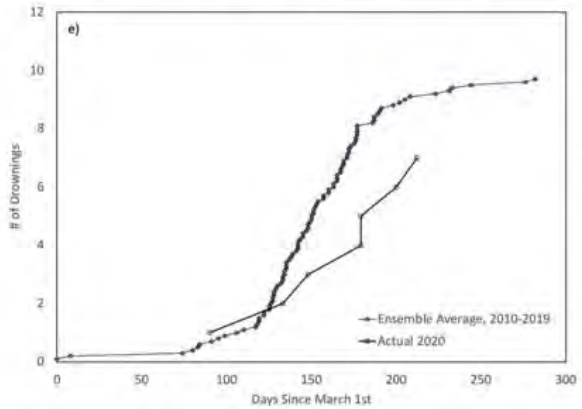
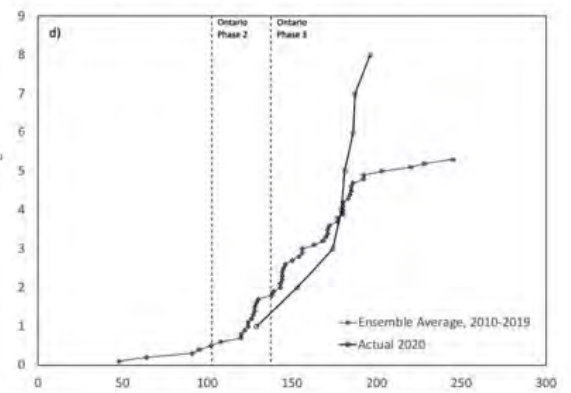
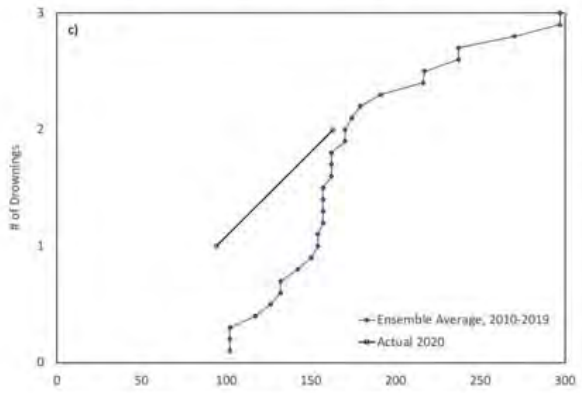
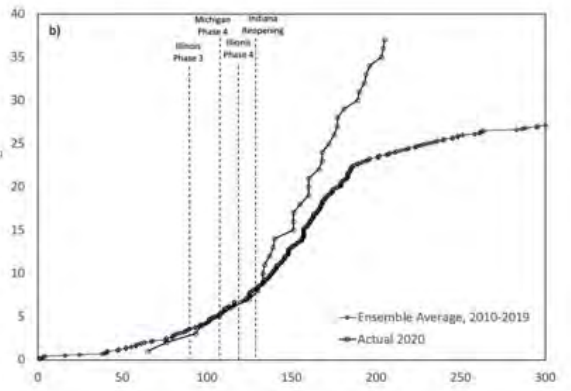
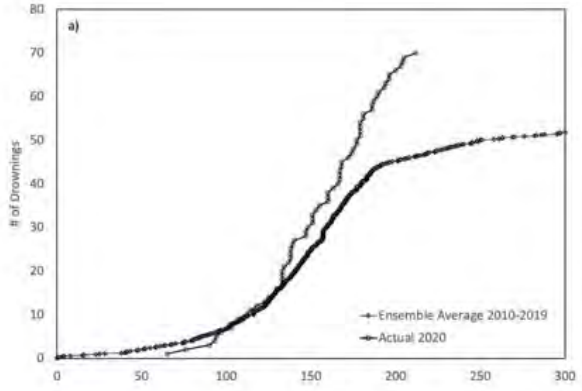
Popular swimming holes won't have lifeguards this summer



Pandemic squashes hiring of lifeguards, officials say; safety advocates contend danger's ahead



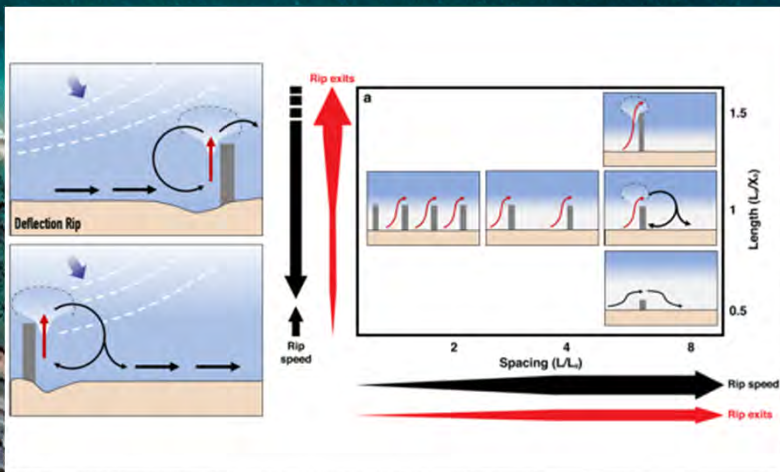
Houser, C., and Vlodarchyk, B. (2021). Impact of COVID-19 on drowning patterns in the Great Lakes. *Ocean and Coastal Management*, 205, p. 105570.

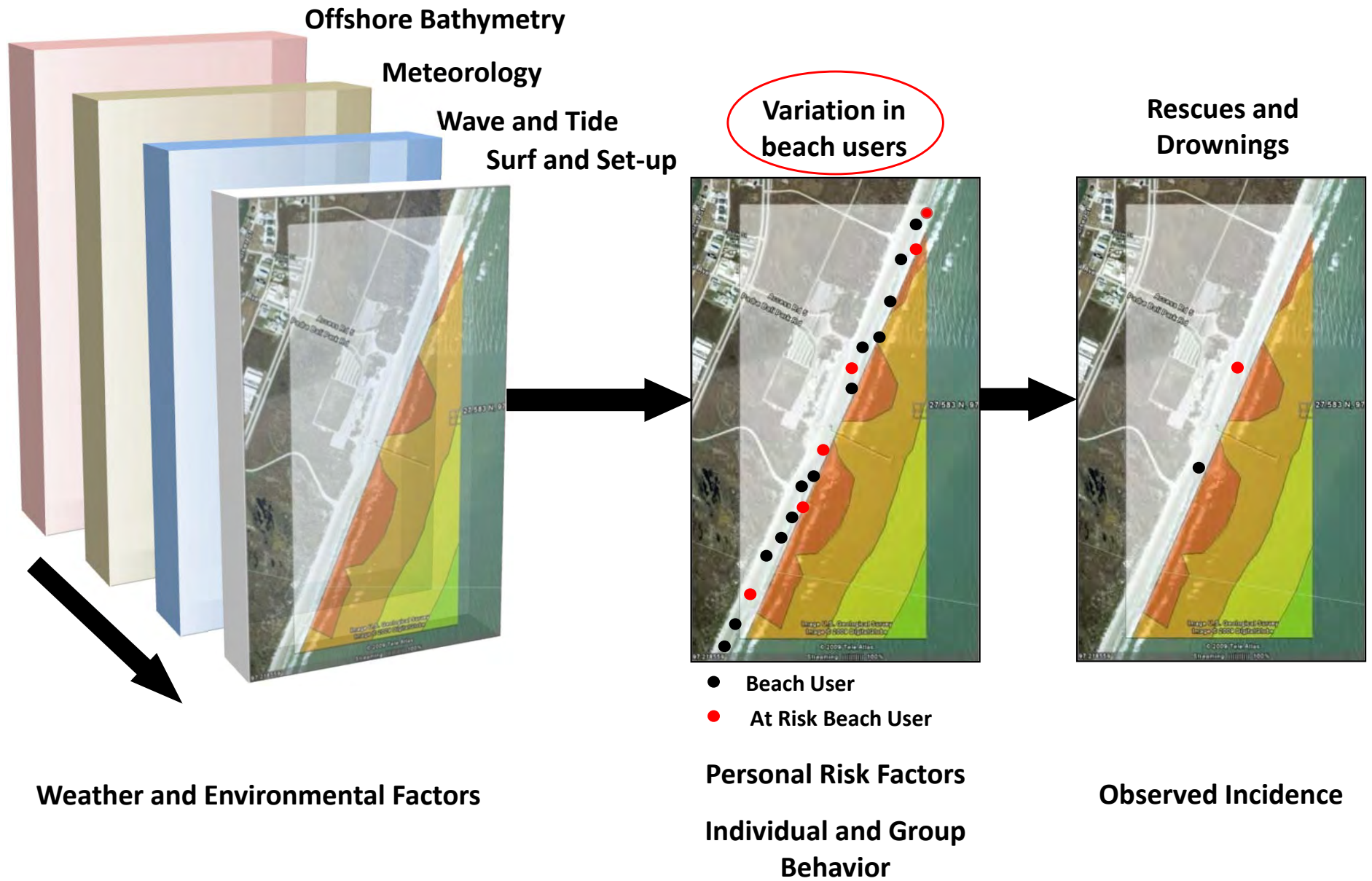


Rough Surf



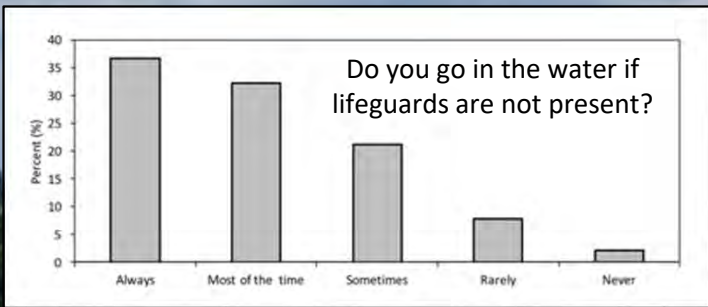
Structural Rips





Lifeguards



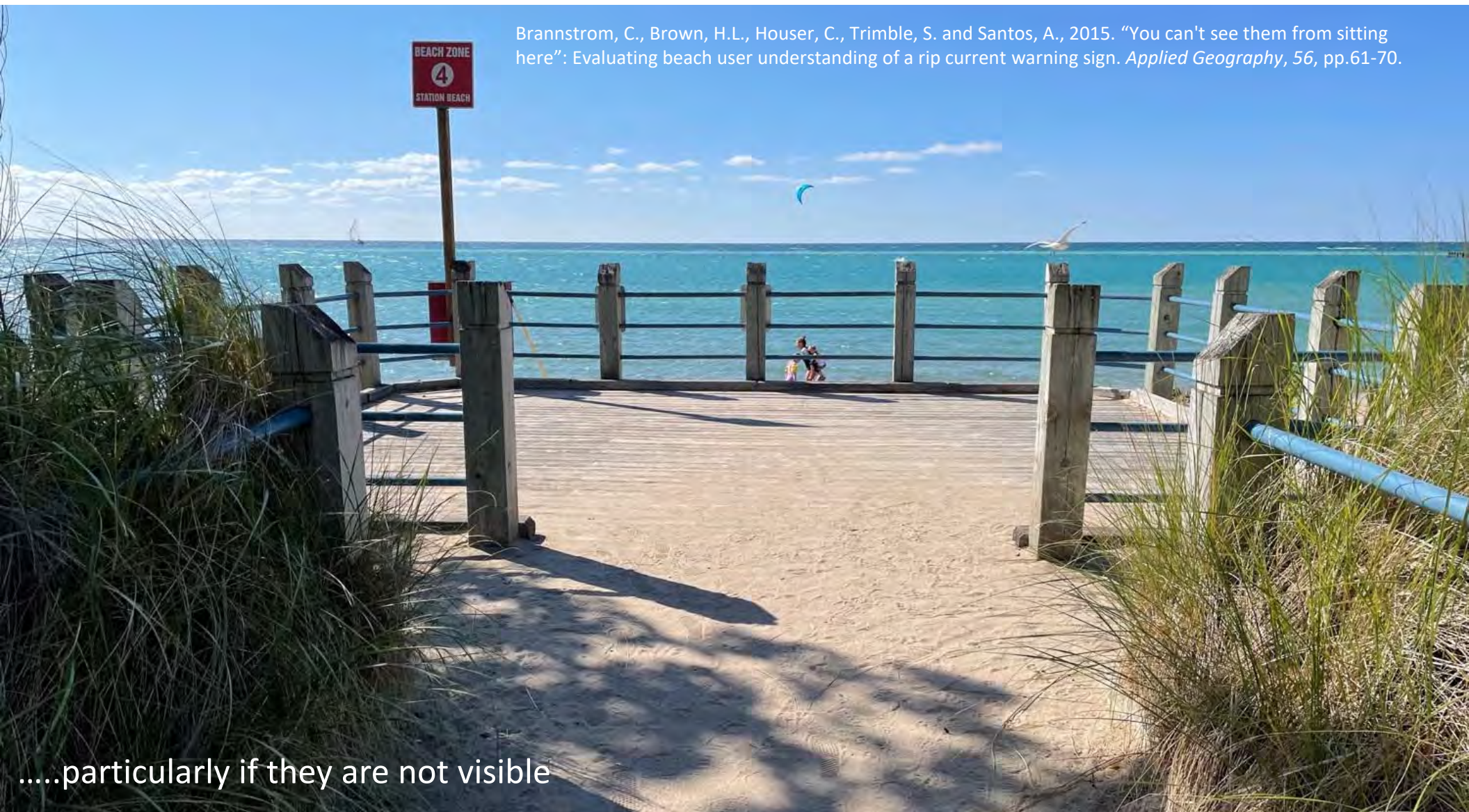


Warning Signs

Beach users tend to ignore signs.....



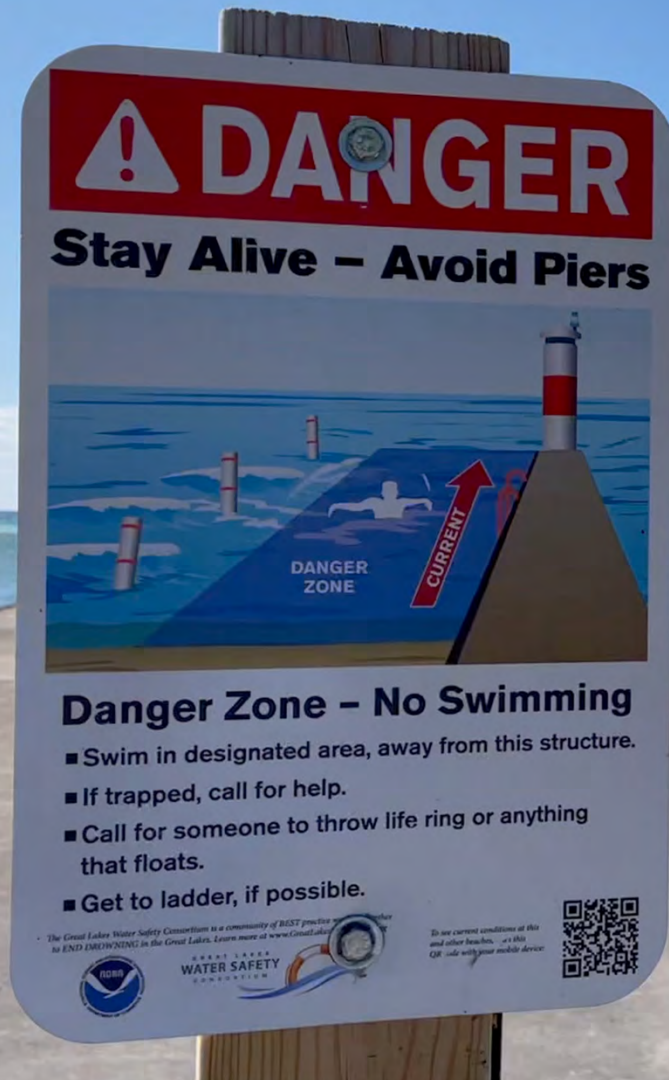
Brannstrom, C., Trimble, S., Santos, A., Brown, H.L. and Houser, C., 2014. Perception of the rip current hazard on Galveston Island and North Padre Island, Texas, USA. *Natural Hazards*, 72(2), pp.1123-1138.



Brannstrom, C., Brown, H.L., Houser, C., Trimble, S. and Santos, A., 2015. "You can't see them from sitting here": Evaluating beach user understanding of a rip current warning sign. *Applied Geography*, 56, pp.61-70.

....particularly if they are not visible

Signs need to be accurate and locally specific



Houser, C., Trimble, S., Brander, R., Brewster, B.C., Dusek, G., Jones, D. and Kuhn, J., 2017. Public perceptions of a rip current hazard education program: "Break the Grip of the Rip!". *Natural hazards and earth system sciences*, 17(7), pp.1003-1024.



RIP CURRENTS Break the Grip of the Rip!

IF CAUGHT IN A RIP CURRENT

- Don't fight the current
- Swim out of the current, then to shore
- If you can't escape, float or tread water
- If you need help, call or wave for assistance

Rip currents are powerful currents of water moving away from shore. They can sweep even the strongest swimmer out to sea.

Warning Flags



Arozarena, I., Houser, C., Echeverria, A.G. and Brannstrom, C., 2015. The rip current hazard in Costa Rica. *Natural Hazards*, 77(2), pp.753-768.

What Flag Color?

Know Before You Go!



GREEN

- Calm Water
- Good Swimming Conditions
- ALWAYS Use Caution When Entering Water

YELLOW

- Use Extreme Caution When Swimming
- Potentially High Surf
- ALWAYS Use Caution When Entering Water

RED

- DANGEROUS SURF
- STRONG CURRENTS
- NO SWIMMING
- STAY OFF PIERS

Text "Beaches" TO 888777 to receive beach flag color status and alerts.

No water is safe water - stay within arms reach of children.

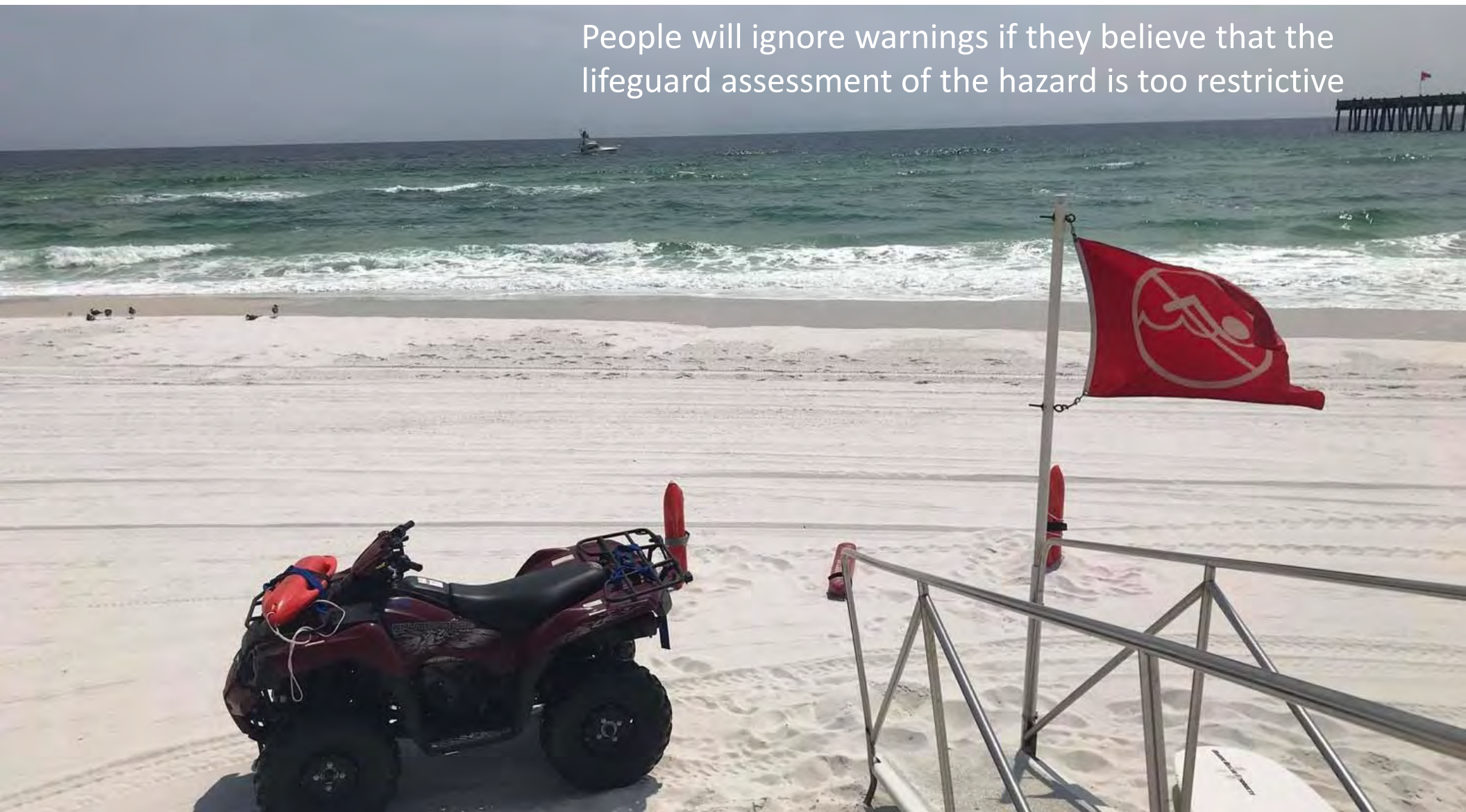
south haven
ON LAKE MICHIGAN

People will be cautious if the water looks dangerous, but can be influenced by others to enter the water



Houser, C., Lehner, J., Cherry, N. and Wernette, P., 2019. Machine learning analysis of lifeguard flag decisions and recorded rescues. *Natural Hazards and Earth System Sciences*, 19(11), pp.2541-2549.

People will ignore warnings if they believe that the lifeguard assessment of the hazard is too restrictive



Lifeguards

Few professional lifeguards and limited transfer of surf hazard knowledge in Ontario



Site-specific Warnings



People will ignore warnings if they believe that the hazard assessment is too restrictive or not representative



Warnings need to be dynamic and local and instill confidence that they are based on a real threat to their safety

Confirmation Bias

Beach users make decisions based on others not warnings

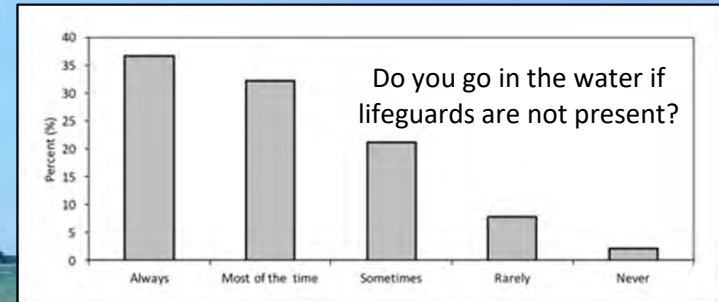
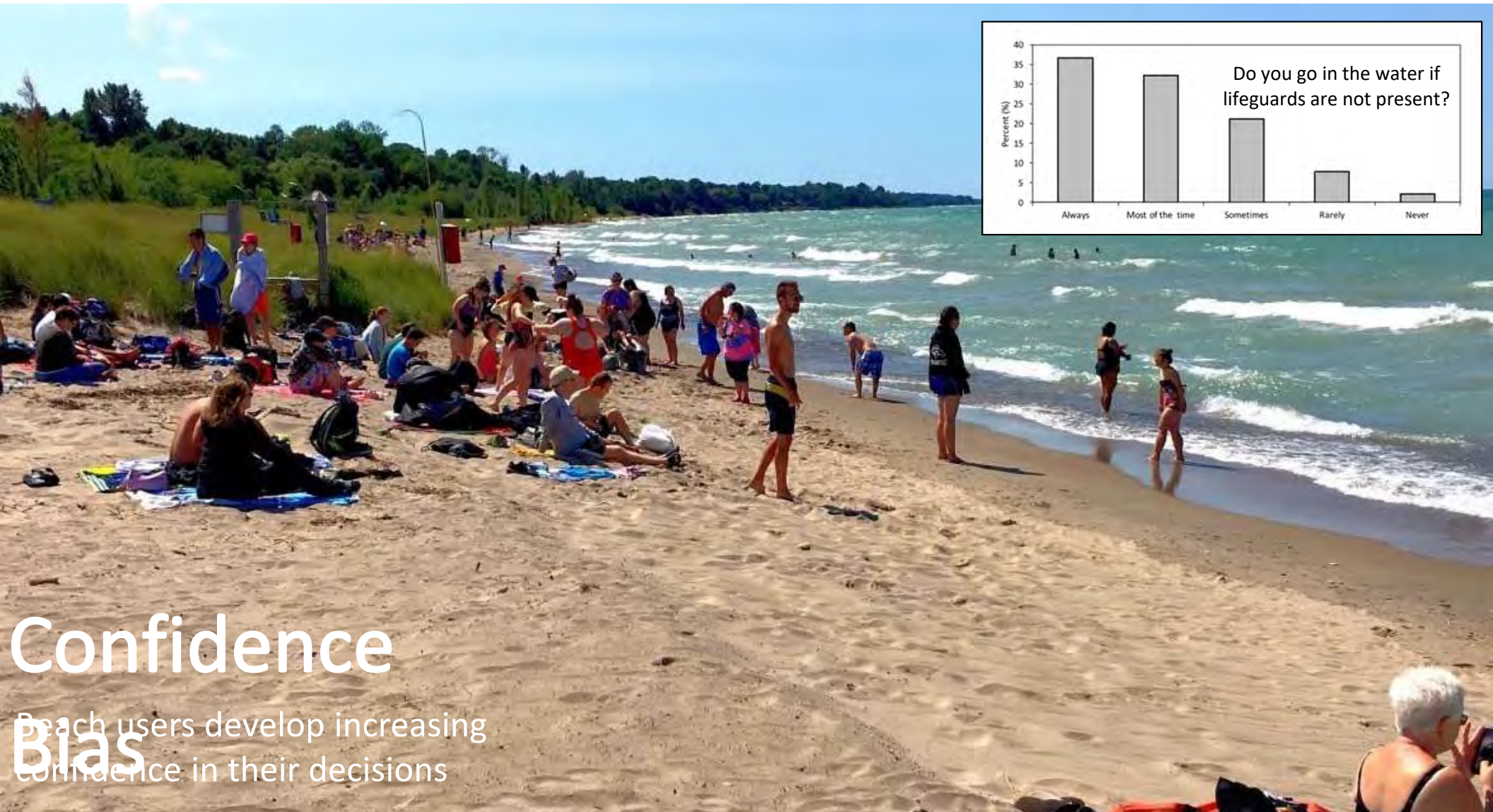
Menard, D., Houser, C., Brander, W., Trumble, S. and Scaman, A., 2018. The psychology of beach users: importance of confirmation bias, action, and intention to improving rip current safety. *Natural Hazards*, 94(2), pp.953-973.



Does this beach look safe?



Menard, A.D., Houser, C., Brander, R.W., Trimble, S., and Scaman, A. (2018) The psychology of beach users: importance of confirmation bias, action and intention to improving rip current safety. *Natural Hazards*, 94, 953-973.



Confidence

Beach users develop increasing confidence in their decisions

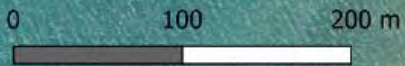
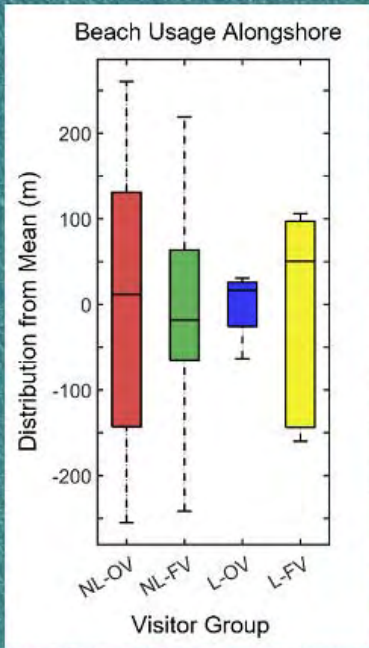
Bias

Beach users assume that access means that the beach must be safe



Trimble, S. and Houser, C., 2018. Seawalls and signage: How beach access management affects rip current safety. In *Beach management tools-concepts, methodologies and case studies* (pp. 497-524). Springer, Cham.

Station Beach Survey Locations
Jul. 30 - Aug. 1 (2022)



- Non Local - Occasional Visitor
- Non Local - Frequent Visitor
- Local - Occasional Visitor
- Local - Frequent Visitor
- All Visitor Survey Locations

Houser, C., and Smith, A. (Accepted with Minor Revisions). Short Communication: Perception of beach safety at a destination beach on the Great Lakes. Submitted to Canadian Geographies. September 2023.

Design Nudges: Use positive reinforcement and indirect suggestions to try to achieve non-forced compliance and influence the motives, incentives and decision making of groups and individuals



Beach Safety

Issues

Combination of bathymetric and structural rips plus strong surf

Seasonal and storm-dependent hazard

- Spatially variable hazard on same beach
- Inconsistent and invisible signage
- Access guides behavior towards no swim zone
- Safety is dependent on social norms and design nudges



Smart Beach

To develop, implement and test an integrated sensor network to provide a real-time and locally calibrated risk and hazard warning system for beach users and local authorities that in guides the behavior of beach users through a dynamic warning system.

Smart Beach

Integrated Sensor Network

Objective 1



WebCAT Cameras

- Anonymized beach user counts
- Spatial variation of surf
- Automatic rip current detection
- Beach erosion monitoring

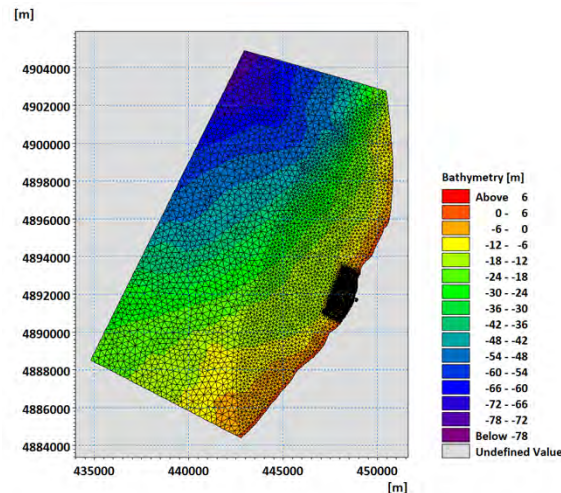
Local Meteorological Station

Real-time Wave Sensors



Wave and Current Model

Objective 2



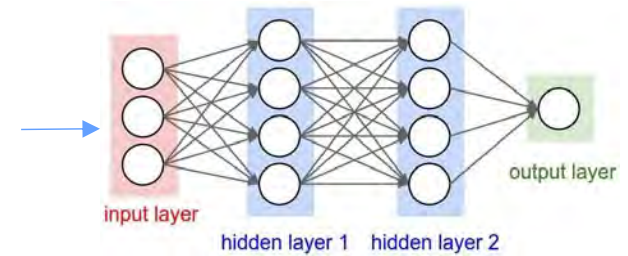
Field validated high-resolution wave and current model using Mike21/3 Software

Summer 2022 & 2023 conditions

Past drowning and rescue events

Extended Wave Model

Objective 3



Artificial Neural Network (ANN) model extension of wave and current model to all possible forcing conditions

Smart Beach

Beach User Perception Objective 4 & 6



Crowd-sourced assessment of surf conditions and swimming conditions

Beach user perception of warning system and incentives to safe behavior

Dynamic Flag System Objective 4



Locally-calibrated and evidence-based flag or light system that is spatially or temporally variable based on predicted and observed wave and current conditions

Beach User App & ? Objectives 5 & 6

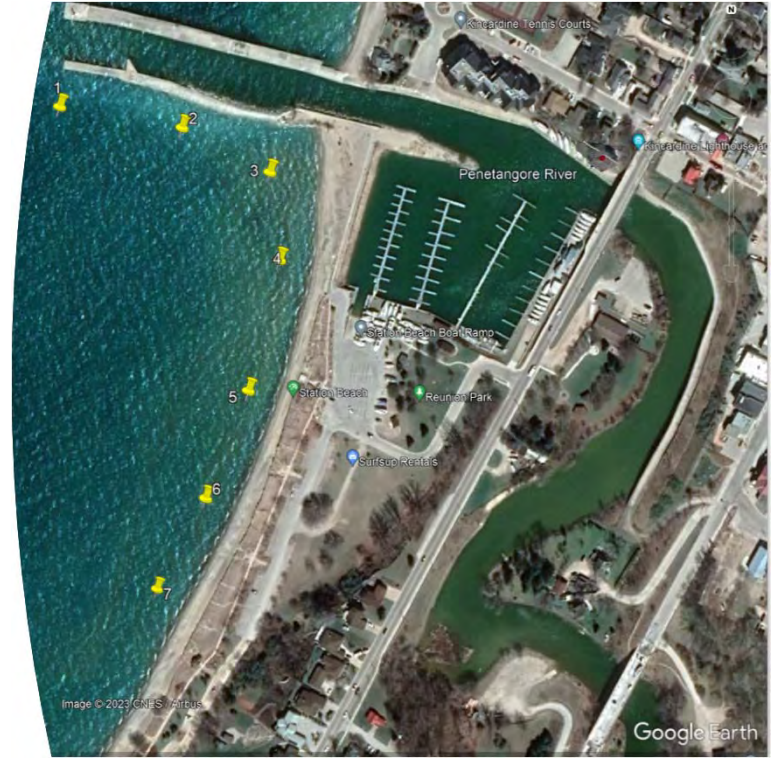
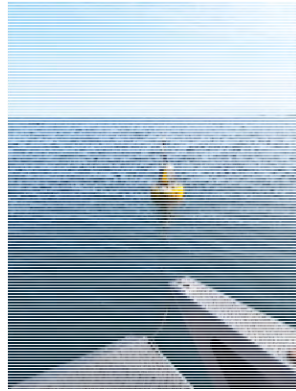
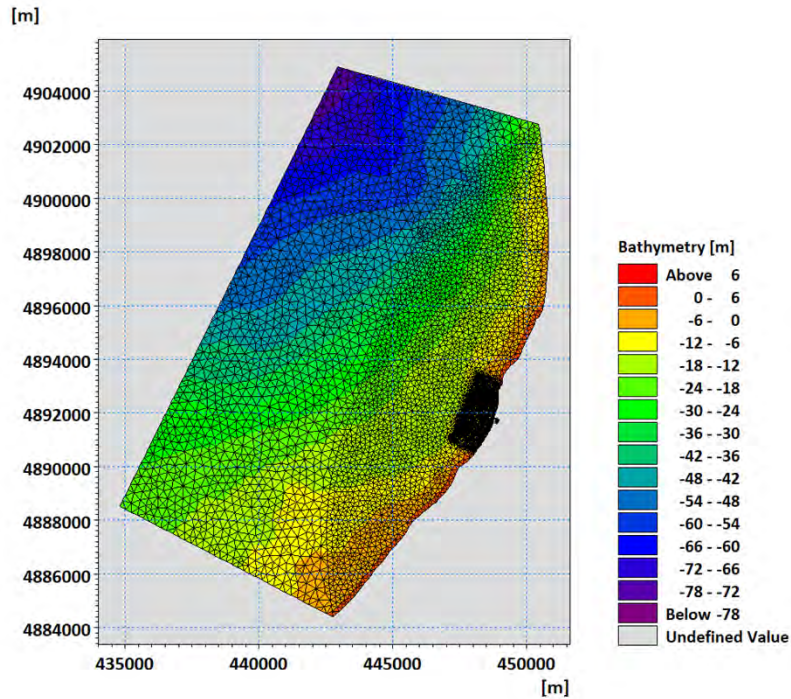


Real-time and forecast surf hazard at Station Beach

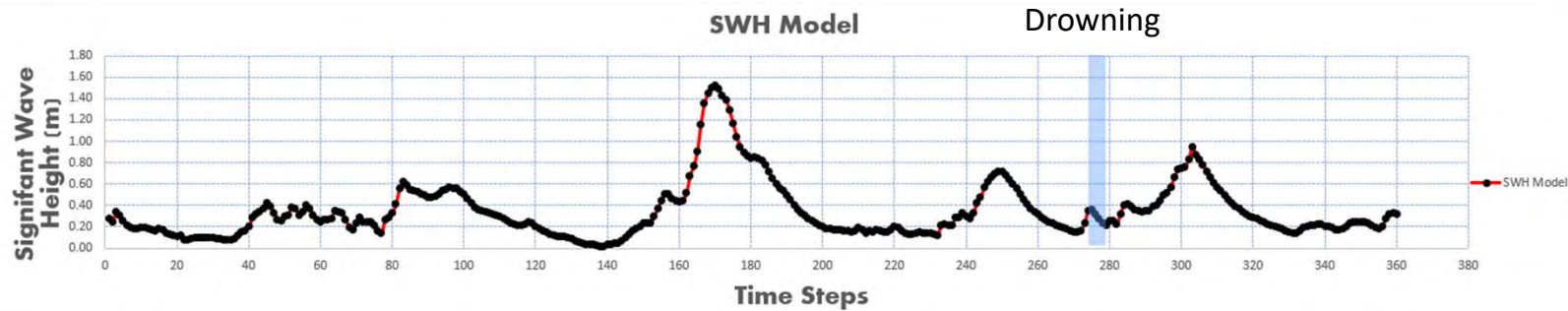
Dynamic and personalized warning based on beach user location

Incentives to safe behavior

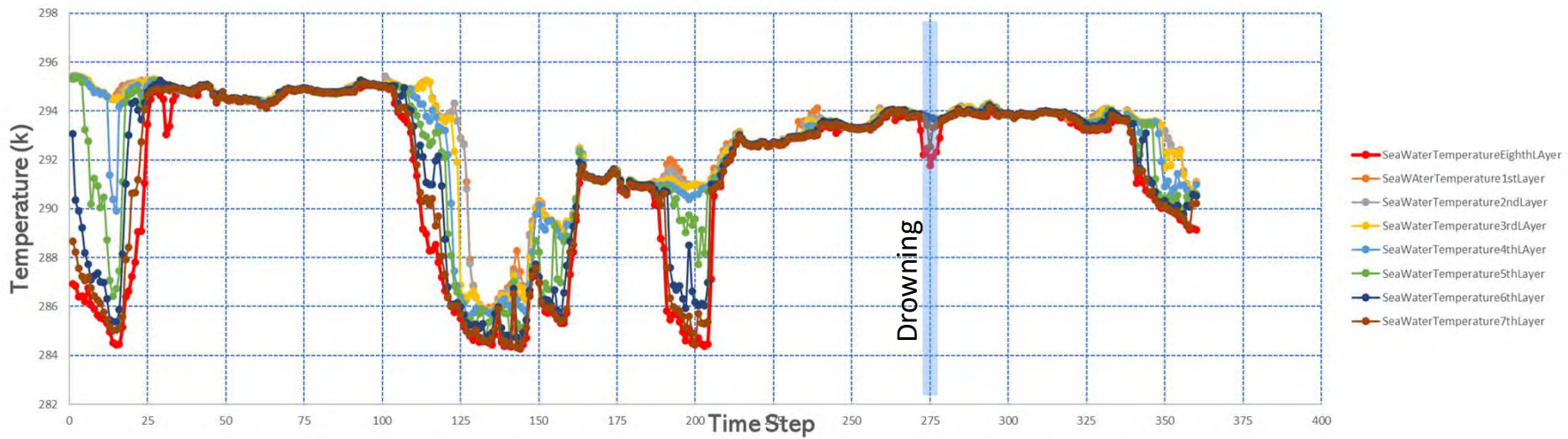
Wave Modeling



Wave height
of ~0.40 m

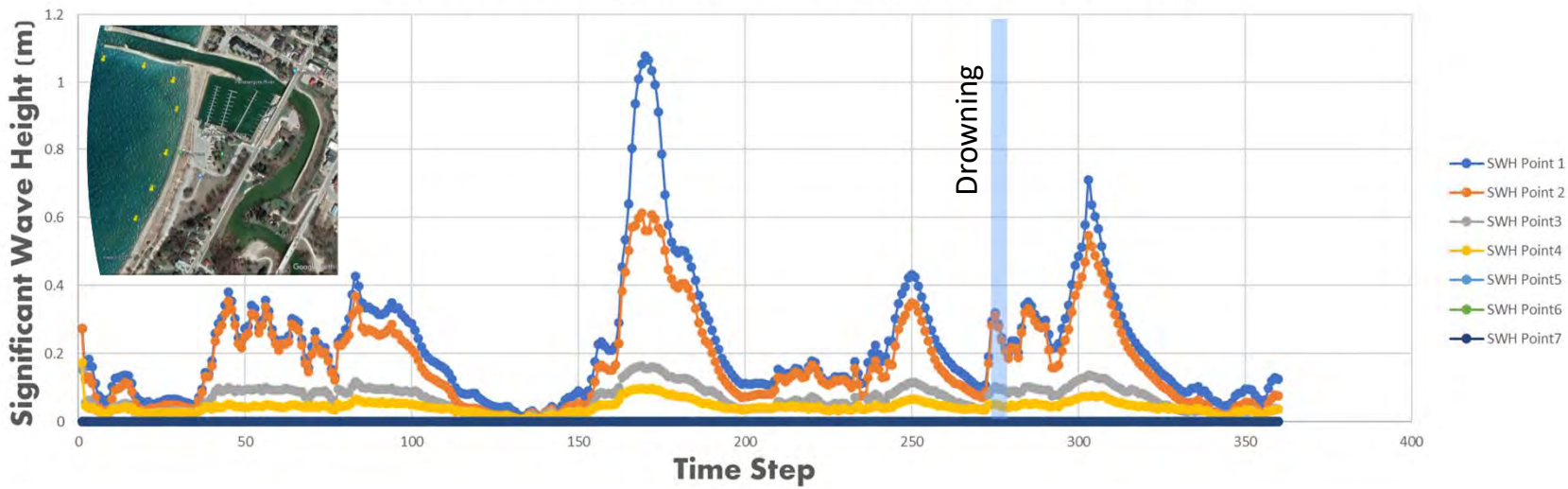


Sea Water Temperature All Layers



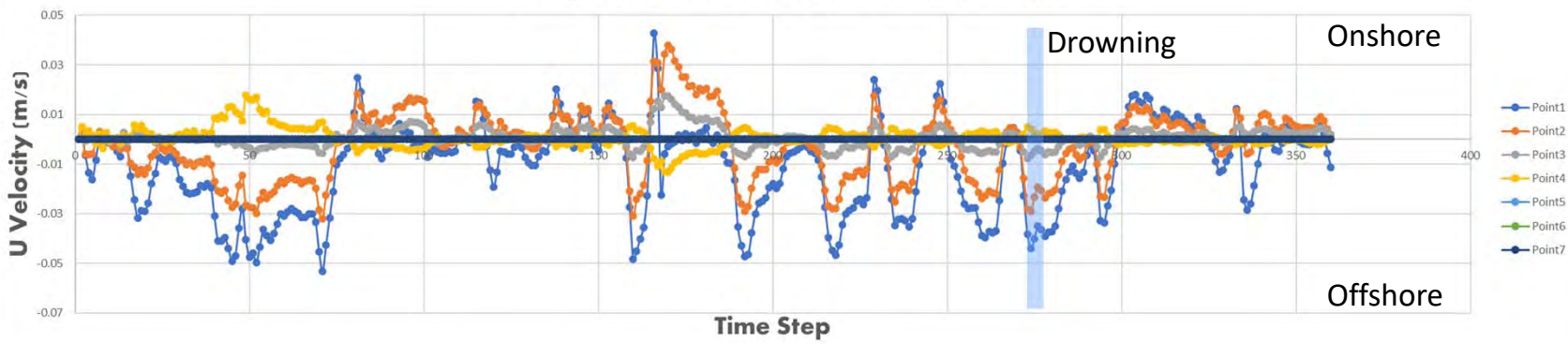
Minor
Upwelling

Comparison of Significant Wave Height for Different Points

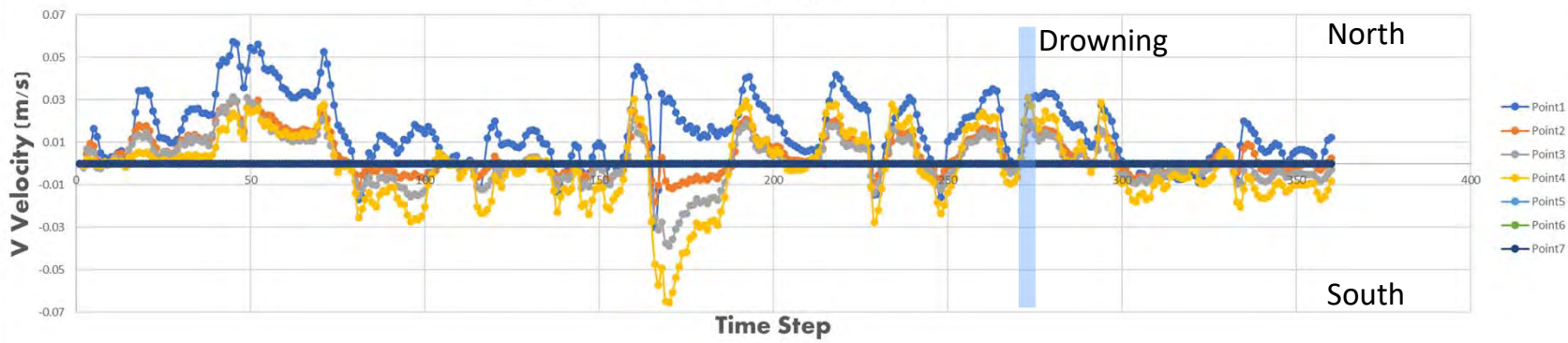


Along jetty
wave height of
~0.40-0.15 m

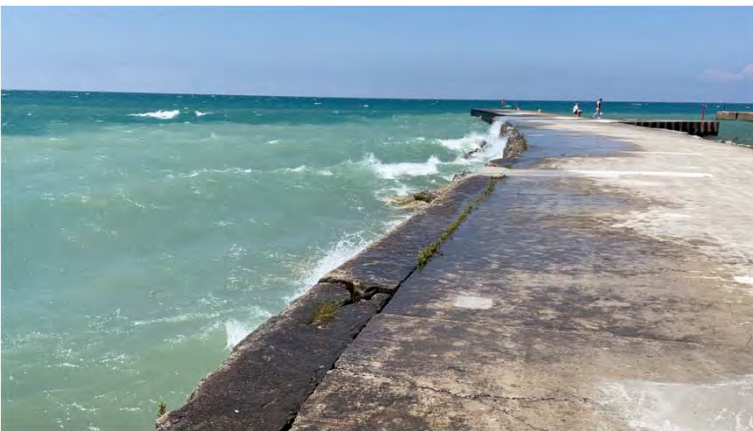
Comparison of U Velocity for Different Points



Comparison of V Velocity for Different Points



Weak to moderate offshore current along the jetty at the time of the drowning



Primary

Issues

- Access guides users to the jetty
- Access along jetty
- Inadequate signage
- Upwelling, waves and rip on date
- No lifeguards
- Personal factors

Representative Conditions



What flag should be flying on this day?

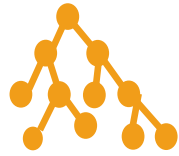
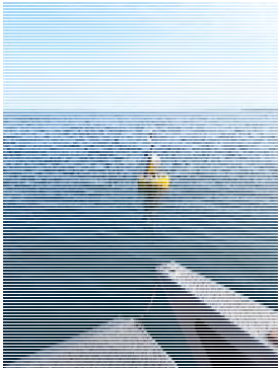
Know Before You Go!

- GREEN**
 - Calm Water
 - Good Swimming Conditions
 - ALWAYS Use Caution When Entering Water
- YELLOW**
 - Use Extreme Caution When Swimming
 - Potentially High Surf
 - ALWAYS Use Caution When Entering Water
- RED**
 - DANGEROUS SURF
 - STRONG CURRENTS
 - NO SWIMMING
 - STAY OFF PIERS

Text "beaches" TO 688777 to receive beach flag color status and alerts.

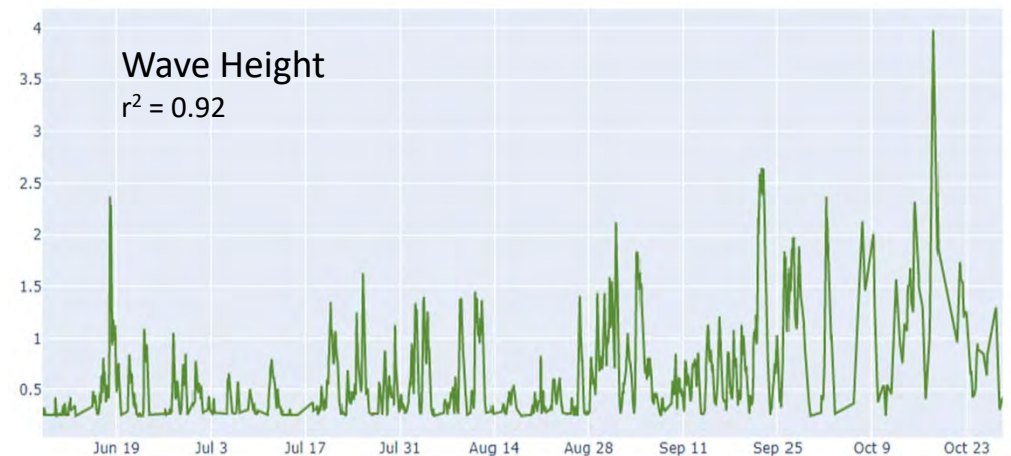
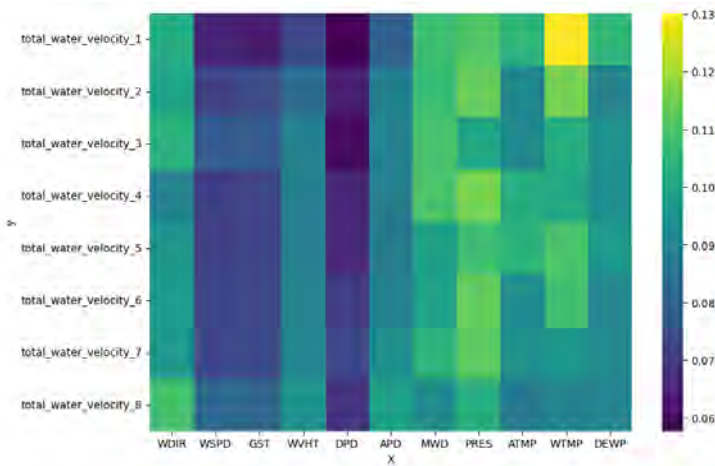
No water is safe water - stay within arms reach of children. south haven ON LAKE MICHIGAN

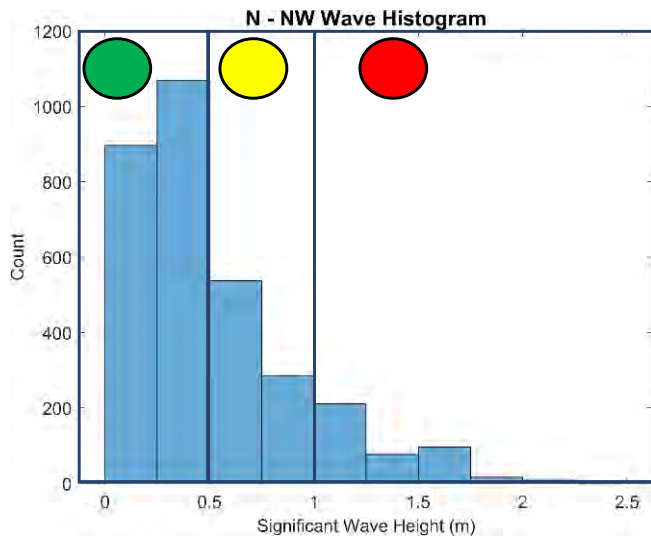
Predict nearshore surf conditions from buoy



Random Forest

- Following initial model selection and hyperparameter testing, a RF ML model provided the most accurate results.
- Feature importance analysis led to further model optimization
- Accurate predictions of surf conditions, including wave height ($r^2=0.92$) and water temperatures ($r^2=0.99$).





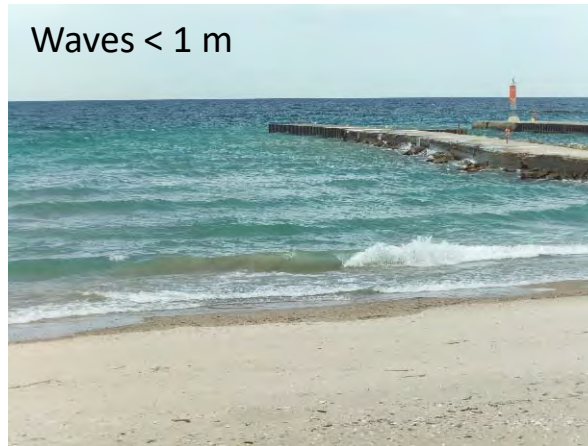
Predict wave heights and surf hazards from cameras

- Images were classified based on expected swim hazards, including green (<50 cm), yellow (< 1m), and red (> 1m)
- 90% accuracy of RF model compared to nearshore waves
- Future work will implement expert lifeguard knowledge to provide a more representative green – red gradient

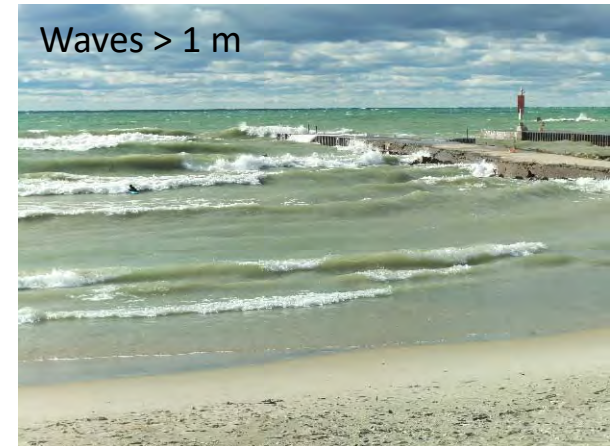
Waves < 50 cm



Waves < 1 m

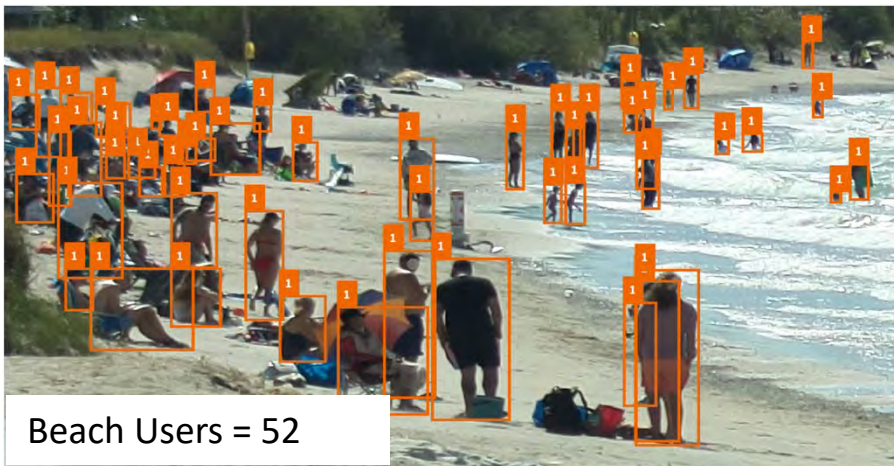


Waves > 1 m





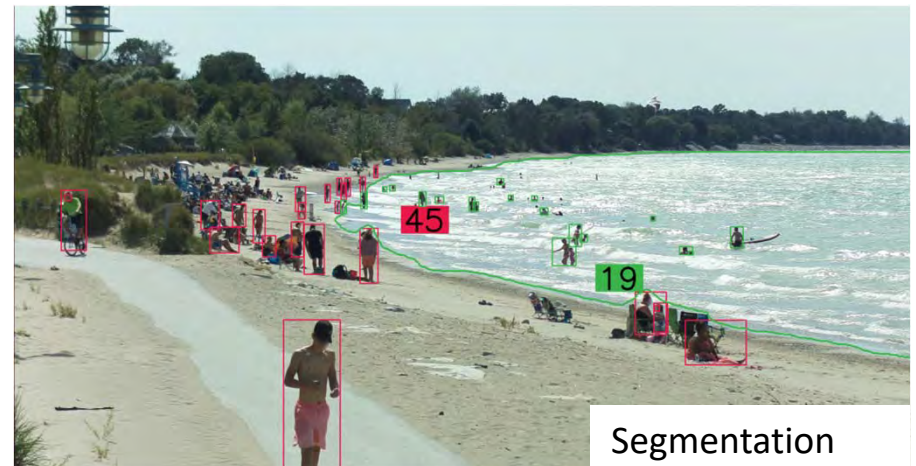
Anonymization



Beach Users = 52

Distribution of Beach Users

- Each image collected is anonymized in pre-processing
- >90% accuracy with 50 or less beach users
- Image segmentation allows for counts at ZOI (water – beach)
- Density mapping during high usage ($N > 50$) is planned

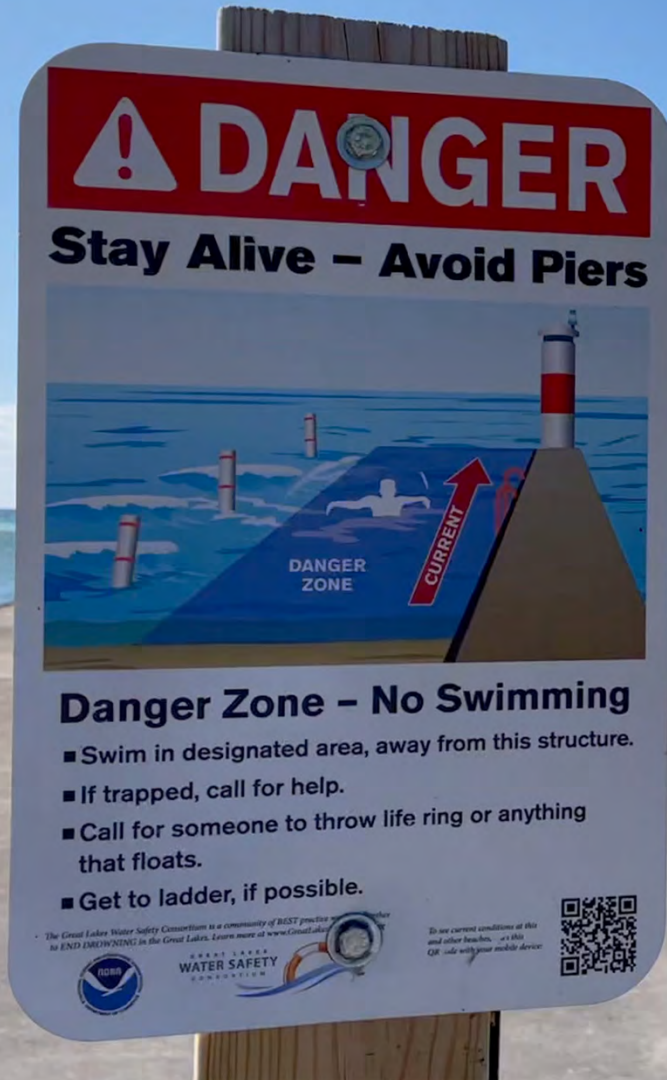


Segmentation

Next Steps: Smart Beach

- Modeling of weather and offshore wave data to inshore wave and current conditions
- Predictive (ML) model of wave and current conditions based on all possible combinations of wind and wave conditions (with Georgian College)
- Crowd-sourced assessment of inshore wave and current conditions in support of warning system
- Implementation and testing of warning system (summer 2024) and testing of warning and prediction platform (with Georgian College)

Smart Beach Update



UNIVERSITY OF
WATERLOO

FACULTY
OF SCIENCE

Smart Beach Project

Year 1: June 2022 – December 2022

- Sensor deployment at Station Beach
- Wave and current modeling at Station Beach

Year 2: January 2023-December 2023

- Wave and current model validation
- Testing of dynamic warning system
- Beach user behavior and incentive

Year 3: January 2024-December 2024

- Model calibration and refinement
- App development, distribution and testing
- Beach user behavior and incentive



Office of the Chief
Coroner

Presented by Dr.
Elizabeth Urbantke,
Regional Supervising
Coroner

Date: November 30,
2023

DROWNING DEATHS

KINCARDINE 2008-2023

Age of
Decedents
range from
16-73

Median is 42

AGE

5 Males

1 Female

SEX

1

Decedent
lived in
Kincardine

5

Decedents
were Non-
Residents

**ADDRESS OF
PRIMARY
RESIDENCE**

3 deaths occurred when
entering
water from Beach



3 deaths occurred when
entering
water off the Pier



LOCATION

3 entered water
for recreation

3 entered water to
attempt rescue of
others

REASON FOR ENTERING WATER

The Day We Will Never Forget.....

Jaime Blackwood + Taylor Robitaille



Our story



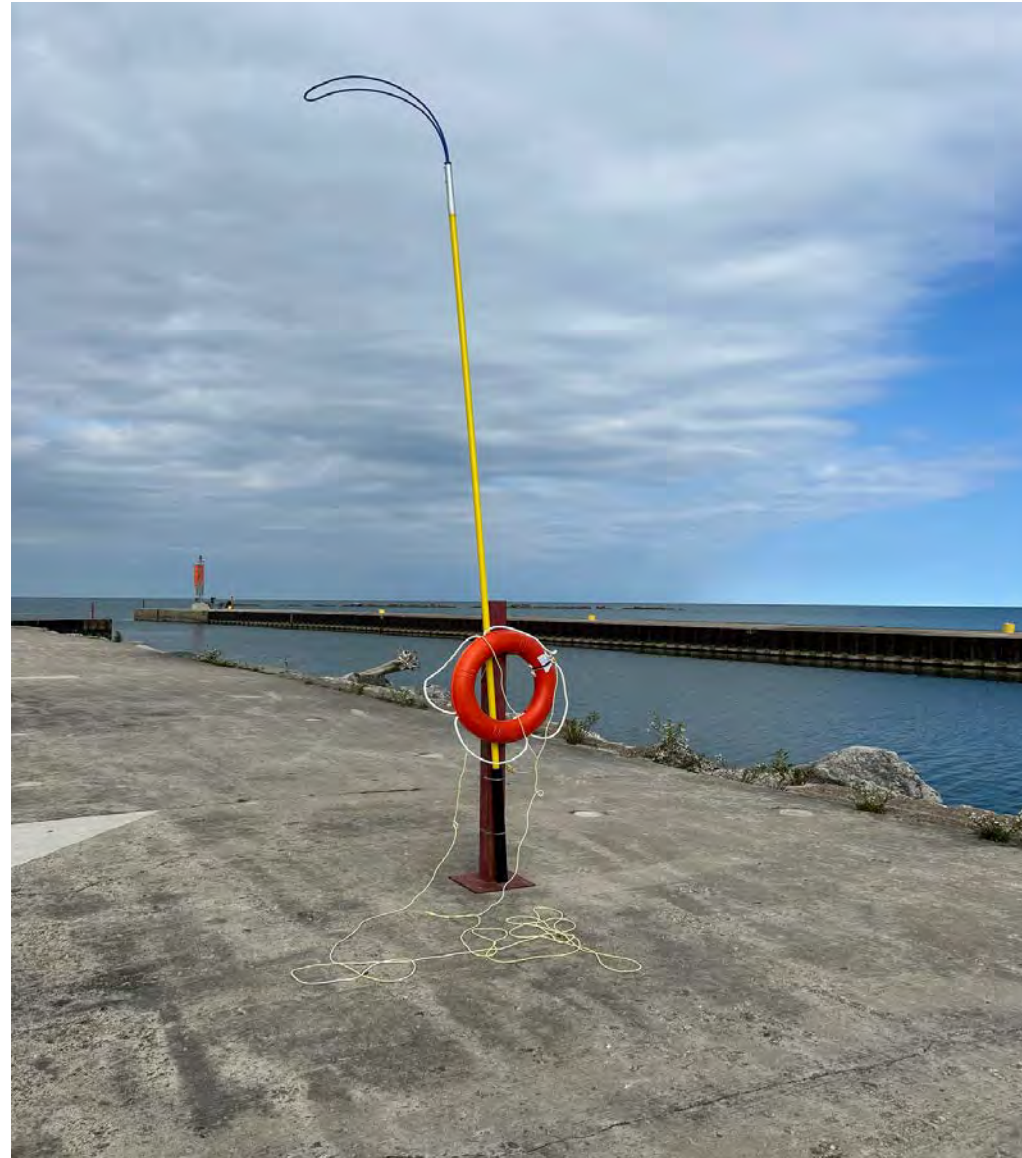


Our story





Our story





Our story





Our story



Reflections





History

- **Please realize the force of nature (Kincardine News 2000)**
- I submit this little horror story in the hopes that it may cause others to not make the same mistake that I did.
- On Sept 17th 2000, my daughter and I decided that we would go for the last of the summer dip in the lake (Huron). The waves were rolling in pretty fiercely and we figured it would be good fun. We entered the water approximately 100 ft South of the pier on Station beach. The water was cool but tolerable. Once in we enjoyed the tumbling and interaction with the waves. Very soon I realised that we were out of our depth (I am 6 ft tall) and I told my daughter that we should get back closer to shore. This is when the horror story began. We had been pulled out by the fierce undertow and now that same undertow was eroding any forward advantage that we gained by swimming. I should point out that both of us are strong swimmers.
- We fought this undertow for what seemed like an hour but probably was a good ten minutes during which time both of us realised that we were in serious trouble, and we had started to shout for help. **At this point I knew in my mind that if something did not change within a few minutes we would become casualties of natures' fierce ways.** Both of us were close to exhaustion due to the efforts of swimming and the waves crashing onto us which tumbled us over. The waves were coming at such a fast rate that it became very hard to catch our breath. Luckily during one of the lulls in the waves I found I was able to touch the bottom. The depth was about 4.5 feet, and I could feel the force of the undertow as pebbles and sand were being swept over my feet and ankles. Again, luckily, I was able to keep my footing despite the pounding of the waves. I was able to coach my daughter to me then I grabbed her arm, and we waded back to shore. We were very very lucky.
- Hindsight:
 - Because I swim so frequently in the lake, I now know that what saved us was nature itself.
 - I have swam many times when there have been large waves rolling in but I have never experienced undertow that strong before. I now remember that when we first entered the lake the undertow was "pulling" us into the lake. This SHOULD have set off alarm bells in my mind, it did not but it will in the future.
- The reason I chose to submit the details of this scary event is in the hope that it may cause alarm bells to go off in other Parents, other adults or children's minds that may prevent anyone from succumbing to Mother Natures' fury in the lake.
- It is somewhat embarrassing to admit that I got into this situation. I have been around for half a century.....I should know better. Please make my embarrassment worthwhile - discuss this event with your family to raise both yours and your families' awareness of this hazard.
- Peter Blackwood



Suggestions for improvements



Better ladders



More signage eye height
and easy to see



More big signs on beach



Ability to close the pier on
rough days



Flag system



Memorial for the many
who have passed away



Change parking so redirect
people further down
beach, away from pier



Beach patrol



THANK YOU FOR THE OPPORTUNITY TO SHARE

Appendix 6

Wayfinding & Signage Standards Manual





Bruce County, Ontario

Wayfinding & Signage Standards Manual

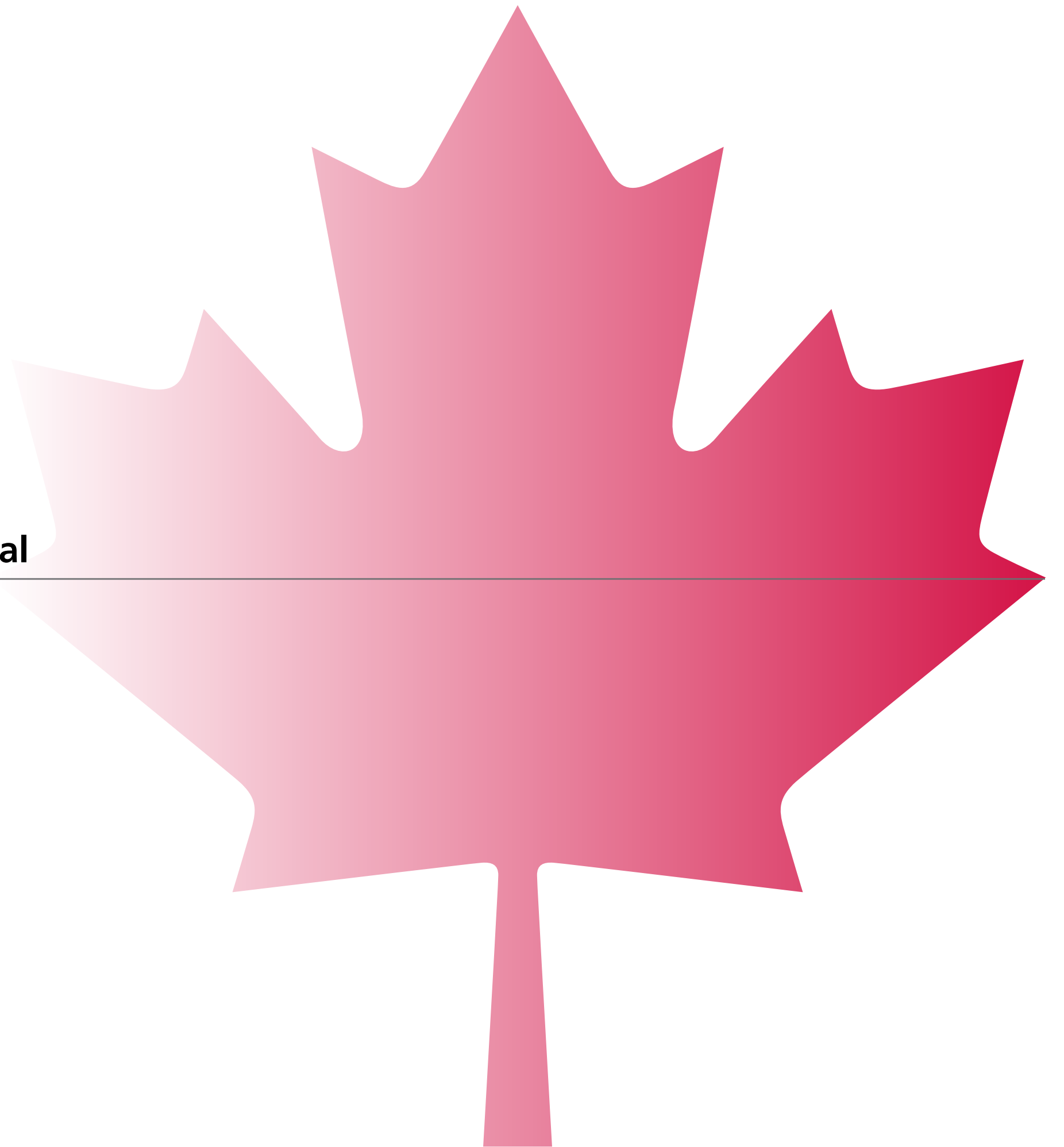
October 16, 2009

Prepared by:

corbindesign
People get lost. We fix that.™

109 East Front Suite 304
Traverse City, MI 49684
231 947.1236 tel
231 947.1477 fax
www.corbindesign.com

Wayfinding: Direction for people in motion



Introduction

Corbin's scope of work is to design a wayfinding program that will function county-wide, both in towns and in the rural areas in-between. The initial design and implementation is focused specifically on Port Elgin, Southampton, Tiverton and Kincardine, however these standards will provide a framework that can be used to expand the system throughout the entire county.

This Wayfinding and Signage Standards Manual provides guidance to Bruce County personnel and outside consultants involved in specifying, fabricating and installing signage in the Bruce County region. It is also designed to guide the use of the Bruce County signage design standard, to assure that it is correctly and consistently applied. Note that this is intended to be a general reference manual. Shop drawings from the fabricators selected to build the signs should take precedence over the sign type drawings included here when reordering signs or developing inserts.

For the system to remain effective over time, it is essential that the program standards be understood and followed. This Wayfinding and Signage Standards Manual is designed to help in that effort. It is important that staff members become familiar with the contents, refer to it whenever signage issues arise and support its use by others. If any questions arise when applying these standards Corbin Design is always available for consultation.

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Wayfinding Objectives

Objective:

It is clear to visitors when they have entered Bruce County, and also when they have entered an urban downtown area. The gateway experiences are welcoming and celebratory.

Strategies:

- Provide consistent, distinctive and visible gateway signage at all major entry points to Bruce County.
- Leave entry points to municipalities unsigned, relying instead on town gateway signage to display both the town and the associated municipality.
- Celebrate the visitors' arrival in each town by allowing a level of personalization to town gateway signage to reflect each town's character.

Custom community gateways are allowed within the system and have been developed for the pilot cities of Kincardine, Tiverton, Port Elgin and Southampton. Examples can be seen on page 9.

Objective:

Visitors are able to locate attractions in downtown areas and access them using the most efficient routes.

Strategies:

- Provide consistent, distinctive and visible gateway signage at all major entry points to Bruce County.
- Leave entry points to municipalities unsigned, relying instead on town gateway signage to display both the town and the associated municipality.
- Personalize downtown guide signage and directories to match the individual character of each town while maintaining overall visual consistency throughout the entire county.

Objective:

When traveling in rural Bruce County, all major intersections provide guide information to nearby towns, as well as trailblazer signage along longer routes.

Strategies:

- Identify all major intersections and place appropriate guide information to nearby towns.
- Locate trailblazer signage every few miles along longer stretches to assure visitors that they are still on the right path.

The CTODS system presents a challenge for the design and implementation of the proposed wayfinding program.

As we move forward with design development, discussion and negotiation between the County and CTODS may be necessary to implement the system in CTODS jurisdictional areas.

Objective:

Visitors are given only the information they need, when they need it.

Strategies:

- Provide a single sign at each intersection with up-to-date, accurate guide information to nearby destinations.

Consolidating messaging onto fewer signs reduces the total number of signs in the environment.

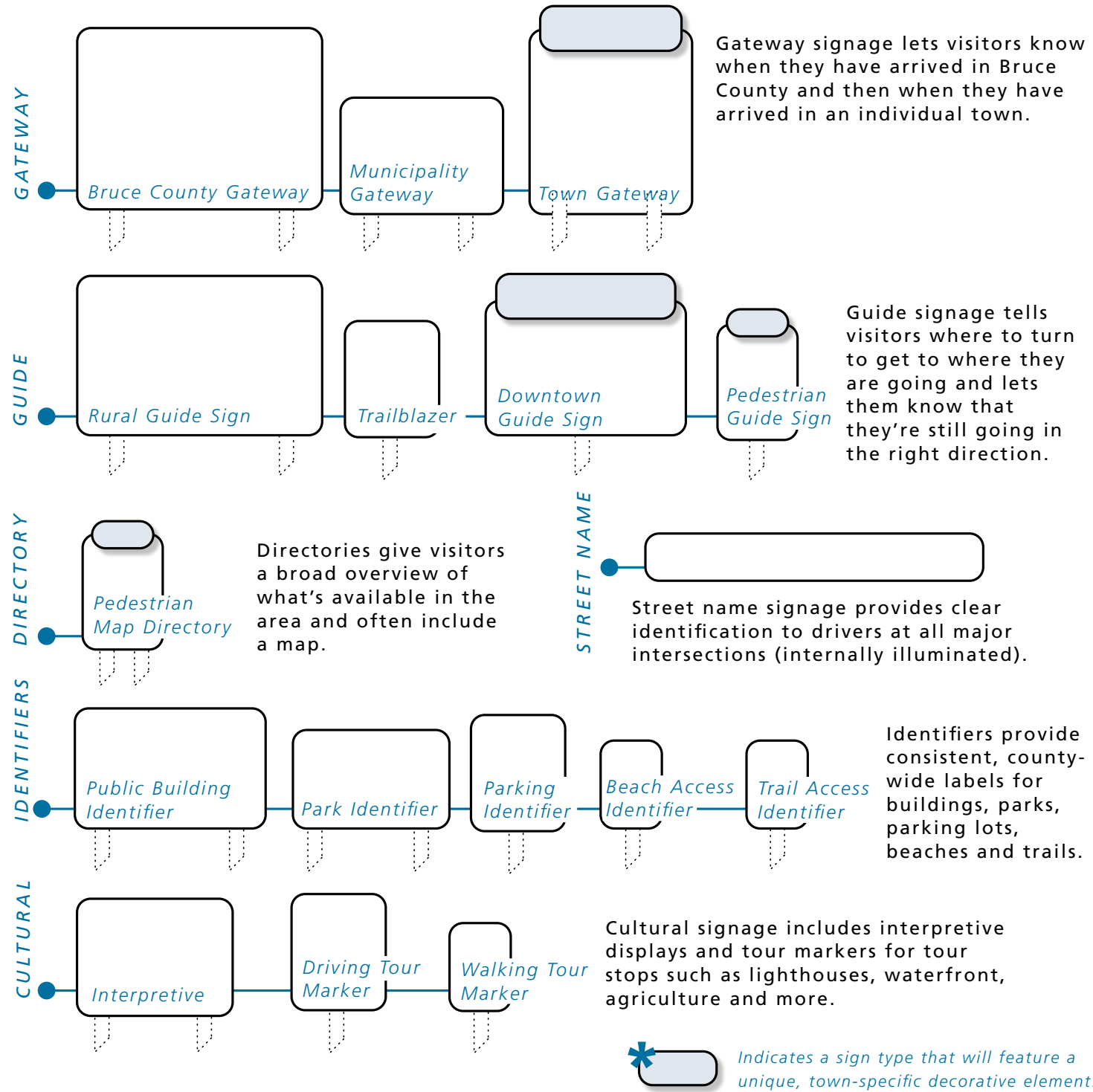
Objective:

Clearly mark cultural or scenic tours and destinations.

Strategies:

- Place consistent identifier signs at the entrance to each participant's location.

Sign Type Hierarchy



Standard Destination Nomenclature

Careful consideration should be given to destination names that are included on wayfinding signage. If possible, standard names should be agreed upon and used throughout the county. Some factors that should be considered when assigning a name for use on signage are; will the name fit on the sign, is the name one that is commonly used and understood by the public, is the name concise and easily understood by the first-time visitor, will the name fit on one line on guide signs, if the name is long can it be abbreviated without sacrificing comprehension, will the name remain the same for a long time.

Below is a listing of the approximate number of characters that will fit on one line of a given sign type:

Gx-1	~14 characters
Gx-2	~14 characters
Gx-3	~16 characters
Gx-4	~16 characters
lx-3/lx-4	~12 characters per line
lx-7a	~17 characters
lx-7b	~17 characters
lx-7c	~18 characters

An example of a list of common destinations is provided in the next column.

Airport
 Arena
 Beach
 Boat Launch
 Bruce County Museum
 Campground
 Chamber of Commerce
 Community Complex
 Curling Club
 Downtown
 Fire Hall
 Soccer Field
 Lighthouse
 Marina
 Municipal Office
 Police Station
 Public Library
 Public Library _____ Branch
 Rail Trail
 Seniors Centre
 Sports Fields
 Theatre
 Visitor Centre

Acceptable Abbreviations for Street Names

No periods may be used. The 1st letter of the 1st/2nd words should be capitalized.

Avenue	Ave	Pier	Pier
Baseline	Bsln	Parkway	Pkwy
Boulevard	Blvd	Place	Pl
Circle	Cir	Point	Pt
Close	Cl	Road	Rd
Concession	Conc	Ridge	Ridge
Cove	Cove	Row	Row
Crescent	Cres	Run	Run
Court	Crt	Sideroad	Sdrd
Drive	Dr	Street	St
Extension	Ext	Terrace	Terr
Glen	Glen	Line	Line
Grove	Grove	Trail	Trl
Haven	Haven	Walk	Walk
Hill	Hill	Way	Way
Highway	Hwy	Woods	Wd
Line	Line	Townline	Tline
Lane	Ln		
Loop	Loop		
Market	Mkt		
Path	Path		

Contact List

For questions about the exterior signage program or its application in Bruce County, use the following contact information:

Chris Hughes
County of Bruce
Box 129, 578 Brown Street
Warton, ON N0H2T0
519.534.5344
chris@explorethebruce.com

For questions about wayfinding for new projects or about current project documentation, use the following contact information:

Heidi Jones or Shelley Steele
Corbin Design
109 E Front St, Ste 304
Traverse City, MI 49684
231.947.1236
heidi@corbindesign.com
shelley@corbindesign.com

Maintenance Recommendations

Exterior Signage

Acrylic polyurethanes are often the coatings of choice in finishing projects when durability and performance are required. Matthews Acrylic Polyurethane, MAP®, is engineered to provide long-term protection against weathering. Based on customer reports and past performance, Matthews Paint has seen MAP® last 4 to 8 years in actual field exposure without noticeable loss of gloss or color.

Service performance is determined by many factors, including geographical location, orientation to the sun and exposure. While Matthews expects its product to outperform any number of coatings, extreme exposure conditions could result in a shorter time frame for the coating's performance.

Finish Maintenance

Maintenance and care of painted and clear coated polyurethane surfaces can be done with commercially available non-abrasive cleaners and polishes recommended for finishes exposed to the environment.

It is recommended to wait at least 30 days after painting before cleaning or polishing. A mild detergent and water solution with soft cloth toweling, followed with a thorough clean water rinse, is often sufficient to remove most dirt. Polish (liquid or paste) application should be done with a wet soft cloth covered sponge and buffed with a soft flannel cloth. This is best accomplished in the cooler hours of the day avoiding direct sunlight if possible. Use of polish over satin finishes may result in an increase to the gloss level.

Any questions should be directed to:

Matthews Paint
8201 100th Street
Pleasant Prairie, WI 53158
800.323.6593

<http://corporateportal.ppg.com/na/refinish/matthews/>



Dx-1, Dx-1a Pedestrian Map Directory

This post-mounted one- or two-sided sign is used mainly in downtown areas to provide visitors with map and directory information. Destinations included in the directory would be civic, retail, recreational, entertainment, etc. The second side of the sign can be used to carry civic group information, in an effort to replace signs with this type of information typically at the outskirts of town. A header element, unique to the town, is attached on the directory side of the sign to reinforce the community identity.

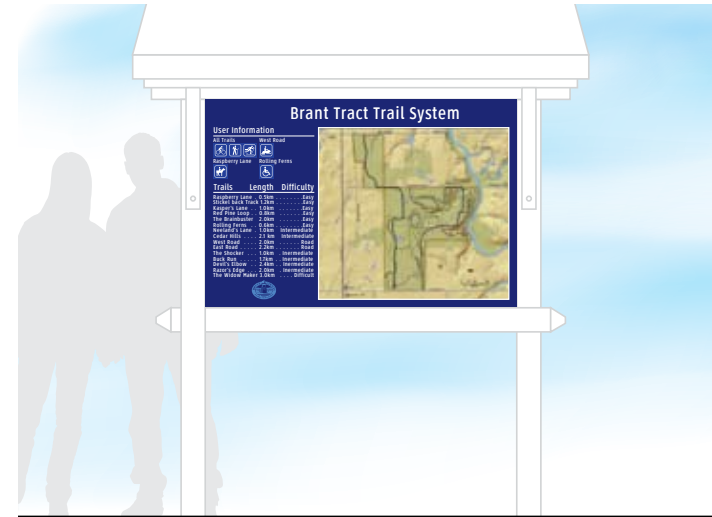
See Page 19



Dx-2 Interpretive Marker – Large

These non-illuminated sign types are used to communicate information about, or explain, the nature, importance, and purpose of historical, natural, or cultural resource, object, or site using photos, graphics and text. It is important that a common layout be established so that the signs appear unified throughout the county system.

See Page 20



Dx-4 Trail Kiosk

This sign's structure is meant to be more appropriate in natural settings and would be used at trail heads, mountain bike parks, river launch areas, etc. The layout of the sign uses colors, fonts and graphics that match the rest of the county wayfinding system.

See Page 21



Gx-1 Rural Guide

This non-illuminated sign type is used on the highway outside of town and designed to meet CDOTs standards for reflectivity, proper cap height and breakaway base. The sign type can accommodate four destinations that are listed in the following order; left, right, then straight ahead, with destinations in the same direction listed alphabetically.

See Page 22



Gx-2 Trailblazer

This non-illuminated sign type is used on roads and highways to provide drivers with visual reinforcement when there are long distances between decision points. The sign is designed to meet CDOTs standards for reflectivity, proper cap height and breakaway base.

See Page 23



Gx-3 Downtown Guide

This non-illuminated sign type is the first guide sign that drivers will encounter after entering a town. This sign type can accommodate four destinations that are listed in the following order; left, right, then straight ahead, with destinations in the same direction listed alphabetically. A header element, unique to the town, is attached to the sign to reinforce the community identity.

See Page 24



Gx-4 Pedestrian Guide

This non-illuminated sign type is used to direct pedestrians. It can accommodate five destinations that are listed using the same guidelines as the Gx-3. A header element, unique to the town, is also attached to the sign to reinforce the community identity. Since its size is similar to the Gx-3 care must be taken when placing and messaging this sign so that it doesn't point to a destination down a one-way street as motorists may also be using this sign.

See Page 25



Gx-5 Driving Tour Guide

This non-illuminated sign type is vehicular in scale and used either inside or outside a town to designate a walking tour. Although this sign is non-illuminated its reflective graphics allow for good visibility at night. When this sign is used to designate a route careful attention should be given to its placement so that drivers are given enough warning for a change of direction and reinforcement when there is a great distance between decision points.

See Page 26

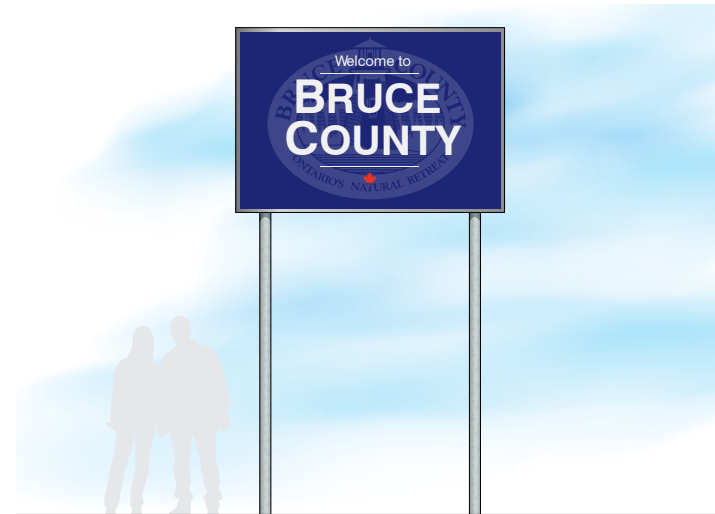
Exterior Sign Type Descriptions



Gx-6 Walking Tour Guide

This non-illuminated sign type is pedestrian scale and used within a city or town to designate a walking tour. As with the Gx-5 careful attention should be given to its placement so that pedestrians are given enough warning for a change of direction and reinforcement when there is a great distance between decision points.

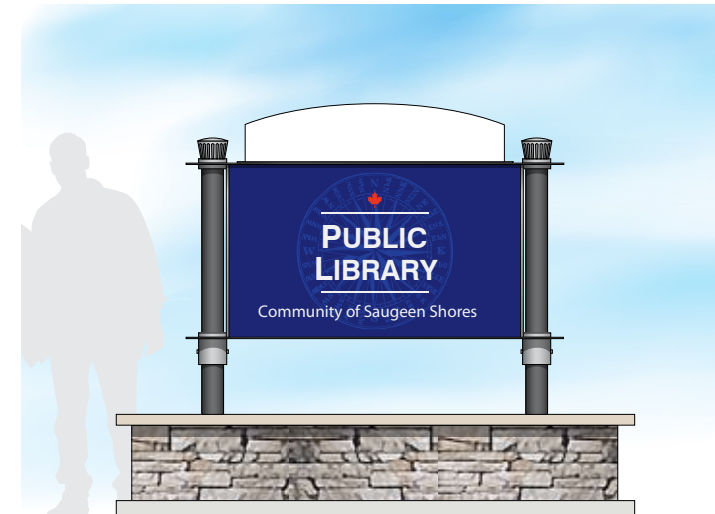
See Page 27



Ix-1 County Gateway

This non-illuminated sign type is used on the highway at entrance points to Bruce County.

See Page 28



Ix-3, Ix-3a Public Building ID & Ix-3b Public Building ID – Large

This non-illuminated sign type can be one- or two-sided and is used to identify an individual public building within a city or town. The Ix-3 has the same construction as the Ix-4 with the addition of a stone base to match the stone used on the custom gateway elements. A header element, unique to the town, is attached to the sign to reinforce the community identity.

See Page 29 & 30



Ix-4, Ix-4a Park ID

This non-illuminated two-sided sign type is used to identify outdoor parks or sports complexes. This sign is typically installed parallel with a street or roadway. The destination name appears on the front with emergency and park maintenance information displayed on the back. A header element, unique to the town, is attached to the sign to reinforce the community identity.

See Page 31



Ix-5a Illuminated Parking Lot ID – Double-sided & Ix-5b Illuminated Parking Lot ID – Single-sided

This illuminated freestanding sign type is used to identify the entrance or boundary of a public parking area. It should be located at every primary entrance to the parking area.

See Page 32 & 33



Ix-6, Ix-6a Beach Trail ID

This non-illuminated sign type is to identify beach access points, trailheads or access points, river access points, or at parks that are too small for an Ix-4 sign type. This sign can also display up to eight symbols, identifying activities that are permitted or not permitted within the area being designated.

See Page 34



Ix-7a Illuminated Street ID, Ix-7b Illuminated Street ID – Large & Ix-7c Non-illuminated Street ID

Use this illuminated sign type at major intersections to give drivers the opportunity to see the street name from a long distance. The non-illuminated version of this sign type should be considered as a tertiary choice at smaller intersections and when illumination is not required or not possible.

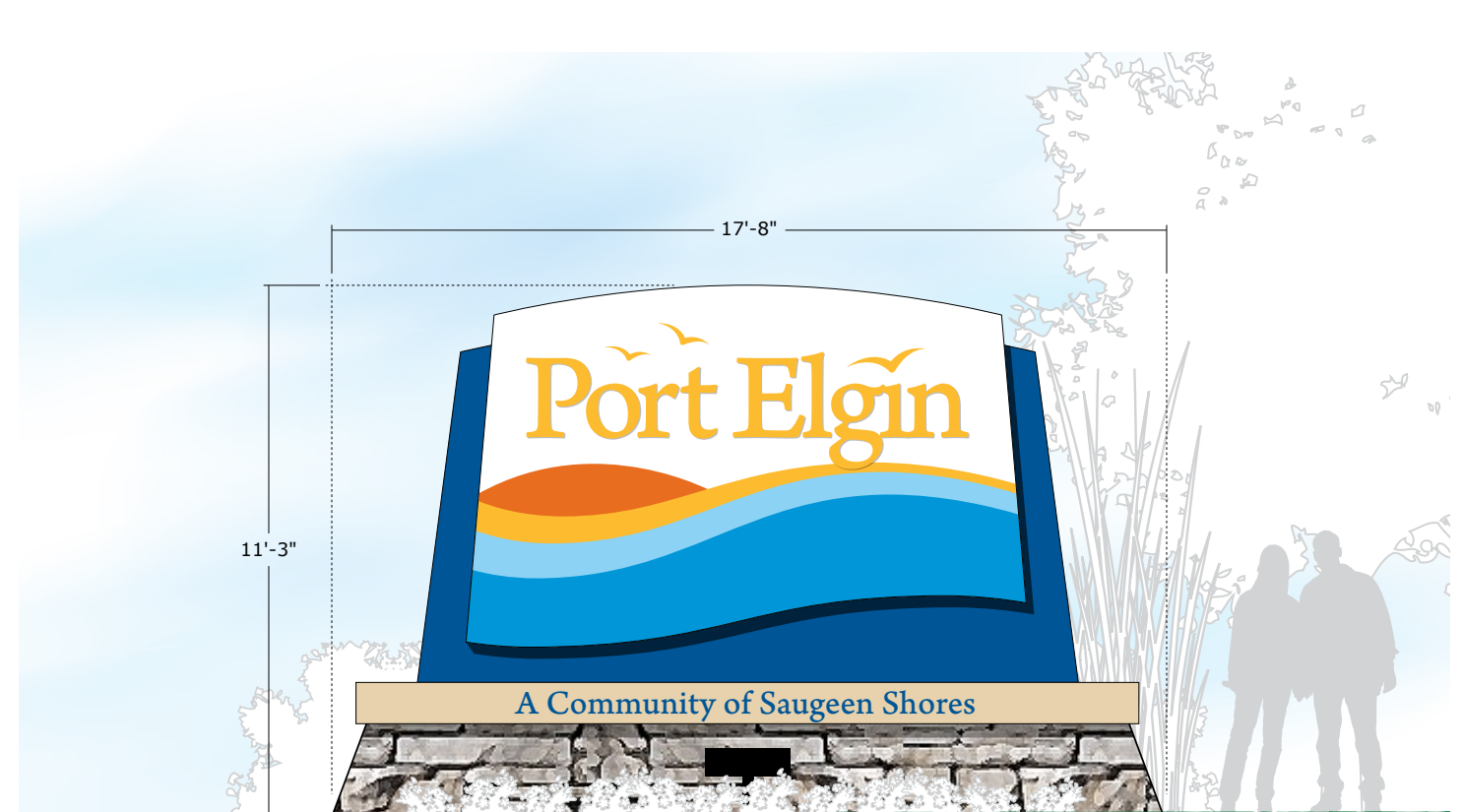
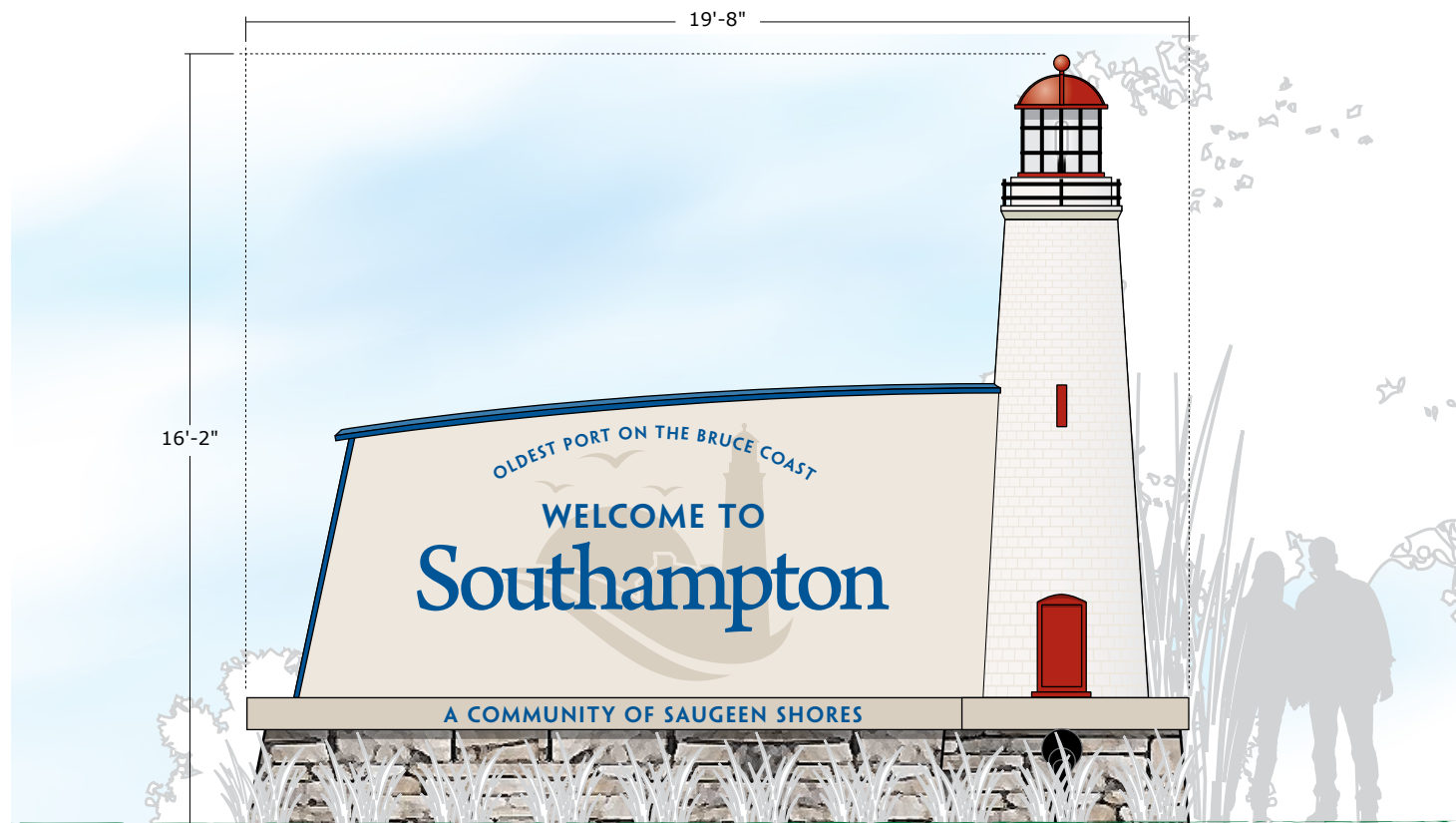
See Page 35 -37



Ix-8 Street ID


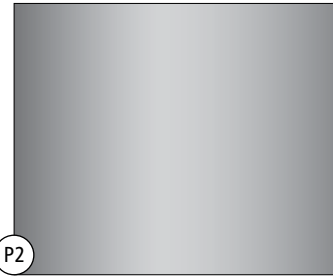




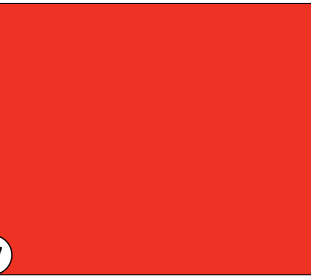
This non-illuminated street sign design is provided to replace the existing system throughout the county. As street signs need replacement all new street name signs should have a blue background with white lettering to give a consistent system appearance.

See Page 38



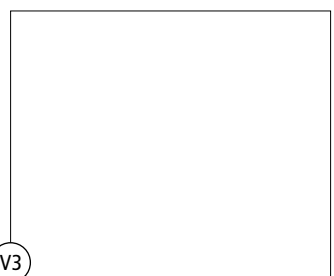
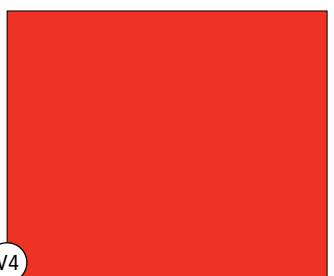






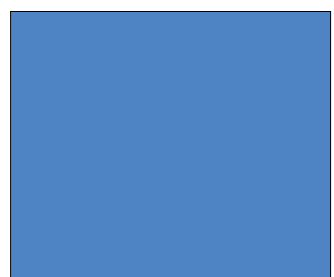
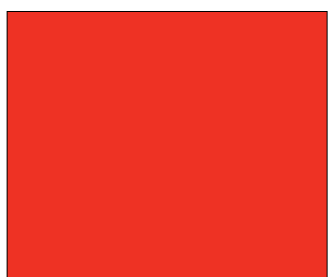
Paint

						
P1 Blue MP00891	P2 Metallic Silver MP18071	P3 Metallic Dark Gray MP19952	P4 White MP N-202	P5 Light Blue MP00895	P6 Medium Blue MP18179	P7 Red MP00643

Vinyl

			
V1 Blue ORACAL Series 8300 049 King Blue	V2 White 3M 3870 High Intensity Reflective	V3 White 3M 3290 Engineer Grade Reflective	V4 Red 3M 3272 Engineer Grade Reflective

PANTONE® Inks

			
Blue PANTONE® 2756	Medium Blue PANTONE® 2736	Light Blue PANTONE® 2727	Red PANTONE® 485

NOTE: Fabricator is responsible for matching all colors and materials as specified and is required to provide Corbin color and material samples for approval.

CAUTION! CONSISTENT AND ACCURATE COLOR REPRODUCTION IN THIS DOCUMENT CANNOT BE ASSURED DUE TO THE LIMITATIONS OF COLOR PRINTING TECHNOLOGY.

The Coated Pantone Matching System®, 3M or Avery vinyl system, and Matthews Paint system are used for specifying signage color matches. (In the absence of actual sign material color chip reference sets, actual specified product color swatches should be referenced for color matching.) Shown here are approximations of the primary signage background colors and supporting accent colors.

Actual color finishes on signage are to be matte or low luster (not shiny or glossy) and exclusively a premium acrylic polyurethane.

Signage paints produced by Matthews Paint Company are to be the standard reference, with the exception of Benjamin Moore paints where specified.



NOTE: These symbols should be reproduced from the Designer's electronic art.

Swiss BT 721 Bold

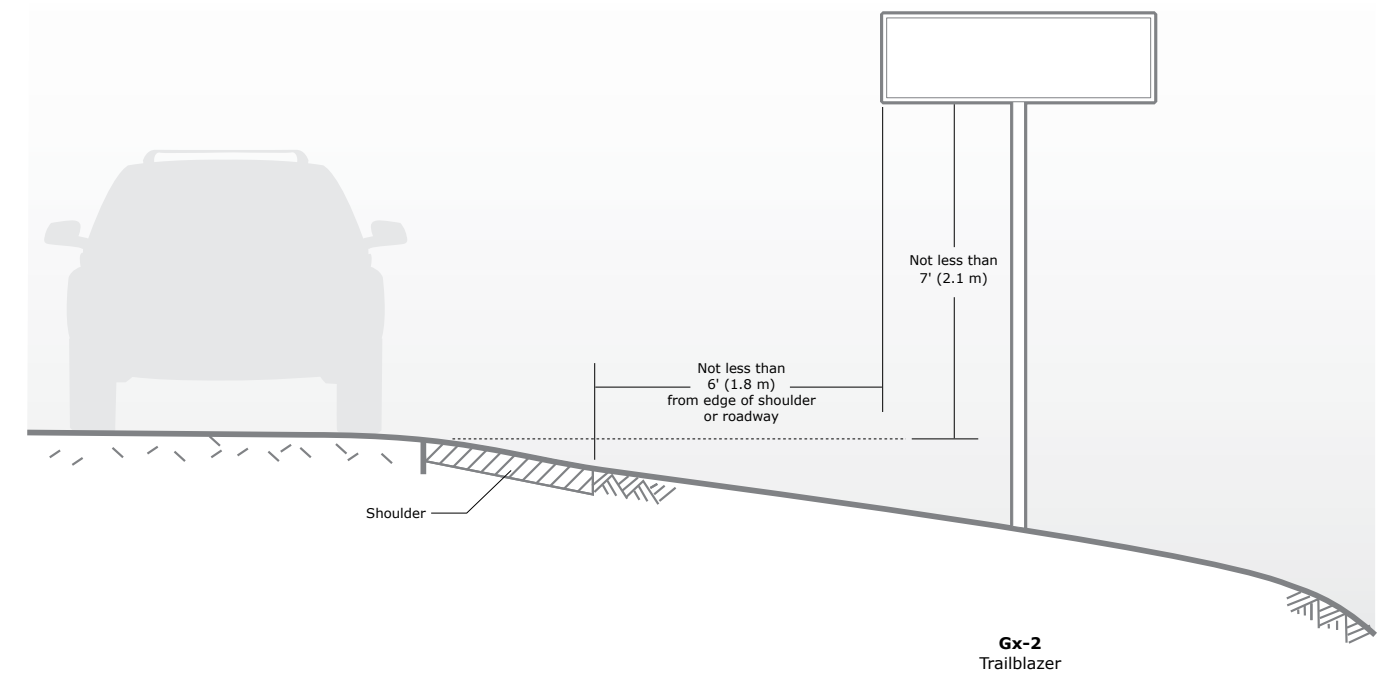
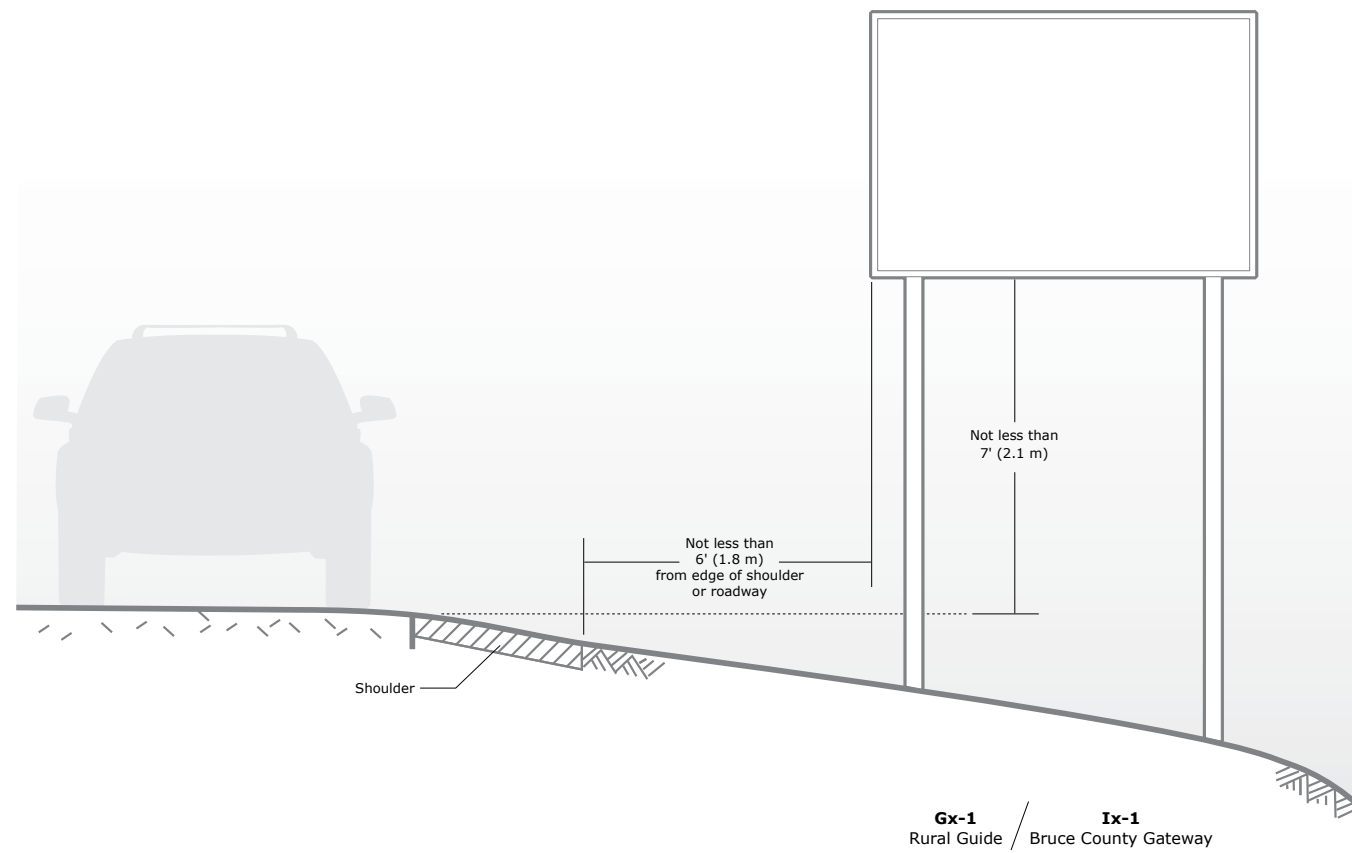
Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn
Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz
1234567890

Clearview Highway 2-W

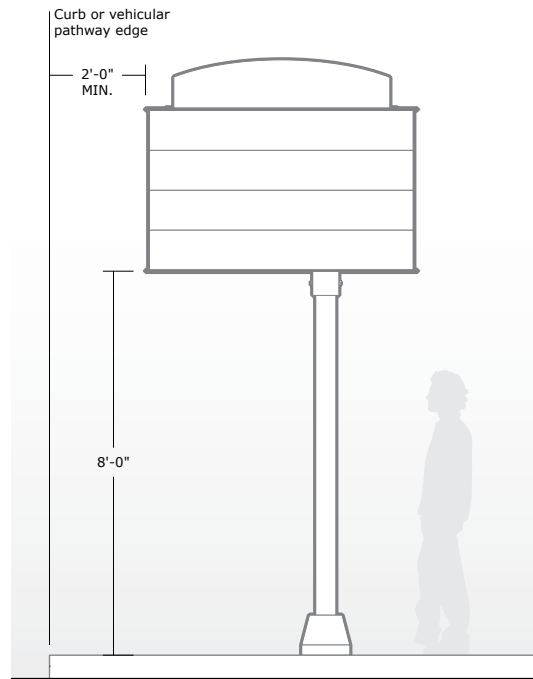
Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn
Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz
1234567890

NOTE: Font substitutions are not acceptable. It is the Fabricator's responsibility to purchase these fonts.

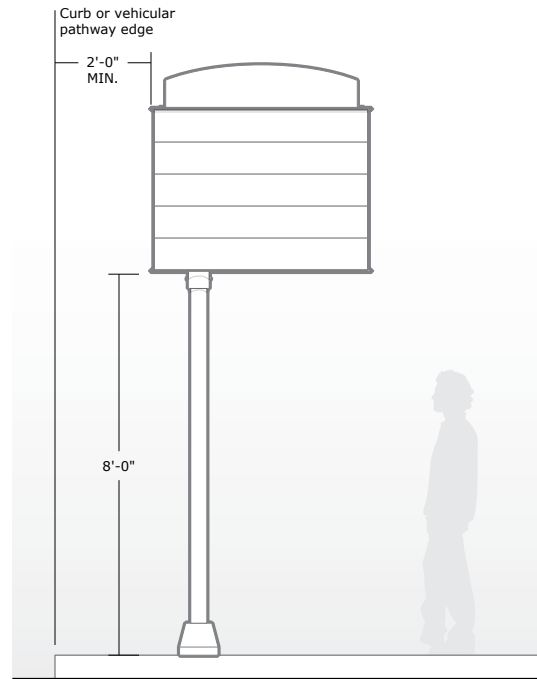
These fonts can be purchased from Adobe at <http://www.adobe.com/>.



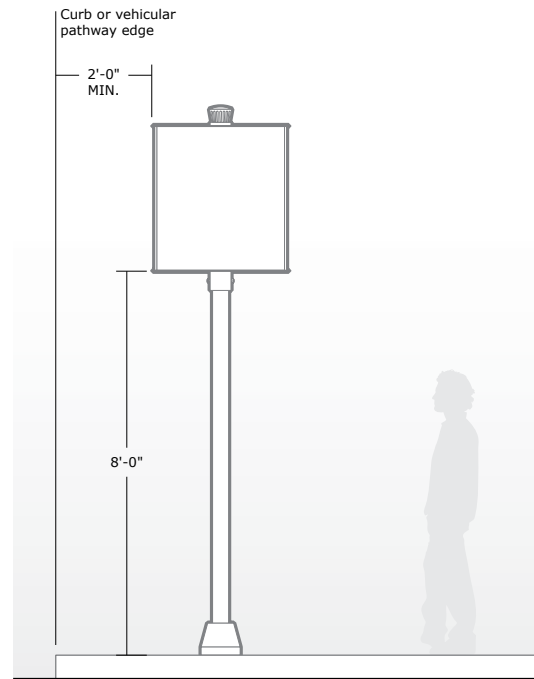
NOTE: These sign placement guidelines are general in nature. Each sign that is placed should be site verified prior to installation.



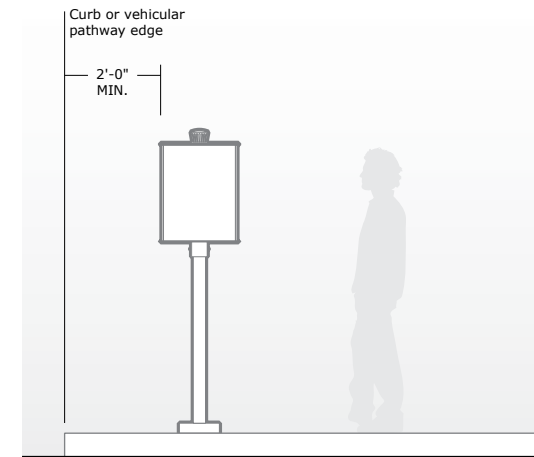
Gx-3
Downtown Guide



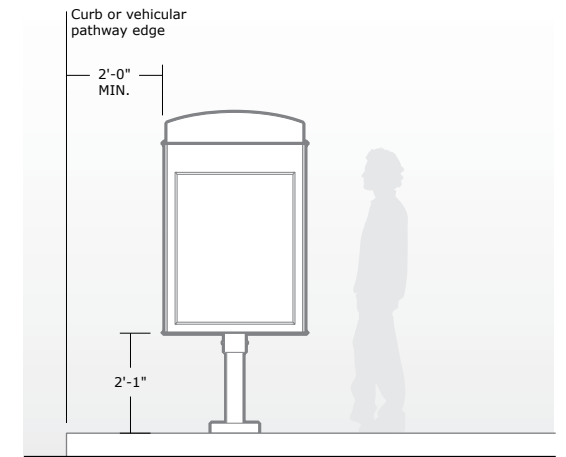
Gx-4
Pedestrian Guide



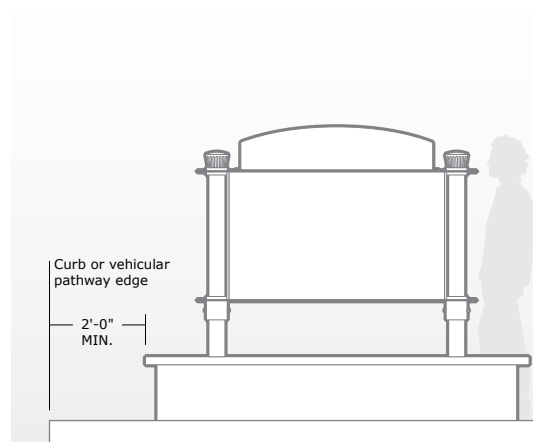
Gx-5
Driving Tour Guide



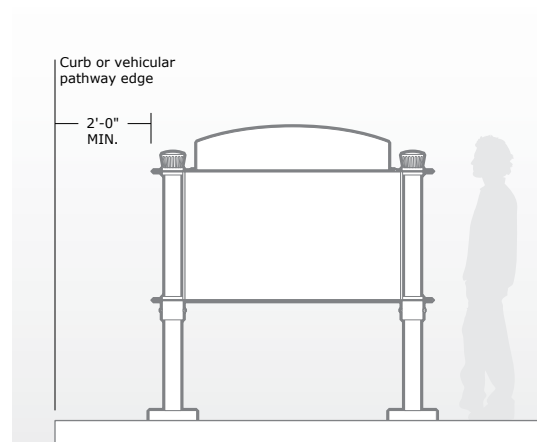
Gx-6 / **Dx-3**
Walking Tour Marker / Interpretive Marker (Small)



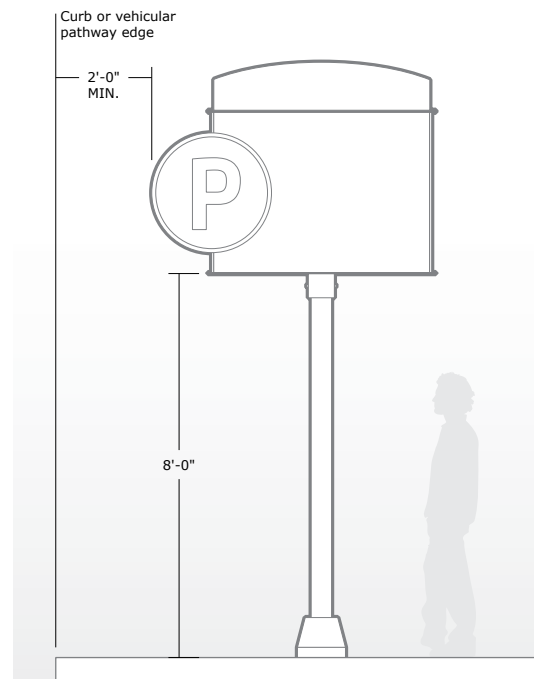
Dx-1
Pedestrian Map Directory



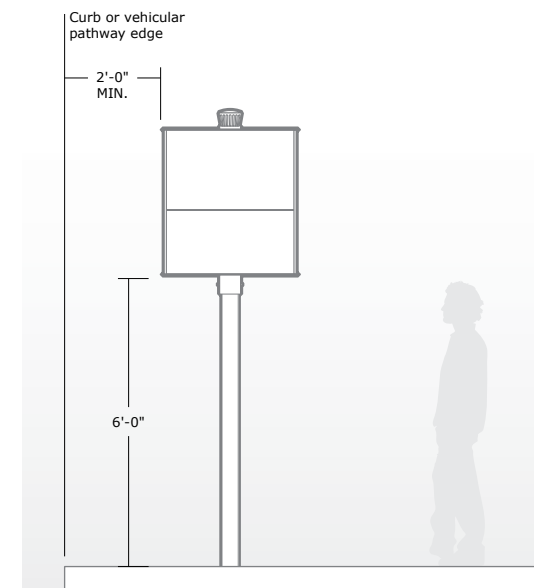
Ix-3, Ix-3a
Public Building ID



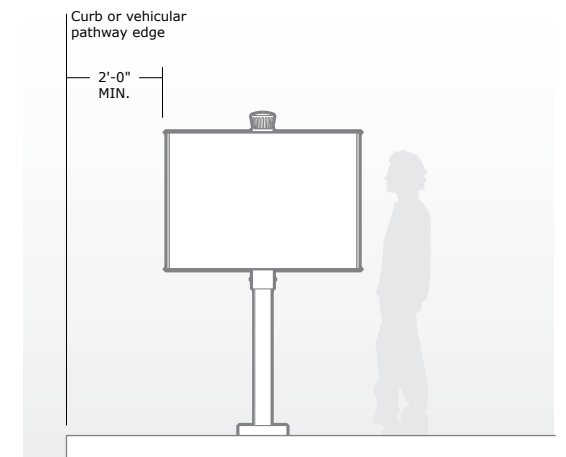
Ix-4, Ix-4a
Park ID



Ix-5
Illuminated Parking Lot ID



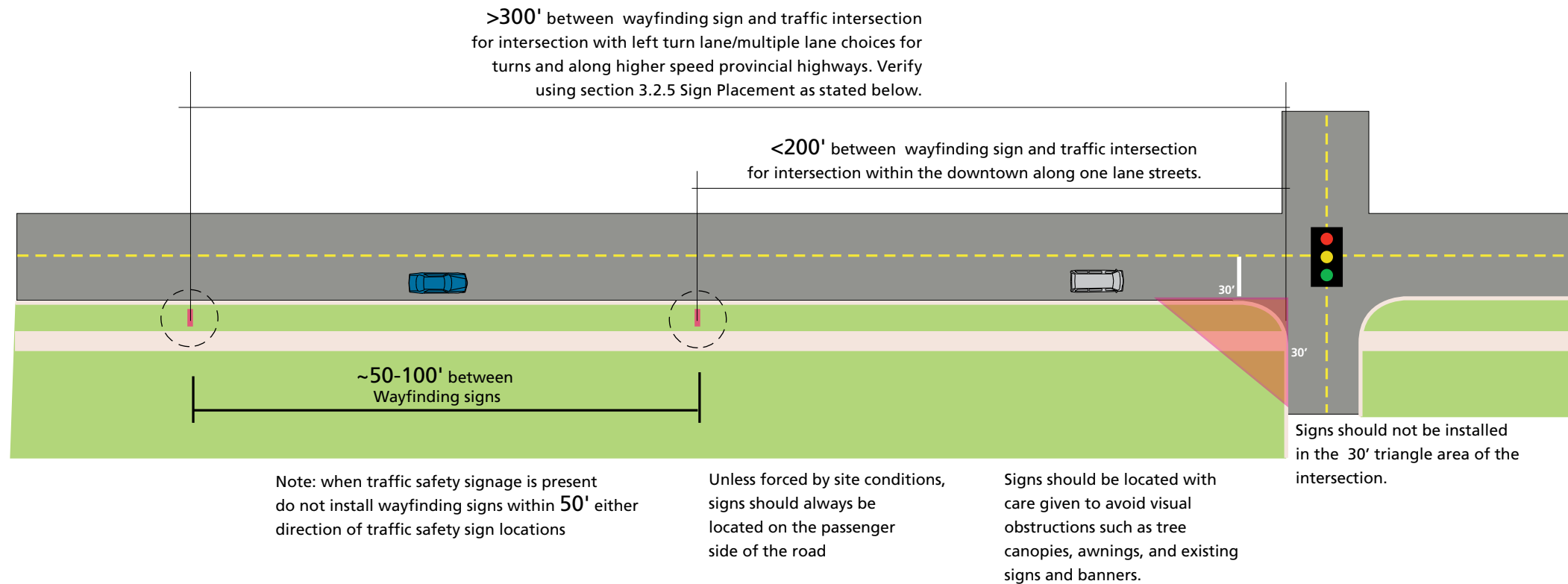
Ix-6, Ix-6a
Beach/Trail ID



Dx-2
Interpretive Marker (Large)

NOTE: These sign placement guidelines are general in nature. Each sign that is placed should be site verified prior to installation.

Sign Placement Guidelines

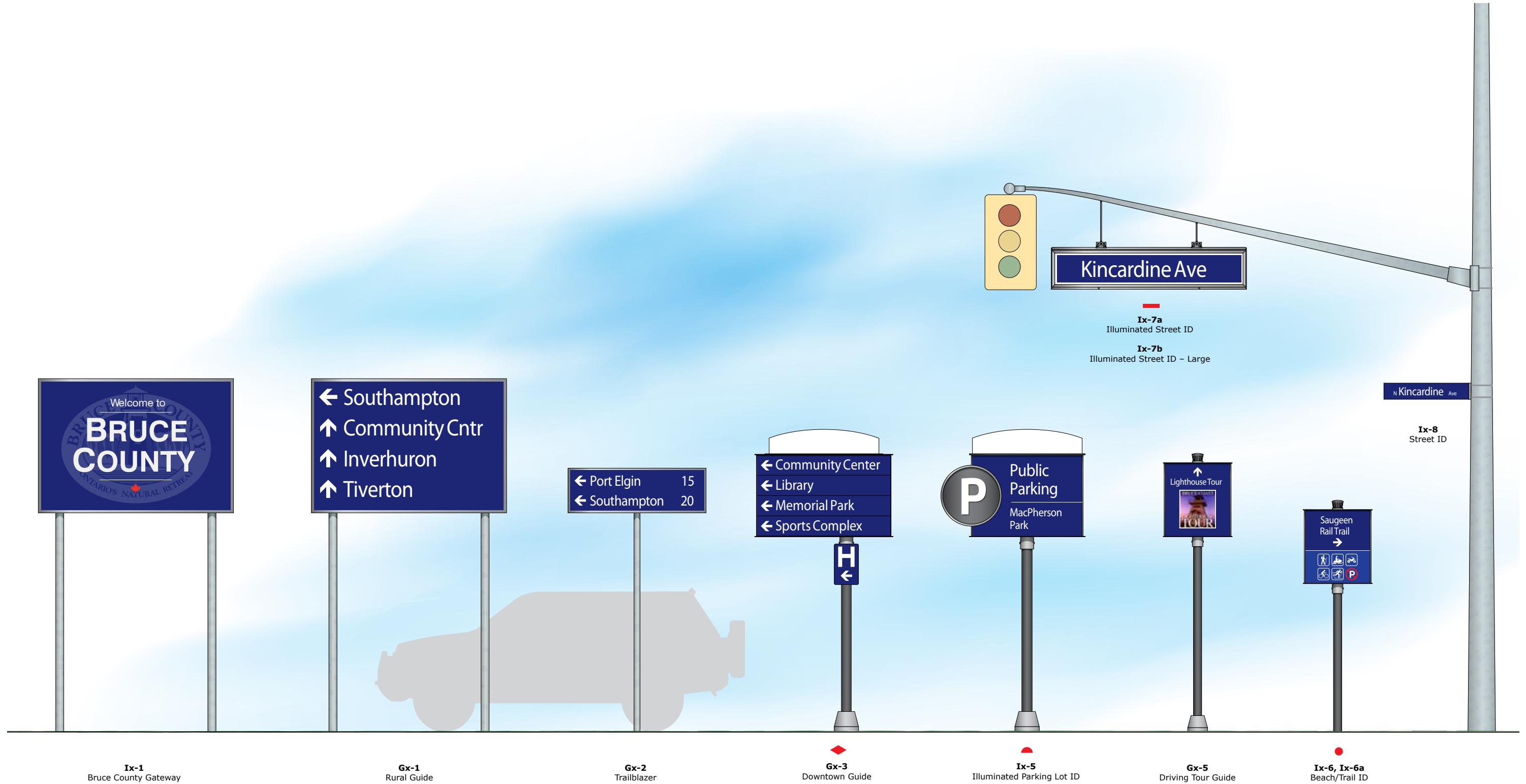


3.2.5 Sign Placement

In order for a sign to be effective, it must be legible at a distance that allows a driver to read it and safely carry out any required actions (e.g., a lane change) before reaching the decision point. A key placement issue for directional and guidance signs is to ensure enough time is available for the driver to check for a gap and change lanes comfortably before reaching a gore or turnoff. In low volume conditions, to encompass the majority of drivers, a distance equivalent to 8 seconds at the assumed operating speed is required, and in high volume conditions, this time should be increased to 9.8 seconds. If advance signs are used, this increases the distance between where the information becomes available to the driver and the gore.

Highway Signing for Drivers' Needs

Paper Prepared for presentation at the Road Safety Engineering – New Developments and Initiatives Session of the 2004 Annual Conference of the Transportation Association of Canada Québec City, Québec, September 19 – 22, 2004



Ix-1
Bruce County Gateway

Gx-1
Rural Guide

Gx-2
Trailblazer

Gx-3
Downtown Guide

Ix-5
Illuminated Parking Lot ID

Gx-5
Driving Tour Guide

Ix-6, Ix-6a
Beach/Trail ID

Ix-7a
Illuminated Street ID

Ix-7b
Illuminated Street ID - Large

Ix-8
Street ID

Exterior Graphic Standards & Specifications



Gx-4
Pedestrian Guide

Gx-6
Walking Tour Marker

Dx-1, Dx-1a
Pedestrian Map Directory

Dx-2
Interpretive Marker (Large)

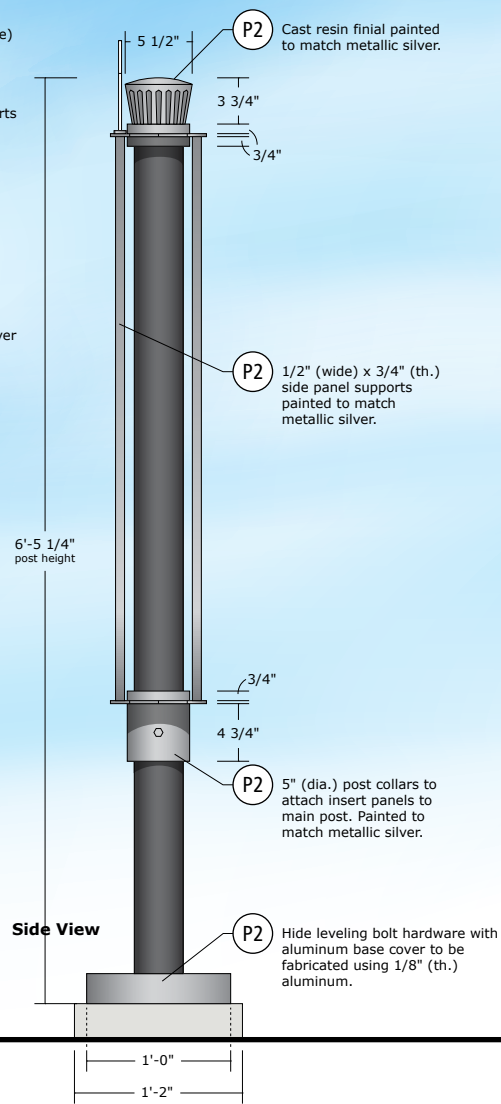
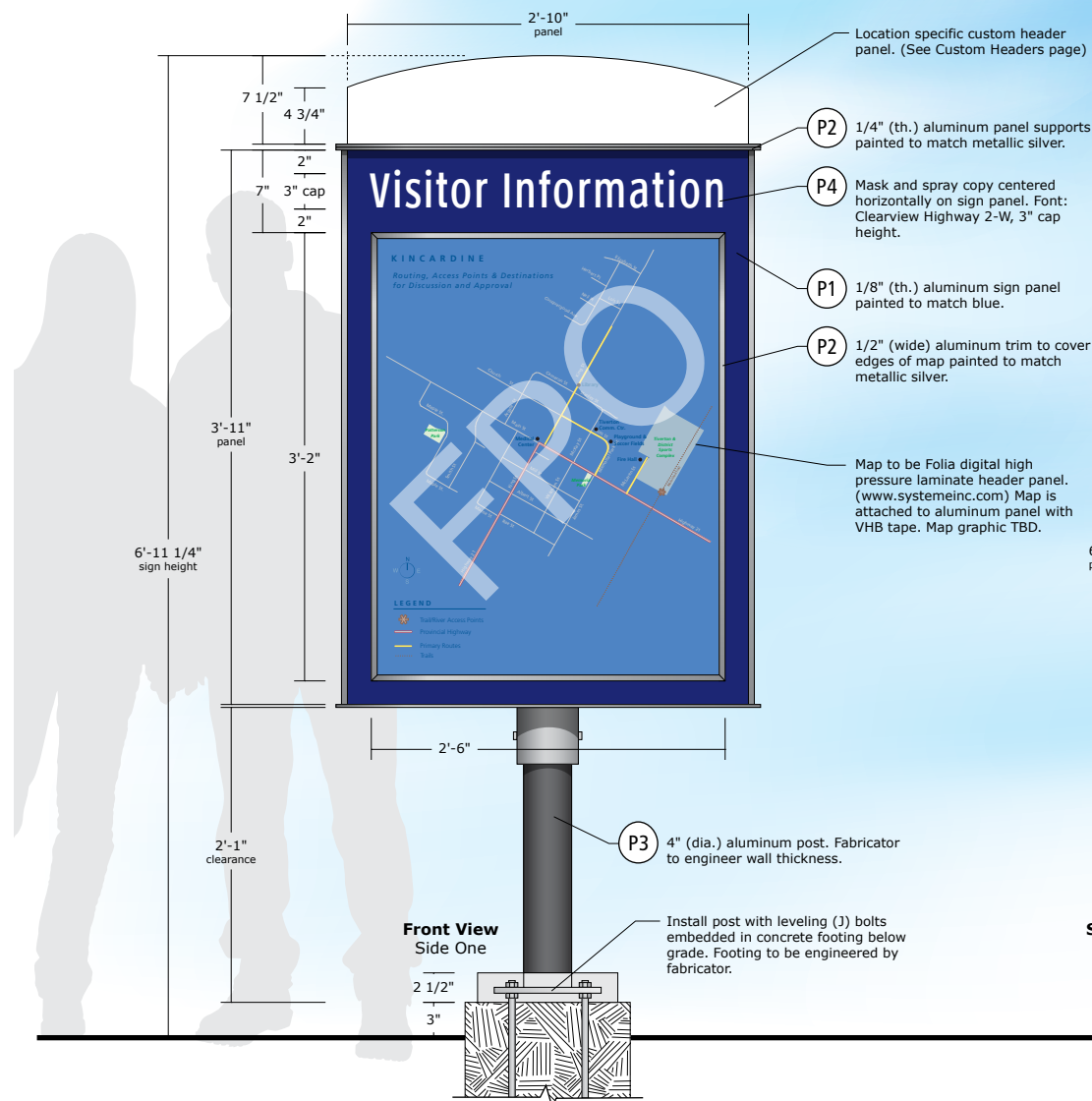
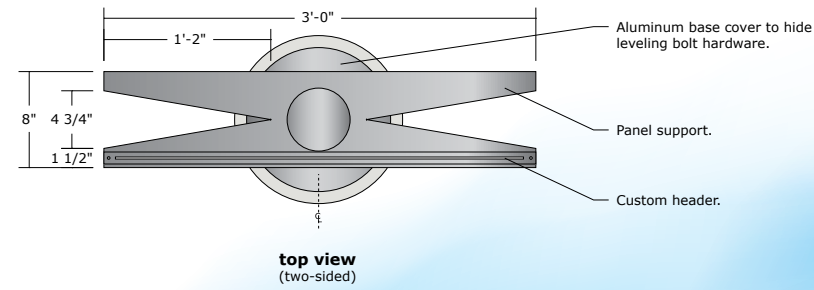
Dx-4
Trail Kiosk

Ix-3, Ix-3a
Public Building ID

Ix-3b
Public Building ID - Large

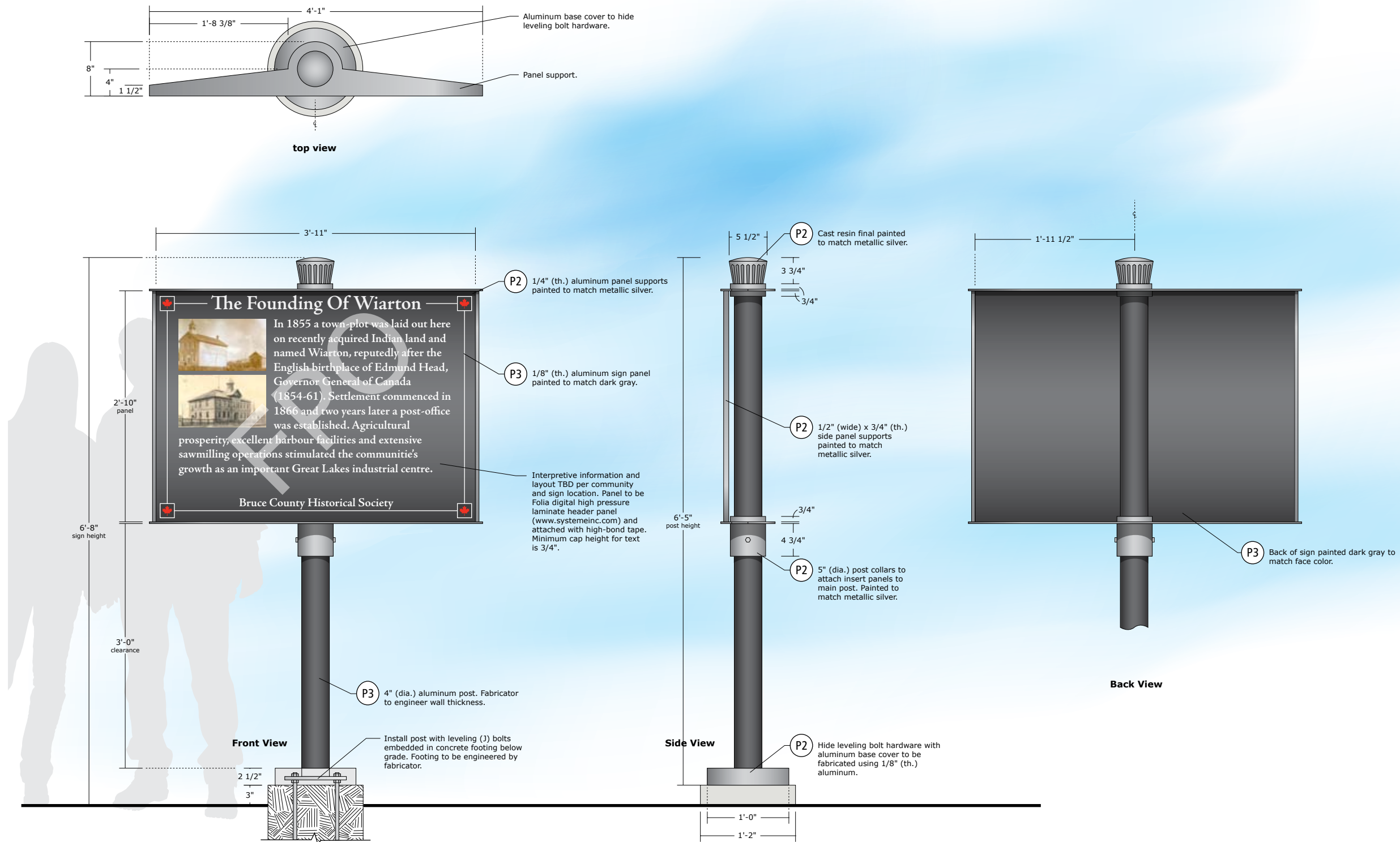
Ix-4, Ix-4a
Park ID

Exterior Array



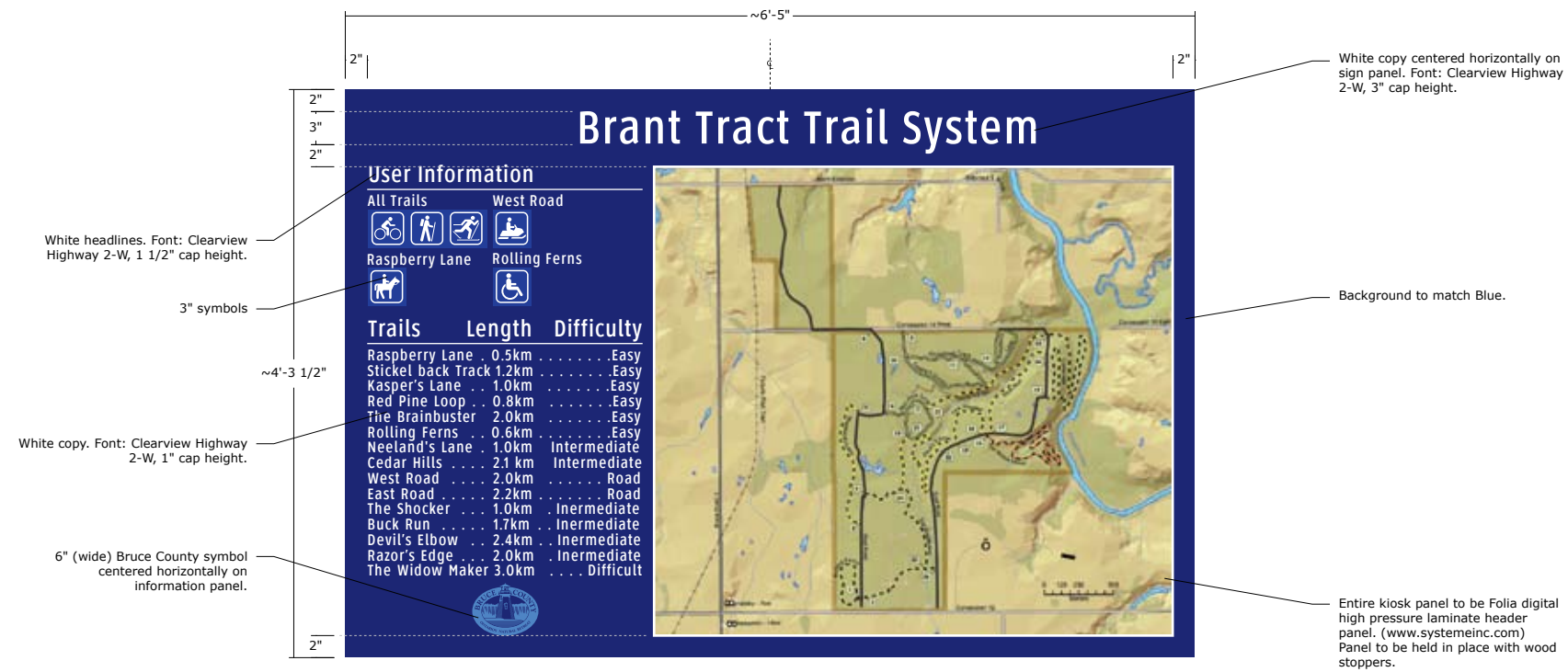
Scale
3/4" = 1'-0"
(on an 11 x 17 sheet)

Dx-1, Dx-1a Pedestrian Map Directory



Scale
 3/4" = 1'-0"
 (on an 11 x 17 sheet)

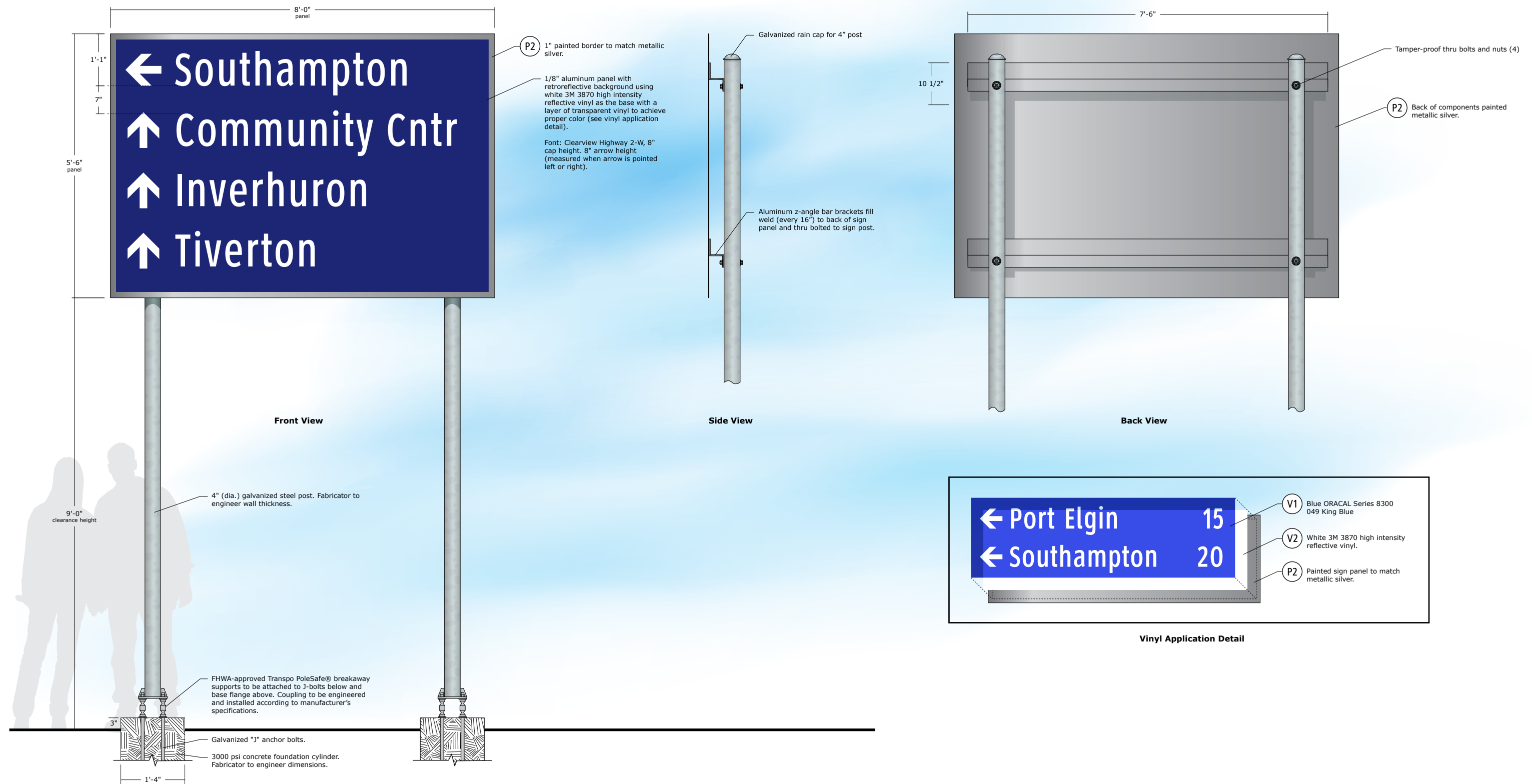
Dx-2 Interpretive Marker – Large



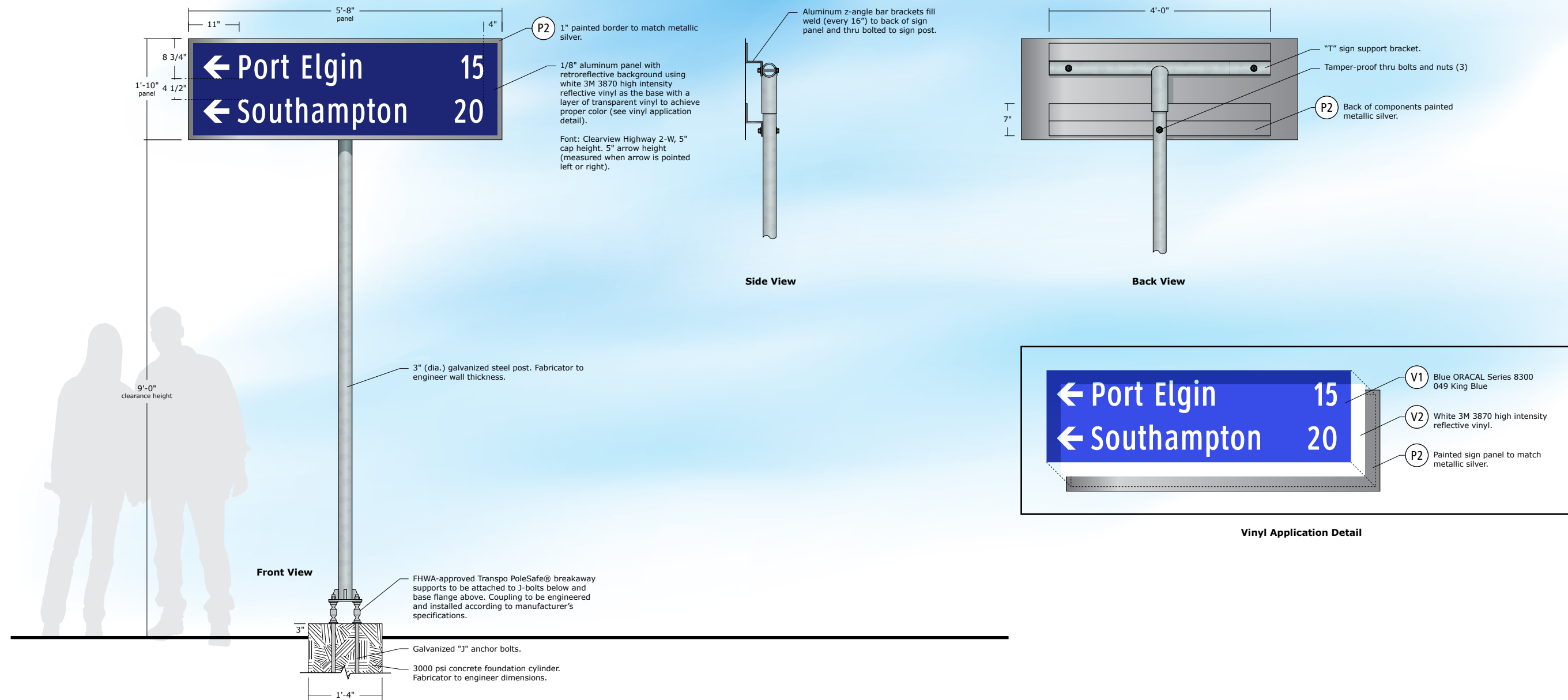
Structure for kiosks constructed to match existing Brant Tract Trail System kiosk.

! Size of sign must be site verified prior to fabrication.

Scale
 3/4" = 1'-0"
 (on an 11 x 17 sheet)

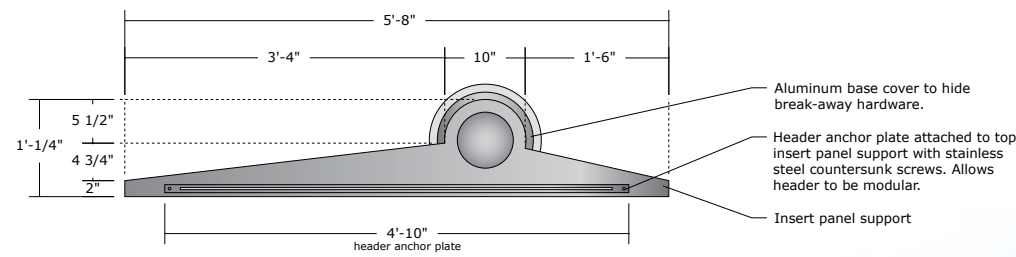
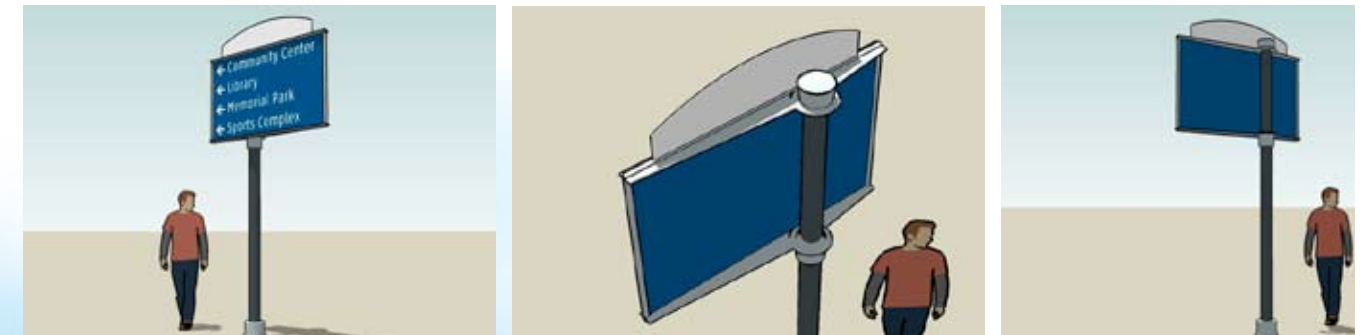


Scale
1/2" = 1'-0"
(on an 11 x 17 sheet)



Scale
 1/2" = 1'-0"
 (on an 11 x 17 sheet)

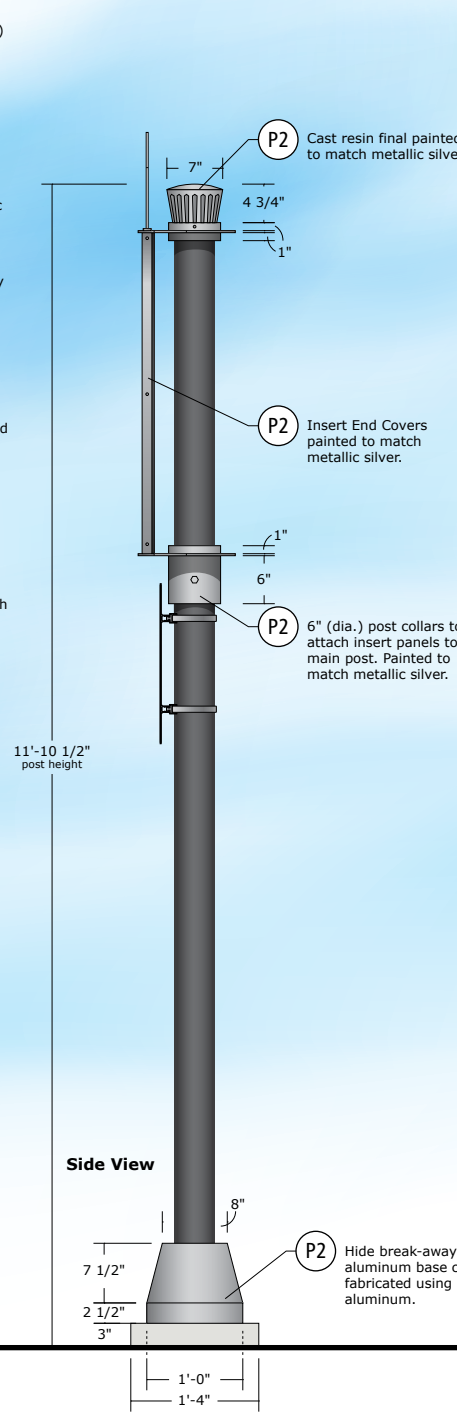
Gx-2 Trailblazer



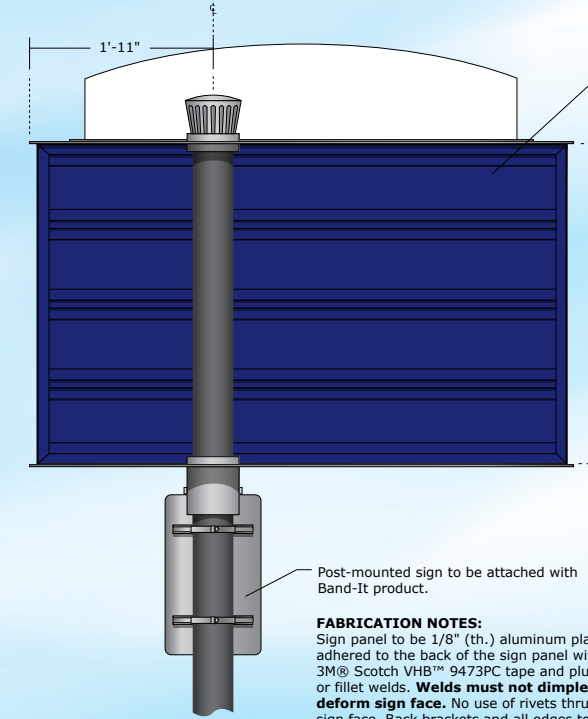
top view



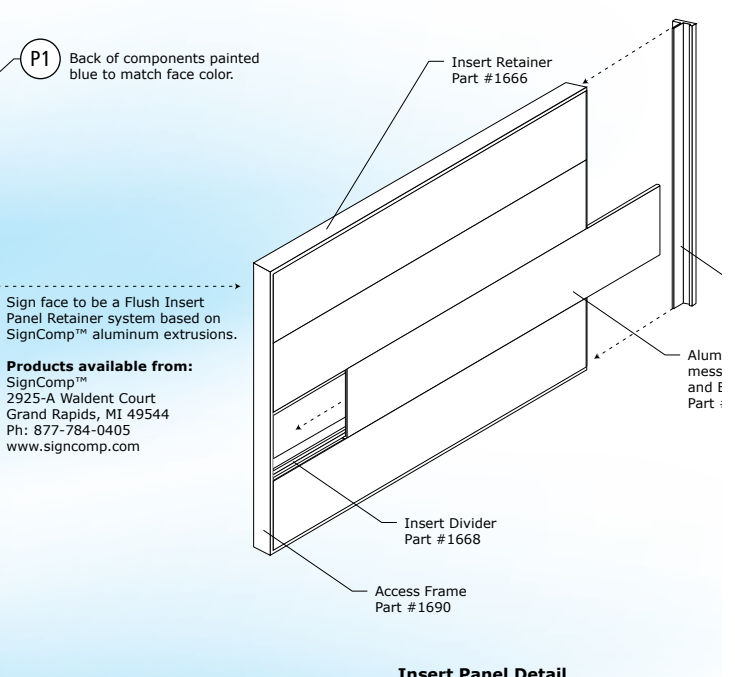
Front View



Side View



Back View



Insert Panel Detail

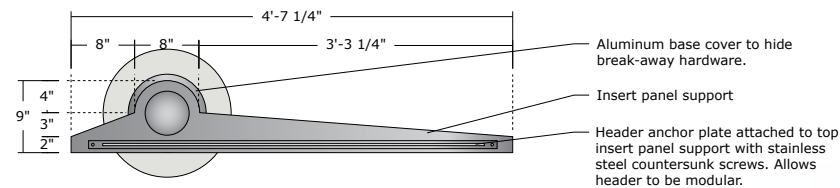
Sign face to be a Flush Insert Panel Retainer system based on SignComp™ aluminum extrusions.

Products available from:
SignComp™
2925-A Waldent Court
Grand Rapids, MI 49544
Ph: 877-784-0405
www.signcomp.com

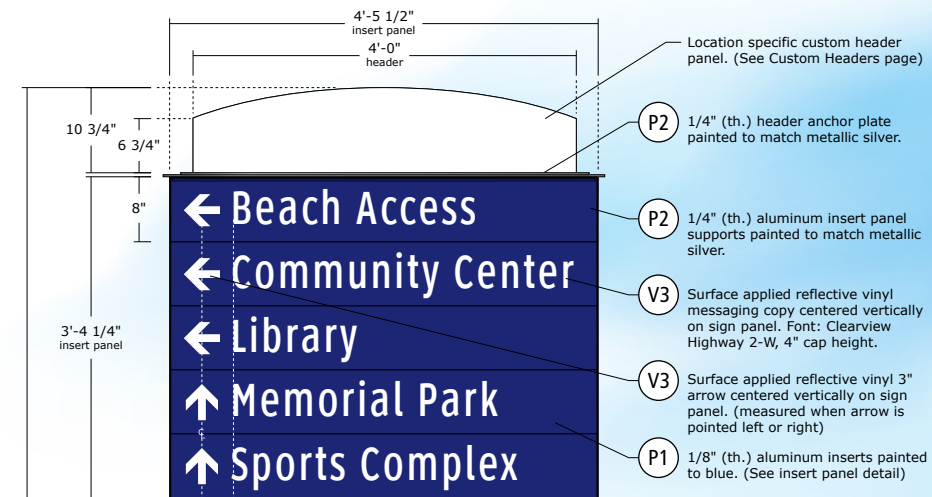
FABRICATION NOTES:
Sign panel to be 1/8" (th.) aluminum plate adhered to the back of the sign panel with 3M® Scotch VHB™ 9473PC tape and plug or fillet welds. **Welds must not dimple or deform sign face.** No use of rivets thru sign face. Back brackets and all edges to be painted metallic silver.

Attachment Product available from:
BAND-IT - IDEX, INC.
4799 Dahlia St.
P.O. Box 16307
Denver, Colorado 80216-0307
Ph: 303-320-4555
www.band-it-idex.com

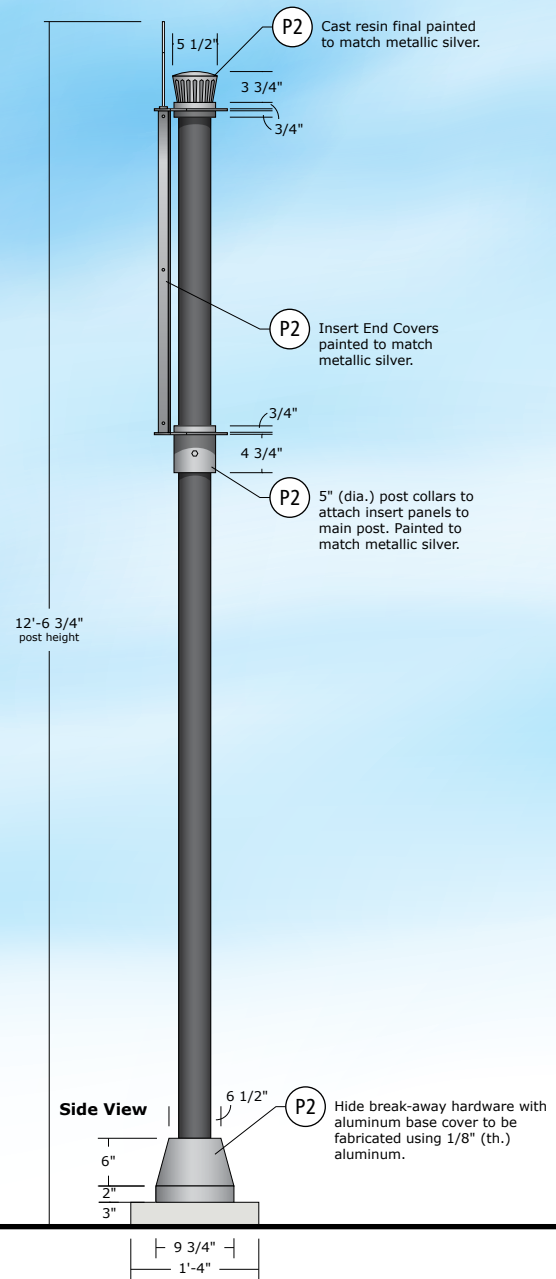
Scale
1/2" = 1'-0"
(on an 11 x 17 sheet)



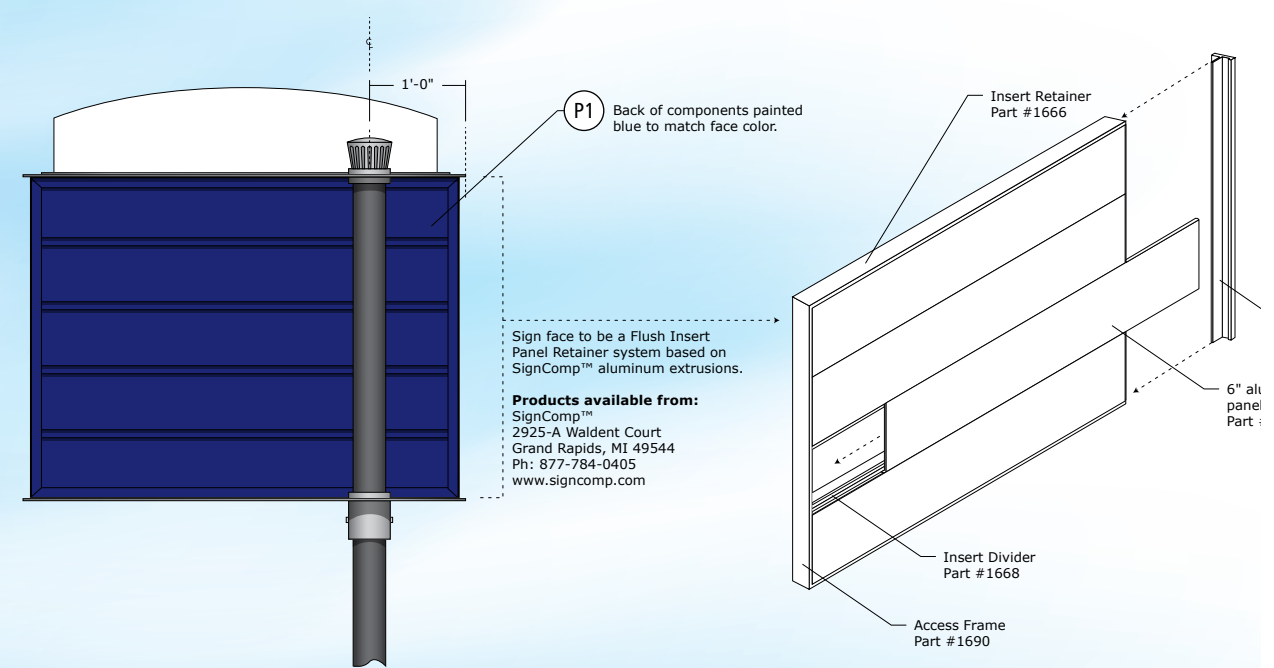
top view



Front View



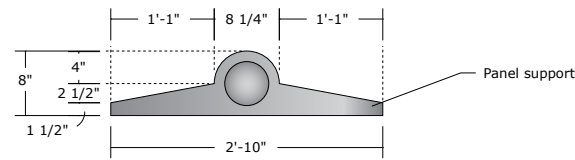
Side View



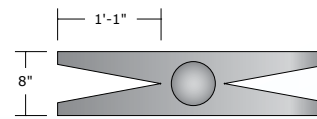
Back View

Insert Panel Detail

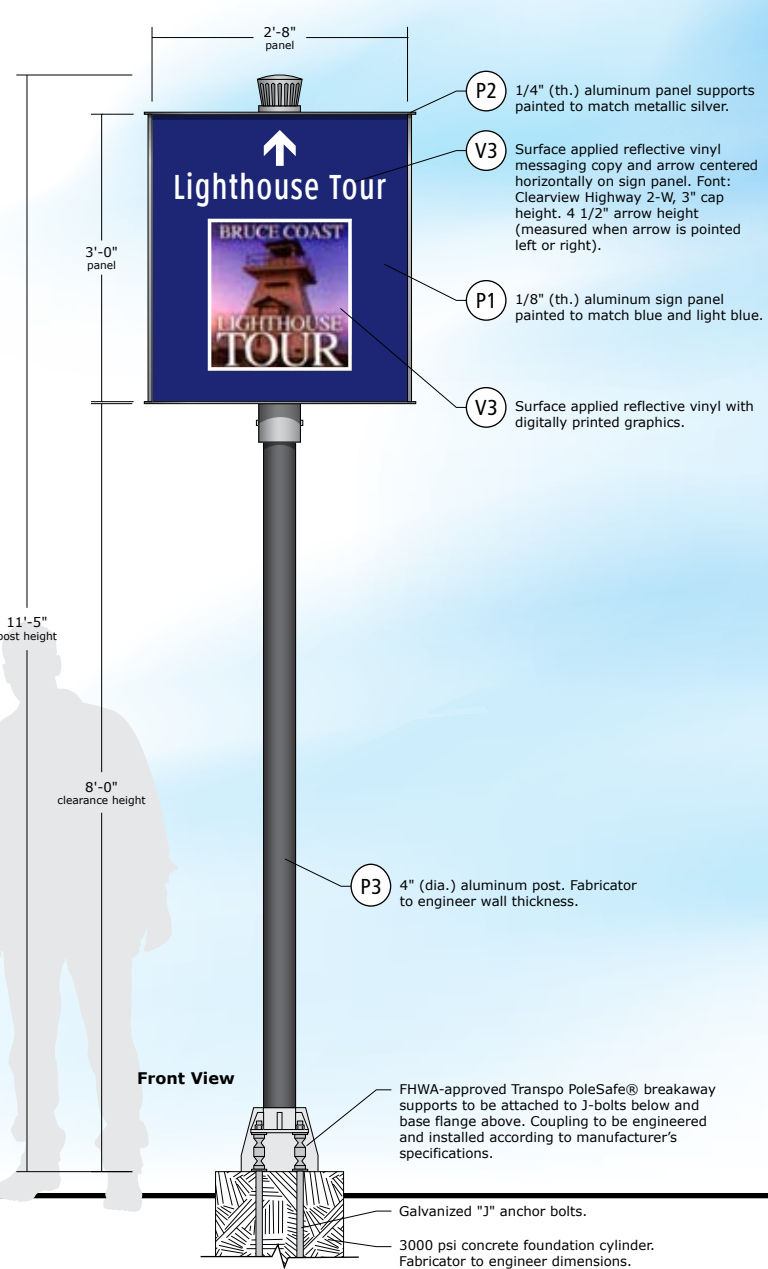
Scale
1/2" = 1'-0"
(on an 11 x 17 sheet)



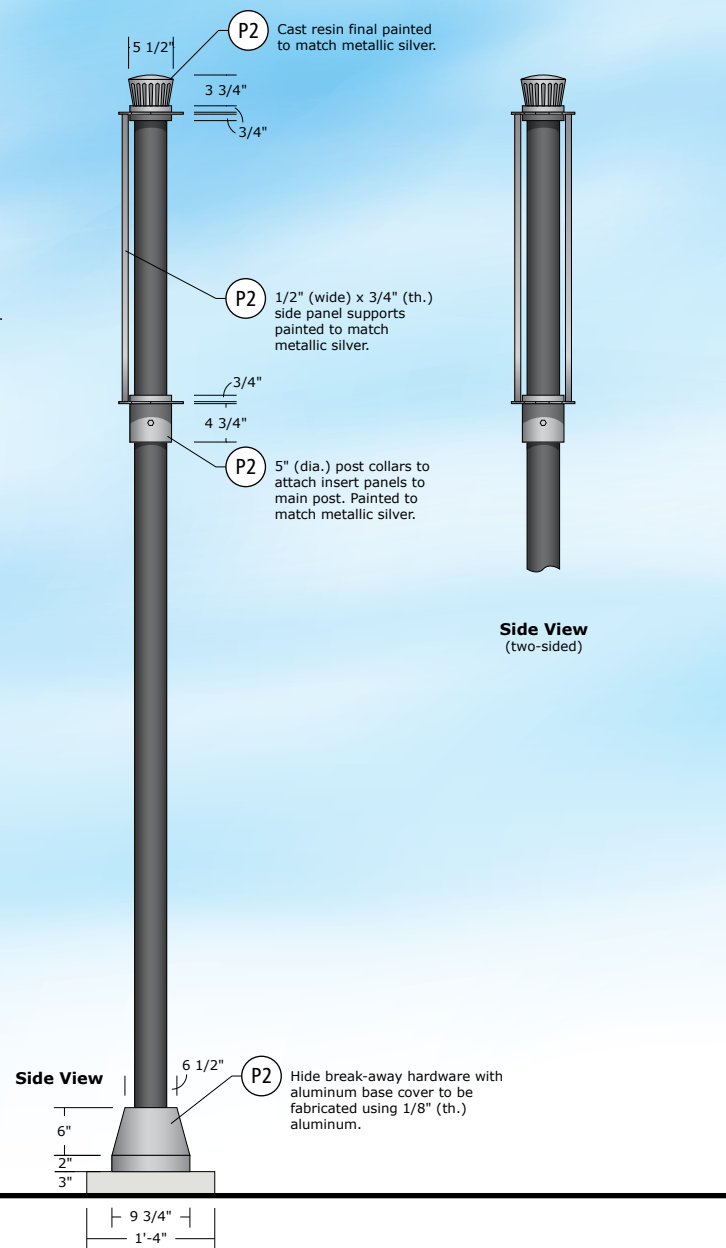
top view



top view
(two-sided)

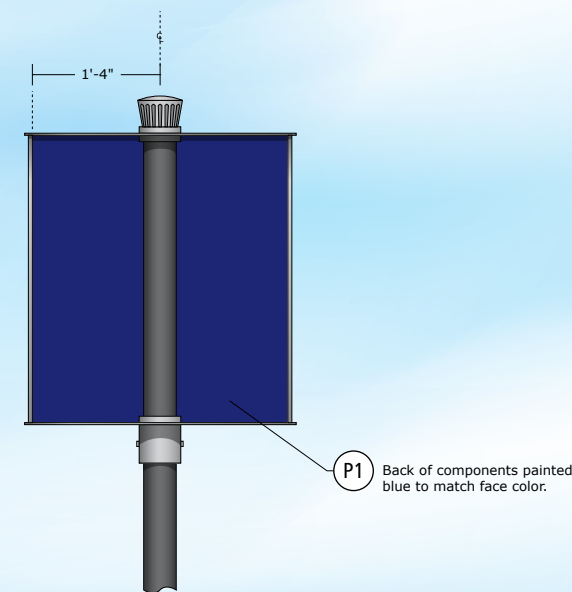


Front View

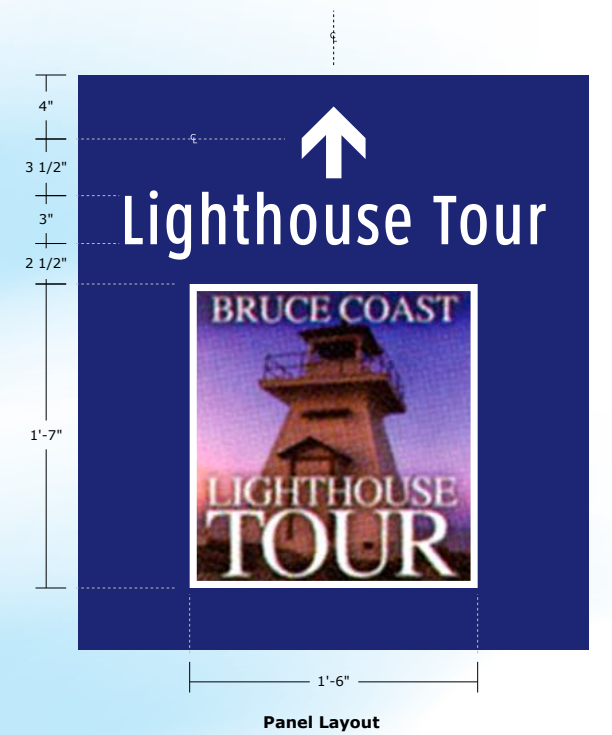


Side View

Side View
(two-sided)

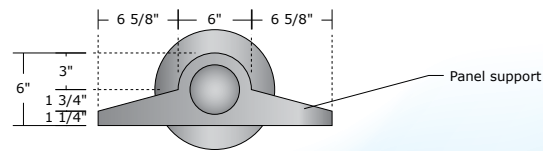


Back View

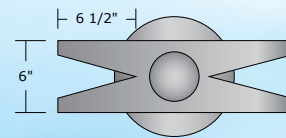


Panel Layout

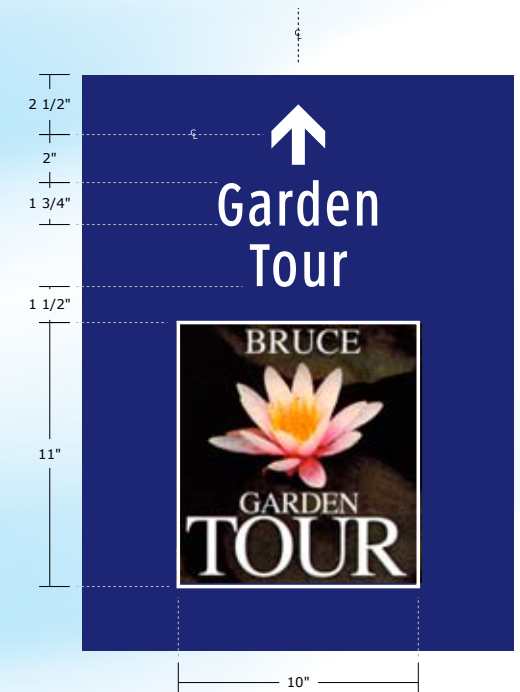
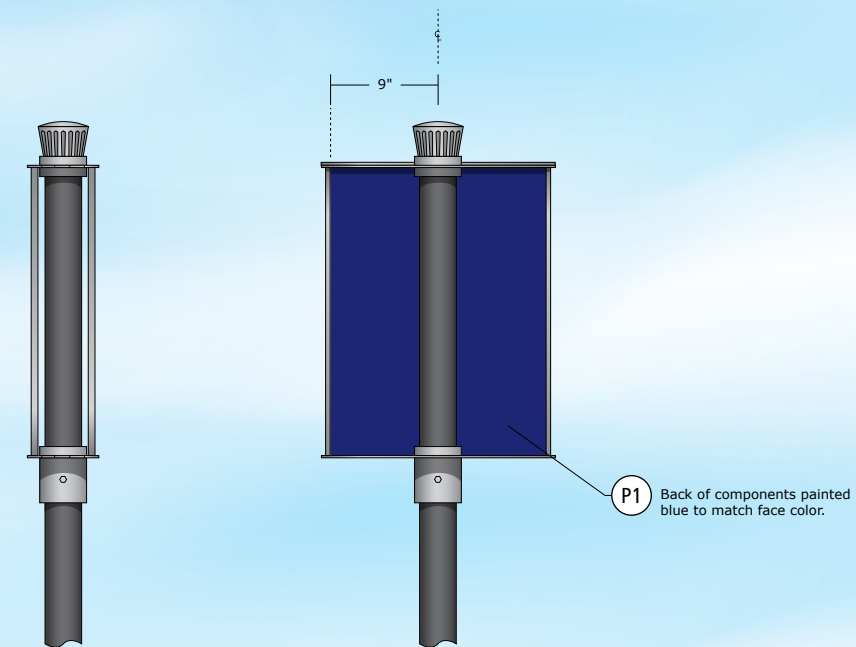
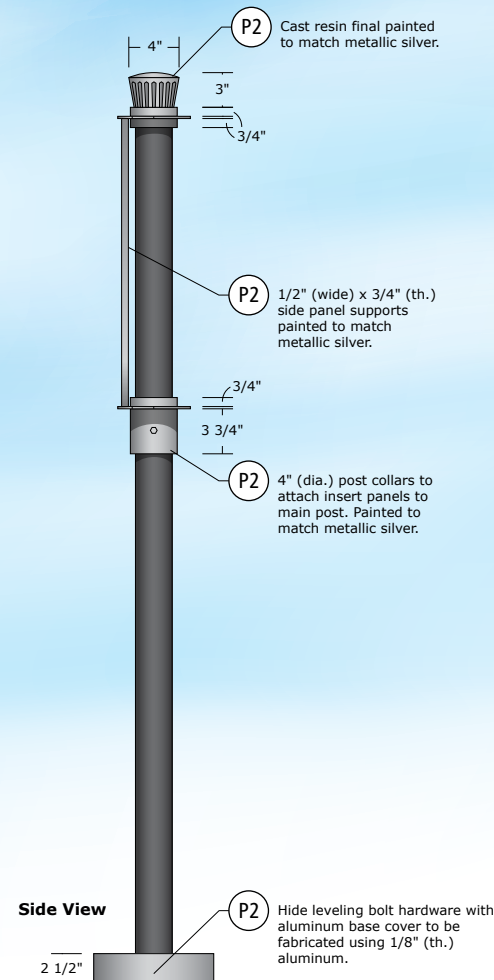
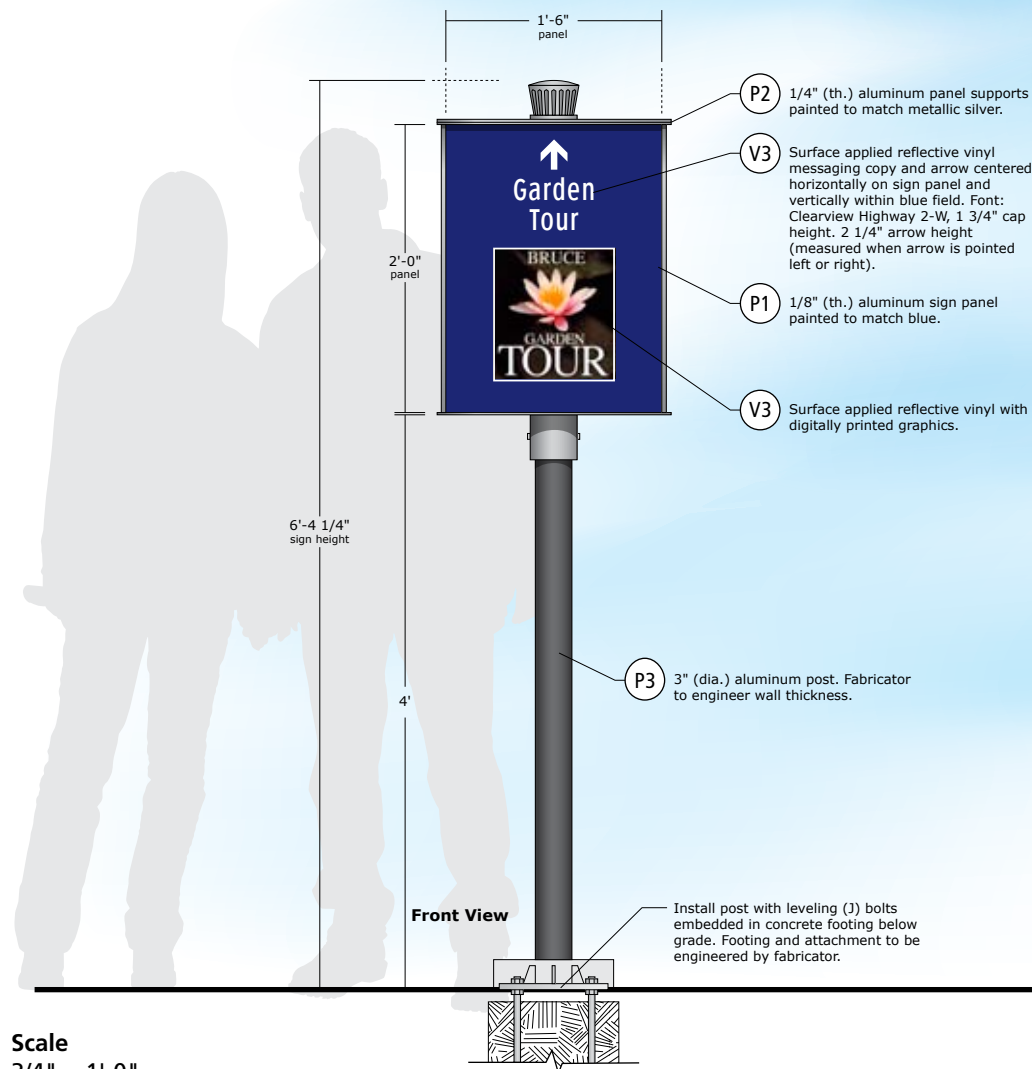
Scale
1/2" = 1'-0"
(on an 11 x 17 sheet)



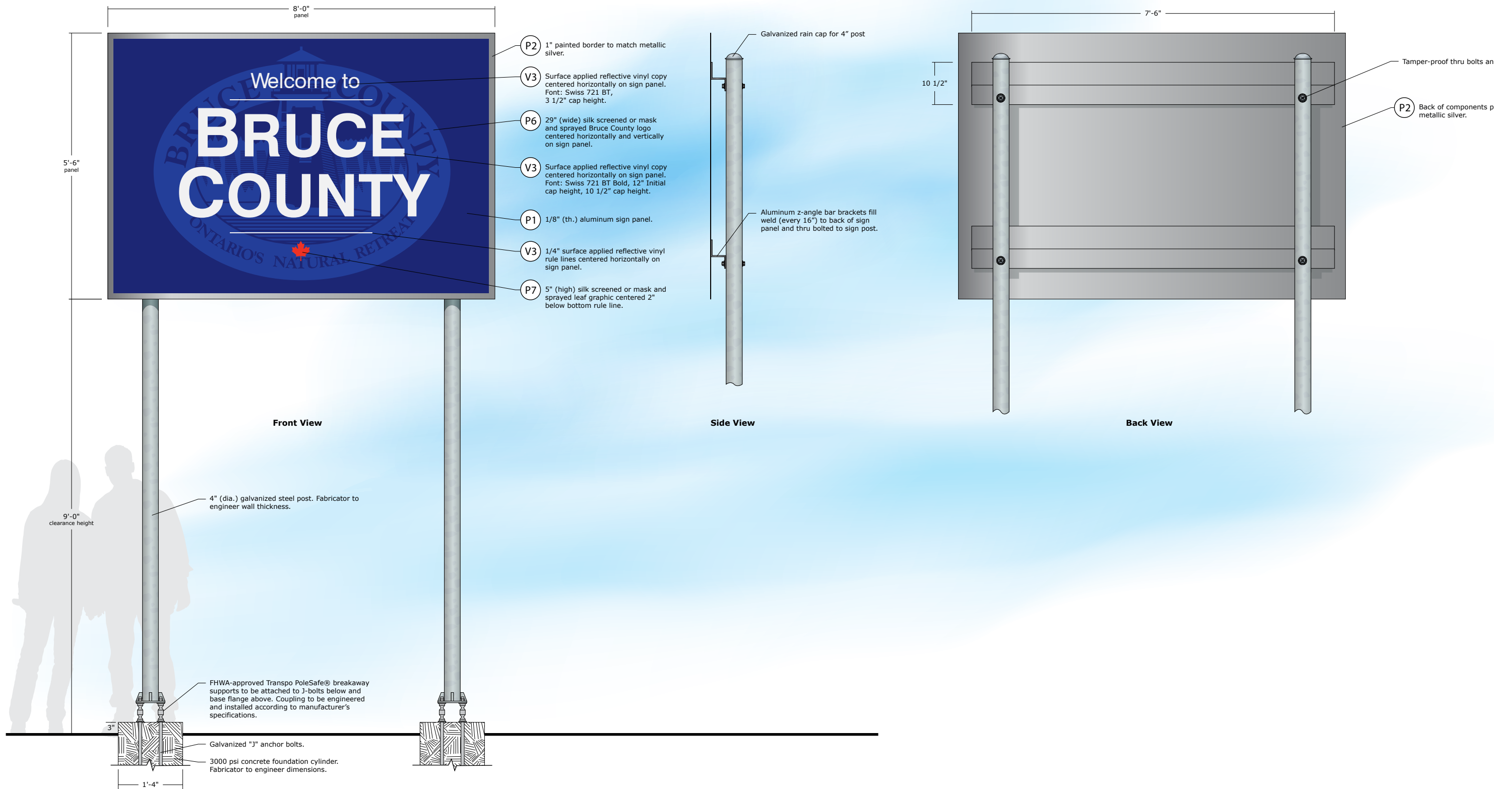
top view



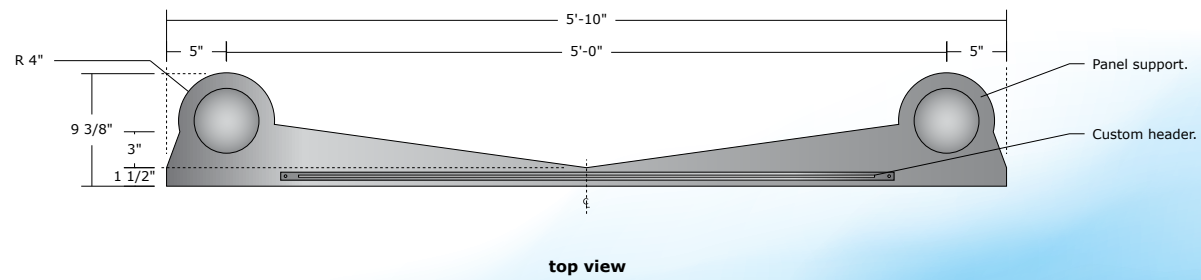
top view
(two-sided)



Scale
3/4" = 1'-0"
(on an 11 x 17 sheet)

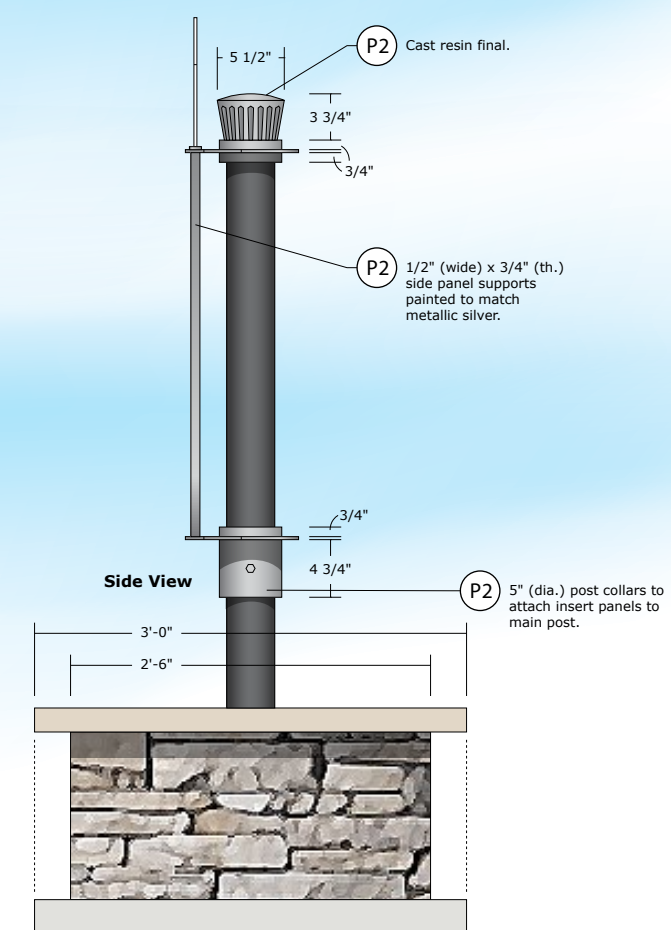
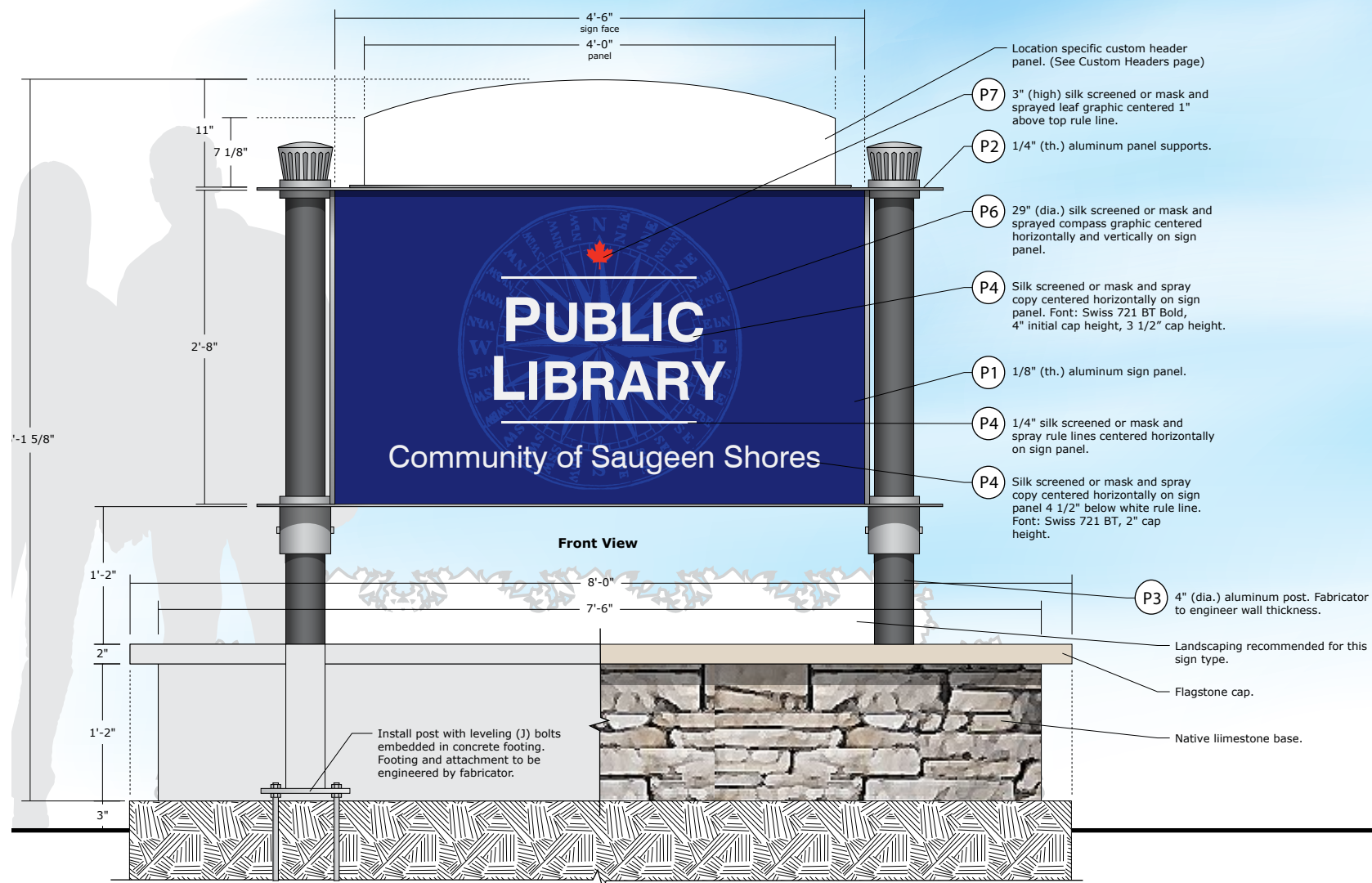


Scale
 1/2" = 1'-0"
 (on an 11 x 17 sheet)

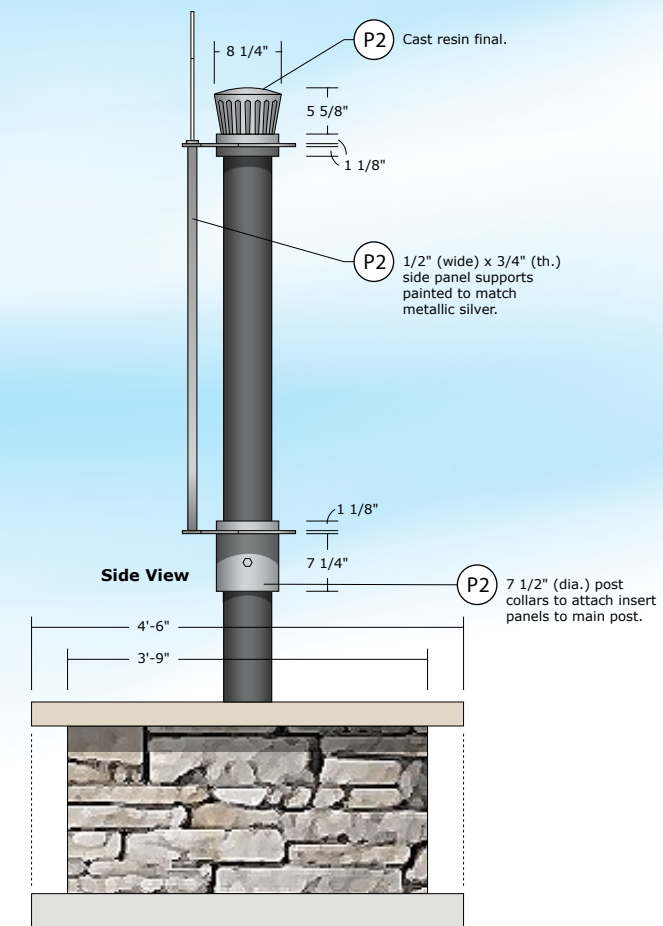
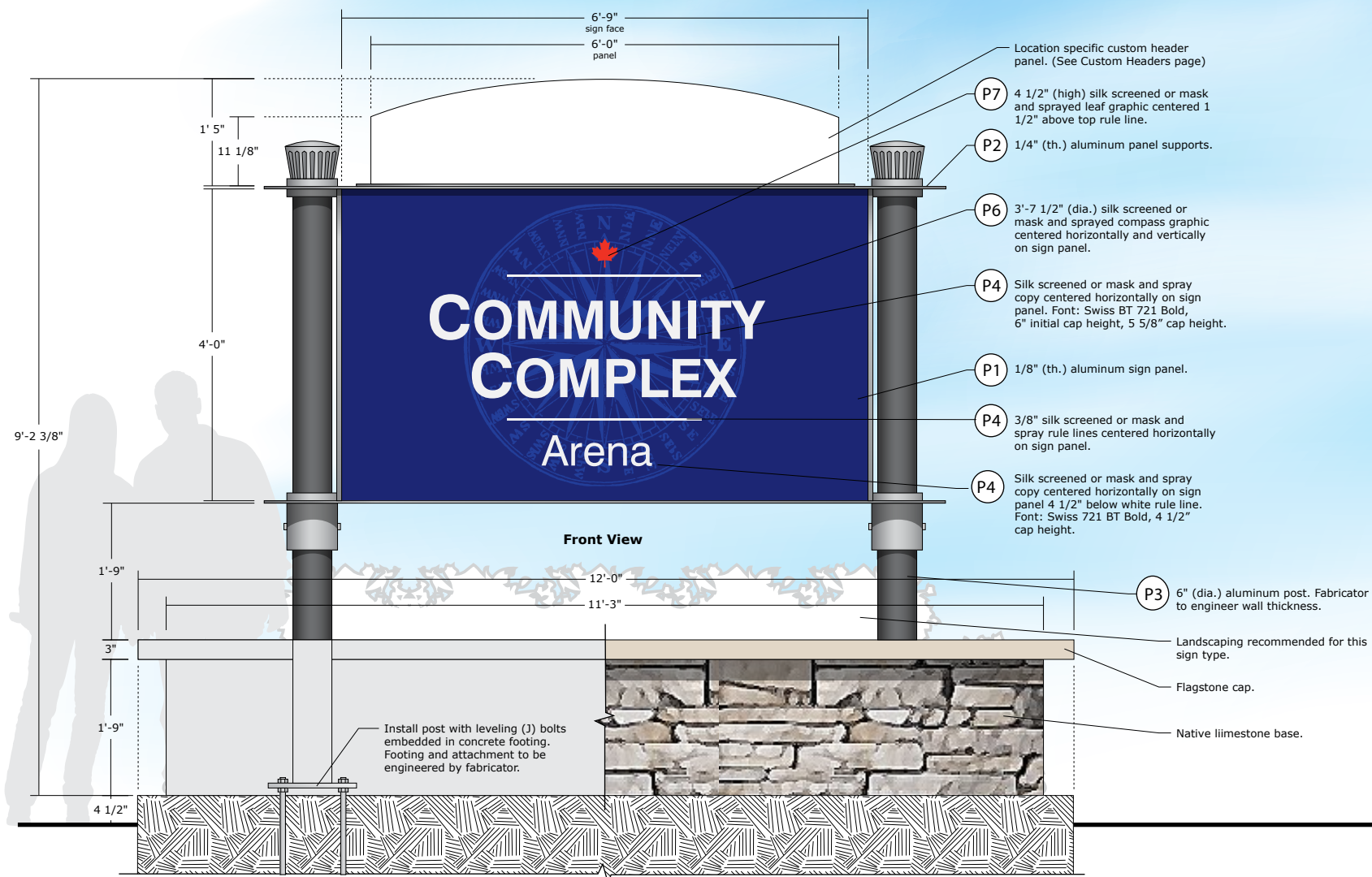
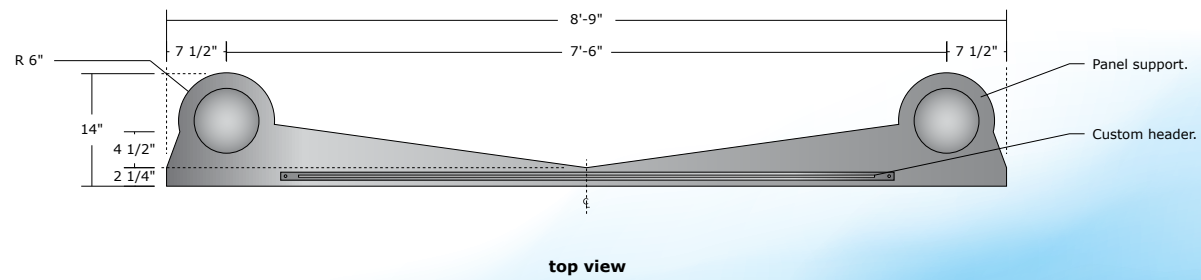


P4 Silk screened or mask and spray copy centered horizontally on sign panel. Font: Swiss 721 BT, 3" cap height.

Alternate Panel Layout

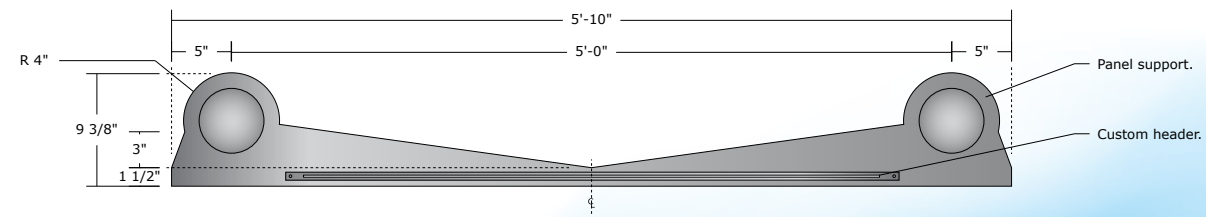


Scale
 3/4" = 1'-0"
 (on an 11 x 17 sheet)



Scale
1/2" = 1'-0"
(on an 11 x 17 sheet)

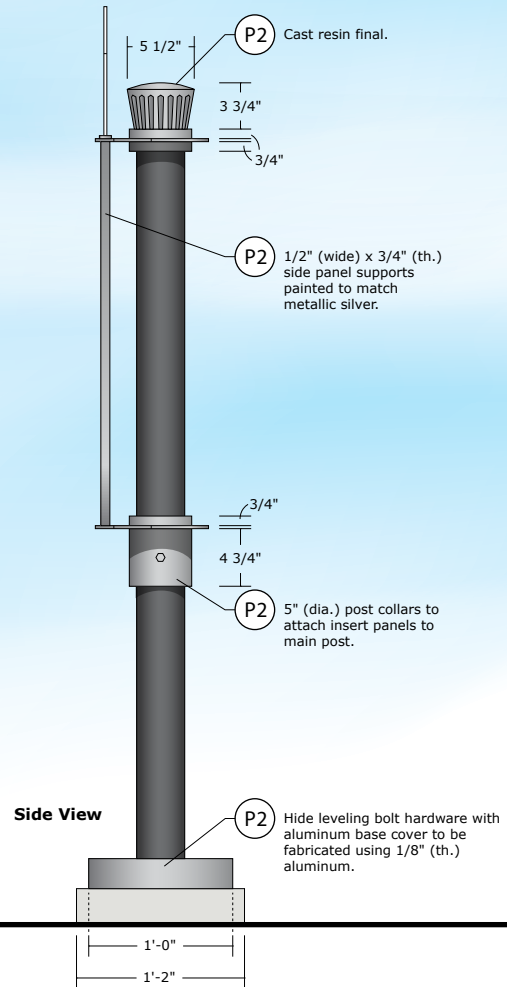
Ix-3b Public Building ID – Large



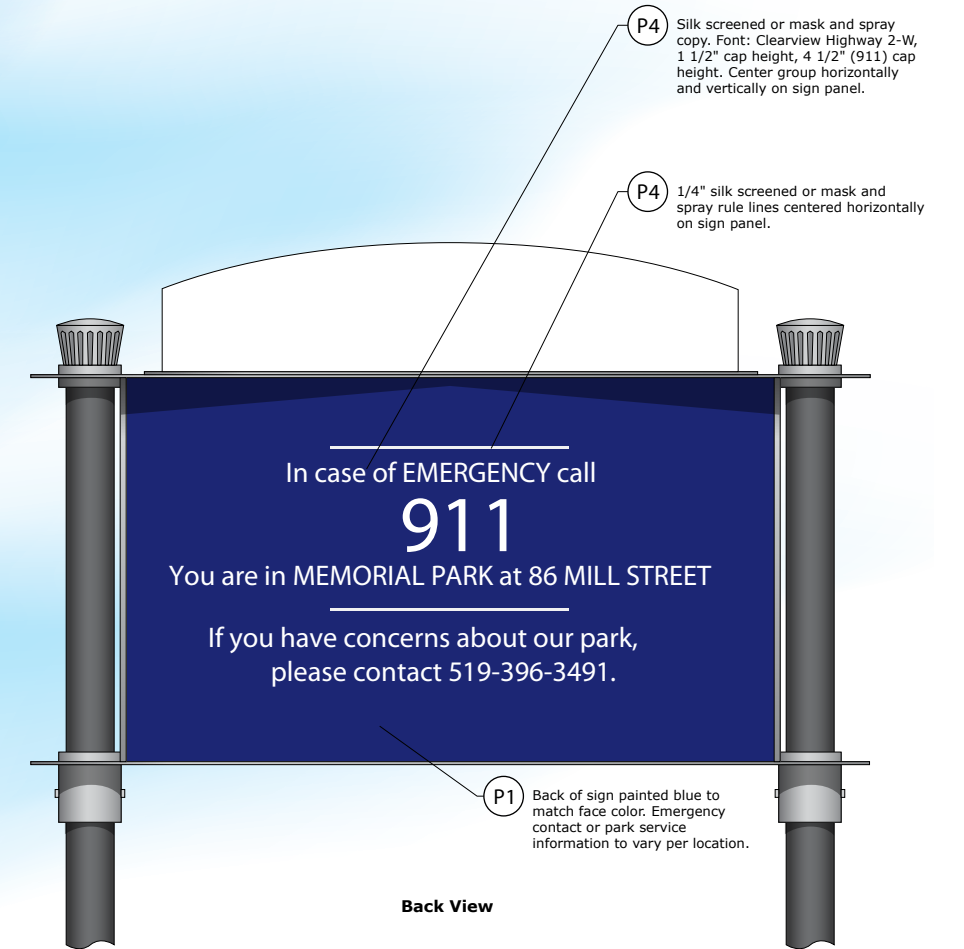
top view
(two-sided)



Front View

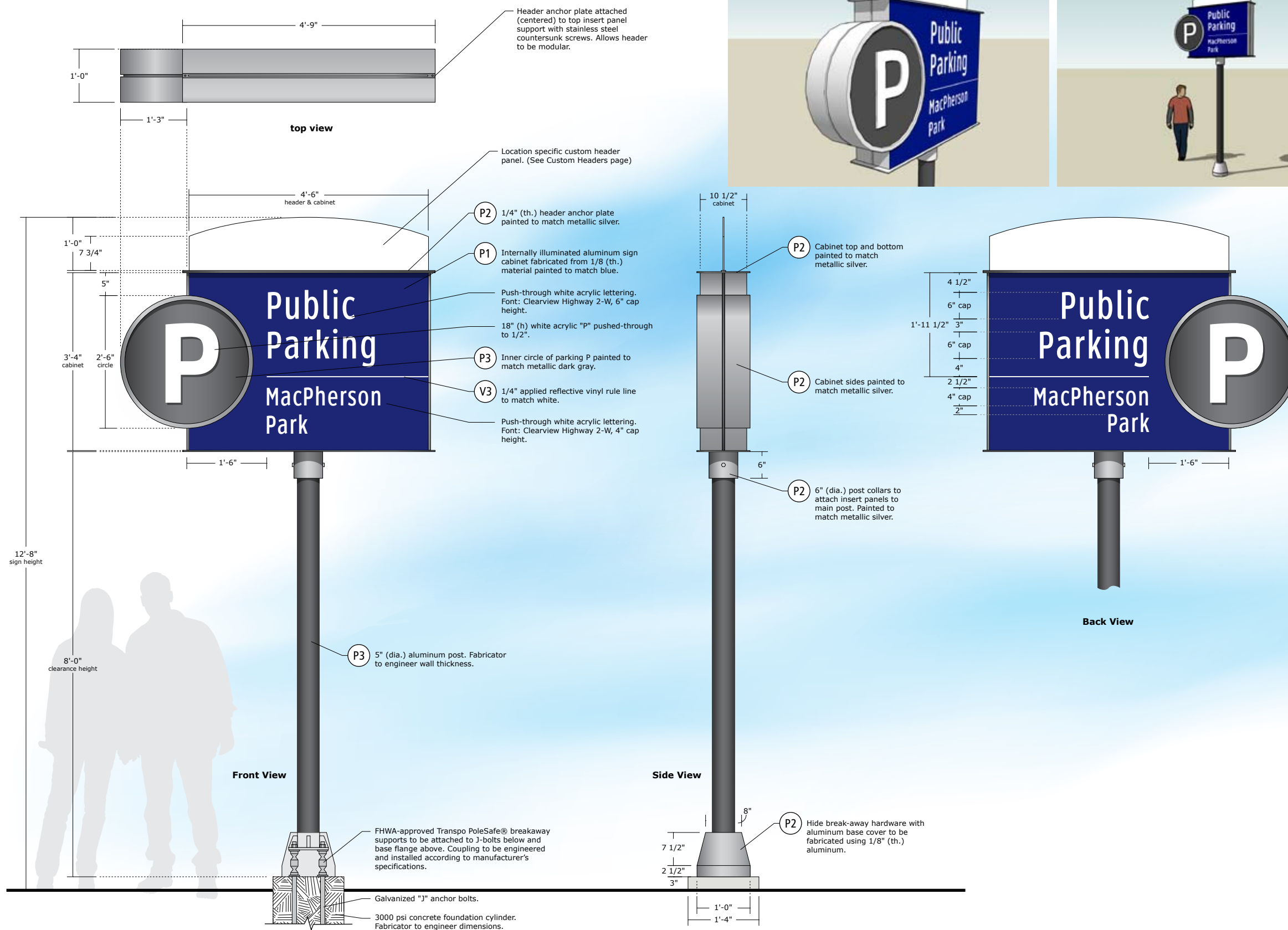


Side View

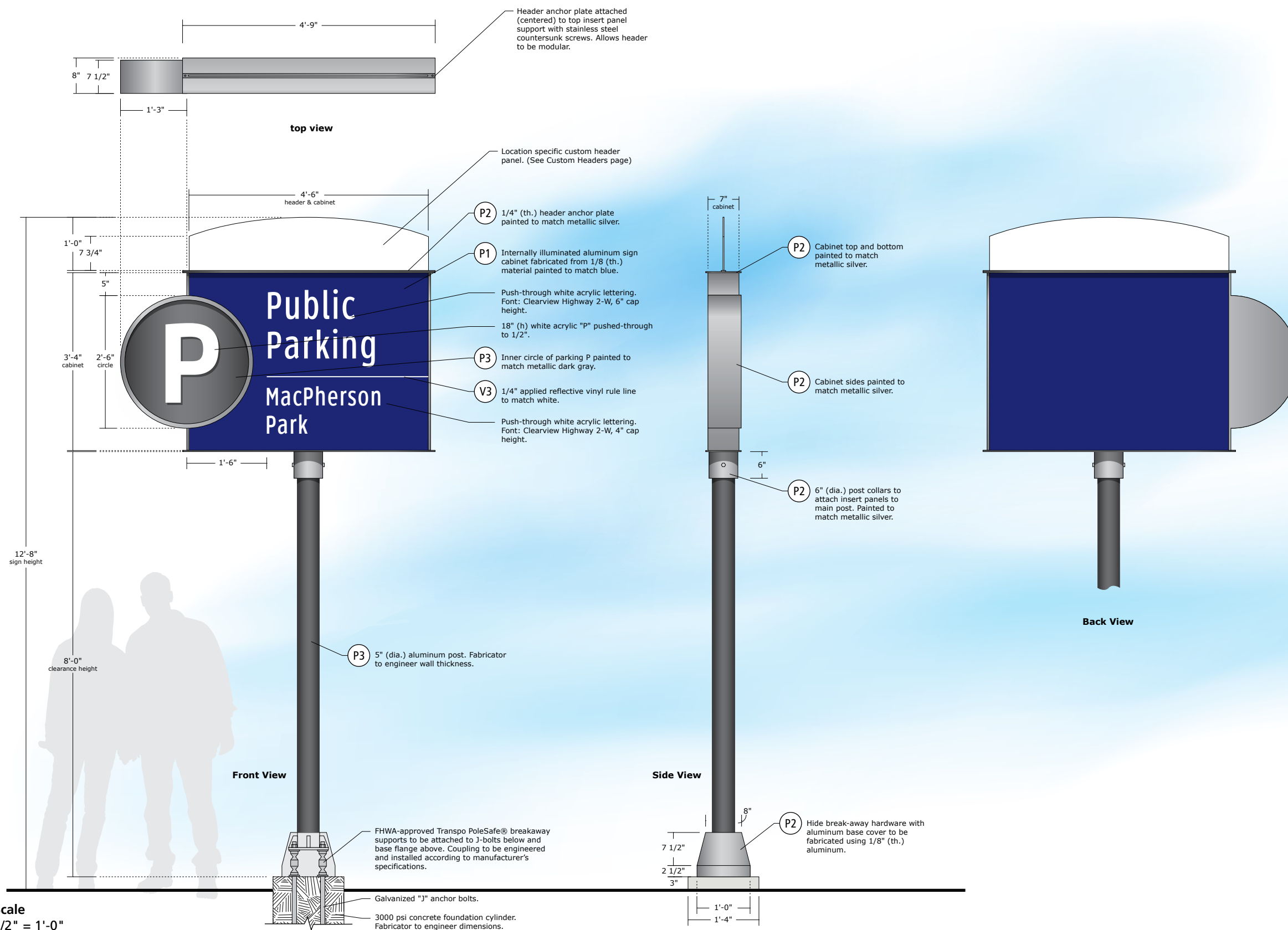


Back View

Scale
3/4" = 1'-0"
(on an 11 x 17 sheet)

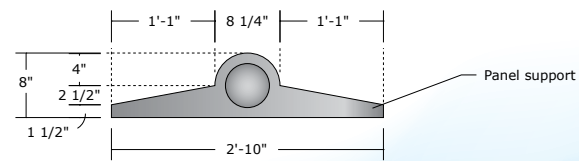


Ix-5a Parking Lot ID – Double-sided

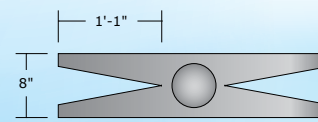


Scale
1/2" = 1'-0"
(on an 11 x 17 sheet)

Ix-5b Parking Lot ID – Single-sided



top view



top view
(two-sided)

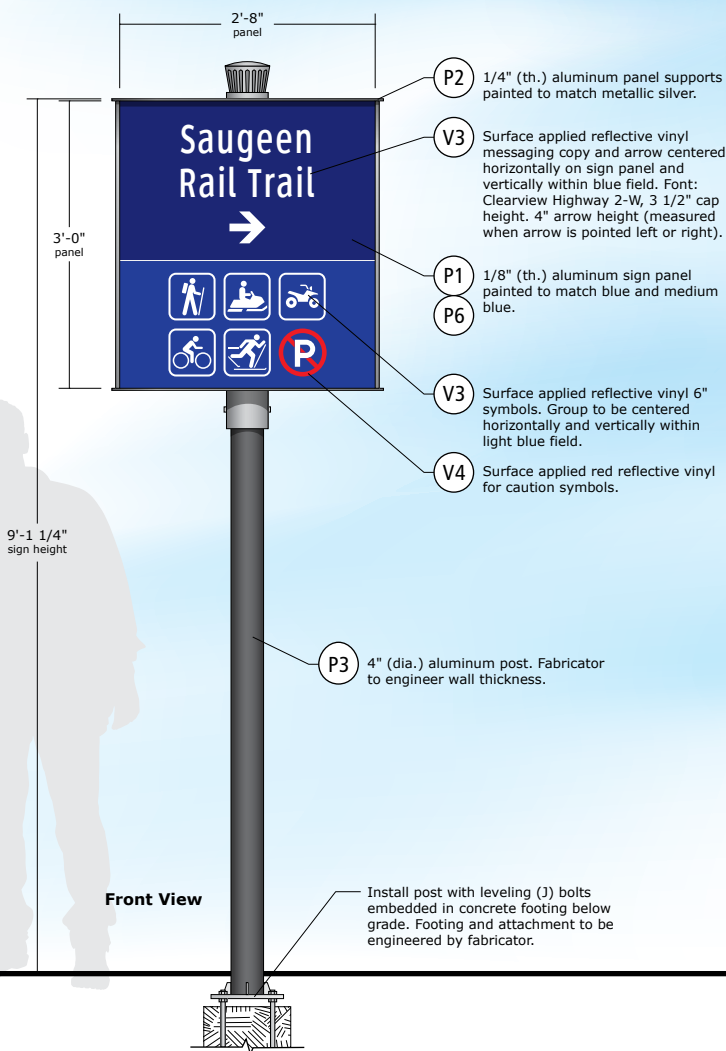


Panel Layout

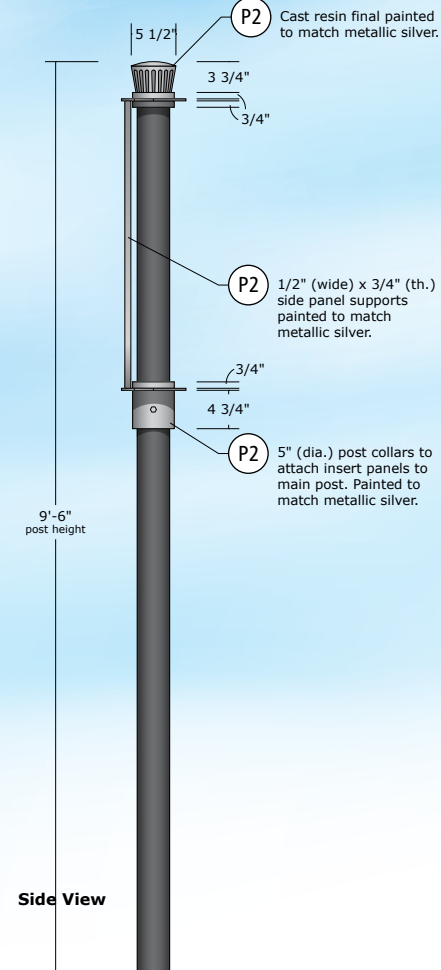


Alternate Panel Layouts

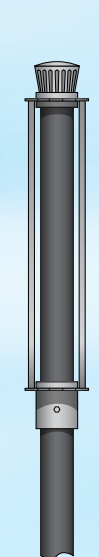
Font: Clearview Highway 2-B, 1" cap height.



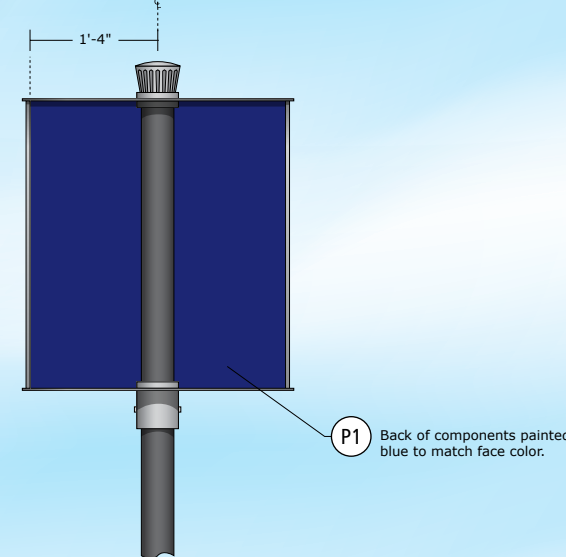
Front View



Side View

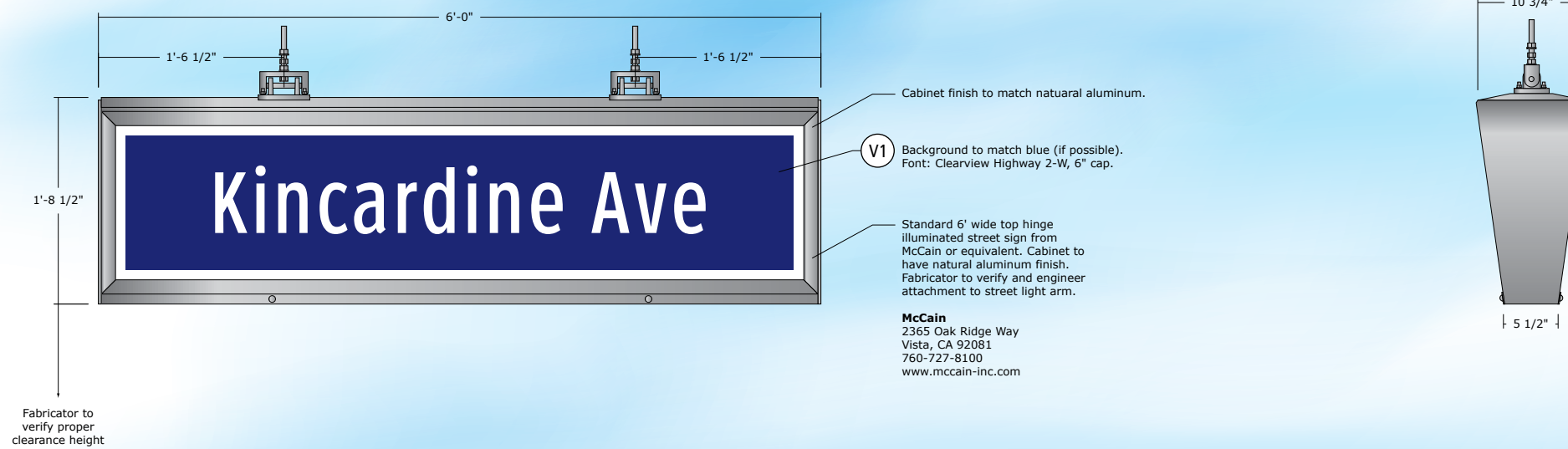


Side View
(two-sided)



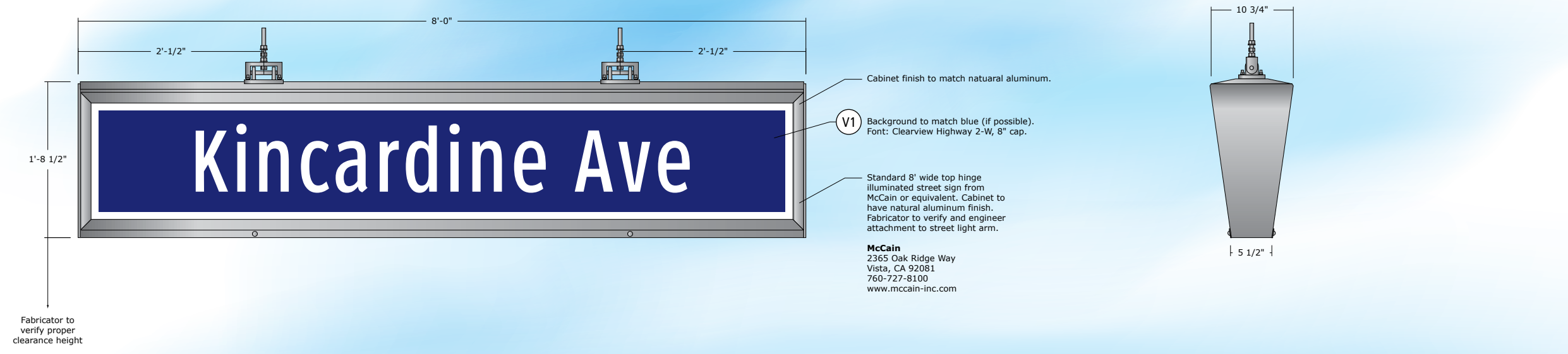
Back View

Scale
1/2" = 1'-0"
(on an 11 x 17 sheet)



Alternate Layouts

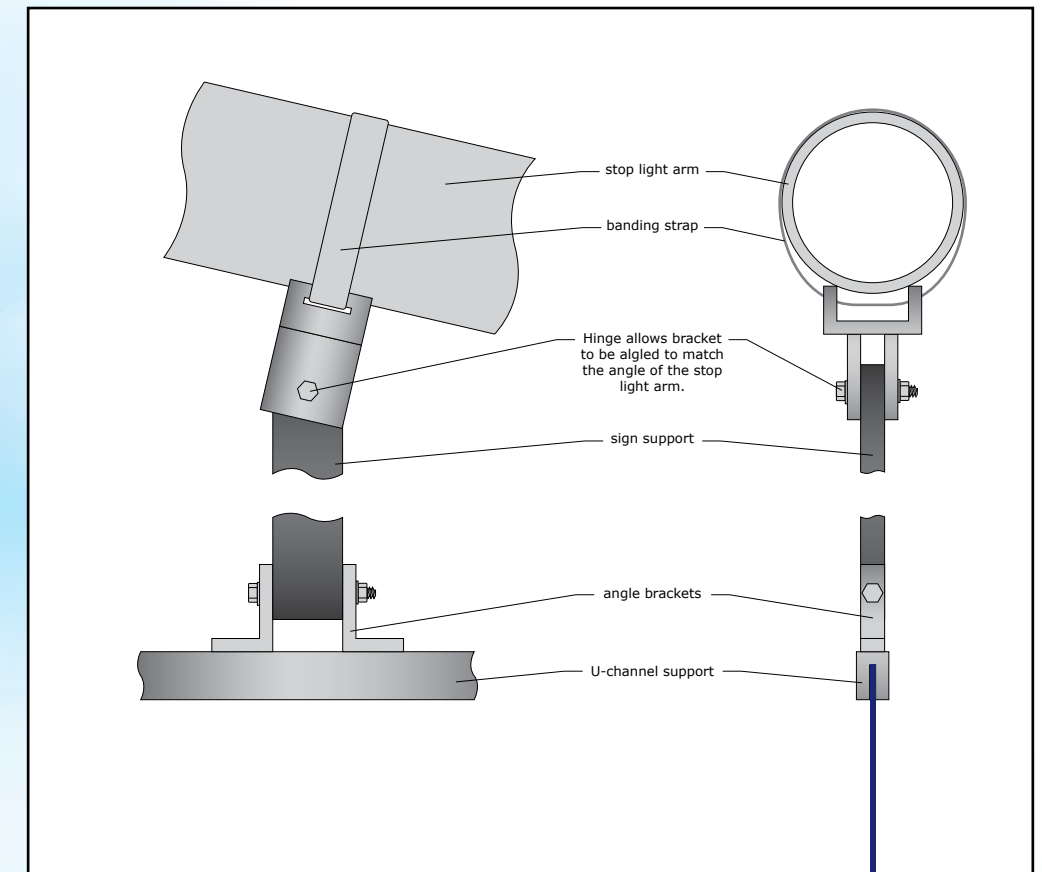
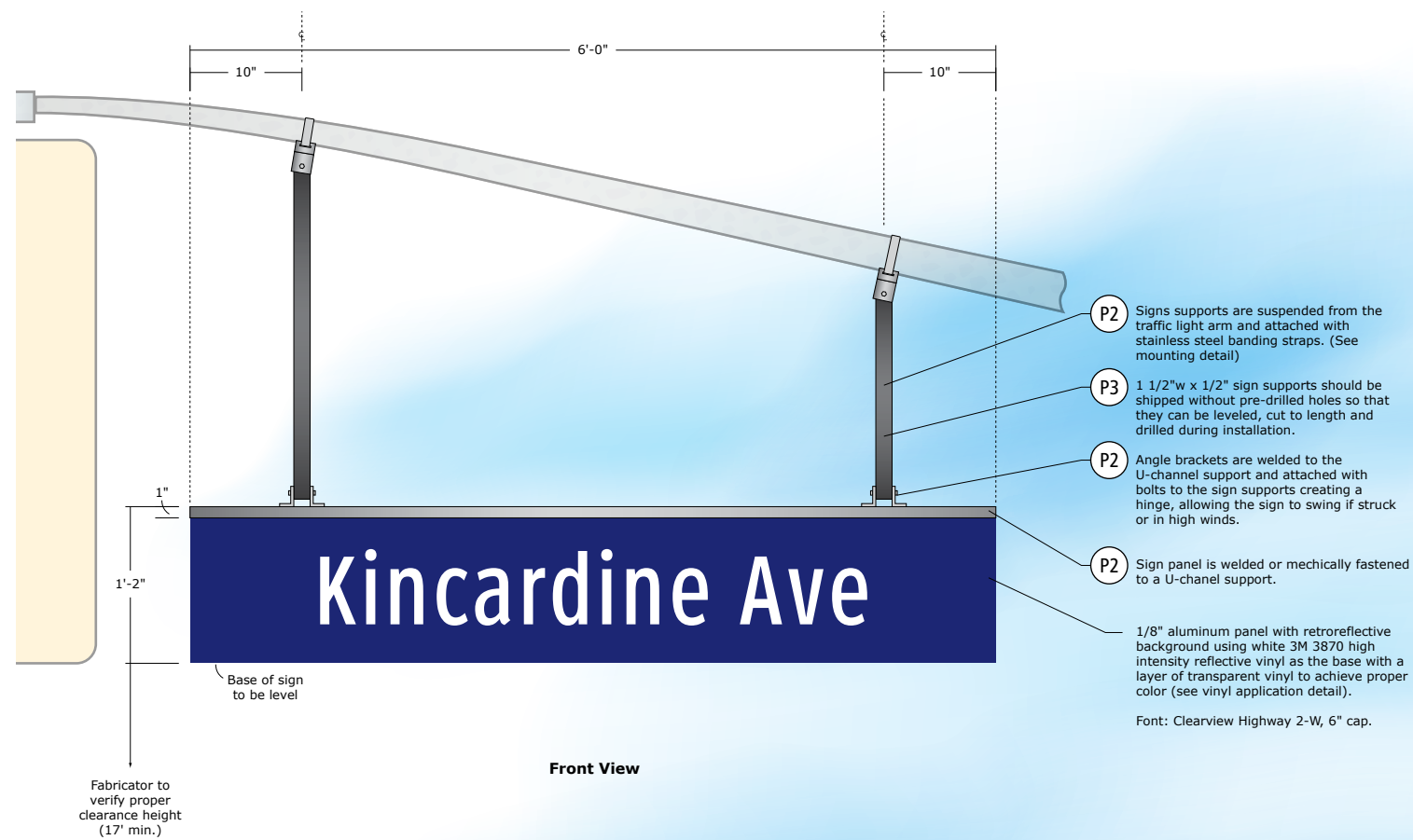
Scale
3/4" = 1'-0"
(on an 11 x 17 sheet)



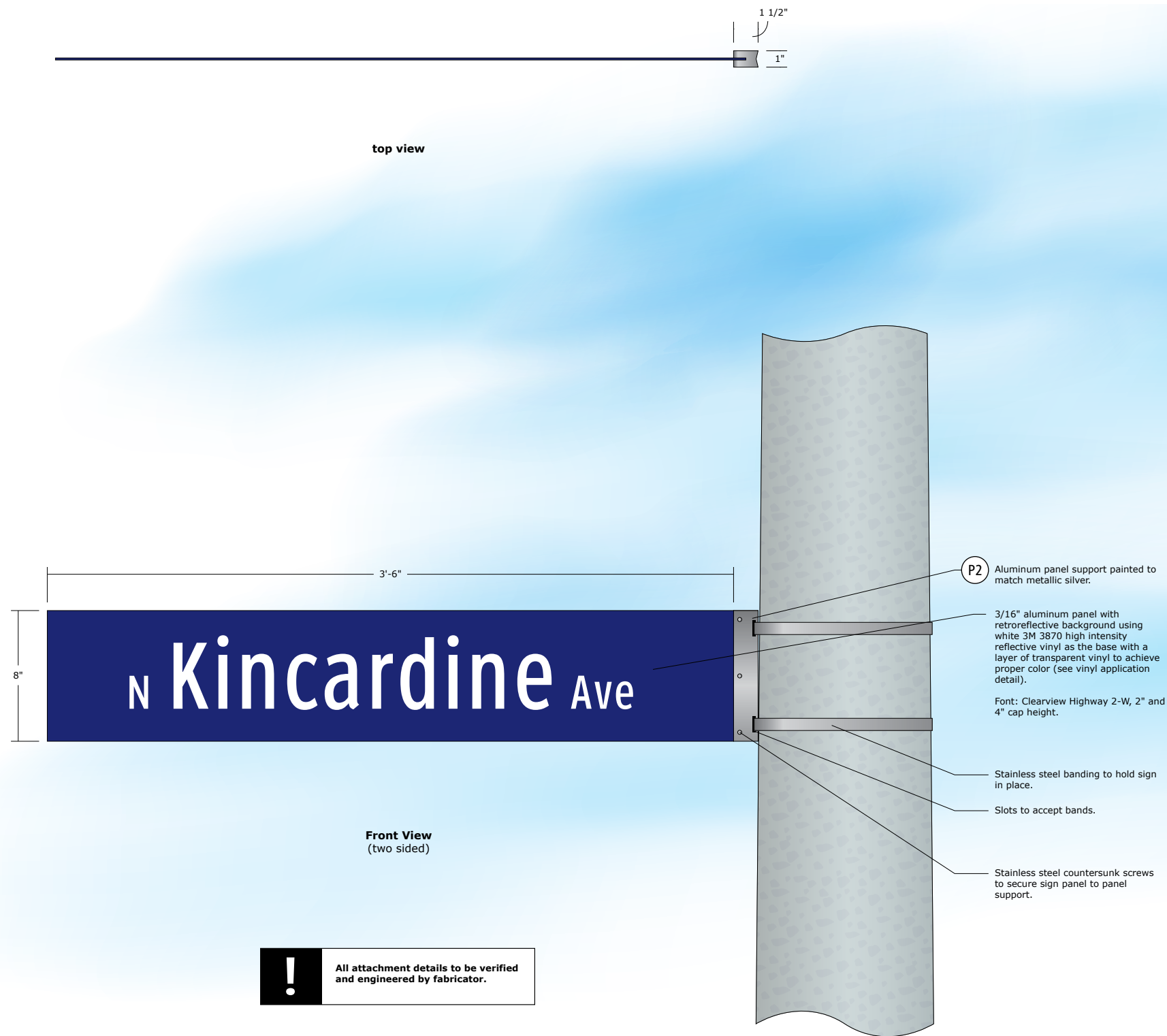
Alternate Layouts

Scale
3/4" = 1'-0"
(on an 11 x 17 sheet)

Ix-7b Illuminated Street ID – Large



Scale
3/4" = 1'-0"
(on an 11 x 17 sheet)



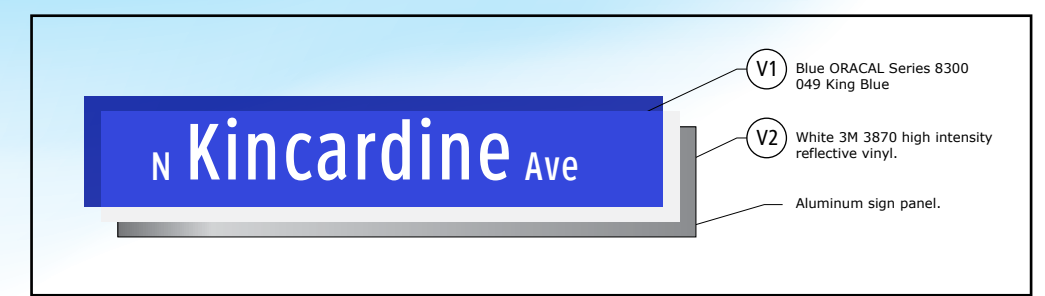
! All attachment details to be verified and engineered by fabricator.

Miramichi Bay Rd

Huron Ridge Cres

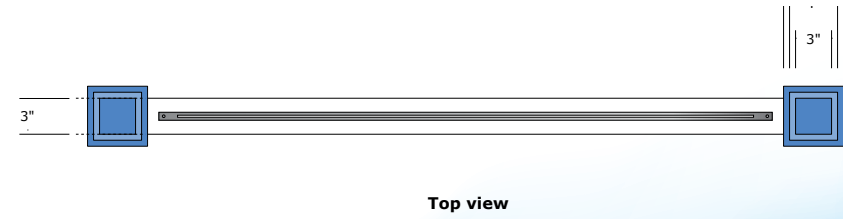
Mackendrick Dr

Example Layouts

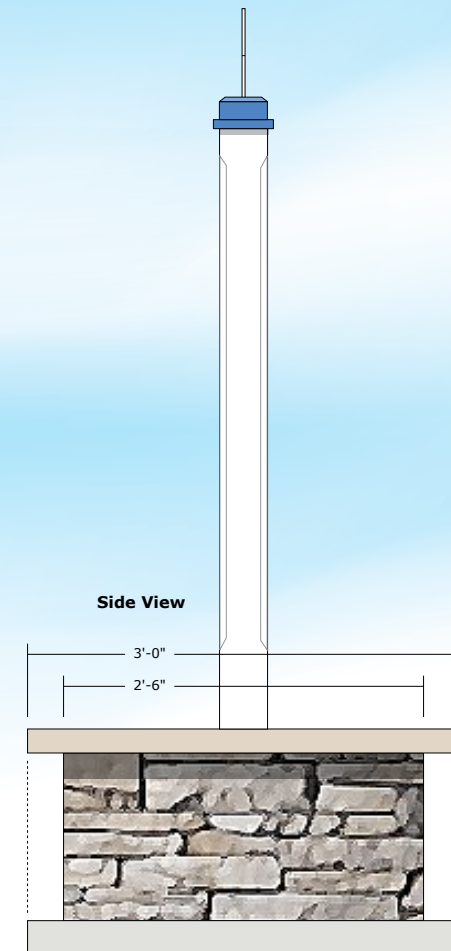
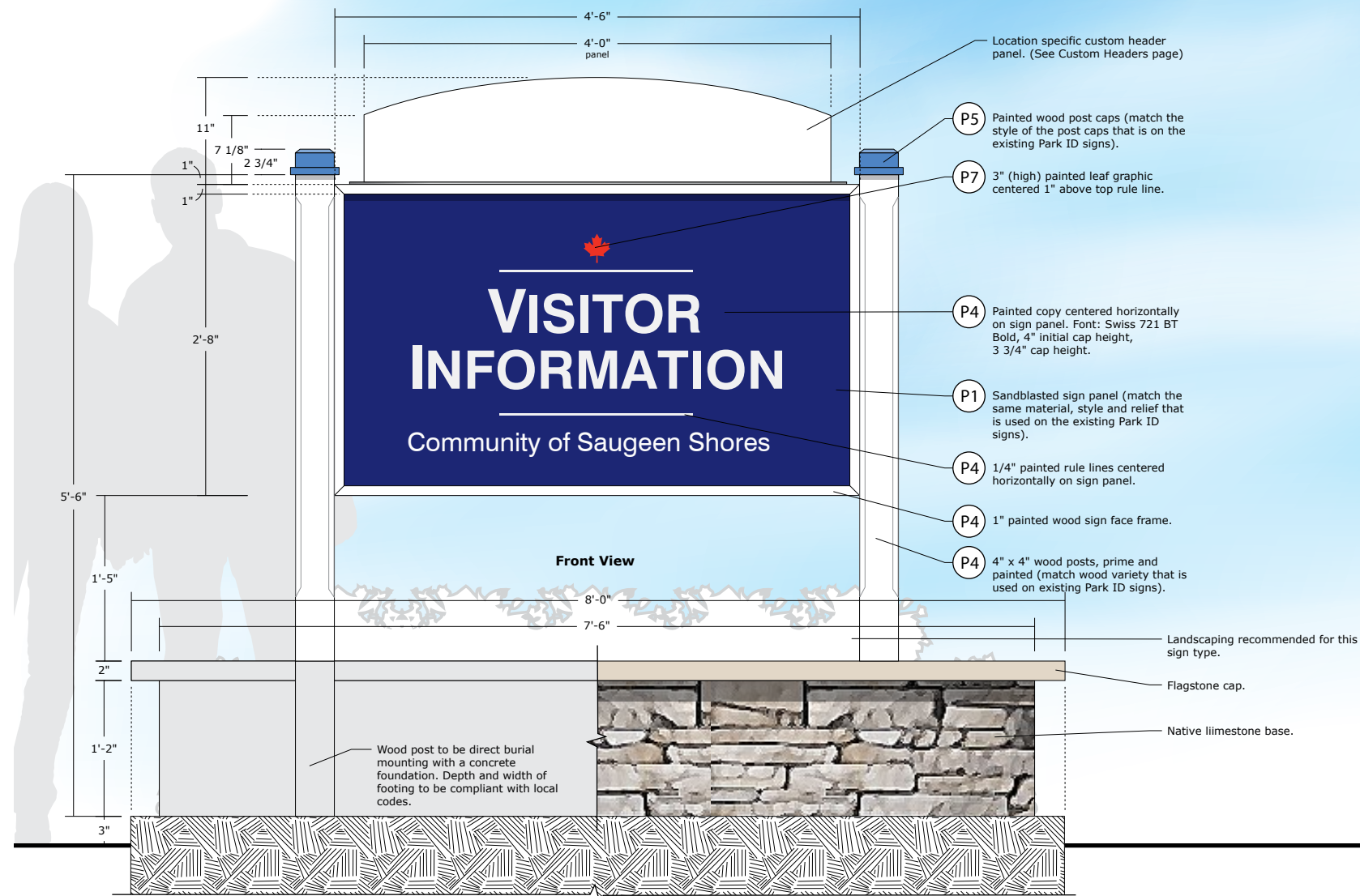


Vinyl Application Detail

Scale
1 1/2" = 1'-0"
(on an 11 x 17 sheet)

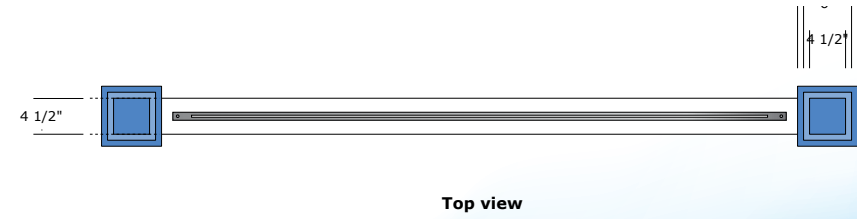


P4 Painted copy centered horizontally on sign panel. Font: Swiss 721 BT Bold, 3" initial cap height, 2 1/2" cap height.

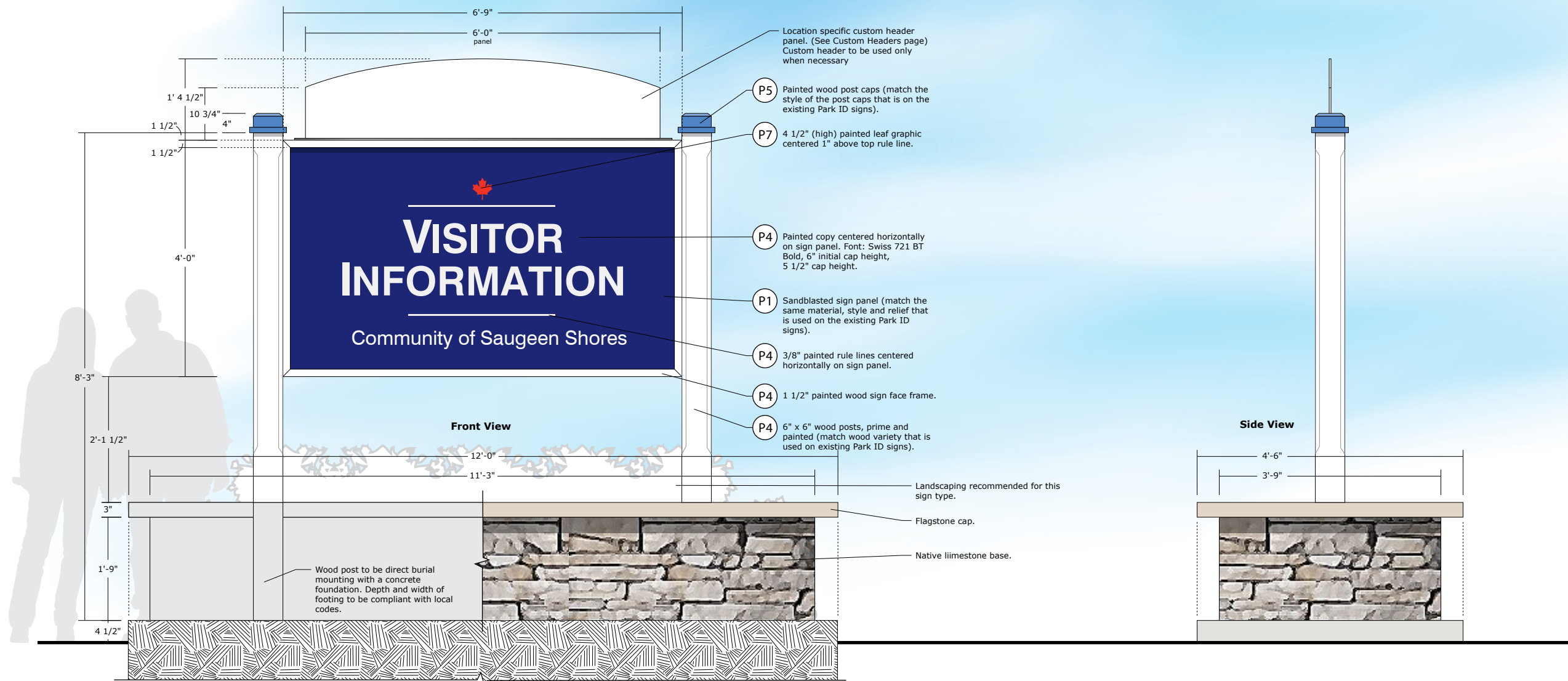


Scale
3/4" = 1'-0"
(on an 11 x 17 sheet)

Ix-3, Ix-3a Public Building ID

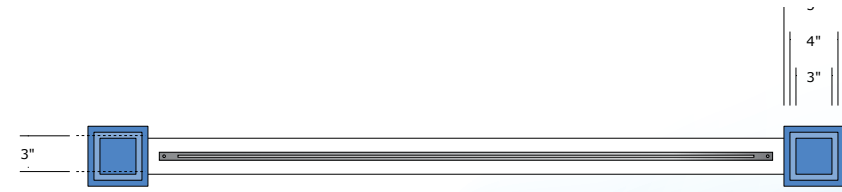


P4 Painted copy centered horizontally on sign panel. Font: Swiss BT 721 Bold, 4 3/8" initial cap height, 4" cap height.

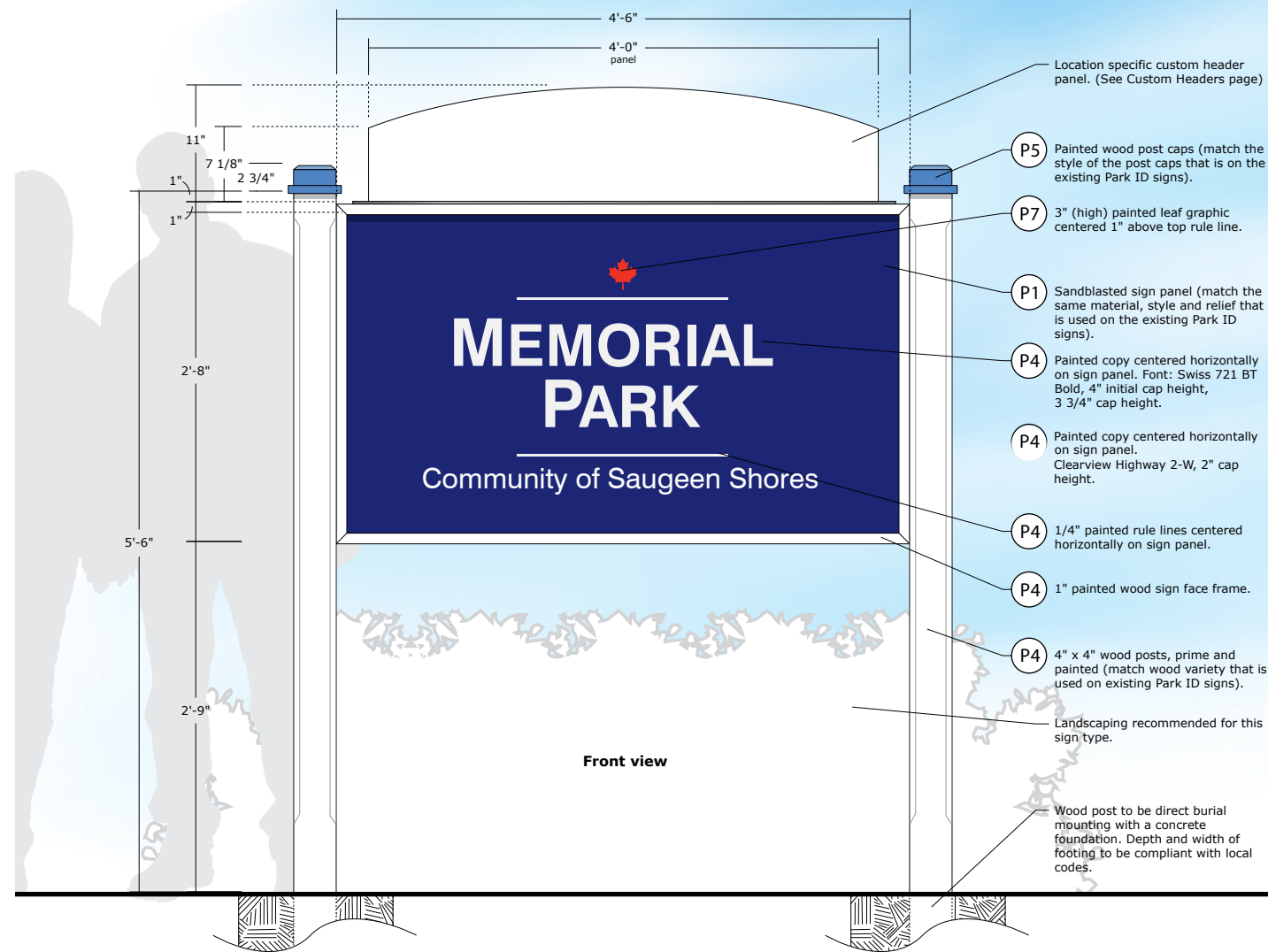


Scale
 1/2" = 1'-0"
 (on an 11 x 17 sheet)

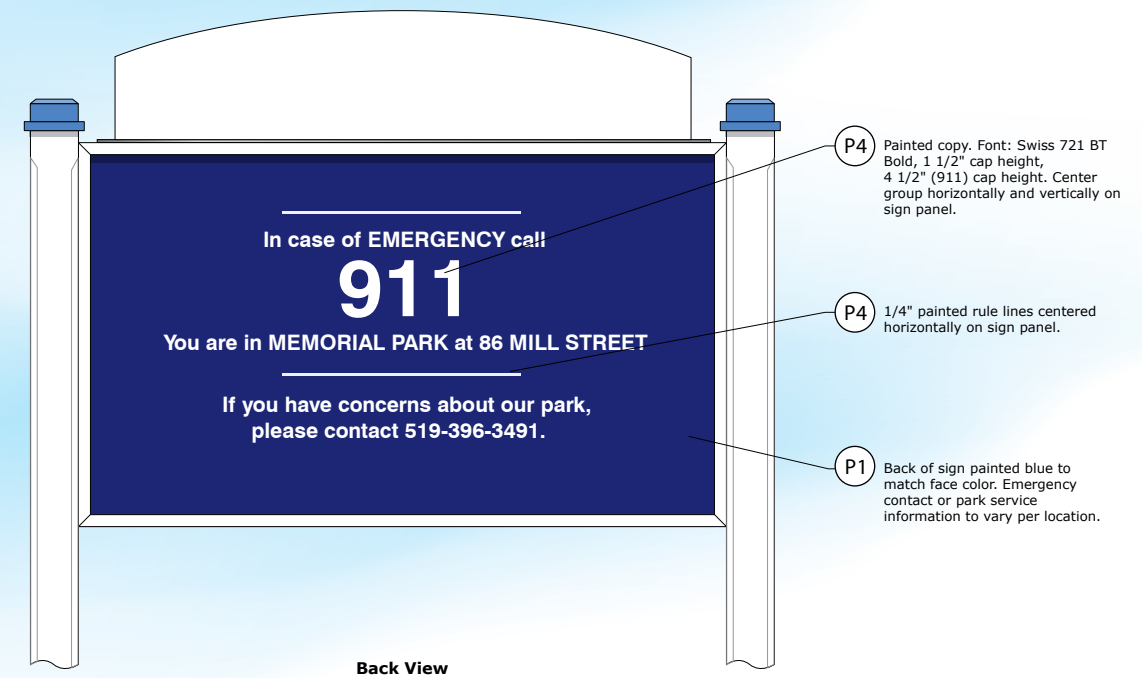
Ix-3b Public Building ID – Large



Top view

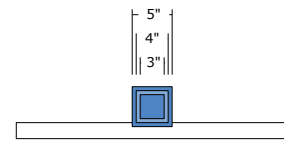


Front view



Back View

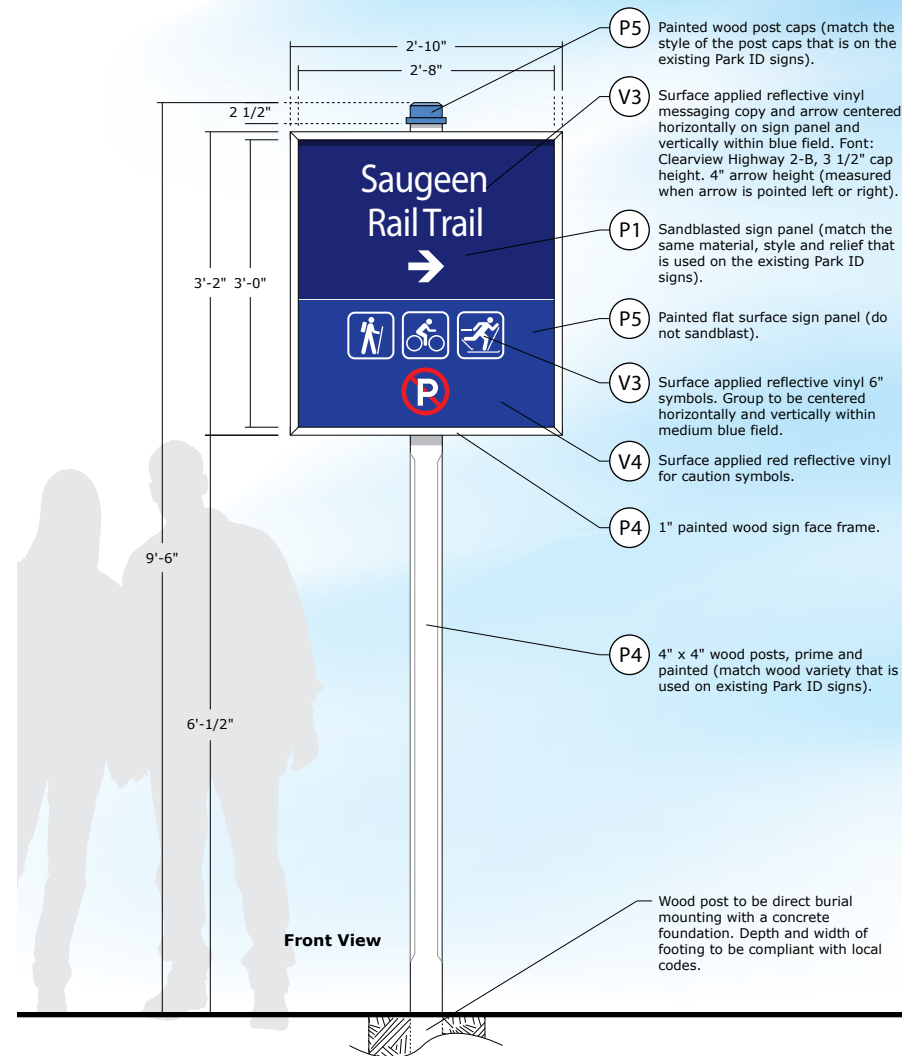
Scale
 3/4" = 1'-0"
 (on an 11 x 17 sheet)



Top view



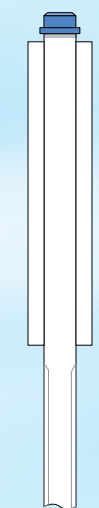
Panel Layout



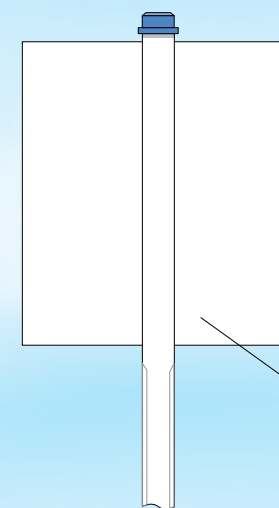
Front View

- (P5) Painted wood post caps (match the style of the post caps that is on the existing Park ID signs).
- (V3) Surface applied reflective vinyl messaging copy and arrow centered horizontally on sign panel and vertically within blue field. Font: Clearview Highway 2-B, 3 1/2" cap height. 4" arrow height (measured when arrow is pointed left or right).
- (P1) Sandblasted sign panel (match the same material, style and relief that is used on the existing Park ID signs).
- (P5) Painted flat surface sign panel (do not sandblast).
- (V3) Surface applied reflective vinyl 6" symbols. Group to be centered horizontally and vertically within medium blue field.
- (V4) Surface applied red reflective vinyl for caution symbols.
- (P4) 1" painted wood sign face frame.
- (P4) 4" x 4" wood posts, prime and painted (match wood variety that is used on existing Park ID signs).

Side View

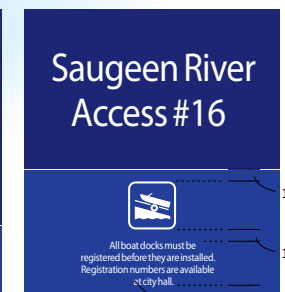
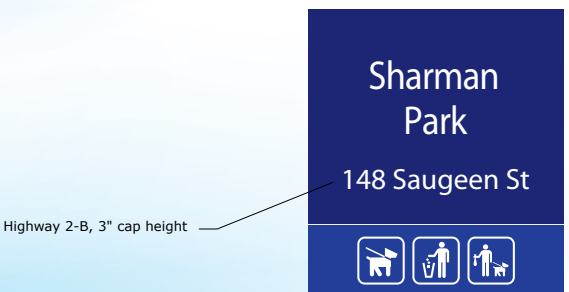


Side View (two-sided)



Back View

(P4) Painted sign back.



Alternate Panel Layouts

Font: Clearview Highway 2-B, 1" cap height.

Scale
1/2" = 1'-0"
(on an 11 x 17 sheet)



Alternate formats of this document are available upon request. For more information contact: 519-396-3468.

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