

CREATING NESTING HABITAT FOR BARN SWALLOWS



Photo: Mark Peck

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Document History					
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CREATING NESTING HABITAT FOR BARN SWALLOWS

Purpose

The purpose of this guidance document is to provide information on different ways to create nesting habitat for Barn Swallow (*Hirundo rustica*) and for modifying existing structures to make habitat suitable for Barn Swallow nesting in Ontario. This document is primarily intended for proponents and land managers who are creating Barn Swallow habitat to fulfill requirements of an authorization or regulatory provision under the *Endangered Species Act, 2007* (ESA). This includes Ontario Regulation 242/08 (O. Reg. 242/08) Section 23.5 (Barn Swallow).

Before an activity can be initiated, permissions, approvals or authorizations may be required from the Ministry of Natural Resources and Forestry (MNRF) (e.g. *Endangered Species Act, 2007* authorization, Wildlife Scientific Collector's Authorization), or from other agencies or, levels of government (e.g. a conservation authority, municipality, federal or provincial government), or from landowners. It is the individual's responsibility to ensure that all necessary permissions, approvals and authorizations are acquired prior to proceeding with their activity.



Photo by Mark Peck

General Information on Barn Swallow

The Barn Swallow is a medium-sized songbird that is about 15-18 cm long. The male has a glossy steel-blue back and upper wings, a rusty-red forehead and throat, a short bill and a broad, blue breast band above its tawny underbelly. The male has long tail feathers that form a distinctive, deep fork and a line of white spots across the outer end of the upper tail. The female's tail feathers are shorter, the blue of her upper parts and breast band are less glossy, and her underside is paler.

The Barn Swallow was listed as threatened under Ontario's ESA in January 2012 and the species and its habitat are protected. A general habitat description (OMNR 2013) provides greater clarity on the area of habitat protected for the species (see Other Resources).

Barn Swallow Habitat Requirements under Ontario Regulation 242/08 s. 23.5

Under O. Reg. 242/08 s. 23.5, individuals who are maintaining, repairing, modifying, replacing or demolishing a building or structure that provides Barn Swallow habitat may be able to conduct their activity provided they meet all eligibility criteria, register with the Ministry, and fulfill all conditions outlined in the regulation, including the requirement to create replacement habitat.

Nest Cup Requirements

For each nest that is removed, damaged or destroyed, the person must substitute one nest cup (see definition on page 6), as outlined in paragraph 3 of O. Reg. 242/08 s. 23.5 (5) and the substitute nest cup(s) must be installed:

- in the building or structure that was the object of the activity in any area of the building or structure that continues to provide suitable nesting conditions;
- in any building or structure within 1 km of the original building if it provides suitable conditions for Barn Swallow nesting; or,
- in any building or structure that the person constructs within 1 km of the original building that meets the requirements of subsection (8) of O. Reg. 242/08 s. 23.5.

Nesting Habitat Requirements

If a building or structure that provides Barn Swallow habitat will be destroyed or altered so that it no longer provides suitable conditions for Barn Swallow nesting, or provides a smaller area for nesting, habitat must be created as outlined in paragraph 4 of O. Reg. 242/08 s. 23.5 (5):

- The person must create a greater amount of Barn Swallow habitat than that which was lost and create that habitat in accordance with subsections (7), (8) and (9) of O. Reg. 242/08 s. 23.5.

The replacement habitat constructed or modified under paragraph 4 of subsection 23.5 (5) must be maintained for 3 years after it is created.

Suitable Nesting Conditions

Buildings or structures that are constructed or modified to create nesting habitat for Barn Swallow must have the following suitable conditions for nesting, as outlined in subsection (8) of O. Reg. 242/08 s. 23.5:

- provide horizontal ledges or rough vertical surfaces with a sheltered overhang;
- provide surface areas suitable for nest attachment at a height that minimizes disturbances to Barn Swallow and in a location that minimizes predation;
- allow barn swallow to freely enter and exit nests;
- provide suitable area to accommodate appropriate spacing between nests; and
- be structurally sound and capable of providing habitat for barn swallow on a long term basis.



Timing of Habitat Creation

Under O. Reg. 242/08 s. 23.5, habitat that is being created or modified for Barn Swallow under paragraph 3 (nest cups) or 4 (nesting habitat) of subsection (5) must be completed within one of the following time frames:

- if the activity will begin outside of the Barn Swallow active season, before the beginning of the next Barn Swallow active season, or
- if the activity will begin during the Barn Swallow active season, before the beginning of that Barn Swallow active season.

The Barn Swallow active season is defined in O. Reg. 242/08 as “the period of each year when Barn Swallow carry out life processes relating to breeding, nesting and rearing, and that begins around the beginning of May and ends around the end of August, the exact dates varying according to the area of the Province in which the Barn Swallow are located and the climate conditions of each year”.

If an eligible activity will occur during the Barn Swallow active season, the steps outlined in paragraphs 1 and 2 of s. 23.5(5) must be followed.

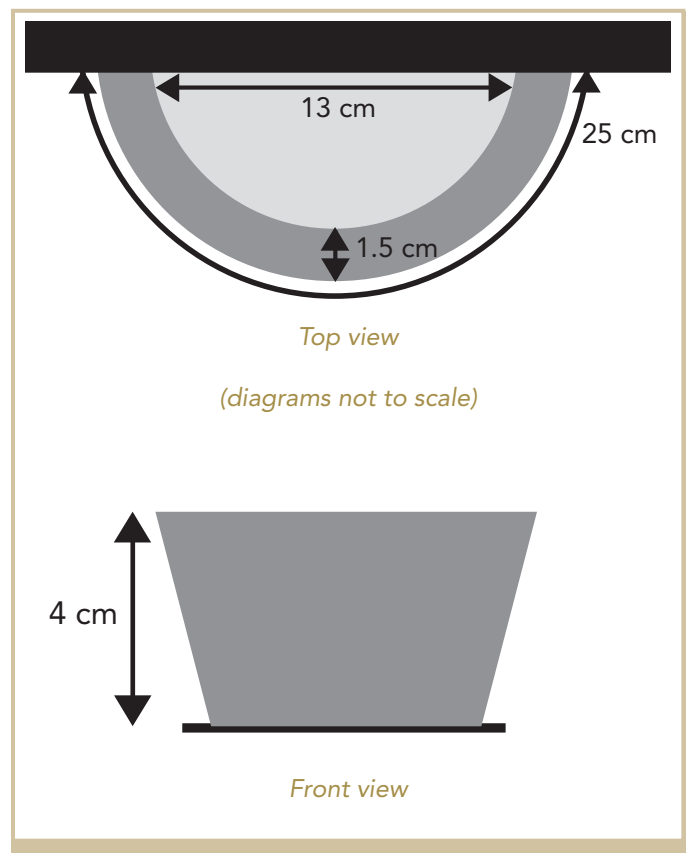
Nest Cups

A nest cup is defined as “a container, receptacle or vessel that may be used as a nest by barn swallow” (O. Reg. 242/08 s. 23.5 (1)). Brown and Brown (1999) report that Barn Swallow will nest in artificial nest cups as well as previously constructed natural nests or newly constructed ones. To date, wood is the most common material that has been used to construct nest cups but some individuals are experimenting with the use of other materials.

Nest Cup Specifications

Nest cups mimic the size and shape of a natural mud nest and allow the swallow to establish a nest faster than constructing a new one out of mud. Nest cups are available for purchase from some commercial manufacturers (Grand 2013, Van Vleck 2013) or may be created based on Barn Swallow nest dimensions in the literature (Baird et al. 1875, Brown and Brown 1999, Peck and James 1987).

Nest cups with the following approximate dimensions have been used successfully in Ontario.





Nest Cup Placement

Barn Swallows have been shown to nest an average of between 2 to 3 m off the ground as would be typical of nests in a barn however some exceptional nests have been over 15 m high (Peck and James 1987). Heights of Barn Swallow nests in British Columbia were measured and 57% of nests were found to be between 2.4 and 3.5 m (Campbell et al. 1997). Barn Swallows prefer to have a ceiling above the top of the nest and will often add layers of mud to achieve an average gap of between 2.5 and 6 cm between the top of the top of the nest and the ceiling (Gryzbowski 1979, Lohofener 1980). Nest cups in a design successfully used in 2013 were placed within 5 to 7 cm of the ceiling board as per instructions outlined by American Artifact's Richard Van Vleck.

Nest Cup Spacing

Barn Swallow nest sites in barns typically contain multiple nests, some of which may be in use (active) and unused (inactive). The average distance between active nests is usually 2 to 4 m (Brown and Brown 1999). However, nests can be closer together; they can be as close as 60 cm, if visual barriers separating the nests such as a wooden hanging beam are present (Mercadante and Stanback 2011). The barrier seems to allow closer nesting because the Barn Swallows are prevented from seeing neighboring active nests (Mercadante and Stanback 2011).



Nesting Habitat

Barn Swallows nest in a variety of places including barns, buildings, sheds, bridges, culverts, or other structures that provide a vertical wall and an overhang or ceiling (Brown and Brown 1999). Barn Swallow nesting structures can be constructed to provide similar shelter to that which they would find in a barn or other structure.

Barn Swallow habitat can be created by constructing a new structure or modifying an existing structure that does not currently provide Barn Swallow nesting habitat. The following suitable conditions are required for nesting habitat constructed or modified under O. Reg. 242/08 s.23.5:

- horizontal ledges or rough vertical surfaces with a sheltered overhang;
- surface areas suitable for nest attachment at a height that minimizes disturbances to barn swallow and in a location that minimizes predation;
- allow barn swallow to freely enter and exit nests;
- suitable area to accommodate appropriate spacing between nests; and
- structurally sound and capable of providing habitat for barn swallow on a long-term basis.

Potential Materials

Since Barn Swallow nests do not usually adhere well to smoothly planed or painted wood, plastic or aluminum (Daly 2003) it is important to consider the materials that will be used to construct the inside vertical nesting structure for the swallows. Nesting habitat structures have been created out of a variety of materials. The habitat must provide horizontal ledges or rough vertical surfaces with a sheltered overhang as identified in subsection (8) of O. Reg. 242/08 s. 23.5. Rough wood is often used as the material to which the nests can be attached. It may be helpful to put a nail, staple or other protrusion on the rough wood or surface as Barn Swallows often start their nests on some feature on the wood (Daly 2003).



Deterring Predators

Another consideration for the nesting habitat structure is the deterrence of predation. It is important to consider whether ground predators such as raccoons will be able to access the nest cups and to design the structure tall enough so that they cannot get to the cups. Because they are good climbers, it is best for the designs to incorporate baffles, shields or sheet metal cylinders on the supporting corner posts or poles of the structure.

Optimizing Space in Nesting Habitat

It is important to also consider the number of nest cups that must be installed as per paragraph 3 of O. Reg. 242/08 s. 23.5 (5) when designing the nesting structure. The amount of nesting habitat created for a swallow on a single structure can be optimized by designing and constructing the replacement structures to include elements that will act as visual barriers between nests thereby requiring smaller buffer areas between nests.

In Mercadante and Stanback's 2011 study, squared-off boards effectively blocked the view from each nest cup to any other nest such that the swallows were shown to nest closer together than would be found in an open barn situation. In a design successfully used in Ontario in 2013, each nest cup was positioned within a squared-off area created by four equal-sized boards, each 60 cm long by 30 cm tall and 5 cm thick.

Nesting Structure Designs

A variety of types of Barn Swallow nesting structures have been constructed in Ontario and elsewhere to create replacement habitat. The information presented above with regards to creating nesting habitat provides some of the considerations to take into account when designing nesting structures.

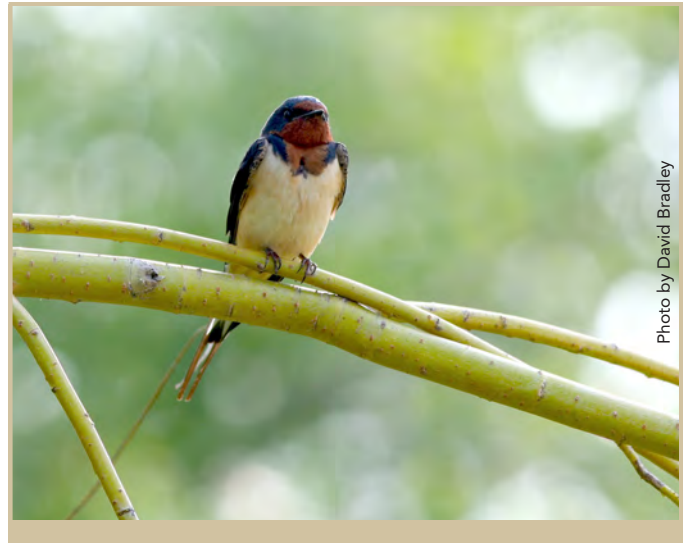
Examples of nesting structure designs provided by the Toronto Region Conservation Authority, Natural Resource Solutions Inc., and Morrison Hershfield in collaboration with Ministry of Transportation, can be seen in Appendices A, B, and C.

Placement of Nesting Structures

O. Reg. 242/08 s. 23.5 requires that created and modified habitat be within 1 km of the removed or altered nesting habitat and within 200 metres of an area that provides suitable foraging conditions for Barn Swallow and that is accessible to Barn Swallow.

Based on the regulation requirement to maintain created habitat for a minimum of 3 years, it is important to consider future plans for the area prior to placing the nesting structures.

Barn Swallows depend upon the surrounding foraging habitat to carry out a number of life processes such as rearing, feeding, and resting. Ideally the created habitat (e.g. structure or building) should be near the centre of an area of suitable foraging habitat and as close as possible to the removed or altered nesting habitat. As low flying aerial insectivorous birds, suitable foraging habitat is one that contains open spaces that provide good sources of flying insects such as waterbodies, wetlands, pastures, old fields and woodland edges (Heagy *et al.* 2014, OMNR 2013).



For Additional Information

This document summarizes considerations and information regarding the creation of Barn Swallow habitat and will be updated as further information becomes available.

For additional information please:

- Visit the Species at Risk website at:

www.ontario.ca/speciesatrisk

- Contact your local MNRF district or regional office; Contact the Natural Resources Information Centre 1-800-667-1940
TTY 1-866-686-6072
mnr.nric@mnr.gov.on.ca
<https://www.ontario.ca/page/ministry-natural-resources-and-forestry>

For general queries related to regulations and registering under the Ministry's Modernization of Approvals Project:

- Contact MNRF's Registry and Approvals Services Centre (RASC) at 1-855-613-4256 or mnr.rasc@ontario.ca

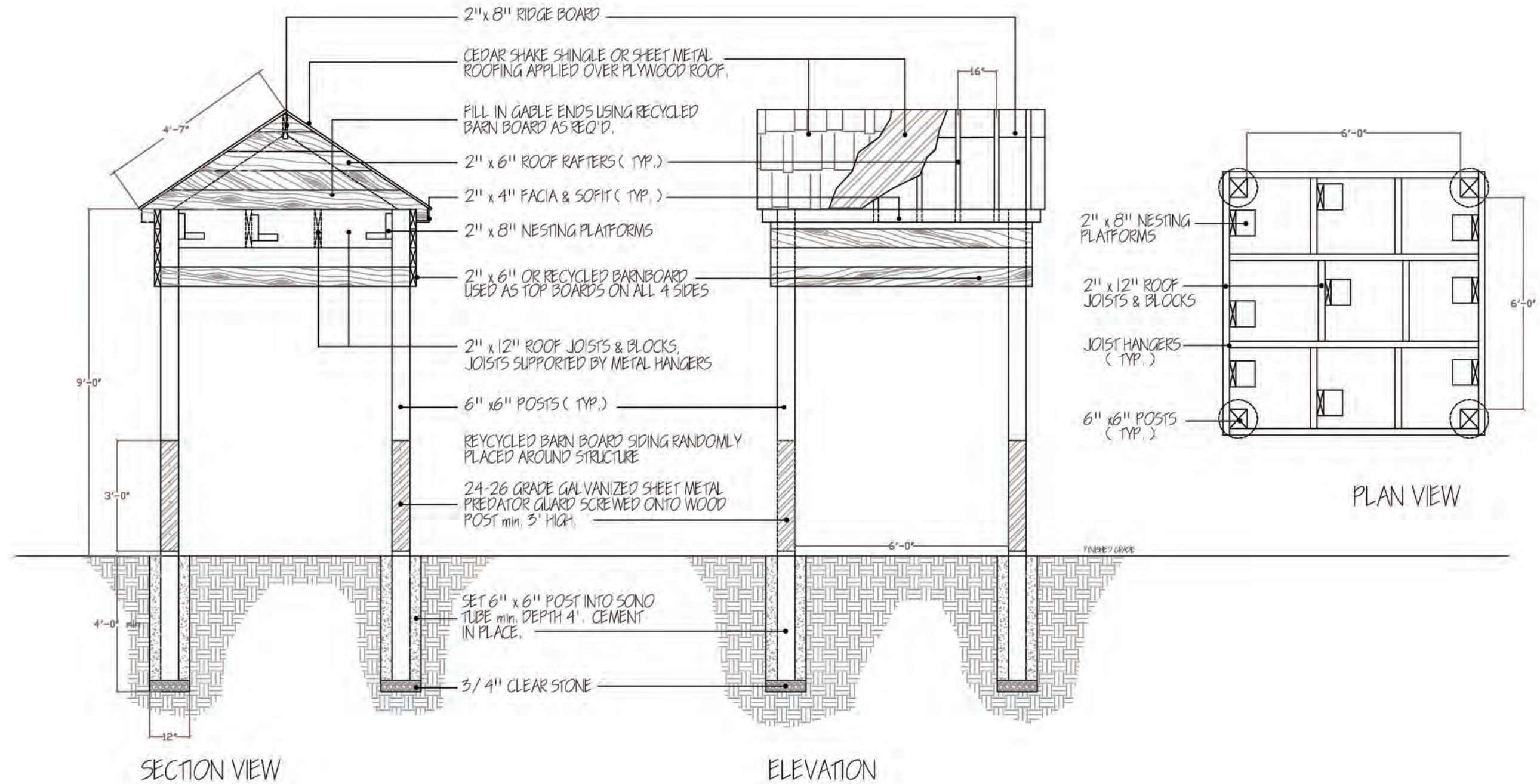
Other Resources

- General Habitat Description for the Barn Swallow
<https://www.ontario.ca/page/barn-swallow-general-habitat-description>
- Ontario Regulation 242/08
<https://www.ontario.ca/laws/regulation/080242>

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- Van Vleck, R. 2013. American Artifacts website, and observation research findings. Website: <http://www.americanartifacts.com> [accessed January 2014].

Appendix A: Nesting Structure Design by Toronto Region Conservation Authority



PROJECT

NOTES

1. ALL WOOD TO BE ROUGH CUT HEMLOCK EXCEPT AS NOTED
2. ALL FASTENERS TO BE GALVANIZED

DATE APRIL 2013

CHECKED

DESIGNED M.P.L.

SCALE NOT TO SCALE

DRAWN A.C.A.D.

DWG. NO.

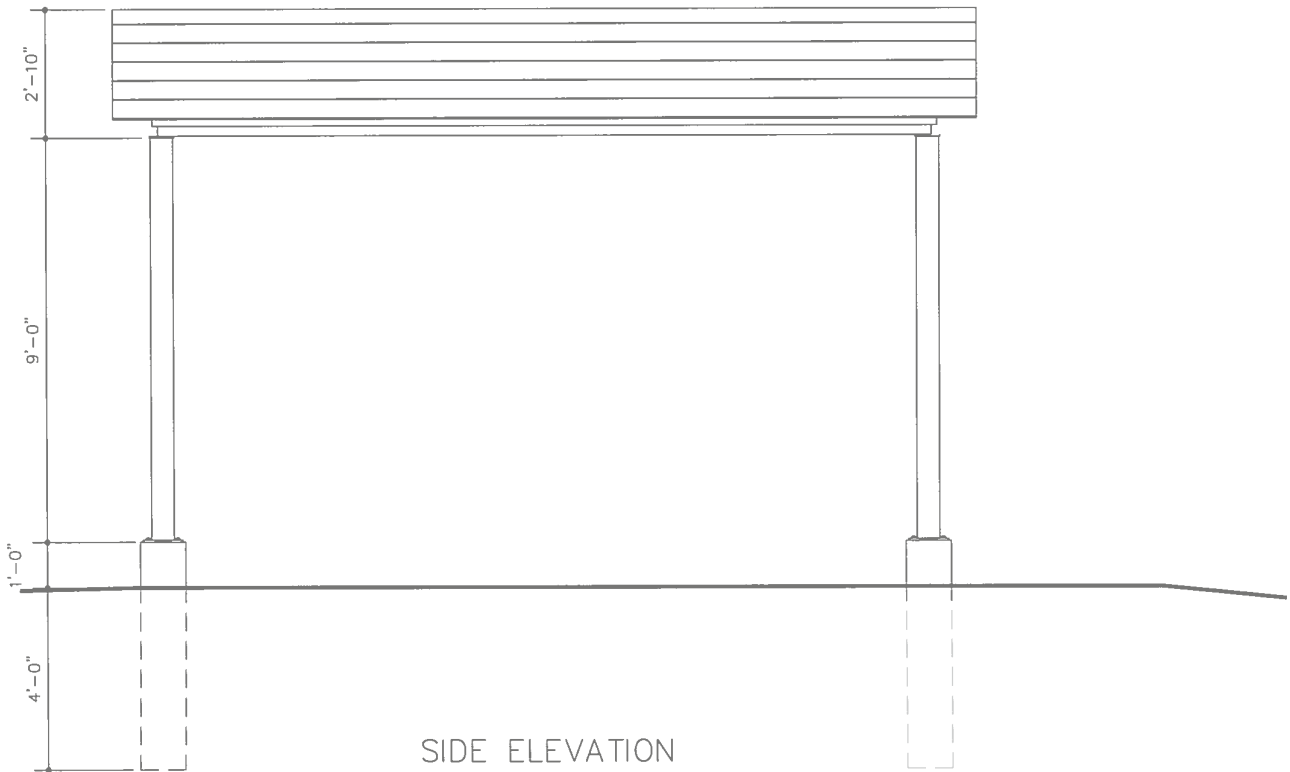
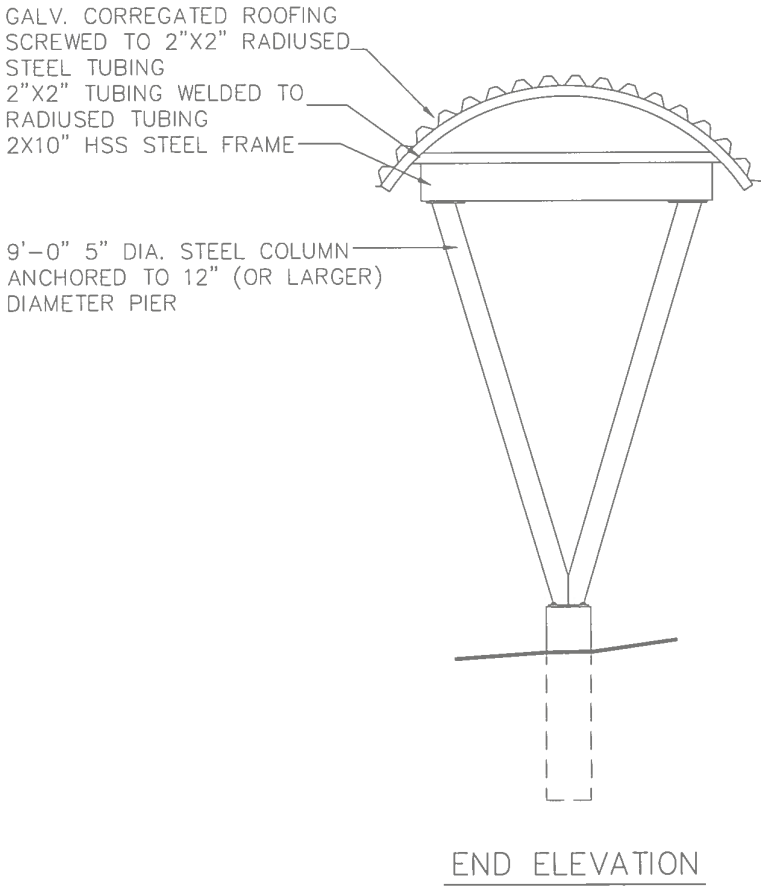
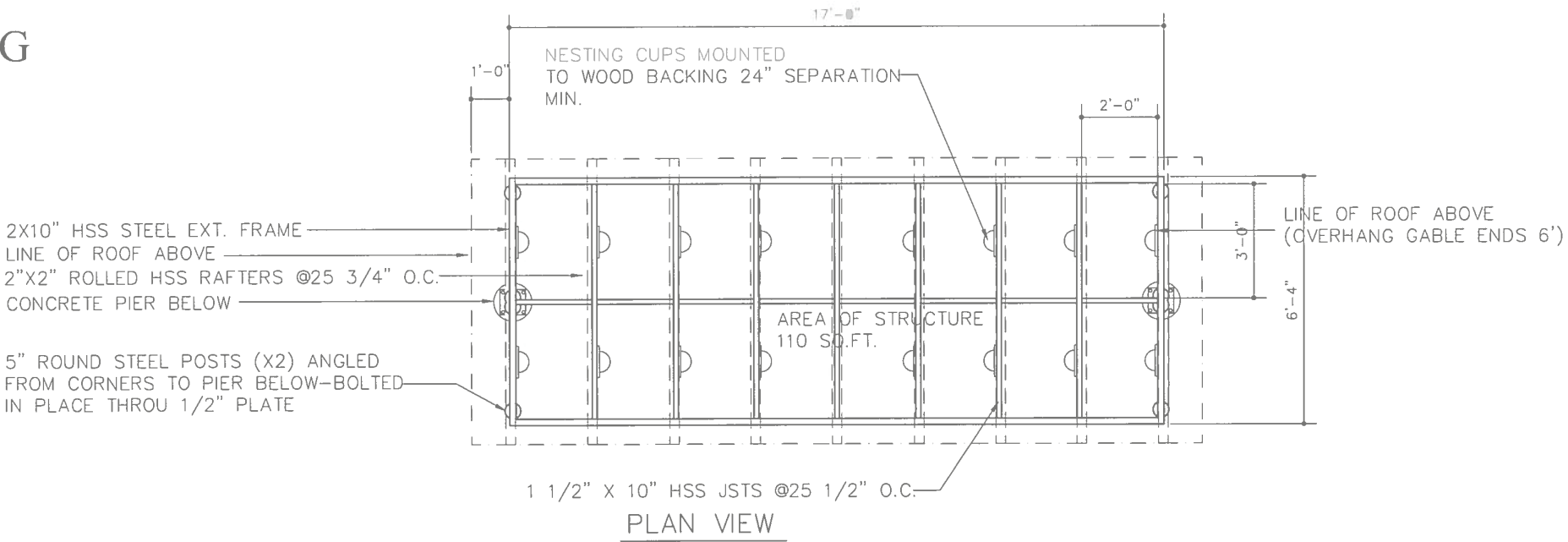
THESE DRAWINGS ARE THE PROPERTY OF TORONTO & REGION CONS. AND SHALL NOT BE USED, ALTERED, MODIFIED, REVISED OR CHANGED WITHOUT WRITTEN CONSENT OF LANDSCAPE ARCHITECT. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE AND ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT. THESE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED AND STAMPED BY THE LANDSCAPE ARCHITECT. DO NOT SCALE DRAWINGS.



DRAWING

BARN SWALLOW NESTING
STRUCTURE

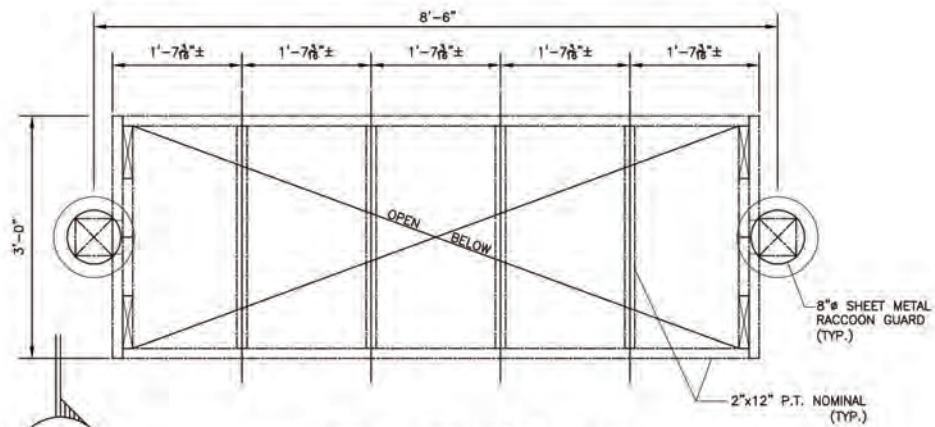
SWALLOW NESTING
STRUCTURES



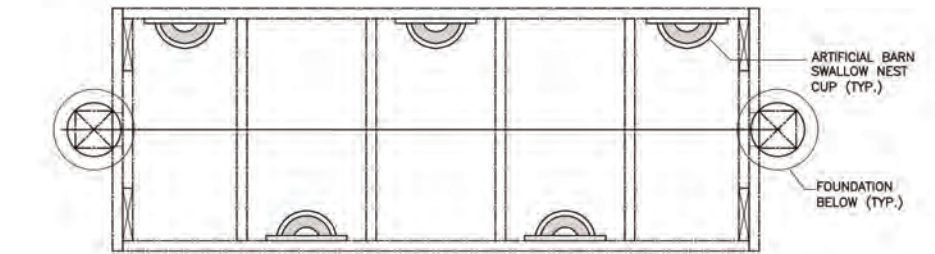
Appendix C: Nesting Structure Design by Morrison Hershfield in collaboration with Ministry of Transportation (MTO)

Larry Sarris of the MTO Planning and Environmental Office worked in collaboration with Morrison Hershfield to create this design.

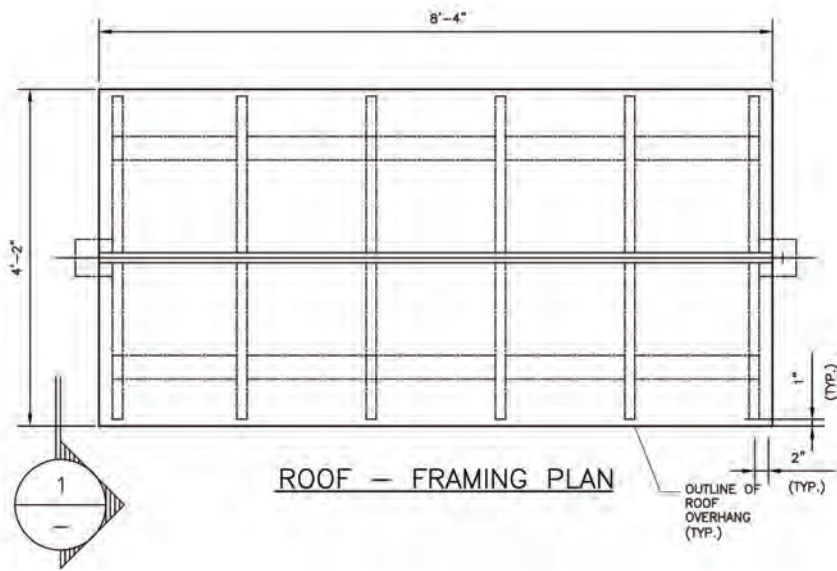
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PLOT DATE: 2014/02/07 11:24:40 AM



BASE — FRAMING PLAN

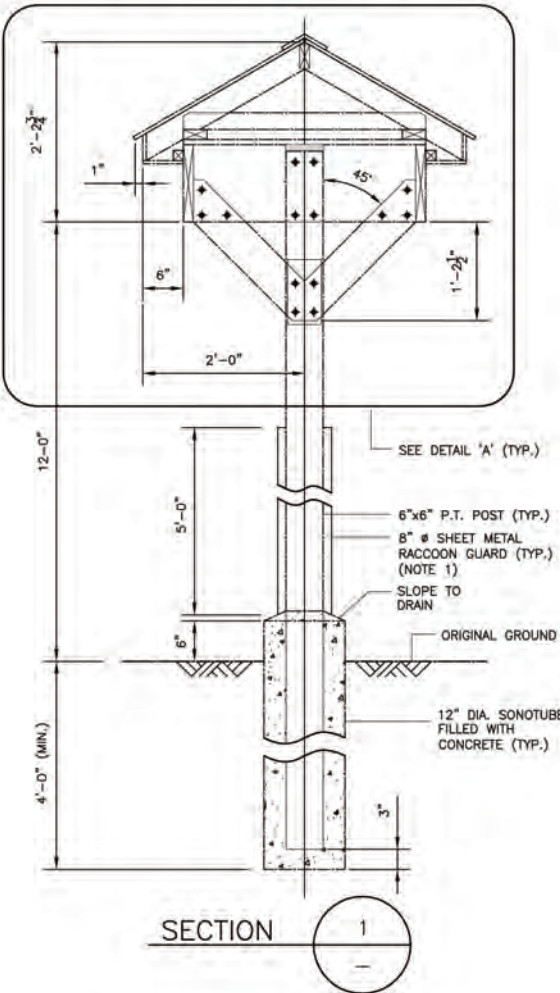


TOP VIEW SHOWING NESTING CUPS



ROOF — FRAMING PLAN

NOTES:
1. CONTRACTOR SHALL WRAP THE BOTTOM 5' OF EACH POST WITH RACCOON GUARD CONSTRUCTED OF 8" #8 SMOOTH GALVANIZED METAL SHEET/PIPING.



SECTION



ARTIFICIAL BARN SWALLOW NEST CUP

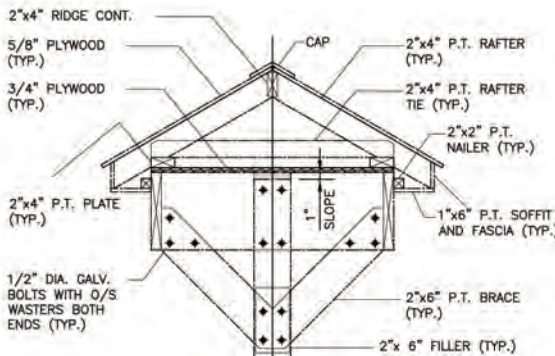
METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN



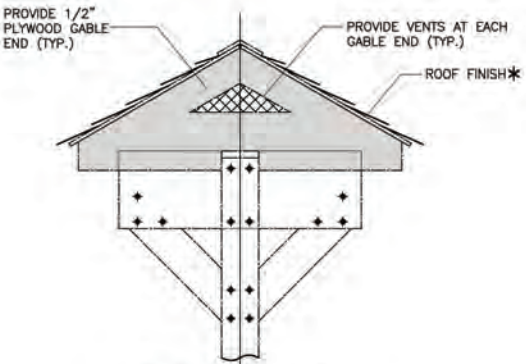
PLATE No
CONT 2014-XXXX
WP 4135-12-01

BARN SWALLOW
SHELTER

SHEET
1



DETAIL — A



END ELEVATION

- * ROOF FINISH:
- PLYWOOD + ASPHALT SHINGLES
 - PLYWOOD + CEDAR SHINGLES
 - STEEL METAL SHEATING
 - CORRUGATED FIBERGLASS SHEATING (SCREWED)

BARN SWALLOW SHELTER
OPTION A — MAXIMUM PRIVACY

N.T.S.