



STEWART, WEIR & CO. LTD.

SURVEYORS ENGINEERS

SUMMER VILLAGE OF WEST COVE.

RESOLUTION OF WATER/DRAINAGE ISSUES

This report was prepared by Stewart, Weir & Co. Ltd. for the account of Summer Village of West Cove. The material in this report reflects Stewart Weir's best judgement in light of the information available at the time of preparation.

TABLE OF CONTENTS

TITLE	PAGE NO.
1.0 INTRODUCTION	3
1.1 GENERAL.....	3
1.2 METHODOLOGY.....	3
2.0 DRAINAGE ISSUES.....	4
2.1 GENERAL.....	4
2.2 DRAINAGE ISSUE AT WEST OF 11 TH STREET (BLOCK 11)	4
2.3 DRAINAGE ISSUE AT MARINE CRESCENT.....	4
2.4 DRAINAGE ISSUE AT OTHER LOCATIONS	4
3.0 PROPOSED CORRECTIVE MEASURES	5
3.1 RESOLUTION OF DRAINAGE ISSUE AT WEST SIDE (BLOCK 11)	5
3.2 RESOLUTION OF DRAINAGE ISSUE AT MARINE CRESCENT	5
3.3 RESOLUTION OF DRAINAGE ISSUE AT OTHER LOCATIONS	5
3.4 RECOMMENDED CULVERT SIZE FOR DRIVEWAYS.....	5
4.0 CONCLUSION.....	6
4.1 RECOMMENDATIONS	6
4.2 CLOSURE	6
APPENDIX.....	7

APPENDIX

Figure 2.1 Existing Drainage Issue

Figure 2.2 Proposed Drainage System/Rehabilitation Measures

1.0 INTRODUCTION

1.1 GENERAL

This drainage design report identifies the existing drainage system within the Summer Village of West Cove and flooding problems within the properties located on the west side of 11th Street, properties bounded by Marine Crescent, Tee junctions of the streets ending at north side and some scattered locations within the Summer Village. This report also outlines conceptual design options as solutions to these drainage issues.

1.2 METHODOLOGY

Accompanied by the Municipal Administrator for the Summer Village, a field visit was undertaken on July 25th, 2007 by Stewart Weir team to identify the drainage issues. Information gathered during this site visit along with already available database for MIMS (Municipal Information Management System) of Summer Villages were incorporated in preparing this report.

2.0 DRAINAGE ISSUES

2.1 GENERAL

Drainage issues identified in the Summer Village of West Cove can be categorized into local and global perspectives. It was understood from the site visit and discussion with the Municipal Administrator of the Village; areas near the west side of 11th Street and properties bounded by Marine Crescent are subjected to the worst drainage problems that need immediate action. This design report particularly addresses these pressing demands.

Existing culvert sizes across the driveways to the individual lots varies and the Village does not have a specific guideline to enforce a minimum size of these driveway culverts. It is also understood that at the Tee junctions of the streets ending at north side have drainage problems. Besides, there are some existing culverts and ditches identified with improper grading that cause isolated drainage issues scattered throughout the Village. These issues need to be addressed from a global perspective. Stewart Weir & Co Ltd. assumes that a global solution of drainage issue for the entire village would be addressed under a different scope of work.

Figure 2.1 illustrates locations with drainage issues that require attention.

2.2 DRAINAGE ISSUE AT WEST OF 11TH STREET (BLOCK 11)

Drainage problem in Lots 11 to 13 within Block 11 is primarily caused by water entering into these Lots from the existing north-south drainage path along west property lines. Storm water from the County land enters the village through the existing culvert across Valking Road and takes course along the west boundary of the village, which ultimately drains through the Lots 11 to 13 due to there relatively low ground elevations.

2.3 DRAINAGE ISSUE AT MARINE CRESCENT

It was observed that the Lots within Block 15, bounded by Marine Crescent, are at lower elevations relative to the surrounding roads. This has resulted in a natural low spot for water to be collected and creating drainage nuisance to these properties. Moreover the existing culvert across Valking Road located at the intersection with Marine Crescent does not suffice the drainage purpose as required.

2.4 DRAINAGE ISSUE AT OTHER LOCATIONS

Drainage problems at Tee junctions and other isolated locations are due to lack of drainage system (e.g. Tee junctions) or improper grading of existing culverts and ditch.

3.0 PROPOSED CORRECTIVE MEASURES

3.1 RESOLUTION OF DRAINAGE ISSUE AT WEST SIDE (BLOCK 11)

We agree with the thought of the Village authority to divert the existing north-south drainage path across Park 9. To achieve this, a new ditch is proposed across Park 9 up to the existing ditch within the walkway between 8th Street and 10th Street. The existing ditch may require rehabilitation. Also, the existing culvert located at the intersection of Walkway and West Cove Drive needs to be removed and existing ditch needs to be re-graded.

3.2 RESOLUTION OF DRAINAGE ISSUE AT MARINE CRESCENT

Two corrugated steel/concrete channels with grating as cover are proposed on both sides of the backyard access road. Similar drainage channels are proposed along the east-west lot boundaries that will connect to the proposed north-south drainage channels on either side. Existing east-west ditch on the south side of Valking Road need to be re-graded.

It is also proposed that these open channels be accommodated with steam pipe so that any blockage due to ice formation during winter can be cleared. This steam pipe would have a thread/connecting mechanism at the ends so that steam pipe from an external source (steam truck) can be connected to it easily. Steam, when induced into the pipe, will heat the pipe and thus melt the ice to make the water free flowing.

3.3 RESOLUTION OF DRAINAGE ISSUE AT OTHER LOCATIONS

Isolated drainage problems at other locations are due to improper grading of culvert and/or associated ditch; therefore establishing appropriate grading is proposed as the resolution of this drainage issue.

Proposed design concept for the above areas is illustrated in Figure 2.2.

3.4 RECOMMENDED CULVERT SIZE FOR DRIVEWAYS

We recommend a minimum of 600mm diameter bevel ended culvert for the driveways that will allow easy maintenance. This size can be 500mm for the locations having constraints due to shallow ditch.

4.0 CONCLUSION

4.1 RECOMMENDATIONS

Our understanding at this moment is that the neither the County nor the Summer Village have regulations on allowable discharge rate of surface runoff. Uncontrolled surface runoff results in flooding or other nuisance in the areas downstream. We recommend that the authorities of the Summer Village and the County formulate an agreement on allowable surface runoff discharge rates that can be released into downstream areas. This will require appropriate storm water management practice for each development to take place.

4.2 CLOSURE

This Design Report was prepared by Stewart, Weir & Co. Ltd. for the Summer Village of West Cove. This report provides the conceptual design only. Detail design would be undertaken soon after these concepts are finalized/accepted. The drawings for this report were prepared based on MIMS' legal maps.

Respectfully Submitted:

STEWART, WEIR & CO. LTD.

Alamgir Hossain, EIT

Junior Engineer, Municipal

APPENDIX
