

PROJECT NO. 13254-0004
HIGHWAY 1 – ADVANCED WORKS
HIGHWAY 11 FIBRE OPTIC RELOCATION, SITE GRADING AND TEST FILLS

T3 – Reference Document: Salt Liner

The following are included in this document:

- MoT evapotranspiration liner
- Technical Bulletin GM96006
- Typical Liner Drawing for Salt Sheds

SALT SHED

75mm Asphalt Concrete

25mm Well Graded Base

50mm - 200mm Drain Rock

-1%

-5%

1.5 : 1

1.5 : 1

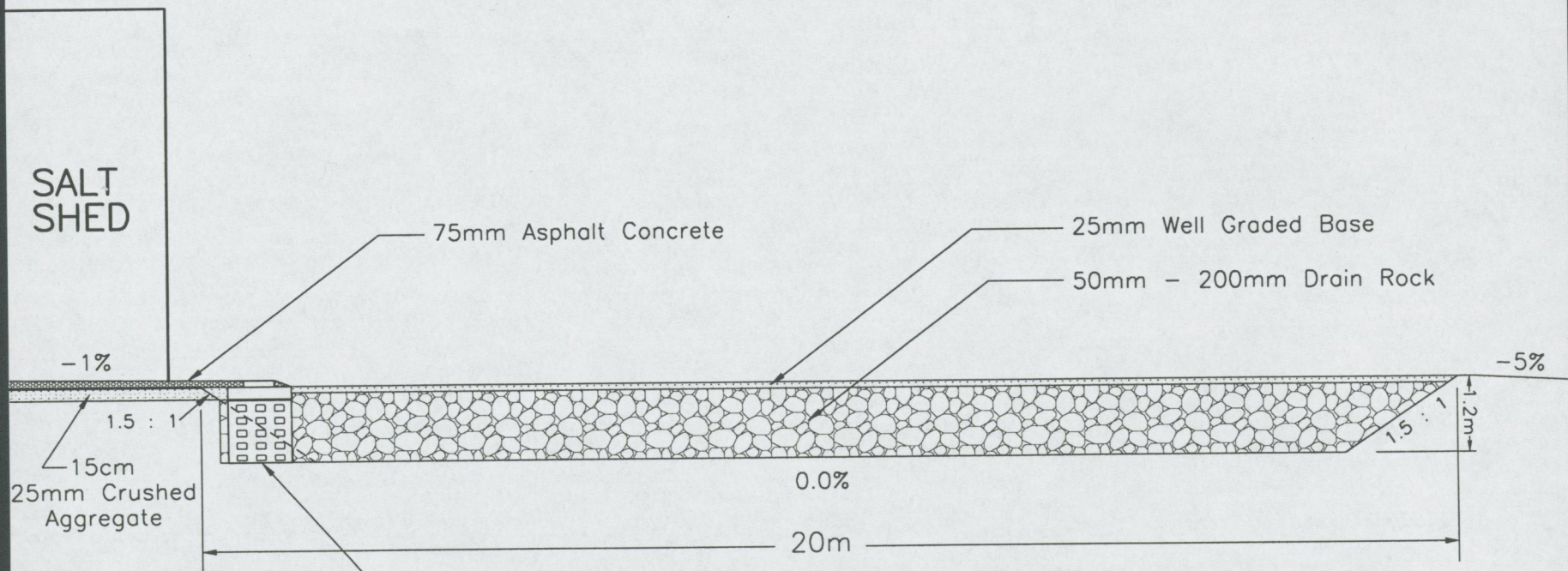
15cm
25mm Crushed
Aggregate

0.0%

20m

1.2m

1m x 1m Drywell Manhole
c/w 0.2m x 1m Lid and
C-18 Frame and Grate





Subject: Salt Shed Operations	
Date: February 2, 2000	Author: R. G. Buchanan, P.Geo.
Bulletin Number: GM96006 Bulletin Type: Information Only	Action Required: Immediate Effective Date: November 15, 1996
Contacts	Standards Affected
Rob Buchanan, 387-7702 Senior Geoscientist	No Standards are directly affected by this information.

Background

Considerable work has been done to evaluate salt storage and application methods used by the Ministry of Transportation and Highways and its' Road and Bridge Maintenance Contractors. Remediation of salt contaminated properties or groundwater systems can cost millions of dollars while the preventative methods required only cost in the hundreds of dollars. As a result, the following procedures for salt shed operation and development are recommended.

Recommended Procedures

From recent investigations, construction projects and operational reviews it has become apparent that problems may exist with some of the Ministry's salt storage sites and that operating procedures could be improved. As a result, the following operating procedures are recommended. In addition, the video "*Environmental Visions*" produced by the B.C. Buildings Corporation (B.C.B.C.), should be reviewed in association with this bulletin. Salt contamination is a cumulative process where constant applications through spillage or mixing in front of a shed will over a period of 5-20 years lead to severe soil contamination and sometimes to groundwater contamination.

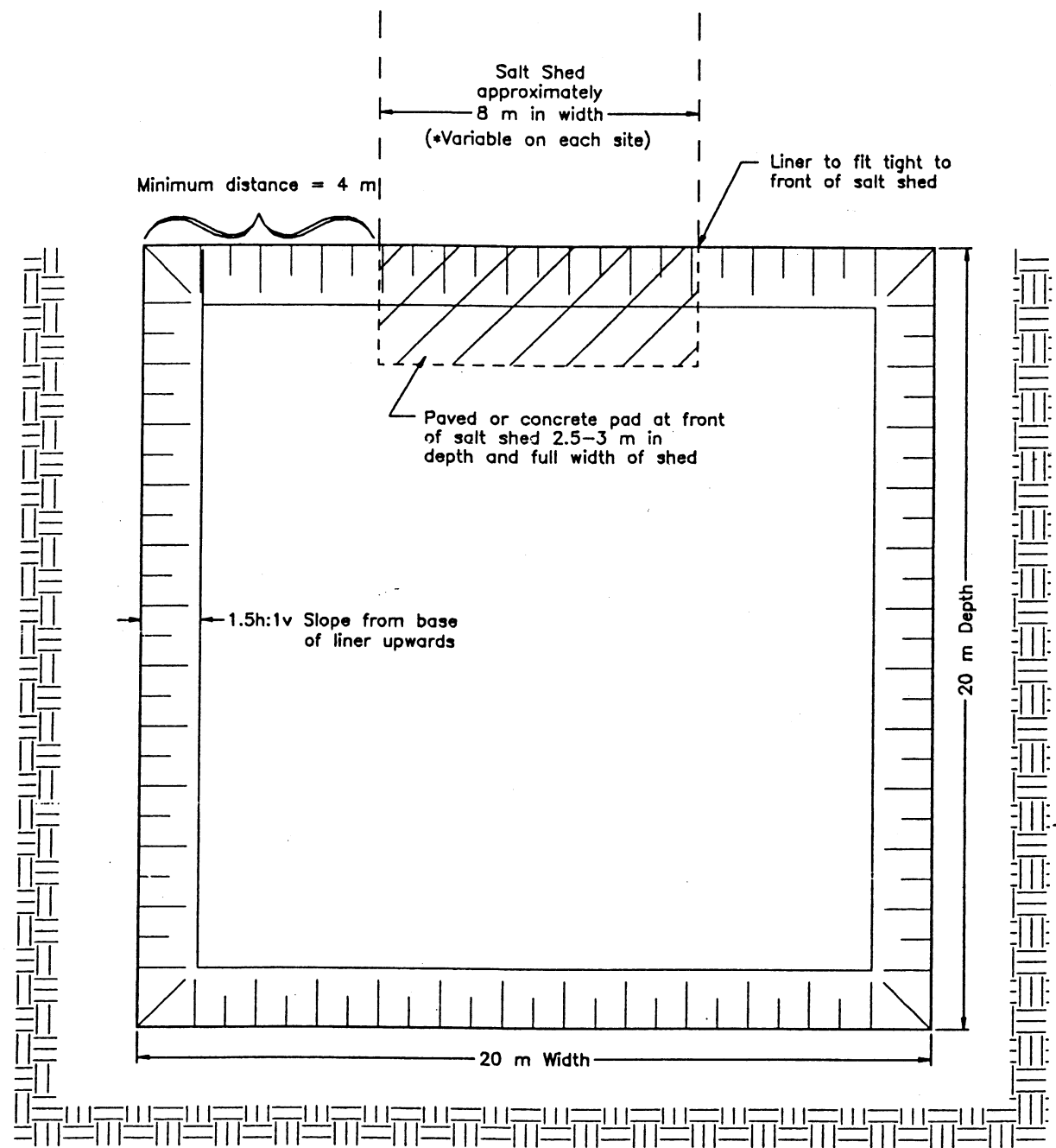
- All salt must be kept under the cover of the shed roof. Salt distributed over the pad in front of the shed or on the ground where a pad does not exist can lead to soil and groundwater contamination.
- It is recommended that all salt sheds which require maintenance should receive the necessary repairs as soon as possible in order to reduce potential salt contamination problems.



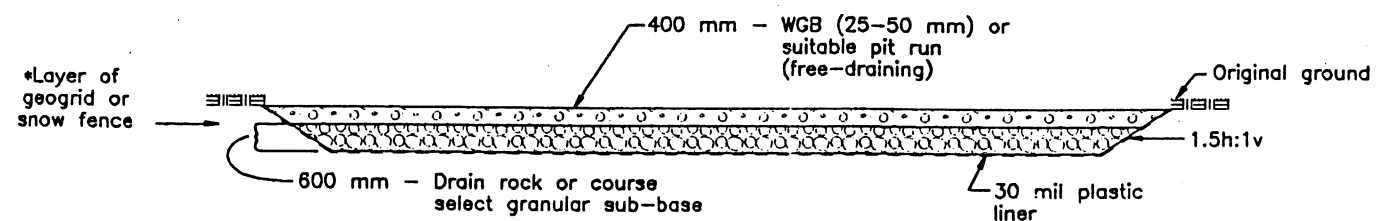
- All new salt storage sites should be reviewed for potential impacts on soil and groundwater conditions within close proximity. This may be possible through a simple site visitation by someone trained in environmental assessment for salt contamination.
- All new salt storage sites should contain adequate means within their designs to capture potential runoff from the pad in front of the shed and from the premixed piles which may be distant from the shed itself.
- Where an evapotranspiration bowl is used instead of a pad then the bowl should be of sufficient size and volume to contain all snowmelt and precipitation conditions. This design effectively traps all the salt laden water and keeps it from entering the soil or groundwater systems (see Diagram attached).
- Where it is recognized that salt sheds are in close proximity to domestic water supplies or streams, rivers, etc., they should be moved at the earliest convenience to reduce the potential for salt contamination. This will effectively protect against any potential environmental damage.
- Once a salt source has been removed from a site (closing of pit) it takes approximately 3-5 years for the soil to remediate itself through infiltration of precipitation and spring runoff water.
- In high precipitation areas (above 1250mm per year) fully enclosed sheds for both salt storage and mixing are recommended. This requires larger structures as designed by B.C.B.C., but, it alleviates the need for an operating pad at the front.

Wherever possible, good housekeeping rules will alleviate many of the potential problems associated with salt storage (sheds and piles) and alleviate the potential for environmental impacts on the soil and groundwater conditions at any particular site.

Where Brine tanks are employed in catching runoff from salt shed pads and storage areas, the brine must be disposed of in an environmentally responsible manner. In some areas, the salt laden brine can be disposed of at local waste water treatment plants where it is mixed in with the large volume of water being treated and diluted beyond any harmful levels. Where this is not possible, other alternatives may have to be pursued.



PLAN



PROFILE

*Snow fence or geogrid to be used as warning device so liner is not dug through or punctured

DIAGRAMMATIC REPRESENTATION
SALT LINER PROTECTION FOR
MINISTRY SALT SHEDS

