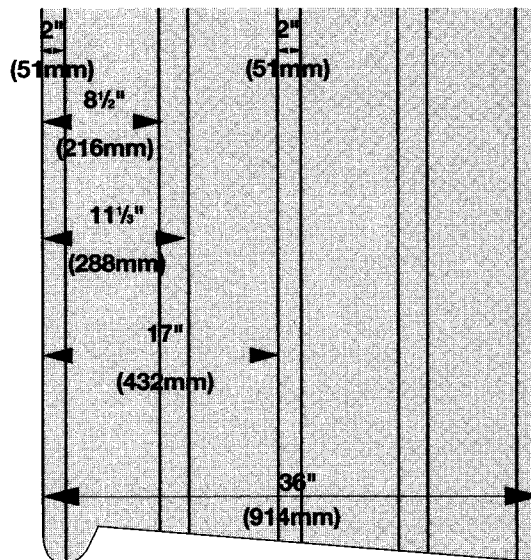


# METRIC-SIZED PLY SHEET

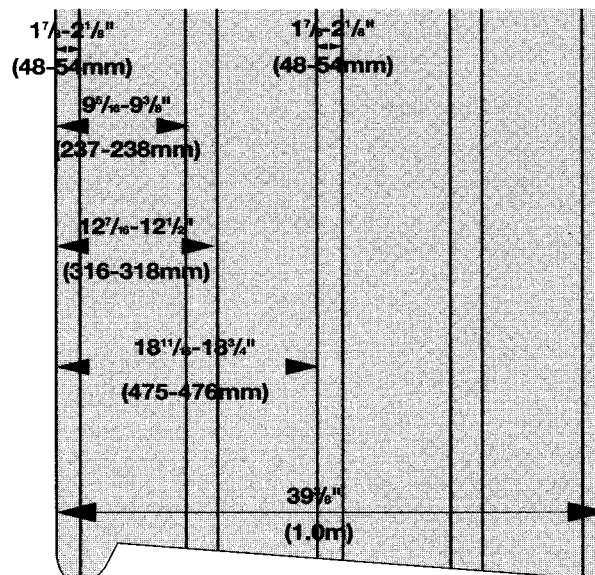
## BULLETIN 98-1, MAY 1998

Several U.S. manufacturers have recently started producing metric-sized ply sheets for use in built-up and multiple-ply, hybrid modified bitumen membrane roof systems. NRCA is concerned with the use of these ply sheets in the U.S. roofing market, specifically, as to the lack of agreement between the manufacturers of metric-sized ply sheets on ply line spacing; the reduction in headlap dimension as a result of the methods of metrification; roll incompatibility with certain felt laying and bitumen application equipment; and the inadequacy of applicable membrane analysis standards.

Metric-sized ply sheets differ from conventional English measurement-based ply sheets in that metric-sized ply sheets are 39-3/8 inches (1 m) wide, compared to a 36 inch (914 mm) width for conventional ply sheets. Also, the ply lines on a metric-sized ply sheets are at a wider spacing than on a conventional ply sheet. The ply line spacing for a conventional English measurement-based ply sheet and the approximate measurements for ply line spacing for a metric-sized ply sheet are shown below.



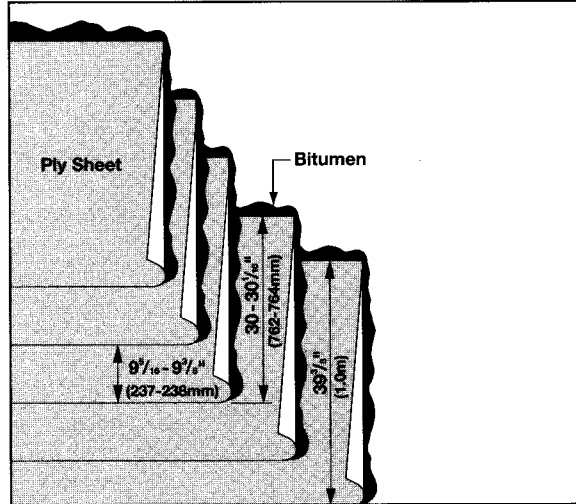
Conventional Ply Sheet



Metric-Sized Ply Sheet

For four ply membrane configurations using metric-sized ply sheets, the intended ply exposure dimensions range from 9-5/16 to 9-3/8 in. (237 to 238 mm) depending upon the particular manufacturer of the ply sheet, compared to 8-1/2 in. (216 mm) on a conventional English measurement-based ply sheet.

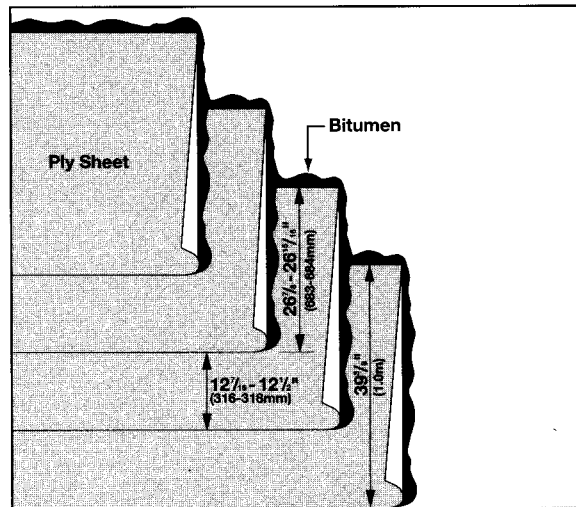
The ply layout for a metric-sized four ply membrane configurations is as follows.



**Ply Layout - 4-Ply Metric-Sized Plies**

For three ply membrane configurations, the intended ply exposure dimensions range from 12-7/16 to 12-1/2 in. (316 to 318 mm) depending upon the particular manufacturer of the ply sheet, compared to 11-1/3 in. (288 mm) on a conventional English measurement-based ply sheet.

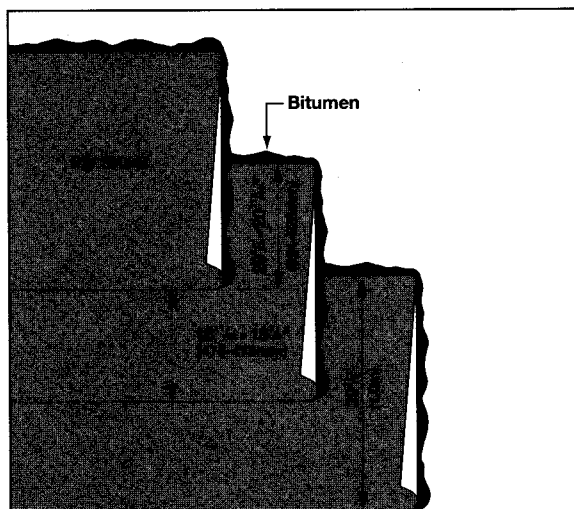
The ply layout for a metric-sized three ply membrane configurations is as follows.



**Ply Layout - 3-Ply Metric-Sized Plies**

For two ply membrane configurations, the intended ply exposure dimensions range from 18-11/16 to 18-3/4 in. (475 to 476 mm) depending upon the particular manufacturer of the ply sheet compared to 17 in. (432 mm) on a conventional English measurement-based ply sheet.

The ply layout for a metric-sized two ply membrane configurations is as follows.



**Ply Layout - 2-Ply Metric-Sized Plies**

With metric-sized ply sheets, the headlap dimension range from 1-7/8 in. to 2-1/8 in. (48 to 54 mm) depending upon the particular manufacturer of the ply sheet. In the case of the ply sheet with the 1-7/8 in. (48 mm) headlap, this is a reduction from a 2 in. (51 mm) headlap dimension on a conventional ply sheet. This is an important consideration since it represents a reduction in overall application tolerances for membranes constructed from metric-sized ply sheets.

Rolls of metric-sized ply sheet are manufactured to have approximately the same total coverage area as rolls of conventional ply sheet (e.g., 5 sqs./roll). As a result of their larger width, the overall length of ply sheet contained in a metric-sized roll is less than that of a conventional roll. The overall length of ply sheet in a metric-sized roll is 161.8 feet to 165 feet (49.3 to 50.3 m) depending on the particular manufacturer, compared to 180 feet (54.9 m) in a conventional roll.

Because of their larger width, rolls of metric-sized ply sheet may not fit on felt laying equipment sized for conventional width ply sheet rolls only. Similarly, use of a bitumen dispenser sized for conventional width ply sheet rolls only will likely result in voids in the bitumen at the edges of metric-sized ply sheet application.

Test cut analysis of roof membranes constructed using metric-sized ply sheet does not necessarily result in the identification of the ply sheet as metric-sized in the test cut samples. Therefore, analysis of ply exposure and headlap distances, and interply mopping weight of roof membranes utilizing metric-sized ply sheet will likely result in inaccurate reporting. Neither ASTM D2829, titled "Standard Practice for Sampling and Analysis of Built-Up Roofs," nor ASTM D3617, titled "Standard Practice for Sampling and Analysis of New Built-Up Roof membranes," which are the standard test methods for laboratory analysis of test cut samples, currently address the use or analysis of membranes utilizing metric-sized ply sheet.