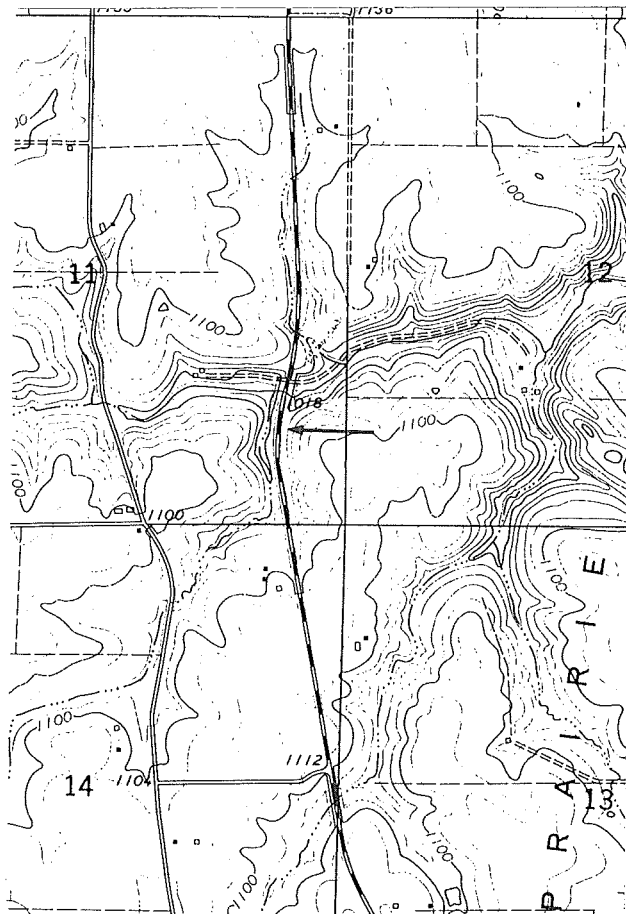


**Title:** Wilmington, Minnesota -- Lower Ordovician New Richmond Member

**Location:** Roadcut at east side of Iowa state highway 76, 2.75 miles south of intersection with Minnesota state highway 44, and 200 feet south of bridge over east-flowing tributary stream to Winnebago Creek and a secondary gravel road in the SE1/4 NE1/4 SE1/4, sec. 11, T. 101 N., R. 6 W., Houston County, Minnesota (Wilmington, Minnesota, quadrangle, 7.5-minute series, topographic, U.S. Geological Survey, 1965) (fig. 1).



**Figure 1.** Location of roadcut in strata of the Lower Ordovician Prairie du Chien Group, 1.85 miles northeast of Wilmington, Minnesota.

**Author:** M. E. Ostrom, 1987 (modified from Ostrom and others, 1970, p. 70-73).

**Description:** At this exposure 29 ft of the New Richmond Member of the Shakopee Formation unconformably overlies 20 ft of the Oneota Formation. The New Richmond consists predominantly of light reddish brown to light brown, medium-grained, thin- to medium-bedded, well sorted, cross-bedded, friable, rounded quartz sandstone. Shaly partings occur in the lower few inches and in beds 15 ft and 25 ft above its base. Well formed ripple marks are common in the lower 12 ft (fig. 2).

The Oneota Formation consists of gray, medium-crystalline, thick-bedded, dense dolomite with some brecciated zones and abundant sparry calcite.

SHAKOPEE FM.

New Richmond Mbr.

East →

SHAKOPEE FM.

ONEOTA FM.

Hager City Mbr.

Medium-grained, bedded, friable, grades into overlying soil.

Medium-grained, shaly, poorly-bedded.

Medium-grained, poorly-bedded, medium brown, friable, ripples.

Medium gray, similar to beds below but with shale interbeds.

Medium-grained, thin-medium bedded, red-brown, sorted, well-formed ripples, some cross-bedding, somewhat friable, shaly at base.

Medium-crystalline, thick-bedded; dense, gray, some pods with apparent brecciation, much calcite spar.

Hwy. 76

(R.A. Davis, 1966)

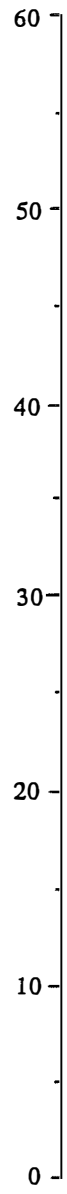
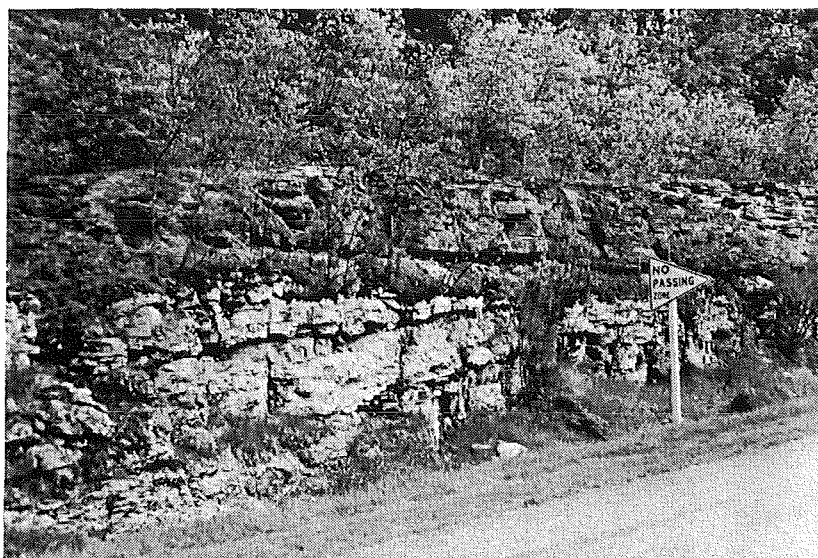


Figure 2. Description of roadcut in Lower Ordovician strata near Wilmington, Minnesota, in the SE1/4 NE1/4 SE1/4, sec. 11, T. 101 N., R. 6 E., Houston County, Minnesota (Wilmington 7 1/2-minute Quadrangle) at east side of Minnesota state highway 76 and about 200 feet north of farm access road and 250 feet north of bridge over east-flowing tributary stream to Winnebago Creek.

**Significance:** The unconformable contact of the Oneota Formation with the overlying New Richmond sandstone is readily accessible in this exposure. Ulrich (1924) was the first to recognize and describe this erosional unconformity; he designated it as the boundary between the Ozarkian and Canadian Systems. Later Powers (1935), Heller (1956), and Shea (1960) interpreted the contact as transitional and as representing continuous deposition within the Prairie du Chien Group. Ostrom (1964, 1970) defined the contact between the Oneota and New Richmond as an erosional unconformity on the basis of exposures in southwest Wisconsin as well as a concept of repetitive depositional cycles. Subsequent regional study of this relationship by Davis (1968) confirmed the presence of the unconformity.

At this exposure, the upper surface of the Oneota Formation is slightly undulating and makes an abrupt lithic change to sandstone of the New Richmond Member. Near Lanesboro, Minnesota, 30 miles to the northwest, large fragments of Oneota dolomite occur in the basal New Richmond Member. About 1.5 miles north of Hanover, Iowa, in a large roadcut exposure at the east side of Iowa state highway 76 an angular relationship between the Oneota and the New Richmond is clearly shown (fig. 3). This same relationship is shown in abandoned quarry exposures at the north side of Wisconsin state highway 179, approximately 2.7 miles east of Eastman, Wisconsin (SW1/4 NW1/4 NE1/4, sec. 17, T.8N., R.5W., Vernon County), and at the south side of county highway X at Wyalusing, Wisconsin (SW1/4 NW1/4 SW1/4, sec. 31, T.6N., R.6W., Grant County).



**Figure 3.** Unconformable contact of New Richmond sandstone with underlying Oneota Formation in roadcut at east side of Iowa state highway 76 about 7 miles north of Hanover, Iowa (Ostrom and others, 1970).

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