

UNIT	NAME	MATERIAL	THICKNESS m	TOPOGRAPHY	DRAINAGE PATTERN	GROUND ICE	COMMENTS
iO	Organic fenland	Peat, typically woody sedge peat	2-3	Flat to very gently sloping, in part with reticulate network of low ridges (50 cm high). Slope 0-2°	No integrated drainage system; water at surface throughout summer months	Commonly unfrozen to 2+ m. Little data available on segregated ice content at greater depths	Poor drainage, plus high compressibility and low strength of the material makes it unsuitable for any type of construction
pO pO-k	Organic peatland	Peat, typically sedge and woody sedge overlain by sphagnum peat; commonly treeless or with scattered black spruce; lichens commonly constitute 50% or more of surface vegetation, resulting in high albedo.	2-4	Flat to very gently sloping, typically with numerous shallow steep-sided (2-3 m) depressions occupied by lakes, ponds, and bogs (pO-k)	Drainage via poorly defined seepage channels; poorly drained	Commonly up to 20%, locally up to 60% segregated ice within peat; typically 30-100 cm, locally up to 3 m total thickness segregated ice in mineral soil immediately below peat. Peat in wet depressions commonly thawed to 1+ m	Subsidence of up to 1 m common and subsidence up to 3 m possible when vegetation is removed; alternation of permanently frozen peat plateaus and thawed depressions and water bodies presents serious problems in construction of roads, pipelines, etc.; material highly compressible when thawed
Ap	Alluvial plain	Medium to coarse sand or gravel of point bar deposits, overlain by silt and fine grained sand of overbank deposits	3-5	Floodplain and low bordering terraces, commonly with meander scars. Slope 0-3° Relief to 1 m	No integrated drainage system; impeded by meander scroll ridges where present. Poorly to moderately well drained	Permafrost lacking in unvegetated part of floodplain; elsewhere 10-25% segregated ice by volume as thin (1 mm-2 cm) seams. Cement ice only in coarse sand and gravel; ice wedges in polygonal pattern (diameter of polygons 6-25 m) common	Subject to periodic flooding; along secondary streams, silt and sand of overbank deposits may be underlain by gravel, but extraction of the gravel may produce serious deleterious changes in the stream course or downstream changes in stream regimen
Ap-k	Thermokarst alluvial plain	Fine grained sand and silt	3-5	Floodplain, in part with meander scars and numerous channels and thermokarst ponds. Slope 0-3° Relief to 5 m	Seepage to ponds and lakes then by connecting channels to trunk stream. Poorly to moderately well drained	20 to 50% or more segregated ice by volume; ice wedges in polygonal pattern (diameter of polygons 6-25 m) common	Thermokarst processes active around pond margins; widespread occurrence of ice wedges which, upon removal of vegetation, will melt and produce a polygonal network of depressions. Occurs mainly adjacent to Mackenzie River
At	Alluvial terrace	Sand and silt; may be underlain by gravel	3-5	Flat to very gently sloping terrace surfaces	No integrated drainage system. Poorly to moderately well drained	Commonly 10-25% segregated ice by volume as thin (1 mm-2 cm) seams. Cement ice only in subjacent gravel	Terraces along Arctic Red River have discontinuous unmapped organic cover. Terraces along Sainville River are mapped together with floodplains (Apt). Potential of the terraces as sources of aggregate varies depending on thickness of overlying silt, sand, or organic deposits
Af	Alluvial fans and fan aprons	Highly variable, mainly silt, sand, minor gravel; discontinuous layers of woody peat	30+	Gently to moderately sloping fans and fan aprons. Slope 1-6°	One or more shifting streams usually present; downslope seepage in poorly defined runnels	No data; ice content probably medium to high	Fans subject to sudden and damaging shifts of streams; generally unsuitable for construction
Cv	Colluvial veneer	Rock detritus and surficial deposits transported by gravity	0-2	Veneer conforms to bedrock topography; occurs mainly along valley walls and scarps. Slope to 30°	Generally freely drained. No organized drainage; generally moderately well drained	No data; ice content probably low to medium; subjacent bedrock typically free of segregated ice	Active layer detachment slides common, especially following removal of vegetation by forest fire. Potential slope instability limits any kind of construction
Cz	Slide, slump	Most commonly developed on shale and siltstone of Cretaceous Arctic Red Formation	3-30	Commonly stepped rotational slumps	No integrated drainage system. Poorly to moderately well drained.	Rock material of slides in bedrock is probably free of ice	Potential slope instability limits any kind of construction
Cx	Slope complex (Cv, Cz, Af, undivided)	Deposits derived from entire range of surficial material plus bedrock detritus transported by gravity, sheetwash, and intermittent streams	0-30	Occurs as veneer or blanket on gently to steeply sloping scarps and valley sides. Slope 3-30° Relief to 90 m	No integrated drainage. Poorly to moderately well drained.	No data; ice content probably highly variable depending on texture and thickness of material forming the unit	Potential slope instability presents major problems for any kind of construction
Lp	Glaciolacustrine plain	Glaciolacustrine silt and clay, minor sand; discontinuous organic cover	2-15+	Flat to gently sloping (0-5°) Relief to 3 m	Surface seepage through fen-filled depressions. Poorly drained, except where overlain by sand	Commonly 10 to 25% segregated ice as thin (1 mm-2 cm) seams in upper 1-3 m; segregated ice as reticulate network to 50% by volume, or thick tabular bodies of nearly pure ice at greater depth.	Active layer detachment slides followed by development of retrogressive thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gullying, even on gentle slopes, following removal of vegetation.
Gp Gt	Glaciofluvial plain Glaciofluvial terrace	Sand, gravel locally with veneer of eolian silt or sand; silt and/or peat may occur as filling in channels	3-30	Flat to gently sloping; commonly retains shallow braided channel system. Slope 0-2°	Drainage mainly subsurface, locally with seepage along channels. Well drained except for seepage along channels	Very low ice content, but where present consists of cement ice only	Offers good construction sites; major source of aggregate where the material is gravel rather than sand. Where the unit grades into unit Lx, the surface deposit is typically sand rather than gravel and may be underlain by ice-rich silt. Small unmapped deposits may occur in association with meltwater channels
Gh Gr	Hummocky, ridged glaciofluvial deposits (includes esker complexes)	Gravel, sand	3-20	Hummocks and ridges. Slope 5-15° Relief to 25 m	Drainage mainly subsurface. Hummocks and ridges well drained; intervening depressions may be poorly drained	Very low ice content, but when ice present consists of cement ice only	Major source of aggregate where the material is gravel rather than sand. Small unmapped deposits may occur in association with meltwater channels
Gx	Glaciofluvial complex (Gh, Gr, Gp, undivided)	Gravel, sand	2-20	Hummocky-kettled topography connected with short flat surfaces. Slope 0-15° Relief to 25 m	As for Gh, Gr, Gp	As for Gh, Gr, Gp	Major source of aggregate where the material is gravel rather than sand. Small unmapped deposits may occur in association with meltwater channels
Mp	Moraine plain	Glacial till, typically clay, silt minor sand and gravel	3-20	Flat to gently sloping. Slope 0-5°	Downslope seepage in shallow subparallel runnels. Generally poorly to moderately well drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular, discontinuous seams in upper 2-3 m. Thicker (10 cm-3+ m) ice lenses at depth	Potential subsidence upon removal of vegetation typically less than 1 m. Possible high ice content in organic deposits within the unit. Because of drainage by numerous runnels, roads, or berms normal to slope direction, requires numerous culverts to avoid impoundment of surface water
Mpv	Moraine plain (veneer)	Glacial till, typically clay, silt minor sand and gravel	1-3	Flat to gently sloping (0-5°); thin till overlies shale and siltstone of Cretaceous Arctic Red Formation	Downslope seepage in shallow subparallel runnels. Generally poorly to moderately well drained.	Commonly 10-25% segregated ice as thin (1 mm-2 cm) seams in till; subjacent shale and siltstone of Cretaceous Arctic Red Formation is typically free of segregated ice	As for Mp; typically thin till cover permits access to subjacent shale and siltstone of Cretaceous Arctic Red Formation, which is typically free of segregated ice and can be ripped to obtain common fill
Mb	Moraine blanket	Glacial till, typically clay, silt minor sand and gravel	3-6	Gentle to steeper slopes. Slope 5-15°	Downslope seepage in shallow subparallel runnels. Generally poorly to moderately well drained.	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams in upper 2-3 m. Thicker (10 cm-3+ m) ice lenses at depth.	Potential subsidence upon removal of vegetation typically less than 1 m; potential for creep of active layer. Because of drainage by numerous runnels, roads, and berms normal to slope direction, requires numerous culverts to avoid impoundment of surface water
Mv	Moraine veneer	Glacial till, typically clay, silt minor sand and gravel	0-3	Occurs as thin till cover on hills and ridges developed on sandstone of Cretaceous Trevor Formation. Slope 8-15°	Typically moderately well drained	May have 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams in till. Subjacent sandstone of Cretaceous Trevor Formation is probably free of segregated ice	Typically thin till cover permits access to subjacent sandstone of Cretaceous Trevor Formation, which is typically free of segregated ice
Md	Drumlinoid till plain	Glacial till, typically clay, silt minor sand and gravel	3-30	Moraine plain with individual drumlins, to fluted moraine plain. Slope 2-15°	Drumlinoid ridges well drained; intervening depressions commonly poorly drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams in upper 2-3 m; thicker (10 cm-3+ m) ice lenses at depth. Subjacent bedrock typically free of ice	Crest of drumlins and drumlinoid ridges typically well drained, intervening depressions poorly drained; construction of roads, etc. easier parallel to rather than normal to orientation of drumlins
Mm	Rolling moraine	Glacial till, typically with 5-20% granule size and larger in a silty clay or clayey silt matrix; locally includes small areas of gravel	up to 20	Broad hummocks 10-20 m high. Slope to 10°	Drainage centripetal to local depressions. Elevated areas moderately well drained; intervening depressions generally poorly drained.	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams in upper 2-3 m; irregularly shaped and irregularly distributed large masses of segregated ice common at greater depth	Summits of broad hummocks typically well drained; removal of vegetation may cause differential subsidence up to 3 m due to thawing of segregated ice masses. It is an extensive unit, covering about 50% of the map area
Mh	Hummocky moraine	Glacial till with 20-50% (locally 60%) granule size and larger in clayey silt to silty sand matrix; locally includes small areas of gravel	up to 20	Individual or coalescent hummocks. Slope 0-20° exceptionally 30° Relief 15-50 m	Hummocks well drained; intervening depressions may be poorly drained	Few data; ice content probably low	Crests of prominent hummocks are commonly well drained offering restricted good construction sites; ice content and potential for subsidence may be high in depressions.
Mr	Ridged moraine	Glacial till with 20-50% (locally 60%) granule size and larger in clayey silt to silty sand matrix; locally includes small areas of gravel	up to 20	Individual and compound straight to sinuous ridges 15 to 60 m high. Slope 0-20° Relief to 60 m	Ridges well drained; intervening depressions may be poorly drained	Few data; ice content probably low	Crests of prominent ridges are commonly well drained and offer restricted good construction sites
Mx	Moraine complex (Mh, Mr, Mm, undivided)	Glacial till as in Mh, Mr, Mm	up to 20	As for Mh, Mr, Mm	As for Mh, Mr, Mm	As for Mh, Mr, Mm	As for Mh, Mr, Mm
R	Bedrock	Shale and siltstone of Devonian Imperial Formation and Cretaceous Arctic Red Formation		Occurs as a terrace (Rt) near Martin House and in combination with colluvial veneer on valley walls of Arctic Red and Peel rivers	Generally well drained	Typically free of segregated ice	Shale and siltstone of Devonian Imperial Formation and Cretaceous Arctic Red Formation, which is typically free of segregated ice, can be ripped to obtain common fill (See Geological Survey of Canada Map 1525A, 1981, by D.K. Norris)