UNIT	NAME	MATERIAL	THICKNESS m	TOPOGRAPHY	DRAINAGE PATTERN	GROUND ICE	COMMENTS
fO	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 (0-2°), 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	Gravel, commonly overlain by silt and sand	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	Common in upper reaches of Caribou, Trail, and Road rivers. Potential source of aggregate
Af	Alluvial fans and fan aprons	Highly variable, mainly silt, sand, minor gravel; discontinuous layers of woody peat	2-15 +	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
Ax	Alluvial complex; includes Ap, At, Af	As for Ap, At, Af		As for Ap, At, Af	As for Ap, At, Af	As for Ap, At, Af	As for Ap, At, Af
Cb	Colluvial blanket	Rock detritus and surficial deposits transported by gravity	3-30	Blanket conforms generally to bedrock topography; occurs mainly in unglaciated Richardson Mountains in combination with colluvial veneer and bedrock	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	Potential slope instability limits any kind of 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, but because this unit generally overlies impermeable bedrock, high ice contents are likely, particularly in foot slope positions	Occurs extensively in unglaciated Richardson Mountains in combination with bedrock and colluvial blanket; occurs locally along valley walls of Peel River and major tributaries. Potential slope instability limits any kind of construction
Ca	Sheetwash depdsits	Mostly organic silt and sand	1-3	Occurs as veneer or blanket on gently sloping (5-10°) scarps and valley sides developed on glaciolacustrine sediments or soft bedrock	No integrated drainage system. Poorly to moderately well drained	No data; material suggests that moderate to high ice contents likely	Moderate to high potential for subsidence following removal of vegetation. The probability of high ice content makes this unit a poor candidate for construction
Cz	Slide, slump	Most commonly developed on shale bedrock and glaciolacustrine sediments		Commonly stepped rotational slumps and retrogressive thaw flow slides	No integrated drainage system. Poorly to moderately well drained.	Rock material of slides in bedrock is probably free of ice. Transported material in retrogressive-thaw flow slides is initially nonfrozen; no data on rate of freeze-back or development of ground ice	Potential slope instability limits any kind of construction, see symbols for retrogressive thaw flows Lb, Lv, Mb, Mv and Mm
Ct	Cryoplanation terrace	Colluvium derived from mass wasting of local bedrock	1-3	Terraces up to 750 m long and 450 m wide, typically occurring as steps on mountain slopes. The "treads" have slopes of 1-5°; intervening "risers" have slopes of 20-35°	Downslope seepage in shallow subparallel runnels	No data; ice content probably low to medium; subjacent bedrock typically free of segregated ice	Restricted to high elevations in unglaciated Richardson Mountains. See symbols for individual small cryoplanation terraces
Cy	Pediment	Typically 1-2 m of silty gravel or colluvium derived from local bedrock, overlain by up to 1 m of silt	2-3	Gently sloping surface (0-6°) extending from valley axis to base of steep mountain slope in valleys within unglaciated Richardson Mountains	Subparallel runnels; moderately well drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) seams in silt cover; cement ice only in silty gravel; subjacent bedrock is typically free of segregated ice	Low to moderate potential for subsidence following removal of vegetation. Because of drainage by numerous runnels, roads, or berms normal to slope, requires numerous culverts or berm breaks to prevent impoundment of surface water or concentration of drainage
Cx	Slope complex (Cv, Cb, Cz, Ca, 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 250 m	No integrated drainage system. 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	3-15 +	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.
Lp-k	Glaciolacustrine thermokarst plain	Glaciolacustrine silt and clay, minor sand; discontinuous organic cover	3-15 +	Flat to gently sloping, with numerous thermokarst lakes and ponds. Slope 0-5° Relief to 6 m	Seepage centripetal to ponds and lakes, intermittent seepage along fen-filled depressions between ponds and lakes. Poorly drained	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.	Thermokarst processes active around pond margin; active layer detachment slides, followed by development of retrogressive thaw flow slides (Cz) common on slopes developed on this unit, especially following fire or other distrubance of vegetation
Lb	Glaciolacustrine blanket	Glaciolacustrine silt and clay, minor sand; discontinuous organic cover	3-15 +	Flat to moderately sloping, conforming to subjacent deposits, typically Mb, Mv, Mm	Diffuse subparallel runnels; poorly drained	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.	As for Lp, occurs along upper slopes of Peel Plateau and in valleys of the eastern part of Richardson Mountains, where glacial lakes and ponds were impounded along the margin of the Laurentide Ice Sheet during ice retreat
Ls	Shoreline deposits of glacial lake: beaches, spits, offshore bars	Sand and gravel	up to 10	Low ridges up to 10 m high along former glacial lake shoreline	No surface drainage. Well drained	No data, but ground ice content probably low	Offers restricted well drained sites at margins of larger areas of poorly drained Lp, Lp-k. Beach gravels are good source of aggregate
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 when ice present consists of cement ice only	Offers good construction sites; major source of aggregate where the material is gravel rather than sand
Gx	Glaciofluvial complex Gp, Gt, with abundant kettles, or in association with hummocky or ridged glaciofluvial deposits	Gravel, sand	2-20	Hummocky-kettled topography connected with short flat surfaces. Slope 0-15° Relief to 25 m	No integrated drainage system. Well drained except for possible depressions	As for Gp, Gt	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 with 5-20% granule size and larger in a silty clay or clayey silt matrix	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, but uncommon	Potential subsidence on 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 with 5-20% granule size and larger in a silty clay or clayey silt matrix	0-3	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 to 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 with 5-20% granule size and larger in a silty clay or clayey silt matrix	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, but uncommon	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 with 5-20% granule size and larger in a silty clay or clayey silt matrix	0-3	Occurs as thin till cover conforming to bedrock hills and ridges on the upper slopes of Peel Plateau and in the glaciated eastern part of Richardson Mountains. Slope 8-15°	Typically moderately well drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) seams in till; subjacent bedrock is typically free of segregated ice	Typically thin till cover permits access to subjacent bedrock, which is typically free of segregated ice and can be used as common fill. Potential subsidence on removal of vegetation less than 1 m
Md	Drumlinoid till plain	Glacial till, typically with 5-20% granule size and larger in a silty clay or clayey silt matrix	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) seams in upper 2-3 m, thicker (10 cm-3 + m) ice lenses at depth. Subjacent bedrock typically free of visible 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 and offer 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		Individual and compound straight to sinuous ridges 15 to 60 m high. 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	Mainly shale, siltstone in Mackenzie Plain and Peel Plateau; sandstone, limestone, shale in Richardson Mountains		Mainly prominent ridges, scarps and hills	Generally drained but with some poorly drained depressions	Typically free of segregated ice	Bedrock suitable for production of rip-rap or crushed products is generally lacking in Mackenzie Plain and Peel Plateau, but the rocks can be ripped to provide common fill. Limestone and dolomite of Ilityd and Gossage formations and of an unnamed facies equivalent of Road River Formation provide sources of bedrock suitable for rip-rap or crushed products in Richardson Mountains (see Geological Survey of Canada Map 1524A, 1981, by D.K. Norris)