

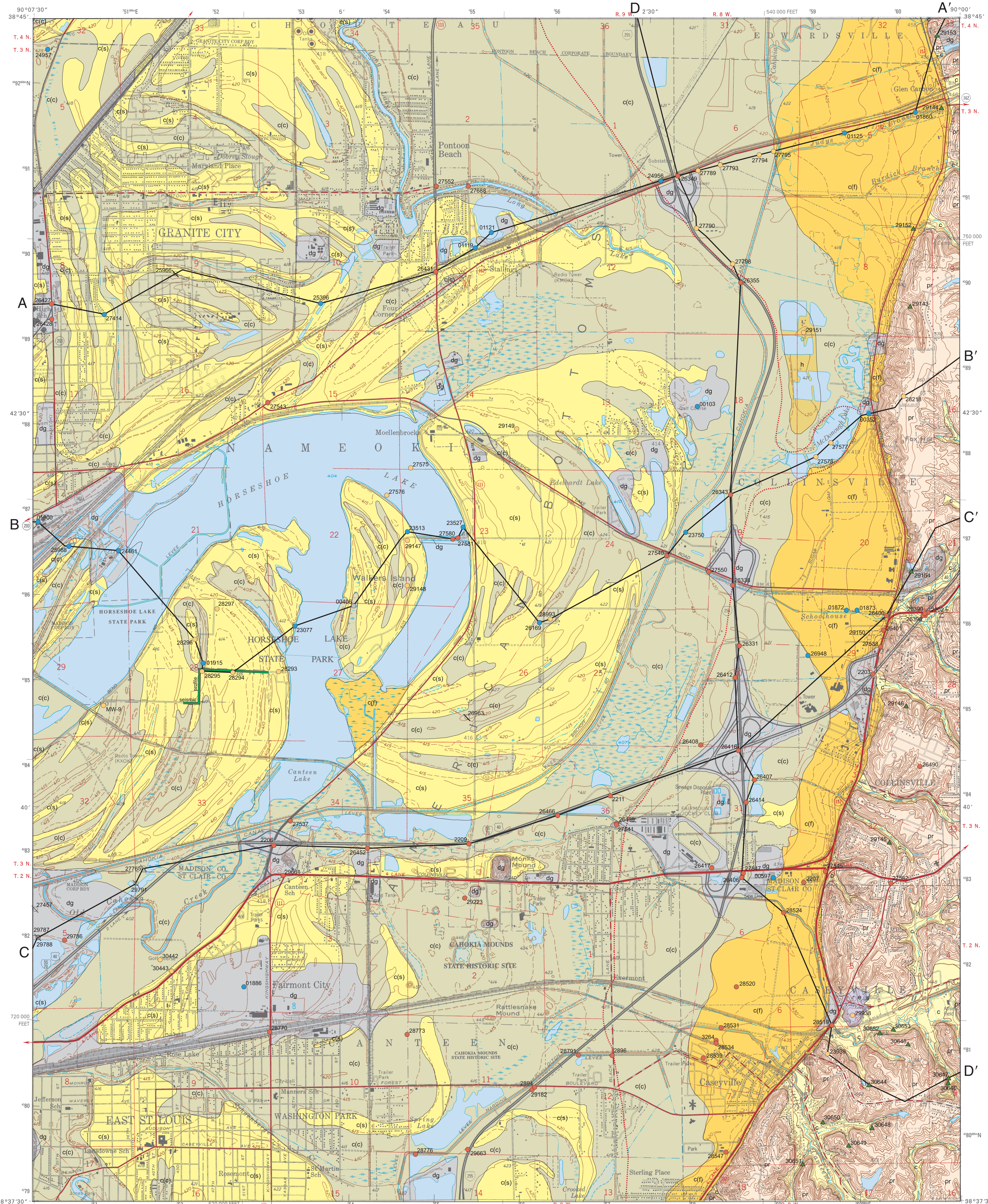
SURFICIAL GEOLOGY OF MONKS MOUND QUADRANGLE

MADISON AND ST. CLAIR COUNTIES, ILLINOIS

Illinois Department of Natural Resources
ILLINOIS STATE GEOLOGICAL SURVEY
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2007

Illinois Preliminary Geologic Map
IPGM Monks Mound-SG



QUATERNARY DEPOSITS

Description	Unit	Interpretation
HUDSON EPISODE (12,000 years before present (B.P.) to today)		
Fill or removed earth; sediment of various types; up to 40 feet thick	Disturbed ground (tributary facies) dg	Man-made materials in interstate interchanges, landfills, sand and gravel pits, borrow pits, and Native American earthen mounds
Mainly silt loam with some silty clay and sand, occasional gravel; gray to brown, massive to well stratified, may contain wood, coal, or manmade debris	Cahokia Formation (tributary facies) c	Alluvium (river deposits) in upland tributaries; contains significant redeposited loess and historically eroded material
Silt loam with occasional thin sand and diamicton beds; brown; weakly stratified, soft; up to 15 feet thick	Cahokia Formation (fan facies) c(f)	Alluvium deposited by distributary channels in fans; includes much redeposited loess, some mud flows
Silty clay loam, silty clay, and silt with occasional fine sand lenses; gray to brown, some thin red layers, massive to well stratified; soft to stiff	Cahokia Formation (clayey Mississippi Valley facies) c(c)	Abandoned channel fill, swale fill, and backswamp alluvium; deposited in floodplain of Mississippi River; interfingers with fan and sandy facies of Cahokia Formation
Very fine, fine, and medium sand, with some coarse sand and gravel and some silt and clay layers; light brown to gray, stratified, loose to soft	Cahokia Formation (sandy Mississippi Valley facies) c(s)	Point bar and channel alluvium of the Mississippi River floodplain; interfingers with clayey facies of Cahokia Formation

WISCONSIN EPISODE (75,000–12,000 years B.P.)		
Silty clay to silt with some fine sand; gray to brown to pinkish-brown, massive to stratified, stiff, calcareous, may contain wood fragments or aquatic snails	Equality Formation e	Lake deposits; below Cahokia Formation in Canteen and Little Canteen Creek Valleys; deposited by backflooding of Mississippi River during glacial times
Medium to coarse sand with gravel and some fine sand; fine sand where exposed near surface; light brown to gray to pinkish-brown, stratified, various pebble compositions	Henry Formation h	Outwash; deposited by the Mississippi River; buried by postglacial Cahokia Formation over much of the quadrangle in the Mississippi Valley
Silt to silt loam; yellow-brown to gray to pinkish brown, massive with some dark organic layers, friable, mainly dolomitic, terrestrial gastropods common; contains modern soil solum in upper 2 to 4 feet, carbonate nodules common	Peoria and Roxana Silts pr	Loess; including some slope deposits and redeposited loess; upper portion is Peoria Silt (tan to gray); lower portion is Roxana Silt (pink to tan-gray with higher clay content); thickest at crest of bluffs along the Mississippi Valley

ILLINOIS EPISODE (~200,000–130,000 years B.P.)		
Silt, silt loam, and silty clay loam; reddish-brown to light brown, strong crumb to blocky soil structure, abundant pedogenic features	Teneriffe Silt (cross sections only) tr	Weathered loess and slope sediments; mostly within solum of Sangamon Geosol (last interglacial soil)
Pebbly silt loam to loam diamicton with sand and silt lenses; olive to gray, weathered brown in upper portion, typically massive, dense, and calcareous, with common wood and shale fragments	Glasford Formation (cross sections only) g	Till and ice marginal sediment; upper portions may be weathered by Sangamon Geosol; occurs below loess in eastern edge of quadrangle
Silt loam; gray, weakly laminated to massive, soft, dolomitic, with sparse pebbles, commonly contains spruce wood fragments and snails	Petersburg Silt (cross sections only) pb	Lake sediment with ice-rafted pebbles; proglacial or slackwater lake origin; occurs below Glasford Formation in buried preglacial valleys

PRE-ILLINOIS AND YARMOUTH EPISODE (~500,000–200,000 years B.P.)		
Pebbly silty clay loam to silt loam diamicton, some silt loam and silty clay loam; olive to gray to brown, massive to weakly laminated	Banner Formation (cross sections only) b	Till, lake deposits, and accretionary deposits; may contain Yarmouth Geosol (interglacial soil) weathering profile in upper 10 feet

Data Type

- ▲ Outcrop
- Stratigraphic boring
- Water well boring
- Engineering boring
- Coal boring
- Monitoring well
- Labels indicate samples (s) or geophysical log (s).
- Boring and outcrop labels indicate the county number.

Note: The county number is a portion of the 12-digit API number on file at the ISGS Geological Records Unit. Most well and boring records are available online from the ISGS Web site.

Line Symbols

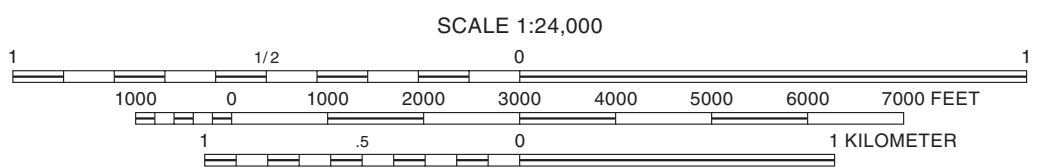
- Contact
- - - Inferred contact
- Geophysical profile transect
- Red clay line
- A—A' Line of cross section

Red clay line: In the American Bottoms, reddish silty clay loam to silty clay beds (typically 0.3–1.0 feet thick) are found at depth east of this red dashed line. The age of this clay is estimated to be ~9700 C¹⁴ years before present (Hajic 1993) and is likely derived from glacial lake outbursts in the Lake Superior region. Following deposition of the red clay layer, the Mississippi River evolved from a braided to a meandering regime as glacier influences subsided. The post glacial meander belt of the river occurs west of this line.

Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey. Topography compiled 1952. Planimetry derived from imagery taken 1988 and other sources. Photoinspected using imagery dated 1998. PLSS and survey control current as of 1953. Boundaries, other than corporate, revised 1999.

North American Datum of 1927 (NAD 27)
Projection: Transverse Mercator
10,000-foot ticks: Illinois State Plane Coordinate system, west zone (Transverse Mercator)
1,000-meter ticks: Universal Transverse Mercator grid system, zone 15

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BASE MAP CONTOUR INTERVAL 10 FEET
SUPPLEMENTARY CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Released by the authority of the State of Illinois: 2007

Geology based on field work and data compilation by D. Grimley, A. Phillips, and S. Lepley, 2000–2001.

Digital cartography by J. Domier, J. Carrell, M. Widener, M. Turino, and Z. Golshani, Illinois State Geological Survey.

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ROAD CLASSIFICATION

- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Interstate Route
- U.S. Route
- State Route

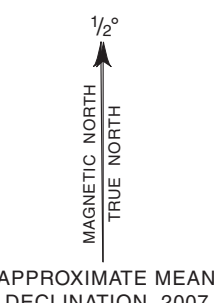


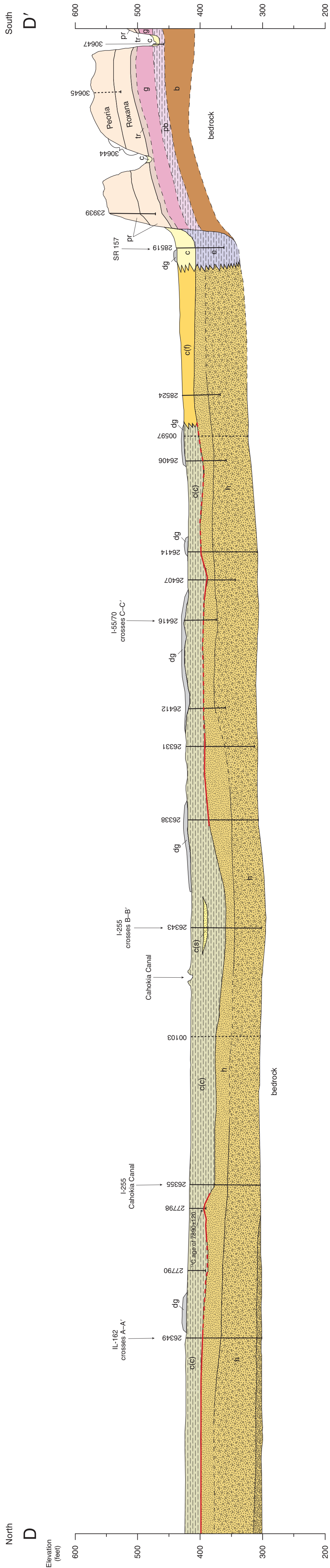
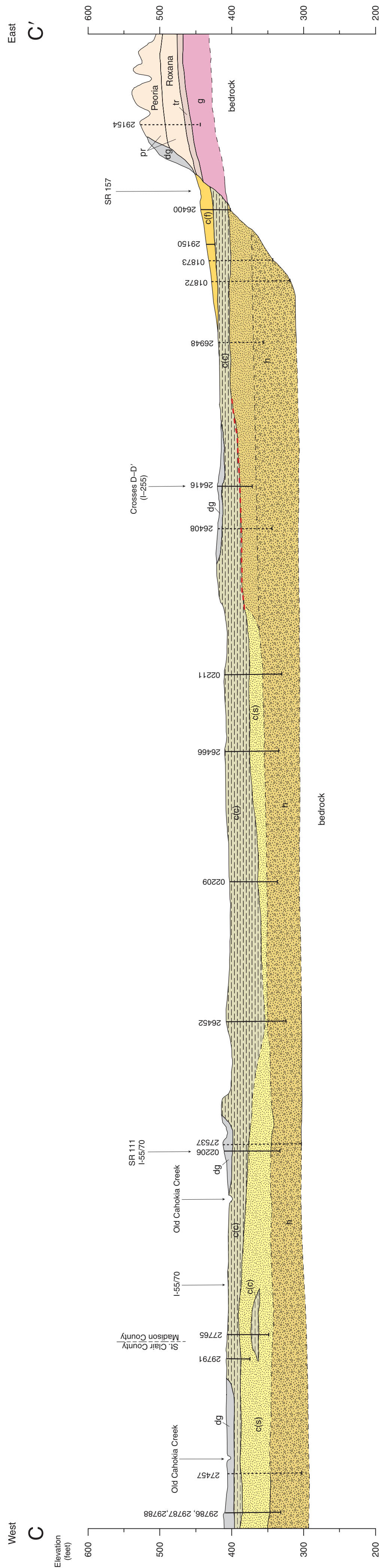
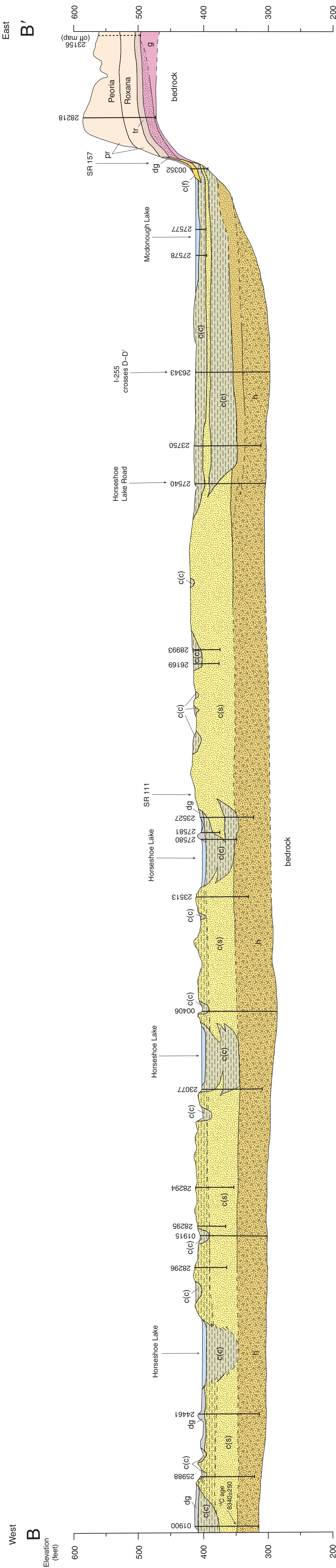
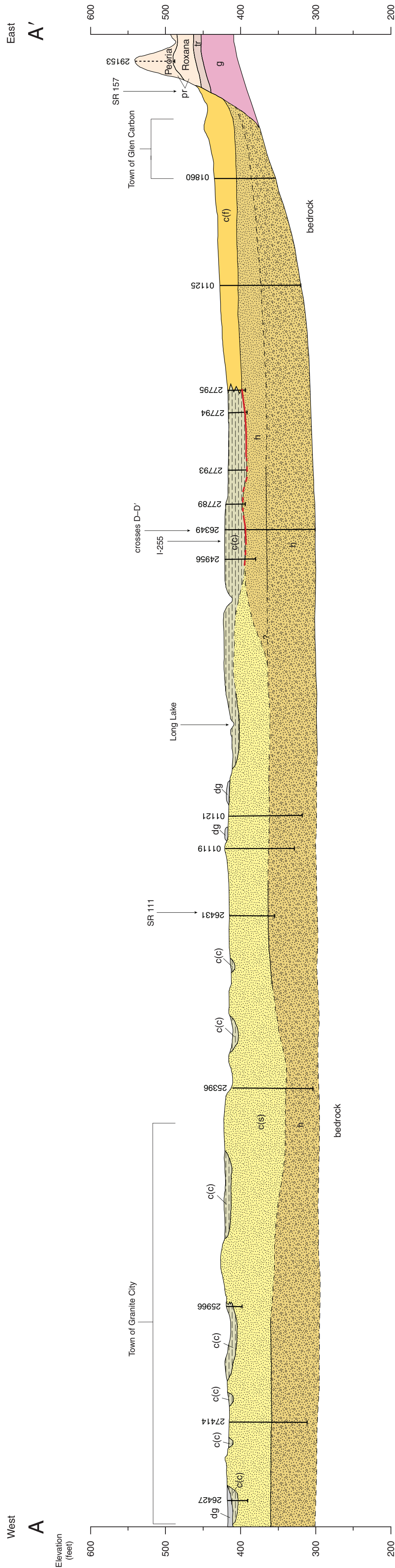
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4	5	
6	7	8

ADJOINING QUADRANGLES
1 Columbia Bottom
2 Wood River
3 Edwardsville
4 Granite City
5 Collinsville
6 Cahokia
7 French Village
8 O'Fallon





- Cross Sections**
- Diancton, massive silt, or other fine-grained sediment
 - Laminated silt and clay
 - Mainly silty sand or very fine sand
 - Mainly fine to medium sand
 - Mainly medium to coarse sand with gravel
 - Coarse sand and gravel with boulders
 - Contact
 - Inferred contact
 - Red clay layer
 - Red clay layer inferred
 - Boring on line of cross section
 - Boring projected to line of cross section
- Horizontal scale: 1 inch = 2000 feet
Vertical scale: 1 inch = 100 feet
Vertical exaggeration: 20x