Robert M. Thorson - Presenter's Packet

Vermont Society of Land Surveyors 2019 Conference & Exhibit Show
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CONTACT INFORMATION

- **Consultant, Author, Journalist:** 41 Sherwood Street, Storrs, CT, 16268, profthorson@yahoo.com, 860-428-1681 cell.
- **Academic:** Professor of Geology, Department of Geosciences, U-1045, University of Connecticut, Storrs, CT 06269
- **Website:** https://robertthorson.clas.uconn.edu/
- **Stone Wall Initiative**: https://stonewall.uconn.edu/

PRESENTATIONS

Friday 8:00-12:00 - Stone Walls in Land Surveying Part 1
Introduction, Definition, Geography, Demonstrations
Friday 1:00-4:00 - Stone Walls in Land Surveying Part 2
History, Description and Classification

FUN EXTRAS

Walls and Declination - John Delano
file:///Users/robertmthorson/Desktop/Stone%20Walls/AGU-MagneticsFosdick.htm
Walls from LiDAR-GIS - Katherine Johnson and Will Ouimet
https://www.sciencedirect.com/science/article/pii/S2213305416300522

Table 1. Terms and Definitions Used in this Taxonomy (in prep, *Historical Archaeology)*

Category	Term	Definition[1]
General		
	Rock	Material aggregate of minerals/particles (natural or human)
	Stone	Object composed of rock, generally a fragment
	Boulder	Large stone lacking sharp corners (technic > 0.256 m ID[2])
	Erratic	Stone outlier, usually by size, but also by comp. or form
	Soil	Subaerial mixture of mineral and(or) organic material
	Till	Unconsolidated sediment deposited directly by glacier ice
	Grade	The land surface, usually the original land surface
Stones		
SHAPE		
	Block	Equant (a=b=c), sharp edges[3]
	Ball	Rounded block
	Slab	Elongate (a>b>c), sharp edges
	Pillow	Rounded slab
	Tablet	Thin and broad (a=b>>c), sharp edges
	Disk	Rounded tablet
	Prism	Elongate (a>>b=c), sharp edges
	Column	Rounded prism
	Blade	Thin and narrow (a>>b>>c), sharp edges
	Dull blade	Rounded blade
SIZE		
	Rubble	Fist-sized or smaller, sharp edges
	Gravel	Rounded rubble (usually stream- or beach-deposited)
	One-hander	Manageable with one hand
	Hefted	Moved by human muscle/frame, 2-4 hands.
	Assisted	Moved with assistance (pry-bar, livestock, ramp, tripod)
	Residual	Too large to move, left in place
SOURCE		
	Field	Stone from adjacent or nearby fields
	Pit	Stone from unconsolidated sediment
	Quarry	Stone from bedrock, usually by cutting (and) or blasting.
DEGREE OR ORDER		
	Dumped	Stones randomly nested by gravity, not stacked
	Stacked	Stones raised and placed but not fitted with care.
	Laid	Stones are raised and carefully fitted by size and shape
	Patterned	Culturally motivated decoration, i.e. mosaic)

Built	Stacked or higher degree of order for wall segment
Unbuilt	Dumped degree of order. Not stacked, laid, or patterned.

Walls & Features

ORIENTATION

Coordinates	X (line of wall), with orthogonal Y (on grade) and Z
Map view	Of the area (XY) from above (+Z) or below (-Y)
Profile view	Of the side (XZ) from left (-Y) or right (+Y)
Cross view	Of the end (YZ) forward (+X) or backward (-X)

HIERARCHY

Origin	Point of origin for mapping or description (GPS coordinate)
Segment	Fundamentally similar linear unit in X between contacts
Wall	Total linear unit (one or more segments) in X
Parcel	Area bounded by two or more walls

SEGMENT CONTACTS

Contact	Any boundary excluding terminations
Selvage	Interwoven. Stones from overlap each other
Abutting	Not interwoven. Stones abut each other in clear
Gradational	Contact neither selvage or abutting
Bend	Contact is large obtuse angle, not gradual curve
Gap	Contact is beginning or end of open space

WALL TERMINATIONS

Termination	Beginning or final segment in a wall.
Junction	Wall ends by junctioning with another (F, L, R)
Tip	Wall ends without junctioning, built or unbuilt

STRUCTURE

Freestanding	Wall has two faces on opposite sides (from +Y and -Y)
Face	Side of wall in profile view (XZ from +Y or -Y)
End	End of wall in cross-view (YZ from +X or -X))
Line	One or more parallel alignments in map view (XY)
Tier	One or more vertical strata one or more courses, esp in XZ
Course	Single layer of stones within a tier, especially in XZ
Cap	Top course and/or tier in XY
Foundation	Basal course and/or tier in XY

CROSS-SECTIONAL SHAPE

Mound	Irregular but continuous curve convex skyward
Triangular	Bottom is base of isosceles triangle (default for single wall)
Trapezoid	Flat top is parallel to flat bottom (default for double wall)
Panel	Vertical stacking one stone thick (creates "lace" walls)

	Asymmetric	Any consistent departure from symmetrical shape in XY

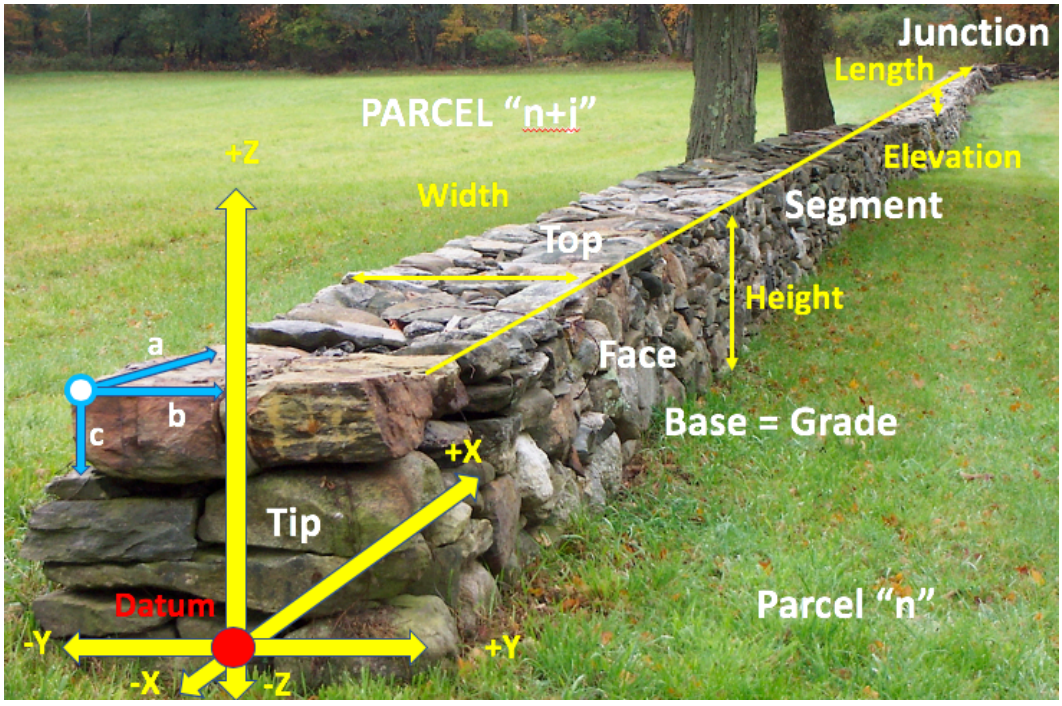
MATRIX

Drystone	No mortar
Mortared	Bonded with mortar, usually cement (called "wet" wall).
Filled	Matrix occupied by soil or standing water
Hearting	Small stones, often rubble, in core of double wall

WALL TERRAIN

Upland	Default freely drained granular soil on broad slopes
Lowland	Default poorly drained granular/muck or streambed
Rocky	Outcrops of the Earth's crust.

Notes: 1 Working definition is for this project only, and may not match others.
2 ID abbreviates "intermediate diameter."
3 The term "sharp" used instead of "angular" for edges and corners.



QUOTE OF DAY: If scholars insist on calling H.D.Thoreau a professional surveyor, then I suggest they fall back on the first definition of this word from the Oxford English Dictionary, which is to "over- see" *(sur- + v(e)ier)* the landscape he loved, "surveyor, if not of highways, then of forest paths and all across- lot routes, keeping them open, and ravines bridged and passable at all seasons." This first definition demotes the second definition: the accurate measurement of land for legal purposes. When Thoreau joyfully proclaimed, "I am monarch of all I survey," he was voicing his declared profession, not his undeclared vocation. In fact, of the twelve times he used the word "survey" in *Walden,* only once did it involve the legal measurement of land and its taking for private gain. (*Walden's Shore*, 67)

Table 2. Diagnostic criteria for taxa in the stone domain, emphasizing walls.

Taxonomic Rank					Informal Names	Diagnostic Criteria at Specified Rank				
CLASS	***Family***	*Type*	*Subtype*	**Variant*	*(vernacular terms)*	Class	*Fam*	*Type*	*Subt*	*Var*
WALL					Fence, row, dyke	CRITERIA: MATERIAL, POPULATION, ELONGATION,CONTINUITY, HEIGHT				
	Freestanding				Two-faced, pasture		***Two faces from base up***			
		Band			Dump, fenceline stone			*Dumped degree of order.*		
			Upland						*Above drained soil of broad slopes.*	
				Normal	Tumbled, Heaped, Tossed					Ribbon-shaped in width
				Irregular	Zig-zag, beaded					Variation in direction, width, etc.
			Lowland		Causeway, fords, road, path				*Within wetland soils or streams.*	
		Single						*Top has single-stack*		
			Normal		Pasture, farmer, stacked				*Broader bases, triangular cross section*	
			Panel		Tall, fence				*Single stone wide, bottom to top*	
				Fitted	Cordwood wall, chinked, tight					Visual porosity is low
				Open	Lace, cannnonball, sheep					Visual porosity is high
		Double						*Separately built faces from base up*		
			Normal		Classic				*No capstone course*	
			Capped						*Top course spanning both faces*	
				Capstone	Estate, fancy					ab plane horizontal
				Copestone	Coped					ab plane vertical or angled
		Broad						*At last one built face and wider than double wall*		
			Normal		Consumption, disposal, walking				*Above stable, well drained soils*	
			Lowland		Causeway, culvert, bridge				*Above poorly-drained or unstable soils, or streams*	
		Abutting						*Large, unstacked, stones placed end to end*		
			Equant						*Equant to sub-equant stones*	
				Block						Angular
				Boulder						Rounded
			Inequant						*Slab, tablular, and prism shaped*	
				Pale	Pale, edging, picket-fence.					High center of gravity
				Rail	Cut stone foundaations					Laid on edge lengthwise
				Normal	Aligned stones					Laid in stable position
		Hybrid						*Two or more families merged*		
			Tiered						*Merger is vertical with tiers in Z direction*	
			Aligned						*Merger is horizontal with lines in X direction*	
	Flanking						***Wall at break in slope between two levels (scarp of terrace)***			

Bank	Bank wall	*Near-vertical, supports higher tread.*
Facing	Retaining wall, sea wall, bank wall.	*Supports pre-existing slope break*
Retaining	Retaining wall, sea wall, bank wall.	*Support created slope break*
Normal	Retaining, cut or fill	Supports cut upslope and(or) fill downslope
Colluvial	False retaining, half-buried	Sediment banked and(or) eroded
Armoring	Riprap, roadcuts, sea walls	*Sloping, protects sloping scarp between treads*
Supporting	Building foundations	***Level, horizontal top surface of laid (rarely stacked) wall.***
Small	Cellar Holes	*House sized, large, top tier at or just above grade.*
Large	Shed, Barn foundations	*Barn-sized, top tier at or above grade*
Enclosing		***Two+ woven corners, similar segments, chest high+***
Squared	pound, corral, pen, yard, cistern, stone building	*Barn-sized or smaller, segments structurally similar*
Circled	Silo, cistern, kiln, charcoal ring	*Curved segment, stacked or laid, no infill*
Blocking		***Stone blocks flowing water***
Perpendicular		*Blockage perpendicular to stream*
Dam	Mill dam, reservior dams	*Continuous to or above bank, impervious backfill*

Faced	Traditional mill dam	Backfilled with low permeability material
Stone	Tightly built, dimension stone	Cut blocks of stone fitted.
Check dam	Flood control, in-stream pools.	*Within channel, usually large stones, deepen pools*
Parallel	Dikes	*Blockage parallel to stream*
Levee	Levee	*Adjacent to protected lowland, impervious*
Dike	Dike	*Adjacent to lowland,impervious*

LINE			FAILS CRITERIA OF CONTINUITY OR HEIGHT
Low			***Fails height criterion***
	Border	Borders, raised beds,	*Line between two areas*
	Divider	Walkway.	*Line across one area*
High			***Fails continuity requirement***
	Dotted	Stone Posts, rock dots	*Space > stone diameter*
	Dashed	Walkways, borders	*Space < stone diameter*
CONCENTRATION			FAILS ELONGATION CRITERION
Built			***Stacked, laid, or patterned degree of order***
	Surface		*Touching or abutting , fails height*
	Pavements	Patio, cobblestone street	Subhorizontal aerial surface
	Veneers	sloping pavements	Sloping surface.
	Upright		*Built (>dumped)*
	Detached	Chimneys, monument, cairn, survey monuments, bee-hives, disposal	Built above grade
	Support	Pillars, piers,	Top tier equal to nearby others or to supporting wall
Dumped			***Dumped order, above grade, discrete masses***
	Pile		*Above grade*
	Normal	Pile	*Isolated, above grade, crudely circular or amorphous*
	Attached	Corner, tumor, surmounting.	*Attached to wall*
	Corner		*Fills corner*
	Segment		*Adjacent or above segment or both.*
	Aligned	Beaded	*Discrete piles aligned*
	On-Rock		*Piles on slabs, sometimes with built downhill face.*
	Ring		*Stone in circular arrangement with empty center*
	Large	Tree pile	*Meter scale, Larger than fencepost*
	Small	Postpile	*Decimeter scale, equal to fencepost*
	Fills	Stone dump.	In topographic depression below adjacent grade.
NOTABLE STONE			FAILS POPULATION CRITERIA (focus on individual)
Outsized			***Unmodified size outlier relative to population***
	Erratic	Erratic	*No evidence of movement*
	Placed	Landscaping boulder	*Evidence of movement (lifting, scraping, or drag marks)*
Modified			***Shaped and (or) marked by humans***
	Shaped	Post, sculpture, gravestone	*Evidence of shaping, quarrying, etc. Marked or unmarked*
	Unshaped		*Stone appears uncut or unshaped*
	Standing	Dolmen, Obelisk	*Unstable (high) center of gravity and geometry*
	Stable	Boulder with marks, plaques	*Stable center of gravity*

Notes: ** For the class wall, add the name "wall" at the end of each taxon, for example "freestanding wall."*
^ Diagnostic criteria are carry downward to all taxa, for eample, a "normal pile" inherits the criteria of "pile."
% Refer to dichotomous key and list of terms.