

#### IV.B. Retaining Wall Checklist

C-R-S:	PID:	Reviewer:	Date:
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If you do not have a retaining wall on the project, you do not have to fill out this checklist.

<b>Soil Data and Preliminary Calculations</b>	
Y N X 1	Has a justification study been performed to determine the necessity of a wall as opposed to ROW purchase or other project alternatives?
Y N X 2	Have the necessary soil strength parameters and unit weights been determined?  Check method used: <input type="checkbox"/> laboratory shear tests <input type="checkbox"/> estimation from SPT or field tests
Y N X 3	Has the groundwater elevation been determined?
Y N X 4	Have the proper loading conditions been determined?  a If yes, check which loading conditions apply: Backfill: <input type="checkbox"/> flat or <input type="checkbox"/> sloped Surcharge: <input type="checkbox"/> yes or <input type="checkbox"/> no
Y N X 5	If applicable, has the influence of groundwater been taken into account with regards to soil unit weights and active pressures?
Y N X 6	Has the Coulomb method been utilized to determine the lateral earth pressure?

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Design				
Y	N	X	7	For preliminary wall design, has the design criteria and wall type selection process been followed as instructed in BDM 204.6?
Y	N	X	8	Was an economic analysis performed to evaluate the cost benefits of the chosen wall type compared to others?
Y	N	X	9	Have all the required F.S. been calculated?
			a	Do the F.S. meet or exceed the minimums listed below (for non-proprietary walls):
Y	N	X		Bearing Capacity (minimum F.S. = 3.0)
Y	N	X		External Stability (minimum F.S. = 1.3 when not supporting abutments)
Y	N	X		Overturning (minimum F.S. = 2.00)
Y	N	X		Sliding (minimum F.S. = 1.50)
			10	If poor foundation soils are present, has a solution been determined with respect to the following:
Y	N	X	a	excessive settlement?
Y	N	X	b	inadequate bearing capacity?
Y	N	X	c	sliding?
Y	N	X	d	global stability?
			11	For non-proprietary walls, each wall type has design recommendations which need to be determined. For the wall type being evaluated, have the following design recommendations been determined by accepted design methods or, where applicable, FHWA design guidelines:
Y	N	X	a	Cantilever, Gravity - footing width, allowable bearing capacity (BDM 204 & 303.4)
Y	N	X	b	Cellular - type, bearing pressure, fill material
Y	N	X	c	Drilled H-Pile - type, embedment, spacing, lagging, maximum moment, section modulus, maximum deflection
Y	N	X	d	Drilled Shafts - diameter, embedment, spacing, maximum moment, maximum deflection (see BDM 303.4.3)
Y	N	X	e	H-pile Lagging - pile size, embedment, lagging design, spacing, facing, maximum deflection
Y	N	X	f	Sheet Pile - embedment, section modulus, maximum deflection
Y	N	X	g	Soil Nailing - spacing, loading per nail, facing, embedment

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Y	N	X		h Tieback - load per tieback, number of rows, wale design, type of anchor	
Y	N	X	12	Proprietary wall designs require a special process for detail design, as outlined in BDM 303.5. Has this procedure been followed for this project?	
			13	The presence and quality of water behind the wall structure and in the backfill can be a major source of overloading and failure.	
Y	N	X		a Has the quality / chemistry of the groundwater been accounted for in the drainage system?	
Y	N	X		b Has an adequate drainage system been included in the detail wall design?	
Y	N	X		c If there is a water source behind the wall, has additional drainage been added to control the effect of this water source on the wall?	
Y	N	X	14	Have the effects of the wall design and construction procedure been determined and accounted for on the construction schedule?	
Y	N	X	15	Has the effect of the wall design and construction been evaluated with regard to structures (e.g., culverts, utilities), which may be subject to unusual stresses or require special design or construction considerations?	

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Plans and Contract Documents				
Y	N	X	16	Have all the necessary notes, specifications, special provisions, and details for the construction of the wall system been included in the plans?
Y	N	X	17	Has the need, location, type, plan notes, and reading schedule for any instrumentation been determined and included in the plans?  Check the types of instrumentation specified: <input type="checkbox"/> inclinometers <input type="checkbox"/> strain gages <input type="checkbox"/> load cells <input type="checkbox"/> settlement platforms <input type="checkbox"/> monitoring wells / piezometers <input type="checkbox"/> other      List other items:

Notes: