



## **CHAPTER VI: STANDARD FORMS & DETAILS**



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## A. LEED Responsibility Matrix



LEEDTM V2.0 Documentation Checklist

PROJECT NAME

Notes	Plumbing Contractor	Electrical Contractor	Mechanical Contractor	General Contractor	Plumbing Engineer	Electrical Engineer	Mechanical Engineer	Structural Engineer	Civil Engineer	Commissioning Agent	Landscape Architect	Architect	Owner	LEED Consultant

Yes ?

			Sustainable Sites	14 Points																
Y		Prereq 1	Erosion & Sedimentation Control	Required																
			Declare whether the project follows local erosion and sedimentation control standards and provide a brief listing of the measures implemented. If local standards and codes are followed, describe how they meet or exceed the EPA best management practices.																	
			Provide the erosion control plan (or drawings and specifications) with the sediment and erosion control measures highlighted.																	
		Credit 1	Site Selection	1																
			Declare that the project site does not meet any of the prohibited criteria.																	
		Credit 2	Urban Redevelopment	1																
			Provide an area plan with the project location highlighted and the calculated development density for both the project and the surrounding area.																	
		Credit	Brownfield Redevelopment	1																



		3		
			Provide a letter from the local regulatory agency or regional EPA office confirming that the site is classified as an EPA Brownfiled site.	
			Provide documentation demonstrating that remediation efforts have been performed on the site to clean up or stabilize contaminants.	
		Credit 4.1	Alternative Transportation, Public Transportation Access 1	
			Provide an area drawing highlighting the building location, the fixed rail stations and bus lines, and indicate the distances between them. Include a scale bar for distance measurement.	
		Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms 1	
			Provide site drawings and specifications highlighting bicycle securing apparatus and changing/shower facilities. Include calculations demonstrating that these facilities accommodate 5% or more of building occupants.	
		Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations 1	
			Provide site drawings and specifications highlighting alternative-fuel refueling stations. Include information on venting if applicable.	
			Provide calculations demonstrating that these facilities accommodate 3% or more of the total vehicle parking capacity.	
		Credit 4.4	Alternative Transportation, Parking Capacity 1	
			Provide a design narrative, parking plan, and company literature demonstrating that carpool and van pool programs serve 5% of the building occupants	
			For new projects, provide a copy of the local zoning requirements highlighting the criteria for minimum parking capacity. Provide a parking plan highlighting the total parking capacity.	
			OR	



For rehabilitation projects, provide a pre-rehabilitation parking plan and a post-rehabilitation parking plan demonstrating that no new parking capacity was added.

Credit  
5.1

Reduced Site Disturbance, Protect or Restore Open Space 1

On greenfield sites, provide site drawings and specifications highlighting limits of construction disturbance.

OR

On previously developed sites, provide a narrative describing restoration of degraded habitat areas. Include highlighted site drawings with area calculations demonstrating that 50% of degraded habitat areas have been restored.

Credit  
5.2

Reduced Site Disturbance, Development Footprint 1

Provide a copy of the local zoning requirements highlighting the criteria for open space.

Provide highlighted site drawings with area calculations demonstrating that the building footprint exceeds the local zoning open space requirements for the site by 25%.

For areas with no local zoning requirements (e.g., university campuses, military bases), designate open space area adjacent to the building that is equal to the building footprint. Provide a letter from the property owner stating that the open space will be conserved for the life of the building.

Credit  
6.1

Stormwater Management, Rate or Quantity 1

For sites with less than 50% net imperviousness, provide pre-construction and post-construction site drawings. Include calculations demonstrating that existing site imperviousness is less than or equal to 50%.

For sites with greater than 50% net imperviousness, provide a copy of the stormwater management plan. Include calculations describing how the measures of the plan decrease net imperviousness of the site by 25% over existing conditions.

Credit  
6.2

Stormwater Management, Treatment 1

Provide drawings and specifications describing EPA Best Management Practices implemented for removal of TSS and TP.



Provide calculations to demonstrate that the BMPs meet or exceed the minimum treatment requirements of the credit.

Credit  
7.1

Landscape & Exterior Design to Reduce Heat Islands, Non-Roof

1

Provide drawings and cut sheets for a pervious paving system with a minimum perviousness of 50%. Include calculations demonstrating that this paving system covers a minimum of 50% of the total parking area.

Provide drawings and calculations demonstrating that these materials are furnished and installed on 30% of non-roof impervious surfaces.

Provide specifications and cut sheets for high-albedo materials applied to non-roof impervious surfaces highlighting the reflectance of the installed materials.

Provide drawings highlighting all non-roof impervious surfaces and portions of these surfaces that will be shaded within five years. Include calculations demonstrating that a minimum of 30% of non-roof impervious surfaces areas will be shaded within five years.

Provide a parking plan demonstrating that a minimum of 50% of site parking spaces are located underground.

Credit  
7.2

Landscape & Exterior Design to Reduce Heat Islands, Roof

1

Provide specifications and cut sheets highlighting roofing materials that are Energy Star labeled, with a minimum initial reflectance of 0.65, and a minimum three-year-aged reflectance of 0.5, and a minimum emissivity of 0.9. Include area calculations demonstrating that the roofing material covers a minimum of 75% of the total roof area.

Provide specifications and cut sheets highlighting a green vegetated roof system. Include area calculations demonstrating that the roof system covers a minimum of 50% of the total roof area.

Credit  
8

Light Pollution Reduction

1

Provide a brief exterior lighting design narrative and exterior lighting design plan demonstrating the lighting objectives and measures that prevent any direct-beam illumination from leaving the building site.

Provide an exterior lighting design plan that illustrates the location of all lighting fixtures and the features they are to



light.																			
Demonstrate that the design will use diffuse or muted light, will meet the IESNA illuminance values measured at eye height, and not create glare or direct lighting onto neighboring property, streets or the night sky.																			

Water Efficiency

5 Points

Credit  
1.1

Water Efficient Landscaping, Reduce by 50%

1

Provide cut sheets for high efficiency irrigation equipment. Include calculations demonstrating that potable water consumption for irrigation is reduced by 50%.

Provide drawings and a narrative describing the captured rain system or recycled site water system with the capacity of the system highlighted. Include calculations demonstrating potable water consumption for irrigation is reduced by 50%.

Credit  
1.2

Water Efficient Landscaping, No Potable Use or No Irrigation

1

Provide drawings and a narrative describing the captured rain system or recycled site water system with the capacity of the system highlighted. Include calculations demonstrating that potable water used for irrigation is reduced by 100%.

Provide a design narrative of the landscape design and describe why a permanent landscape irrigation system is not required.

Credit  
2

Innovative Wastewater Technologies

1

Provide drawings, specifications, and a narrative demonstrating that 100% of building wastewater volumes is directed to an on-site wastewater treatment system that provides treatment to tertiary levels. Include a letter from the local health department documenting compliance with local codes.

Provide a narrative of measures implemented to reduce potable water sewage conveyance. Include calculations demonstrating that potable water sewage conveyance volumes are reduced by 50% over baseline conditions.



Credit  
3.1

Water Use Reduction, 20% Reduction

1

Provide a water budget calculation demonstrating that occupancy based potable water consumption is reduced by 20% over baseline conditions.

Provide cut sheets for all water consuming fixtures necessary for the occupancy use of the building, with water conservation specifications highlighted. Demonstrate that plumbing fixtures meet or exceed fixture performance requirements of the Energy Policy Act of 1992.

X

Credit  
3.2

Water Use Reduction, 30% Reduction

1

Provide a water budget calculation demonstrating that occupancy based potable water consumption is reduced by 30% over baseline conditions.

Provide cut sheets for all water consuming fixtures necessary for the occupancy use of the building, with water conservation specifications highlighted. Demonstrate that plumbing fixtures meet or exceed fixture performance requirements of the Energy Policy Act of 1992.

Energy & Atmosphere

17  
Points

Prereq  
1

Fundamental Building Systems Commissioning

Required

Provide a copy of the commissioning plan highlighting the five fundamental commissioning procedures as listed in the credit requirements.

Provide a signed letter of certification by the commissioning authority confirming that the commissioning plan has been successfully executed and the design intent of the building has been achieved.

Prereq  
2

Minimum Energy Performance

Required

State whether the energy design process followed ASHRAE/IESNA 90.1-1999 or local energy codes. If local energy codes were applied, demonstrate that the local code is equivalent to or more stringent than ASHRAE/IESNA 90.1-1999.





Y

Prereq  
3

Provide a summary table of design features that minimally comply with applicable mandatory and prescriptive requirements in ASHRAE/IESNA 90.1-1999, Sections 5-10, or local energy codes (whichever is stricter) OR a copy of the Energy Cost Budget Compliance Report.

CFC Reduction in HVAC&R Equipment

Require  
d

For existing buildings, provide a listing of all existing HVAC&R components and state whether each component uses CFCs. For those components that use CFCs, provide a copy of the phase out plan describing how these components will be converted or removed and replaced with CFC-free components before construction is complete.

For new buildings, provide equipment schedules and cut sheets highlighting refrigerant information for all HVAC&R components.

Credit  
1.1

Optimize Energy Performance, 20% New / 10% Existing

2

Provide a narrative highlighting energy saving measures incorporated in the building design, including an isometric of the building showing the basic floor plate shape and external projections.

Demonstrate that the design energy cost is 20% lower for new buildings or 10% lower for existing buildings than the energy cost budget as defined in ASHRAE/IESNA 90.1-1999, Section 11. Provide a completed and signed copy of the Energy Cost Budget (ECB) Compliance Form.

Credit  
1.2

Optimize Energy Performance, 30% New / 20% Existing

2

Provide a narrative highlighting energy saving measures incorporated in the building design, including an isometric of the building showing the basic floor plate shape and external projections.

Demonstrate that the design energy cost is 30% lower for new buildings or 20% lower for existing buildings than the energy cost budget as defined in ASHRAE/IESNA 90.1-1999, Section 11. Provide a completed and signed copy of the Energy Cost Budget (ECB) Compliance Form.

Credit  
1.3

Optimize Energy Performance, 40% New / 30% Existing

2



Provide a narrative highlighting energy saving measures incorporated in the building design, including an isometric of the building showing the basic floor plate shape and external projections.

Demonstrate that the design energy cost is 40% lower for new buildings or 30% lower for existing buildings than the energy cost budget as defined in ASHRAE/IESNA 90.1-1999, Section 11. Provide a completed and signed copy of the Energy Cost Budget (ECB) Compliance Form.

Credit  
1.4

Optimize Energy Performance, 50% New / 40% Existing 2

Provide a narrative highlighting energy saving measures incorporated in the building design, including an isometric of the building showing the basic floor plate shape and external projections.

Demonstrate that the design energy cost is 50% lower for new buildings or 40% lower for existing buildings than the energy cost budget as defined in ASHRAE/IESNA 90.1-1999, Section 11. Provide a completed and signed copy of the Energy Cost Budget (ECB) Compliance Form.

Credit  
1.5

Optimize Energy Performance, 60% New / 50% Existing 2

Provide a narrative highlighting energy saving measures incorporated in the building design, including an isometric of the building showing the basic floor plate shape and external projections.

Demonstrate that the design energy cost is 60% lower for new buildings or 50% lower for existing buildings than the energy cost budget as defined in ASHRAE/IESNA 90.1-1999, Section 11. Provide a completed and signed copy of the Energy Cost Budget (ECB) Compliance Form.

Credit  
2.1

Renewable Energy, 5% 1

Provide drawings, cut sheets, and specifications highlighting on-site renewable energy systems installed in the building.

Provide calculations demonstrating that 5% of total energy costs are supplied by on-site renewable energy systems.

Credit  
2.2

Renewable Energy, 10% 1

Provide drawings, cut sheets, and specifications highlighting on-site renewable energy systems installed in the building.



Provide calculations demonstrating that 10% of total energy costs are supplied by on-site renewable energy systems.

Credit  
2.3

Renewable Energy, 20%

1

Provide drawings, cut sheets, and specifications highlighting on-site renewable energy systems installed in the building.

Provide calculations demonstrating that 20% of total energy costs are supplied by on-site renewable energy systems.

Credit  
3

Additional Commissioning

1

Provide a signed letter of certification by an independent commissioning authority or designer confirming that Tasks 4 and 5 of the credit requirements have been successfully executed.

Provide an excerpt from the commissioning plan highlighting the five additional commissioning tasks as listed in the credit requirements.

Provide a signed letter of certification by an independent commissioning authority confirming that Tasks 1, 2, and 3 of the credit requirements have been successfully executed.

Credit  
4

Ozone Depletion

1

Provide a letter from the architect or engineer stating that HVAC&R systems are free of HCFC's and Halons. Include equipment schedules and cut sheets highlighting refrigerant information for all HVAC&R system components.

Credit  
5

Measurement & Verification

1

Provide a copy of the Measurement & Verification Plan.

Include a summary schedule of the instrumentation and controls for the ten required monitoring categories, highlighting the I/O data points to be collected.

Include cut sheets of sensors and the data collection system used to provide continuous metering per IPMVP standards.

Credit  
6

Green Power

1



Provide documentation demonstrating that the supplied renewable power meets the referenced Green-E requirements.

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Provide a copy of the two-year electric utility purchase contract for power generated from renewable sources.

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Materials & Resources

13  
Points

Prereq  
1

Storage & Collection of Recyclables

Require  
d

Provide drawings highlighting locations for collection and storage of materials separated for recycling. Indicate the path from recycling locations to the building loading dock and demonstrate that the recycling area can handle the recycling material volumes generated by building occupants.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Credit  
1.1

Building Reuse, Maintain 75% of Existing Shell

1

Provide pre-construction and post-construction plan and elevation drawings highlighting reused structure and shell elements. Include calculations demonstrating that 75% of the structure and shell was reused.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Credit  
1.2

Building Reuse, Maintain 100% of Shell

1

Provide pre-construction and post-construction plan and elevation drawings highlighting reused structure and shell elements. Include calculations demonstrating that 100% of the structure and shell was reused.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Credit  
1.3

Building Reuse, Maintain 100% Shell & 50% Non-Shell

1

Provide pre-construction and post-construction plan and elevation drawings highlighting reused structure and shell elements. Include calculations demonstrating that 100% of the structure and shell was reused.

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Provide pre-construction and post-construction drawings highlighting reused interior walls, floor coverings and ceilings. Include calculations demonstrating that 50% of the non-shell components were reused.

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		Credit 2.1	Construction Waste Management, Divert 50% 1																
			Provide calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 50% of construction wastes were recycled or salvaged.																
			Provide a copy of the Waste Management Plan for the project highlighting recycling and salvage requirements.																
		Credit 2.2	Construction Waste Management, Divert 75% 1																
			Provide calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.																
			Provide a copy of the Waste Management Plan for the project highlighting recycling and salvage requirements.																
		Credit 3.1	Resource Reuse, Specify 5% 1																
			Provide specifications and contractor submittals highlighting salvaged and refurbished materials used on the project.																
			Provide calculations demonstrating that 5% of building materials were salvaged. Include the origin and cost for salvaged materials and the total cost for building materials.																
		Credit 3.2	Resource Reuse, Specify 10% 1																
			Provide specifications and contractor submittals highlighting salvaged and refurbished materials used on the project.																
			Provide calculations demonstrating that 10% of building materials were salvaged. Include the origin and cost for salvaged materials and the total cost for building materials.																
		Credit 4.1	Recycled Content, Specify 25% 1																
			Provide specifications and contractor submittals highlighting recycled content materials installed.																

[illegible]

Recycled Content, Specify 50%

1

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[illegible][illegible]

### Local/Regional Materials, 20% Manufactured Locally

1

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[illegible][illegible]

Local/Regional Materials, of 20% Above, 50% Harvested Locally

1


[illegible][illegible]



Provide a spreadsheet of all materials used on the project highlighting locally manufactured materials. Include the location of the material manufacturer, the distance from the manufacturer to the project site, the costs of all materials for the project, and calculations demonstrating that 20% of building materials are manufactured within 500 miles of the project.

Credit  
6

Rapidly Renewable Materials

1

Provide written documentation from the manufacturer, declaring the rapidly renewable materials contained in the candidate products.

Provide a spreadsheet of all materials used on the project highlighting rapidly renewable materials. Include manufacturer information, the costs of all materials for the project, and calculations demonstrating that 5% of building materials are rapidly renewable.

Provide specifications and contractor submittals highlighting rapidly renewable materials installed.

Credit  
7

Certified Wood

1

Provide specifications and contractor submittals highlighting certified wood-based materials installed.

Provide a spreadsheet of all wood-based materials used on the project highlighting certified wood-based materials. Include calculations demonstrating that 50% of wood-based materials are certified wood.

Provide wood certification documentation from the manufacturer declaring conformance with Forest Stewardship Council Guidelines for certified wood building components.

Indoor Environmental Quality

15  
Points

Prereq  
1

Minimum IAQ Performance

Require  
d

Provide a letter from the mechanical engineer stating compliance with ASHRAE 62-1999.



Y

Prereq  
2

Declare the ASHRAE 62-1999 procedure employed in the IAQ analysis (Ventilation Rate Procedure or Indoor Air Quality Procedure) and include design criteria and assumptions.

Environmental Tobacco Smoke (ETS) Control

Require  
d

Provide drawings and a narrative demonstrating that designated smoking rooms have ventilation systems independent of non-smoking building areas.

Provide a letter from the testing engineer stating compliance with ASHRAE 129-1997 for the smoking areas. Include the tracer gas analysis report as specified in ASHRAE 129-1997, Section 8.

Provide a letter from the building owner verifying the building policy prohibiting smoking. Include site drawings highlighting designated outdoor smoking areas if applicable.

Credit  
1

Carbon Dioxide (CO<sub>2</sub>) Monitoring

1

Provide drawings, specifications and cut sheets highlighting the installed carbon dioxide monitoring system. Include a narrative describing the sequence of operation and control of building ventilation systems and initial operation set point parameters.

Credit  
2

Increase Ventilation Effectiveness

1

For mechanically ventilated buildings, provide a report summarizing test results and calculations demonstrating that the designed building has an air-change effectiveness value of 0.9 or greater as determined by ASHRAE 129-1997, Appendix B. If E is less than 0.9, provide documentation indicating the corrected design ventilation rate (CDVR) used in the system design.

For mechanically ventilated buildings, provide a design narrative that describes compliance with the recommended design approaches in ASHRAE Fundamentals Chapter 31, Space Air Diffusion design for as described in the calculation details of this credit.



[illegible]

Provide cut sheets of filtration media used during construction and installed immediately prior to occupancy with MERV values highlighted.

[illegible]

Provide a copy of the Construction IAQ Management Plan highlighting the six requirements of SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3.

[illegible]

Provide specifications and documentation demonstrating conformance with IAQ testing procedures and requirements as described in the referenced standard.

[illegible]

Low-Emitting Materials, Adhesives & Sealants
Provide a cut sheet and a Material Safety Data Sheet (MSDS)

[illegible]

Provide a cut sheet and a Material Safety Data Sheet (MSDS) for each adhesive used in the building highlighting VOC limits.

[illegible]

Low-Emitting Materials, Paints
Provide a cut sheet and a Material Safety Data Sheet (MSDS)

[illegible]

Provide a cut sheet and a Material Safety Data Sheet (MSDS) for each paint or coating used in the building highlighting VOC limits and chemical component limits.

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Low-Emitting Materials, Carpet 17

[illegible]






[illegible]

Provide a narrative and supporting documents (e.g., drawings, specifications, cut sheets) for EACH innovative measure incorporated into the project. Include information that demonstrates the sustainable benefits of each measure.

[illegible]

Provide a copy of the LEED™ Accredited Professional Certificate.

[illegible]

Project Totals

69  
Points

Certified 26-32 points      Silver 33-38 points      Gold 39-51 points  
Platinum 52-69 points




THE UNIVERSITY  
*of* NORTH CAROLINA  
*at* CHAPEL HILL

DEPARTMENT OF FACILITIES PLANNING & CONSTRUCTION