

## PLAN REVIEW & INSPECTION COMPARISON

### State Construction Office Responsibilities vs. Other Entities

The following is a listing of the responsibilities of the State Construction Office (SCO), which is statutorily charged with performing these responsibilities on behalf of all state agencies, including Cabinet, Council of State, Universities, and Community Colleges. The chart depicts the full extent of what is entailed in review and inspection of state buildings, from design to construction, as well as post-construction (renovations and ongoing condition assessments throughout the life of a building). This affects the quality and more importantly, the safety of the occupants of State owned buildings. While some functions of the office could be outsourced or performed by other entities, none would be performed with the thoroughness and completeness as is done by the Registered Architects and Engineers of SCO. In addition, based on current market comparisons, the cost to the State would be more than 6-1/2 times the annual operating budget of SCO for partial performance of functions because many of the responsibilities are not performed by private or other public entities and would therefore leave a gap in the safety, sustainability and longevity of State owned public buildings.

RESPONSIBILITY	LEGISLATION	SCO OVERSIGHT	Private 3 <sup>rd</sup> PARTY COORDINATION CHECK	MUNICIPALITY REVIEW (City or County)
<b>GENERAL/ARCHITECTURAL</b>				
Consistent centralized review location (One-stop for all submissions and review by architectural, electrical, mechanical, structural)	G.S.143-341	✓		
Coordination of work by all Design Disciplines	G.S.143-341	✓		
Oversight – 3 <sup>rd</sup> party non-bias oversight	G.S.143-341	✓		
Designer Interviews and Selections	G.S. 143-135.26	✓		
Value Engineering Reviews	G.S.143-341	✓	✓	
Investment Grade Audit [IGS] – Performance Contracting	G.S. 143-64.17	✓		
Project Budget Review – Cost Benefit/Optimization	G.S.143-341	✓		
Project Award – Verification of all bidding statutes followed	G.S. 143-128	✓		
Contracting – Verification of proper documentation (bonds, insurance, etc)	G.S. 143-128	✓		
Public Work Requirements (Statutes) Review	G.S. 133-1,2,3,4	✓		
HUB Verification and Participation Requirements	G.S. 143-128.2,3,4	✓		
Procedural Issues – State Building Commission	G.S. 143-135.25	✓		
Compliance with Industry Standards – BIA, NRCA, AISC, ACI, UL, FM, NFPA, ASHRAE, etc.	G.S.143-341	✓	✓ (Not All)	
NC State Building Code Review	G.S.143-139(e)	✓		✓
Review/approve plans & specifications for Community College Buildings. Majority of county personnel are not certified to review buildings of this size - Counties must have assistance from Dept. of Insurance	G.S. 143-341	✓		✓ (Some)
Maintenance Reviews – Ensure cost effective maintenance	G.S.143-341	✓		
Maintainability Reviews - Ease of maintenance (50 year building life)	G.S.143-341	✓		

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Constructability Reviews- Appropriate materials/methods of construction	G.S.143-341	✓	✓	
Life Cycle Cost Analysis Reviews – Building envelope, roof, insulation, etc.	G.S.143-64-15 & 143-15A	✓		
Sustainability Reviews - Economy of design and materials	G.S.143-341	✓	✓	
<b>CIVIL/STRUCTURAL</b>				
Administer uniform flood lands development and permitting within FEMA designated floodplain for state-owned properties	Executive Order 123	✓ (Statewide)		✓ (Local Only)
Review civil utilities	G.S.143-341	✓		✓ (Verification of easements only)
General review of storm water best management practices (BMP) for construction considerations. Actual BMP requirements vary by locality.	G.S.143-341	✓		✓
Verification of erosion control plans	G.S.143-341	✓		✓
Review of project tie-in with roadway, etc.	G.S.143-341	✓		✓
Review of grading for efficiency – balanced cut-and-fill	G.S.143-341	✓	✓	
Review of retaining wall structures for structural adequacy and efficiency	G.S.143-341	✓		.
Evaluation of storm drainage systems for emergency overland flow route	G.S.143-341	✓		
Detailed review of civil specifications for: ▪Clarity regarding base-bid quantities & unit prices ▪Coordination with drawings ▪Technical accuracy	G.S.143-341	✓		
Thorough review of geotechnical report and evaluation of related construction documents. Review of specifications versus recommendations	G.S.143-341	✓		
Verification of code-required live loads, wind loads, and seismic criteria	G.S.143-341	✓	✓	✓
In-depth review of seismic design criteria and related structural detailing requirements	G.S.143-341	✓		
Review of main lateral load resisting system for overall stability, compatibility of components, and compliance with building code criteria	G.S.143-341	✓		
Detailed review of complete structural system for code compliance and conformance with correct engineering practice	G.S.143-341	✓		
Review of structural system and details for efficiency, constructability, and longevity. Recommend alternatives as appropriate	G.S.143-341	✓		

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Perform review for conflicts of structural members within the structure and with elements of other disciplines (mechanical, electrical, etc.)	G.S.143-341	✓	✓	
Review of shop drawing submittals for vendor-designed structural systems (metal buildings, etc.)	G.S.143-341	✓		✓
Detailed review of structural and building facade specifications to ensure code-compliance, coordination with drawings, conformance with proper engineering practices and weatherproofing	G.S.143-341	✓		
Verify applicability of Special Inspections and review Statement of Special Inspections	G.S.143-341	✓		✓
Review projects at preliminary phases (SD & DD) to help project comply with code requirements and other criteria	G.S.143-341	✓		
<b>PLUMBING/MECHANICAL/FIRE PROTECTION</b>				
Plumbing, mechanical, fire protection NCBC review	G.S. 143-341	✓		✓
Contractual Issues: Budget, Design and construction contract	G.S. 143-129	✓		
Review LCCA compliance with energy legislation	G.S. 143-64.15	✓		
Support and enforce the requirements of the Energy and Water Savings Legislation.	G.S.143-135.35-40	✓		
Compliance with the NC Energy Conservation Code	G.S.143-341	✓		✓
Advance planning submission reviews	G.S.143-341	✓		
Energy modeling	G.S.143-135.35-40	✓	✓	
Investment grade audits	G.S. 143-64.17	✓		
Performance contracts from Energy Services Corporations	G.S. 143-64.17	✓		
Review of Building Automation Control (DCC)	G.S.143-341	✓		
Sprinkler design shop drawing review	G.S.143-341	✓		✓
Sprinkler Hydraulic calculation review	G.S.143-341	✓		
Assistance in the field inspection for Thermal envelopes, overhead and life safety checks	G.S.143-341	✓		

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<b>ELECTRICAL</b>				
Review for compliance with the State Energy Code. The building energy table & the method of compliance (prescriptive, performance, or energy cost budget). Compliance with NFPA 20, 70, 72, 101, 110 & 780. BCBC, and NC Accessibility Code. Industry standards, IEEE/ ANSI & UL.	G.S.143-341	✓		✓ (Review of NCBC Only)
Review the Designers load calculations, voltage drop calculations, short circuit calculations & TCC Time characteristics Curves to ensure systems (medium voltage & 600V system) coordination for the equipment protective devices.	G.S.143-341	✓		✓ (Verification of load calculations per code only)
Review Short circuit calculations for the medium voltage equipment.	G.S.143-341	✓		
Review and check the sizes, types and styles of the medium voltage equipment (the MV cables, the MV transformers, the MV sectionalizing loop switches, and the Universities owned 25KV & 15KV substations. Review of all power primary systems and secondary power systems	G.S.143-341	✓		
Review the hi-pot test for the medium voltage cables	G.S.143-341	✓		
Review LCCA compliancy with energy legislation	G.S.143-135.35-40	✓		
Mandate designers to specify energy efficient equipment	G.S.143-135.35-40	✓		
Review the communications and Data systems: The location and size of the telecomm room, telecom riser diagram, telecom service point to the building, telecom cable raceway, conduits and interducts, the support of the communications cables.	G.S.143-341	✓		
Review Security Systems	G.S.143-341	✓		
Review Fire Alarm Systems	G.S.143-341	✓		
Review systems and equipment grounding	G.S.143-341	✓		✓ (Check for equipment grounds only)
Review for constructability, maintainability, long facility life, sustainability, energy consumption, life cycle cost, coordination with other disciplines, compliance with industry standards, good engineering practice, contractual issues, compliance with General Statutes, and compliance with NC Building Codes.	G.S.143-341	✓		✓ (Review of NCBC Only)

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Comments may exceed code minimum to insure long facility life, ease of maintenance, durability of components and systems	G.S.143-341	✓		
Consistency of Documents and Procedures for all State Projects	G.S.143-341	✓		
Assistance on Final Inspections – A comprehensive inspection of all building life safety, fire alarm prior to issuing of Certification of Occupancy	G.S.143-341	✓		
Review of Add Alternates and Owner Preferred Alternates	G.S.143-341	✓		
The facility or agency guidelines have been reviewed and included where appropriate	G.S.143-341	✓		
Review for the sequence of Operations for all equipment. Review of the interlock diagrams for the main and tie breakers for the medium voltage and the 480volt systems	G.S.143-341	✓		
Review of building's special systems such as CCTV, nurse call, security and all other systems included in the electrical scope of work	G.S.143-341	✓		✓  (Review of NCBC Only)
<b>CONSTRUCTION MANAGEMENT</b>				
Inspect for NC Building Code Compliance	G.S.143-341	✓		✓
Inspect Fire and Life Safety Systems	G.S.143-341	✓		✓
Inspect for Building Functionality and Compliance with Plans & Specifications	G.S.143-341	✓		
Inspect for Mechanical System Functionality and Compliance with Plans & Specifications	G.S.143-341	✓		
Inspect for Plumbing System Functionality and Compliance with Plans & Specifications	G.S.143-341	✓		
Inspect for Electrical Functionality and Compliance with Plans & Specifications	G.S.143-341	✓		
Inspect for Compliance with Energy Efficiency Requirements of SB 668	G.S.143-135.35-40	✓		
Facilitate Project Progress at Monthly Construction Conferences to keep projects on schedule and budget	G.S.143-341	✓		
Mediate Project Disputes Early in Process. Saves cost of mediation and cost of potential claim settlements. Function as unbiased 3 <sup>rd</sup> party.	G.S. 143-135.3	✓		

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Administer DOA CI Program (active projects of \$85M). Includes preparation of CI budget requests, cost estimate preparation, invoice review and approval.	G.S.143-341	✓		
Administer Access NC Project (\$3.5M Program)	G.S.143-341	✓		
Perform In-House Design for DOA Small R&R Projects (active projects of \$1M)	G.S.143-341	✓		
Repository for Project Database. Provide valuable construction and cost information to GA Fiscal Research, Owning Agencies, Universities, and Community Colleges.	G.S.143-341	✓		
Repository for Project Plans and Specifications across the State. Often contacted for copies of previous projects.	G.S.143-341	✓		
Monitor HUB Participation during construction process and investigate HUB contractor complaints	G.S.143-128	✓		
Provide information to other agencies, designers, and contractors on the state building process; including, public bidding regulations, building environmental concerns (asbestos, lead paint, mold), ADA compliance	G.S.143-341	✓		
Assist with resolution of problems that occur during construction	G.S.143-341	✓		
Assist with forensic investigations for post construction failures	G.S.143-341	✓		

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**ANNUAL COSTS TO FACILITATE THE STATE'S CAPITAL IMPROVEMENT PROGRAM <sup>1</sup>**

Outsourced/Privatized Annual Costs <sup>2</sup>		
Plan Compliance Inspection (Non-Code) <sup>7</sup>	\$10,220,365	
Private 3 <sup>rd</sup> Party Coordination Check <sup>7</sup>	\$8,176,292	
Municipality Review (City or County) <sup>7</sup>	<u>\$6,132,219</u>	
		\$24,528,876
SCO Current Annual Cost	<u>\$5,066,563</u>	
		<u>\$5,066,563</u>
Current Cost vs. Outsourced/Privatized Costs		
Savings annually by using SCO Expertise		\$19,462,313
SCO Cost Avoidance		
Negotiated Design Fees Savings	\$445,700	
Negotiated Construction Manager At Risk Fee Savings	\$424,800	
Mandated Energy Efficiency Standards savings	\$1,587,800	
Verified Claim savings impact (Total claims submitted vs. settled)	\$5,000,000	
Indirect cost savings in SCO operations <sup>3,4,5,6</sup>	<u>\$1,423,200</u>	
Total Annual SCO Cost Avoidance		<u>\$8,881,500</u>

<b>Total Annual SCO Savings for the State of NC<sup>8</sup></b>	<b>\$28,343,813</b>
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#### **Cost Notes**

1. Costs are based on annual average value of projects under design with SCO - \$2,044,073,107.
2. Plan compliance inspection cost average 0.5% of the construction cost. Private third party coordination review average 0.4% of the construction cost. Permitting and inspection fees for local City/County Departments average 0.3% of the construction cost.
3. Informal Mediation by SCO impacts about 185 of the 304 active construction projects and averages about 24 hours each. This provides about \$688,200 in annual savings that would be paid for outside mediation at cost of \$155/hour.
4. Administration of the DOA Capital Improvement Program is estimated to have an annual cost savings of 0.5% of the \$92M program or \$460,000, based on current market value of services.
5. Administration of the Access NC Program is estimated to have an annual cost savings of 5% of the total program cost or \$175,000, based on current design costs.
6. In-house design of DOA Projects represents an annual cost savings of 10% of the active project cost or \$100,000, based on design fees for the projects we have designed in-house.
7. SCO currently performs all of these private entity functions without utilizing third party resources.
8. The total savings is much higher when human life is considered, because of the high quality Engineering/Architectural expert reviews and inspections performed, lives are saved, but cannot be documented. The State of NC has some of the safest and well built buildings in the country.