

Object Design

- Object lists in E+ indicate substitutability
 - You can use any object in ConstructionNames for a surface construction
 - In an object model these would be base classes
 - Checked by input processor so this is a minimum
 - Additional constraints are described in documentation
- When object of a certain type is added users expect it to work like similar objects
- Objects should be designed to maximize substitutability

Construction Object Hierarchy

Object Type	ConstructionNames	ComplexFenestration States
Construction	X	
Construction: CfactorUndergroundWall	X	
Construction: FfactorGroundFloor	X	
Construction: InternalSource	X	
Construction: WindowEquivalentLayer	X	
Construction: WindowDataFile	X	
Construction: ComplexFenestrationState	X	X

Materials Object Hierarchy

Object Type	MaterialName	GlazingMaterialName	CFSGlazingName	CFSGap	WindowGasAndGasMixtures	WindowShadesScreensAndBlinds	WindowEquivalentLayerMaterialNames	WindowComplexShades
Material	X							
Material:NoMass	X							
Material:InfraredTransparent	X							
Material:AirGap	X							
Material:RoofVegetation	X							
WindowMaterial:SimpleGlazingSystem	X	X						
WindowMaterial:Glazing	X	X	X					
WindowMaterial:GlazingGroup:Thermochromic	X	X						
WindowMaterial:Glazing:	X	X						

Current Issues in ShadingControl

- Trying to add support for BSDFs to in ShadingControl object
 - ShadingControls cannot use Construction: ComplexFenestrationState for the shaded construction
 - ShadingControls cannot use WindowMaterial:Shade:EquivalentLayer, WindowMaterial:Drape:EquivalentLayer, WindowMaterial:Blind:EquivalentLayer, WindowMaterial:Screen:EquivalentLayer, or WindowMaterial:ComplexShade for the shaded material

Recommendations

- Remove Construction:WindowEquivalentLayer
- Make Construction:ComplexFenestrationState belong to ConstructionNames reference list
- Remove ComplexFenestrationStates reference list
- Combine models for all WindowEquivalentLayerMaterialNames with corresponding other objects
 - e.g. combine WindowMaterial:Glazing and WindowMaterial:Glazing:EquivalentLayer
- Make WindowMaterial:ComplexShade a WindowShadesScreensAndBlinds object
- Make WindowMaterial:Gap a GlazingMaterialName object
- Remove CFSGlazingName, CFSGap, WindowEquivalentLayerMaterialNames, and WindowComplexShades reference lists

Object Type	ConstructionNames	ComplexFenestration States
Construction	X	
Construction: CfactorUndergroundWall	X	
Construction: FfactorGroundFloor	X	
Construction: InternalSource	X	
Construction: WindowEquivalentLayer	X	
Construction: WindowDataFile	X	
Construction: ComplexFenestrationState	X	X

Object Type	MaterialName	GlazingMaterialName	CFSGlazingName	CFSGap	WindowGasAndGasMixtures	WindowShadesScreensAndBlinds	WindowEquivalentLayerMaterialNames	WindowComplexShades
Material	X							
Material:NoMass	X							
Material:InfraredTransparent	X							
Material:AirGap	X							
Material:RoofVegetation	X							
WindowMaterial:SimpleGlazingSystem	X	X						
WindowMaterial:Glazing	X	X	✗					
WindowMaterial:GlazingGroup:Thermochromic	X	X						
WindowMaterial:Glazing:RefractionExtinctionMethod	X	X						

Future Issues to Investigate

- Simple geometry objects
- DELight daylighting
- Ground models
- AirflowNetwork/ZoneMixing/HVAC