续表 A.3.1

类型	EXPRESS 描述
任务类型枚举 (IfcTaskTypeEnum)	TYPE IfcTaskTypeEnum = ENUMERATION OF (ATTENDANCE, CONSTRUCTION, DEMOLITION, DISMANTLE, DISPOSAL, INSTALLATION, LOGISTIC, MAINTENANCE, MOVE, OPERATION, REMOVAL, RENOVATION, USERDEFINED, NOTDEFINED); END_TYPE
工作日历类型枚举 (IfcWorkCalendar TypeEnum)	TYPE IfcWorkCalendarTypeEnum = ENUMERATION OF (FIRSTSHIFT, SECONDSHIFT, THIRDSHIFT, USERDEFINED, NOTDEFINED); END_TYPE
工作方案类型枚举 (IfcWorkPlan TypeEnum)	TYPE IfcWorkPlanTypeEnum = ENUMERATION OF (ACTUAL, BASELINE, PLANNED, USERDEFINED, NOTDEFINED); END_TYPE
工作计划类型枚举 (IfcWorkSchedule TypeEnum)	TYPE IfcWorkScheduleTypeEnum = ENUMERATION OF (ACTUAL, BASELINE, PLANNED, USERDEFINED, NOTDEFINED); END_TYPE

A.3.2 过程扩展实体的 EXPRESS 描述应符合表 A.3.2 的规定。

表 A.3.2 过程扩展实体的 EXPRESS 描述

实体	EXPRESS 描述
事件 (IfcEvent)	ENTITY IfcEvent SUBTYPE OF IfcProcess; PredefinedType : OPTIONAL IfcEventTypeEnum; EventTriggerType : OPTIONAL IfcEventTriggerTypeEnum; UserDefinedEventTriggerType : OPTIONAL IfcLabel; EventOccurenceTime : OPTIONAL IfcEventTime; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcEvent TypeEnum. USERDEFINED) OR ((PredefinedType = IfcEventTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : NOT(EXISTS(EventTriggerType)) OR (EventTriggerType <> IfcEventTrigger TypeEnum. USERDEFINED) OR ((EventTriggerType = IfcEventTriggerTypeEnum. USERDEFINED) AND EXISTS(UserDefinedEventTriggerType)); END_ENTITY

续表 A.3.2

实体	EXPRESS 描述
事件类型 (IfcEventType)	ENTITY IfcEventType SUBTYPE OF IfcTypeProcess; PredefinedType : IfcEventTypeEnum; EventTriggerType : IfcEventTriggerTypeEnum; UserDefinedEventTriggerType : OPTIONAL IfcLabel; WHERE CorrectPredefinedType : (PredefinedType <> IfcEventTypeEnum. USERDEFINED) OR ((PredefinedType = IfcEventTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcTypeProcess. ProcessType)) ; CorrectEventTriggerType : (EventTriggerType <> IfcEventTriggerTypeEnum. USERDEFINED) OR ((EventTriggerType = IfcEventTriggerTypeEnum. USERDEFINED) AND EXISTS(UserDefinedEvent TriggerType)) ; END_ENTITY
过程 (IfcProcedure)	ENTITY IfcProcedure SUBTYPE OF IfcProcess; PredefinedType : OPTIONAL IfcProcedureTypeEnum; WHERE HasName : EXISTS(SELF\IfcRoot. Name); CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcProcedureType Enum. USERDEFINED) OR ((PredefinedType = IfcProcedureTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); END_ENTITY
过程类型 (IfcProcedureType)	ENTITY IfcProcedureType SUBTYPE OF IfcTypeProcess; PredefinedType : IfcProcedureTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcProcedureTypeEnum. USERDEFINED) OR ((Predefined Type = IfcProcedureTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcTypeProcess. ProcessType)); END_ENTITY
顺序关系 (IfcRelSequence)	ENTITY IfcRelSequence SUBTYPE OF IfcRelConnects; RelatingProcess : IfcProcess; RelatedProcess : IfcProcess; TimeLag : OPTIONAL IfcLagTime; SequenceType : OPTIONAL IfcSequenceEnum; UserDefinedSequenceType : OPTIONAL IfcLabel; WHERE AvoidInconsistentSequence : RelatingProcess :<>: RelatedProcess; CorrectSequenceType : (SequenceType <> IfcSequenceEnum. USERDEFINED) OR ((SequenceType = Ifc SequenceEnum. USERDEFINED) AND EXISTS(UserDefinedSequenceType)); END_ENTITY
任务 (IfcTask)	ENTITY IfcTask SUBTYPE OF IfcProcess; Status : OPTIONAL IfcLabel; WorkMethod : OPTIONAL IfcLabel; IsMilestone : BOOLEAN; Priority : OPTIONAL INTEGER; TaskTime : OPTIONAL IfcTaskTime; PredefinedType : OPTIONAL IfcTaskTypeEnum; WHERE HasName : EXISTS(SELF\IfcRoot. Name); CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcTaskTypeEnum. USERDEFINED) OR ((PredefinedType = IfcTaskTypeEnum. USERDEFINED) AND EXISTS(SELF\Ifc Object. ObjectType)); END_ENTITY

续表 A.3.2

实体	EXPRESS 描述
任务类型 (IfcTaskType)	ENTITY IfcTaskType SUBTYPE OF IfcTypeProcess; PredefinedType : IfcTaskTypeEnum; WorkMethod : OPTIONAL IfcLabel; WHERE CorrectPredefinedType : (PredefinedType <> IfcTaskTypeEnum. USERDEFINED) OR ((PredefinedType = IfcTaskTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcTypeProcess. ProcessType)) ; END_ENTITY
工作日历 (IfcWorkCalendar)	ENTITY IfcWorkCalendar SUBTYPE OF IfcControl; WorkingTimes : OPTIONAL SET [1:?] OF IfcWorkTime; ExceptionTimes : OPTIONAL SET [1:?] OF IfcWorkTime; PredefinedType : OPTIONAL IfcWorkCalendarTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcWorkCalendar TypeEnum. USERDEFINED) OR ((PredefinedType = IfcWorkCalendarTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcObject. ObjectType)); END_ENTITY
工作控制 (IfcWorkControl)	ENTITY IfcWorkControl ABSTRACT SUPERTYPE OF(ONEOF(IfcWorkPlan, IfcWorkSchedule)) SUBTYPE OF IfcControl; CreationDate : IfcDateTime; Creators : OPTIONAL SET [1:?] OF IfcPerson; Purpose : OPTIONAL IfcLabel; Duration : OPTIONAL IfcDuration; TotalFloat : OPTIONAL IfcDuration; StartTime : IfcDateTime; FinishTime : OPTIONAL IfcDateTime; END_ENTITY
工作方案 (IfcWorkPlan)	ENTITY IfcWorkPlan SUBTYPE OF IfcWorkControl; PredefinedType : OPTIONAL IfcWorkPlanTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcWorkPlanType Enum. USERDEFINED) OR ((PredefinedType = IfcWorkPlanTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); END_ENTITY
工作计划 (IfcWorkSchedule)	ENTITY IfcWorkSchedule SUBTYPE OF IfcWorkControl; PredefinedType : OPTIONAL IfcWorkScheduleTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcWorkSchedule TypeEnum. USERDEFINED) OR ((PredefinedType = IfcWorkScheduleTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcObject. ObjectType)); END_ENTITY

A.4 产 品 扩 展

A.4.1 产品扩展类型的 EXPRESS 描述应符合表 A.4.1 的规定。

表 A.4.1 产品扩展类型的 EXPRESS 描述

类型	EXPRESS 描述
装配场地 (IfcAssembly PlaceEnum)	TYPE IfcAssemblyPlaceEnum = ENUMERATION OF (SITE, FACTORY, NOTDEFINED); END_TYPE

续表 A.4.1

类型	EXPRESS 描述
元素装配类型（IfcElementAssemblyTypeEnum）	TYPE IfcElementAssemblyTypeEnum = ENUMERATION OF (ACCESSORY_ASSEMBLY, ARCH, BEAM_GRID, BRACED_FRAME, GIRDER, REINFORCEMENT_UNIT, RIGID_FRAME, SLAB_FIELD, TRUSS, USERDEFINED, NOTDEFINED); END_TYPE
元素组成（IfcElementCompositionEnum）	TYPE IfcElementCompositionEnum = ENUMERATION OF (COMPLEX, ELEMENT, PARTIAL); END_TYPE
外部空间元素类型（IfcExternalSpatialElementTypeEnum）	TYPE IfcExternalSpatialElementTypeEnum = ENUMERATION OF (EXTERNAL, EXTERNAL_EARTH, EXTERNAL_WATER, EXTERNAL_FIRE, USERDEFINED, NOTDEFIEND); END_TYPE
地理元素类型（IfcGeographicElementTypeEnum）	TYPE IfcGeographicElementTypeEnum = ENUMERATION OF (TERRAIN, USERDEFINED, NOTDEFINED); END_TYPE
网格类型(IfcGridTypeEnum)	TYPE IfcGridTypeEnum = ENUMERATION OF (RECTANGULAR, RADIAL, TRIANGULAR, IRREGULAR, USERDEFINED, NOTDEFINED); END_TYPE
内/外部(IfcInternalOrExternalEnum)	TYPE IfcInternalOrExternalEnum = ENUMERATION OF (INTERNAL, EXTERNAL, EXTERNAL_EARTH, EXTERNAL_WATER, EXTERNAL_FIRE, NOTDEFINED); END_TYPE
洞口元素（IfcOpeningElementTypeEnum）	TYPE IfcOpeningElementTypeEnum = ENUMERATION OF (OPENING, RECESS, USERDEFINED, NOTDEFINED); END_TYPE

续表 A.4.1

类型	EXPRESS 描述
实体/虚拟 (IfcPhysicalOr VirtualEnum)	TYPE IfcPhysicalOrVirtualEnum = ENUMERATION OF (PHYSICAL, VIRTUAL, NOTDEFINED); END_TYPE
投影元素类型 (IfcProjectionElement TypeEnum)	TYPE IfcProjectionElementTypeEnum = ENUMERATION OF (USERDEFINED, NOTDEFINED); END_TYPE
空间类型 (IfcSpaceTypeEnum)	TYPE IfcSpaceTypeEnum = ENUMERATION OF (SPACE, PARKING, GFA, INTERNAL, EXTERNAL, USERDEFINED, NOTDEFINED); END_TYPE
空间区域类型 (IfcSpatialZone TypeEnum)	TYPE IfcSpatialZoneTypeEnum = ENUMERATION OF (CONSTRUCTION, FIRESAFETY, LIGHTING, OCCUPANCY, SECURITY, THERMAL, TRANSPORT, VENTILATION, USERDEFINED, NOTDEFINED); END_TYPE
运输元素类型 (IfcTransportElement TypeEnum)	TYPE IfcTransportElementTypeEnum = ENUMERATION OF (ELEVATOR, ESCALATOR, MOVINGWALKWAY, CRANEWAY, LIFTINGGEAR, USERDEFINED, NOTDEFINED); END_TYPE
空间边界选项 (IfcSpaceBoundary Select)	TYPE IfcSpaceBoundarySelect = SELECT (IfcSpace, IfcExternalSpatialElement); END_TYPE

A.4.2 产品扩展实体的 EXPRESS 描述应符合表 A.4.2 的规定。

表 A.4.2 产品扩展实体的 EXPRESS 描述

实体	EXPRESS 描述
注释 (IfcAnnotation)	ENTITY IfcAnnotation SUBTYPE OF IfcProduct; INVERSE ContainedInStructure : SET [0:1] OF IfcRelContainedInSpatialStructure FOR RelatedElements; END_ENTITY
建筑 (IfcBuilding)	ENTITY IfcBuilding SUBTYPE OF IfcSpatialStructureElement; ElevationOfRefHeight : OPTIONAL IfcLengthMeasure; ElevationOfTerrain : OPTIONAL IfcLengthMeasure; BuildingAddress : OPTIONAL IfcPostalAddress; END_ENTITY

续表 A.4.2

实体	EXPRESS 描述
建筑元素 (IfcBuildingElement)	ENTITY IfcBuildingElement ABSTRACT SUPERTYPE OF(ONEOF(IfcBeam, IfcBuildingElementProxy, IfcChimney, IfcColumn, IfcCovering, IfcCurtainWall, IfcDoor, IfcFooting, IfcMember, IfcPile, IfcPlate, IfcRailing, IfcRamp, IfcRampFlight, IfcRoof, IfcShadingDevice, IfcSlab, IfcStair, IfcStairFlight, IfcWall, IfcWindow)) SUBTYPE OF IfcElement; INVERSE HasCoverings : SET OF IfcRelCoversBldgElements FOR RelatingBuildingElement; WHERE MaxOneMaterialAssociation : SIZEOF (QUERY(temp <* SELF\IfcObjectDefinition.HasAssociations | 'IFCPRODUCTEXTENSION.IFCRELASSOCIATESMATERIAL' IN TYPEOF(temp))) <= 1; END_ENTITY
建筑元素类型 (IfcBuilding ElementType)	ENTITY IfcBuildingElementType ABSTRACT SUPERTYPE OF(ONEOF(IfcBeamType, IfcBuildingElementProxyType, IfcChimneyType, IfcColumnType, IfcCoveringType, IfcCurtainWallType, IfcDoorType, IfcFootingType, IfcMemberType, IfcPileType, IfcPlateType, IfcRailingType, IfcRampFlightType, IfcRampType, IfcRoofType, IfcShadingDeviceType, IfcSlabType, IfcStairFlightType, IfcStairType, IfcWallType, IfcWindowType)) SUBTYPE OF IfcElementType; END_ENTITY
建筑楼层 (IfcBuildingStorey)	ENTITY IfcBuildingStorey SUBTYPE OF IfcSpatialStructureElement; Elevation : OPTIONAL IfcLengthMeasure; END_ENTITY
土木工程元素 (IfcCivilElement)	ENTITY IfcCivilElement SUBTYPE OF IfcElement; END_ENTITY
土木工程元素类型 (IfcCivilElementType)	ENTITY IfcCivilElementType SUBTYPE OF IfcElementType; END_ENTITY
分布式元素 (IfcDistribution Element)	ENTITY IfcDistributionElement SUPERTYPE OF(ONEOF(IfcDistributionControlElement, IfcDistributionFlowElement)) SUBTYPE OF IfcElement; INVERSE HasPorts : SET OF IfcRelConnectsPortToElement FOR RelatedElement; END_ENTITY
分布式元素类型 (IfcDistribution ElementType)	ENTITY IfcDistributionElementType SUPERTYPE OF(ONEOF(IfcDistributionControlElementType, IfcDistributionFlowElementType)) SUBTYPE OF IfcElementType; END_ENTITY
元素 (IfcElement)	ENTITY IfcElement ABSTRACT SUPERTYPE OF(ONEOF(IfcBuildingElement, IfcCivilElement, IfcDistributionElement, IfcElementAssembly, IfcElementComponent, IfcFeatureElement, IfcFurnishingElement, IfcGeographicElement, IfcTransportElement, IfcVirtualElement)) SUBTYPE OF IfcProduct; Tag : OPTIONAL IfcIdentifier; INVERSE FillsVoids : SET [0:1] OF IfcRelFillsElement FOR RelatedBuildingElement; ConnectedTo : SET OF IfcRelConnectsElements FOR RelatingElement; IsInterferedByElements : SET OF IfcRelInterferesElements FOR RelatedElement; InterferesElements : SET OF IfcRelInterferesElements FOR RelatingElement; HasProjections : SET OF IfcRelProjectsElement FOR RelatingElement; ReferencedInStructures : SET OF IfcRelReferencedInSpatialStructure FOR RelatedElements; HasOpenings : SET OF IfcRelVoidsElement FOR RelatingBuildingElement; IsConnectionRealization : SET OF IfcRelConnectsWithRealizingElements FOR RealizingElements; ProvidesBoundaries : SET OF IfcRelSpaceBoundary FOR RelatedBuildingElement; ConnectedFrom : SET OF IfcRelConnectsElements FOR RelatedElement; ContainedInStructure : SET [0:1] OF IfcRelContainedInSpatialStructure FOR RelatedElements; END_ENTITY

续表 A.4.2

实体	EXPRESS 描述
元素集合 (IfcElementAssembly)	ENTITY IfcElementAssembly SUBTYPE OF IfcElement; AssemblyPlace : OPTIONAL IfcAssemblyPlaceEnum; PredefinedType : OPTIONAL IfcElementAssemblyTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcElementAssemblyTypeEnum. USERDEFINED) OR ((PredefinedType = IfcElementAssemblyTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCPRODUCTEXTENSION. IFCELEMENTASSEMBLYTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
元素集合类型 (IfcElement AssemblyType)	ENTITY IfcElementAssemblyType SUBTYPE OF IfcElementType; PredefinedType : IfcElementAssemblyTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcElementAssemblyTypeEnum. USERDEFINED) OR ((PredefinedType = IfcElementAssemblyTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
元素数量 (IfcElementQuantity)	ENTITY IfcElementQuantity SUBTYPE OF IfcQuantitySet; MethodOfMeasurement : OPTIONAL IfcLabel; Quantities : SET [1:?] OF IfcPhysicalQuantity; WHERE UniqueQuantityNames : IfcUniqueQuantityNames(Quantities); END_ENTITY
元素类型 (IfcElementType)	ENTITY IfcElementType ABSTRACT SUPERTYPE OF(ONEOF(IfcBuildingElementType, IfcCivilElementType, IfcDistributionElementType, IfcElementAssemblyType, IfcElementComponentType, IfcFurnishingElementType, IfcGeographicElementType, IfcTransportElementType)) SUBTYPE OF IfcTypeProduct; ElementType : OPTIONAL IfcLabel; END_ENTITY
外部空间元素 (IfcExternal SpatialElement)	ENTITY IfcExternalSpatialElement SUBTYPE OF IfcExternalSpatialStructureElement; PredefinedType : OPTIONAL IfcExternalSpatialElementTypeEnum; INVERSE BoundedBy : SET OF IfcRelSpaceBoundary FOR RelatingSpace; END_ENTITY
外部空间结构元素 (IfcExternalSpatial StructureElement)	ENTITY IfcExternalSpatialStructureElement ABSTRACT SUPERTYPE OF(IfcExternalSpatialElement) SUBTYPE OF IfcSpatialElement; END_ENTITY
特征元素(IfcFeature Element)	ENTITY IfcFeatureElement ABSTRACT SUPERTYPE OF(ONEOF(IfcFeatureElementAddition, IfcFeatureElementSubtraction, IfcSurfaceFeature))SUBTYPE OF IfcElement; END_ENTITY
特征元素增加 (IfcFeatureElement Addition)	ENTITY IfcFeatureElementAddition ABSTRACT SUPERTYPE OF(IfcProjectionElement) SUBTYPE OF IfcFeatureElement; INVERSE ProjectsElements : IfcRelProjectsElement FOR RelatedFeatureElement; END_ENTITY

续表 A.4.2

实体	EXPRESS 描述
特征元素相减 (IfcFeatureElement Subtraction)	ENTITY IfcFeatureElementSubtraction ABSTRACT SUPERTYPE OF(ONEOF(IfcOpeningElement, IfcVoidingFeature)) SUBTYPE OF IfcFeatureElement; INVERSE VoidsElements : IfcRelVoidsElement FOR RelatedOpeningElement; WHERE HasNoSubtraction : SIZEOF(SELF\IfcElement. HasOpenings) = 0; IsNotFilling : SIZEOF(SELF\IfcElement. FillsVoids) = 0; END_ENTITY
家装元素 (IfcFurnishingElement)	ENTITY IfcFurnishingElement SUPERTYPE OF(ONEOF(IfcFurniture, IfcSystemFurnitureElement)) SUBTYPE OF IfcElement; END_ENTITY
家装元素类型 (IfcFurnishing ElementType)	ENTITY IfcFurnishingElementType SUPERTYPE OF(ONEOF(IfcFurnitureType, IfcSystemFurnitureElementType)) SUBTYPE OF IfcElementType; END_ENTITY
地理元素 (IfcGeographicElement)	ENTITY IfcGeographicElement SUBTYPE OF IfcElement; PredefinedType : OPTIONAL IfcGeographicElementTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcGeographicElementTypeEnum. USERDEFINED) OR ((PredefinedType = IfcGeographicElementTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCPRODUCTEXTENSION. IFCGEOGRAPHICELEMENTTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
地理元素类型 (IfcGeographic ElementType)	ENTITY IfcGeographicElementType SUBTYPE OF IfcElementType; PredefinedType : IfcGeographicElementTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcGeographicElementTypeEnum. USERDEFINED) OR ((PredefinedType = IfcGeographicElementTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
网格 (IfcGrid)	ENTITY IfcGrid SUBTYPE OF IfcProduct; UAxes : LIST [1:?] OF UNIQUE IfcGridAxis; VAxes : LIST [1:?] OF UNIQUE IfcGridAxis; WAxes : OPTIONAL LIST [1:?] OF UNIQUE IfcGridAxis; PredefinedType : OPTIONAL IfcGridTypeEnum; INVERSE ContainedInStructure : SET [0:1] OF IfcRelContainedInSpatialStructure FOR RelatedElements; WHERE HasPlacement : EXISTS(SELF\IfcProduct. ObjectPlacement); END_ENTITY
开洞元素 (IfcOpeningElement)	ENTITY IfcOpeningElement SUPERTYPE OF(IfcOpeningStandardCase) SUBTYPE OF IfcFeatureElementSubtraction; PredefinedType : OPTIONAL IfcOpeningElementTypeEnum; INVERSE HasFillings : SET OF IfcRelFillsElement FOR RelatingOpeningElement; END_ENTITY
标准洞口形式 (IfcOpeningStandard Case)	ENTITY IfcOpeningStandardCase SUBTYPE OF IfcOpeningElement; END_ENTITY

续表 A.4.2

实体	EXPRESS 描述
端口 (IfcPort)	ENTITY IfcPort ABSTRACT SUPERTYPE OF(IfcDistributionPort) SUBTYPE OF IfcProduct; INVERSE ContainedIn : SET [0:1] OF IfcRelConnectsPortToElement FOR RelatingPort; ConnectedFrom : SET [0:1] OF IfcRelConnectsPorts FOR RelatedPort; ConnectedTo : SET [0:1] OF IfcRelConnectsPorts FOR RelatingPort; END_ENTITY
投影元素 (IfcProjectionElement)	ENTITY IfcProjectionElement SUBTYPE OF IfcFeatureElementAddition; PredefinedType : OPTIONAL IfcProjectionElementTypeEnum; END_ENTITY
关联材料关系 (IfcRelAssociates Material)	ENTITY IfcRelAssociatesMaterial SUBTYPE OF IfcRelAssociates; RelatingMaterial : IfcMaterialSelect; WHERE NoVoidElement : SIZEOF(QUERY(temp <* SELF\IfcRelAssociates.RelatedObjects | ('IFCPRODUCTEXTENSION.IFCFEATUREELEMENTSUBTRACTION' IN TYPEOF(temp)) OR ('IFCPRODUCTEXTENSION.IFCVIRTUALELEMENT' IN TYPEOF(temp)))) = 0; AllowedElements : SIZEOF(QUERY(temp <* SELF\IfcRelAssociates.RelatedObjects | (SIZEOF (TYPEOF(temp) * ['IFCPRODUCTEXTENSION.IFCELEMENT','IFCPRODUCTEXTENSION.IFCELEMENTTYPE','IFCSHAREDBLDGELEMENTS.IFCWINDOWSTYLE','IFCSHAREDBLDGELEMENTS.IFCDOORSTYLE','IFCSTRUCTURALANALYSISDOMAIN.IFCSTRUCTURALMEMBER','IFCPRODUCTEXTENSION.IFCPORT']) = 0))) = 0; END_ENTITY
连接元素关系 (IfcRelConnects Elements)	ENTITY IfcRelConnectsElements SUPERTYPE OF(ONEOF(IfcRelConnectsPathElements, IfcRelConnectsWithRealizingElements)) SUBTYPE OF IfcRelConnects; ConnectionGeometry : OPTIONAL IfcConnectionGeometry; RelatingElement : IfcElement; RelatedElement : IfcElement; WHERE NoSelfReference : RelatingElement :<>: RelatedElement; END_ENTITY
连接端口关系 (IfcRelConnectsPorts)	ENTITY IfcRelConnectsPorts SUBTYPE OF IfcRelConnects; RelatingPort : IfcPort; RelatedPort : IfcPort; RealizingElement : OPTIONAL IfcElement; WHERE NoSelfReference : RelatingPort :<>: RelatedPort; END_ENTITY
连接端口元素关系 (IfcRelConnects PortToElement)	ENTITY IfcRelConnectsPortToElement SUBTYPE OF IfcRelConnects; RelatingPort : IfcPort; RelatedElement : IfcDistributionElement; END_ENTITY
连接实现元素关系 (IfcRelConnectsWith RealizingElements)	ENTITY IfcRelConnectsWithRealizingElements SUBTYPE OF IfcRelConnectsElements; RealizingElements : SET [1:?] OF IfcElement; ConnectionType : OPTIONAL IfcLabel; END_ENTITY
包含于空间结构关系 (IfcRelContainedIn SpatialStructure)	ENTITY IfcRelContainedInSpatialStructure SUBTYPE OF IfcRelConnects; RelatedElements : SET [1:?] OF IfcProduct; RelatingStructure : IfcSpatialElement; WHERE WR31 : SIZEOF(QUERY(temp <* RelatedElements | 'IFCPRODUCTEXTENSION.IFCSPATIALSTRUCTUREELEMENT' IN TYPEOF(temp))) = 0; END_ENTITY

续表 A.4.2

实体	EXPRESS 描述
填充元素关系 (IfcRelFillsElement)	ENTITY IfcRelFillsElement SUBTYPE OF IfcRelConnects; RelatingOpeningElement : IfcOpeningElement; RelatedBuildingElement : IfcElement; END_ENTITY
干涉元素关系 (IfcRelInterferes Elements)	ENTITY IfcRelInterferesElements SUBTYPE OF IfcRelConnects; RelatingElement : IfcElement; RelatedElement : IfcElement; InterferenceGeometry : OPTIONAL IfcConnectionGeometry; InterferenceType : OPTIONAL IfcIdentifier; ImpliedOrder : LOGICAL; WHERE NotSelfReference : RelatingElement :<>: RelatedElement; END_ENTITY
投影元素关系 (IfcRelProjects Element)	ENTITY IfcRelProjectsElement SUBTYPE OF IfcRelDecomposes; RelatingElement : IfcElement; RelatedFeatureElement : IfcFeatureElementAddition; END_ENTITY
参考空间结构关系 (IfcRelReferencedIn SpatialStructure)	ENTITY IfcRelReferencedInSpatialStructure SUBTYPE OF IfcRelConnects; RelatedElements : SET [1:?] OF IfcProduct; RelatingStructure : IfcSpatialElement; WHERE WR31 : SIZEOF(QUERY(temp <* RelatedElements |'IFCPRODUCTEXTENSION. IFCSPATIALSTRUCTUREELEMENT'IN TYPEOF(temp))) = 0; END_ENTITY
建筑服务关系 (IfcRelServices Buildings)	ENTITY IfcRelServicesBuildings SUBTYPE OF IfcRelConnects; RelatingSystem : IfcSystem; RelatedBuildings : SET [1:?] OF IfcSpatialElement; END_ENTITY
空间边界关系 (IfcRelSpaceBoundary)	ENTITY IfcRelSpaceBoundary SUPERTYPE OF(IfcRelSpaceBoundary1stLevel) SUBTYPE OF IfcRelConnects; RelatingSpace : IfcSpaceBoundarySelect; RelatedBuildingElement : IfcElement; ConnectionGeometry : OPTIONAL IfcConnectionGeometry; PhysicalOrVirtualBoundary : IfcPhysicalOrVirtualEnum; InternalOrExternalBoundary : IfcInternalOrExternalEnum; WHERE CorrectPhysOrVirt : ((PhysicalOrVirtualBoundary = IfcPhysicalOrVirtualEnum. Physical) AND (NOT('IF CPRODUCTEXTENSION. IFCVIRTUALELEMENT ' IN TYPEOF (RelatedBuildingElement)))) OR ((PhysicalOrVirtualBoundary = IfcPhysicalOrVirtualEnum. Virtual) AND (('IFCPRODUCTEXTENSION. IFCVIRTUALELEMENT'IN TYPEOF(RelatedBuildingElement)) OR ('IFCPRODUCTEXTEN SION. IFCOPENINGELEMENT'IN TYPEOF(RelatedBuildingElement)))) OR (PhysicalOrVirtualBoundary = IfcPhysicalOrVirtualEnum. NotDefined); END_ENTITY
第一级空间边界关系 (IfcRelSpace Boundary1stLevel)	ENTITY IfcRelSpaceBoundary1stLevel SUPERTYPE OF(IfcRelSpaceBoundary2ndLevel) SUBTYPE OF IfcRelSpaceBoundary; ParentBoundary : OPTIONAL IfcRelSpaceBoundary1stLevel; INVERSE InnerBoundaries : SET OF IfcRelSpaceBoundary1stLevel FOR ParentBoundary; END_ENTITY

续表 A.4.2

实体	EXPRESS 描述
第二级空间边界关系 (IfcRelSpace Boundary2ndLevel)	ENTITY IfcRelSpaceBoundary2ndLevel SUBTYPE OF IfcRelSpaceBoundary1stLevel; CorrespondingBoundary : OPTIONAL IfcRelSpaceBoundary2ndLevel; INVERSE Corresponds : SET [0:1] OF IfcRelSpaceBoundary2ndLevel FOR CorrespondingBoundary; END_ENTITY
开洞元素关系 (IfcRelVoidsElement)	ENTITY IfcRelVoidsElement SUBTYPE OF IfcRelDecomposes; RelatingBuildingElement : IfcElement; RelatedOpeningElement : IfcFeatureElementSubtraction; END_ENTITY
场地 (IfcSite)	ENTITY IfcSite SUBTYPE OF IfcSpatialStructureElement; RefLatitude : OPTIONAL IfcCompoundPlaneAngleMeasure; RefLongitude : OPTIONAL IfcCompoundPlaneAngleMeasure; RefElevation : OPTIONAL IfcLengthMeasure; LandTitleNumber : OPTIONAL IfcLabel; SiteAddress : OPTIONAL IfcPostalAddress; END_ENTITY
空间 (IfcSpace)	ENTITY IfcSpace SUBTYPE OF IfcSpatialStructureElement; PredefinedType : OPTIONAL IfcSpaceTypeEnum; ElevationWithFlooring : OPTIONAL IfcLengthMeasure; INVERSE HasCoverings : SET OF IfcRelCoversSpaces FOR RelatingSpace; BoundedBy : SET OF IfcRelSpaceBoundary FOR RelatingSpace; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcSpace TypeEnum. USERDEFINED) OR ((PredefinedType = IfcSpaceTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCPRODUCTEXTENSION. IFCSPACETYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
空间类型 (IfcSpaceType)	ENTITY IfcSpaceType SUBTYPE OF IfcSpatialStructureElementType; PredefinedType : IfcSpaceTypeEnum; LongName : OPTIONAL IfcLabel; WHERE CorrectPredefinedType : (PredefinedType <> IfcSpaceTypeEnum. USERDEFINED) OR ((PredefinedType = IfcSpaceTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcSpatialElementType. ElementType)); END_ENTITY
空间元素 (IfcSpatialElement)	ENTITY IfcSpatialElement ABSTRACT SUPERTYPE OF (ONEOF (IfcExternalSpatialStructureElement, IfcSpatialStructureElement, IfcSpatialZone)) SUBTYPE OF IfcProduct; LongName : OPTIONAL IfcLabel; INVERSE ContainsElements : SET OF IfcRelContainedInSpatialStructure FOR RelatingStructure; ServicedBySystems : SET OF IfcRelServicesBuildings FOR RelatedBuildings; ReferencesElements : SET OF IfcRelReferencedInSpatialStructure FOR RelatingStructure; END_ENTITY
空间元素类型 (IfcSpatial ElementType)	ENTITY IfcSpatialElementType ABSTRACT SUPERTYPE OF(ONEOF(IfcSpatialStructureElementType, IfcSpatialZoneType)) SUBTYPE OF IfcTypeProduct; ElementType : OPTIONAL IfcLabel; END_ENTITY

续表 A.4.2

实体	EXPRESS 描述
空间结构元素 (IfcSpatialStructure Element)	ENTITY IfcSpatialStructureElement ABSTRACT SUPERTYPE OF(ONEOF(IfcBuilding, IfcBuildingStorey, IfcSite, IfcSpace)) SUBTYPE OF IfcSpatialElement; CompositionType : OPTIONAL IfcElementCompositionEnum; WHERE WR41 : (HIINDEX(SELF\IfcObjectDefinition. Decomposes) = 1) AND ('IFCKERNEL. IFCRELAGGREGATES' IN TYPEOF(SELF\IfcObjectDefinition. Decomposes[1])) AND (('IFCKER NEL. IFCPROJECT' IN TYPEOF (SELF\IfcObjectDefinition. Decomposes[1]. RelatingObject)) OR ('IF CPRODUCTEXTENSION. IFCSPATIALSTRUCTUREELEMENT' IN TYPEOF (SELF\IfcObjectDefi nition. Decomposes[1]. RelatingObject))); END_ENTITY
空间结构元素类型 (IfcSpatialStructure ElementType)	ENTITY IfcSpatialStructureElementType ABSTRACT SUPERTYPE OF(IfcSpaceType) SUBTYPE OF IfcSpatialElementType; END_ENTITY
空间区域 (IfcSpatialZone)	ENTITY IfcSpatialZone SUBTYPE OF IfcSpatialElement; PredefinedType : OPTIONAL IfcSpatialZoneTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcSpatialZone TypeEnum. USERDEFINED) OR ((PredefinedType = IfcSpatialZoneTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCPRODUCTEXTENSION. IFCSPATIALZONETYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
空间区域类型 (IfcSpatialZoneType)	ENTITY IfcSpatialZoneType SUBTYPE OF IfcSpatialElementType; PredefinedType : IfcSpatialZoneTypeEnum; LongName : OPTIONAL IfcLabel; WHERE CorrectPredefinedType : (PredefinedType <> IfcSpatialZoneTypeEnum. USERDEFINED) OR ((Pre definedType = IfcSpatialZoneTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcSpatialElementType. ElementType)); END_ENTITY
系统 (IfcSystem)	ENTITY IfcSystem SUPERTYPE OF(ONEOF(IfcBuildingSystem, IfcDistributionSystem, IfcStructuralAnalysisModel, Ifc Zone)) SUBTYPE OF IfcGroup; INVERSE ServicesBuildings : SET [0:1] OF IfcRelServicesBuildings FOR RelatingSystem; END_ENTITY
运输元素 (IfcTransportElement)	ENTITY IfcTransportElement SUBTYPE OF IfcElement; PredefinedType : OPTIONAL IfcTransportElementTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcTransportElement TypeEnum. USERDEFINED) OR ((PredefinedType = IfcTransportElementTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCPRODUCTEXTENSION. IFCTRANSPORTELEMENTTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
运输元素类型 (IfcTransport ElementType)	ENTITY IfcTransportElementType SUBTYPE OF IfcElementType; PredefinedType : IfcTransportElementTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcTransportElementTypeEnum. USERDEFINED) OR ((PredefinedType = IfcTransportElementTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElement Type. ElementType)); END_ENTITY

续表 A.4.2

实体	EXPRESS 描述
虚拟元素 (IfcVirtualElement)	ENTITY IfcVirtualElement SUBTYPE OF IfcElement; END_ENTITY
区域 (IfcZone)	ENTITY IfcZone SUBTYPE OF IfcSystem; LongName : OPTIONAL IfcLabel; WHERE WR1 : (SIZEOF(SELF\IfcGroup. IsGroupedBy) = 0) OR (SIZEOF (QUERY (temp <* SELF\IfcGroup. IsGroupedBy[1]. RelatedObjects | NOT(('IFCPRODUCTEXTENSION. IFCZONE' IN TYPEOF(temp)) OR ('IFCPRODUCTEXTENSION. IFCSPACE' IN TYPEOF(temp)) OR ('IFCPRODUCTEXTENSION. IFCSPATIALZONE' IN TYPEOF(temp))))) = 0); END_ENTITY

附录 B　共享层数据模式的 EXPRESS 描述

B.1　共享建筑元素

B.1.1　共享建筑元素类型的 EXPRESS 描述应符合表 B.1.1 的规定。

表 B.1.1　共享建筑元素类型的 EXPRESS 描述

类型	EXPRESS 描述
梁类型 (IfcBeamTypeEnum)	TYPE IfcBeamTypeEnum = ENUMERATION OF (BEAM, JOIST, HOLLOWCORE, LINTEL, SPANDREL, T_BEAM, USERDEFINED, NOTDEFINED); END_TYPE
代理元素类型 (IfcBuildingElement ProxyTypeEnum)	TYPE IfcBuildingElementProxyTypeEnum = ENUMERATION OF (COMPLEX, ELEMENT, PARTIAL, PROVISIONFORVOID, USERDEFINED, NOTDEFINED); END_TYPE
建筑系统类型 (IfcBuildingSystem TypeEnum)	TYPE IfcBuildingSystemTypeEnum = ENUMERATION OF (FENESTRATION, FOUNDATION, LOADBEARING, OUTERSHELL, SHADING, TRANSPORT, USERDEFINED, NOTDEFINED); END_TYPE
烟囱类型 (IfcChimneyTypeEnum)	TYPE IfcChimneyTypeEnum = ENUMERATION OF (USERDEFINED, NOTDEFINED); END_TYPE
柱类型 (IfcColumnTypeEnum)	TYPE IfcColumnTypeEnum = ENUMERATION OF (COLUMN, PILASTER, USERDEFINED, NOTDEFINED); END_TYPE
连接类型 (IfcConnection TypeEnum)	TYPE IfcConnectionTypeEnum = ENUMERATION OF (ATPATH, ATSTART, ATEND, NOTDEFINED); END_TYPE

续表 B.1.1

类型	EXPRESS 描述
覆盖物类型（IfcCoveringTypeEnum）	TYPE IfcCoveringTypeEnum = ENUMERATION OF (CEILING, FLOORING, CLADDING, ROOFING, MOLDING, SKIRTINGBOARD, INSULATION, MEMBRANE, SLEEVING, WRAPPING, USERDEFINED, NOTDEFINED); END_TYPE
幕墙类型（IfcCurtainWallTypeEnum）	TYPE IfcCurtainWallTypeEnum = ENUMERATION OF (USERDEFINED, NOTDEFINED); END_TYPE
门类型（IfcDoorTypeEnum）	TYPE IfcDoorTypeEnum = ENUMERATION OF (DOOR, GATE, TRAPDOOR, USERDEFINED, NOTDEFINED); END_TYPE
门开启类型（IfcDoorTypeOperationEnum）	TYPE IfcDoorTypeOperationEnum = ENUMERATION OF (SINGLE_SWING_LEFT, SINGLE_SWING_RIGHT, DOUBLE_DOOR_SINGLE_SWING, DOUBLE_DOOR_SINGLE_SWING_OPPOSITE_LEFT, DOUBLE_DOOR_SINGLE_SWING_OPPOSITE_RIGHT, DOUBLE_SWING_LEFT, DOUBLE_SWING_RIGHT, DOUBLE_DOOR_DOUBLE_SWING, SLIDING_TO_LEFT, SLIDING_TO_RIGHT, DOUBLE_DOOR_SLIDING, FOLDING_TO_LEFT, FOLDING_TO_RIGHT, DOUBLE_DOOR_FOLDING, REVOLVING, ROLLINGUP, SWING_FIXED_LEFT, SWING_FIXED_RIGHT, USERDEFINED, NOTDEFINED); END_TYPE
线性构件类型（IfcMemberTypeEnum）	TYPE IfcMemberTypeEnum = ENUMERATION OF (BRACE, CHORD, COLLAR, MEMBER, MULLION, PLATE, POST, PURLIN, RAFTER, STRINGER, STRUT, STUD, USERDEFINED, NOTDEFINED); END_TYPE

续表 B.1.1

类型	EXPRESS 描述
平板类型 (IfcPlateTypeEnum)	TYPE IfcPlateTypeEnum = ENUMERATION OF (CURTAIN_PANEL, SHEET, USERDEFINED, NOTDEFINED); END_TYPE
扶栏类型 (IfcRailingTypeEnum)	TYPE IfcRailingTypeEnum = ENUMERATION OF (HANDRAIL, GUARDRAIL, BALUSTRADE, USERDEFINED, NOTDEFINED); END_TYPE
坡道段类型 (IfcRampFlight TypeEnum)	TYPE IfcRampFlightTypeEnum = ENUMERATION OF (STRAIGHT, SPIRAL, USERDEFINED, NOTDEFINED); END_TYPE
坡道类型 (IfcRampTypeEnum)	TYPE IfcRampTypeEnum = ENUMERATION OF (STRAIGHT_RUN_RAMP, TWO_STRAIGHT_RUN_RAMP, QUARTER_TURN_RAMP, TWO_QUARTER_TURN_RAMP, HALF_TURN_RAMP, SPIRAL_RAMP, USERDEFINED, NOTDEFINED); END_TYPE
屋顶类型 (IfcRoofTypeEnum)	TYPE IfcRoofTypeEnum = ENUMERATION OF (FLAT_ROOF, SHED_ROOF, GABLE_ROOF, HIP_ROOF, HIPPED_GABLE_ROOF, GAMBREL_ROOF, MANSARD_ROOF, BARREL_ROOF, RAINBOW_ROOF, BUTTERFLY_ROOF, PAVILION_ROOF, DOME_ROOF, FREEFORM, USERDEFINED, NOTDEFINED); END_TYPE
遮阳设施类型 (IfcShadingDevice TypeEnum)	TYPE IfcShadingDeviceTypeEnum = ENUMERATION OF (JALOUSIE, SHUTTER, AWNING, USERDEFINED, NOTDEFINED); END_TYPE

续表 B.1.1

类型	EXPRESS 描述
板类型 (IfcSlabTypeEnum)	TYPE IfcSlabTypeEnum = ENUMERATION OF (FLOOR, ROOF, LANDING, BASESLAB, USERDEFINED, NOTDEFINED); END_TYPE
梯段类型 (IfcStairFlight TypeEnum)	TYPE IfcStairFlightTypeEnum = ENUMERATION OF (STRAIGHT, WINDER, SPIRAL, CURVED, FREEFORM, USERDEFINED, NOTDEFINED); END_TYPE
楼梯类型 (IfcStairTypeEnum)	TYPE IfcStairTypeEnum = ENUMERATION OF (STRAIGHT_RUN_STAIR, TWO_STRAIGHT_RUN_STAIR, QUARTER_WINDING_STAIR, QUARTER_TURN_STAIR, HALF_WINDING_STAIR, HALF_TURN_STAIR, TWO_QUARTER_WINDING_STAIR, TWO_QUARTER_TURN_STAIR, THREE_QUARTER_WINDING_STAIR, THREE_QUARTER_TURN_STAIR, SPIRAL_STAIR, DOUBLE_RETURN_STAIR, CURVED_RUN_STAIR, TWO_CURVED_RUN_STAIR, USERDEFINED, NOTDEFINED); END_TYPE
墙类型 (IfcWallTypeEnum)	TYPE IfcWallTypeEnum = ENUMERATION OF (MOVABLE, PARAPET, PARTITIONING, PLUMBINGWALL, SHEAR, SOLIDWALL, STANDARD, POLYGONAL, ELEMENTEDWALL, USERDEFINED, NOTDEFINED); END_TYPE
窗类型 (IfcWindowType Enum)	TYPE IfcWindowTypeEnum = ENUMERATION OF (WINDOW, SKYLIGHT, LIGHTDOME, USERDEFINED, NOTDEFINED); END_TYPE

续表 B. 1. 1

类型	EXPRESS 描述
窗分隔类型 (IfcWindowType PartitioningEnum)	TYPE IfcWindowTypePartitioningEnum = ENUMERATION OF (SINGLE_PANEL, DOUBLE_PANEL_VERTICAL, DOUBLE_PANEL_HORIZONTAL, TRIPLE_PANEL_VERTICAL, TRIPLE_PANEL_BOTTOM, TRIPLE_PANEL_TOP, TRIPLE_PANEL_LEFT, TRIPLE_PANEL_RIGHT, TRIPLE_PANEL_HORIZONTAL, USERDEFINED, NOTDEFINED); END_TYPE

B. 1. 2 共享建筑元素实体的 EXPRESS 描述应符合表 B. 1. 2 的规定。

表 B. 1. 2 共享建筑元素实体的 EXPRESS 描述

实体	EXPRESS 描述
梁(IfcBeam)	ENTITY IfcBeam SUPERTYPE OF(IfcBeamStandardCase) SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcBeamTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcBeamTypeEnum. USERDEFINED) OR ((PredefinedType = IfcBeamTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCBEAMTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
标准梁 (IfcBeamStandard Case)	ENTITY IfcBeamStandardCase SUBTYPE OF IfcBeam; WHERE HasMaterialProfileSetUsage : SIZEOF (QUERY(temp <* USEDIN(SELF, 'IFCKERNEL. IFCRELASSOCIATES. RELATEDOBJECTS') | ('IFCPRODUCTEXTENSION. IFCRELASSOCIATESMATERIAL' IN TYPEOF(temp)) AND ('IFCMATERIALRE SOURCE. IFCMATERIALPROFILESETUSAGE' IN TYPEOF(temp. RelatingMaterial)))) = 1; END_ENTITY
梁类型 (IfcBeamType)	ENTITY IfcBeamType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcBeamTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcBeamTypeEnum. USERDEFINED) OR ((PredefinedType = IfcBeamTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
代理建筑元素 (IfcBuildingElement Proxy)	ENTITY IfcBuildingElementProxy SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcBuildingElementProxyTypeEnum; WHERE HasObjectName : EXISTS(SELF\IfcRoot. Name); CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcBuildingElement ProxyTypeEnum. USERDEFINED) OR ((PredefinedType = IfcBuildingElementProxyTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCBUILDIN GELEMENTPROXYTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY

续表 B.1.2

实体	EXPRESS 描述
代理建筑元素类型 (IfcBuildingElement ProxyType)	ENTITY IfcBuildingElementProxyType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcBuildingElementProxyTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcBuildingElementProxyTypeEnum. USERDEFINED) OR ((PredefinedType = IfcBuildingElementProxy TypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
建筑系统 (IfcBuildingSystem)	ENTITY IfcBuildingSystem SUBTYPE OF IfcSystem; PredefinedType : OPTIONAL IfcBuildingSystemTypeEnum; END_ENTITY
烟囱 (IfcChimney)	ENTITY IfcChimney SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcChimneyTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcChimney TypeEnum. USERDEFINED) OR ((PredefinedType = IfcChimneyTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCCHIMNEYTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
烟囱类型 (IfcChimneyType)	ENTITY IfcChimneyType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcChimneyTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcChimneyTypeEnum. USERDEFINED) OR ((Predefined Type = IfcChimneyTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
柱 (IfcColumn)	ENTITY IfcColumn SUPERTYPE OF(IfcColumnStandardCase) SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcColumnTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcColumn TypeEnum. USERDEFINED) OR ((PredefinedType = IfcColumnTypeEnum. USERDEFINED) AND EX ISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCCOLUMNTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
标准柱 (IfcColumnStandard Case)	ENTITY IfcColumnStandardCase SUBTYPE OF IfcColumn; WHERE HasMaterialProfileSetUsage : SIZEOF (QUERY(temp <* USEDIN(SELF, 'IFCKERNEL. IFCRELASSOCIATES. RELATEDOBJECTS')	('IFCPRODUCTEXTENSION. IFCRELASSOCIATESMATERIAL' IN TYPEOF(temp)) AND ('IFCMATERIALR ESOURCE. IFCMATERIALPROFILESETUSAGE' IN TYPEOF(temp. RelatingMaterial)))) = 1; END_ENTITY
柱类型 (IfcColumnType)	ENTITY IfcColumnType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcColumnTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcColumnTypeEnum. USERDEFINED) OR ((Predefined Type = IfcColumnTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY

续表 B.1.2

实体	EXPRESS 描述
覆盖物 (IfcCovering)	ENTITY IfcCovering SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcCoveringTypeEnum; INVERSE CoversSpaces : SET [0:1] OF IfcRelCoversSpaces FOR RelatedCoverings; CoversElements : SET [0:1] OF IfcRelCoversBldgElements FOR RelatedCoverings; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcCovering TypeEnum. USERDEFINED) OR ((PredefinedType = IfcCoveringTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELE MENTS. IFCCOVERINGTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
覆盖物类型 (IfcCoveringType)	ENTITY IfcCoveringType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcCoveringTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcCoveringTypeEnum. USERDEFINED) OR ((Predefined Type = IfcCoveringTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementTypc. ElementType)); END_ENTITY
幕墙 (IfcCurtainWall)	ENTITY IfcCurtainWall SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcCurtainWallTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcCurtainWallTypeEnum. USERDEFINED) OR ((PredefinedType = IfcCurtainWall TypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGEL EMENTS. IFCCURTAINWALLTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
幕墙类型 (IfcCurtainWallType)	ENTITY IfcCurtainWallType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcCurtainWallTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcCurtainWallTypeEnum. USERDEFINED) OR ((PredefinedType = IfcCurtainWallTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
门(IfcDoor)	ENTITY IfcDoor SUPERTYPE OF(IfcDoorStandardCase) SUBTYPE OF IfcBuildingElement; OverallHeight : OPTIONAL IfcPositiveLengthMeasure; OverallWidth : OPTIONAL IfcPositiveLengthMeasure; PredefinedType : OPTIONAL IfcDoorTypeEnum; OperationType : OPTIONAL IfcDoorTypeOperationEnum; UserDefinedOperationType : OPTIONAL IfcLabel; WHERE CorrectStyleAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCDOORTYPE 'IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
标准门 (IfcDoorStandardCase)	ENTITY IfcDoorStandardCase SUBTYPE OF IfcDoor; END_ENTITY

续表 B.1.2

实体	EXPRESS 描述
门类型 (IfcDoorType)	ENTITY IfcDoorType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcDoorTypeEnum; OperationType : IfcDoorTypeOperationEnum; ParameterTakesPrecedence : OPTIONAL BOOLEAN; UserDefinedOperationType : OPTIONAL IfcLabel; WHERE CorrectPredefinedType : (PredefinedType <> IfcDoorTypeEnum. USERDEFINED) OR ((PredefinedType = IfcDoorTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
线性构件 (IfcMember)	ENTITY IfcMember SUPERTYPE OF(IfcMemberStandardCase) SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcMemberTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcMember TypeEnum. USERDEFINED) OR ((PredefinedType = IfcMemberTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCMEMBERTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
标准线性构件 (IfcMemberStandard Case)	ENTITY IfcMemberStandardCase SUBTYPE OF IfcMember; WHERE HasMaterialProfileSetUsage : SIZEOF (QUERY(temp <* USEDIN(SELF,'IFCKERNEL. IFCRELASSOCIATES. RELATEDOBJECTS')	(' IFCPRODUCTEXTENSION. IFCRELASSOCIATESMATERIAL' IN TYPEOF(temp)) AND ('IFCMATERIALRESOURCE. IFCMATERIALPROFILESETUSAGE' IN TYPEOF(temp. RelatingMaterial)))) = 1; END_ENTITY
线性构件类型 (IfcMemberType)	ENTITY IfcMemberType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcMemberTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcMemberTypeEnum. USERDEFINED) OR ((Predefined Type = IfcMemberTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
平板 (IfcPlate)	ENTITY IfcPlate SUPERTYPE OF(IfcPlateStandardCase) SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcPlateTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcPlate TypeEnum. USERDEFINED) OR ((PredefinedType = IfcPlateTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCPLATETYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
标准平板 (IfcPlateStandardCase)	ENTITY IfcPlateStandardCase SUBTYPE OF IfcPlate; WHERE HasMaterialLayerSetUsage : SIZEOF (QUERY(temp <* USEDIN(SELF,'IFCKERNEL. IFCRELASSOCIATES. RELATEDOBJECTS')	('IFCPRODUCTEXTEN SION. IFCRELASSOCIATESMATERIAL'IN TYPEOF(temp)) AND ('IFCMATERIAL RESOURCE. IFCMATERIALLAYERSETUSAGE' IN TYPEOF(temp. RelatingMaterial)))) = 1; END_ENTITY

续表 B.1.2

实体	EXPRESS 描述
平板类型 (IfcPlateType)	ENTITY IfcPlateType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcPlateTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcPlateTypeEnum. USERDEFINED) OR ((PredefinedType = IfcPlateTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
扶栏 (IfcRailing)	ENTITY IfcRailing SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcRailingTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcRailing TypeEnum. USERDEFINED) OR ((PredefinedType = IfcRailingTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELE MENTS. IFCRAILINGTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
扶栏类型 (IfcRailingType)	ENTITY IfcRailingType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcRailingTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcRailingTypeEnum. USERDEFINED) OR ((Predefined Type = IfcRailingTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
坡道 (IfcRamp)	ENTITY IfcRamp SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcRampTypeEnum; WHERE CorrectShapeDecomposition : (HIINDEX(SELF\IfcObjectDefinition. IsDecomposedBy) = 0) OR ((HIIN DEX(SELF\IfcObjectDefinition. IsDecomposedBy) = 1) AND ((NOT(EXISTS(SELF\IfcProduct. Repres entation))) OR ((EXISTS(SELF\IfcProduct. Representation)) AND (SIZEOF(QUERY(temp <* SELF\ IfcProduct. Representation. Representations | temp. RepresentationIdentifier = 'Body')) = 0)))); CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcRamp TypeEnum. USERDEFINED) OR ((PredefinedType = IfcRampTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCRAMP TYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
坡道段 (IfcRampFlight)	ENTITY IfcRampFlight SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcRampFlightTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcRampFlightType Enum. USERDEFINED) OR ((PredefinedType = IfcRampFlightTypeEnum. USERDEFINED) AND EX-ISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELE MENTS. IFCRAMPFLIGHTTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
坡道段类型 (IfcRampFlightType)	ENTITY IfcRampFlightType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcRampFlightTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcRampFlightTypeEnum. USERDEFINED) OR ((PredefinedType = IfcRampFlightTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY

续表 B.1.2

实体	EXPRESS 描述
坡道类型 (IfcRampType)	ENTITY IfcRampType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcRampTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcRampTypeEnum. USERDEFINED) OR ((PredefinedType = IfcRampTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
路径元素连接关系 (IfcRelConnectsPath Elements)	ENTITY IfcRelConnectsPathElements SUBTYPE OF IfcRelConnectsElements; RelatingPriorities : LIST OF NUMBER; RelatedPriorities : LIST OF NUMBER; RelatedConnectionType : IfcConnectionTypeEnum; RelatingConnectionType : IfcConnectionTypeEnum; WHERE NormalizedRelatingPriorities : (SIZEOF(RelatingPriorities) = 0) OR (SIZEOF (QUERY (temp <* RelatingPriorities | {0.0 <= temp <= 1.0})) = SIZEOF(RelatingPriorities)); NormalizedRelatedPriorities : (SIZEOF(RelatedPriorities) = 0) OR (SIZEOF (QUERY (temp <* RelatedPriorities | {0.0 <= temp <= 1.0})) = SIZEOF(RelatedPriorities)); END_ENTITY
覆盖建筑元素关系 (IfcRelCoversBldg Elements)	ENTITY IfcRelCoversBldgElements SUBTYPE OF IfcRelConnects; RelatingBuildingElement : IfcElement; RelatedCoverings : SET [1:?] OF IfcCovering; END_ENTITY
覆盖空间关系 (IfcRelCoversSpaces)	ENTITY IfcRelCoversSpaces SUBTYPE OF IfcRelConnects; RelatingSpace : IfcSpace; RelatedCoverings : SET [1:?] OF IfcCovering; END_ENTITY
屋顶(IfcRoof)	ENTITY IfcRoof SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcRoofTypeEnum; WHERE CorrectShapeDecomposition : (HIINDEX(SELF\IfcObjectDefinition. IsDecomposedBy) = 0) OR ((HIINDEX (SELF \ IfcObjectDefinition. IsDecomposedBy) = 1) AND ((NOT (EXISTS (SELF \ IfcProduct. Representation))) OR ((EXISTS(SELF\IfcProduct. Representation)) AND (SIZEOF(QUERY(temp <* SELF\IfcProduct. Representation. Representations | temp. RepresentationIdentifier ='Body')) = 0)))); CorrectPredefinedType : NOT (EXISTS (PredefinedType)) OR (PredefinedType <> IfcRoofTypeEnum. USERDEFINED) OR ((PredefinedType = IfcRoofTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCROOFTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
屋顶类型 (IfcRoofType)	ENTITY IfcRoofType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcRoofTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcRoofTypeEnum. USERDEFINED) OR ((PredefinedType = IfcRoofTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
遮阳设施 (IfcShadingDevice)	ENTITY IfcShadingDevice SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcShadingDeviceTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcShadingDevice TypeEnum. USERDEFINED) OR ((PredefinedType = IfcShadingDeviceTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCSHADINGDEVICETYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY

续表 B.1.2

实体	EXPRESS 描述
遮阳设施类型 (IfcShadingDeviceType)	ENTITY IfcShadingDeviceType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcShadingDeviceTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcShadingDeviceTypeEnum. USERDEFINED) OR ((PredefinedType = IfcShadingDeviceTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcElementType. ElementType)); END_ENTITY
板 (IfcSlab)	ENTITY IfcSlab SUPERTYPE OF(ONEOF(IfcSlabElementedCase, IfcSlabStandardCase)) SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcSlabTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcSlabTypeEnum. USERDEFINED) OR ((PredefinedType = IfcSlabTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCSLABTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
复合板 (IfcSlabElementedCase)	ENTITY IfcSlabElementedCase SUBTYPE OF IfcSlab; WHERE HasDecomposition : HIINDEX(SELF\IfcObjectDefinition. IsDecomposedBy) > 0; END_ENTITY
标准板 (IfcSlabStandardCase)	ENTITY IfcSlabStandardCase SUBTYPE OF IfcSlab; WHERE HasMaterialLayerSetusage : SIZEOF (QUERY(temp <* USEDIN(SELF,'IFCKERNEL. IFCRELASSOCIATES. RELATEDOBJECTS')	('IFCPRODUCTEXTENSION. IFCRELASSOCIATESMATERIAL' IN TYPEOF(temp)) AND ('IFCMATERIALRESOURCE. IFCMATERIALLAYERSETUSAGE' IN TYPEOF(temp. RelatingMaterial)))) = 1; END_ENTITY
板类型 (IfcSlabType)	ENTITY IfcSlabType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcSlabTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcSlabTypeEnum. USERDEFINED) OR ((PredefinedType = IfcSlabTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
楼梯 (IfcStair)	ENTITY IfcStair SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcStairTypeEnum; WHERE CorrectShapeDecomposition : (HIINDEX(SELF\IfcObjectDefinition. IsDecomposedBy) = 0) OR ((HIINDEX(SELF\IfcObjectDefinition. IsDecomposedBy) = 1) AND ((NOT(EXISTS(SELF\IfcProduct. Representation))) OR ((EXISTS(SELF\IfcProduct. Representation)) AND (SIZEOF(QUERY(temp <* SELF\IfcProduct. Representation. Representations | temp. RepresentationIdentifier ='Body')) = 0)))); CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcStairTypeEnum. USERDEFINED) OR ((PredefinedType = IfcStairTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELEMENTS. IFCSTAIRTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY

续表 B.1.2

实体	EXPRESS 描述
楼梯段 (IfcStairFlight)	ENTITY IfcStairFlight SUBTYPE OF IfcBuildingElement; NumberOfRiser : OPTIONAL INTEGER; NumberOfTreads : OPTIONAL INTEGER; RiserHeight : OPTIONAL IfcPositiveLengthMeasure; TreadLength : OPTIONAL IfcPositiveLengthMeasure; PredefinedType : OPTIONAL IfcStairFlightTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcStairFlightType Enum. USERDEFINED) OR ((PredefinedType = IfcStairFlightTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELE MENTS. IFCSTAIRFLIGHTTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
楼梯段类型 (IfcStairFlightType)	ENTITY IfcStairFlightType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcStairFlightTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcStairFlightTypeEnum. USERDEFINED) OR ((Predefined Type = IfcStairFlightTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
楼梯类型 (IfcStairType)	ENTITY IfcStairType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcStairTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcStairTypeEnum. USERDEFINED) OR ((PredefinedType = IfcStairTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
墙 (IfcWall)	ENTITY IfcWall SUPERTYPE OF(ONEOF(IfcWallElementedCase, IfcWallStandardCase)) SUBTYPE OF IfcBuildingElement; PredefinedType : OPTIONAL IfcWallTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcWall TypeEnum. USERDEFINED) OR ((PredefinedType = IfcWallTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELE MENTS. IFCWALLTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
复合墙 (IfcWallElementedCase)	ENTITY IfcWallElementedCase SUBTYPE OF IfcWall; WHERE HasDecomposition : HIINDEX(SELF\IfcObjectDefinition. IsDecomposedBy) > 0; END_ENTITY
标准墙 (IfcWallStandardCase)	ENTITY IfcWallStandardCase SUBTYPE OF IfcWall; WHERE HasMaterialLayerSetUsage : SIZEOF (QUERY(temp <* USEDIN(SELF,'IFCKERNEL. IFCRELAS SOCIATES. RELATEDOBJECTS') | ('IFCPRODUCTEXTENSION. IFCRELASSOCIATESMATERIAL' IN TYPEOF(temp)) AND ('IFCMATERIALRESOURCE. IFCMATERIALLAYERSETUSAGE' IN TYPEOF (temp. RelatingMaterial)))) = 1; END_ENTITY
墙类型 (IfcWallType)	ENTITY IfcWallType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcWallTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcWallTypeEnum. USERDEFINED) OR ((PredefinedType = IfcWallTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY

续表 B.1.2

实体	EXPRESS 描述
窗 (IfcWindow)	ENTITY IfcWindow SUPERTYPE OF(IfcWindowStandardCase) SUBTYPE OF IfcBuildingElement; OverallHeight : OPTIONAL IfcPositiveLengthMeasure; OverallWidth : OPTIONAL IfcPositiveLengthMeasure; PredefinedType : OPTIONAL IfcWindowTypeEnum; PartitioningType : OPTIONAL IfcWindowTypePartitioningEnum; UserDefinedPartitioningType : OPTIONAL IfcLabel; WHERE CorrectStyleAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGELE MENTS. IFCWINDOWTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
标准窗 (IfcWindowStandard Case)	ENTITY IfcWindowStandardCase SUBTYPE OF IfcWindow; END_ENTITY
窗类型 (IfcWindowType)	ENTITY IfcWindowType SUBTYPE OF IfcBuildingElementType; PredefinedType : IfcWindowTypeEnum; PartitioningType : IfcWindowTypePartitioningEnum; ParameterTakesPrecedence : OPTIONAL BOOLEAN; UserDefinedPartitioningType : OPTIONAL IfcLabel; WHERE CorrectPredefinedType : (PredefinedType <> IfcWindowTypeEnum. USERDEFINED) OR ((Predefined Type = IfcWindowTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY

B.2 共享建筑服务元素

B.2.1 共享建筑服务元素类型的 EXPRESS 描述应符合表 B.2.1 的规定。

表 B.2.1 共享建筑服务元素类型的 EXPRESS 描述

类型	EXPRESS 描述
分配室类型枚举 (IfcDistribution ChamberElement TypeEnum)	TYPE IfcDistributionChamberElementTypeEnum = ENUMERATION OF (FORMEDDUCT, INSPECTIONCHAMBER, INSPECTIONPIT, MANHOLE, METERCHAMBER, SUMP, TRENCH, VALVECHAMBER, USERDEFINED, NOTDEFINED); END_TYPE
分配端口类型枚举 (IfcDistributionPort TypeEnum)	TYPE IfcDistributionPortTypeEnum = ENUMERATION OF (CABLE, CABLECARRIER, DUCT, PIPE, USERDEFINED, NOTDEFINED); END_TYPE

续表 B.2.1

类型	EXPRESS 描述
分配系统枚举（IfcDistributionSystemEnum）	TYPE IfcDistributionSystemEnum = ENUMERATION OF (AIRCONDITIONING, AUDIOVISUAL, CHEMICAL, CHILLEDWATER, COMMUNICATION, COMPRESSEDAIR, CONDENSERWATER, CONTROL, CONVEYING, DATA, DISPOSAL, DOMESTICCOLDWATER, DOMESTICHOTWATER, DRAINAGE, EARTHING, ELECTRICAL, ELECTROACOUSTIC, EXHAUST, FIREPROTECTION, FUEL, GAS, HAZARDOUS, HEATING, LIGHTING, LIGHTNINGPROTECTION, MUNICIPALSOLIDWASTE, OIL, OPERATIONAL, POWERGENERATION, RAINWATER, REFRIGERATION, SECURITY, SEWAGE, SIGNAL, STORMWATER, TELEPHONE, TV, VACUUM, VENT, VENTILATION, WASTEWATER, WATERSUPPLY, USERDEFINED, NOTDEFINED); END_TYPE
流向枚举（IfcFlowDirectionEnum）	TYPE IfcFlowDirectionEnum = ENUMERATION OF (SOURCE, SINK, SOURCEANDSINK, NOTDEFINED); END_TYPE

B.2.2 共享建筑服务元素实体的 EXPRESS 描述应符合表 B.2.2 的规定。

表 B. 2. 2　共享建筑服务元素实体的 EXPRESS 描述

实体	EXPRESS 描述
分配室 (IfcDistribution ChamberElement)	ENTITY IfcDistributionChamberElement SUBTYPE OF IfcDistributionFlowElement; PredefinedType : OPTIONAL IfcDistributionChamberElementTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcDistributionChamberElementTypeEnum. USERDEFINED) OR ((PredefinedType = IfcDistributionChamberElementTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDBLDGSERVICEELEMENTS. IFCDISTRIBUTIONCHAMBERELEMENTTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
分配室类型 (IfcDistribution Chamber ElementType)	ENTITY IfcDistributionChamberElementType SUBTYPE OF IfcDistributionFlowElementType; PredefinedType : IfcDistributionChamberElementTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcDistributionChamberElementTypeEnum. USERDEFINED) OR ((PredefinedType = IfcDistributionChamberElementTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
分配电路 (IfcDistributionCircuit)	ENTITY IfcDistributionCircuit SUBTYPE OF IfcDistributionSystem; END_ENTITY
分配控制元素 (IfcDistribution ControlElement)	ENTITY IfcDistributionControlElement SUPERTYPE OF(ONEOF(IfcActuator, IfcAlarm, IfcController, IfcFlowInstrument, IfcProtectiveDeviceTrippingUnit, IfcSensor, IfcUnitaryControlElement)) SUBTYPE OF IfcDistributionElement; INVERSE AssignedToFlowElement : SET [0:1] OF IfcRelFlowControlElements FOR RelatedControlElements; END_ENTITY
分配控制元素类型 (IfcDistributionControl ElementType)	ENTITY IfcDistributionControlElementType ABSTRACT SUPERTYPE OF(ONEOF(IfcActuatorType, IfcAlarmType, IfcControllerType, IfcFlowInstrumentType, IfcProtectiveDeviceTrippingUnitType, IfcSensorType, IfcUnitaryControlElementType)) SUBTYPE OF IfcDistributionElementType; END_ENTITY
流动分配元素 (IfcDistribution FlowElement)	ENTITY IfcDistributionFlowElement SUPERTYPE OF(ONEOF(IfcDistributionChamberElement, IfcEnergyConversionDevice, IfcFlowController, IfcFlowFitting, IfcFlowMovingDevice, IfcFlowSegment, IfcFlowStorageDevice, IfcFlowTerminal, IfcFlowTreatmentDevice)) SUBTYPE OF IfcDistributionElement; INVERSE HasControlElements : SET [0:1] OF IfcRelFlowControlElements FOR RelatingFlowElement; END_ENTITY
流动分配元素类型 (IfcDistributionFlow ElementType)	ENTITY IfcDistributionFlowElementType ABSTRACT SUPERTYPE OF(ONEOF(IfcDistributionChamberElementType, IfcEnergyConversionDeviceType, IfcFlowControllerType, IfcFlowFittingType, IfcFlowMovingDeviceType, IfcFlowSegmentType, IfcFlowStorageDeviceType, IfcFlowTerminalType, IfcFlowTreatmentDeviceType)) SUBTYPE OF IfcDistributionElementType; END_ENTITY

续表 B.2.2

实体	EXPRESS 描述
分配端口 (IfcDistributionPort)	ENTITY IfcDistributionPort SUBTYPE OF IfcPort; FlowDirection : OPTIONAL IfcFlowDirectionEnum; PredefinedType : OPTIONAL IfcDistributionPortTypeEnum; SystemType : OPTIONAL IfcDistributionSystemEnum; END_ENTITY
分配系统 (IfcDistributionSystem)	ENTITY IfcDistributionSystem SUPERTYPE OF(IfcDistributionCircuit) SUBTYPE OF IfcSystem; LongName : OPTIONAL IfcLabel; PredefinedType : OPTIONAL IfcDistributionSystemEnum; END_ENTITY
能源转换装置 (IfcEnergyConversion Device)	ENTITY IfcEnergyConversionDevice SUPERTYPE OF(ONEOF(IfcAirToAirHeatRecovery, IfcBoiler, IfcBurner, IfcChiller, IfcCoil, IfcCondenser, IfcCooledBeam, IfcCoolingTower, IfcElectricGenerator, IfcElectricMotor, IfcEngine, IfcEvaporativeCooler, IfcEvaporator, IfcHeatExchanger, IfcHumidifier, IfcMotorConnection, IfcSolarDevice, IfcTransformer, IfcTubeBundle, IfcUnitaryEquipment)) SUBTYPE OF IfcDistributionFlowElement; END_ENTITY
能源转换装置类型 (IfcEnergyConversion DeviceType)	ENTITY IfcEnergyConversionDeviceType ABSTRACT SUPERTYPE OF(ONEOF(IfcAirToAirHeatRecoveryType, IfcBoilerType, IfcBurnerType, IfcChillerType, IfcCoilType, IfcCondenserType, IfcCooledBeamType, IfcCoolingTowerType, IfcElectric GeneratorType, IfcElectricMotorType, IfcEngineType, IfcEvaporativeCoolerType, IfcEvaporatorType, IfcHeatExchangerType, IfcHumidifierType, IfcMotorConnectionType, IfcSolarDeviceType, IfcTransformer Type, IfcTubeBundleType, IfcUnitaryEquipmentType)) SUBTYPE OF IfcDistributionFlowElementType; END_ENTITY; Link to EXPRESS-G diagram EXPRESS-G dia
流量控制器 (IfcFlowController)	ENTITY IfcFlowController SUPERTYPE OF(ONEOF(IfcAirTerminalBox, IfcDamper, IfcElectricDistributionBoard, IfcElectric TimeControl, IfcFlowMeter, IfcProtectiveDevice, IfcSwitchingDevice, IfcValve)) SUBTYPE OF IfcDistributionFlowElement; END_ENTITY
流量控制器类型 (IfcFlowController Type)	ENTITY IfcFlowControllerType ABSTRACT SUPERTYPE OF(ONEOF(IfcAirTerminalBoxType, IfcDamperType, IfcElectricDistribution BoardType, IfcElectricTimeControlType, IfcFlowMeterType, IfcProtectiveDeviceType, IfcSwitchingDevice Type, IfcValveType)) SUBTYPE OF IfcDistributionFlowElementType; END_ENTITY
流量配件 (IfcFlowFitting)	ENTITY IfcFlowFitting SUPERTYPE OF(ONEOF(IfcCableCarrierFitting, IfcCableFitting, IfcDuctFitting, IfcJunctionBox, Ifc PipeFitting))SUBTYPE OF IfcDistributionFlowElement; END_ENTITY
流量配件类型 (IfcFlowFittingType)	ENTITY IfcFlowFittingType ABSTRACT SUPERTYPE OF(ONEOF(IfcCableCarrierFittingType, IfcCableFittingType, IfcDuctFitting Type, IfcJunctionBoxType, IfcPipeFittingType)) SUBTYPE OF IfcDistributionFlowElementType; END_ENTITY
流体传输装置 (IfcFlowMovingDevice)	ENTITY IfcFlowMovingDevice SUPERTYPE OF(ONEOF(IfcCompressor, IfcFan, IfcPump)) SUBTYPE OF IfcDistributionFlowElement; END_ENTITY

续表 B.2.2

实体	EXPRESS 描述
流体传输装置类型（IfcFlowMovingDeviceType）	ENTITY IfcFlowMovingDeviceType ABSTRACT SUPERTYPE OF(ONEOF(IfcCompressorType，IfcFanType，IfcPumpType)) SUBTYPE OF IfcDistributionFlowElementType; END_ENTITY
流体管段（IfcFlowSegment）	ENTITY IfcFlowSegment SUPERTYPE OF(ONEOF(IfcCableCarrierSegment，IfcCableSegment，IfcDuctSegment，IfcPipeSegment)) SUBTYPE OF IfcDistributionFlowElement; END_ENTITY
流体管段类型（IfcFlowSegmentType）	ENTITY IfcFlowSegmentType ABSTRACT SUPERTYPE OF(ONEOF(IfcCableCarrierSegmentType，IfcCableSegmentType，IfcDuctSegmentType，IfcPipeSegmentType)) SUBTYPE OF IfcDistributionFlowElementType; END_ENTITY
流体储存装置（IfcFlowStorageDevice）	ENTITY IfcFlowStorageDevice SUPERTYPE OF(ONEOF(IfcElectricFlowStorageDevice，IfcTank)) SUBTYPE OF IfcDistributionFlowElement; END_ENTITY
流体储存装置类型（IfcFlowStorageDeviceType）	ENTITY IfcFlowStorageDeviceType ABSTRACT SUPERTYPE OF(ONEOF(IfcElectricFlowStorageDeviceType，IfcTankType)) SUBTYPE OF IfcDistributionFlowElementType; END_ENTITY
流体末端设备（IfcFlowTerminal）	ENTITY IfcFlowTerminal SUPERTYPE OF(ONEOF(IfcAirTerminal，IfcAudioVisualAppliance，IfcCommunicationsAppliance，IfcElectricAppliance，IfcFireSuppressionTerminal，IfcLamp，IfcLightFixture，IfcMedicalDevice，IfcOutlet，IfcSanitaryTerminal，IfcSpaceHeater，IfcStackTerminal，IfcWasteTerminal)) SUBTYPE OF IfcDistributionFlowElement; END_ENTITY
流体末端设备类型（IfcFlowTerminalType）	ENTITY IfcFlowTerminalType ABSTRACT SUPERTYPE OF(ONEOF(IfcAirTerminalType，IfcAudioVisualApplianceType，IfcCommunicationsApplianceType，IfcElectricApplianceType，IfcFireSuppressionTerminalType，IfcLampType，IfcLightFixtureType，IfcMedicalDeviceType，IfcOutletType，IfcSanitaryTerminalType，IfcSpaceHeaterType，IfcStackTerminalType，IfcWasteTerminalType)) SUBTYPE OF IfcDistributionFlowElementType; END_ENTITY
流体处理设备（IfcFlowTreatmentDevice）	ENTITY IfcFlowTreatmentDevice SUPERTYPE OF(ONEOF(IfcDuctSilencer，IfcFilter，IfcInterceptor)) SUBTYPE OF IfcDistributionFlowElement; END_ENTITY
流体处理设备类型（IfcFlowTreatmentDeviceType）	ENTITY IfcFlowTreatmentDeviceType ABSTRACT SUPERTYPE OF(ONEOF(IfcDuctSilencerType，IfcFilterType，IfcInterceptorType)) SUBTYPE OF IfcDistributionFlowElementType; END_ENTITY
流体控制设备关系（IfcRelFlowControlElements）	ENTITY IfcRelFlowControlElements SUBTYPE OF IfcRelConnects; RelatedControlElements : SET [1:?] OF IfcDistributionControlElement; RelatingFlowElement : IfcDistributionFlowElement; END_ENTITY

B.3 共享部件元素

B.3.1 共享部件元素类型的 EXPRESS 描述应符合表 B.3.1 的规定。

表 B. 3. 1　共享部件元素类型的 EXPRESS 描述

类型	EXPRESS 描述
建筑元素部件类型（IfcBuildingElementPartTypeEnum）	TYPE IfcBuildingElementPartTypeEnum = ENUMERATION OF (INSULATION, PRECASTPANEL, USERDEFINED, NOTDEFINED); END_TYPE
离散附件类型（IfcDiscreteAccessoryTypeEnum）	TYPE IfcDiscreteAccessoryTypeEnum = ENUMERATION OF (ANCHORPLATE, BRACKET, SHOE, USERDEFINED, NOTDEFINED); END_TYPE
紧固件类型（IfcFastenerTypeEnum）	TYPE IfcFastenerTypeEnum = ENUMERATION OF (GLUE, MORTAR, WELD, USERDEFINED, NOTDEFINED); END_TYPE
机械紧固件类型（IfcMechanicalFastenerTypeEnum）	TYPE IfcMechanicalFastenerTypeEnum = ENUMERATION OF (ANCHORBOLT, BOLT, DOWEL, NAIL, NAILPLATE, RIVET, SCREW, SHEARCONNECTOR, STAPLE, STUDSHEARCONNECTOR, USERDEFINED, NOTDEFINED); END_TYPE

B. 3. 2　共享部件元素实体的 EXPRESS 描述应符合表 B. 3. 2 的规定。

表 B. 3. 2　共享部件元素实体的 EXPRESS 描述

实体	EXPRESS 描述
建筑元素部件（IfcBuildingElementPart）	ENTITY IfcBuildingElementPart SUBTYPE OF IfcElementComponent; PredefinedType : OPTIONAL IfcBuildingElementPartTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcBuildingElementPartTypeEnum. USERDEFINED) OR ((PredefinedType = IfcBuildingElementPartTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDCOMPONENTELEMENTS. IFCBUILDINGELEMENTPARTTYPE ' IN TYPEOF (SELF \ IfcObject. IsTypedBy [1]. RelatingType)); END_ENTITY
建筑元素部件类型（IfcBuildingElementPartType）	ENTITY IfcBuildingElementPartType SUBTYPE OF IfcElementComponentType; PredefinedType : IfcBuildingElementPartTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcBuildingElementPartTypeEnum. USERDEFINED) OR ((PredefinedType = IfcBuildingElementPartTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY

续表 B.3.2

实体	EXPRESS 描述
离散附件 (IfcDiscreteAccessory)	ENTITY IfcDiscreteAccessory SUBTYPE OF IfcElementComponent; PredefinedType : OPTIONAL IfcDiscreteAccessoryTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcDiscreteAccessoryTypeEnum. USERDEFINED) OR ((PredefinedType = IfcDiscreteAccessoryTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDCOMPONENTELEMENTS. IFCDISCRETEACCESSORYTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
离散附件类型 (IfcDiscrete AccessoryType)	ENTITY IfcDiscreteAccessoryType SUBTYPE OF IfcElementComponentType; PredefinedType : IfcDiscreteAccessoryTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcDiscreteAccessoryTypeEnum. USERDEFINED) OR ((PredefinedType = IfcDiscreteAccessoryTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
元素构件 (IfcElementComponent)	ENTITY IfcElementComponent ABSTRACT SUPERTYPE OF(ONEOF(IfcBuildingElementPart, IfcDiscreteAccessory, IfcFastener, IfcMechanicalFastener, IfcReinforcingElement, IfcVibrationIsolator)) SUBTYPE OF IfcElement; END_ENTITY
元素构件类型 (IfcElementComponentType)	ENTITY IfcElementComponentType ABSTRACT SUPERTYPE OF(ONEOF(IfcBuildingElementPartType, IfcDiscreteAccessoryType, IfcFastenerType, IfcMechanicalFastenerType, IfcReinforcingElementType, IfcVibrationIsolatorType)) SUBTYPE OF IfcElementType; END_ENTITY
紧固件 (IfcFastener)	ENTITY IfcFastener SUBTYPE OF IfcElementComponent; PredefinedType : OPTIONAL IfcFastenerTypeEnum; WHERE CorrectPredefinedType : NOT (EXISTS (PredefinedType)) OR (PredefinedType <> IfcFastenerTypeEnum. USERDEFINED) OR ((PredefinedType = IfcFastenerTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDCOMPONENTELEMENTS. IFCFASTENERTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
紧固件类型 (IfcFastenerType)	ENTITY IfcFastenerType SUBTYPE OF IfcElementComponentType; PredefinedType : IfcFastenerTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcFastenerTypeEnum. USERDEFINED) OR ((PredefinedType = IfcFastenerTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
机械紧固件 (IfcMechanical Fastener)	ENTITY IfcMechanicalFastener SUBTYPE OF IfcElementComponent; NominalDiameter : OPTIONAL IfcPositiveLengthMeasure; NominalLength : OPTIONAL IfcPositiveLengthMeasure; PredefinedType : OPTIONAL IfcMechanicalFastenerTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcMechanicalFastenerTypeEnum. USERDEFINED) OR ((PredefinedType = IfcMechanicalFastenerTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDCOMPONENTELEMENTS. IFCMECHANICALFASTENERTYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY

续表 B.3.2

实体	EXPRESS 描述
机械紧固件类型（IfcMechanicalFastenerType）	ENTITY IfcMechanicalFastenerType SUBTYPE OF IfcElementComponentType; PredefinedType : IfcMechanicalFastenerTypeEnum; NominalDiameter : OPTIONAL IfcPositiveLengthMeasure; NominalLength : OPTIONAL IfcPositiveLengthMeasure; WHERE CorrectPredefinedType : (PredefinedType <> IfcMechanicalFastenerTypeEnum.USERDEFINED) OR ((PredefinedType = IfcMechanicalFastenerTypeEnum.USERDEFINED) AND EXISTS(SELF\IfcElementType.ElementType)); END_ENTITY

B.4 共享设施元素

B.4.1 共享设施元素类型的 EXPRESS 描述应符合表 B.4.1 的规定。

表 B.4.1 共享设施元素类型的 EXPRESS 描述

类型	EXPRESS 描述
家具类型（IfcFurnitureTypeEnum）	TYPE IfcFurnitureTypeEnum = ENUMERATION OF (CHAIR, TABLE, DESK, BED, FILECABINET, SHELF, SOFA, USERDEFINED, NOTDEFINED); END_TYPE
库存类型（IfcInventoryTypeEnum）	TYPE IfcInventoryTypeEnum = ENUMERATION OF (ASSETINVENTORY, SPACEINVENTORY, FURNITUREINVENTORY, USERDEFINED, NOTDEFINED); END_TYPE
成员类型（IfcOccupantTypeEnum）	TYPE IfcOccupantTypeEnum = ENUMERATION OF (ASSIGNEE, ASSIGNOR, LESSEE, LESSOR, LETTINGAGENT, OWNER, TENANT, USERDEFINED, NOTDEFINED); END_TYPE
系统家具元素类型（IfcSystemFurnitureElementTypeEnum）	TYPE IfcSystemFurnitureElementTypeEnum = ENUMERATION OF (PANEL, WORKSURFACE, USERDEFINED, NOTDEFINED); END_TYPE

B.4.2 共享设施元素实体的 EXPRESS 描述应符合表 B.4.2 的规定。

表 B.4.2　共享设施元素实体的 EXPRESS 描述

实体	EXPRESS 描述
资产 (IfcAsset)	ENTITY IfcAsset SUBTYPE OF IfcGroup; Identification : OPTIONAL IfcIdentifier; OriginalValue : OPTIONAL IfcCostValue; CurrentValue : OPTIONAL IfcCostValue; TotalReplacementCost : OPTIONAL IfcCostValue; Owner : OPTIONAL IfcActorSelect; User : OPTIONAL IfcActorSelect; ResponsiblePerson : OPTIONAL IfcPerson; IncorporationDate : OPTIONAL IfcDate; DepreciatedValue : OPTIONAL IfcCostValue; END_ENTITY
家具 (IfcFurniture)	ENTITY IfcFurniture SUBTYPE OF IfcFurnishingElement; PredefinedType : OPTIONAL IfcFurnitureTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcFurnitureTypeEnum. USERDEFINED) OR ((PredefinedType = IfcFurnitureTypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDFACILITIESELE MENTS. IFCFURNITURETYPE' IN TYPEOF(SELF\IfcObject. IsTypedBy[1]. RelatingType)); END_ENTITY
家具元素类型 (IfcFurnitureType)	ENTITY IfcFurnitureType SUBTYPE OF IfcFurnishingElementType; AssemblyPlace : IfcAssemblyPlaceEnum; PredefinedType : OPTIONAL IfcFurnitureTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcFurnitureTypeEnum. USERDEFINED) OR ((Predefined Type = IfcFurnitureTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY
库存 (IfcInventory)	ENTITY IfcInventory SUBTYPE OF IfcGroup; PredefinedType : OPTIONAL IfcInventoryTypeEnum; Jurisdiction : OPTIONAL IfcActorSelect; ResponsiblePersons : OPTIONAL SET [1:?] OF IfcPerson; LastUpdateDate : OPTIONAL IfcDate; CurrentValue : OPTIONAL IfcCostValue; OriginalValue : OPTIONAL IfcCostValue; END_ENTITY
居住者 (IfcOccupant)	ENTITY IfcOccupant SUBTYPE OF IfcActor; PredefinedType : OPTIONAL IfcOccupantTypeEnum; WHERE WR31 : NOT(PredefinedType = IfcOccupantTypeEnum. USERDEFINED) OR EXISTS(SELF\ IfcObject. ObjectType); END_ENTITY
系统家具元素 (IfcSystemFurniture Element)	ENTITY IfcSystemFurnitureElement SUBTYPE OF IfcFurnishingElement; PredefinedType : OPTIONAL IfcSystemFurnitureElementTypeEnum; WHERE CorrectPredefinedType : NOT(EXISTS(PredefinedType)) OR (PredefinedType <> IfcSystemFurnitu reElementTypeEnum. USERDEFINED) OR ((PredefinedType = IfcSystemFurnitureElement TypeEnum. USERDEFINED) AND EXISTS (SELF\IfcObject. ObjectType)); CorrectTypeAssigned : (SIZEOF(IsTypedBy) = 0) OR ('IFCSHAREDFACILITIESELE MENTS. IFCSYSTEMFURNITUREELEMENTTYPE ' IN TYPEOF (SELF \ IfcObject. IsTypedBy [1] . RelatingType)); END_ENTITY

续表 B.4.2

实体	EXPRESS 描述
系统家具元素类型（IfcSystemFurnitureElementType）	ENTITY IfcSystemFurnitureElementType SUBTYPE OF IfcFurnishingElementType; PredefinedType : OPTIONAL IfcSystemFurnitureElementTypeEnum; WHERE CorrectPredefinedType : (PredefinedType <> IfcSystemFurnitureElementTypeEnum. USERDEFINED) OR ((PredefinedType = IfcSystemFurnitureElementTypeEnum. USERDEFINED) AND EXISTS(SELF\IfcElementType. ElementType)); END_ENTITY

B.5 共享管理元素

B.5.1 共享管理元素类型的 EXPRESS 描述应符合表 B.5.1 的规定。

表 B.5.1 共享管理元素类型的 EXPRESS 描述

类型	EXPRESS 描述
操作请求类型（IfcActionRequestTypeEnum）	TYPE IfcActionRequestTypeEnum = ENUMERATION OF (EMAIL, FAX, PHONE, POST, VERBAL, USERDEFINED, NOTDEFINED); END_TYPE
成本项目类型（IfcCostItemTypeEnum）	TYPE IfcCostItemTypeEnum = ENUMERATION OF (USERDEFINED, NOTDEFINED); END_TYPE
成本计划类型（IfcCostScheduleTypeEnum）	TYPE IfcCostScheduleTypeEnum = ENUMERATION OF (BUDGET, COSTPLAN, ESTIMATE, TENDER, PRICEDBILLOFQUANTITIES, UNPRICEDBILLOFQUANTITIES, SCHEDULEOFRATES, USERDEFINED, NOTDEFINED); END_TYPE
许可类型（IfcPermitTypeEnum）	TYPE IfcPermitTypeEnum = ENUMERATION OF (ACCESS, BUILDING, WORK, USERDEFINED, NOTDEFINED); END_TYPE

B.5.2 共享管理元素实体的 EXPRESS 描述应符合表 B.5.2 的规定。

表 B.5.2 共享管理元素实体的 EXPRESS 描述

实体	EXPRESS 描述
操作请求（IfcActionRequest）	ENTITY IfcActionRequest SUBTYPE OF IfcControl; PredefinedType : OPTIONAL IfcActionRequestTypeEnum; Status : OPTIONAL IfcLabel; LongDescription : OPTIONAL IfcText; END_ENTITY
成本项目（IfcCostItem）	ENTITY IfcCostItem SUBTYPE OF IfcControl; PredefinedType : OPTIONAL IfcCostItemTypeEnum; CostValues : OPTIONAL LIST [1:?] OF IfcCostValue; CostQuantities : OPTIONAL LIST [1:?] OF IfcPhysicalQuantity; END_ENTITY
成本计划（IfcCostSchedule）	ENTITY IfcCostSchedule SUBTYPE OF IfcControl; PredefinedType : OPTIONAL IfcCostScheduleTypeEnum; Status : OPTIONAL IfcLabel; SubmittedOn : OPTIONAL IfcDateTime; UpdateDate : OPTIONAL IfcDateTime; END_ENTITY

续表 B.5.2

实体	EXPRESS 描述
许可 （IfcPermit）	ENTITY IfcPermit SUBTYPE OF IfcControl; PredefinedType : OPTIONAL IfcPermitTypeEnum; Status : OPTIONAL IfcLabel; LongDescription : OPTIONAL IfcText; END_ENTITY
项目订单 （IfcProjectOrder）	ENTITY IfcProjectOrder SUBTYPE OF IfcControl; PredefinedType : OPTIONAL IfcProjectOrderTypeEnum; Status : OPTIONAL IfcLabel; LongDescription : OPTIONAL IfcText; END_ENTITY

附录 C　专业领域层数据模式的 EXPRESS 描述

C.1　建 筑 专 业 应 用

C.1.1　建筑专业类型的 EXPRESS 描述应符合表 C.1.1 的规定。

表 C.1.1　建筑专业类型的 EXPRESS 描述

类型	EXPRESS 描述
门开启方式（IfcDoorPanelOperationEnum）	TYPE IfcDoorPanelOperationEnum = ENUMERATION OF (SWINGING, DOUBLE_ACTING, SLIDING, FOLDING, REVOLVING, ROLLINGUP, FIXEDPANEL, USERDEFINED, NOTDEFINED); END_TYPE
门板位置（IfcDoorPanelPositionEnum）	TYPE IfcDoorPanelPositionEnum = ENUMERATION OF (LEFT, MIDDLE, RIGHT, NOTDEFINED); END_TYPE
门主要材料（IfcDoorStyleConstructionEnum）	TYPE IfcDoorStyleConstructionEnum = ENUMERATION OF (ALUMINIUM, HIGH_GRADE_STEEL, STEEL, WOOD, ALUMINIUM_WOOD, ALUMINIUM_PLASTIC, PLASTIC, USERDEFINED, NOTDEFINED); END_TYPE
门类型（IfcDoorStyleOperationEnum）	TYPE IfcDoorStyleOperationEnum = ENUMERATION OF (SINGLE_SWING_LEFT, SINGLE_SWING_RIGHT, DOUBLE_DOOR_SINGLE_SWING, DOUBLE_DOOR_SINGLE_SWING_OPPOSITE_LEFT, DOUBLE_DOOR_SINGLE_SWING_OPPOSITE_RIGHT, DOUBLE_SWING_LEFT, DOUBLE_SWING_RIGHT, DOUBLE_DOOR_DOUBLE_SWING, SLIDING_TO_LEFT, SLIDING_TO_RIGHT, DOUBLE_DOOR_SLIDING, FOLDING_TO_LEFT, FOLDING_TO_RIGHT, DOUBLE_DOOR_FOLDING, REVOLVING, ROLLINGUP, USERDEFINED, NOTDEFINED); END_TYPE

续表 C.1.1

类型	EXPRESS 描述
渗透性覆盖物类型（IfcPermeableCoveringOperationEnum）	TYPE IfcPermeableCoveringOperationEnum = ENUMERATION OF (GRILL, LOUVER, SCREEN, USERDEFINED, NOTDEFINED); END_TYPE
窗开启方式（IfcWindowPanelOperationEnum）	TYPE IfcWindowPanelOperationEnum = ENUMERATION OF (SIDEHUNGRIGHTHAND, SIDEHUNGLEFTHAND, TILTANDTURNRIGHTHAND, TILTANDTURNLEFTHAND, TOPHUNG, BOTTOMHUNG, PIVOTHORIZONTAL, PIVOTVERTICAL, SLIDINGHORIZONTAL, SLIDINGVERTICAL, REMOVABLECASEMENT, FIXEDCASEMENT, OTHEROPERATION, NOTDEFINED); END_TYPE
窗扇位置（IfcWindowPanelPositionEnum）	TYPE IfcWindowPanelPositionEnum = ENUMERATION OF (LEFT, MIDDLE, RIGHT, BOTTOM, TOP, NOTDEFINED); END_TYPE
窗主要材料（IfcWindowStyleConstructionEnum）	TYPE IfcWindowStyleConstructionEnum = ENUMERATION OF (ALUMINIUM, HIGH_GRADE_STEEL, STEEL, WOOD, ALUMINIUM_WOOD, PLASTIC, OTHER_CONSTRUCTION, NOTDEFINED); END_TYPE
窗类型（IfcWindowStyleOperationEnum）	TYPE IfcWindowStyleOperationEnum = ENUMERATION OF (SINGLE_PANEL, DOUBLE_PANEL_VERTICAL, DOUBLE_PANEL_HORIZONTAL, TRIPLE_PANEL_VERTICAL, TRIPLE_PANEL_BOTTOM, TRIPLE_PANEL_TOP, TRIPLE_PANEL_LEFT, TRIPLE_PANEL_RIGHT, TRIPLE_PANEL_HORIZONTAL, USERDEFINED, NOTDEFINED); END_TYPE

C.1.2 建筑专业实体的 EXPRESS 描述应符合表 C.1.2 的规定。

表 C. 1. 2　建筑专业实体的 EXPRESS 描述

实体	EXPRESS 描述
门框属性 (IfcDoorLining Properties)	ENTITY IfcDoorLiningProperties SUBTYPE OF IfcPreDefinedPropertySet; LiningDepth : OPTIONAL IfcPositiveLengthMeasure; LiningThickness : OPTIONAL IfcNonNegativeLengthMeasure; ThresholdDepth : OPTIONAL IfcPositiveLengthMeasure; ThresholdThickness : OPTIONAL IfcNonNegativeLengthMeasure; TransomThickness : OPTIONAL IfcNonNegativeLengthMeasure; TransomOffset : OPTIONAL IfcLengthMeasure; LiningOffset : OPTIONAL IfcLengthMeasure; ThresholdOffset : OPTIONAL IfcLengthMeasure; CasingThickness : OPTIONAL IfcPositiveLengthMeasure; CasingDepth : OPTIONAL IfcPositiveLengthMeasure; ShapeAspectStyle : OPTIONAL IfcShapeAspect; LiningToPanelOffsetX : OPTIONAL IfcLengthMeasure; LiningToPanelOffsetY : OPTIONAL IfcLengthMeasure; WHERE WR31 : NOT(EXISTS(LiningDepth) AND NOT(EXISTS(LiningThickness))); WR32 : NOT(EXISTS(ThresholdDepth) AND NOT(EXISTS(ThresholdThickness))); WR33 : (EXISTS(TransomOffset) AND EXISTS(TransomThickness)) XOR (NOT(EXISTS(TransomOffset)) AND NOT(EXISTS(TransomThickness))); WR34 : (EXISTS(CasingDepth) AND EXISTS(CasingThickness)) XOR (NOT(EXISTS(CasingDepth)) AND NOT(EXISTS(CasingThickness))); WR35 : (EXISTS(SELF\IfcPropertySetDefinition. DefinesType[1])) AND (('IFCSHAREDBLDGELEMENTS. IFCDOORTYPE' IN TYPEOF(SELF\IfcPropertySetDefinition. DefinesType[1])) OR ('IFCARCHITECTUREDOMAIN. IFCDOORSTYLE' IN TYPEOF(SELF\IfcPropertySetDefinition. DefinesType[1]))); END_ENTITY
门板属性 (IfcDoorPanel Properties)	ENTITY IfcDoorPanelProperties SUBTYPE OF IfcPreDefinedPropertySet; PanelDepth : OPTIONAL IfcPositiveLengthMeasure; PanelOperation : IfcDoorPanelOperationEnum; PanelWidth : OPTIONAL IfcNormalisedRatioMeasure; PanelPosition : IfcDoorPanelPositionEnum; ShapeAspectStyle : OPTIONAL IfcShapeAspect; WHERE ApplicableToType : (EXISTS(SELF\IfcPropertySetDefinition. DefinesType[1])) AND (('IFCSHAREDBLDGELEMENTS. IFCDOORTYPE' IN TYPEOF(SELF\IfcPropertySetDefinition. DefinesType[1])) OR ('IFCARCHITECTUREDOMAIN. IFCDOORSTYLE' IN TYPEOF(SELF\IfcPropertySetDefinition. DefinesType[1]))); END_ENTITY
门类型 (IfcDoorStyle)	ENTITY IfcDoorStyle SUBTYPE OF IfcTypeProduct; OperationType : IfcDoorStyleOperationEnum; ConstructionType : IfcDoorStyleConstructionEnum; ParameterTakesPrecedence : BOOLEAN; Sizeable : BOOLEAN; END_ENTITY
渗透性覆盖物属性 (IfcPermeableCovering Properties)	ENTITY IfcPermeableCoveringProperties SUBTYPE OF IfcPreDefinedPropertySet; OperationType : IfcPermeableCoveringOperationEnum; PanelPosition : IfcWindowPanelPositionEnum; FrameDepth : OPTIONAL IfcPositiveLengthMeasure; FrameThickness : OPTIONAL IfcPositiveLengthMeasure; ShapeAspectStyle : OPTIONAL IfcShapeAspect; END_ENTITY

续表 C.1.2

实体	EXPRESS 描述
窗框属性 (IfcWindowLining Properties)	ENTITY IfcWindowLiningProperties SUBTYPE OF IfcPreDefinedPropertySet; LiningDepth : OPTIONAL IfcPositiveLengthMeasure; LiningThickness : OPTIONAL IfcNonNegativeLengthMeasure; TransomThickness : OPTIONAL IfcNonNegativeLengthMeasure; MullionThickness : OPTIONAL IfcNonNegativeLengthMeasure; FirstTransomOffset : OPTIONAL IfcNormalisedRatioMeasure; SecondTransomOffset : OPTIONAL IfcNormalisedRatioMeasure; FirstMullionOffset : OPTIONAL IfcNormalisedRatioMeasure; SecondMullionOffset : OPTIONAL IfcNormalisedRatioMeasure; ShapeAspectStyle : OPTIONAL IfcShapeAspect; LiningOffset : OPTIONAL IfcLengthMeasure; LiningToPanelOffsetX : OPTIONAL IfcLengthMeasure; LiningToPanelOffsetY : OPTIONAL IfcLengthMeasure; WHERE WR31 : NOT(EXISTS(LiningDepth) AND NOT(EXISTS(LiningThickness))); WR32 : NOT(NOT(EXISTS(FirstTransomOffset)) AND EXISTS(SecondTransomOffset)); WR33 : NOT(NOT(EXISTS(FirstMullionOffset)) AND EXISTS(SecondMullionOffset)); WR34 : (EXISTS(SELF\IfcPropertySetDefinition.DefinesType[1])) AND (('IFCSHAREDBLDGEL EMENTS.IFCWINDOWTYPE' IN TYPEOF(SELF\IfcPropertySetDefinition.DefinesType[1])) OR ('I FCARCHITECTUREDOMAIN.IFCWINDOWSTYLE' IN TYPEOF(SELF\IfcPropertySetDefinition. DefinesType[1]))); END_ENTITY
窗扇属性 (IfcWindowPanel Properties)	ENTITY IfcWindowPanelProperties SUBTYPE OF IfcPreDefinedPropertySet; OperationType : IfcWindowPanelOperationEnum; PanelPosition : IfcWindowPanelPositionEnum; FrameDepth : OPTIONAL IfcPositiveLengthMeasure; FrameThickness : OPTIONAL IfcPositiveLengthMeasure; ShapeAspectStyle : OPTIONAL IfcShapeAspect; WHERE ApplicableToType : (EXISTS(SELF\IfcPropertySetDefinition.DefinesType[1])) AND (('IFCSHARED BLDGELEMENTS.IFCWINDOWTYPE' IN TYPEOF(SELF\IfcPropertySetDefinition.DefinesType[1])) OR ('IFCARCHITECTUREDOMAIN.IFCWINDOWSTYLE' IN TYPEOF(SELF\IfcPropertySetDefini tion.DefinesType[1]))); END_ENTITY
窗类型 (IfcWindowStyle)	ENTITY IfcWindowStyle SUBTYPE OF IfcTypeProduct; ConstructionType : IfcWindowStyleConstructionEnum; OperationType : IfcWindowStyleOperationEnum; ParameterTakesPrecedence : BOOLEAN; Sizeable : BOOLEAN; END_ENTITY

C.2 结构专业应用

C.2.1 结构专业类型的 EXPRESS 描述应符合表 C.2.1 的规定。

表 C.2.1 结构专业类型的 EXPRESS 描述

类型	EXPRESS 描述
基础类型 (IfcFooting TypeEnum)	TYPE IfcFootingTypeEnum = ENUMERATION OF (CAISSON_FOUNDATION, FOOTING_BEAM, PAD_FOOTING, PILE_CAP, STRIP_FOOTING, USERDEFINED, NOTDEFINED); END_TYPE