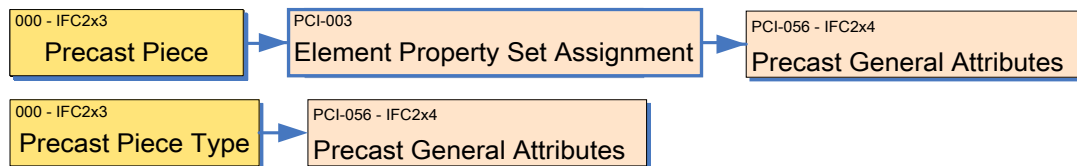


IFC Release Specific Concept Description (<IFC Release 2x3>)

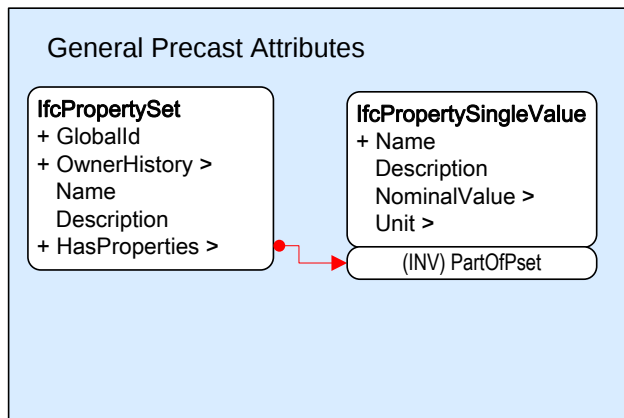
Precast General Attributes

Reference	PCI-056	Version	1.1	Status	Draft
Relationships	General precast attributes assigned to precast piece or precast piece type.				
History	v.1.0 8-Aug-09; Revised Nov 21, 2012				
Authors	Shiva Aram; Chuck Eastman				
Document Owner	Precast/Prestress Concrete Institute				

Usage in view definition diagram



Instantiation diagram



Implementation agreements

IfcPropertySet

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided, but may contain dummy data
Name	Must be "Precast Concrete Element General Properties"
Description	<Open>
HasProperties	Must point to the full list of properties defined in the table below; one IfcPropertySingleValue must appear for each property listed in the table

IfcPropertySingleValue

Name	Must be from the table below
Description	<Open>
NominalValue	Must be from the table below
IfcUnit	Must be from the table below

The following property set definition is provided in IFC 2x4:

PropertySet Definition:

PropertySet Name	Pset_PrecastConcreteElementGeneral
Applicable Entities	IfcBeam IfcBeamType IfcBuildingElementPart IfcBuildingElementPartType IfcBuildingElementProxy IfcBuildingElementProxyType IfcColumn IfcColumnType IfcCovering IfcCoveringType IfcCurtainWall IfcCurtainWallType IfcFooting IfcFootingType IfcMember IfcMemberType IfcPile IfcPileType IfcRailing IfcRailingType IfcRamp IfcRampType IfcRampFlight IfcRampFlightType IfcRoof IfcRoofType IfcSlab IfcSlabType IfcStair IfcStairType IfcStairFlight IfcStairFlightType IfcWall IfcWallType IfcWallStandardCase
Applicable Type Value	
Definition	Definition from IAI: Production and manufacturing related properties common to different types of precast concrete elements. The Pset can be used by a number of subtypes of IfcBuildingElement. If the precast concrete element is a sandwich wall panel each structural layer or shell represented by an IfcBuildingElementPart may be attached to a separate Pset of this type, if needed. Some of the properties apply only for specific types of precast concrete elements.

Property Definitions:

Name	Data Type	Definition
TypeDesignator	IfcLabel	Type designator for the precast concrete element. The content depends on local standards. For instance in Finland it usually a one-letter acronym, e.g. P=Column, K=reinforced concrete beam,etc.
ElementWeight	IfcMassMeasure / MASSUNIT	The weight of the concrete element. Usually expressed in kg.
ElementGrossVolume	IfcVolumeMeasure / VOLUMEUNIT	The gross volume of concrete element. Usually expressed in cubic metre (m3).
ElementNetVolume	IfcVolumeMeasure / VOLUMEUNIT	The net volume of concrete element. Openings, voids, chamfers, etc. are subtracted from the gross volume. Usually expressed in cubic metre (m3).
CornerChamfer	IfcPositiveLengthMeasure / LENGTHUNIT	The chamfer in the corners of the precast element. The chamfer is presumed to be equal in both directions.
ManufacturingToleranceClass	IfcLabel	Classification designation of the manufacturing tolerances according to local standards.
FormStrippingStrength	IfcPressureMeasure / PRESSUREUNIT	The minimum required compressive strength of the concrete at form stripping time.
LiftingStrength	IfcPressureMeasure / PRESSUREUNIT	The minimum required compressive strength of the concrete when the concrete element is lifted.
ReleaseStrength	IfcPressureMeasure / PRESSUREUNIT	The minimum required compressive strength of the concrete when the tendon stress is released. This property applies to prestressed concrete elements only.

MinimumAllowableSupportLength	IfcPositiveLengthMeasure / LENGTHUNIT	The minimum allowable support length.
InitialTension	IfcPressureMeasure / PRESSUREUNIT	The initial stress of the tendon. This property applies to prestressed concrete elements only.
TendonRelaxation	IfcPositiveRatioMeasure	The maximum allowable relaxation of the tendon (usually expressed as %/1000 h). This property applies to prestressed concrete elements only.
TransportationStrength	IfcPressureMeasure / PRESSUREUNIT	The minimum required compressive strength of the concrete required for transportation.
SupportDuringTransportDescription	IfcText	Textual description of how the concrete element is supported during transportation.
SupportDuringTransportDocReference	IfcExternalReference	Reference to an external document defining how the concrete element is supported during transportation.
HollowCorePlugging	IfcLabel	A descriptive label for how the hollow core ends are treated: they may be left open, closed with a plug, or sealed with cast concrete. Values would be, for example: 'Unplugged', 'Plugged', 'SealedWithConcrete'. This property applies to hollow core slabs only.
CamberAtMidspan	IfcRatio Measure	The camber deflection, measured from the midpoint of a cambered face of a piece to the midpoint of the chord joining the ends of the same face, as shown in the figure below, divided by the original (nominal) straight length of the face of the piece.
BatterAtStart	IfcPlaneAngleMeasure	The angle, in radians, by which the formwork at the starting face of a piece is to be rotated from the vertical in order to compensate for the rotation of the face that will occur once the piece is stripped from its form, inducing camber due to eccentric prestressing.
BatterAtEnd	IfcPlaneAngle Measure	The angle, in radians, by which the formwork at the ending face of a piece is to be rotated from the vertical in order to compensate for the rotation of the face that will occur once the piece is stripped from its form, inducing camber due to eccentric prestressing.
Twisting	IfcPlaneAngle Measure	The angle, in radians, through which the end face of a precast piece is rotated with respect to its starting face, along its longitudinal axis, as a result of non-aligned supports. This measure is also termed the 'warping' angle.
Shortening	IfcRatio Measure	The ratio of the distance by which a precast piece is shortened after release from its form (due to compression induced by prestressing) to its original (nominal) length.
PieceMark	IfcLabel	Defines a unique piece for production purposes. All pieces with the same piece mark value are identical and interchangeable. The piece mark may be composed of sub-parts that have specific locally defined meaning (e.g. B-1A may denote a beam, of generic type '1' and specific shape 'A').
DesignLocationNumber	IfcLabel	For a 'precast piece' this must define a unique location within a structure, the 'slot' for which the piece was designed. For a 'precast piece type' this must have a null or 'Not Applicable' value.
ElementSurfaceArea	IfcArea Measure	The gross surface area of the precast concrete element. Usually expressed in square metres (m ²).
ElementFormedSurface Area	IfcArea Measure	The net surface area of the precast concrete element that is in contact with a form. Usually expressed in square metres (m ²).