

**COMPARATIVE STUDY OF LOADING AND INSIDE STYLE  
ON PC-U (Prestressed Concrete-U) GIRDER BASED  
RSNI T-02-2005 AND SNI 1725-2016  
(A Case Study at the Sembayat Baru II Bridge in Gresik, East Java)**

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### ABSTRACT

*Bridges are a means of connecting that are important for life and the economy. In the construction work of the Sembayat Baru II Gresik Bridge, East Java, the PC-U (Prestressed Concrete-U) Girder design refers to the RSNI T-02-2005. Along with the times, these standards are updated to become SNI 1725-2016. Therefore, this study will conduct a comparative study of loading and internal force on PC-U (Prestressed Concrete-U) Girder based on RSNI T-02-2005 and SNI 1725-2016 using CSI Bridge software. The results of this study are that the loading value and internal force with RSNI T-02-2005 have a greater influence on modeling PC-U (Prestressed Concrete-U) Girder than loading with SNI 1725-2016.*

*Keywords : Bridge, PC-U Girder, RSNI T-02-2005, SNI 1725-2016,*

### BACKGORUND

Bridges are an important means of connecting life and the economy. According to Struyk (1984), a bridge is a construction that is used to continue the path through an obstacle that is lower. Bridge loading is carried out by giving a load to the upper structure which is calculated from the total factored force and the load combination based on RSNI T-02-2005 and SNI 1725-2016. The PC-U (Prestressed Concrete-U) Girder design used in this study was obtained from the Abipraya Beton Plant Gempol PT.Brantas Abipraya (Persero). This research is only viewed from the superstructure of the PC-U (Prestressed Concrete-U) Girder bridge. Comparison method of PC-U (Prestressed Concrete-U) Girder behavior based on RSNI T-02-2005 and SNI 1725-2016 with modeling using CSI Bridge software.

### OBJECTIVES

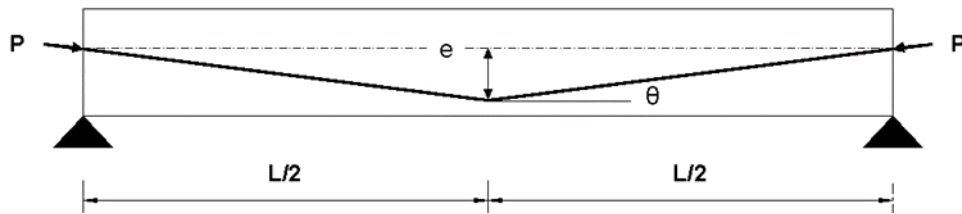
The objectives of this research is to make modeling, analyze loading and compare deflection behavior of PC-U (Prestressed Concrete-U) Girder using CSI Bridge software and compare between RSNI T-02-2005 and SNI 1725-2016 guidelines

### PROBLEM IDENTIFICATION

The PC-U (Prestressed Concrete-U) Girder design used in this study was obtained from the Abipraya Beton Plant Gempol PT.Brantas Abipraya (Persero). This research is only viewed from the superstructure of the PC-U (Prestressed Concrete-U) Girder bridge. Comparison method of PC-U (Prestressed Concrete-U) Girder behavior based on RSNI T-02-2005 and SNI 1725-2016 with modeling using CSI Bridge software.

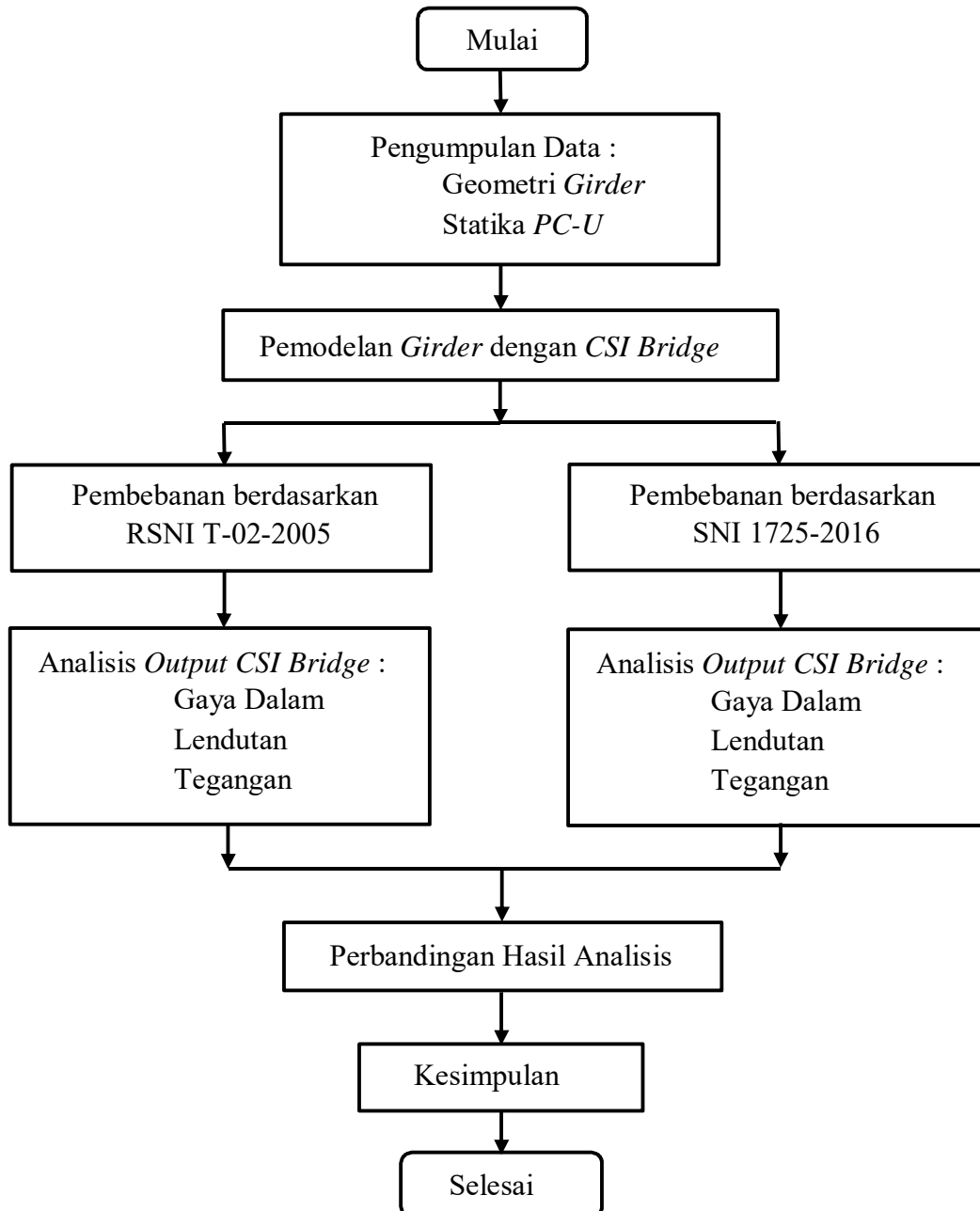
### LITERATUR REVIEW

According to Budiadi (2008), in addition to the longitudinal prestressing force acting on the prestressed beam on the anchor, the transverse (upward) force is also generated due to prestress, where there is a curvature (curvature) in the tendon.



Gambar 1. The elevation of a pres-tress beam (Budiadi., 2008).

## METHODOLOGY



## RESULT AND DISCUSSION

Table 1. shows the results of the calculation of the PC-U Girder satika the amount of deflection due to the effect of the prestressing force on the service boundary conditions of -16,594 cm. Meanwhile, based on the results of the CSI Bridge modeling on the service boundary conditions can be seen that the amount of deflection at the service boundary conditions is 0.128 m.

Tabel 1. Statica Result of *PC-U Girder*

NO	LOAD	RELEASE	ERECTION	FINAL	ALLOWABLE	KETERANGAN
		CM	CM	CM	L/800 CM	
1	PRESTRES	-16.594	-16.594			CAMBER
2	BEAM	9.271	9.271			
3	ADL DECK	-7.323				CAMBER
			3.119			
4	ADL ASPAL		-4.204	-4.204		CAMBER
				0.431		
				-3.772		
				-		
5	CREEP			11.31		
				7		
	LL			3.732	6.1	
				-7.585	OK	CAMBER

## CONCLUSION

Based on research conducted on a comparative study of loading and internal force on the PC-U (Prestressed Concrete-U) Girder based on RSNI T-02-2005 and SNI 1725-2016 regarding bridge loading (case study on the Sembayat Baru II Bridge, Gresik, East Java ) The conclusion is the value of the shear force due to loading with SNI 1725-2016 in service and ultimate conditions tends to be smaller than the load with RSNI T-02-2005. The amount of moment (moment) and deflection due to loading with SNI 1725-2016 in service and ultimate conditions tend to be smaller than the loading with RSNI T-02-2005. Loading with RSNI T-02-2005 has a greater influence on the PC-U (Prestressed Concrete-U) Girder modeling than the loading with SNI 1725-2016

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