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Earthquake-Proof Composite Bridge Column Using Deformed H-Shapes

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Synopsis :

A proposed composite bridge column (REED method) has been developed with the aims
of speedy construction, labor saving, and increase in resistance against earthquake. For
the purpose of achieving these objects, the composite bridge column consists of precast
forms, deformed H-shapes as an alternative material for reinforcing bars, and filled-in
concrete. The present study has verified the mechanical characteristics and the
construction conditions of the composite bridge column. As a result of the studies, the
followings are confirmed: (1) The composite structure can be designed on the basis of RC
method wherein deformed H-shapes are treated as equivalents for reinforcing bars. (2)
The ductility (resistance against earthquake) of the composite structure is more
excellent than that of a conventional reinforced structure. (3) The reduction ratios of the
construction period and the labor force of the composite pier method, as compared with
those of a conventional method, are 64½ and 46½, respectively.

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突起付 H 形鋼を用いた高耐震複合構造橋脚*

川崎製鉄技報
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要旨

橋脚の耐震性向上、橋脚施工の合理化といったニーズに答えうる工法として、突起付 H 形鋼とプレキャスト埋設型枠を用いた鉄骨コンクリート複合構造橋脚 (DBFCV 工法) を用いた、高耐震性橋脚



工の合理化、ならびに安全性の向上などの施工上の利点が大き

Steel	Strain on allowable stress * (μ)	Yield strength (MPa)	Tensile strength (MPa)	Modulus of elasticity (GPa)
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Legend		Specimen		
		RC	SC	SCP
Concrete strength	Compressive strength	36.1	35.0	98.8

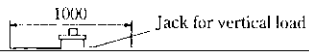


Table 5 Material properties of concretes

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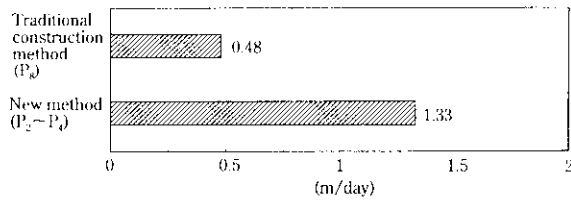


Fig. 12 Speed of construction

(2) 梁曲げせん断試験において、突起付 H 形鋼を用いた鉄骨コンクリート試験体（プレキャスト型枠なし）に発生した最大ひび割れ幅は、ひび割れに対する配慮が必要な使用限界状態に相当する荷重レベルでは、RC 試験体とほぼ同等であった。

一方、これら 2 つの供試体よりも、この鉄骨コンクリート構造の表面にステンレスファイバーを混入したプレキャスト型枠「SEED フォーム」を配置した試験体（提案した構造）の方が、すべての荷重レベルにおいて最大ひび割れ幅が小さかった。

Traditio

(3) 水平交番載荷試験において RC 試験体が 7δv で終局に至っ