

DUCTILE DETAILING OF REINFORCED CONCRETE STRUCTURES

1. FOLLOWING PROVISIONS SHALL BE ADOPTED IN ALL REINFORCED CONCRETE STRUCTURE IN SEISMIC ZONE III, IV, AND V
2. THE TOP AS WELL AS BOTTOM REINFORCEMENT OF A BEAM SHALL CONSIST OF AT LEAST TWO BARS THROUGHOUT THE MEMBER LENGTH.
3. IN AN EXTERNAL JOINT, BOTH THE TOP AND THE BOTTOM BARS OF THE BEAM SHALL BE PROVIDED WITH ANCHORAGE LENGTH, BEYOND THE INNER FACE OF THE COLUMN, EQUAL TO THE DEVELOPEMENT LENGTH IN TENSION PLUS TEN TIMES THE BAR DIAMETER. IN AN INTERNAL JOINT, BOTH FACE BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN. (FIG.-1)

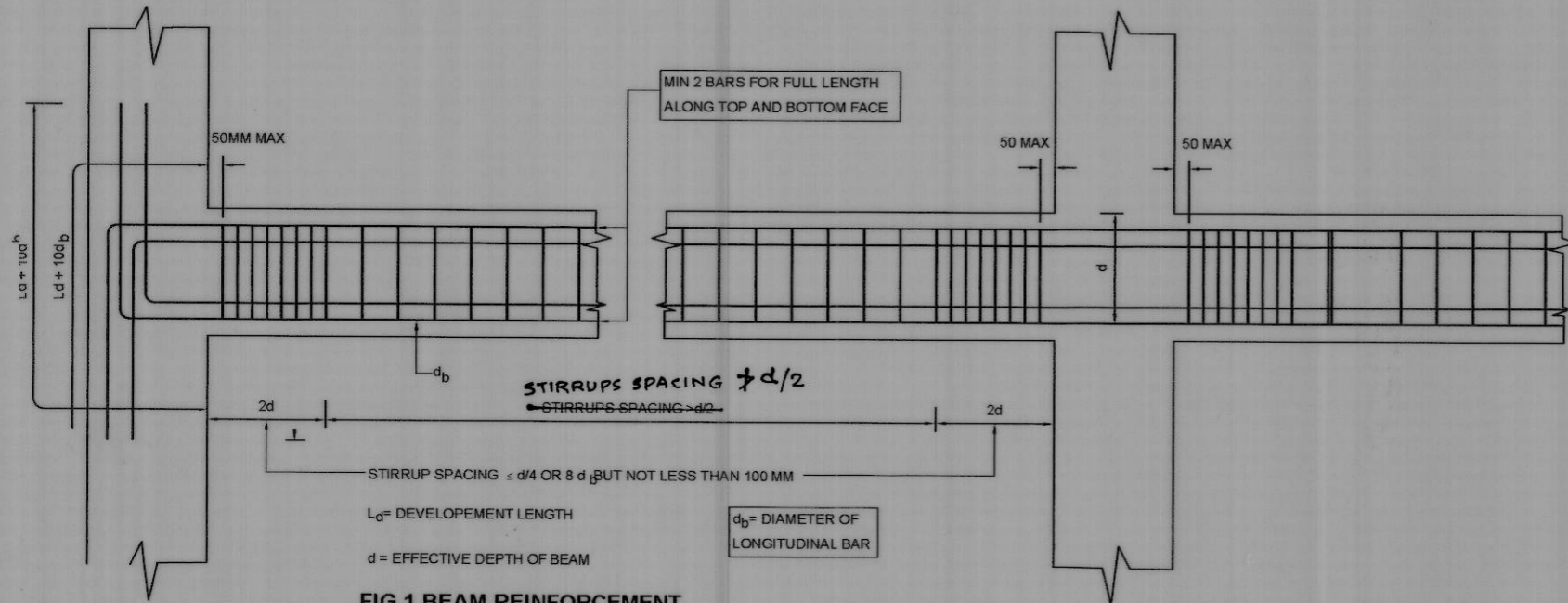


FIG.1 BEAM REINFORCEMENT

4. THE LONGITUDINAL BARS SHALL BE SPLICED, ONLY IF HOOPS ARE PROVIDED OVER THE ENTIRE SPLICE LENGTH, AT A SPACING NOT EXCEEDING 150 MM (FIG.-2). THE LAP LENGTH SHALL NOT BE LESS THAN THE BAR DEVELOPEMENT LENGTH IN TENSION. LAP SPLICES SHALL NOT BE PROVIDED (a) WITHIN A JOINT (b) WITHIN A DISTANCE OF 2d FROM JOINT FACE AND (C) WITHIN A QUARTER LENGTH OF THE MEMBER WHERE FLEXURAL YIELDING MAY GENERALLY OCCUR UNDER THE EFFECT OF EARTHQUAKE FORCES. NOT MORE THAN 50 PERCENT OF THE BARS SHALL BR SPLICED AT ONE SECTION. (FIG.-2)

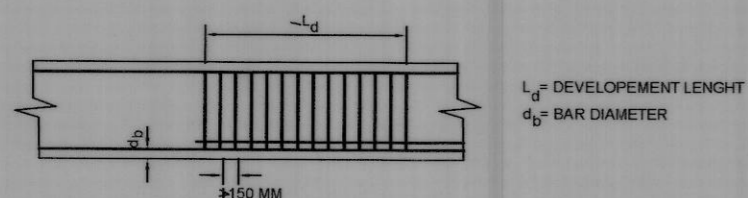


FIG - 2 LAP SPLICE IN BEAM

5. MAXIMUM SPACING OF STIRRUPS OVER A LENGTH OF 2d AT EITHER END OF BEAM SHALL NOT EXCEED $d/4$ OR 8 TIMES THE DIA OF SMALLEST LONGITUDINAL BARS. HOWEVER, IT NEED NOT BE LESS THAN 100 MM. THE FIRST STIRRUPS SHALL BE AT A DISTANCE NOT EXCEEDING 50 MM FROM THE JOINT FACE. ELSEWHERE THE BEAM SHALL HAVE VERTICAL STIRRUPS AT A SPACING NOT EXCEEDING $d/2$ WHERE d IS THE EFFECTIVE DEPTH OF THE BEAM (FIG.-1). THE STIRRUPS SHALL HAVE 135 HOOKS WITH A 10 DIA EXTENSION BUT NOT LESS THAN 75 MM (FIG-3)



FIG.3 HOOP CROSS TIE AND U STIRRUPS

SNO.	DATE	DESCRIPTION	S.O.I	SO-I INITIAL
2.	03-8-06	NOTE 5, LINE 4 FOR "135 HOOKS" READ "135 DEGREE HOOKS"	MZ	[Signature]
1	03-8-06	FIG 1. BEAM REINFORCEMENT FOR "STIRRUPS SPACING > d/2" READ "STIRRUPS SPACING > d/2"	MZ	[Signature]
REVISIONS				
DATE	31-3-06	CHIEF ENGINEER	JALANDHAR ZONE	
DRN	RENUKA			
TCD				
CKD				
SCALE	AS SHOWN	SEISMIC PROVISIONS		
SHT. SIZE	A3			
[Signature] (DEVI SINGH) TECH.OFFICER AAD (ARCH)		DUCTILE DETAILING OF REINFORCED CONCRETE STRUCTURE		
[Signature] (YOGESH K SINGHAL) SE DIRECTOR (DESIGN) FOR CHIEF ENGINEER		DRG. NO.	SHEET NO.	
			6/8	
		DRG NO CEJZ / STD-216 / 06		