International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 05 Issue: 04 | Apr-2018 www.irjet.net p-ISSN: 2395-0072

# Study on Post tensioned and Reinforced concrete transfer slab: State of Art

**HARI PRASADH.T[1], MOHAN KUMAR.N. S[2], ANAND.T[3]**

[1,2]*Student, Dept. of civil Engineering, kumaraguru college technology, Tamilnadu, India.*
[3]*Assisstant professor, Dept. of civil Engineering, kumaraguru college technology, Tamilnadu, India.*

---

## INTRODUCTION:

There are many exceptional creation approaches of transfer beam in fact initiatives application, from stride, can be divided into single stride, double strides and multi strides , from the higher wall shape, can be divided into full stride, open hole , without open hollow, open the door hole and windows hollow ; from the transfer beam function, can be divided into bresummer and underpinned column; from the transfer beam form, can be divided in to haunch or without haunch; from the adopted materials of transfer beam production, can be divided into concrete, inherent stress concrete and steel ribs concrete, metallic production and so forth. Interpretation relay approaches of beam type transfer production undertake the shape of wall (pole) transfer underpinned pole(wall), has the gain of at once interpretation relay, specific and clear access of interpretation relay, handy to tasks calculate, analyse and layout, and keep the constructing cost. transfer beam has the gain of correct loading-wearing capability feature, reliable work, smooth creation and convenient creation, construction calculation also relatively smooth. As the main pressure circumstance of beam type switch floor—transfer massive beam, the loading-carrying capability bureaucracy.

**J.W. track et.al** studied the flat plate system which might be designed as a building frame system or dual system, which has not yet been established. the results of experimental study about 3 remote interior flat slab column connections were applied to input data of slab-column connections for non-linear pushover analysis to analyse the system level seismic potential for 45 shear-reinforced flat plate systems. the over-strength and a response modification factor, both of that are design factors of the seismic resistance system in the IBC 2012 as an index. Results of the experimental analysis confirmed that the flat-plate system with shear band had good overall performance of an RC (reinforced-concrete) IMRF (intermediate moment resistance frame) other than the 5-storey case. in the case of low-rise buildings, the value of the over-strength factor was less than the value of the standards, due to the fact redundancy is low for buildings with few members. however, structures over 10-storey tall, which had been strengthened by means of shear band met the value of the standards. the effective response modification factor values were over RC IMRF regardless of shear reinforcement and the value of maximum response factor increased by twenty percentage when shear studs are provided as shear reinforcement which in-turn increased the ductility of the structure [1].

**Soerya Widjaja et.al**. studied the complex behaviour of corner column-slab connections, the moment transfer in addition to gravity load increased the behavioural complexity. Stiffness, ductility and drift capacity were studied experimentally on 5 large scale specimens subjected to combined gravity and bidirectional lateral loads. It was found that slab stiffness was reduced due to unidirectional and bidirectional lateral loads, which in turn decreases cracked slab thickness. The presence of shear studs reinforcement increases ductility, supress the loss of stiffness after reaching critical lateral load drift, significantly increases the ultimate drift capacity and unbalanced moment [2].

**S. Teng et.al** studied and furnished a clean review of previous experimental records on exterior slab-column connections, together with edge and corner connections. The punching strength of experimental records is checked based on the ACI 318-02. It is determined that the interplay between shear and moment is vulnerable for area connections, and even weaker for corner connections. Reductions of stresses are each proposed based totally on the ACI described value for edge and corner connections based on the evaluation of available records for outside connections, such as edge and corner connections, the subsequent conclusions can be drawn. For exterior connections the interaction among shear and moment is not as strong as anticipated. The interaction between shear and moment is even weaker for corner connections than for edge connections. A 60 percentage of ACI described value should be used for area connections, and 10 percent of that value have to be used for corner connections best. once the reduced value of yield strength is used in the ACI 318-02, the accuracy of the strength prediction for exterior slab-column connections may be advanced greatly [3].

**Tamrazyan et.al** founded that high-rise buildings have recently grow to be the critical form of building structure built considerably in densely populated countries or urban regions. in conjunction with revolutionary

building materials and construction techniques, construction of high-rise buildings has usually improved. Monolithic high-rise building with transfer floors is one of the realistic methods in construction of tall buildings. This studies is making an attempt to perceive and inspect risk assessment in analysing high-rise buildings with transfer floors using parallel-structure systems. the primary goal of this work is to find a answer to govern the stableness of high-rise structures after occurrence of any events leading to inefficiency of primary structural members. Such systems are taken into consideration with all viable conditions, occasions and risk analysis. Described the influence via the ratio of the transverse rigidity of the transitional floors and upper floors in the seismic-resistant structures. For buildings with shear-partitions, and the transitional floors, wherein the location of the transitional floors as a substitute low, restricting the ratio of shear rigidity, it's far feasible to restrict the version of the drift angle among the floors above and beneath the transitional floor and, accordingly, the change of internal forces [4].

**Y. Zhua et.al** investigated transfer structures among the high zone and the low zone of a high-rise building has end up famous and every so often even inevitable in contemporary-day constructing developments. under earthquake actions, focused stresses and huge lateral displacement might also additionally occur at the ones places wherein stiffness modified considerably both on plan or in elevation. The exam, based on the effects of the preceding shaking table check and numerical analyses, fashionable seismic behaviour of switch systems is recognized. The mechanisms for the formation of gentle tale underneath the switch floors, the abrupt exchange in inter-tale go with the flow inside the location of transfer story and shear awareness because of local deformation of transfer systems are summarized. This remark can enhance the general know-how of the seismic reaction of concrete homes with transfer structures in low to-mild seismicity regions.

Shaking table tests suggest that underneath common earthquake assaults, all the homes with switch systems remained elastic, no cracks had been discovered inside the models and the herbal frequencies of the models did no longer decrease. while the fashions had been subjected to rare earthquakes, great cracks took place within the location of the transfer shape and the fashions were critically broken. The herbal frequency of the systems reduced by way of at most 46 % and the damping ratio changed into accelerated to 4.5-7.5%. nearby flexural deformation of switch systems become recognized as the beginning of shear concentration at outside partitions above the switch ground. a fixed of measures have been summarized for minimizing the unfavourable impact of shear concentration. To better are expecting the interplay among outdoors shear walls and different structural additives, bendy shell or three-dimensional solid elements ought to be used to version the transfer systems and slabs inside the neighbouring flooring of the switch degree [5].

**Bin Wang et.al** worked on evaluation of excessive-upward thrust building switch ground creation approach: For the stress status of excessive-upward thrust building transfer ground, it's at the test fundamental, integrate with the ANSYS finite element to examine, similarly explained its exchange extent, distribution variety, can provide a correct records reference for production design. The duration modulus μ of half of stress connection of excessive-upward push building transfer floor scaffolding can be treat as the revision of reality, follow test technique, get enjoy facts of μ value of scaffolding, convenient to the stableness calculation of scaffolding is appropriate fact. whilst analyse the loading-carrying functionality situation of switch floor multilayer scaffolding, its floor tension to advance look at evaluation which based on the principle derivation, handy switch the layout of switch floor every floor aid. Used on the same strategies of calculating half of stress connection framework, can as compared with the design of limited popularity techniques, to evaluate which technique could be greater suitable fact situation [6].

**Gang Li et al** integrated seismic optimum design approach for the high-upward push buildings with girder transfer ground, which include topology finest design of the switch ground and length finest design of beams and columns. The initial value and life cycle cost are hired as the objective feature within the seismic layout, respectively. The consequences show that the superior layout of minimal life cycle fee is greater value-powerful [7].

**8 Y.M. Abdlebasset** founded that many high-rise buildings, architectural necessities may additionally bring about a variable configuration for the vertical structural factors among the memories of the building. to deal with such vertical elements' discontinuity, a "switch" floor conveying vertical and lateral loads between top and lower stories ought to be introduced. A downside of the switch floor is the surprising change in the building's lateral stiffness at its stage: the structure turns into at risk of the formation of a gentle-storey mechanism beneath moderate to intense earthquakes. these homes commonly confirmed traditional elastic behaviour for common earthquake but go through big crack inside the location of the switch floors for rare earthquake. For design functions, current numerical modelling of excessive-rise building adopts reduced stiffness for the vertical factors for electricity evaluation and complete stiffness for serviceability and waft evaluation: a lifestyle that desires to be demonstrated. A 3-D numerical version is constructed-up for a high-upward thrust building with such vertical irregularities

and analysed the usage of elastic reaction spectrum and nonlinear time-records evaluation strategies. The impact of the switch flooring on the buildings' go with the flow and seismic-generated internal forces is investigated in which judgment for adopting a full or decreased stiffness for the vertical factors is scrutinized [8].

## Conclusion:

1. For the construction of buildings with shear-walls and transitional floors and production of buildings with rigid centre and transitional floors, the analysis of the flow attitude among the flooring above and below the transition is vital and changes in inner forces. the primary factors affecting the seismic balance of buildings: top of the transitional ground, the ratio of the equal pressure of the higher and decrease elements of the constructing relative to the transitional ground and the ratio of the transversal pressure of bearing structures of the building, are identified. For the development of buildings with the centre pressure and transitional flooring, the main influencing factors are the pressure of the outer frame of the transitional ground, ground mounting peak of the transitional ground and tension of internal body.

2. For the above two types of buildings with the height of the transitional structures of the transitional floor is the main factor affecting the seismic resistance of buildings. When the transitional floor is higher, the greater is the change in the drift angle between the floors above and below the transitional floor and greater is the change in internal forces. The design should limit the mounting height of the transitional floors.

3. For the construction of buildings with the core rigidity and transitional floors, if the outer frame of the building is designed as a system of "shear wall-frame", the rigidity of a structural system and the distribution of shear forces is similar to the construction of "shear wall", supported by columns and beams.

4. For building structures with the core rigidity and transitional floors, if the outer frame of the building is designed as a framework, in general, there is no abrupt change in rigidity, but there is a sharp change in shear forces on the height of the building. The height of the installed transitional floor for such building, respectively, increases.

## References

[1] Seismic performance of flat plate system with shear reinforcements.j.w. song & j.g. song chonnam , wcee lisboa 2015.

[2] Rectangular corner column-slab connections subjected to combined gravity and bidirectional lateral loads. soerya widjaja, r. hidayat, susanto teng, nanyang technological university, singapore.37th conference on our world in concrete & structures: 29 - 31 august 2012, singapore.

[3] Strength of exterior slab-column connections, s. teng, j.z. geng*, h.k. cheong, n. 29th conference on our world in concrete & structures: 25 - 26 august 2004, singapore

[4] Study of monolithic high-rise buildings with transfer floors under progressive destruction in the nonlinear formulation.tamrazyan a. georgievich, alireza m-banafsheh varagh wcee lisboa 2015

[5] Influence of local deformations of transfer structures on seismic design y. zhua, r.k.l. sub the 14th world conference on earthquake engineering october 12-17, 2008, beijing, china.

[6] Study on high-rise building transfer floor bin wang, huiqin yang, wenxin zhang architectural engineering institute 0f binzhou polytechnic, binzhou , china. advanced materials research vols 143-144 (2011) pp 857-862

[7] smic optimum design for the high-rise building with girder transfer floor gang li and hongchao ning. the 14th world conference on earthquake engineering october 12-17, 2008, beijing, chin

[8] High-rise buildings with transfer floors: linear versus nonlinear seismic analysis y.m. abdlebasset, s. a. mourad. electronic journal of structural engineering 16(1) 2016