

Support Action for Strengthening PAlestine capabilities for seismic Risk Mitigation

SASPARM 2.0

**2014 PROJECT FOR CIVIL PROTECTION FINANCIAL INSTRUMENT
PREPAREDNESS AND PREVENTION SCHEME**

**RETROFIT MEASURES BUILDING
CONTRACTORS (UNDP Building Example)**

**Pavia – Nablus
May 25, 2016**

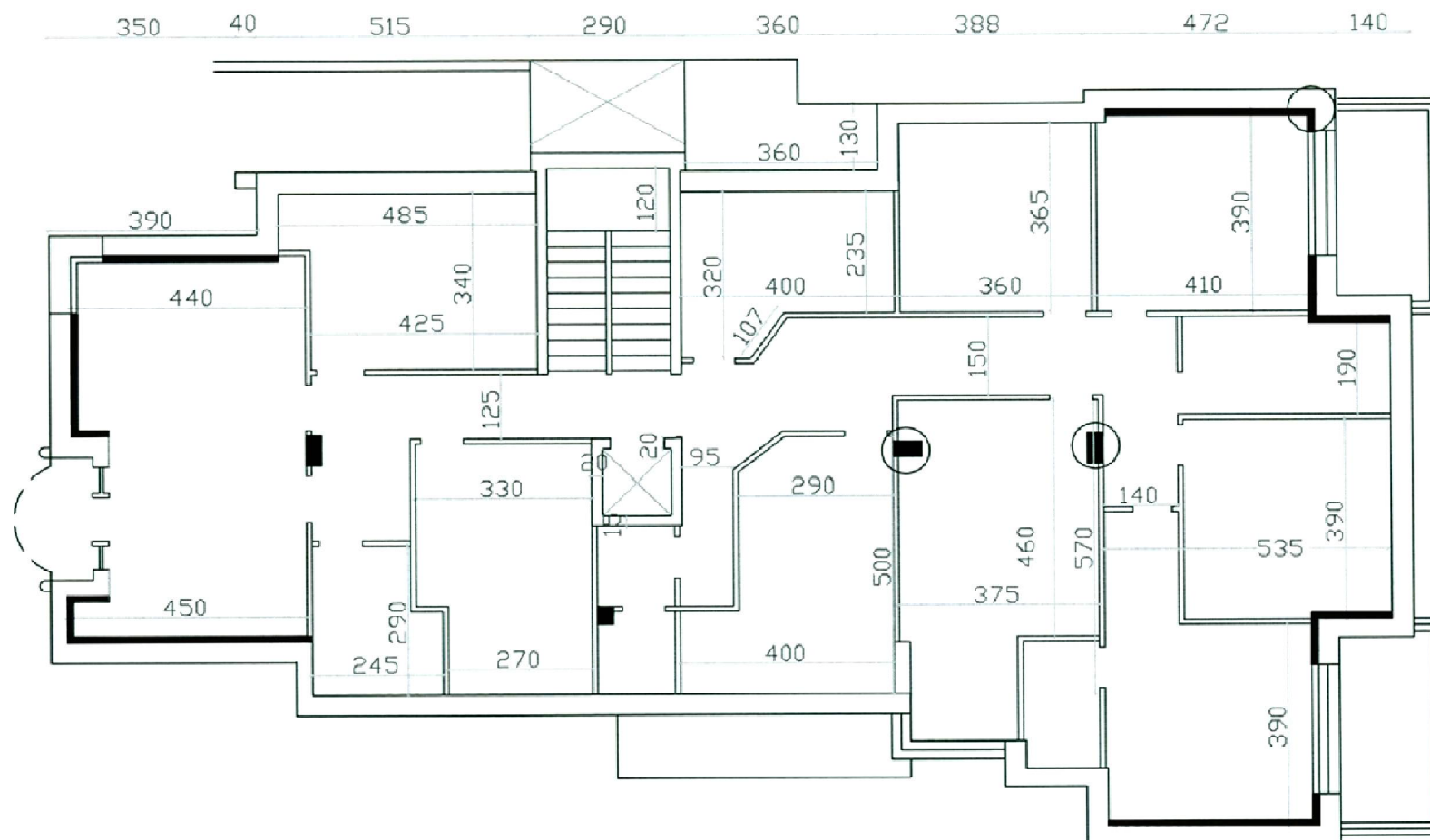


UNDP Building in Jerusalem



- The UNDP building is composed of five floors; two basements, ground, first and second, of a total area equals to about 1,282m².
- The exterior walls are masonry which are composed of stone (70mm), plain concrete (230mm), insulation (50mm) and blocks (100mm) that form a wall of 450mm thickness in most regions.
- The structural floor heights are 3m for basements, 3.2m for ground floor and 2.8m for top floors. The slab thickness is 300mm one way and two way.





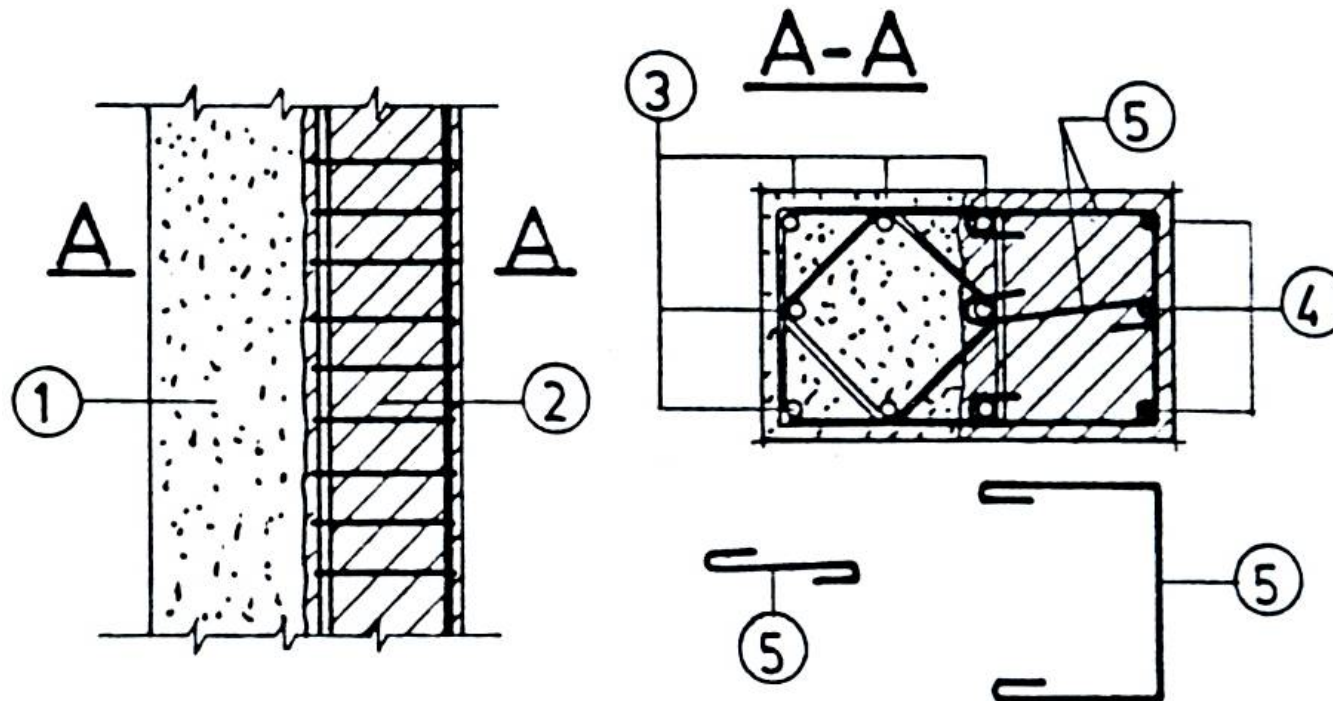
GROUND FL.



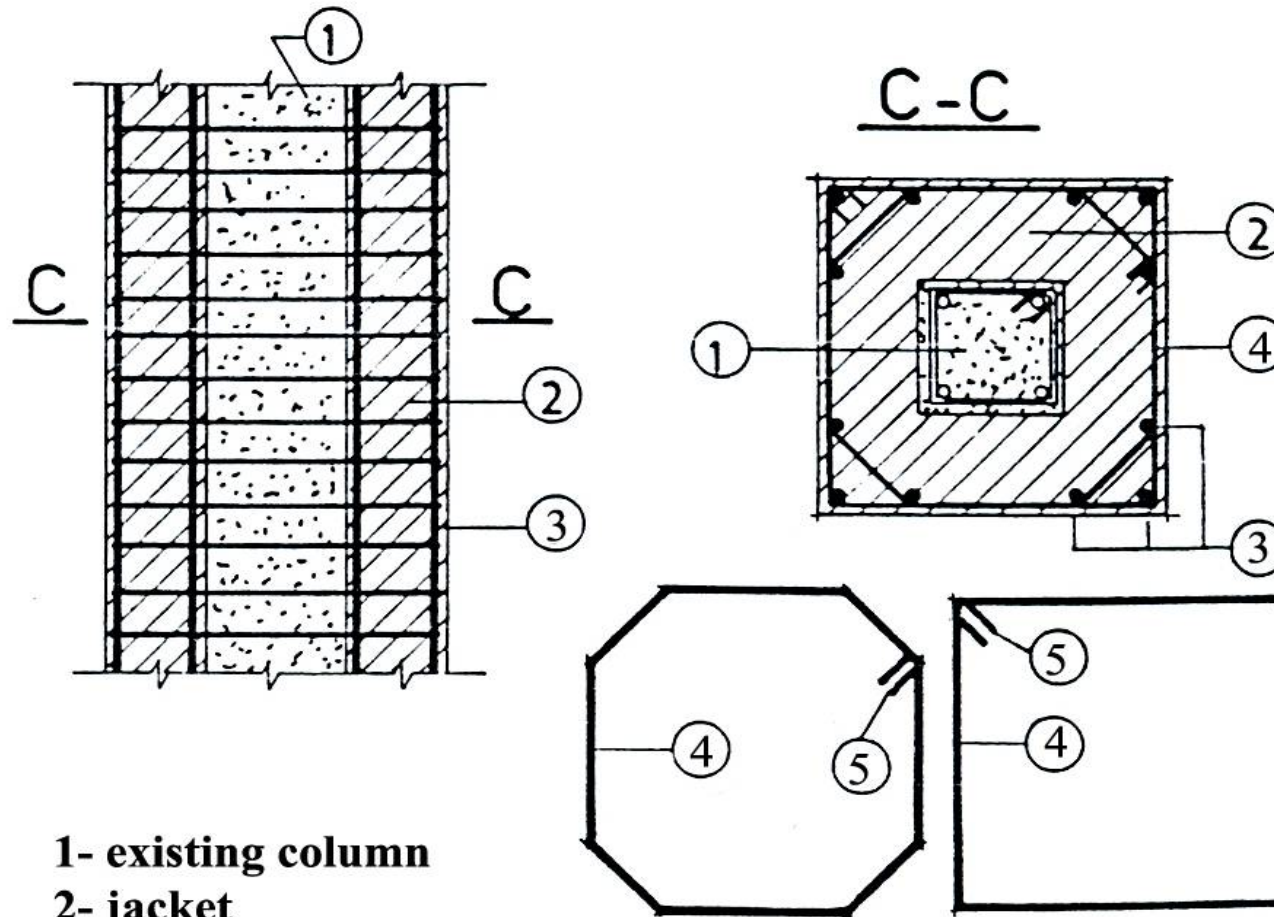
Table: Results of Non-destructive Tests

No.	Floor	Kg/cm ²				Average	Used strength
1	Basement 2 FL.	395	400	-	-	398	300
1	Basement 1 FL.	387	372	-	-	380	
2	Ground Floor	347	387	392	376	375	
3	First Floor	394	382	405		393	
4	Second Floor	372	318	-	-	345	
5	Roof	365	-	-	-	365	



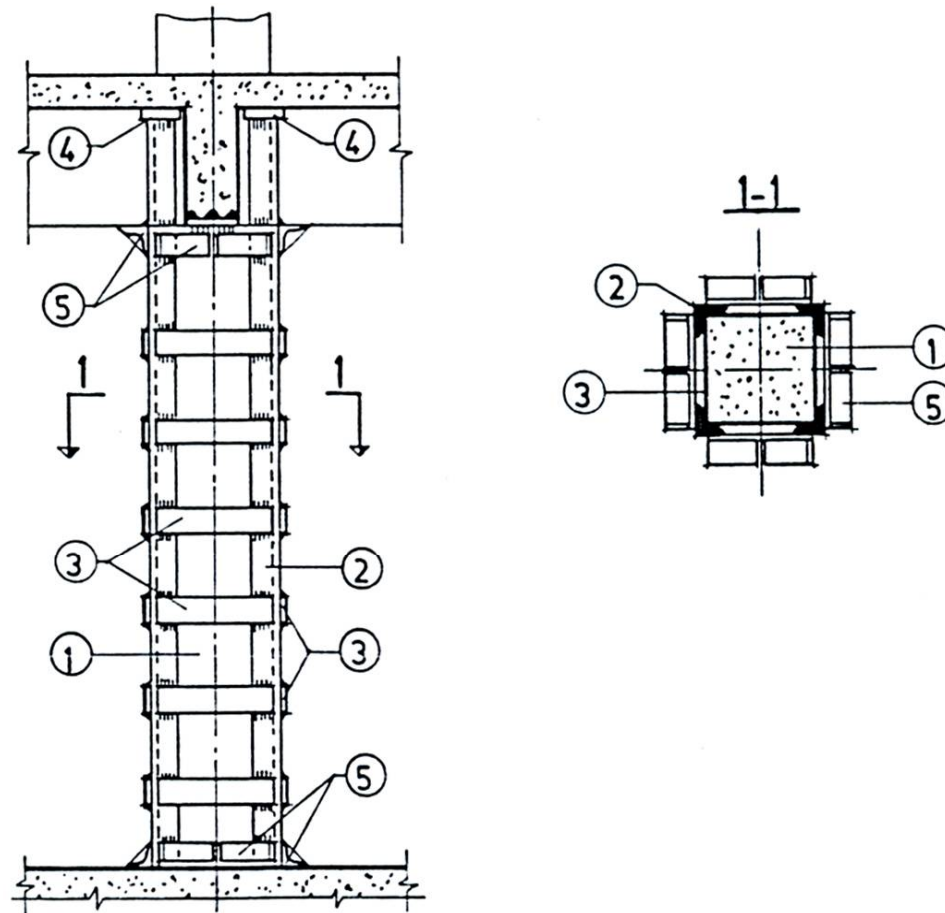


**1- existing column; 2-jacket; 3- existing reinforcement
4-added longitudinal reinforcement; 5 added ties;**



- 1- existing column**
- 2- jacket**
- 3- added longitudinal reinforcement**
- 4- ties**
- 5- alternative corners**

Steel profile jacketing

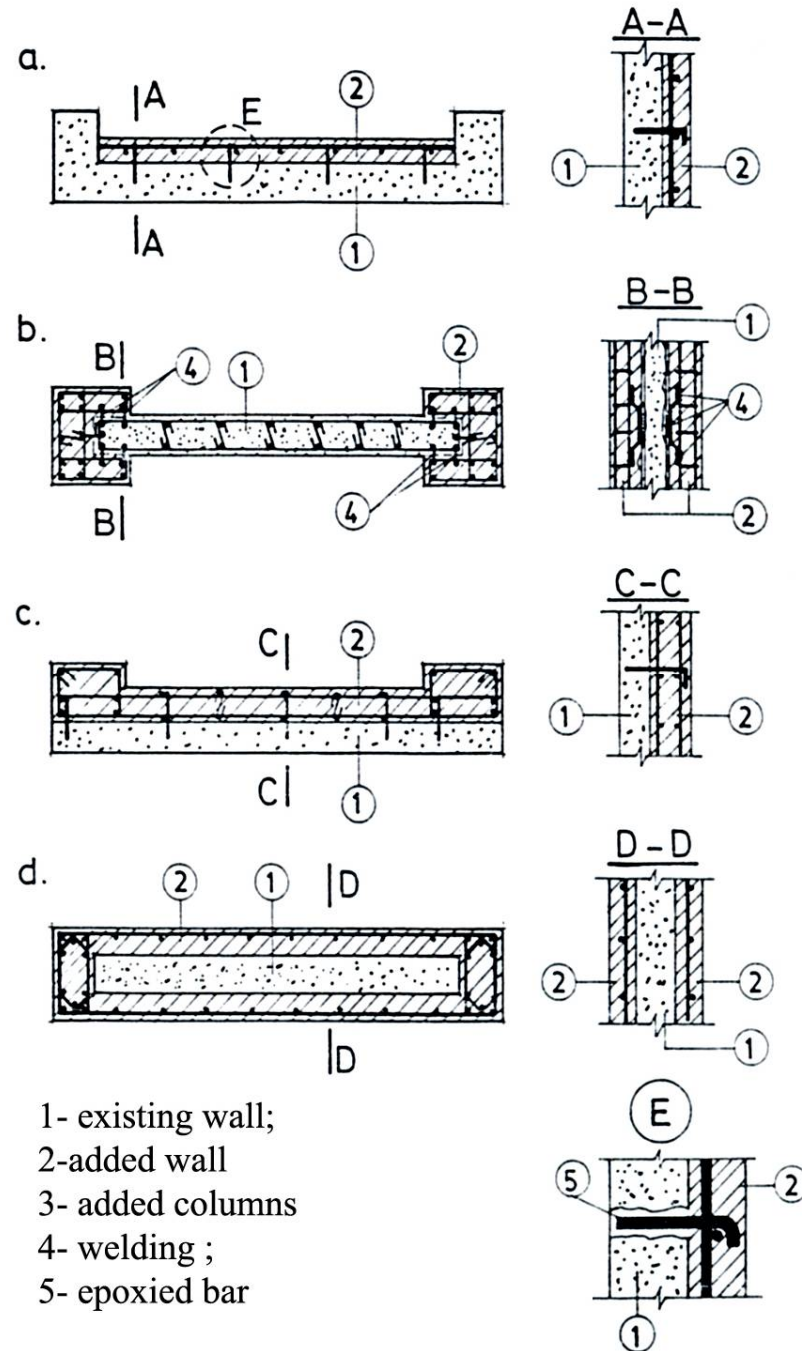


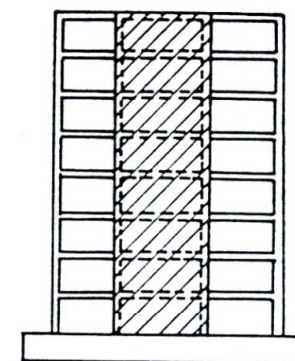
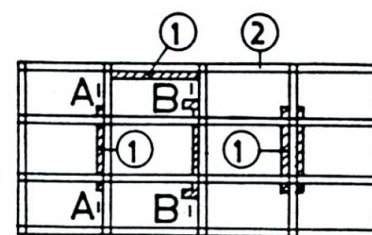
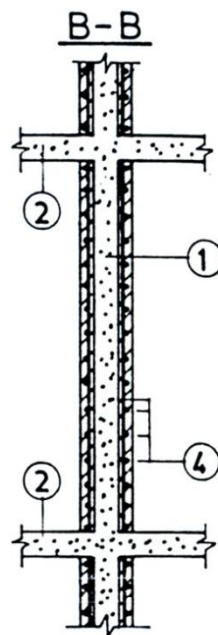
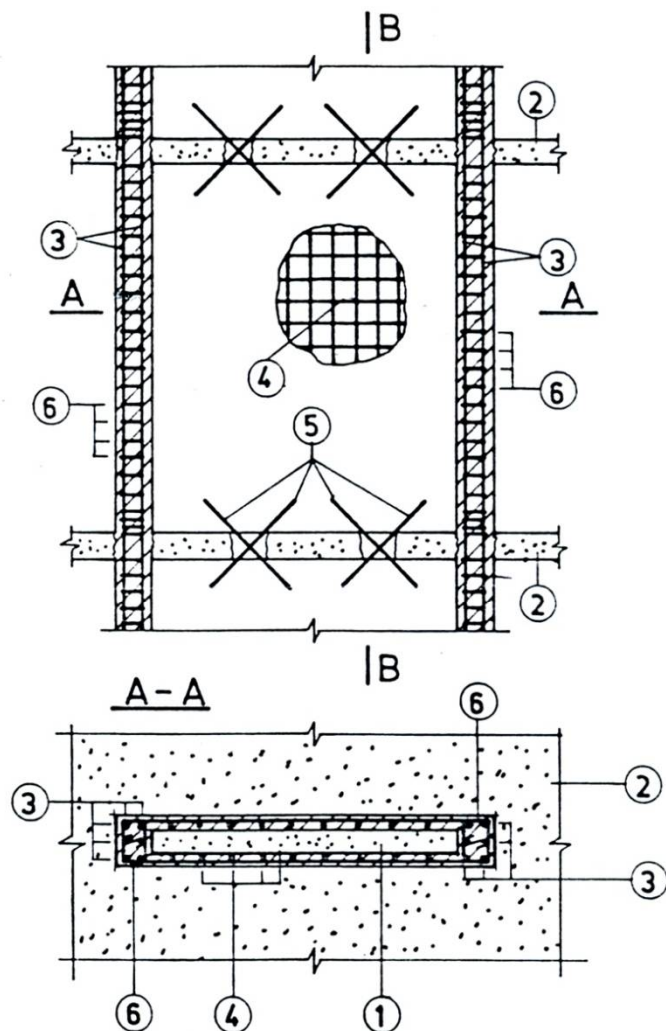
**1- existing column; 2- steel angle profile; 3- steel plate ;
4- supporting plate; 5- angle profile.**

Increase of Wall Size



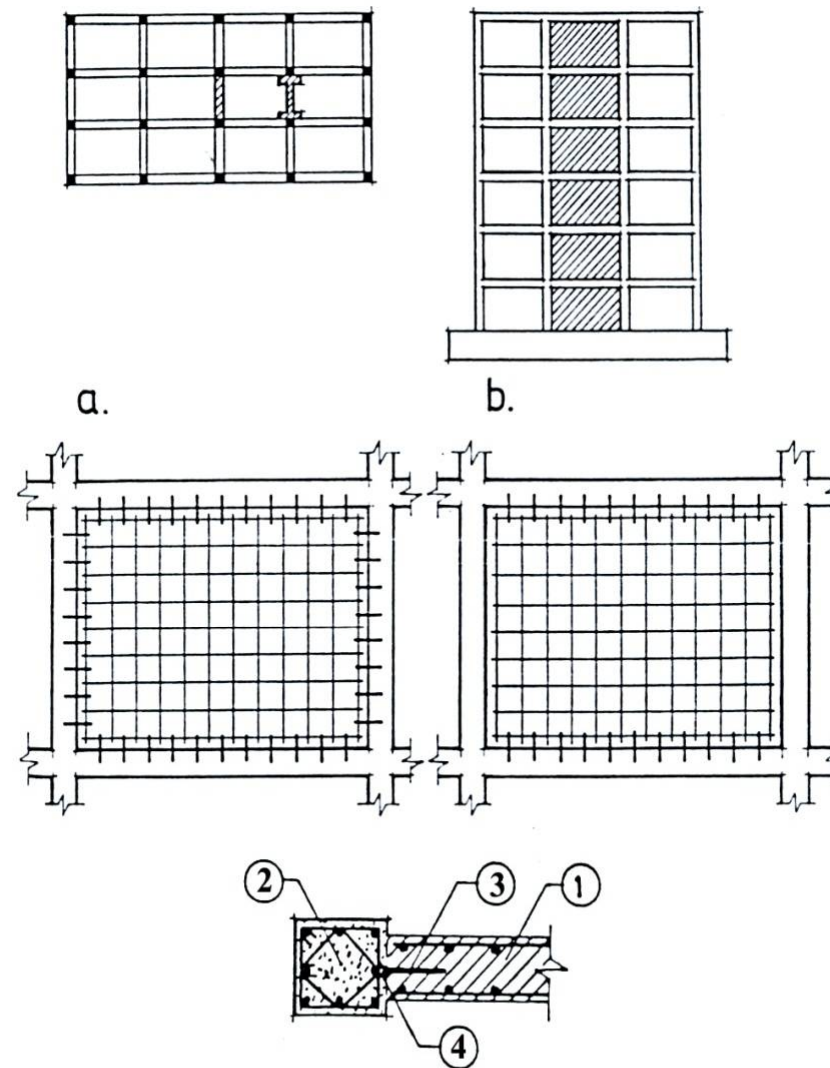
riore Pavia





**1- existing wall; 2- existing slab; 3- added longitudinal reinforcement
existing column; 4- added wire fabric; 5- diagonal connecting**

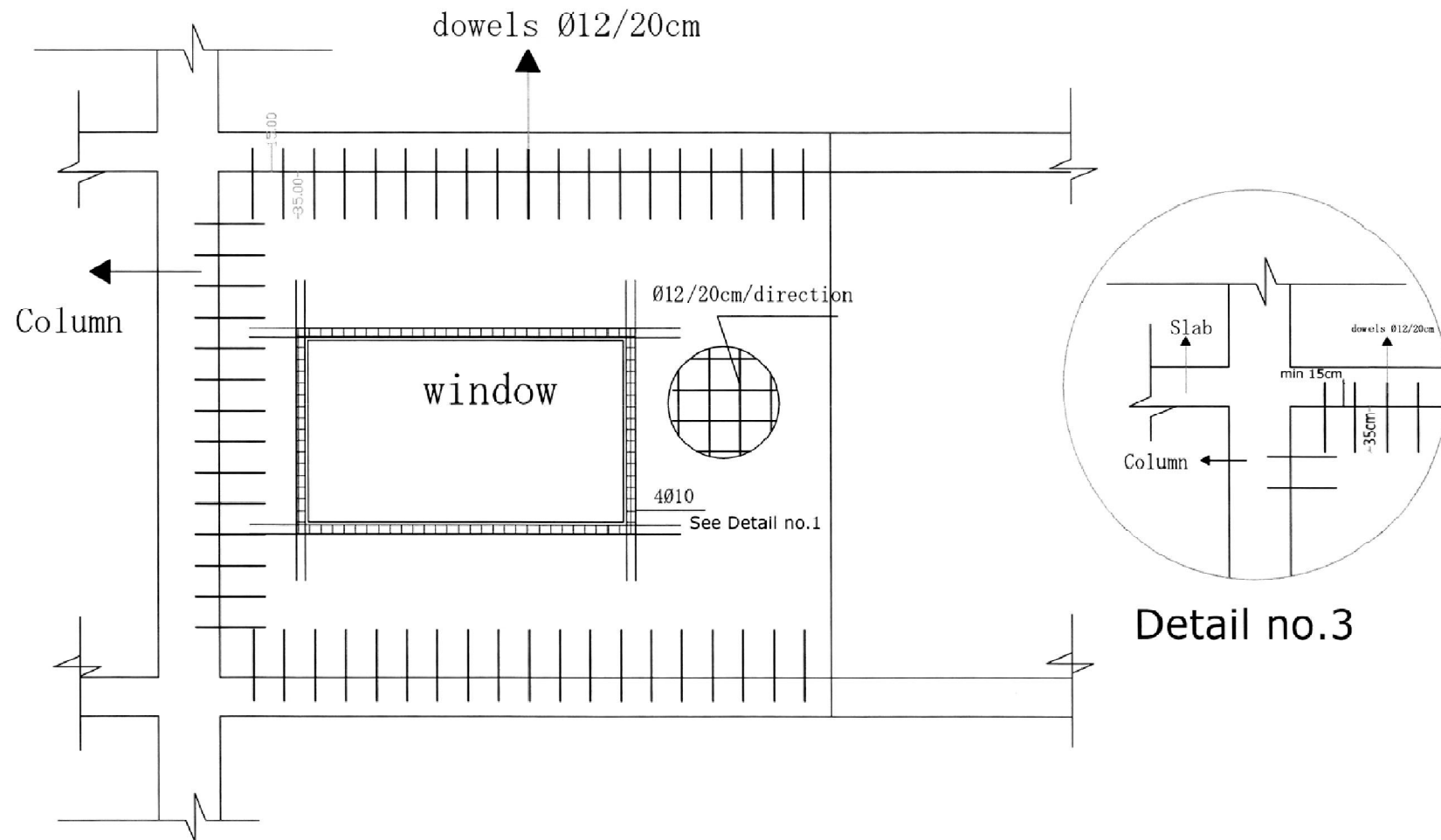




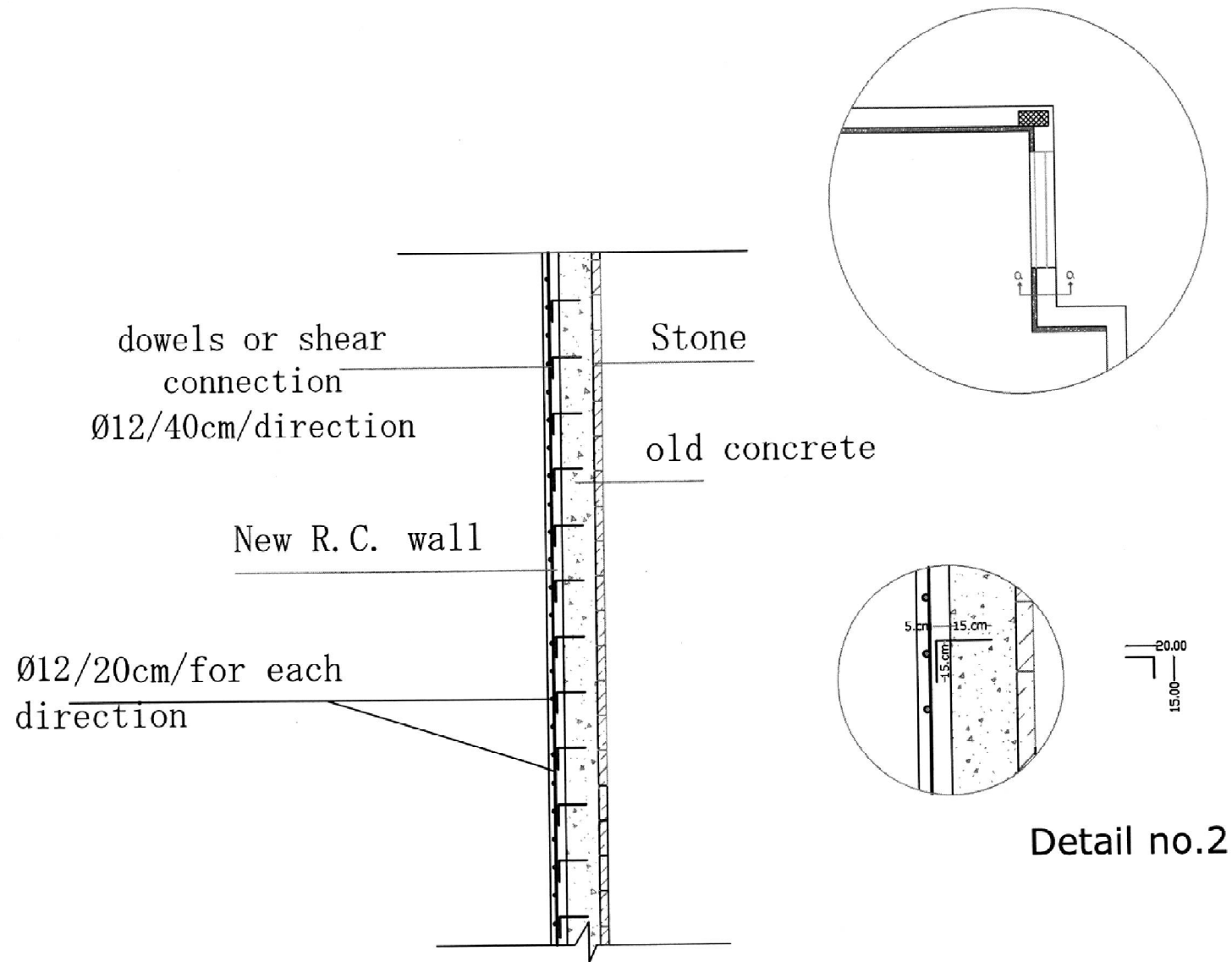
1- added infilled wall; 2- existing column;
3- welded anchor bar; 4- welding.

a- cast-in- place infilled shear wall

b- cast- in- place infilled shear wall separated from columns



Retrofitting System through adding Reinforced Concrete Jacketing Walls



Section a-a: Details of old concrete wall and proposed R.C wall

The more advanced rehabilitation techniques follow...

