

Lecture 4

Steel Hall Buildings – Part 3: Secondary framing

Acknowledgement

I express my gratitude to doctor Dawid Mądry for creating this work and for professor Antoni Biegus for making available to me the materials incorporated in his book "Stalowe budynki halowe" (Steel industrial buildings), which were mainly used at drawing this work up

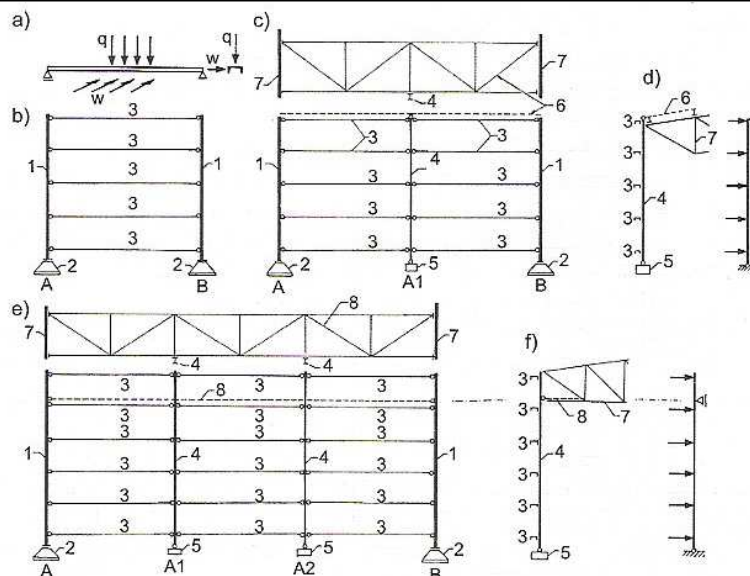


Fig.4.1 Bearing structure of the sidewall: 1- primary column, 2,5- foundations, 3- wall girt, 4- secondary column, 6- longitudinal roof bracing, 7- roof rafter, 8- longitudinal truss bracing in the plane of bottom chord

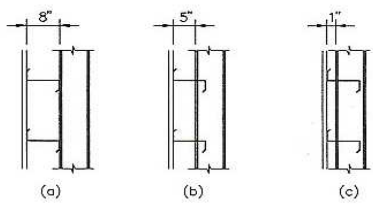


Fig.4.2 Girt insets: a) bypass, b) semiflush, c) flush

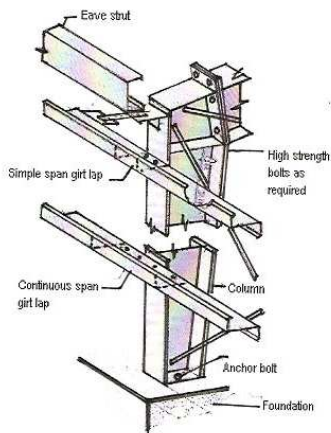


Fig.4.3 Bypass girt assembly

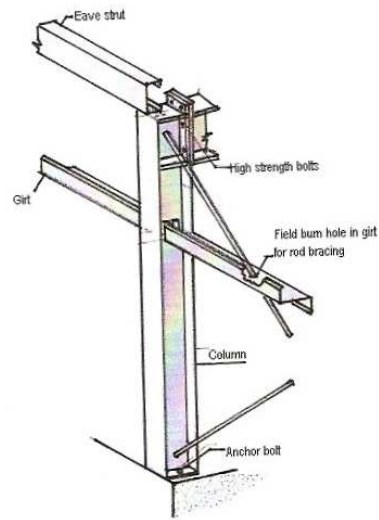


Fig.4.4 Flush girt assembly

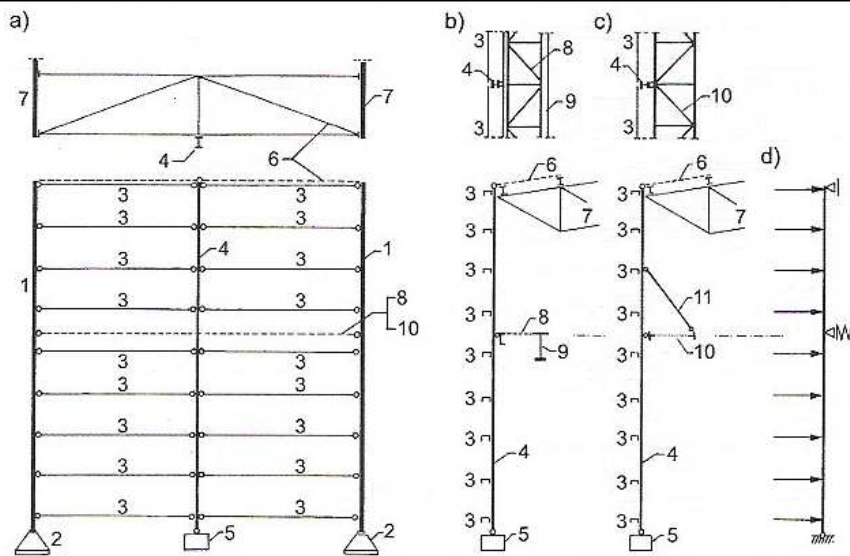


Fig.4.5 Construction of high sidewalls: 1- primary column, 2,5- foundations, 3- wall girt, 4- secondary column, 6- longitudinal roof bracing, 7- roof rafter, 8- lateral runway bracing, 9- runway beam, 10- horizontal sidewall bracing, 11- suspension rod

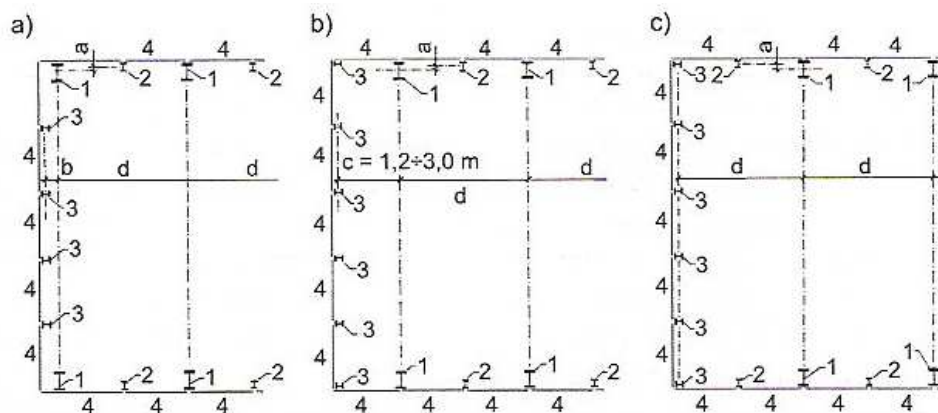


Fig.4.6 Schemes of the endwall to sidewall connection: 1- primary column, 2- secondary sidewall column, 3- endwall column, 4- wall girt

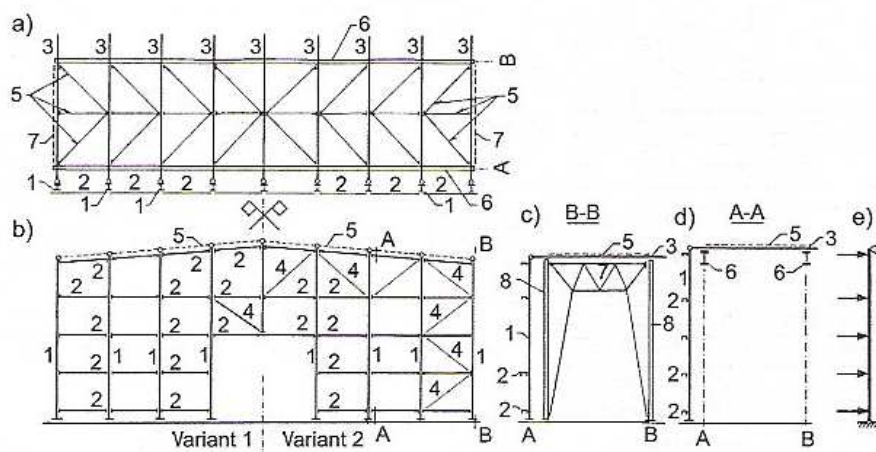


Fig.4.7 Example of the endwall structure: 1- secondary column, 2- endwall girt, 3- purlin, 4- endwall bracing, 5- roof bracing, 6- roof rafter, 7- sidewall bracing

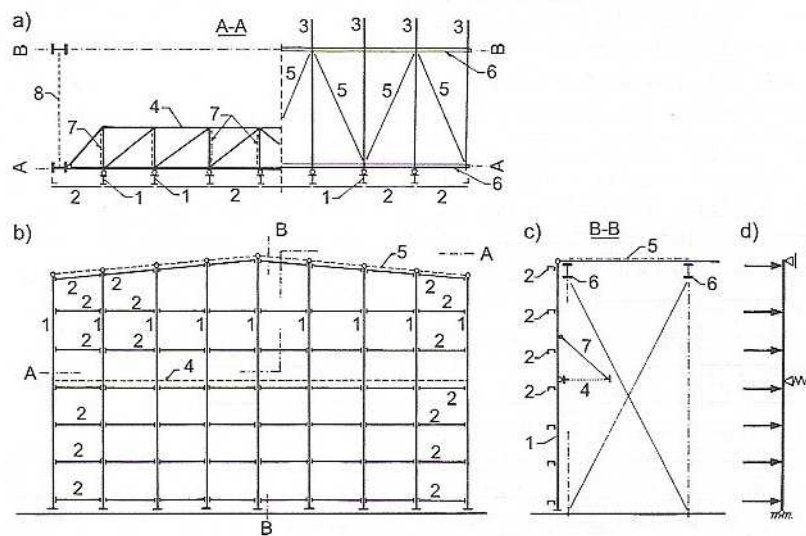


Fig.4.8 Construction of high endwall: 1- secondary column, 2- endwall girt, 3- purlin, 4- wind bracing, 5- roof bracing, 6- roof rafter, 7- suspension rod, 8- sidewall bracing

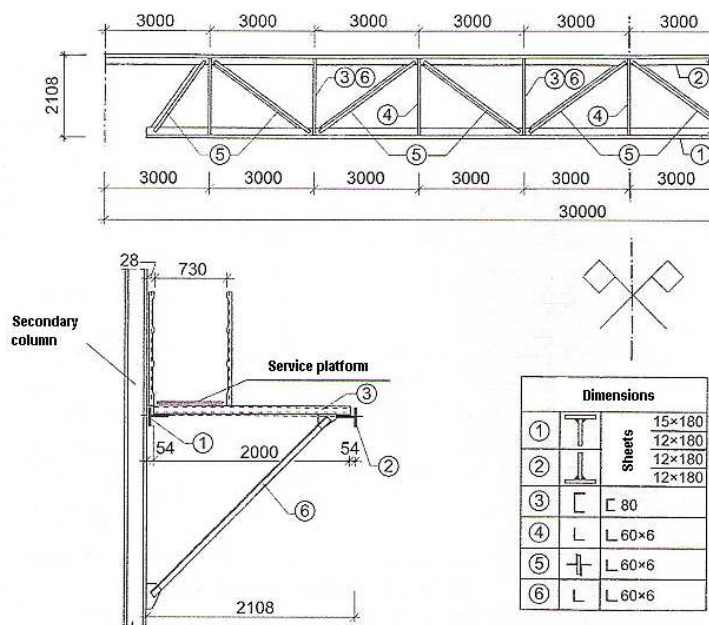


Fig.4.9 Example of endwall wind bracing

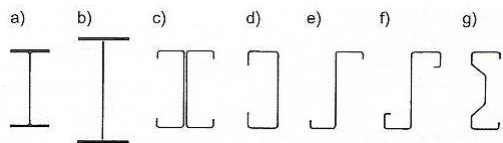


Fig.4.10 Secondary columns - cross-sections

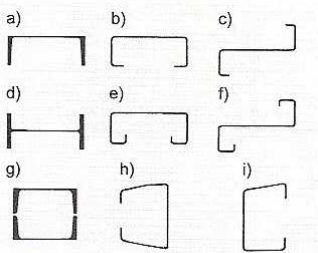


Fig.4.11 Wall girts - cross-sections

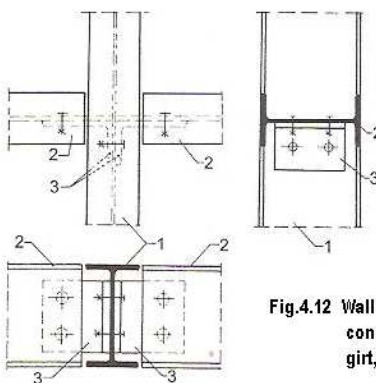
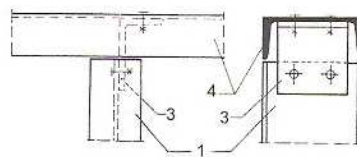


Fig.4.12 Wall girt to hot-rolled secondary column connection: 1- secondary column, 2- wall girt, 3- angle, 4- eave wall girt

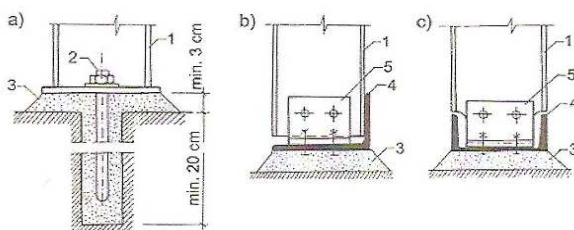


Fig.4.13 Base of secondary columns: 1- column, 2- anchor bolt, 3- base mortar, 4- ground beam, 5- base angle

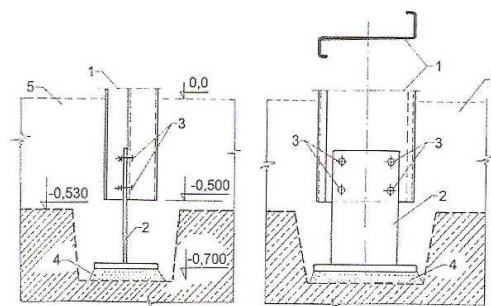


Fig.4.14 Typical secondary thin-walled column to foundation connection: 1- column, 2- column base, 3- bolts, 4- base mortar, 5- concrete

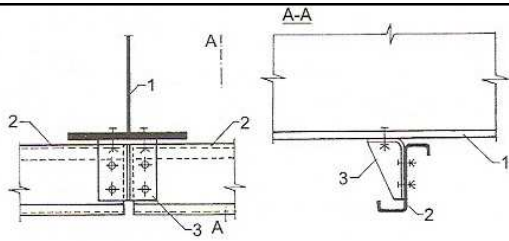


Fig.4.15 Cold-formed girt to double tee column connection: 1- secondary column, 2- wall girt, 3- bearing ribbed angle

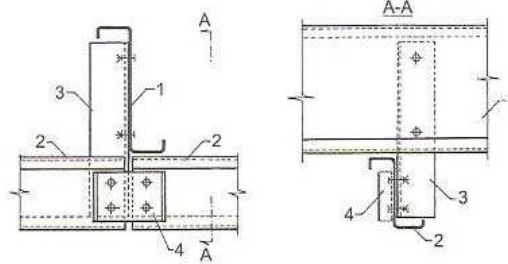


Fig.4.16 Cold-formed girt to cold-formed column connection: 1- column, 2- cold-formed angle, 4- cold-formed channel

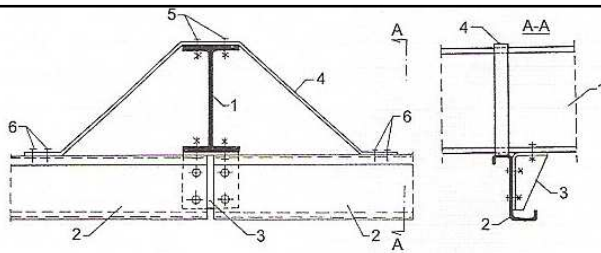


Fig.4.17 Secondary column protected against lateral buckling: 1- column, 2- wall girt, 3- ribbed angle, 4- band bar, 5- shoot-in nails

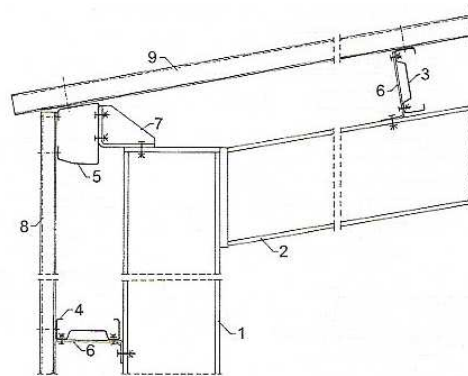


Fig.4.18 Connection between the roof and sidewall: 1- column, 2- roof rafter, 3- purlin, 4- wall girt, 5- eave girt, 6- cold-formed angle, 7- ribbed angle, 8,9- wall and roof corrugated sheets, respectively