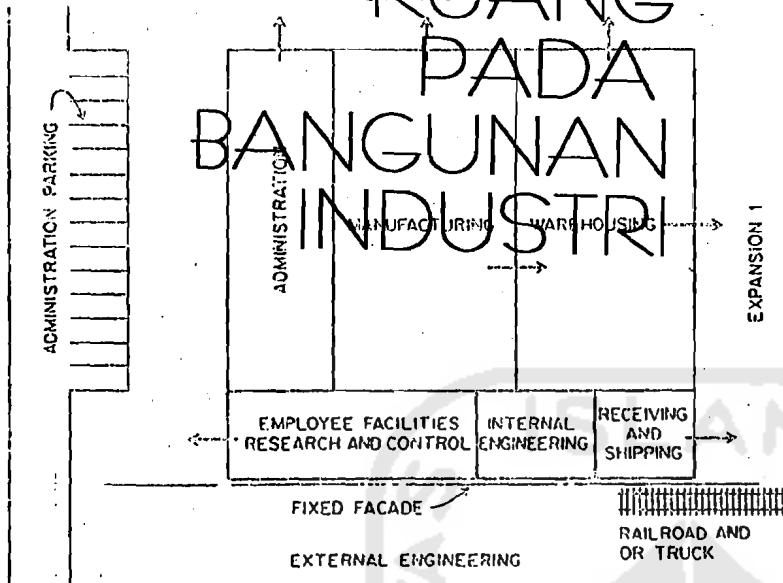


PERENCANAAN RUANG PADA BANGUNAN INDUSTRI



Lampiran berikut merupakan standar macam ruang yang umum terdapat pada kantor perusahaan industri, dan modul besaran ruang yang dapat dipakai sebagai acuan dalam perancangan.

1. Administration

The following organizational relationships must be worked out before the planning of this area can be developed:

- a. Reception Room
 - Number of seats
 - Receptionist—special or part of the general office, extra duties (typing, etc.), equipment
- b. Executive Area
 - Private Offices—number, occupant of each, size of each, furniture and equipment for each, closets
- c. Departments and/or Divisions
 - Accounting, bookkeeping, production, etc.
- d. Private Offices in Each Department
 - Number, occupant of each, size of each, furniture and equipment for each, closets
- e. General Work Areas in Each Department
 - Personnel in each, equipment in each, storage requirements for each
- f. Special-Purpose Rooms/Areas

- Conference room
- Library
- Projection room
- Mail and shipping
- Reproduction room
- Secretarial pools
- Telephone equipment rooms
- Hospital areas
- PDX room—type of board, number of positions
- IBM room
- File room
- Private toilets and showers
- Stock and storage rooms
- Rest rooms

g. General Information

- Interrelationship of person and department
- Clothing space
- Time clocks
- Water coolers

Fig. 3 Example of industrial building plan.

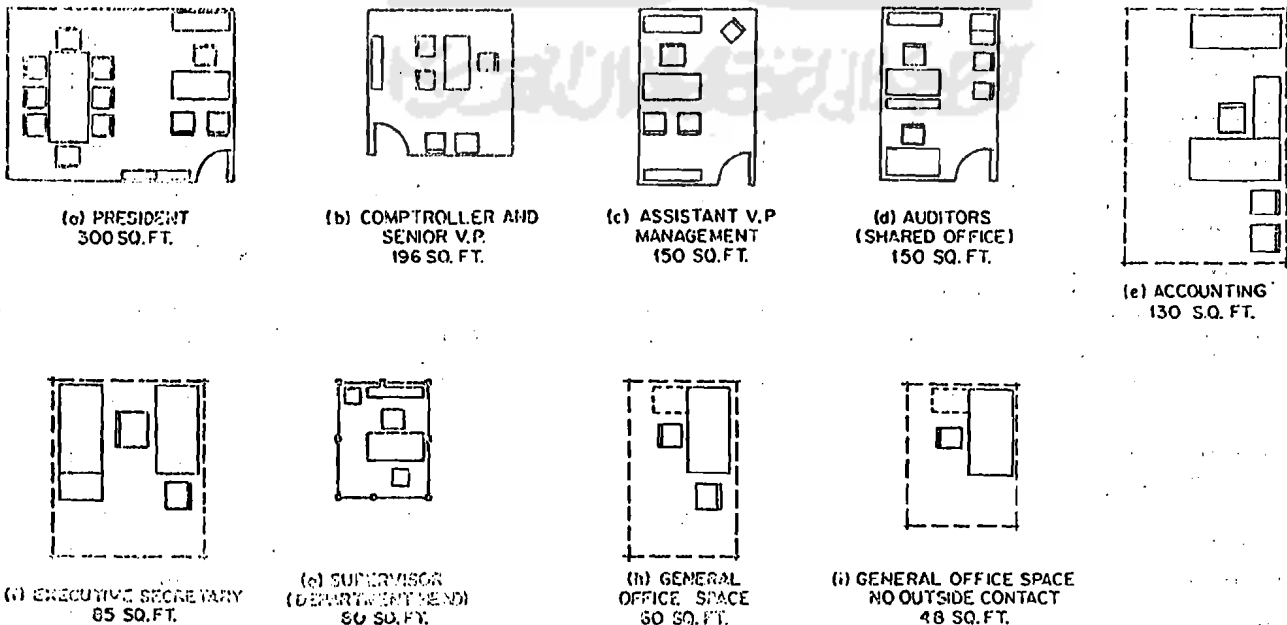


Fig. 4 Office areas.

Building Name	Main Admin Building	Changing Facility	Mosque	Cafeteria	Lab
Population	200	200	400	200 (shift)	15
No. of Stories	3	1	1	1	1
Blast Resistant	no	no	no	no	no
Frame	Reinf Conc	Masonry	Masonry	Masonry	Masonry
Exterior Walls	Masonry	Masonry	Masonry	Masonry	Masonry
Interior Partitions	Masonry	Masonry	Masonry	Masonry	Masonry
Function	Reception & Administration	Changing Room	Prayer Room	Food Prep & Dining	Central for all process units
Office(s)	yes	no	no	yes	yes
Meeting Rooms	yes	no	no	no	yes
Locker Rooms *	yes	400 lockers only	no	yes	yes
Restrooms	yes	yes	yes w/ ablution	yes	yes
Training Facilities	yes	no	no	no	no
Recreation Area	yes	no	no	no	no
Store Room	records arch.	yes	no	yes	yes
Workshop	no	no	no	no	yes
Computer Room	yes	no	no	no	yes
Lighting	offices	area	subdued	indoor area	indoor
Prayer Room	yes (12)	no	na	no	yes (6)
HVAC/Ventilation	HVAC	HVAC	HVAC	HVAC	HVAC
Sprinklers	yes	yes	no	yes	yes
Fire Suppression Sys	yes	no	no	no	no
Fire Detection	yes	yes	no	yes	yes
Extinguishers	yes	yes	no	yes	yes
Overhead Cranes	no	no	no	no	no
Remarks	elevators	Issue protective			waste?
* includes showers		clothing & hats			
		NO showers			
Approx. Area	3000 m2	100 m2	1200 m2	600 m2	650 m2

3.2 BUILDING PRESSURIZATION

3.2.1 Buildings or portions of buildings may be pressurized with safe air to facilitate:

- a. The use of general purpose equipment in a potentially hazardous area.
- b. Proper operation and maintenance of computers in a clean environment.

3.2.2 Pressurizing systems shall be designed to maintain a positive pressure of 1/4 inch (6.35mm) of water with all building openings closed.

3.2.3 Methods of achieving proper sealing include weather stripping at exterior doors, caulking and sealing around cable tray entries and other openings, air locks at all personnel exits from pressurized areas to non-pressurized areas, and positive latching hardware and door closures for all air lock doors. Preferably, no windows shall be provided. If windows are required for visual observation, the window area shall not exceed 5 percent of the wall area in which it occurs. Glazing shall be insulated, double pane.

3.2.4 In the case of a pressurized room in a non-pressurized building, the walls shall be sealed to the roof, or the suspended ceiling shall be constructed of gypsum board with cemented acoustical tiles and surface mounted lighting fixtures.

4 REQUIREMENTS FOR THE BUILDINGS

4.1 ADMINISTRATION BUILDING

4.1.1 Provide an entry area for receptionist, security, and a waiting lounge for visitors.

4.1.2 Provide a large multimedia conference room with video conferencing capability on ground floor (first floor). Provide a medium conference room on each of the other floors which can be reconfigured to be 2 small conference rooms.

4.1.3 Provide reconfigurable cubicle space and supervisors' hardwall office spaces as required by Client.

4.1.4 Provide appropriate bathroom facilities with at least one set containing showers and clothes changing facilities.

4.1.5 Provide appropriate office furniture and equipment (chairs, desks, file cabinets, bookshelves, etc.)

4.1.6 Provide computer systems and networking capability throughout the building. The capability should exist for each desk to have a computer and the network should be sized to operate at 80% of capacity. The network should include the Central Control Building,

Maintenance Office, Field Office and Medical Center, and Fire Station as well as access to the outside world.

4.1.7 Include adequate parking.

4.1.8 SPACE REQUIREMENTS

a. The plant office building may contain some or all of the following spaces as requested by the Owner.

1. Office space
 - a) General offices
 - b) Private offices
2. Reception area
3. Conference rooms
4. Training rooms
5. File room
6. Reproduction room
7. Mail/supply room
8. Toilet rooms (men and women)
9. Lounges
10. Janitor's closets
11. Telephone switchroom
12. Electric closets
13. Mechanical equipment room
14. Canteen for office staff
15. Document & Drawing Library

4.1.9 DESIGN AND CONSTRUCTION

a. Building shall have reinforced concrete frame and a flat roof.

b. Architectural treatment shall provide a simple, pleasant appearance without artistic embellishments.

c. Typical area allowances for office personnel shall be:

- | | |
|-------------------------------|-------------------------------|
| 1. Large offices | 225-300 square feet (21-28sm) |
| 2. Medium sized offices | 150 square feet (14sm) |
| 3. Small offices or cubicles | 120 square feet (11.2sm) |
| 4. Secretarial area | 100 square feet (9.3sm) |
| 5. General office, per person | 75 square feet (7sm) |

d. "Open Planning" is preferred for interior space layout. Low, movable acoustical panels or partially glazed screens permit more natural light, more communications among personnel and greater flexibility for future space requirements.

- f. In accordance with type of food service to be rendered, service space shall provide for delivery, storage, food preparation, dishwashing and waste disposal.
- g. Design of lunchroom shall present a pleasant and relaxing atmosphere apart from the work environment, by prudent selection and use of materials, furniture and color scheme.

4.10 LABORATORY

4.10.1 Laboratory work may be performed in small sample testing rooms located in buildings such as maintenance buildings or a more elaborate chemical laboratory that may be located in a control building, office building or a separate facility.

4.10.2 Small laboratory rooms for specific tests consist of a simple laboratory bench with work counter 8 feet (2.4m), 2 feet (.61m) long, with or without sink and/or fume hood as required. A hung ceiling shall be 8 feet, 0 inches (2.4m) above the floor.

4.10.3 Small laboratories located in a control building shall face the process area with one outside door and be isolated from the rest of the building. Walls shall have washable surface and floor shall be dust-proof concrete.

4.10.4 Small laboratories in office buildings shall have finishes similar to adjacent office space, resilient tile flooring and furred drywalls appropriately painted.

4.10.5 Medium or large laboratories shall provide some or all of the following spaces:

1. Entrance area
2. Main laboratory area
3. Offices for chemists
4. Space for typist/file clerk
5. Areas with emergency shower/eye wash
6. Sample room
7. Laboratory storage
8. Toilets (men and women) with janitor's closet

4.10.6 Fume hoods shall be located away from possible drafts.

4.10.7 Wall and floor finishes shall be chemical resistant.

4.10.8 Balance table shall have an independent footing if a balance room is provided.

4.10.9 The laboratory equipment shall include the following:

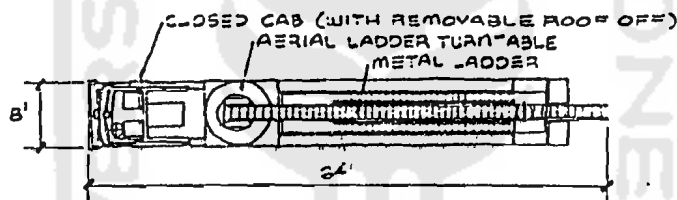
- a. Equipment for safe handling of flammable and toxic samples.
- b. Fixed and portable instruments suitable for the sampling schedules developed by process licensors.
- c. Initial chemicals, reagents and consumables for the specified tests.

SITE PLANNING—FIRE STATIONS AND FIRE APPARATUS

Fire stations should be located near major roads, close to the center of the area being served, and set well back from the curb. Stations should be distributed in a community so they will be able to provide effective fire apparatus response times to existing areas requiring protection and be able to serve future patterns of growth. Avoid locations that can easily become jammed with vehicular traffic (e.g., near large parking garages, major intersections). Traffic light control from the station is often desirable. Consider the effects of barriers (e.g., railroad tracks, draw bridges, highways without sufficient cross streets) which can seriously reduce response times. Example fire apparatus sizes are shown below. Actual dimensions vary according to the manufacturer and to the needs and specifications of the local fire department.

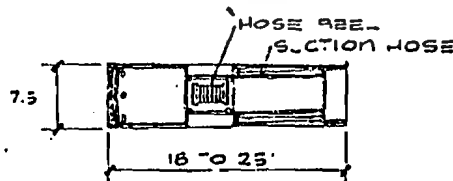
Ladder Truck

This type of apparatus carries a hydraulically operated aerial ladder for rescue and fire suppression operations. It also carries an assortment of ground ladders, tools, and rescue devices. Aerial ladder apparatus are either two- or three-axle tractor drawn as shown below. Tractor drawn apparatus have greater maneuverability on narrow streets or in heavy traffic, but require an additional driver to steer the trailer's rear wheels.



Pumper

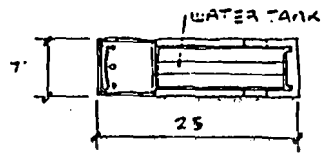
A pumper provides adequate water pressure from fire hydrants and other water sources to control and suppress fires. It also carries hose, ladders, forcible entry tools, self-contained breathing units, portable fire extinguishers, and other equipment. Pump sizes typically vary from 500 to 1500 gpm at 150 psi. Combination pumpers have a pump, hose compartment, and a water tank on one chassis.



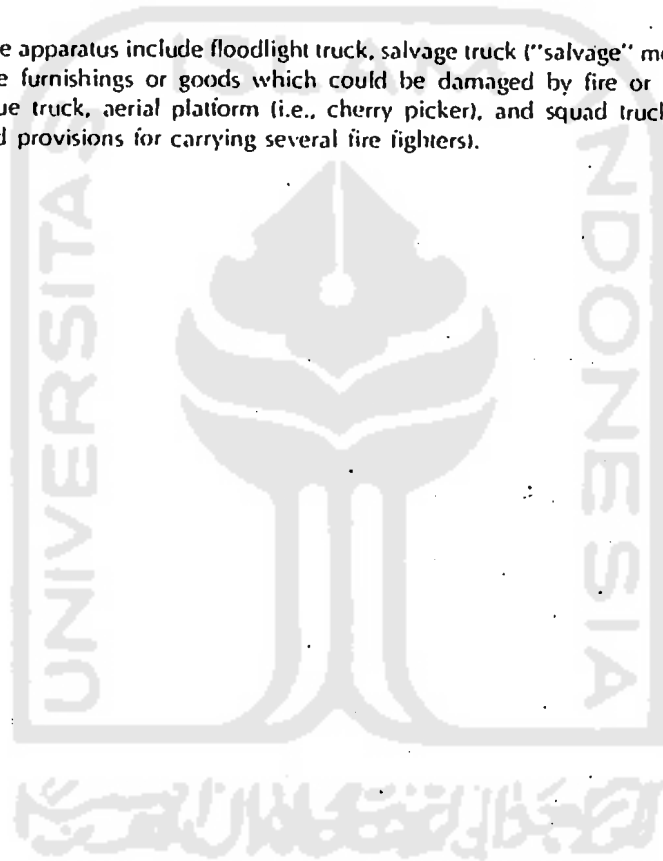
SITE PLANNING—FIRE STATIONS AND FIRE APPARATUS (Continued)

Tanker

Tankers transport water to areas without hydrant or other protection for fire suppression purposes. Tank sizes typically vary from 500 to 5000 gal.



Note: Other fire apparatus include floodlight truck, salvage truck ("salvage" means to cover or remove furnishings or goods which could be damaged by fire or water), emergency rescue truck, aerial platform (i.e., cherry picker), and squad truck (with special tools and provisions for carrying several fire fighters).

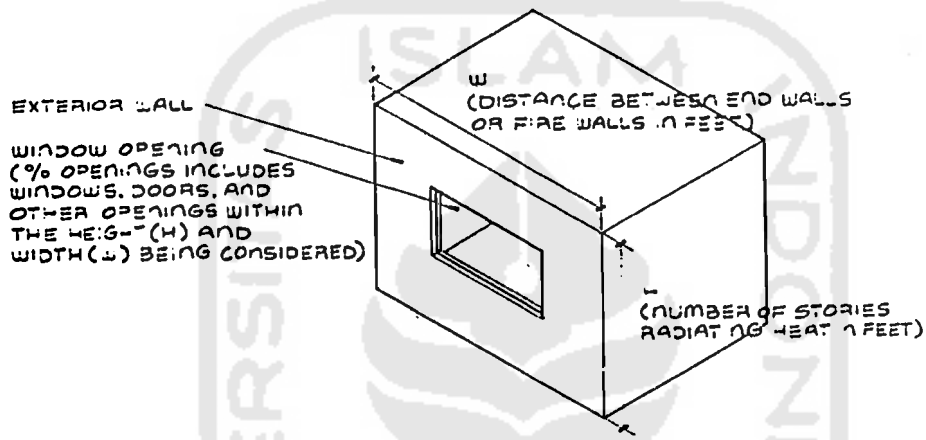


SITE PLANNING—SEPARATION DISTANCES

The table below lists guide numbers (*N*) for determining separation distances to protect exposed buildings from fire spread through equally distributed windows. Separation distance can be found by the formula:

$$d = FN + 5$$

where *d* = distance between buildings in ft
F = width (*W*) or height (*H*) in ft
N = guide number from table (no units)



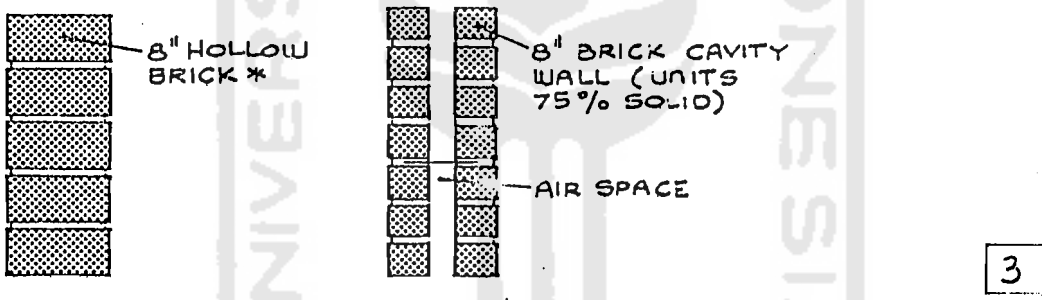
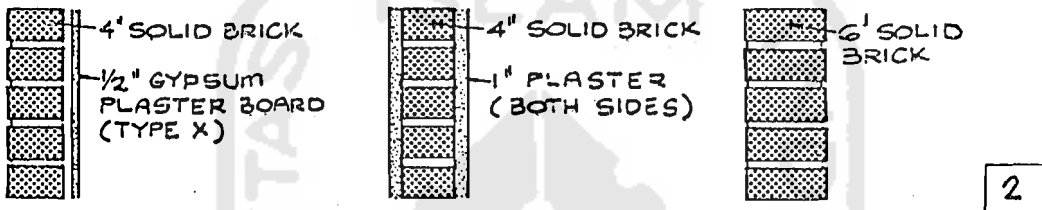
Openings (%) for Exposure Severity of:			Guide Number (<i>N</i>) for Shape Ratio of <i>W</i> / <i>H</i> or <i>H</i> / <i>W</i>									
Light	Moderate	Severe	1.0	1.3	1.6	2.0	3.2	5.0	8.0	13.0	20.0	32.0
20	10	5	0.36	0.40	0.44	0.46	0.49	0.51	0.51	0.51	0.51	0.51
30	15	7.5	0.60	0.66	0.73	0.79	0.88	0.92	0.94	0.95	0.95	0.95
40	20	10	0.76	0.85	0.94	1.02	1.17	1.27	1.32	1.33	1.34	1.34
50	25	12.5	0.90	1.00	1.11	1.22	1.42	1.58	1.66	1.70	1.71	1.71
60	30	15	1.02	1.14	1.26	1.39	1.64	1.85	1.99	2.05	2.08	2.08
80	40	20	1.22	1.37	1.52	1.68	2.02	2.34	2.59	2.73	2.79	2.81
100	50	25	1.39	1.56	1.74	1.93	2.34	2.76	3.12	3.36	3.48	3.52
	60	30	1.55	1.73	1.94	2.15	2.63	3.13	3.60	3.95	4.15	4.22
	80	40	1.82	2.04	2.28	2.54	3.12	3.77	4.43	5.01	5.41	5.60
	100	50	2.05	2.30	2.57	2.87	3.55	4.33	5.16	5.95	6.56	6.92
		60	2.26	2.54	2.84	3.17	3.93	4.82	5.80	6.78	7.63	8.18
		80	2.63	2.95	3.31	3.70	4.61	5.68	6.91	8.24	9.51	10.50
		100	2.96	3.32	3.72	4.16	5.19	6.43	7.88	9.50	11.15	12.59

Note: To find guide numbers for shape ratios not given in the above shortened table, see "Protection of Buildings from Exterior Fire Exposures," NFPA No. 80A, 1975.

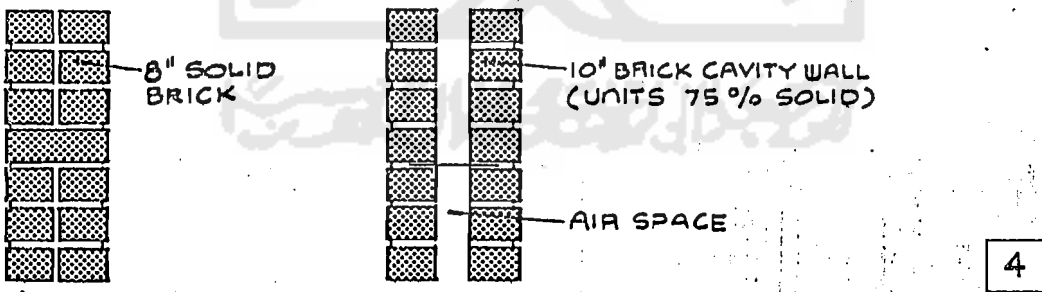
BUILDING MATERIALS AND CONSTRUCTIONS—FIRE RESISTANCE FOR BRICK WALLS

Shown below are fire-resistance ratings in hours for various brick load-bearing walls.

FIRE RESISTANCE
(IN HOURS)



* CELLS FILLED WITH PERLITE INSULATION CAN PROVIDE 4-HOUR RATING.



Note: Where combustible members (e.g., wood joists, beams, girders) are framed-in to 2 hour and greater wall constructions, subtract 1 hour from the rating shown above. There should be at least 4 in. of brick between the ends of the combustible members and the opposite face of the wall.

REFERENCE

Gross, J. G. and H. C. Plummer, "Principles of Clay Masonry Construction," McLean, Va., Structural Clay Products Institute, 1970.

*Vien persembahkan kepada
Uswati Estuningsih,
mamaku tercinta yang selalu tabah dan tawakal.
Juga buat m' Nung dan m'Pur sekeluarga, m'Shita, Riki dan Papa
yang sudah memberikan banyak kemudahan.*

Terima kasih dan hormat kepada p'Ichi atas bimbingan, ilmu dan kepercayaan yang diberikan sehingga Vien Insya Allah menjadi seorang Arsitek. Juga p'Ilya atas bimbingan dan diskuasi kecil yang berharga yang sayang sekali Vien tidak sempat untuk mempelajarinya.

Dan juga kepada guru – guru di Arsitektur yang sudah membagi ilmunya untuk Vien. Without you, I'm nothing.

Terima kasih buat Iin dan Toro jta sahabat tersayang dalam suka dan duka, INVITO cita – cita kita ya ...

Terima kasih buat Astrid, Anna dan Ade buat persahabatan AVIA kita. Juga buat m'Brep yang selalu ngebantuin Vien. Nggak lupa buat Ratri, anak-anak Red Top. Rudi dan m'Pur yang vien rusuhin printernya di saat- saat terakhir penulisan.

Terakhir, kuperuntukan juga buat “perempuan – perempuan”.

