PORT QASIM AUTHORITY
(PLANNING AND DEVELOPMENT DEPARTMENT)

NO: PQA/P&D/315/2001 Dated: March 3, 2001

SUBJECT: BUILDING BYE-LAWS

Enclosed herewith find a copy of Building bye-laws approved by the Board. The same may be used/referred while checking the drawings for construction of civil works submitted by private companies. Please ensure that there is no violation/deviation of these bye-laws.

Enclosure as above

(A. N. QABULIO)
DY. GENERAL MANAGER (P&D)

DISTRIBUTION:

1. Manager (P&D)
2. Chief Draftsman
3. AXEN (P&D)-I

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PORT QASIM AUTHORITY

(INDUSTRIAL MANAGEMENT DEPARTMENT)

PQA/DGM/IM/03/99 P-1

DATED February 28, 2001

SUBJECT: APPROVAL OF DRAWINGS

Reference your memo No. PQA/DGM(P&D)/05/93 dated 24.2.2001 on the subject matter. Enclosed please find herewith a copy of "Building Byelaws" duly approved by the Board for your information and taking further action at your end.

(Deputy General Manager (I.M)

DGM(P&D)

Manager (Pro)

C.C. to:

DG(P&D)

D. G. M (P & D) Office
Dy. No. 340
In/Out Ward 28/2/01

BUILDING BYE-LAWS.

A. GENERAL REQUIREMENT FOR CIVIL CONSTRUCTION WORKS.

A.1 Documents to be submitted.

The following documents in quintuplicate duly prepared by qualified Engineers and Architects and bearing their address, should be provided to PQA for approval. Engineer and Architect should be member of P.E.C and P.C.A.T.P respectively.

A.1.1 Copy of site plan of the plot alongwith allocation letter and Acknowledgement of Possession.

A.1.2 Layout plan showing the dimensions of the plot and relative location of all the structure and buildings as well as open areas, parking places, green belts etc.

A.1.3 Structural design of all the buildings and structures shown on the layout plan.

A.1.4 Floor plans, elevations and cross sections of all the structures and buildings.

A.1.5 Details / Drawings of services including water supply, sanitary lines, Storm water drains, electrical services, gas supply etc.

A.1.6 Details/Drawings of Electrical works, substation, wiring diagrams etc.

A.1.7 Copy of letter of provisional allotment / transfer (whichever applicable).

A.1.8 Dues Clearance Certificate from Estate Section of PQA.

Note: All attached documents should also be attested by relevant Architect.

A.2. Industrial plots.

Industrial buildings in PQA industrial zones shall meet the following construction requirements:

A.2.1 No residential use of the industrial plots or part thereof and the building raised thereon shall be allowed except for security personnel.

A.2.2 The built up area shall not exceed 65% of the total plot area in any case.

A.2.3 All buildings, except those allowed within the compulsory vacant strips, should have permanent open space as stated below:

5.0 meters from road side boundary.

3.0 meters from sides and rear boundary for plots upto 01 (one) acre.

6.0 meters from sides and rear boundary for plots above 01 (one) acre.

A.2.4 Following Structures may be provided in the compulsory open spaces:

a. Gate house of reasonable size.

b. Time office of reasonable size.

c. Underground tanks.

d. Septic tanks for sewerage and settling tank if necessary.

e. Gas & electricity meter rooms.

A.2.5 Open spaces shall be clearly shown on the site & detail plans.

A.2.6 Minimum clear height of each floor shall be 4.0 m for work places and 3.0 m for offices.

A.2.7 The height of compound wall shall not be less than 2.0 m above the plinth level of factory building.

A.2.8 For storage of explosives, details of the materials and permission from Government Explosive Inspector shall be produced.

A.2.9 The responsibility for the safety and security of the building, structures, equipments and goods in the building rests with the allottee. The allottees are advised to install fire hydrants and fire extinguishers at suitable places to ensure fire safety.

A.2.10 Depth of footings of the main factory building shall not be less than 1.50 m from natural ground level.

A.2.11 Determination of soil bearing capacity shall be the responsibility of the allottee.

A.2.12 There should be no projection of footings beyond property lines.

A.2.13 The whole site or any part thereof upon which the building shall be erected and workers shall have to work will be raised to a required height to ensure a complete dry surface of floors for workers. No building shall be constructed below the specified level of the site.

A.2.14 The top of the plinths of the buildings shall not be less than 600 mm above the highest finished level of the adjoining road. There shall be sufficient slope from the interior outwards to ensure proper drainage unless other adequate means of drainage have been provided.

A.2.15 All buildings must be provided with a damp proof course at plinth/floor level.

A.2.16 The floors of buildings should have sufficient strength and resistance against impact, abrasives, chemicals and dampness etc.

A.2.17 All load-bearing walls shall be properly designed for the loads expected to come on them and shall be constructed of fire-proof materials only.

A.2.18 All partition and panel-walls shall be of such thickness as to ensure against the breakage due to vibration of machines installed near these walls.

A.2.19 The width of the doors shall be sufficient to facilitate the movement of machinery and the escape of workers in case of fire.

A.2.20 No part of the second storey of any building shall be more than 30 m from the staircase leading to the ground floor.

A.2.21 The stairs shall be easy to climb, well lighted and ventilated of fire proof construction, with minimum width of 1.2 m tread at least 260 mm in width, and riser not more than 175 mm of non-slip finish, continuous hand rail and without winders. Treads and risers shall be of the same size in each and every flight.

A.2.22 Basements (if any) shall be constructed with waterproofing walls and floor space. They are allowed only for use of necessary machinery and for use as godowns but they are not permitted as permanent workrooms, restaurants or canteens.

A.2.23 No projections like doorsteps, sunshades, bay windows, etc. shall be constructed beyond the face of the front boundary line of the plot.

A.2.24 Building construction supervision should be carried out by qualified Engineers and Architects and their names and addresses be supplied to PQA.

A.2.25 The building should not be used or occupied unless the Architect / Engineer submits completion certificate and the same is accepted by PQA.

A.2.26 The building shall not exceed three storeys in height including the ground floor, unless otherwise essential requirement of relevant industry.

A.2.27 The allottee shall be responsible for the stability of all structures erected by him and all the materials used in the said building should be good and sound and must be so certified by the Architect of the allottee, which may be subject to examination by PQA.

A.2.28 All Acts relating to safety, environment and pollution etc. shall be strictly followed. Necessary No Objection Certificates shall be obtained by the Allottee from concerned Agencies, wherever applicable.

A.2.29 For the purpose of arranging the building on corner plots at Junction of main road / small road of the industrial sector, the corner plot shall be considered as such and the building in them shall be located in the same way as in the other non corner plots that is having vehicular entry/front elevation on sub road/small road only. Building faces on main road may have opening etc. for Architectural purpose only, vehicular entry from main road not allowed except mentioned on site plan issued by PQA.

B. BUILDINGS ON COMMERCIAL PLOTS.

B.1 All rules and regulations and byelaws of the Port Qasim Authority, Karachi Metropolitan Corporation, Karachi Development Authority, Karachi Port Trust, Sindh Industrial Trading Estate or any such Competent Authority in any way relating to buildings which may be in force from time to time, shall be conformed to by the allottee/s including the rules as to the permissible built up area, maintenance of Air spaces, thickness of walls, prohibiting doors form opening outwards and also prohibiting projections and all necessary licence from the said Metropolitan Corporation, Karachi Development Authority, Karachi Port Trust, Sindh Industrial Trading Estate or Any Competent Authority shall be adopted by the allottee/s.

B.2 All buildings shall be of masonary concrete and/or steel construction with outer faces neatly finished to present good appearance. The roofing shall be constructed of timbre trusses, cement, asbestos sheets, corrugated iron and manglore tiles. AND wherever Railway siding lies in, or adjoins the said premises, the allottee/s shall not erect any structure liable to foul the track or infringe on the standard railway running dimensions.

B.3 The buildings shall be of such architectural merit as will harmonise with others in their surroundings and will suitably maintain the General appearance of the particular area.

B.4 All clearing, filling up with earth up to a level not lower than the level of the adjoining road and leveling etc. of the premises as may be required shall be completed within 12 months from the date of occupation, but the allottee/s shall not be entitled to obtain material for filling from any adjacent land belonging to PQA or any other allottee.

B.5. Car Parking space shall be provided within the leased area.

C. <u>VENTILATION, SANITATION, WATER SUPPLY AND DRAINAGE.</u>

C.1 For light and ventilation in every building there shall be openings in the walls or roofs wherever applicable. The amount of these openings shall not be less than 1/12th of the floor area of the building or 0.5 sq.meter for each person required to work in such room whichever is maximum.

C.2 In all types of buildings cross ventilation shall be achieved.

C.3 Every room or place where employees will work shall be adequately ventilated so that no air stagnancy occurs.

C.4 Whenever there is a possibility of air stagnancy, mechanical ventilation shall be provided.

C.5 All places, where any person shall work or attend from time to time, shall have sufficient light facilities so that persons working there will not have eyestrains.

C.6 Window, fanlights or skylights wherever adopted for lighting shall be so located as not to give direct lights to the eyes of the workers.

C.7 All bathrooms, lavatories and water closets shall have ventilation, in or close to the ceiling opening direct to the outer air, Mechanical ventilation shall be preferred.

C.8 The following table is given as a rough guide for the number of urinals and W.Cs to be provided.

Water Closets & Urinals.

No. of Persons	No. of Urinals	No. of W.Cs
1-9	1	1
10-24	2	1
25-49	3	2
50-75	4	2
75-100	5	3

a. One W.Cs per additional 50 persons one urinal per additional 30 persons shall be provided.

b. There shall be one shower per 15 persons. If exposed to excessive heat of poisonous or infections or irritating materials.

c. Where female employees are working, suitable number of separate W.Cs and showers should be provided.

d. Adequate number of urinals, closets and washing places etc. should be provided at each floor which should be well ventilated.

C.9 There shall be one drinking fountain per 30 persons, which should not be installed in near a toilet room.

C.10 The underground water tank should have minimum storage capacity 03 days consumption.

C.11 Wastewater, which is likely to affect adversely, should be pre-treated within the factory premises before discharging into external sewer lines/effluent lines. The toxic and other hazardous waster and effluents will be suitably treated by allottee prior to discharge in to the sewerage system laid by PORT QASIM AUTHORITY.

D. HEALTH AND SAFETY.

D.1 There shall be provided for each person working in any room of a factory, a floor area of at least 3.5 sq.meter exclusive of the area occupied by machinery and a breathing space of at least:

(i) 20 cubic meter, where mechanical or electrical power is used.

(ii) 15 cubic meter, where no mechanical or electrical power used.

For the purpose of calculating breathing space available under this section no space above 3.0 meter from the floor shall be taken into consideration.

D.2 All kinds of power connections shall be installed in such a way as not to cause any injury to any person whosoever happens to pass nearby.

D.3 No part of building structure like staircase, beams, balconies or any other projections shall be placed in such a fashion that may cause bodily injury to any of the workers or may cause inconvenience for free movement.

D.4 (i) Sufficient services of first aid.
(ii) Fire fighting arrangement to be shown in the drawings.

E. STORAGE TANKS OF EDIBLE OIL/MOLASSES.

E.1. Edible Oil / Molasses are an important materials for distillemes producing alcohol. Storage of Molasses without deterioration is important. Construction of Molasses tanks, preferably of steel, is of marked importance in arresting the deterioration and wastage of Molasses.

E.2 These recommendations are intended to cover the provisions relating to the construction of covered mild steel tanks for storage of Edible Oil/Molasses. Reference may be made to the API (American Petroleum Institute), STD 650 Welded steel tanks for oil storage.

E.2.1 An example of recommended details of 8000 m3 tank is given below:

DIA HEIGHT, BOTTOM PLATE, THICNESS OF STEEL PLATES (MM)

M	M		Courses 1st, 2nd, 3rd, 4th, 5th, 6th, last 2 roof							
34,	9.60	12	18	16	14	12	10	8	6	6

E.2.2 The tank for storage of Edible Oil/Molasses shall be built from mild steel plates with sound engineering design.

E.2.3 All joints shall be seam or butt welded. The welded joints shall be sound and finished smooth in side and shall be watertight. The bottom plates shall be v-grooved and welded with butt-welding. Mild steel strips 60 mm wide and 6 mm thick shall be provided over the welds.

E.2.4 Suitable radial trusses shall also be employed for support of the roof of the tank, which may directly be supported on the shell plates with a curb angle at the roof level all around.

E.2.5 Central column, two channels at right angles to each other with suitable saddle at the base shall be provided.

E.3 The tank shall be fitted with the following accessories and fittings and shall be provided with suitable openings as described below:

E.3.1 Outlet – The outlet shall be of steel with a minimum diameter of 15 cm and shall be located on the first course of the tank 15-cm above the bottom. The sanction for pumping Edible / Molasses should be from the side of the tank.

E.3.2 Outlet discharge valve – A sluice valve, preferably of stainless steel, shall be fitted to the outlet opening. It is desirable to have two valves in series.

E.3.3 Drainage or Wash out valve – A tank shall be provided with a sluice valve fitted at the bottom of the tank and also connected to the outlet.

E.3.4 The inlet of Edible / Molasses shall preferably be at the bottom unless the Edible Oil/Molasses is discharged through an overhead pipe line in which case the Edible Oil/Molasses should not be allowed to fall from a height as in doing so a lot air gets occluded, which is not desirable. Instead, the pipe may be held tangential to the inside of the wall about a meter from the top. The inlet shall be fitted with a non-return valve followed by a sluice valve.

E.3.5 Indicator Thermometer – The tank shall be provided with at least three 15 – cm dial thermometers, one about 0.15 m from the bottom, other at one third height and the third at two-thirds height of the tank. The pockets for inserting the bulb of the thermometer shall be pipes of 25 mm diameter and 1 m length filled with oil. The pocket pipes should be fitted to the joints for support, wherever possible.

E.3.6 Manhole – Two manholes having diameter of 45 to 60 cm shall be located one on the top and other on the side bottom of the tank. A suitable attachment shall be provided to securely hold the man-way door in position through a suitable bracket. A bolt with nut attachment shall be fitted to hold the bracket in position, alternative, a loose cover with lifting handle may be provided. The manhole covers shall be water-tight.

E.3.7 Safety Railing – A safety railing, preferably around the roof of the tank but at least in the quadrant of the manhole shall be provided. The railing shall be of the height of 1 m. The maximum distance between two railing posts shall be 2.4 m.

E.3.8 Vent pipe or Chimney – A vent pipe or chimney shall be provided at the Centre of the roof for venting out of the gas. For large size tank over 16-m diameter, more than one vent pipe may be provided. The mouth of the vent pipe shall be suitably protected with wire netting.

E.3.9 A 25-mm drip cock shall be provided at the outlet for sampling purposes.

E.3.10 Water spraying coil – Provision of a perforated water spraying Coil 85 mm (minimum) in diameter shall be made all round outside the tank. The directions of the perforations shall be such that the water flows along the sides of the tank.

E.3.11 Painting – The tank shall be suitably painted on the outside and with anti-corrosive paint on the inside. The roof, and the supporting trusses and the top strake may be painted inside also.

E.3.12 Ladder – The tank shall be provided with a ladder of sturdy construction and design and made of aluminum alloy or mild steel painted or otherwise made rustproof. The ladder shall be provided with suitable guard.

E.3.13 The tank may be provided with a suitable level indicator.

E.3.14 All openings in the tank shall be so made that there is no possibility of accumulation of liquid or other foreign matter and the entrances are protected against dust, insects and other extraneous materials. All component parts shall be capable of being cleaned and inspected in position or by dismantling, if necessary.

E.4. TANK TESTING.

E.4.1 The tank shall not leak when tested by the following method.

E.4.2 Bottom Testing.

After the bottom and at least the bottom courses of shell plates have been welded, the bottom shall be tested by pumping air beneath the bottom plates to a pressure just sufficient to lift them off the foundation and in any case of not less than 100 mm H 20 gauge. The pressure shall be held by the construction of a temporary dam or clay or other suitable material around the tank periphery. Soap suds or other suitable material shall be applied to all joints for the detection of leaks. Molasses may be used instead of air and soap suds to test for leaks.

Alternatively, the bottom seams may be tested by the vacuum-box method.

E.4.3 Shell Testing.

The shells of tanks shall be tested after the completion of the roof, wherever possible, testing shall be by filling the tank with water to the level of the top course.

Where local conditions are such that testing with water is impractical, the tank shall be tested by painting or spraying all joints on the inside with a highly penetrating oil and noting any leaks.

E.4.4 Repair of Leaks.

All leaks detected during testing shall be repaired and the entire tank shall be tight and free from leak.

In the joints between roof plates only, pinhole leaks may be repaired by mechanical caulking. However, where there is any indication of considerable porosity the leaks shall be sealed by laying down an additional layer or weld metal over the porous section.

In all other joints, whether between shell plates or bottom plates or both, leaks shall be required only by welding, if necessary, after first cutting out the defective part.

When the tank is filled with water for testing, defects in the shell joints shall be repaired with the water level at least 300 mm below the joint being repaired.

No welding shall be done on any tank unless all lines connecting thereto have been completely blanked off. No repairs shall be attempted on tanks while filled with molasses/Edible Oil, nor any tanks which have contained molasses/Edible Oil until the tank has been emptied, cleaned and gas freed in a safe manner. No repairs shall be attempted by erector on a tank, which has contained molasses/Edible Oil except in a manner approved in writing by Port Qasim Authority the presence of the stand by staff.

E.5. MARKING.

The tank shall be marked legibly and permanently with the following particulars:

(a) Tank number, and
(b) Volume of the tank in m.

E.6. Spacing (Tank to Tank)

Tanks used for storage of molasses/Edible Oil(in a single tier / row) shall be spaced no less than 0.91meter apart. However, a 4.57 meter passage shall be provided between the tank tiers/rows for maintenance and emergency requirements, if not constructed in tiers, then a space of 4.57 to be maintained between every tank.

E.7. Boundary wall.

With a view to prevent accidental spillages into a large area causing operational problems during emergency, it is recommended that a strong enough boundary wall be so constructed that molasses/Edible Oil of largest tank

could be retained there. Gate shall also be capable of serving as a part of boundary wall. Sandbags in sufficient quantity also be kept near the gate(s). This wall to be erected 4.57 meter away from the tanks and office blocks be constructed out of this boundary.

E.8. With the rise in temperature decomposition reaction which are exothermic in character may take place during the molasses/Edible Oil storage. This may lead the contents of the tank being ejected by the formation of same and eventually igniting is a mass of glowing charcoal. The precise point at which this takes place is uncertain but in temperature above 60 C storage tanks of molasses/Edible Oil must be considered at risk.

As a guide to the speed of the reactions involved, an increase of temperature from 40 to 50 c may accelerate reaction by about three times. There is a further increase in reaction from 50 c to 60 c of about four times and from 60 C to 70 C another five times.

Every effort should be made to store molasses/Edible Oil below 60 C and useful protection would be to install recording thermometers on molasses/Edible Oil storage tanks.

E.9 Fire fighting equipment: Adequate quantity of portable trolley mounted fire extinguishers to deal with fires including those which may be initiated from electrical gadgets should be made available. Fire Hydrants shall also be provided.

F. GENERAL:

F.1 If at any stage, it is observed that construction beyond the allowable built up area has been done, the allottee shall immediately demolish such un-authorised construction in compulsory vacant strips as mentioned in para A .2.3. The Authority reserves the right to demolish this un-authorised construction at the risk and cost of the allottee. If

the built up area is in excess of the authorised construction as mentioned in para A.2.2, or any other deviation of Building Bye-laws the allottee shall be liable to pay the penalty, at the following rates till un-authorised structures are removed:

(a) Additional 20% Peripheral Development Charges (PDCs) m2 per annum plus annual land rent at prevalent rate/s at that time on covered area of au-authorised structures.

(b) Additional 50% annual land rent only (not PDCs) in case of Molasses/Edible Oil area on the prevalent rent at that time.

F.2 If there is anything which is not covered in these rules/regulations or of Karachi Development Authority, Karachi Metropolitan Corporation, Karachi Port Trust or Sindh Industrial Trading Estate then PQA will take decision as per merits of the case, which will be final and binding on the allottee.