

COMPENDIUM

OF

EXISTING SERVICE DELIVERY

&

TECHNICAL STANDARDS



Planning & Development Department
Government of the Punjab



Punjab Devolved Social Services Programme
Government of the Punjab

MESSAGE BY THE CHAIRMAN

Efficient service delivery is a matter of serious priority with governments the world over and it has come to stay as one of the yardsticks to evaluate Good Governance. It is also an acknowledged fact that poverty reduction is inextricably linked with pro-poor service delivery particularly in the social sector. The Government of the Punjab, therefore, attaches tremendous importance to introducing improvements in the service delivery system and incorporating the good attributes of service delivery through international best practices.

The Punjab Devolved Social Services Programme (PDSSP) is a major developmental intervention of the Government. One of its salient objectives relates to setting minimum standards of social service delivery. In order to make progress towards this goal, the PDSSP has compiled a Compendium of Existing Service Standards Package. This fulfills one of the Programme's First Tranche Actions and lays down the foundations for developing new sets of agreed technical and service standards that the PDSSP's Policy Matrix stipulates over the next year. This Compendium will contribute significantly to improving the service delivery system in a purposeful manner. It contains service delivery and technical standards pertaining to the Health, Education, Special Education and Water Supply & Sanitation sectors. All this carries the approval of the concerned Provincial Line Departments and are, hereby, being notified by the Planning & Development Board. It is being published for the information and benefit of all the stakeholders.

SIBTAIN FAZAL HALIM
Chairman P&D Board,
Punjab.

ACRONYMS

ARI	Acute Respiratory Infection
ASTM	
CCC	Coronary Care Unit
CDC	Communicable Diseases Control
C&S	Commodities & Services
EDL	Essential Drugs List
ENT	Ear Nose & Throat
EPI	Extended Programme for Immunization
E.W	
FP	Family Planning
ICU	Intensive Care Unit
LHV	Lady Health Visitor
LHWs	Lady Health Workers
MCH	Mother Child Health
MHT	Medical Health Technician
MO	Medical Officer
OPD	Outdoor Patient Department
PCC	Paved Cement Concrete
PHC	Preventive Health Care
PHED	Public Health Engineering Department
PSP	Public Stand Posts
RCC	Reinforced Cement Concrete
SMO	Senior Medical Officer
TBA s	Trained Birth Attendants
WMO	Woman Medical Officer

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Health Service Delivery Standards

PUNJAB DEVOLVED SOCIAL SERVICES PROGRAMME

HEALTH SERVICE DELIVERY PACKAGE

DHQ Hospitals

❖ A DHQ Hospital is located at the District Headquarters, which is meant to:

✓ Provide secondary level referral care to the patients including those referred by the THQs, RHCs, BHUs, LHWs and other Primary care facilities, using approved essential drugs list (EDL).

✓ Serve as a static centre for:

- Curative care
- MCH, FP, EPI and food and nutrition
- Sanitation, immunisation and Health Education
- CDC, ARI and other special programmes.

✓ Support clinically and technically the THQs, RHCs, BHUs and LHWs in its jurisdiction.

❖ **The DHQ shall have the following services and measures to fulfil its obligations :**

- All PHC activities
- Morning and evening OPD
- 24-Hour emergency care
- Special disaster services
- In-patient facility
- Specialist services (Essential: Medicine, Surgery, Eye, ENT, Gyn & Obs., Pediatrics, Anesthesia, Radiology, Pathology, Physiotherapy);

Category 'B' : Neurosurgery plus the above-mentioned.

- Referral support
- Blood transfusion services

DHQ Hospital: Category C

Position	No.
Managers	4
Specialists	15
Medical Officers	64
Dental Surgeon	1
Pharmacist	1
Nursing Staff	47
Paramedics	45
Others	201

Category C 125-250 Beds

DHQ Hospital: Category B

Position	No.
Managers	5
Specialists	20
Medical Officers	84
Dental Surgeon	2
Pharmacist	1
Physiotherapist	1
Nursing Staff	86
Paramedics	52
Others	291

Category B 250-400 Beds

- Diagnostic services
- Cardiology wards
- Dialysis Unit
- Radiology
- Laboratory
- Operation theatre
- Intensive and coronary care
- Reproductive health services
- Dental care
- Nursing care
- Pharmacy
- Training and internship services
- Ambulance services
- Hospital records and HMIS
- Kitchen and dietary services (mostly defunct due to financial limitations)
- Laundry, linen and sterilisation
- Workshop for repairs and maintenance of hospital equipment
- Hospital waste, environment and estate management
- Hospital management (Budget provided for C & is @Rs.250/bed/day).

DHQ Hospital: Category A	
Position	No
Managers	5
Specialists	26
Medical Officers	104
Dental Surgeon	2
Pharmacist	1
Physiotherapist	1
Nursing Staff	136
Paramedics	70
Others	390

Category A > 400 Beds

Pre-Requisites for a CCU and ICU:

CCU

- ✓ One monitor for each bed
- ✓ Preferably a Central Monitoring Unit
- ✓ Central Oxygen Supply
- ✓ Defibrillator (2 nos.)
- ✓ Suction Machine

ICU

- ✓ Ventilator
- ✓ Cardiac Monitor for each bed
- ✓ One Defibrillator
- ✓ Central Oxygen Supply
- ✓ Invisible Blood Pressure and Oxygen System

THQ Hospitals

- ❖ The THQ Hospitals are located at Tehsil Headquarters, serve a catchment population of about 0.5 to 1.0 million people and are meant to:

- ✓ Provide secondary level referral care to the patients including those referred by the RHCs, BHUs, LHWs and other primary care facilities, using EDL.
- ✓ Serve as a static centre for:
 - Curative care
 - MCH, EP, EPI and advice on food & nutrition
 - Sanitation and Health education
 - CDC, ARI and other special programmes.
- ✓ Support clinically and technically RHCs, BHUs and LHWs in Tehsil.

THQ Hospital (40-60 Bedded)

Position	No
Medical Supdt	1
Specialists	10
Medical Officers	12
Nursing Staff	15
Paramedics	24
Others	51

- ❖ **The THQ shall have the following services and measures to fulfil its obligations :**

- All PHC activities
- Morning and evening OPD
- 24-hour emergency care
- Special disaster plans/services
- In-patient facility
- Specialist services (Essential: Surgery, Gyn & Obs., Pediatrics and Anesthesia)
- Referral support
- Blood transfusion services
- Diagnostic services
 - Radiology
 - Laboratory
- Operation theatre
- Reproductive health services
- Dental care
- Nursing care

- Pharmacy
- Training services
- Ambulance services
- Hospital records and HMIS
- Kitchen and dietary services
- Laundry, linen and sterilisation
- Hospital waste, environment and estate management
- Hospital management (Budget provided for C&S is @ Rs. 200/bed/day)

Rural Health Centre (RHC)

❖ At the former Markaz level there are RHCs, which are meant to:

- ✓ Provide first level referral care to the patients referred by the LHWs, TBAs and BHUs and primary care facilities (treatment of common diseases) using EDL.
- ✓ Serve as a centre for static and out-reach services for:
 - MCH, FP, EPI and Food and nutrition.
 - Sanitation and Health education,
 - CDC, ARI and other special programs.
- ✓ Act as a focal point, where community and the public sector health functionaries may come together to resolve issues concerning health.
- ✓ Support; clinically (clinical visits of SMOs, Medical Officer- II, WMO etc.) logistically (supply of drugs, medical supplies, EPI supplies and cold chain maintenance etc.) and managerially (management support: in-service training, supervision, clinical and administrative practices, HMIS, data collection, record keeping, monitoring, surveillance etc. of diseases, especially of epidemics) to the BHUs falling in the former Markaz; LHWs, TBAs, Dispensaries, MCH Centre, Sub Health Centres etc. falling in the revenue limits of Union Council where a RHC is situated.

❖ **The RHC shall have the following services and measures to fulfill its obligations :**

- All PHC activities
- Morning and evening OPD

- 24-hour emergency care
- Special disaster plans
- In-patient facility (Typically the RHCs have 8-20 beds and each serves a catchment Population of about 00,000 people).
- Referral support
- Diagnostic services
 - Radiology
 - Laboratory
- Operation theater
- Reproductive health services
- Dental care
- Pharmacy
- Training services
- Ambulance services
- Hospital records and HMIS
- Laundry, linen and sterilisation
- Facility waste, environment and estate management
- Facility management.(Budget provided for C & S is @ Rs. 2,60,000 per year)

RHC—former Markez level	
Position	No
SMO I/C RHC	1
Medical Officer	2
WMO	1
Dental Surgeon	1
Nurses	2
Paramedics	21
Others	21

Basic Health Unit (BHU)

❖ BHU –at Union Council level is charged with the following roles;

- ✓ Provide the first level referral care to patients referred by LHWs and TBAs; and primary level organized curative care (treatment of common diseases) using EDL.
- ✓ Centre for provision of static and out-reach services;
 - MCH, FP, EPI and Food and nutrition.
 - Sanitation and Health education,
 - CDC, ARI and other special programmes.

BHU (Union Council)	
Medical Officer	(1)
LHV	(1)
MHT	(1)
Sanitary Inspector	(1)
Vaccinator	(1)
CDC Supervisor	(1)
Dispenser	(1)
Midwife	(1)
Lab Assistant	(1)
Others	(5)

- ✓ Supports; clinically, logistically and managerially to the LHWs, TBAs, MCH Centres, Dispensaries, Sub Health Centres etc. that fall in its geographical limits.
- ✓ Serve as a focal point, where community and the public sector health functionaries may come together to resolve issues concerning health.

❖ **The BHU shall have the following services and measures to fulfill its obligations :**

- All PHC activities (This is essential health care, which includes preventive, promotive and curative services such as keeping a clean environment; pure water supply; care of mothers during pregnancy and childbirth; care of children; family planning; nutrition; immunization; early treatment of diseases; and provision of essential medicine)
- Morning and evening OPD
- Special disaster plans
- In-patient facility (Typically the BHUs have 2 beds and each serves a catchment population of about 25,000 people).
- Referral support
- Reproductive health services
- Pharmacy
- Training services
- Facility records and HMIS
- Linen and sterilisation
- Facility waste, environment and estate management
- Facility management (Budget provided for C&S is @ Rs. 96,000 per year)

MCH Centre

❖ At certain locations MCH Centre may exist as separate establishment – usually this is a component of the BHUs and RHCs – that is meant to :

- ✓ Provide to the women especially in their reproductive age (15-45 years) the static and outreach services in respect of:
 - Antenatal including nutrition education and supply of micro-nutrients
 - Natal
 - Postnatal
 - Family planning
- ✓ Serve the children less than 5 years of age for providing them;

- Immunisation; and
- CDC, ARI, CDD.

MCH Centre	
WMO	(1)
LHV	(1)
Mid Wife	(1)
Dai/TBA	(1)

- ✓ Act as referral for the high risk pregnancies and FP cases referred by the LHWs and TBAs working in its catchments area
- ✓ Support clinically, logistically and managerially the LHWs and TBAs working in its catchments area
- ✓ Be a focal point, where community especially women and the public sector health functionaries may come together to resolve issues concerning health.

❖ **The MCH centre shall have the following services and measures to fulfil its obligations :**

- Reproductive health services
- Morning OPD
- Referral support
- Pharmacy
- Training services
- Facility records and HMIS
- Linen and sterilisation
- Facility waste, environment and estate management
- Facility management

Dispensary

- ❖ At certain localities dispensary may exist as separate establishment – usually this is a component part of the BHUs and RHCs – that is meant to:
- ✓ Provide the primary level organized curative care using EDL and referral care to patients referred by the LHWs and TBAs; and
 - ✓ Support; clinically, logistically and managerially the LHWs and TBAs that work in its catchments area.
 - ✓ Serve as a focal point, where community and the public sector health functionaries may come together to resolve issues concerning health.

❖ **The dispensary shall have the following services and measures to fulfil its obligations :**

- Treatment of common diseases
- Morning (and may be evening) OPD.
- Referral support
- Pharmacy
- Training services
- Facility records and HMIS
- Linen and sterilisation
- Facility waste, environment and estate management
- Facility management.

<i>Dispensary</i>	
MO	(1)
Dispenser	(1)
Naib Qasid	(1)

Sub-Health Centre

❖ At certain localities a sub-health centre may exist as an establishment usually in a community premises and attached to or as a satellite to RHC – that is meant to:

- ✓ Provide the primary care using EDL; and
- ✓ Serve as a focal point, where community and the public sector health functionaries to fulfil its obligations :

- Treatment of common diseases
- Morning OPD
- Pharmacy
- Facility records and HMIS
- Facility waste, environment and estate management
- Facility management.

<i>Sub-Health Centre</i>	
Dispenser	(1)
Naib Qasid	(1)

IMPORTANT YARDSTICKS

- ❑ Yardstick for establishment of BHU is at Union Council irrespective of the population
- ❑ Yardstick for establishment of RHC is at Markaz ('Thana'/Police Station) level irrespective of the population
- ❑ Minimum land required for THQ Hospital is 100 Kanal (1/3 for residences and 2/3 for hospital)

- Minimum land required for DHQ Hospital is 200 Kanal (1/3 for residences and 2/3 for hospital)

Yardstick for a BHU

Civil Works

- Approach Road
- Boundary Wall
- Repair of main building and residences
- Water Supply
- Sewerage
- Repair of Electrification
- Telephone Facilities
- Sui Gas

Equipment

Labour Room
Hospital Beds
Sucker Machine
Oxygen Cylinder

Yardstick for a RHC

Civil Works

- Approach Road
- Boundary Wall
- Repair of main building and residences
- Water Supply
- Sewerage
- Repair of Electrification
- Telephone Facilities
- Sui Gas

Equipment

Operation Theatre
Labour Room
Sucker Machine
Oxygen Cylinder
Hospital Beds
Emergency Tray
Ambulance
X-Ray Plant
Functional Laboratory

Education Service Delivery Standards & Yardsticks

PUNJAB DEVOLVED SOCIAL SERVICES PROGRAMME

EDUCATION STANDARDS

The existing⁽¹⁾ service delivery and technical standards in the Education sector are as follows:

CRITERIA FOR ESTABLISHMENT / UPGRADATION OF SCHOOLS

1) Opening of New Primary School

- a. The population of abadi should not be less than 500;
- b. No Girls / Boys Primary school should be functioning in a radius of 1 K.M.
- c. Two Kanals of land is to be made available by the community free of cost.

2) Up Gradation of Primary school to Middle Level

- a. Enrollment of schools (class I – V) inclusive of feeder schools in the radius of 5 K.M;
Male 400
Female 300
- b. Minimum land required is 4 Kanals;
- d. No other middle school in the Union Council;
- e. No other school within a radius of 5 K.M. even in the other Union Council.

3) Establishment of New Secondary School

- a. Enrolment: Minimum 300 for Boys and 200 for Girls in class V-VIII including the feeder school within a radius of 5 K.M.
- b. Pass-Outs: At least 150 for Boys and 100 for Girls including the feeder schools within a radius of 5 K.M.
- c. Land: At least 16 Kanals of land to be arranged by the community free of cost and transferred to Education Department.
- d. Location: No Higher Secondary School or Inter College should be available within a radius of 10 K.M. for girls and 20 K.M. for Boys.

4) Yardstick for Up gradation of High School to Higher Secondary School

- a. Tehsil Headquarter / Markaz Headquarter.
- b. School located in the center of high schools flourishing one.

⁽¹⁾ The yardsticks with respect to distance from schools and population are under review and may be done away with. Greater emphasis will be placed on enrollment as a yardstick.

- c. No college / higher secondary school should exist in a radius of 10 K.M. in case of girls and 20 K.M. in case boys.
- d. Number of pass-outs inclusive of feeder schools should be 100 in case of boys and 50 in case of girls.
- e. Minimum land required is 16 Kanals.

CRITERIA FOR ESTABLISHMENT / UPGRADATION OF EDUCATIONAL INSTITUTION

Establishment of Inter College

1) Population

There should be at least 20,000 population of the town.

2) Number of Pass Out from Feeding Schools

There should be at least 100 in case of male and 50 in case of female passing out students in matriculation in last three consecutive years.

3) Minimum Distance from the nearest Colleges

If the college is established in rural area, there should be at least 15 K.M. in case of male and 10 K.M. in case of female. For urban area it should be 3 K.M.

4) Minimum Land Required:

20 Kanals in case of rural area and 5 Kanals in case of urban area. 3 to 4 Kanals of land in case of hilly areas like Kahuta and Murree.

Establishment of Degree College

1) Population

District / Tehsil Headquarter or a town population of 35,000. New colonies may be preferred for location of the college.

2) Number of Pass Out from Feeding Schools

There should be at least 200 & 75 in case of male and 100 & 40 in case of female passing out student in Matriculation and Intermediate respectively in last three consecutive years.

3) Minimum Distance from the Nearest College

If the college is established in rural area the distance should be 20 K.M. in case of male and 10 K.M. in case of female. For urban area it should be 5 K.M.

4) Minimum Land Required

30 Kanals in case of rural area and 10 Kanals in case of urban area. 3 to 4 Kanals of land in case of hilly area like Kahuta and Murree.

Yard Stick for Opening of a New Primary School for Boys and Girls

- a) The population of the Abadi should not be less than 500;
- b) No girls / boys Primary School should be functioning in a radius of one K.M.
- c) Two Kanals of land is to be made available by the community free of cost.

Yardstick for up gradation of Primary School to Middle Level

- a) Enrolment inclusive of feeder schools:
For Boys 400
For Girls 300
- b) Minimum land required 4 Kanals.
 - I. No other middle school in the Union Council
 - II. No other school at least within a radius of 5 K.M. even in the other Union Council.

Yardstick for up gradation of Middle School to High School

- a) Enrolment inclusive of feeder schools:
For Boys 200
For Girls 120
- b) Minimum land required 8 Kanals;
- c) No other high school in the Union Council;
- d) No other high school at least within a radius of 5 K.M. in the other Union Council.

Yardstick for Establishment of Degree College

- a) Number of passouts of Inter exams Male 50 Female 30
- b) Distance from Degree College Male 40 K.M. Female 20 K.M.
- c) Land / Building the college should have its own building with sufficient Land
- d) Location District / Tehsil H.Q.

Yardstick for Establishment of a New Secondary School

a) Enrollment:

Minimum 300 for Boys and 200 for Girls in class VI – VIII including the feeder schools within a radius of 5 K.M.

b) Pass-Outs:

At least 150 for Boys and 100 for Gils including the feeder schools within a radius of 5 K.M.

c) Land:

At least 16 Kanals land to be arranged by the community free of cost and transferred to Education Department.

d) Location:

Ho Higher Secondary School or Inter College should be available within a radius of 10 K.M. for Girls and 20 K.M. for Boys.

Yardstick for up gradation of High School to Higher Secondary School

a) Tehsil headquarter / Markaz headquarter;

b) School located in the centre of high schools flourishing one;

c) No College / Higher Secondary school should exist in a radius of 10 K.M. in case of Girls and 20 K.M. in case of Boys;

d) Number of passouts inclusive of feeder schools should be 100 in case of Boys and 50 in case of Girls;

e) Minimum land required is 16 Kanals.

Yardstick for up gradation of Inter College to Degree College

a) Number of passouts of Inter Exam Male 50 Female 30

b) Distance from Degree College Male 40 K.M. Female 20 K.M.

c) Land / Building the college should have its own building with sufficient open space.

ESTABLISHMENT OF INTER COLLEGE

a) Population

There should be at least 20,000 population of the town.

b) Number Of Pass Out From Feeding School

There should be at least 100 in case of male and 50 in case of female passing out students in matriculation in last three consecutive years.

c) **Minimum Distance From The Nearest Colleges**

If the college is established in rural area there should be at least 15 km in case of male and 10 km in case of female. For urban area it should be 3 km.

d) **Minimum Land Required**

20 kanals in case of rural area and 5 kanals in case of urban area. 3 to 4 kanals of land in case of hilly areas like Kahuta and Murree.

ESTABLISHMENT OF DEGREE COLLEGE

a) **Population**

District / Tehsil Headquarter or a Town having population of 35,000. New colonies may be preferred for location of the college

b) **Number Of Pass Out From Feeding Schools**

There should be at least 200 & 75 in case of male and 100 & 40 in case of female passing out students in matriculation & Intermediate respectively in last three consecutive years.

c) **Minimum Distance From The Nearest College**

If the college is established in rural area the distance should be 20 km in case of male and 10 km in case of female. For urban area it should be 5 km.

d) **Minimum Land Required**

30 kanals in case of rural area and 10 kanals in case of urban area 3 to 4 kanals of land in case of hilly areas like Kahuta and Murree.

CRITERIA FOR ESTABLISHMENT / UP-GRADATION OF SCHOOLS

1. OPENING OF A NEW PRIMARY SCHOOL	
a)	The Population of the abadi should not be less than 500.
b)	No Girls/Boys Primary School should be functioning in a radius of one K.M.
c)	Two kanals of land is to be made available by the community free of cost.
2. UP-GRADATION OF PRIMARY SCHOOL TO MIDDLE LEVEL	
a)	Enrolment of school (class 1-V inclusive of feeder schools in the radius of 5 k.m):- for Boys 400 for Girls 300
b)	Minimum land required 4 kanals.
c)	No other middle school in the Union Council
d)	No other school within a radius of 5 K.M. even in the other Union Council.
3. ESTABLISHMENT OF A NEW SECONDARY SCHOOL	
a)	Enrolment Minimum 300 for Boys and 200 for Girls in class V-VIII including the feeder schools within a radius of 5 K.M.
b)	Pass-outs At least 150 for Boys and 100 for Girls including the feeder schools within a radius of 5 K.M.
c)	Land At least 16 kanals land to be arranged by the community free of cost and transferred to Education Department
d)	Location No Higher Secondary School or Inter College should be available within a radius of 10 K.M. for Girls and 20 K.M. for Boys.
4. YARDSTICK FOR UP-GRADATION OF HIGH SCHOOL TO HIGHER SECONDARY SCHOOL	
a)	Tehsil headquarter / Markaz headquarter
b)	School located in the centre of high schools flourishing one.
c)	No college / higher secondary school should exist in a radius of 10 K.M. in case of Girls and 20 K.M. in case of Boys.
d)	Number of passouts inclusive of feeder schools should be 100 in case of Boys and 50 in case of Girls.
e)	Minimum land required is 16 kanals.

SPECIAL EDUCATION SERVICE DELIVERY PACKAGE

PUNJAB DEVOLVED SOCIAL SERVICES PROGRAMME

Free Text Books

Most of the students of Special Education institutions belong to low-income families. To share their financial burden, Special Education Department has made arrangements for supply of free of cost textbooks to all the students studying in Government's Special Education institutions.

Audiological Clinics

Audiological Clinics have been established for providing facility of free assessment of hearing of the hearing impaired persons. Audiological Clinics have the facility of sound-proof room.

Equipment

Sr.No	Items
1	Digital Audiometer
2	Tympanometer
3	Hearing Aid Analyzer
4	Oto Scope
5	Sound Level Meter

Merit Scholarships

17 merit scholarships to outstanding special students in fifth class and middle standard examination are being given.

Stipends for Special Children

For compensation of financial burden on the parents of disabled children a stipend of Rs.200/- per month is being distributed among all the disabled students studying in the Government's Special Education institutions.

Free Braille Books

Braille Books are being provided free of cost to all blind students studying in Government's institutes. This facility is also extended to the blind students studying in private institutions. For provision of Braille Books, Special Education Department has

purchased four computerized Braille printers. These printers have the advantage of English Print as well as print in Braille.

Free Pick and Drop Facility

59 new buses have been provided to the all Government's Special Education institutions for free pick-n-drop facility to the disabled children. School buses specially designed for physically disabled children are being purchased and being provided in the next two months.

Free Uniform

Free of cost uniform is being provided to all the disabled students studying in Government's Special Education institutions throughout the Province.

Sports Facilities

Sports facilities are being provided to the disabled children in the shape of provision of sports goods and equipment. Special permission has been granted by the Punjab Sports Board for utilization of the playgrounds.

Vocational Training

Vocational training programme is an integral part of the curriculum being taught in Special Education institutions. Each student has to opt for one or two trades such as wood working, tailoring, welding, carpet weaving, typing, computers, chick making, canning of chairs, candle work and music.

Teacher Training

The teachers of Special Education institutions are being imparted training in Government In-Service Training College for the Teachers of Disabled Children, Lahore in different fields like Audiology, Speech Therapy, Hearing Assessment, Psychological Problems of Disabled Children, Latest Teaching Methodology, Curriculum Management of Special Education Institutions, Classroom Management etc.

Speech Therapy

To train in-service teachers of Special Education possessing diploma in teaching of deaf, two months training in speech therapy in Government Training College for the Teachers of Deaf, Lahore has been arranged.

Mentally Retarded Children

Courses have been tailor made for each mentally retarded student depending on his/her I.Q. level with special emphasis on daily living skills.

ESTABLISHMENT OF 90 SPECIAL EDUCATION CENTRES

90 Special Education centres are being established at Tehsil level in the Province. Some of the centres have already started functioning.

The Following are the details of the Equipment that is made available in the centres.

Hearing Impaired

Sr.No	Name of Item	Qty
1	Hearing Aids	50
2	Digital Audio Meter	01
3	Tympano Meter	01
4	Hearing Aids Analyzer	01
5	Otoscope	01
6	Sound Level Meter	01
7	Computer	20
8	Printer	05
9	Multi Media Projector	01
10	Photo Copier	01

Visually Impaired

Sr. No	Name of Item	Qty
1	Braille Frame 27 liner	50
2	Braille Frame 4 liner	50
3	White Cane Stick	50
4	Mathematic Slate(L)	50
5	Perkin Brailier	10
6	Braille on paper(Imported)	50Pkt
7	Braille Emboser with Soft Ware	05

8	Stylus	100
9	Algebra Type	2 KG
10	Mathematic Type	2 KG

Physically Disabled

Sr.No	Name of Item	Qty
1	Electric Treadmil	01
2	Auto Tricycle	03
3	Wheel Chairs	05
4	Exercise Cycle	05
5	Electric Jogging Machine	02
6	Computer	10
7	Printer	02
8	Photo Copier	01

Existing Standards

TEACHER-STUDENT RATIO

- Hearing Impaired 1 : 8
- Visually Impaired 1 : 6
- Physically Disabled 1 : 8
- Mentally Retarded 1 : 3

**Water Supply & Sanitation Service Delivery & Technical
Standards**

PUNJAB DEVOLVED SOCIAL SERVICES PROGRAMME

PUNJAB PUBLIC HEALTH ENGINEERING DEPARTMENT

DESIGN CRITERIA FOR WATER SUPPLY, SEWERAGE & DRAINAGE SCHEME- 1998

WATER SUPPLY SCHEMES

1) Population Projection

- i. The Growth rate of population will be @ 40% increase in 10 years for urban areas.
- ii. The growth rate of population will be @ 30% increase in 10 years for semi urban/ town committee.
- iii. The growth rate of population will be @ 30% increase in 10 years for rural areas.

The above percentages will be amended on actual census reports when finalized by Government of Pakistan from decade to decade. However from September 1998 the rates of increase will 2.24% for rural and 3.31% for urban areas.

Note: 10 years are to be counted from the year of designing and submission of estimate.

2) Design Period

- ✓ Tube wells and treatment works 10 years
- ✓ Pumping chambers (structure) 25 years
- ✓ Machinery 10 years
- ✓ Distribution system and rising main 20 years

3) Requirement Of Water

- ✓ Domestic Water consumption

	Design Population		Per Capita consumption per day(inclusive of unaccounted for water)
Upto			
5,000	-----	5,000	10 gallon
10,000	-----	10,000	15 gallon
10,000	-----	25,000	20 gallon
25,000	-----	25,000	30 gallon (with sewerage facilities)
25,000	-----	1 lac	10 gallon (with sewerage facilities)
Above	1 lac		50 gallon (with sewerage facilities)

- ✓ Industrial Water Consumption:
The requirement of any industry be assessed separately and include in total requirement of water.
- ✓ Industrial Water Consumption
- ✓ For institutions such as hospitals, hostels, schools etc an allowance @ 10 gallons per boarder and @ 5 gallon per day scholar is to be made.

✓ Short Term variation in demand

- | | |
|-----------------------|----------------------------------|
| I. Maximum day demand | 1.5 times the average day demand |
| II. Peak hour demand | 1.5 times maximum day demand |

4) Terminal Pressure

- | | |
|---------------------------------|-------------------|
| I. For urban residential area | 30 feet(minimum) |
| II. For rural residential areas | 25 feet (minimum) |

5) Velocity Flow In Pipes

- | | |
|----------------------|----------------------|
| I. Distribution main | 1 to 5 feet/second |
| II. Rising mains | 1.5 to 7 feet/second |

6) Minimum Size

Recommended minimum size of distribution mains 3 inches in plain in areas and as per actual calculated for hilly areas. However velocity shall be the controlling factor.

7) Cover Over Pipes

3 feet for all sizes of pipes except in hilly area. However all road cuts are to be filled in with pit sand/river sand.

8)

a. Public Stand Posts(PSP)

- i. The location of the stand-posts shall be made in such a manner that it is an approximate distance of about 350 feet from the end consumers in the rural areas and may be avoided in the urban semi urban areas as far as possible to reduce losses.
- ii. Each stand-post shall serve about 200 persons.
- iii. PSP to be provided only after of Revenue Collection Data of concerned village.

b. Fire Hydrants

Fire hydrants to be provided in urban/semi urban areas. The capacity of fire hydrants to deliver water should not be less than 7 gallons per second.

9) Sluice Valves

Valves shall be located at main control points for balancing and regulation. Non-return valve to be provided in rising main with length exceeding 5000 feet.

10) Air Valves & Washout

Air valves only at sumimits and washout at lowest points.

11) Master Meters

Master meter shall be provided at source.

12) Over Head Reservoirs

- a) Provide over head reservoir where it is needed due to:
 - i. Strategic location of project
 - ii. Source is more than 5,000 feet away from village.
 - iii. Difference of level between source and village is more than 100 feet.
- b) Capacity of reservoir will be $1/6^{\text{th}}$ of the average daily demand subject to minimum of 5000 gallons.

13) Machinery

- a) Spare parts, tools are recommended to be provided.
- b) Large units are economical. It may be kept in view that combination of unit is possible for average and peak flows.
- c) Working hours:
 - i. Tube Wells:
 - a) Rural 8-12 hours
 - b) Urban 16 hours
 - ii. Machinery at treatment works:
 - a) For population above 25,000 gallons 16 hours
 - b) For population less than 25,000 gallons 8-12 hours

14) Chlorinating

0.1 PPM residual at the farthest end of the distribution system

15) Ground Water Storage

- i. Ground water storage tank at intermediate point to be provided due to excessive head.
- ii. Capacity of ground water storage tank @ $1/4^{\text{th}}$ average daily demand will be provided.

16) High Level Tank (Raw Water)

One hour capacity of average daily requirement

17) Slow Sand Filtration

- ✓ Raw Water storage requirement 50% of 21 days average water requirement
- ✓ Rate of filtration 40 gallon per day per Sft of sand area
- ✓ Depth of filter sand 30 to 36 inches
- ✓ Effective size of sand (d10) top of filter
 - garage to 1 feet 0.3 mm - 0.35mm
 - 1 to 2 feet 0.25mm- 0.30mm
 - Top Layer 9 inches minimum 0.18mm- 0.22mm

- ✓ Uniformity co-efficient of sand Not greater than 2.5(d₆₀/d₁₀)
- ✓ Depth of water over the sand 3 - 4 feet
- ✓ Velocity of water in under drainage system Not more than 0.75 feet/second
- ✓ Minimum number of sedimentation tanks in water treatment plants will be two.
- ✓ Sedimentation tanks will be constructed in series to achieve stage sedimentation prior to filtration.
- ✓ Range Gravel

Range	Depth
3 to 1 inches	6 inches
1 to 3/8 inches	2 inches
3/8 to 3/16 inches	<u>2 inches</u>
Total Depth: <u>10 inches</u>	

The gravel should be placed over the under drains but not within 2 feet from the side walls, so that only sand will rest in the 2 feet zone along sides of the filters.

The outlets system will be provided with telephonic arrangement of pipes to adjust required flow of filtered water according to varying resistance in filter media. The difference in line & outlet will be 24-30 inches

18) Rapid sand Filters

1	Rate of filtration	2-4 gal/sft/min
2	Minimum depth of filter	Should not be less than 8.5 feet
3	Depth of water on the sand	Should not be less than 3 feet
4	Depth of filtering sand	24 inches to 30 inches
5	Effective size of filtering sand	0.35 - 0.50 mm
6	Uniformity co-effective of sand	1.3 - 1.7
7	Supporting Gravel	
	Range	Depth
	2-1/2 to 1-1/2 inches	5 to 8 inches
	1-1/2 to 3/4 inches	3 to 5 inches
	3/4 to 1/2 inches	3 to 5 inches
	1/2 to 3"/16 inches	2 to 3 inches
	3/16 to 3/32 inches	2 to 3 inches
	Total Depth	15 TO 24 Inches

19) Test Pressure Of Land Water Lines

50% above class of pipes used.

20) Protection Of Pipes

M.S. pipes should be provided with bituminous coating and polythene wrapping.

21) Water Standards

SUBSTANCE OT CHARACTERISTICS	UNDESIRABLE EFFECT THAT MAY BE PRODUCED	HIGHEST DESIRABLE LEVEL	MAXIMUM PERMISSIBLE LEVEL
Substance causing discoloration	Discoloration	5 units(a)	50 Units(a)
Substance causing odour	Odour	Unobjectionable	Unobjectionable
Substance causing taste	Taste	Unobjectionable	Unobjectionable
Suspended matter	Turbidity possible gastrointestinal irritation	5 unit(b)	5 Unit(b)
Total Solids	Taste Gastrointestinal irritation	500mg/l	1500mg/l
PH range	Taste corrosion	7.00 to 8.5	6.5 to 9.2
Anionic detergents	Taste and foaming	0.2mg/l	1.0mg/l
Mineral oil	Taste and odour after chlorinating	0.01mg/l	0.30mg/l
Copper (as Cu)	Astringent taste Discoloration Corrosion of pipes, fitting and utensils	0.05mg/l	1.5mg/l
Iron (total as Fe)	Taste Discoloration deposits and growth of iron bacteria turbidly	0.1mg/l	1.0mg/l
Magnesium (as Mg)	Hardness Taste Gastrointestinal irritation in the presence of sulfate	Not more than 30mg/l if there are sulfate, if there is less sulfate, magnesium upto 150mg/l may be allowed	150mg/l
Management (as Mn)	Taste Discoloration deposit in pipes Turbidity	0.05mg/l	0.5mg/l
Sulphate (as So4)	Gastrointestinal irritation when magnesium or sodium are present	200mg/l	400mg/l
Zinc(as Zn)	Astringent taste	5.0mg/l	5mg/l

	opalescence and sand-like deposits		
Phenolic compounds (as phenol)	Taste, particularly in chlorinated water	0.001mg/l	0.002mg/l
Total hardness	Excessive Scale formation	(100 mg/l CaCo ₃)	(500mg/l CaCo ₃)
Calcium (as Ca)	Excessive scale formation	75mg/l	200mg/l
Chloride (as Cl)	Taste corrosion in hot water systems	200mg/l	600mg/l

- a) On the platinum-cobalt scale
- b) Turbidity units
- c) If the hardness is much less than this, other undesirable effects may be caused, for example, heavy metals may be dissolved out of pipes.

SEWERAGE SCHEMES

1. Sewerage

- I. The Disposal station should be located at a place where from sullage water can be disposed of safely, economically and hygienically.
- II. The sewers will be designed as partially combined system allowing surcharging of the system for some time.
- III. By-pass arrangements at disposal station must be planned where level permits.
- IV. Out fall sewer in village to be provided if otherwise economical and safer as compared to Punjab Standard Drains Type I/II.

2. Design Period

- I. Civil works including sewers 20 years
- II. Machinery 10 years
- III. Sufficient area for the disposal station should be acquired to accommodate further extension for next 40 years.
- IV. Master plan for sewerage scheme should be prepared and phasing out be done according to priority of work / area.

3. Design Flow Calculation

- I. The sewage contribution of the water consumed will be as follow:

- | | | |
|----|--------------------------------|-----|
| a) | For Semi Urban/ Town Committee | 70% |
| | - 75% | |
| b) | For Urban area | 80% |
| | - 85% | |

- II. In-filtration Rate

- | | | |
|----|-------------------------------------|-----|
| a) | Sewerage above sub-soil water level | 350 |
| | gpd /inches/dia/miles | |
| b) | Sewerage below sub-soil water level | 700 |
| | gpd/inches/dia/miles | |

- III. Peak Factor

Population in thousand	Peak Factor
Up to 5	4.50
5 to 10	4.00
10 to 25	4.00
25 to 50	3.50
50 to 80	2.50
80 to 100	2.00
100 to 200	2.00
Above 200	2.00

- IV. Multiply the average rate by the peak factor to calculate maximum dry weather flow.

V. Add allowance for industrial waste as per actual assessment. On treated industrial waste as per National Environment Quality Standards is allowed.

VI. Storm Water Allowance

- i. Rural Area NIL
- ii. Urban Area NIL

- a) 50% of peak flow in northern areas
- b) 33% of peak flow in southern area

NOTE:

The storm water allowance for urban area in North and South Zone will be subject to the condition that proper arrangement for connecting storm water drainage appurtenance and sewerage system are adequately provided.

- VII. Design Flow (Qd) b+d+e+f
- VIII. Discharge for running full (Qd) to provide air space.

4. Velocity At Design Flow

Minimum (in difficult situation)	2.00 feet/second
Desirable minimum	2.50 feet/second
Maximum hilly area	7 feet/second

5. Spacing Of Manholes

a) Describe spacing of manholes in straight lines shall be as under

Size of sewer	Spacing
9 inches- 12 inches dia	100 feet- 150 feet
15 inches- 24 inches dia	200 feet- 250 feet
27 inches - 42 inches	300 feet
42 inches - 60 inches	400 feet
Above 60 inches dia	500 feet

- b) Manholes should invariable be provided at every change of alignment, change in size of sewer or at a junction.
- c) Where-ever drop in more than 3 feet, drop manholes should be constructed.
- d) Ewer above sub-soil water level

Size of sewer	Depth	Manhole	Remarks
9" - 12"	Upto 4'	2'*2' (Square)	Masonry in 1:3
9" - 21"	4' - 7'	4 feet dia(circular)	Cement mortar
24 - 30"	4' - 7'	5 feet dia	Upto 8' depth p" masonry from
33 - 42"	8' - 20'	6-1/2 feet dia	8' to 15' depth
45" - 54"	8' - 20'	7-1/2 feet dia	13-1/2 to 9"
60"	8' - 20'	8 feet dia	Masonry from
66"	4' - 20'	8 feet dia	15' to 20'
72"	4' - 20'	9 feet dia	Depth, 8' to 9' masonry

- e) For manholes under sub-soil water, core-wall and floor will be designed as per actual depth of water.
 f) For depth more than 10 feet RCC slab will be put at 7 feet from invent and then 4 feet dia masonry will be constructed upto surface.

6. Minimum Size Of Sewers

Minimum size of sewer shall be 9 inches nominal dia.

7. Minimum Cover

2.5 feet over crown of the sewer.

8. Pipe Roughness Co-efficient

<u>RCC Pipes</u>	<u>Co-efficient “n”</u>
New Lines	0.013
Old Lines	0.015

9. Outfall Works

- a) The capacity of pumps shall be such that combination for minimum average and maximum flow is possible
 b) Stand-by arrangement = 50% of peak load.
 c) Detention time of collection tanks for design flow.

1	Population upto 25,000	10 minutes
2	25,000 to 50,000	5 minutes
3	50,000 to 100,000	5 minutes
4	1 lac to 500,000	2 minutes
5	Above 5 lac	2 minutes

10. Bedding (A.S.T.M STANDARDS)

A	Above sub-soil water level for sewers 9 in - 12 in dia For sewer 15 in dia and above	Sand Crush stone (1/4 in - 1 in/ Size)
B	For sewers below sub-soil water and for slushy soil	Decision to be taken as per conditions at site

11. Class Of Pipe

ASTM pipes class II (c-76) as amended by PHED. For use of class III pipes, decision to be taken as per specific site conditions.

12. Pipe Reinforcement

As per ASTM specification (as amended by PHED)

13. Slope of Sewer Line

Minimum gradient of sewers to attain velocities as per section 4 above.

STORM WATER DRAINAGE

The capacity of storm water drainage is calculated according to Burklizeger formula taking into consideration, slope of the catchments area, type of development and intensities of rainfall based on rational assessment of the last 10 years covering 80% of rain storms.

This formula is calculated as follow:

$$Q = ARC \cdot 4 \sqrt[3]{S}$$

Where Q = Discharge in cusecs

A = Drainage area in acres

S = Average slope pf the water shed in feet per thousand feet

C = Co-efficient of impermeability

Value of "R" depends upon the time of concentration i.e. T, which is the time taken for water to flow from limits of the area under consideration to a specific point of the sewer. This also includes time of entry whose usual values are as below:

I. Large mansions in very large plots	2 min
II. Semi detached hoases	1 min
III. Closely built area	1-1/2 min

According to Punjab Engineering Congress paper No.295 (1952) on analysis of heavy rainfall in short period at Lahore by Mr. S.M.Naqvi

Value of "R"	4.32 - 0.0961
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This formula is applicable only to maximum intensity of rainfall and is limited to a duration of 45 minutes, where T= Duration of heavy rainfall in minutes.

For other cases the following value of "R" may be adopted

- i. $R = \frac{30}{T+10}$
When T=5 to 30 minutes (Time of Concentration)
- ii. $R = \frac{40}{4+20}$
When T 20 to 100 minutes

Where time of concentration cannot be calculated, the following formula be used for finding out the discharge.

$$Q = 60.5 \cdot R \cdot A \cdot C$$

Where Q = Discharge in cuft/min

R = Average intensity of rainfall in inches/hours

A = Drainage area in acres

C = Co-efficient of impermeability

The presence of imperviousness of various types of surface very commonly used are those of kuichiling which are shown blow:

"Vide page 344 of book Water Supply & Sewerage by E.W Steel, 1947"

Type Of Surface	Co-efficient of impermeability
Water light rood surface	0.70-0.95
Asphaltic pavement in good order	0.85-0.90
Stone, Brick and wood block pavement with tightly cemented joints	0.70-0.85
Same with uncemented joints	0.70-0.80
Inferior block pavements with uncemented joints	0.070-0.80
Adamized roadways	0.25- 0.30
Gravel roadways & walks	0.25-0.300
Parks, gardens, Lawns, Meadows, depending on surface slope and character of sub-soil	0.05- 0.25

The percent of imperviousness for the whole area is then arrived after estimating on ascertaining figure which are usually adopted may serve to the whole area. Following figure which are usually adopted may serve as good guide.

Type of surface	Co-efficient
Most densely built up area	0.70- 0.90
Adjacent well built up sections	0.50- 0.70
Residential area with detached houses	0.25- 0.50
Sub-urban section with few building	0.10- 0.25

For southern Punjab, an intensity of 1/30 in per hour may be taken except for industrial cities, whereas higher intensity (1/4 in per hour) be assumed. For Northern Punjab, an intensity of ¼ in per hour be assumed for small town while ½ in per hour or figure based on rational assessment be assumed for larger cities.

Design Outfall Works

Outfall pumping stations are proposed to be designed to cater for the maximum peak load plus a 50% stand-by (50% of peak load).

Capacity:

- I. Present average flow (if it be less than, ½ of ultimate average) or ½ ultimate average.
- II. Present and ultimate peak flow.

The pumps would be located in dry well adjacent to collecting sumps with at least to minute's retention capacity. There would be at least 2 units. The sump will preceded by coarse screen with 2 inches each.

For the present only works and machinery needed for the present maximum discharge would be provided.

The pumps will be vertical centrifugal type in dry design for passing solids of 2 to 3 inches size. These will be powered by A>C electric motors. For safeguard against power failure at least 50% pumping capacity will have additional diesel \engine in addition to the normal electric driven 50 % standby prescribed above.

Open Surface Drains

Punjab standard open surface drains type I and type II are to be constructed in villages with population upto 5000 persons. The design is given in detail in Chief Engineer's West Pakistan Technical Memo No 18, which may be consulted with the following special instruction:

- Initial houses at up stream may be first provide4d with "House Drains" instead of Type I.
- Tega only to be provided along houses at stating length without drains.
- 4-1/2" Drain on one side if street width is less then 6'.
- Precast drains instead of situ type are to be preferred.
- Street crossing should be in form of girder crossing instead of RCC slab as per Technical Memo No. 18.
- Proper toe wall to be constructed at the outfall point.
- Existing ponds to be eliminated as for as possible.
- Cover existing ponds into oxidation ponds preferably.
- Provide screen before sullage collecting pit.
- Reduce the number of collecting pits as far as a village.
- Provide at least 2 number pumping units for a village.
- L- Section of drains to be drawn in Tech Sanction estimate.

Brick Pavement

First class bricks sand grounds are to be used in brick pavement in streets of villages upto 5000 persons:

- I. Full pavement of street with width upto 15' with open drains on both sides center.
- II. Storm water to be guided through brick pavement.
- III. PCC soling in Hilly areas.