

**THE GOVERNMENT OF MALAYSIA
PRIME MINISTER'S DEPARTMENT
ECONOMIC PLANNING UNIT**

**THE STUDY
ON
INTEGRATED URBAN DRAINAGE IMPROVEMENT
FOR
MELAKA AND SUNGAI PETANI
IN MALAYSIA**

FINAL REPORT

VOL. 5: TECHNICAL GUIDELINE

AUGUST 2000

**CTI ENGINEERING INTERNATIONAL CO., LTD.
IN ASSOCIATION WITH
PASCO INTERNATIONAL, INC.**

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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ESTIMATE OF PROJECT COST

Price Level : As of May 1999
Currency Conversion Rate : US\$1.00 = RM 3.8 = 121.4 Yen

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GLOSSARY (1/4)

<p>1. Combined Sewer Overflow (CSO)</p>	<p>The CSO is a flow from a combined sewer in excess of the interceptor capacity that is discharged into a receiving water.</p>
<p>2. Combined Sewage</p>	<p>The combined sewerage contains both domestic sewage and surface water or stormwater, with or without industrial wastes. It includes flow in heavily infiltrated sanitary sewer systems as well as combined sewer systems.</p>
<p>3. Combined Sewer</p>	<p>The combined sewer is a sewer to receive both intercepted surface runoff and municipal sewage.</p>
<p>4. Design Flood</p>	<p>The design flood is the probable flood runoff discharge which has a recurrence probability of the adopted design scale and is subject to regulation effect by the proposed drainage facilities.</p>
<p>5. Design Hyetograph</p>	<p>The design hyetograph is the hyetograph of probable storm rainfall which corresponds to the design scale.</p>
<p>6. Design Scale</p>	<p>The design scale is expressed in a term of recurrence probability of storm rainfall and used as a standard for designing of the proposed drainage structures.</p>
<p>7. Diversion Channel</p>	<p>The diversion channel is a ditch or conduit designed to bypass floodwaters around or away from a specific area.</p>
<p>8. Domestic Sewage</p>	<p>The domestic sewerage is derived principally from dwellings, business buildings, institutions, and the like. It may or may not contain groundwater.</p>
<p>9. Drainage Pumping Station</p>	<p>The drainage pumping station is placed at or near the line-of-protection in order to discharge interior flows over or through the levees or flood-walls (or through pressure lines) when free outflow through gravity outlets is hindered by exterior stages.</p>
<p>10. Exterior Stage</p>	<p>The exterior stage is a water surface level on the unprotected (exterior) side of the line-of-protection.</p>
<p>11. First Flush Flood</p>	<p>The first flush flood is a storm sewer discharge or combined sewer overflow at beginning of a flood which tends to contain a disproportionately high pollutant load.</p>
<p>12. Flood Detention</p>	<p>The flood detention is to store storm runoff and gradually release it toward the downstream through a control structure or other release mechanism</p>
<p>13. Flood Retention</p>	<p>The flood retention is to store storm runoff but not release it toward the downstream. The stormwater stored is released only via evaporation and infiltration. When the stormwater stored is slowly released over an extended period of several days or more, such storing and releasing mechanism is also referred to as extended flood retention.</p>

GLOSSARY (2/4)

<p>14. Flood Storage Pond:</p>	<p>The flood detention pond is the off-site storage facility to store the flood runoff discharge from a rather extensive catchment area and reduce its peak discharge. The flood discharge stored is release by the mechanism of flood detention, flood retention or their combination.</p>
<p>15. Gabion</p>	<p>The gabion is a rock-filled wire cage used on stream for erosion control and construction of dams and other structures.</p>
<p>16. Gravity Outlet</p>	<p>The gravity outlet is such as a culvert, conduit, or other similar conveyance opening through the line-of-protection that permit discharge of interior floodwaters through the line-of-protection by gravity when the exterior stages are lower than interior stages. It is usually equipped with a gate to prevent river flows from entering the protected area during time of high exterior stages.</p>
<p>17. Gully Erosion</p>	<p>The soil on a slope is eroded by rainfall or flood stream. This soil erosion brings about numerous rills on the slope at beginning (called as rill erosion). These rills are gradually developed to be a deeper V shape gully in progress of the soil erosion. This soil erosion developed from the rill erosion is called as the gully erosion. The gully erosion tends to occur on a slope which contains a large quantity of clay particularly in a collapsed land or bare land.</p>
<p>18. Infiltration Facility</p>	<p>The function of infiltration facility is to make stormwater to disperse and/or infiltrate from the surface and/or shallow portion of the ground into the unsaturated stratum.</p>
<p>19. Interceptor</p>	<p>The interceptor is a sewer that receives dry-weather flow from a number of transverse combined sewers and additional predetermined quantities of intercepted surface runoff and conveys such waters to a point for treatment.</p>
<p>20. Interior Stage</p>	<p>Water level on the protected side of the line-of-protection.</p>
<p>21. Municipal Sewage</p>	<p>Sewage from a community which may be composed of domestic sewage, industrial wastes, or both.</p>
<p>22. Non-point Source</p>	<p>The non-point source is any unconfined and non-discrete source from which pollutants are or may be discharged.</p>
<p>23. Non-sewered urban runoff</p>	<p>The non-sewered urban runoff is a part of surface runoff in an urban drainage area reaching a stream or other body of water without passing through a sewer system.</p>
<p>24. Off-site Storage</p>	<p>The function of the off-site storage is to store stormwater runoff from a rather extensive catchment area and reduce the peak runoff discharge.</p>

GLOSSARY (3/4)

<p>25. <i>On-site Storage</i></p>	<p>The function of on-site storage is to store the storm rainfall within a limited compound and reduce the peak runoff of the storm rainfall.</p>
<p>26. <i>Oxidation Pond</i></p>	<p>The oxidation pond is a basin (generally 0.6 to 1.8 m deep) used for detention of wastewater before final disposal effecting biological oxidation of organic matter by natural or artificially accelerated transfer of oxygen to the water from air.</p>
<p>27. <i>Point Source</i></p>	<p>The point source is any discernible, confined, and discrete source from which pollutants are or may be discharged.</p>
<p>28. <i>Quick Disposal of Flood</i></p>	<p>Quick disposal of flood is a concept on urban drainage improvement that aims at draining the stormwater out of the objective drainage area as soon as possible.</p>
<p>29. <i>Regulation Pond</i></p>	<p>The regulation pond is to temporarily storage interior floodwater which is drained through the line-of-protection when the exterior water level drops below the storage water level of the pond. The regulation pond is usually placed near the gravity outlets, pumping stations, or pressure conduits in low-lying area.</p>
<p>30. <i>Rill Erosion</i></p>	<p>The soil on a slope is eroded by rainfall or flood stream. This soil erosion brings about numerous rills on the slope at beginning. This type of soil erosion is called as rill erosion.</p>
<p>31. <i>Sanitary Sewer</i></p>	<p>The sanitary sewer is a sewer that carries liquid and water-carried wastes disposed from residences, commercial buildings, industrial plants, and institutions, together with relatively low quantities of surface flow.</p>
<p>32. <i>Sheet Erosion</i></p>	<p>The sheet erosion is a type of soil erosion such that almost same soil depth of an entire slope surface is eroded by flood flow.</p>
<p>33. <i>Sediment Basin</i></p>	<p>The sediment basin is a facility to collect and store the sediment runoff .</p>
<p>34. <i>Sediment Detention</i></p>	<p>The sediment detention is one of functions by sediment basin. The function of sediment detention is to store sediment runoff and gradually release it toward the downstream through a control structure or other release mechanism</p>
<p>35. <i>Sediment Retention</i></p>	<p>The sediment detention is one of functions by sediment basin. The function of the sediment retention is to store sediment runoff but not release it toward the downstream.</p>
<p>36. <i>Sewer</i></p>	<p>The sewer is a pipe or conduit to carry sewage or other waste liquids.</p>

GLOSSARY (4/4)

<p>37. Sewerage</p>	<p>The sewerage is a piping system with appurtenances to collect and convey wastewater.</p>
<p>38. Source Control of Flood</p>	<p>Source control of flood is a concept on urban drainage improvement that aims at detaining and/or retaining the stormwater within the objective drainage area.</p>
<p>39. Standard Project Flood</p>	<p>The standard project flood is the probable flood runoff discharge which has a recurrence probability of the adopted design scale and is subject to no regulation effect by any proposed basin flood control facility.</p>
<p>40. Storage Facility in Public open Space</p>	<p>A public open space such as a sport ground and a car parking space is enclosed by a low wall to collect the rainfall from the public compound and reduce the peak runoff of the storm rainfall. The stormwater stored is release by the mechanism of flood detention, flood retention or their combination.</p>
<p>41. Storage Tank in an Individual House Lot</p>	<p>A storage tank is installed in an individual house lot to collect the rainfall from house rooftop to reduce the peak runoff of the storm rainfall. The stormwater stored is released by the mechanism of flood detention, flood retention or their combination.</p>
<p>42. Storm Sewer</p>	<p>The storm sewer is a sewer that carries intercepted surface runoff, street wash and other wash waters, or drainage, but excludes domestic sewage and industrial wastes.</p>
<p>43 Sump</p>	<p>The sump is to trap coarse sediment contained in drainage channel flow. The sump is a temporary facility made available during a land development work and usually placed at the inflection points of the channel where the sediment in the drainage channel flow is hardly transported by gravity flow.</p>
<p>44. Sediment Trap</p>	<p>The sediment trap aims at storing and settling sediment-laden water at the land development site of less than 2ha. The sediment trap is temporarily constructed by direct excavation of the ground and used as a temporary facility during a land development work.</p>
<p>45. Sediment Basin</p>	<p>The sediment basin aims at storing and settling laden water at the land development site of more than 2ha. The sediment basin is used as a temporary or permanent structure which is constructed by direct excavation or embankment equipped with spillway and outlet facility.</p>