

DRAINAGE MANAGEMENT PLAN

Revision	Date	Comment

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1.0 INTRODUCTION

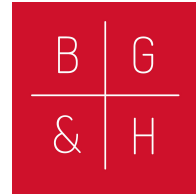
This document sets out the principles for the long term management and maintenance of the surface water Sustainable Drainage Systems (SuDS) to be constructed at Little Greene Paint Company Ltd, Ashton Old Road, Manchester.

The purpose of this document is to set out the basis of the development SuDS Maintenance Plan and to ensure that the site and building owner establishes a robust inspection and maintenance programme, ensuring the optimum operation of the surface water drainage network is continually maintained for the lifetime of the development and to prevent the increased risk of flooding both on and off site in accordance with the National Planning Policy Framework (NPPF).

This plan has been comprised of and is directly referenced from the latest technical SuDS guidance within the CIRIA Report C697 The SuDS Manual (2013) and other applicable guidance.

The activities listed in this document are generic to the relative SuDS types and represent the minimum maintenance and inspection requirements, however additional tasks or varied maintenance frequency may be carried out by the company appointed to carry out the maintenance under instruction from the site owner. Specific maintenance needs of the SuDS elements should be monitored and maintenance schedules adjusted to suit requirements.

All those responsible for maintenance should follow relevant Health and Safety legislation (Health and Safety at Work Regulations, 1999) for all activities listed within this report (including lone working, if relevant) and risk assessments should always be undertaken.



Any contractor employed by the site owner shall carry out periodic maintenance of all such SuDS in accordance with the schedules listed in this report. Inspection checks shall be carried out by a qualified and competent person, at the minimum intervals listed within the schedules and the appropriate work carried out.

2.0 SUDS LAYOUT & DESIGN

The storm water drainage strategy for the proposed development utilises SuDS features to intercept and convey all pluvial surface water runoff. The design of the system aims to attenuate runoff and encourage infiltration.

The proposed storm water system consists of the following SuDS components:

- Green roof
- Infiltration
- Storage Basins

There are three categories of maintenance activities referred to in this Plan:

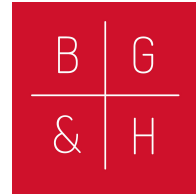
- **Regular maintenance (including inspections and monitoring).**
Consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.
- **Occasional maintenance**
Comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).
- **Remedial maintenance**
Comprises intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.

3.0 SUDS MANAGEMENT & MAINTENANCE

3.1 Attenuation Basins and Headwalls

Note: The operations contained within this section specific to the maintenance of landscaping, shall be read in conjunction with any development landscape maintenance plan(s).

- 3.1.1 The land drainage system including the attenuation basins and associated inlet / outlet headwalls and pipework will be subject to a routine monitoring and maintenance schedule as part of the general site management. This will be carried out at monthly intervals between 1 April and 31 October and once between 1 November and 31 March unless otherwise detailed. A record of maintenance visits and remedial operations shall be maintained. The following



guidelines are offered as an initial regime, but maybe either increased or decreased by the site owner depending on the local environment and any external contributing factors.

- 3.1.2 The key maintenance requirement for the attenuation basins and associated inlet / outlet headwalls and pipework will be the maintenance of vegetation and mowing of grass within and on the banks/verges and the removal of accumulated sediments and collection of litter and debris.
- 3.1.3 During the inspections the general operation, and structural condition of the inlet / outlet headwalls and any erosion of banks or scour control features should be identified and rehabilitated as required.
- 3.1.4 During the inspections the water retention membrane lining the basins is to be inspected and any damage to or slippage of the membrane is to be repaired and reset to ensure the membrane is effective in preventing water filtration into the ground.
- 3.1.5 Vegetation on the banks of the basins should be trimmed twice a year, preferably in April and October to a height of 100mm to establish a dense sward and provide long grass margins which will discourage staff. Cuttings from any clearance work should be removed to avoid it causing blockages downstream.
- 3.1.6 De-silting of the attenuation basins will usually be on a 10-15 year cycle depending on the on-going silt level checking. The de-silting work will be carried out under the supervision of consulting engineers and to a pre-agreed method statement.
- 3.1.7 Prior to de-silting works commencing, a suitably qualified ecologist shall be appointed to undertake an assessment of the ecological interest within the basin and its margins.
- 3.1.8 In the event that the attenuation basins develop particular ecological interest, then careful consideration will be given to the timing of this operation.
- 3.1.9 Sediments excavated from the attenuation basins that receive run-off from greenfield areas are not toxic or hazardous material and can be safely disposed of by either land application or landfilling. However, consultation should take place with the environmental regulator to confirm appropriate protocols. As long as the silt is non-hazardous it can be put it on the bank of the basins and depositing silt on top of the banks allows for any organisms to re-establish.



Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Remove litter and debris	Monthly
	Cut grass – to maintain access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year), then annually or as required
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets and outlets	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually
	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
Occasional maintenance	Remove sediment in inlets, outlets and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
	Repair erosion or other damage by reseedling or re-turfing	As required
	Inspection and realignment of basin membrane	As required
Remedial actions	Inspection and repair of basin membrane	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Repair/rehabilitation of inlets, outlets and overflows	

Table 01 - Maintenance Plan for the Attenuation Basin

4.0 SPILLAGE – EMERGENCY ACTION

- 4.1 Most spillages on development sites are of compounds that do not pose a serious risk to the environment if they enter the drainage in a slow and controlled manner with time available for natural breakdown in a treatment system. Therefore small spillages of oil, milk or other



known organic substances should be removed where possible using soak mats as recommended by the Environment Agency with residual spillage allowed to bio-remediate in the drainage system.

- 4.2 In the event of a serious spillage, either by volume or of unknown or toxic compounds, then isolate the spillage with soil, turf or fabric and block outlet pipes from chamber(s) downstream of the spillage with a bung(s). (A bung for blocking pipes may be made by wrapping soil or turf in a plastic sheet or close woven fabric.)

Contact the Environment Agency immediately.

5.0 QUERIES REGARDING DESIGN FEATURES

- 5.1 In the event of a concern or failure of a SuDS design feature contact Bradshaw Gass & Hope LLP.

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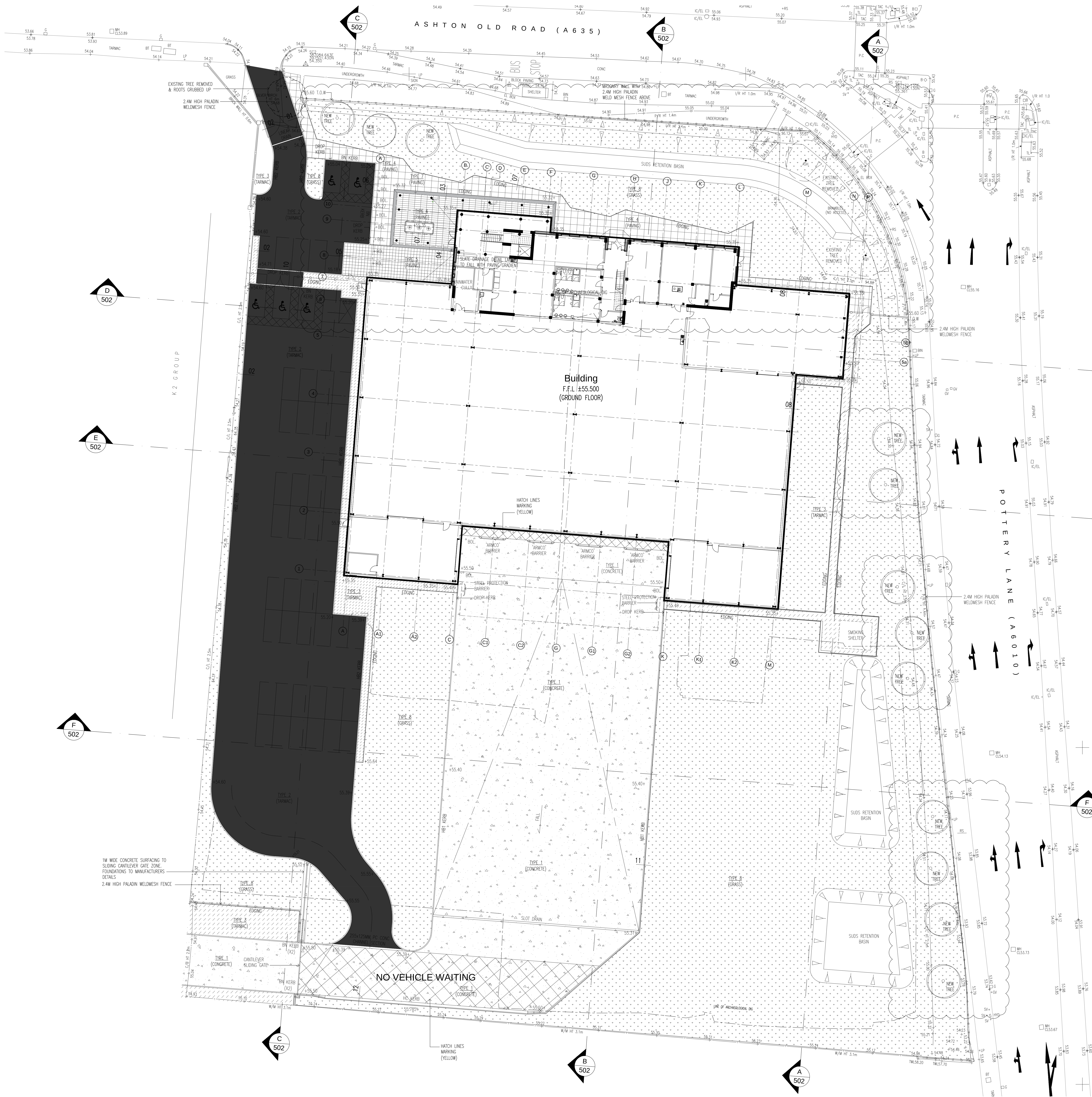
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APPENDIX A

PROPOSED EXTERNAL LANDSCAPE SITE PLAN



Legend

- TYPE 1 – SURFACING (CONCRETE – VEHICULAR ACCESS)**
REFER TO STRUCTURAL ENGINEERS DRAWING 2139.01.106 FOR SPECIFICATION.
- TYPE 2 – SURFACING (TARMAC – VEHICULAR ACCESS)**
REFER TO STRUCTURAL ENGINEERS DRAWING 2139.01.106 FOR SPECIFICATION.
- TYPE 3 – SURFACING (TARMAC – PEDESTRIAN ACCESS)**
REFER TO STRUCTURAL ENGINEERS DRAWING 2139.01.106 FOR SPECIFICATION.
- TYPE 4 – SURFACING (PAVING – PEDESTRIAN ACCESS)**
600MM X 600MM X 50MM THK. PAVING SLABS.
NBS Q25.315 – COLOUR: LYRA
- TYPE 5 – SURFACING (PAVING – PEDESTRIAN ACCESS)**
450MM X 450MM X 50MM THK. PAVING SLABS.
NBS Q25.315A – COLOUR: SILVER GREY
- TYPE 6 – SURFACING (PAVING – PEDESTRIAN ACCESS)**
900MM x 300MM x 50MM THK. PRECAST CONCRETE PAVING.
NBS Q25.315B – COLOUR: LUNA
- TYPE 7 – SURFACING (PAVING – PEDESTRIAN ACCESS)**
400MM x 50MM x 50MM THK. NATURAL SLATE. SEE DRAWING 2139.01.107C2 FOR DETAIL.
NBS XXX.XXX
- TYPE 8 – SURFACING (GRASS)**
WILD FLOWER GRASS MIX BRITISH SEED HOUSES OR SIMILAR WF3 ON 150MM THK TOPSOIL TOPING TO BS3882:1994. ON IMPROVED TOP SOIL CAPPING AS RECOMMENDED BY SITE INVESTIGATION REPORT ON CONTAMINATED LAND.
NBS Q30.311

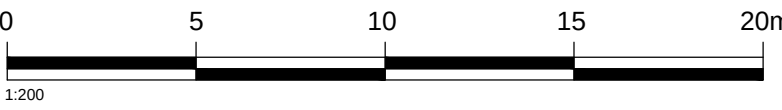
- HB1 KERB MARSHALLS
- HB2 KERB MARSHALLS 255 X 125 'HALF' BATTERED 2' PCC KERB
- BN KERB MARSHALLS 150 X 125 'BULLNOSED' PCC KERB
- HC KERB MARSHALLS 400 X 390 'TITAN' HIGH CONTAMINANT PCC KERB
- EDGING MARSHALLS 50 X 150 SQUARE PCC EDGING

NOTE 1
PLEASE REFER TO DRAWINGS 2139.01.106 & 2139.01.107 FOR PAVING AND KERB DETAILS.

WHITE LINING
NEW PARKING BAYS, DISABLED PARKING BAYS, ACCESS ROADS, PEDESTRIAN ZONE, PROHIBITED ZONES ETC. ARE TO BE MARKED OUT WITH 100mm THICK THERMOPLASTIC LINE MARKING PAINT. ALL SYMBOLS AND TEXT IS TO BE SIMILAR
ALL MARKINGS ARE TO BE WHITE UNLESS INDICATED OTHERWISE.

SUB RETENTION BASINS
EMBANKMENTS TO BASINS TO BE FORMED FROM SELECTED EXCAVATED MATERIAL WITH A 200mm TOPSOIL CAPPING

1M WIDE CONCRETE SURFACING TO SLIDING CANTILEVER GATE ZONE. FOUNDATIONS TO MANUFACTURERS DETAILS
2.4M HIGH PALADIN WELDMESH FENCE



STATUS

CONSTRUCTION

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This drawing shall be used in conjunction with all other relevant drawings, specifications and associated documentation. Any discrepancies, errors or omissions are to be reported to the originator before proceeding with work.
All dimensions are to be checked on site by the contractor prior to proceeding with any work.

Hazard Identification

ref

hazard

date

08 TREE LOCATIONS INDICATED

09 CANOPY DUMPERS ADDED

10 STAKE DRIVINGS DETAIL, PRINTED AND LEVELS ACCESS RECONFIGURED

11 PAVING FLAG COLOURS ADDED - 2 ADDITIONAL HIGHLIGHTS ADDED

12 FOOTPATH TO EAST SIDE OF BUILDING TO EXTEND TO WAREHOUSE ACCESS DOOR

13 ISSUED FOR CONSTRUCTION

14 ISSUED FOR TENDER

15 revision

16 by

17 date

08	TREE LOCATIONS INDICATED	DAH	04.03.18
09	CANOPY DUMPERS ADDED	CSB	01.02.18
10	STAKE DRIVINGS DETAIL, PRINTED AND LEVELS ACCESS RECONFIGURED	CSB	11.10.17
11	PAVING FLAG COLOURS ADDED - 2 ADDITIONAL HIGHLIGHTS ADDED	DAH	18.09.17
12	FOOTPATH TO EAST SIDE OF BUILDING TO EXTEND TO WAREHOUSE ACCESS DOOR	MO	01.08.17
13	ISSUED FOR CONSTRUCTION	DAH	27.10.16
14	ISSUED FOR TENDER	JA	29.02.16
15	revision	by	date

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drawing
PROPOSED SITE PLAN

drawn by
checked by
scale

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APPENDIX B

PROPOSED DRINAGE PLAN

