



Salt Box, Bognor Regis

Unit 2 and Access Road

Operation and Maintenance

Drainage

For LandLink Estates

Date: 11 November 2021

Doc ref: SAL-HYD-XX-ZZ-RP-C-0011

DOCUMENT CONTROL SHEET

Issued by	Hydrock Consultants Limited Merchants House North Wapping Road Bristol BS1 4RW United Kingdom	
Client	LandLink Estates	
Project name	Salt Box, Bognor Regis	
Title	Unit 2 and Access Road Operation and Maintenance Drainage	
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03	S2	29/10/2019	Updated drawings appended
04	S2	06/11/2019	Updated to incorporate Arun DC comments
05	S2	15/11/2019	Updated to incorporate Arun DC comments
06	S2	20/11/2019	Updated to incorporate Arun DC comments
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07	S2	25/02/20	Updated to incorporate Arun DC comments
08	S2	20/05/20	Updated to incorporate Arun DC comments
09	S2	28/06/21	Planning Issue
10	S2	11/11/21	Drawings Updated

Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

Introduction

The key elements of the surface water system will require periodic maintenance to prevent failure of the system and/or a reduction in capacity of the networks as a whole and the following matrix therefore sets out the various drainage items to be maintained, identifies whose is responsible and the frequency of maintenance.

The drainage within the development will be maintained privately by a management company appointed by the owner / occupier as follows:

Unit 2

The occupier (Warburtons) will have direct responsibility for the maintenance and repair of the foul and surface water drainage system within their site boundary including ensuring compliance with any regulatory requirement with regards to the quality of surface water discharge.

Site Wide Drainage (inc Estate Road)

Management of the site wide drainage is the overall responsibility of the Landlords. The overall estate will be owned & managed by a management company who will be funded by the landlord. The management Company will derive income from the service charge obligations placed on the tenants on a due proportion basis.

The intention is that the Estate Road will eventually become adopted by West Sussex Local Authority Highways and all maintenance responsibilities with regards to the associated Estate Road drainage system will be passed over to the Local Authority. Until then, maintenance of the Estate Road drainage will be the responsibility of the Landlords as noted above.

Drainage Strategy Summary

0.1 Surface Water

The surface water drainage for the wider development has been split into 3 no. networks. This Operation and Maintenance document relates to Surface Water Network 1 for Unit 2, and Surface Water Network 2 for the main estate roads.

Surface Water Network 1

Unit 2 surface water run-off is collected by way of drainage channels, gullies, Rain Water Pipes and Permeable Paving (Car Park). Surface water from the yard area is collected by a series of drainage channels which run the length of the yard discharging into a below ground gravity drainage system. Run-off from the yard is treated by a Full Retention Oil Interceptor OI-201. The roof of the building is collected by rain water pipes.

The car park is drained by way of porous paving located in the bays. Each 'strip' of porous paving has a filter drain along its length which collects run-off which permeates through the sub-base before it is discharged into the Unit 2 drainage system.

In order to achieve the permitted discharge rates, flows have been restricted by a HydroBrake flow control at FC-201 and attenuation provided in 2 no. cellular storage tanks, one located beneath the yard and the other beneath the car park.

Upstream of Unit 2, surface water run-off from Unit 3 and Units 4-8 connects into Surface Water Network 1 on the western side of each of their respective plots. A carrier drain then takes flows northwards within the estate road, across the top of Unit 2, before out falling into the existing watercourse via a headwall on the western boundary of the development. Unit 2 surface water connects into Surface Water Network 1 at a location upstream of the outfall.

Surface Water Network 2

Surface water run-off is collected from the estate roads and associated footpaths by way of gullies located within the road channel adjacent to the kerb. Run-off is then discharged into the below ground drainage system 'Surface Water Network 2' located within the road which runs east to west across the development before out falling into the existing watercourse via a headwall on the western boundary.

In order to achieve the permitted discharge rates, flows have been restricted by a HydroBrake flow control at FC-501 and attenuation provided in a concrete culvert which extends along the length of one of the estate roads. Prior to discharge into watercourse, Surface water run-off is treated by a Full Retention Oil Interceptor OI-501.

Drainage Strategy Performance Criteria (both networks)

The surface water drainage for both Unit 2 and the Estate Road has been designed to ensure that:

- No flooding will occur during the 1 in 100-year rainfall event in any part of the building, or in any utility plant susceptible to water.
- Surface water for the 100-year rainfall event is contained within each catchment boundary.
- An allowance for 40% climate change is applied to the 100-year rainfall event and incorporated into the surface water drainage design in accordance with local and national planning policy.

The surface water drainage network has been modelled to take into consideration the effects surcharge should an extreme storm event occur at the same time as high flood levels from the adjacent water course.

The 100 year plus 45% climate change fluvial flood level of 1.85 mAOD has specified at the outfall of each network and rainfall simulated for all storm events up to and including the 100 year plus 40% climate change.

Should rainfall exceed the 1 in 100-year storm event or the system failure through lack of maintenance, surface water run-off is to be directed via designated exceedance routes away buildings and/or critical infrastructure.

0.2 Foul Water

Foul water drainage from each unit plot will discharge into a new sewer located within the estate roads. Flows will be directed towards the north of the development where they will then be pumped from a new foul pumping station offsite via a rising main into the Southern Water Foul Sewer at Manhole ref 8801 to the north east in Shripney Road.

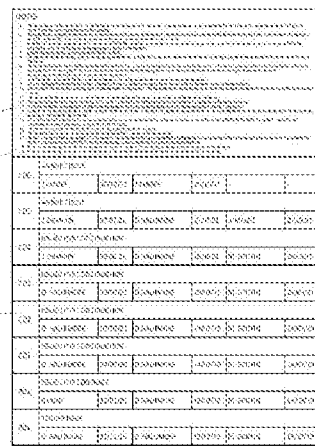
Ownership & Maintenance Responsibility Matrix

Responsibility	Feature	Maintenance	Frequency
Owner / Occupier Appointed Management Company	Private Drains	Inspection	CCTV survey every 5-10 years.
		Regular Maintenance	Jet clean system fully every 5-10 years. (Recommend prior to CCTV drainage survey is)
		Remedial / Occasional Maintenance	Carry out remedial works as identified in CCTV survey
	Outfall pipes, non-return pipe flaps, and anti-scour mat flow channel	Inspection	Quarterly
		Regular Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial / Occasional Maintenance	Damage to pipes and headwall to be repaired as necessary
	Discharge orifice manholes/flow control devices	Inspection	Monthly
		Regular Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial / Occasional Maintenance	Damage to orifice manholes/flow control devices to be repaired as necessary
	Gullies / Drainage Channels	Inspection	Quarterly
		Regular Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial / Occasional Maintenance	Damage to Gullies / Drainage Channels to be repaired as necessary
	Permeable Paving (Refer to specialist)	Inspection	Within 3 months of installation then every 6 months
		Regular Maintenance	Sweep surface to remove debris and contamination 1-2 times a year, and typically after leaf fall in autumn.
		Occasional Maintenance	Removal of weeds. As required.
		Remedial Measures	Remediate areas of rutting and depressions. As required. Replace broken / damaged blocks. As required. Rehabilitate surface with sweeping and reapplication of clean gritstone. As required.
	Attenuation tank	Inspection	Annually
		Occasional Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial Measures	Damage to Attenuation tank to be repaired as necessary.
	Catchpits	Inspection	Every 6 months
		Occasional Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial Measures	Damage to catchpits to be repaired as necessary.

	Oil Interceptor	Inspection	Monthly
		Regular Maintenance	Jet clean system fully every 5-10 years. (Recommend prior to CCTV drainage survey)
		Remedial / Occasional Maintenance	Carry out remedial works as identified in CCTV survey.
	In addition to the above, the following is a list of tasks associated with the maintenance of an Interceptor. This should be read in conjunction with the manufacturers own specific maintenance requirements and only carried out by a fully trained operative. • Inspect the integrity of the separator and all mechanical parts. • Inspect all filters and replace or repair as required. • Assess the amount of collected contaminants (oil and fuel) and silt. • Service any electrical systems including volume alarms and any interceptor management systems. • Conduct safe silt/contaminant removal in accordance with waste transit and disposal regulations. • Maintain industry standard documentation. Maintain logs of inspections, maintenance, incidents, services and contaminant removal.		
	<u>Interceptor Alarms:</u> Each interceptor will have a visual alarm indicator local to the interceptor as well as an alarm (visual or audible) linked either back to the adjacent building if maintenance responsibility resides with the tenant or to a remote supervisory point when maintenance responsibility resides with the estate management team. Alarm sounds to inform to take corrective action ensuring the safe and economic operation of separators preventing oil passing through the separator. When alarm sounds, empty tank as necessary. Factory trained engineers are available for site visits as part of a planned maintenance contract or on a one-off call out basis.		
	Reference should be made to the manufacturer recommendations where applicable		

Appendix A Drainage Layouts

- SAL-HYD-00-ZZ-DR-C-7010 Unit 2 Drainage layout Sheet 1
- SAL-HYD-00-ZZ-DR-C-7011 Unit 2 Drainage layout Sheet 2
- SAL-HYD-00-ZZ-DR-C-7020 Access Road Drainage Layout Sheet 1
- SAL-HYD-00-ZZ-DR-C-7021 Access Road Drainage Layout Sheet 2
- SAL-HYD-00-ZZ-DR-C-7022 Access Road Drainage Layout Sheet 3
- SAL-HYD-00-ZZ-DR-C-7220 Access Road External Works Sheet 1
- SAL-HYD-00-ZZ-DR-C-7221 Access Road External Works Sheet 2
- SAL-HYD-00-ZZ-DR-C-7222 Access Road External Works Sheet 3



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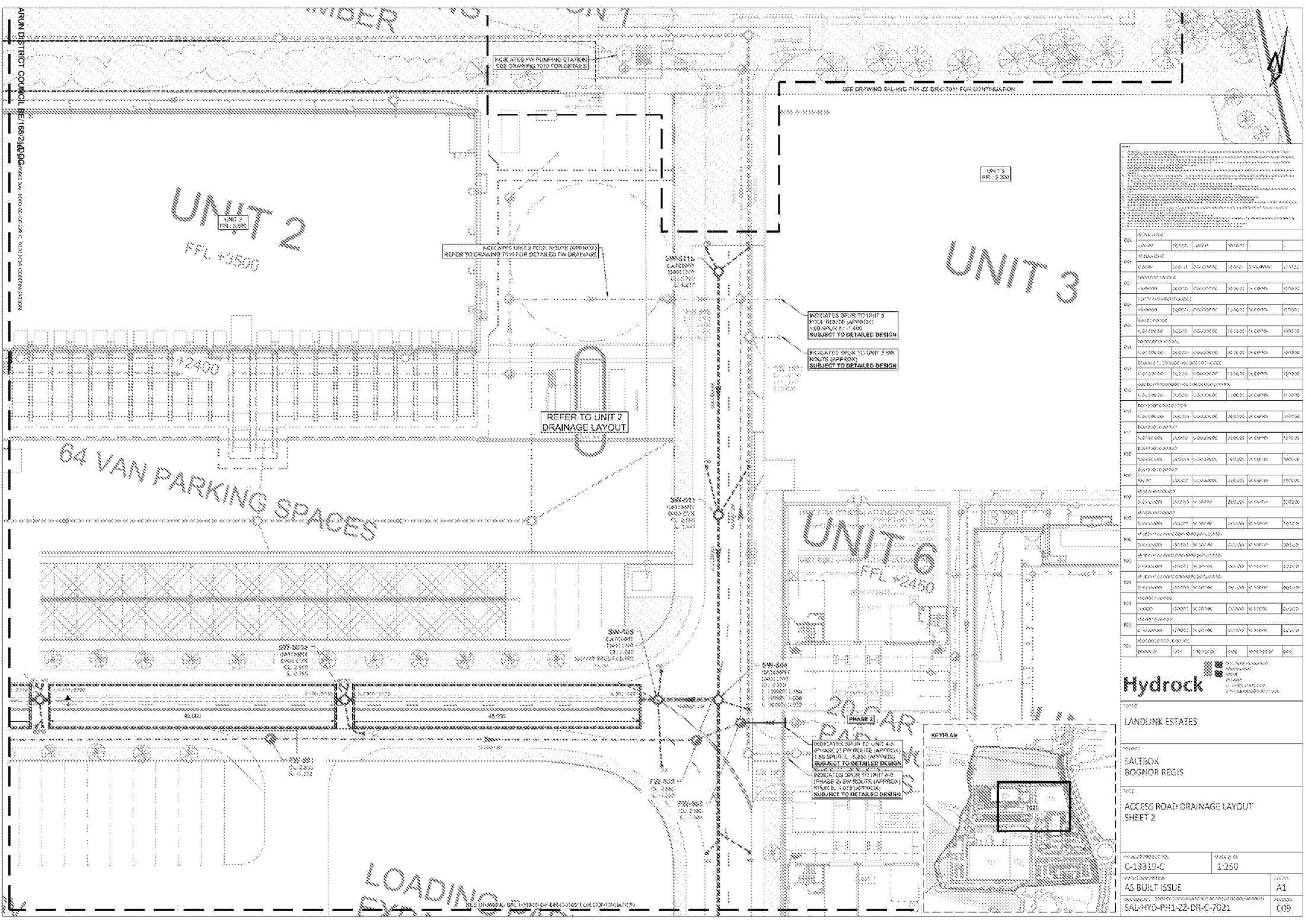
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ACCESS ROAD DRAINAGE LAYOUT
SHEET 2

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C-13319-C	0250

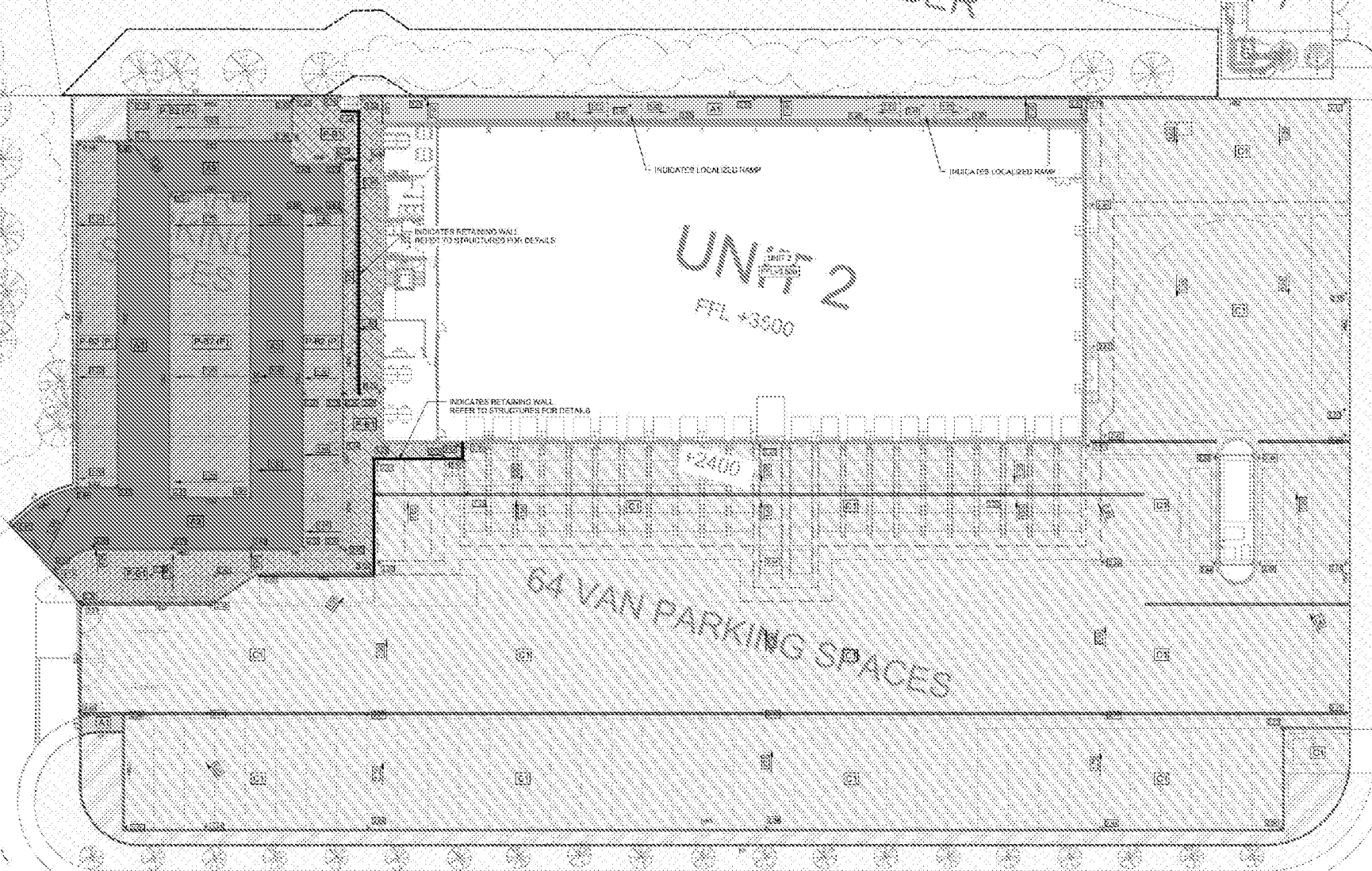
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PROBATION DEPT C-13319-C	STATE OF 1:250	
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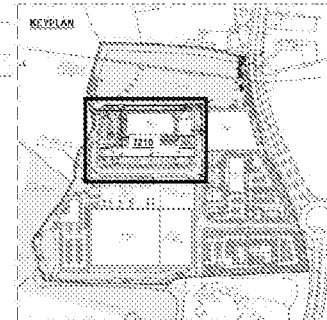
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LANDLINK ESTATES

SALTBOX
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UNIT 2 EXTERNAL WORKS

INTERCOM PROJECT NO. C-13319-C	SCALE 1:250
SHEET DESCRIPTION A5 BUILT ISSUE	CITY CODE A
DRAWING NO. PROJECT NUMBER DRAWING NUMBER SAL-HYO-PH1-ZZ-DR-C-721D	DATE 08/05



PAVING SURFACE TYPES	
TYPING	
	TYPE A1: ASPHALT PAVING CONSTRUCTION - • PEDESTRIAN LOADING ONLY
	TYPE A2: ASPHALT PAVING CONSTRUCTION - • CARS; LIGHT VEHICLES & OCCASIONAL HGVs
CONCRETE	
	TYPE C1: CONCRETE
PORPHYR BLOCK	
	TYPE B1: POROUS BLOCK PAVING CONSTRUCTION - • PARKING LIGHT VEHICLES, NO COMMERCIAL VEHICLES
BLOCK	
	TYPE B2: BLOCK PAVING CONSTRUCTION - • PEDESTRIAN LOADING ONLY

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LEGEND - LEVELS AND GRADIENTS

+ (0.000)	PROPOSED SPOT ELEV.
+ (0.000)	EXISTING SPOT ELEV.
- (0.000)	PROPOSED GRADIENT
- (1.100)	EXISTING GRADIENT

APPENDIX - KERB TYPES

- HALF DATED KERB (HYDRA-ROAD KERB)
- SPRAY KERB (HYDRA-ROAD KERB)
- BULB ROUGH KERB (HYDRA-ROAD KERB)
- BULB ROUGH KERB (HYDRA-ROAD KERB)
- BULB ROUGH KERB (HYDRA-ROAD KERB)
- CHAMFERED SQUARE KERB (HYDRA-ROAD KERB)
- FLAT TOP EDGING KERB (HYDRA-ROAD KERB)
- TRANSITION KERB (HYDRA-ROAD KERB)
- DROPPER KERB (HYDRA-ROAD KERB)

LEGEND - SURFACE TYPES

TANDEM:

- TYPE A1 ASPHALT PAVING CONSTRUCTION - RESIDENTIAL AND COMMERCIAL VEHICLES
- TYPE A2 ASPHALT PAVING CONSTRUCTION - RESIDENTIAL AND COMMERCIAL VEHICLES

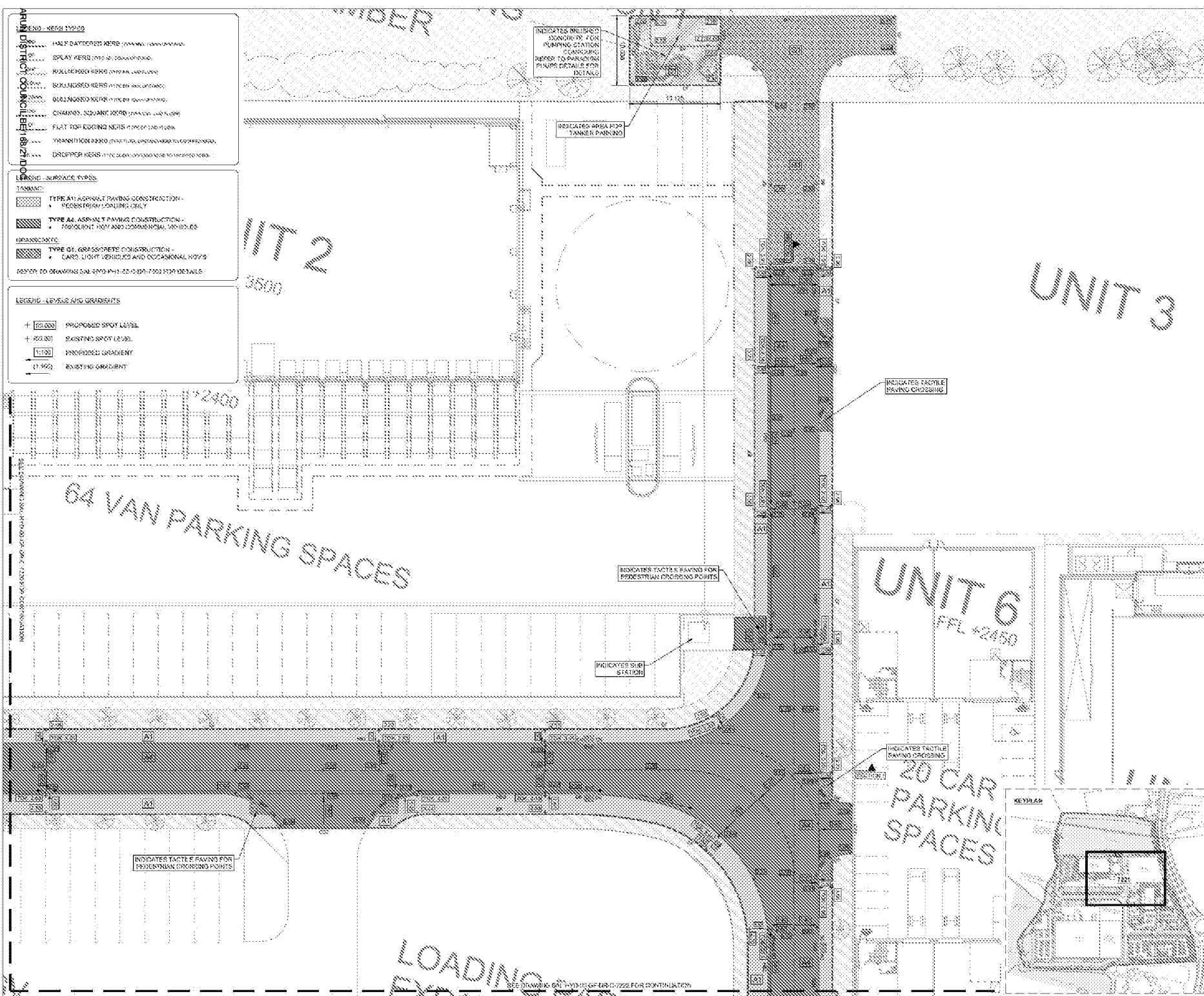
GRASS/GRASS/GRASS:

- TYPE G1 GRASS/GRASS CONSTRUCTION - CARDS, LIGHT VEHICLES AND OCCASIONAL HGV'S

REFER TO DRAWING SAL-HYD-01-ZZ-01-01-01 FOR DETAILS

LEGEND - LEVELS AND GRADIENTS

- +100.000 PROPOSED SPOT LEVEL
- +100.000 EXISTING SPOT LEVEL
- 1:100 PROPOSED GRADIENT
- 1:100 EXISTING GRADIENT



NOTES

1. All dimensions are to the finished ground level, unless otherwise stated.
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NO.	DESCRIPTION	DATE	BY	CHECKED	DATE	BY
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3	DESIGN	10/01/2020	HYDROCK	HYDROCK	10/01/2020	HYDROCK
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5	DESIGN	10/01/2020	HYDROCK	HYDROCK	10/01/2020	HYDROCK
6	DESIGN	10/01/2020	HYDROCK	HYDROCK	10/01/2020	HYDROCK
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10	DESIGN	10/01/2020	HYDROCK	HYDROCK	10/01/2020	HYDROCK

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LANDLINK ESTATES

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ACCESS ROAD EXTERNAL WORKS SHEET 2

HYDROCK PROJECT NO. C-13319-C

SCALE 1:250

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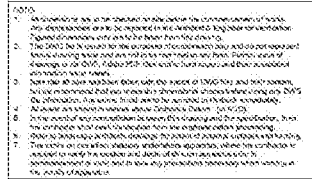
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