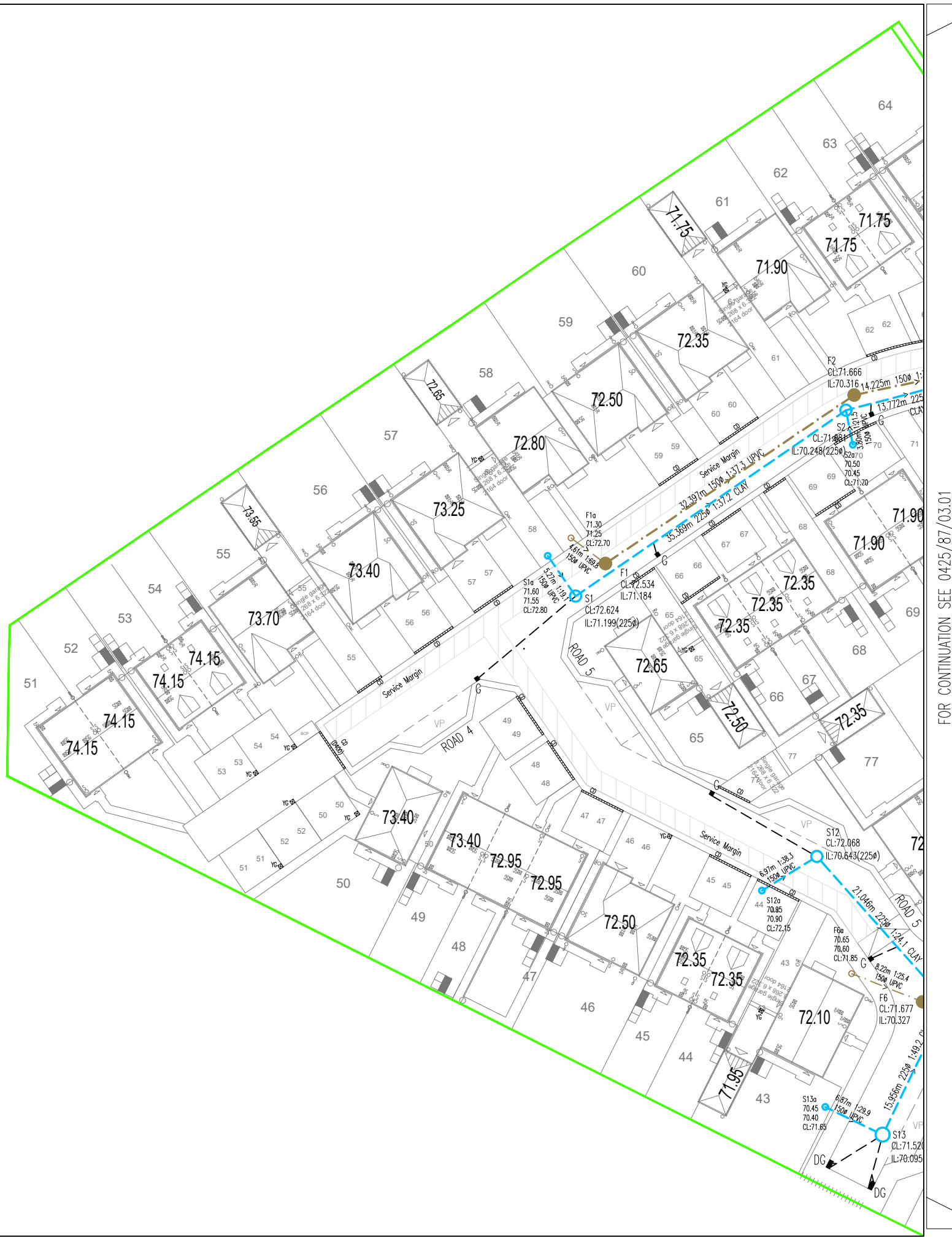
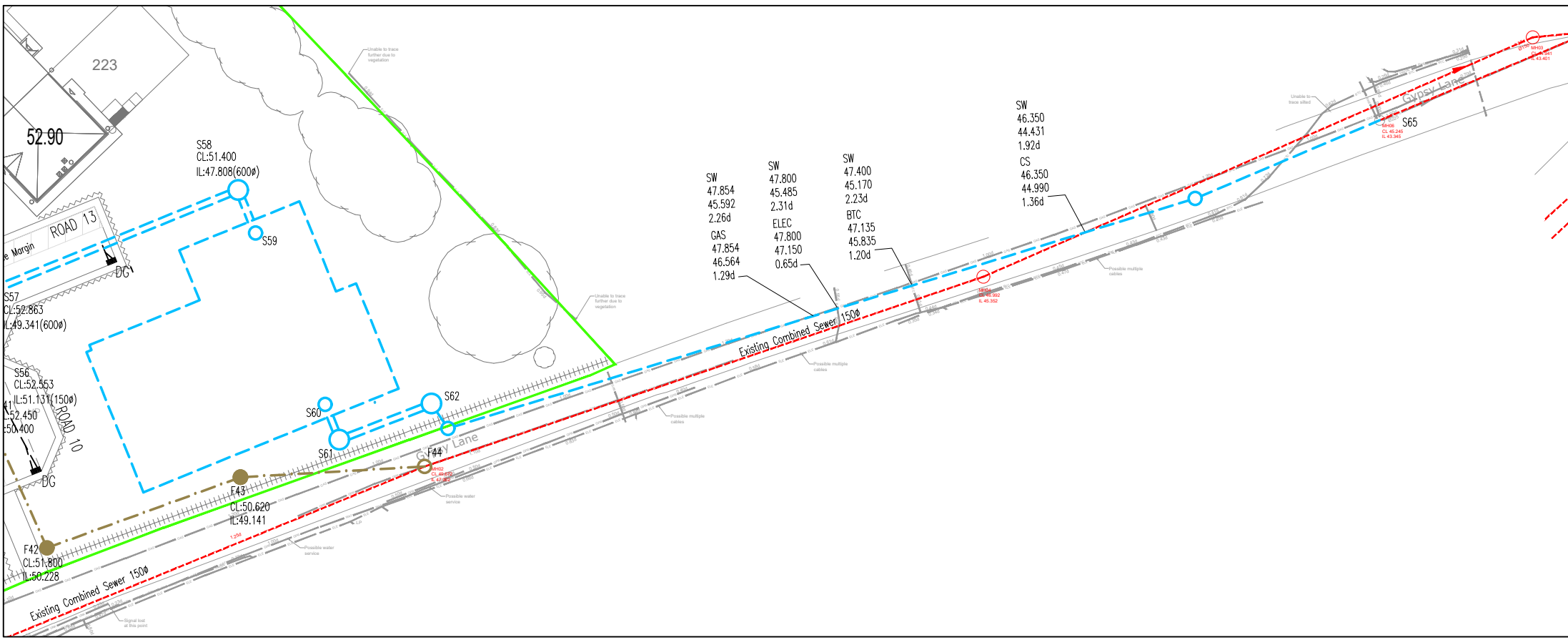


DRAINAGE CROSSOVER LEVELS				
REF	PIPE RUN, IL & DIA	PIPE RUN, IL & DIA	CLEARANCE	
22	S39c-S39 59.484m 150ø	F26-F27 59.034m 150ø	0.300m	
23	S39-S40 58.964m 225ø	F26-F27 58.536m 150ø	0.278m	
24	S42-S44 59.710m 225ø	F28-F28 60.287m 150ø	0.352m	
25	S44a-S44 58.959m 150ø	F29-F30 57.771m 150ø	1.038m	
26	S42-S44 59.235m 225ø	F30-F31 57.734m 150ø	1.351m	
27	S45a-S45 59.280m 150ø	F30-F31 57.364m 150ø	1.766m	
28	S40-S45 58.383m 300ø	F31-F32 57.326m 150ø	0.907m	
29	S45-S46 56.142m 375ø	F32b-F32 57.991m 150ø	1.474m	
30	S45b-S46 56.099m 150ø	F32-F33 56.896m 150ø	0.647m	
OMITTED FROM DESIGN				
32	S49a-S49 51.008m 150ø	F34-F35 51.472m 150ø	0.314m	
33	S51-S52 52.139m 225ø	F36a-F36 52.627m 150ø	0.259m	
34	S52b-S53 51.621m 150ø	F36-F37 52.171m 150ø	0.400m	
35	S53-S54 50.824m 300ø	F37a-F37 51.567m 150ø	0.443m	
36	S53-S54 50.555m 300ø	F35-F38 51.068m 150ø	0.213m	
37	S54-S55 50.206m 600ø	F38a-F38 51.086m 150ø	0.280m	
38	S55a-S55 51.501m 150ø	F38-F39 50.822m 150ø	0.538m	
39	S55-S57 49.946m 600ø	F39a-F39 50.915m 150ø	0.369m	
40	S56a-S56 51.212m 150ø	F40-F41 50.432m 150ø	0.630m	



NOTES

ATTENTION IS DRAWN TO THE REQUIREMENTS OF THE CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS 2015 AND THE DUTIES AND RESPONSIBILITIES CONTAINED THEREIN

- For longitudinal sections refer to drawing 0425/87/06.
- No services are to be sited directly over, or within 1m of, an adoptable sewer or manhole.
- Private drainage connections to adoptable sewers to be via 45° junction.
- Off site manholes already built must have invert levels checked prior to connection to the off site drainage.
- Any connections to existing sewers/manholes are to be supervised by Yorkshire Water.
- All connections to proposed public sewers to be minimum 150mm.
- Any land drain or water course on site to be diverted as not to pass under proposed buildings. Diversion to be approved and inspected on site by the Local Authority.

INWL General Notes

- All adoptable sewer works and material to be in accordance with INWL requirements
- Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
- Filled ground must be filled and consolidated under the supervision, and to the satisfaction, of INWL before any sewer works are carried out.
- Cover slabs must carry the BS1 Kitemark or will be rejected by the INWL inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600x600mm for the INWL specified cover size. Please refer to the Concrete Pipe Systems Association (CPSA), 'Technical Bulletin' issued autumn 2004 for kitemarked cover slab opening sizes.
- The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
- Sewers must have 5 metres clearance from trees and hedges, (please also refer to Figure 2.3 on page 33 in 'Sewers for Adoption' 6th Edition for restrictions on tree planting adjacent to sewers).
- Sewers to be laid in Class 'S' bedding (150mm granular bed and surround). Where depth of cover to top of the sewer is less than 1.2m in highways and verges (or less than 900mm in none vehicular access areas) then a concrete slab should be provided above the granular bed and surround.
- Adoptable plastic sewer pipes to be BS1 Kitemarked (Certified to WIS 4-35-01 and BS EN13476). Adoptable sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer.
- Plastic channel sections in manholes are not acceptable and clayware is preferable. Plastic channels are difficult to set in concrete and a satisfactory finish cannot be obtained on the benching.
- The chamber size of manholes with more than one connection in them may need to be increased an increment to accommodate the connections and bends.
- INWL policy is not to accept Type 'C' brick manhole and 1050mm dia manhole rings, instead it is preferred that you use a type 'B' manhole with 1200mm dia or 1500mm dia rings, with the opening sited over the channel where depth of cover to pipe soffit is 1-1.5m.
- Surface water and foul rising mains to be provided with marker tape above the rising mains.
- If plastic pipes are to be used then the following should apply:-
 - All adoptable sewers to be BS1 Kitemark (certified to WIS 4-35-01).
 - Bedding and backfill material to conform to the requirements of Water Industry Specification 4-08-02 (Table A2)
- Where plastic pipes are proposed for adoptable sewers, structural calculations for the plastic pipes and a site investigation report to prove that the ground condition is suitable for the plastic pipes are to be produced.
- Where plastic pipes are installed into the ground prior to getting full technical approval, the developer must provide a CCTV survey of the prospectively adoptable sewers and a deformation test (Light-Line test) of the plastic pipes.
- Demarcation chambers to be a min. 450mm dia for 100mm dia & 150mm dia surface water pipes up to 1.2m deep. For depths greater than 1.2m, restricted access opening to 350mm is required for safety reasons.
- Maximum depth of demarcation chamber to be 2m, where depth exceeds 2m, manhole to be constructed as type B manhole.
- Where a B125 cover and frame has been approved, this must not be coated in plastic and must have lifting eyes suitably sized to accommodate standard lifting keys. Screw down covers are not acceptable.
- INWL is not obliged to accept filter drain/land drainage runoff into the public sewer network or adoptable drainage system (directly or in-directly). An alternative method of disposal of the land drainage runoff will therefore be required and you will have to liaise with the Land Drainage Authority/Land Drainage Section with regard to the disposal of the filter drain/land drainage runoff is required.
- Sulphate resisting cement (C20-D22) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
- Strength of vitrified clay pipes (if used) to be 40KN/m for 100ø, 40KN/m for 150ø, 45KN/m for 225ø and 72KN/m for 300ø. All concrete pipes to be Class 120 concrete to EN 1916/BS 5911-1:2002.
- All levels of existing drainage to be confirmed prior to work commencing on site.
- The contractor must allow for any fees required for road and sewer opening permits, sewer connections and make the appropriate applications.
- There should be enough clearance to accommodate the bedding for both pipes, approx 300mm; if crossover is near rocker then the clearance needed may be increased.

Flow Control Manhole S61

CL: 52.50
L: 47.468 67th
Design Head: 3.6m
Discharge Rate: 5.8/s

Flow Control Manhole S62

CL: 52.50
L: 47.385 60th
L: 47.335 104th
Design Head: 2.1m
Discharge Rate: 2.5/s

Flow Control Manhole S36

CL: 61.55
L: 58.310 90th
L: 58.262 15th
Design Head: 2.15m
Discharge Rate: 3.5/s

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Flow Control Manhole S36

CL: 61.55
L: 58.310 90th
L: 58.262 15th
Design Head: 2.15m
Discharge Rate: 3.5/s

NOTE

Lateral sewers to be Plastidrain (110 & 160 O.D.) in UPVC and manufactured by Hepworth or similar approved by Yorkshire Water. Demarcation chamber to be polypropylene Non-Entry Inspection Chamber up to 2.0m depth manufactured by Wavin or similar approved by Yorkshire Water to BS EN 13598-1:2003.

SUBJECT TO THE APPROVAL OF ALL RELEVANT AUTHORITIES

MANUFACTURER

HYDRO INTERNATIONAL

TELEPHONE

01275 878371

TYPE

HYDRO-BRAKE OPTIMUM

FLOW/HEAD

5.6 l/s @ 3.6m

HYDRO REF

SHE-0086-5800-3600-5800

To be installed in accordance with manufacturers specifications and recommendations before the manhole cover slab is installed

MANUFACTURER

HYDRO INTERNATIONAL

TELEPHONE

01275 878371

TYPE

HYDRO-BRAKE OPTIMUM

FLOW/HEAD

3.5 l/s @ 2.1m

HYDRO REF

SHE-0075-3500-2100-3500

To be installed in accordance with manufacturers specifications and recommendations before the manhole cover slab is installed

Scale

1:500 @ A1

Date

MAY 22

Drawn

DJG

Rev

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Drg. No.

0425/87/03.02