DATED 14 MARCH 2024

SUFFOLK COUNTY COUNCIL (1)

- and –

DENBURY HOMES LIMITED (2)

- and –

HSBC UK BANK PLC (3)

AGREEMENT

made pursuant to Sections 278 and 38 of the Highways Act 1980
and any other enabling power relating to
the development of land South of Rougham Hill, Bury St Edmunds

Nigel Inniss
Head of Governance
Suffolk County Council
8 Russell Road Ipswich
Suffolk IP1 2BX

Ref: JL/80138

SECTION 278 AGREEMENT
INDEX

THIS AGREEMENT is made the 1st day of MARCH 2024

BETWEEN the following parties :-

(1) SUFFOLK COUNTY COUNCIL of Endeavour House 8 Russell Road Ipswich Suffolk IP1 2BX ("the County Council")

(2) DENBURY HOMES LIMITED (company number 02162164) of Westley Bottom, Westley, Bury St Edmunds IP33 3WD ("the Developer")

(3) HSBC UK BANK PLC (company number 09928412) of 1 Centenary Square, Birmingham, B1 1HQ ("the Mortgagee")

RECITALS AND DEFINITIONS

(A) In this Agreement unless the context otherwise requires the following words shall have the following meanings :-

"1980 Act"	Means the Highways Act 1980 (as amended)
"Approved Contractor"	Means the contractor(s) approved by the County Council for carrying out the Highway Works of the value and complexity proposed
"Approved Sub-Contractor"	Means the sub-contractor(s) approved by the County Council for carrying out the Highway Works of the value and complexity proposed
"CDM Regulations"	Means the Construction (Design and Management) Regulations 2015 (SI 2015/51)
"Certificate of Final Completion"	Means any of the certificates referred to in paragraph 15.3 of Schedule I
"Certificate of Substantial Completion"	Means any of the certificates referred to in paragraph 14.2 of Schedule I
"Commuted Sums"	Means the sum of £340,653.72 (Three hundred and forty thousand, six hundred and fifty-three pounds and seventy-two pence) which is calculated, as set out in paragraph 18.1 on Schedule I towards the cost of the County Council's future maintenance liability of the Highway Works
"Construction Management Plan"	Means the Construction Management Plan dated February 2022 approved under planning application DC/20/3362/FUL and attached to this agreement
"Contract"	Means the contract or contracts in respect of each and all of the Highway Works
"Contractor"	Means the contractor or contractors who have been awarded the Contract to execute the Highway Works. For the avoidance of doubt the aforementioned definition does not include any subcontractor

"Development"	Means the development to be carried out pursuant to the Permission
"Director"	Means the County Council's Executive Director of Growth, Highways and Infrastructure or other officers of the County Council acting under his hand
"Highway Works"	Means the works collectively or individually as the context requires which are set out in Schedule III of this Agreement and shown in the Works Drawings
"Highway Structure"	Means any bridge, subway, culvert, pipe, tunnel, or other structure built in, over, under or adjacent to any part of the highway
"Performance Bond"	Means the bond with the Performance Bond Surety for each and all of the Highway Works, such bond to be in the form set out in Schedule II, to the effect that should the Developer default in the execution of its obligations to carry out the Highway Works and to maintain the same in accordance with the provisions of this Agreement then the County Council will call upon the Performance Bond Surety to provide the full value of the Performance Bond (subject to the provisions hereinafter contained) to carry out the Highway Works and maintain the same as aforesaid
"Performance Figure"	Means the sum of £1,554,454.26 (One Million Five Hundred and Fifty Four Thousand Four Hundred and Fifty Four Pounds and Twenty Six Pence) being the Tender Sum plus 10 per cent in respect of the Highway Works and as set out in each of the Contracts
"Performance Bond Surety"	Means HSBC UK Bank plc as Surety

"Permission"	Means the planning permission granted by West Suffolk Council dated 6th March 2020 granted with reference number DC/15/2483/OUT in respect of the Site together with any modification of it
"Road Safety Audit"	Means the evaluation of each and all of the Highway Works during design and at the end of construction to identify potential road safety problems that may affect any users of the highway and to suggest measures to eliminate or mitigate those problems in accordance with Department for Transport standards or by the County Council as agreed by the Director
"Site"	Means land situated at West of Chapel Road, Grundisburgh Suffolk registered at the Land Registry under title number SK202122
"Specification"	The County Council's "Specification for Estate Roads" dated May 2007 (or later amendment current at the date of this Agreement) so far as this is consistent with the Works Drawings and description in Schedule III (subject to any variations agreed in writing by the Director)
"Sub-contractor"	Means the sub-contractor(s) working for the Contractor(s) who have been contracted to execute the Highway Works
"Substantial Completion"	Means complete to the reasonable satisfaction of the Director and so that the Highway Works can be used for the purpose and operate in the manner for which they were designed

"Technical Standards"	Means the standards necessary to ensure complete conformity with all UK primary and secondary legislation (including by-laws) all guidance standards and codes of practice issued by the Department for Transport the County Council statutory undertakers and relevant professional institutes the Road Safety Audit and formal instructions issued by the Director from time to time during the design and implementation of the Highway Works and for the avoidance of doubt this shall include the Traffic Signs Regulations and General Directions 2016 and BS5489 in relation to the design of any street lighting
"Tender Sum"	Means the sum of £1,413,140.24 (One Million Four Hundred and Thirteen Thousand One Hundred and Forty Pounds and Twenty Four Pence) (including the costs associated with statutory undertakers work and traffic management) agreed by the Director for carrying out the Contract by the Contractor
"Works Drawings"	Means the attached drawings bearing the numbers referred to in Schedule IV or any subsequent revision of them which has been approved or requested by the Director and which relate to the Highway Works

(B) In this Agreement unless the context otherwise requires :-

(i) Words importing the singular meaning where the context so admits include the plural meaning and vice versa; and

(ii) Words of the masculine gender include the feminine and neuter genders and words denoting actual persons include companies, corporations and firms and all such words shall be construed interchangeably in that manner; and

(iii) "party" or "parties" means a party or parties to this Agreement; and

(iv) references to any party shall include the successors in title and assigns of that party; and in the case of the County Council the successors to its statutory functions; and

(v) where a party includes more than one person any obligations of that party can be enforced against all of them jointly and severally unless there is an express provision otherwise; and

(vi) the headings and contents list in this Agreement shall not form part of or affect its construction; and

(vii) references to clauses schedules and paragraphs are references to clauses in and schedules to this Agreement and paragraphs in schedules to this Agreement; and

(viii) where a party or any officer or employee is required to give its consent approval or agreement to any specific provision in this Agreement such consent approval or agreement shall not be unreasonably withheld or delayed; and

(ix) any mention herein of any act or of any section regulation or statutory instrument shall be deemed to refer to the same source as at any time amended and where such act section regulation or statutory instrument has been replaced consolidated or re-enacted with or without amendment such mention shall be deemed to refer to the relevant provision of the updating consolidating or re-enacting act or section or regulation or statutory instrument

(C) The County Council is the highway authority (except for trunk roads) for the purposes of the 1980 Act for the area within which the Site is situated and the Highway Works will be carried out

(D) The Developer has the benefit of the Permission

(E) The Developer is the registered proprietor with title absolute of the Site in so far as it is registered at the Land Registry under Title Numbers SK202122 and SK367079

(F) The Mortgagee has a registered charge dated 11 July 2023 over the part of the Site registered with Title Numbers SK202122 and SK367079

(G) The Developer wishes to dedicate as public highway that part of the Site within Title Number SK202122 upon which the Highway Works are to be constructed which does not currently form part of the public highway and the County Council agrees to accept such dedication and adopt that part of the Site and the Highway Works as highway maintainable at public expense on the terms and conditions hereinafter contained

(H) Having regard to the development plan and other material considerations the County Council considers it expedient in the interests of the proper planning of their area that the Highway Works need to be carried out to facilitate the Development and that entering into this Agreement will be of benefit to the public

NOW THIS DEED WITNESSES as follows:-

1 LEGAL EFFECT

1.1. This Agreement and the covenants that appear hereinafter are made pursuant to Sections 38 72 and 278 of the 1980 Act Section 111 of the Local Government Act 1972 and Section 1 of the Localism Act 2011 and all other enabling powers to the intent that the provisions of this Agreement shall bind the Site and the parties hereto and all persons deriving title through or under them

1.2. This Agreement is a Deed. Any financial default under this Agreement will be registered as a Local Land Charge under section 278(5)(c) of the 1980 Act

1.3. No waiver (whether express or implied) by the County Council of any breach or default by the Developer in the performance or observance of any of the covenants, terms or obligations in this Agreement shall constitute a continuing waiver and no such waiver shall prevent the County Council from enforcing any of the covenants, terms or obligations or from acting upon any subsequent breach or default in respect thereof

1.4. Any provision of this Agreement which is or may be unlawful void or unenforceable shall to the extent of such unlawfulness invalidity or

unenforceability be deemed severable and shall not affect any other provision of this Agreement

1.5. This Agreement is governed by and interpreted in accordance with English law and shall be determined in the courts of England

2 NOTICES

2.1. Any notices or other written communication to be served or given by one party upon or to any other party under the terms of this Agreement shall be deemed to have been validly served or given if delivered by hand or sent by recorded delivery post or sent by the DX service to the party upon whom it is to be served or to whom it is to be given or as otherwise notified for the purpose by notice in writing provided that the notice or other written communication is addressed and delivered by hand or by recorded delivery post or by the DX service to the address of the party concerned as nominated in sub-clause 2.2. below

2.2. The address for any notice or other written communication in the case of each party to this Agreement shall be as follows:-

The County Council	Suffolk County Council Endeavour House 8 Russell Road Ipswich IP1 2BX marked for the attention of the Assistant Director of Governance, Legal and Assurance (or where the context requires the Executive Director of Growth, Highways and Infrastructure, Endeavour House 8 Russell Road Ipswich IP1 2BX)
The Developer	marked for the attention of the Engineering Manager of Denbury Homes Limited Westley Bottom Bury St Edmunds IP33 3WD
The Mortgagee	marked for the attention of Client Relationship Manager for Denbury

Homes Limited
of HSBC UK BANK PLC, 1 Centenary Square, Birmingham, United Kingdom, B1 1HQ

2.3. Any notice or other written communication to be given by the County Council shall be deemed to be valid and effective if on its face it is signed on behalf of the County Council by a duly authorised officer

3 GENERAL

3.1. All works and activities to be carried out under the terms of this Agreement (including for the avoidance of doubt such works as are of a preparatory ancillary or of a maintenance nature) are (save where expressly provided otherwise) to be at the sole expense of the Developer and at no cost to the County Council

3.2. All consideration given and payments made in accordance with the provisions of this Agreement shall be exclusive of any VAT properly payable in respect thereof and in the event of VAT becoming chargeable at any time in respect of any supply made in accordance with the terms of this Agreement then to the extent that VAT had not previously been charged in respect of that supply the person making the supply shall raise a VAT invoice to the person to whom the supply was made and the VAT shall be paid accordingly

3.3. The County Council and their respectively duly authorised officers and agents may enter upon the land on which the Highway Works are being carried out at any reasonable time to ascertain whether the terms of the Agreement are being or have been complied with

4 ARBITRATION

4.1. Any dispute or difference arising between the parties as a result of this Agreement may be referred to the arbitration of a single arbitrator to be agreed upon between the parties or failing agreement within fourteen days

after either of the parties has given to the other a written request requiring the appointment of an arbitrator to a person to be appointed at the request of either of the parties by the President for the time being of The Institution of Civil Engineers

4.2. Any reference to arbitration shall be undertaken in accordance with and subject to the provisions of the Arbitration Act 1996 save as follows:-

(a) the seat of the arbitration shall be at the County Council's offices in Ipswich Suffolk

(b) where appropriate the arbitrator may consolidate arbitral proceedings

(c) with the parties' agreement the arbitrator may appoint experts or legal advisers

4.3 A party wishing to refer any such dispute or difference to arbitration shall notify the other party in writing of such intention without delay

4.4 The arbitrator shall act as a referee and not as an expert except in any case where the parties to a dispute or difference agree on the arbitrator when such parties may also agree that such arbitrator shall act as an expert

4.5 Subject to Sections 67 68 and 69 of the Arbitration Act 1996 the parties agree to be bound by the decision of the arbitrator

5 COVENANTS

5.1 The Developer covenants and warrants to the County Council that they have full power to enter into this Agreement and there is no other person having a charge over or any other interest in the Site whose consent is necessary for the Developer to enter into this Agreement and to comply with the obligations set out at paragraph 14.3 of Schedule I

5.2 The Developer hereby covenants and undertakes with the County Council that from the date of this Agreement it will (unless otherwise agreed by the

County Council) carry out and comply with the obligations set out in Schedule I and the details set out in Schedules III and IV hereto

5.3 The County Council without prejudice to its statutory powers and duties hereby appoints the Developer to act as its agent and gives to the Developer licence (in so far as is reasonably necessary for the Developer to perform the obligations under the terms of this Agreement) to enter into and upon and remain upon the highway to carry out the construction of the Highway Works within the timescales referred to in Schedule III hereto or such other period as may be agreed in writing by the Director, provided that this licence shall not extend to the Developer's successors in title or assigns unless otherwise agreed in writing by the Director prior to that successor or assignee commencing work in the public highway

5.4 The Developer covenants with the County Council not to commence the Highway Works set out in Schedule III unless road space has first been booked with the County Council

5.5 The Developer covenants with the County Council as highway authority to give written notice not less than three calendar months prior to works commencing, in order that the County Council as highway authority has sufficient time to ensure that the commencement of works will cause the least disruption possible to road users and the County Council reserves the right to refuse consent and/or to stop or require the stopping of works under the terms of this Agreement and relevant legislation where the aforesaid notice period is not complied with

5.6 The Developer covenants with the County Council as highways authority to comply with the provisions of the New Roads and Street Works Act 1991, the Traffic Management Act 2004 and any amendments thereof

5.7 The County Council covenants with the Developer that on the date of issue of the Certificate of Final Completion the roads subject to the Highway Works shall thenceforth be, to the extent they are not already, adopted as highways maintainable at the public expense

6 MORTGAGEE CONSENT

6.1 The Mortgagee acknowledges and declares that this Agreement has been entered into by the Developer with its consent and that the Site shall be bound by the obligations contained in this Agreement PROVIDED THAT the Mortgagee shall otherwise have no liability under this Agreement unless it takes possession of the Site in which case it too will be bound by the obligations as if it were a person deriving title from the Developer. For the avoidance of doubt the Mortgagee shall have no liability once it ceases to have any legal or other interest in the Site.

7 THIRD PARTY RIGHTS

7.1 It is hereby agreed and declared that the provisions of Contracts (Rights of Third Parties) Act 1999 shall not apply to this Agreement

8 LAPSE

8.1 If the Highway Works have not been commenced within one (1) year from the date of this Agreement, save as this period is otherwise extended in writing by the Director at his discretion, then this Agreement shall lapse and be of no further effect (save to the extent already complied with) and the Developer agrees to pay to the County Council any costs properly incurred by the County Council prior to the lapse of this Agreement (which have not already been paid) including but not limited to those costs set out in paragraph 19 of Schedule I to this Agreement

8.2 Where, in accordance with clause 8.1 above the Director, at his discretion, agrees in writing to an extension to the period of one (1) year after which this Agreement shall lapse, this Agreement shall lapse at the end of such period as agreed in writing by the Director where the Highway Works have not been commenced by the expiry of that extension period

In witness whereof this Agreement has been executed and delivered as a Deed on the date first written above

The COMMON SEAL of)
SUFFOLK COUNTY COUNCIL)
was hereunto affixed)
in the presence of)

.....
A Duly Authorised Officer

EXECUTED as a deed by)
BIRKETTS LLP)
as attorney for)
DENBURY HOMES LIMITED)
In the presence of:

Attorney's signature:

Designated Member of Birketts LLP, as attorney for Denbury Homes Limited

Witness' signature:

Witness' name: Rachel Baker

Witness' address: Birketts LLP (Norwich)
Kingfisher House
1 Gilders Way
Norwich NR3 1UB

Witness' occupation: Paralegal

EXECUTED as a Deed by) SIOBHAN LAWRENCE-BROWNE

an attorney for and in the name of)
HSBC UK BANK PLC)
In the presence of)

Witness signature

Attorney

Name EVA NYANTEKYI

Address

HSBC UK Bank Plc
Corporate Banking
London Real Estate
London Commercial Banking Centre
Level 6, 71 Queen Victoria Street
London EC4V 4AY

SCHEDULE I

1 THE DESIGN OF THE HIGHWAY WORKS

1.1 The design of the Highway Works shall be to the satisfaction of the Director with due consideration of the Technical Standards

1.2 No work on any of the Highway Works shall commence and no Contract for their construction shall be let until

1.2.1 full details of the design of the Highway Works to be commenced in the form of plans, drawings, specifications and other materials have been submitted to the Director together with the name of the principal designer (whom the Developer shall appoint for the full duration of the design and construction of each and all of the Highway Works) in accordance with the CDM Regulations and any codes of practice referred to therein

1.2.2 the Director has given his written approval to the Highway Works to be commenced and such approval shall not be given if the said plans, drawings, specifications and other documentation have not adequately addressed the issues raised in the pre-construction stages of the Road Safety Audit process and if given shall lapse if the Highway Works are not commenced within twelve (12) months of the date of the said Director's approval

1.2.3 preliminary proposals, detailed contract drawings, schedules and specifications for Highway Structures have been prepared by the Developer and submitted for written approval to the Director's Bridge Office in accordance with Department for Transport Document BD2/12 and the structural design and checking procedure has been carried out by an incorporated or chartered engineer familiar with Department for Transport Codes of Practice and experienced in the design of Highways Structures. The documents are to be agreed as applicable with the Director before the design is commenced and details are submitted for approval

1.3 If the Director does not propose to give his approval in relation to those matters referred to in paragraph 1.2 of this Schedule he shall in each case as soon as possible in writing inform the Developer and if the Director requires amendments or additions to the plans drawings specifications and other materials referred to in paragraph 1.2 of this Schedule these amendments shall be undertaken by the Developer at his own expense and a revised set of updated documents shall be re-submitted to the Director for his approval

1.4 Without prejudice to paragraph 1.2 of this Schedule, the Director shall not give his approval as referred therein until the Developer has paid the sum referred to in paragraph 19.1.3 towards the cost of checking the design of the Highway Works and inspecting the Highway Works. The Highway Works at all times shall be carried out in accordance with the plans, drawings, specifications and other materials which have received the Director's approval referred to in paragraph 1.2 of this Schedule and the Developer shall in the execution of the Highway Works comply or ensure that the Contractor complies with the Technical Standards

1.5 Without prejudice to paragraph 1.4 of this Schedule, the Highway Works at all times shall be carried out in accordance with the Construction Management Plan

2 LETTING OF THE CONTRACT

2.1 No Contract shall be let until all traffic management measures have been prepared by the Developer and approved in writing by the Director ("the approved programme") and thereafter each of the Contracts will be offered to an Approved Contractor

2.2 The Contract to be let under paragraph 2.1 of this Schedule shall be let under NEC3 suite of contracts (and any amendments thereto shall be approved by the Director) and the Developer shall obtain the agreement of the Contractor to be bound by the agreed drawings in Schedule IV

2.3 The Contract shall be awarded by the Developer subject to the Director having first given his written approval to the proposed chartered engineer(s) or other suitably qualified person(s) who shall be independent of the Contractor and will supervise the execution of the Highway Works by the Contractor

2.4 The Developer shall not award the Contract unless the Approved Contractor and the Approved Sub-Contractor/s concerned are insured throughout the period of the Contract (such period to include the maintenance period detailed in paragraph 15.1 of this Schedule) for public liability risks in the sum of at least ten million pounds (£10,000,000) in respect of any single claim and the Developer shall ensure that the Contractor remains so insured throughout the period of the Contract and prior to the commencement of each or all of the Highway Works or any maintenance works carried out in accordance with paragraph 15.1 of this Schedule the Developer shall produce to the Director insurance policies fully covering the Developer's liability in respect of the matters set out in this Agreement

2.5 The Developer shall not sub-contract or assign the Contract without the written approval of the Director and any sub-contractor shall be an Approved Sub-Contractor

3 INSPECTION OF THE HIGHWAY WORKS

3.1 The Developer shall provide the Director with not less than twenty-four (24) hours nor more than seventy-two (72) hours notice (excluding weekends and bank holidays) of any intended execution of the Highway Works specifying the tasks to be carried out in accordance with the approved programme referred to in paragraph 2.1 of this Schedule

3.2 Without prejudice to the approved programme the Developer shall notify the Director in writing at least twenty-eight (28) days prior to the commencement of any work connected with statutory undertaker's equipment

3.3 The Developer shall during the progress of each and all of the Highway Works give to or procure for the Director and any person or persons duly authorised by him free access to every part of the Highway Works and the Site and permit him or them to inspect the same as they proceed and all materials used or intended to be used therein and shall give effect to any reasonable and proper requirements made or reasonable and proper directions given by the Director to conform to the approved detailed plans Works Drawings and specification referred to in paragraph 1.2 of this Schedule

3.4 Without prejudice to the approved programme the Developer shall notify the Bridge Office and the Director in writing at least seventy-two (72) hours prior to the commencement of each and every stage of excavation and concrete operations associated with any Highway Structures

3.5 The Developer shall not cover up or put out of view any works forming part of the Highway Works without the approval of the Director and shall afford full opportunity for the Director to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon and shall give at least seventy-two (72) hours' notice to the Director whenever any such work or foundations is or are ready or about to be ready for examination

3.6 The Director shall without unreasonable delay, unless he considers it unnecessary and advises the Developer accordingly, attend when required by the Developer for the purpose of examining such works or of examining such foundations

3.7 The Director shall for the purposes of paragraphs 3.1 to 3.6 be allowed reasonable access and admission to the Highway Works or the places where materials or plant for the Highway Works may be stored or in the course of preparation manufacture or use (unless such access or

admission is refused due to circumstances beyond the control of the Developer)

4 TESTING OF MATERIALS

4.1 The Developer shall reimburse the County Council for all reasonable costs and expenses whatsoever arising from the operation of paragraphs 4.2 to 4.5

4.2 The Director shall require the testing of materials plant and workmanship used or proposed to be used in the Highway Works and in his reasonable discretion have the power to reject any materials plant or workmanship so tested which he may reasonably and properly find to be not in accordance with the approved detailed plans Works Drawings and specification referred to in paragraph 1.2 of this Schedule. In relation to Highways Structures the Director will require a schedule of testing to be agreed prior to the commencement of works or any part thereof

4.3 The Developer shall as soon as is reasonably practicable replace or repair any materials plant or workmanship which have been found to be not in accordance with the approved detailed plans Works Drawings and specification referred to in paragraph 1.2 of this Schedule

4.4 The Director shall for the purposes of paragraphs 4.2 to 4.5 be allowed reasonable access and admission to the Highway Works or the places where materials or plant for the Highway Works may be stored or in the course of preparation manufacture or use (unless such access or admission is refused due to circumstances beyond the control of the Developer)

4.5 The Developer shall as soon as is reasonably practicable remove such materials and plant as are rejected by the Director pursuant to paragraph 4.2. of this Schedule which are not capable of repair or remedy from the Site and if the Developer shall wish to continue to store such rejected materials and plant on the Site they shall be stored separately from those

materials and plant which have not been so rejected or which the Developer shall wish in future to use in execution of the Highway Works

5 OPENING OF THE HIGHWAY WORKS

5.1 During the construction of each and all of the Highway Works and prior to the issue of the Certificate of Substantial Completion:

(a) the Director may issue instructions to the Developer to open or expose any of the Highway Works which has been covered up without previously being inspected by the Director

(b) should the Developer fail to comply with any such instructions the County Council may so take up or expose the relevant part of the Highway Works causing as little damage or inconvenience as is possible in respect of any other part or parts of the Highway Works the reasonable and proper cost of such taking up or exposure and reinstatement to be met by the Developer

PROVIDED THAT if the Highway Works or any part or parts thereof are covered up by the Developer after giving the notice referred to in paragraph 3.5 of this Schedule and the Director shall have failed to inspect in the period therein referred to and the Director shall subsequently require the Highway Works or any part of them to be uncovered for the purposes of inspection:-

(a) if inspection reveals the relevant part or parts of the Highway Works to have been completed in accordance with the approved detailed plans drawings and specification referred to in paragraph 1.2 of this Schedule all costs in respect of such uncovering and inspection and of reinstating the part or parts of the Highway Works uncovered shall be borne by the County Council; or

(b) if inspection reveals the relevant part or parts of the Highway Works not to have been completed in accordance with the approved detailed plans drawings and specifications referred to in paragraph 1.2 of this Schedule all reasonable and proper costs in respect of

uncovering and inspection and of reinstating the part or parts of the Highway Works uncovered shall be borne by the Developer

6 UNDERTAKERS

6.1 Insofar as the County Council as Highway Authority is required by any legislation regulation direction or code of practice (including in particular but without prejudice to the generality of the foregoing the New Roads and Street Works Act 1991) to serve a notice or notices in respect of the Highway Works on undertakers or other persons the Developer shall comply with such requirement on behalf of the County Council before the Highway Works commence and shall thereafter assume on behalf of the County Council such responsibilities as follow on therefrom in particular during the construction of the Highway Works and prior to the issue of the Certificate of Substantial Completion the Developer shall also:-

(a) carry out or procure the carrying out of such works and activities in regard to the plant and equipment of undertakers as are required by undertakers in accordance with their statutory powers under the New Roads and Street Works Act 1991 as a result of the construction or intended construction of each and all of the Highway Works

(b) cause all public sewers, highway drains gas and water mains electric cables and telecommunications ducts or other apparatus which are to be laid by the Developer under the Highway Works together with all necessary connections from them to the boundary of the Highway Works to be laid so far as is practicable under the Highway Works before the foundation of the Highway Works are laid and shall also in so far as is practicable cause the connections from electric cables to any street lamp to be laid before the paving of the footways comprised in the Highway Works is carried out

(c) cause all trench works within the highway to be backfilled and reinstated in accordance with the Specification for the Reinstatement of Openings in the Highway as determined from time to time under the New Roads and Street Works Act 1991

(d) not at any time give consent to the erection by any telecommunications operator of telegraph poles or telephone poles or to the erection by any statutory undertaker or public or private company firm or individual of any over ground or underground equipment without the consent in writing of the Director

7 PROTECTION OF THE PUBLIC

7.1 The Developer shall give due consideration to adjoining owners and occupiers at all times and shall organise activities relating to the Highway Works in such a manner as to cause the least practicable disruption

7.2 Prominent notices shall be displayed and maintained around the perimeter of the site of each and all of the Highway Works to warn the public of the dangers of entering the Site

7.3 The Developer shall nominate a member of the site management team as the contact point for the Director in the event of an emergency and shall advise a daytime and twenty-four (24) hour contact number to the Director for the same purpose

7.4 The Developer shall take or procure the taking of all necessary steps to avoid creating a nuisance from noise and in particular:

7.4.1 the Developer shall afford all reasonable facilities to enable the Director to carry out such site investigations as he may deem necessary in order to determine noise emission levels

7.4.2 all vehicles and plant including compressors shall be fitted with effective silencers and acoustic covers as appropriate and maintained in good working order and all static plant shall be located to minimise nuisance to persons living or working in the vicinity

7.4.3 all portable traffic signals and pumps shall be operated from mains electricity unless otherwise agreed with the Director

7.4.4 noisy activities shall not be permitted on Sundays and Bank Holidays and except as agreed in writing by the Director shall not be permitted outside the hours of 9.30 a.m. to 4.30 p.m. Monday to Friday and 9.30 a.m. to 1 p.m. on Saturdays

PROVIDED THAT if in the reasonable opinion of the Director the Developer is not dealing adequately with the control of noise the Developer shall carry out or procure the carrying out of such additional measures as the Director considers necessary at the Developer's expense

7.5 Compliance with the provisions of paragraph 7.4 shall not relieve the Developer of any of his obligations and liabilities under this Agreement the Control of Pollution Act 1974 or the Environmental Protection Act 1990

7.6 The Developer shall take or procure the taking of all necessary steps to avoid creating a nuisance from dust and as far as practicable works are to be carried out in such a way that dust is kept to a minimum PROVIDED THAT if in the reasonable opinion of the Director the Developer is not dealing adequately with the control of dust the Developer shall carry out or procure the carrying out of such additional measures as the Director considers necessary at the Developer's expense

7.7 The Developer shall arrange the regular removal of refuse likely to encourage vermin and arrange for suitable secure storage containers to be provided for collection

7.8 The Developer shall keep a log book on site to record all complaints received from the public and the action taken in response and the log book shall be available for inspection by the Director

8 PREVENTION OF MUD BEING CARRIED ON THE PUBLIC HIGHWAY

8.1 Provision shall be made at the Site to limit in so far as is practicable the amount of mud dust and other materials carried on to adjacent public highways by vehicles and plant leaving the Site

8.2 The Developer shall keep or procure the keeping of all roads footpaths rights of way and other means of passage leading to or from or crossing the Site free from mud slurry or other hazardous substances that are deposited through the construction of the Highway Works and any such substance so deposited on any such road footpath right of way or other means of passage shall be promptly removed by or at the direction of the Developer

8.3 The Director may close any associated crossings entrances and exits if such substances deposited are not promptly removed by the Developer and any losses or expenses incurred as a result shall be borne by the Developer and on removal of such substances the Director shall reopen such crossings entrances and exits and the Developer shall bear the costs incurred

9 TRAFFIC CONTROL

9.1 During the periods when the Highway Works are being executed the Developer shall institute at his own expense measures previously approved in writing by the Director to maintain the safe flow of traffic on the highways in the vicinity of the site of the Highway Works

9.2 The Highway Works shall be signed and protected to at least the standards of Chapter 8 of the Traffic Signs Manual published by His Majesty's Stationery Office and the proposed arrangements shall be approved in writing by the Director before the Highway Works commence

10 TIMING

10.1 No Highway Works within or affecting existing public highways or temporary diversions which could interfere with the traffic flow will be permitted within the morning and evening peak periods i.e. 7.30 - 9.30 a.m. and 4.30 - 6.30 p.m. Monday to Friday except as agreed in writing by the Director

11 SAFETY

11.1 During the periods when the Highway Works are being carried out the Developer shall provide all watching and lighting as required and shall maintain all lights, guards, fencing, warning signs when and, where necessary, undertake such further measures as may be reasonably required by the Director

12 ACCOMMODATION WORKS

12.1 The Developer shall carry out or ensure that there shall be carried out all related accommodation works associated with the Highway Works

13 CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015

13.1 The Developer shall be the only client for the purpose of the CDM Regulations and the Developer agrees to undertake the obligations of a client under the CDM Regulations and to use all reasonable endeavours to ensure that the Highway Works are carried out in accordance with the CDM Regulations

13.2 The Highway Works shall not commence until the Developer as the only client has provided to the Director:

13.2.1 an estimate of the number of working days and/or person days of construction work and the number of workers working on site simultaneously at any one point in the project which the Contract will entail

13.2.2 written details of the principal designer and the principal contractor appointed for the project and also provide copies of the Construction Phase Plan and Health & Safety File

13.2.3 a copy of the Notification of Project (form HSE F10) to the HSE pursuant to Regulation 6 of the CDM Regulations

13.3 Throughout the Highway Works the Developer shall provide to the Director copies of the updates and revisions to the construction phase plan and Health and Safety File pursuant to Regulation 12

13.4 Within twenty-eight (28) days of issue of the Certificate of Substantial Completion for any or all of the Highway Works the Developer shall provide to the Director

13.4.1 a plan showing the land over which those Highways Works have been constructed and

13.4.2 a Health and Safety file conforming in all respects with the CDM Regulations and which shall accord with the current format used by the County Council to include a separate Health and Safety File for each Highway Structure

13.5 The Director shall be at liberty to delay issue of the Certificate of Final Completion in respect of any of the Highway Works if the Developer fails to provide the Director with the documents referred to in 13.4.1 and 13.4.2 above within twenty-eight (28) days of issue of any Certificate of Substantial Completion for any of the Highway Works equivalent to the number of days after the twenty-eight (28) day period that the documents were submitted

13.6 In respect of the Highway Works generally the Developer shall provide to the Director the final information in both paper and electronic format and shall at least comprise:

13.6.1 1:500 scale (or alternative scale as may be specified by the Director) "as built" drawings

13.6.2 records of the earthworks showing sources of material used in areas of fill description of fill materials descriptions of sub-grades in cut areas copies of results of tests of material carried out as part of the supervision of the construction of the earthworks

13.6.3 records of the sources of supply of all deliveries of road construction materials with details of the location of the Highway Works at which each load is placed

13.6.4 records of the sources of supply of all other manufactured materials (e.g. drainage goods, fencing materials, traffic signs, electrical components and cables etc).

13.7 No work on Highway Structures shall commence until the general Health and Safety file information including format to be supplied in respect of Highway Structures has been agreed with the County Council's Bridge Engineer and shall accord with the County Council's current Technical Approval Procedure for Highway Structures

13.8 The Developer shall indemnify and keep the County Council indemnified against any breach of the Developer's obligations under this paragraph 13

14 SITE CLEARANCE AND CERTIFICATE(S) OF SUBSTANTIAL COMPLETION

14.1 On Substantial Completion of the Highway Works the Developer shall:-

14.1.1 clear away and remove from the site of the Highway Works all constructional plant and temporary works of every kind and leave the site of the Highway Works in a neat and tidy condition to the satisfaction of the Director and

14.1.2 carry out stage 3 of the Road Safety Audit process and comply to the satisfaction of the Director with recommendations arising thereunder prior to the opening of the Highway Works to the public

14.2. Upon Substantial Completion of the Highway Works including any additional work resulting from stage 3 of the Road Safety Audit process to the satisfaction in all respects of the Director he shall issue a Certificate of Substantial Completion in respect of those Highway Works to the Developer provided that all costs and expenses owing to the County Council have been paid in respect of those Highway Works

14.3. The Developer hereby agrees that on the date of Substantial Completion that part of the Site upon which the Highways Works are constructed which does not currently form part of the public highway shall be dedicated as highway under section 38 of the 1980 Act

14.4. After the issue of the Certificate of Substantial Completion the County Council may approve a reduction of up to 90% of the Performance Figure in respect of the relevant Highway Works and the County Council may release the Developer and the Performance Bond Surety and each of them from their obligations under the Performance Bond in respect of the relevant Highway Works to such extent

15 DEFECTS CORRECTION PERIOD AND CERTIFICATE OF FINAL COMPLETION

15.1 The Developer shall maintain each and all of the Highway Works for a period of eighteen (18) months (unless the Director agrees in writing a lesser period having considered paragraph 15.2) from the issue of the related Certificate of Substantial Completion and prior to the expiration of this period the Developer shall reinstate and make good any damage or defect which may have arisen from any cause whatsoever or be discovered during the said period of eighteen months (including any defect in or damage to the surface water drainage system) so as to place the highway and the Highway Works in a condition satisfactory to the Director

15.2 After the expiration of the period of twelve (12) months from Substantial Completion or the date the Development becomes operational (whichever is the latter) the Developer shall (unless the Director writes to the Developer informing him that it is to be carried out sooner or that he does not need to do so) carry out stage 4 of the Safety Audit and comply to the satisfaction of the Director with any recommendations arising thereunder

15.3 After the expiration of the period of eighteen (18) months referred to in paragraph 15.1 (or such lesser period as agreed in writing by the Director under paragraph 15.1) and after any defects have been made good as therein provided including any improvements arising under stage 4 of the

Road Safety Audit to the satisfaction of the Director and after the provisions of paragraph 13.4 and paragraph 20.2 of this Schedule have been fulfilled the Director shall issue forthwith to the Developer the Certificate of Final Completion in respect of the Highway Works provided that the Certificate of Final Completion shall in the case of road gullies extend only as far as their points of entry to the surface water sewers where those are not being adopted by the County Council as highway drains and upon the issue of the Certificate of Final Completion the County Council shall release the Developer and the Performance Bond Surety and each of them from all subsisting obligations under the Performance Bond in respect of those Highway Works

15.4 If called upon to do so by notice in writing served within twenty-one years of the date hereof by the County Council the Developer agrees to transfer to the County Council in consideration of one pound any land over which any part of the Highway Works have been constructed which does not at the date of this Agreement already form part of the highway together with any other land dedicated as public highway by the Developer hereunder free in each case from encumbrances and together with all rights necessary to permit the use inspection maintenance repair and replacement of all utility systems servicing the Highway Works and not vested in the relevant undertaker as are situated outside the limits of the Highway Works and the said other land

16 INDEMNITY

16.1 The Developer shall from the date of this Agreement indemnify the County Council against all claims charges costs expenses liability or loss whatsoever arising out of and incidental to any or all of the Highway Works including but not limited to those arising out of any legally sustainable claims for payments under Section 10 of the Compulsory Purchase Act 1965 and Part I of the Land Compensation Act 1973 (as amended) in connection with those Highway Works provided that the Developer's indemnity will not extend to any claims submitted to the County Council arising out of the negligence of the County Council's employees or arising

out of any works of alteration carried out to any of the Highway Works by the County Council after the issue of the related Certificate of Final Completion

16.2 The County Council shall notify the Developer forthwith upon receipt of any such claim or liability

16.3 The County Council shall not accept or settle any claim without first having given the Developer the opportunity to provide the County Council with representations as to the validity of such claim

16.4 The indemnification referred to in paragraph 16.1 includes:

16.4.1 all fees incurred by claimants which the County Council is obliged to pay, and those of the County Council or its agent or contractor, in negotiating any claims (together with VAT payable on the claimants' professional advisors' fees);

16.4.2 statutory interest payments to claimants and their professional advisors; and

16.4.3 the County Council's reasonable and proper legal costs in making the compensation, fees and interest payments

17 PERFORMANCE BOND

17.1 Without expense to the County Council the Developer and the Performance Bond Surety shall on the date of this Agreement enter into the Performance Bond for each and all of the Highway Works and the Developer and Performance Bond Surety shall be bound to the County Council in the amount of the Performance Figure for the Highway Works

17.2 Should the Developer default in the execution of its obligations to carry out any or all of the Highway Works and to maintain the same in accordance with the provisions of this Agreement then the County Council may (subject to the provisions hereinafter contained) itself carry out the Highway Works

and maintain the same as aforesaid having first called upon the Performance Bond Surety for the cost to be expended in so doing

17.2.1 Unless there is a danger to users of the highway the County Council shall give twenty (20) working days prior written notice (or lesser period as may in the circumstances be reasonable) of its intention to commence work under Paragraph 17.2

17.2.2 any notice served under this paragraph shall specify the period of the notice ("the Notice Period") the extent of the work which the County Council proposes to carry out and full details of all matters in respect of which the Director considers that the Highway Works have not been carried out in accordance with the terms of this Agreement

17.2.3 if before the expiry of the Notice Period the Developer serves written notice upon the County Council that the Developer intends diligently to execute the works specified in the notice in accordance with the terms of this Agreement and specifies a time to complete that the County Council considers reasonable in the circumstances the County Council shall not be entitled to execute the relevant part or parts of the Highway Works specified in the notice served under this paragraph unless the Developer then fails to execute those works within the agreed time scale

17.3 If the Developer should default in the execution of its obligations to carry out any or all of the Highway Works and to maintain the same in accordance with the provisions of this Agreement then the County Council will call upon the Performance Bond Surety to provide the full Performance Figure (or such sum that remains following reduction of the Performance Bond in accordance with Paragraph 14.4 of this Schedule) in accordance with this Agreement. Save that the County Council after all works are completed and all contracts and any contract claims settled will return any Performance Bond sum unused with interest at the Bank of England Base Rate minus 2 basis points, compounding annually at financial year end on receipt of a written request to the Performance Bond Surety within one

month of all the aforementioned completing and settling. If for any period the Bank of England Base Rate is at or below 0.02% then no interest shall be payable for that period by any party to this Agreement

18 COMMUTED SUMS FOR MAINTENANCE

18.1 Prior to the date of this Agreement the Developer shall pay to the County Council the Commuted Sums calculated as follows:

	£
Carriageway	63,545.00
Footway	45,750.00
Drainage	20,322.26
Street lighting	10,576.47
Traffic signals	172,490.80
Traffic signs and Lines	3,823.47

19 LEGAL AND ADMINISTRATIVE COSTS

19.1 The Developer shall pay to the County Council:-

19.1.1 the whole of the costs of the County Council's Legal Services Department in connection with the preparation and completion of this Agreement and these costs shall be payable prior to sealing of this Agreement;

19.1.2 interest at four per cent above the Bank of England Base Rate from time to time on any sum due to the County Council under this Agreement which is outstanding for more than twenty-eight (28) days from the date on which it was demanded or in the event that

a dispute or difference regarding such payment is referred to arbitration pursuant to clause 4.1 of this Agreement the said twenty-eight (28) day period shall run from the date of the decision of the arbitrator (such interest to be charged on the amount outstanding each day from the date of issue of a written demand for any sum due or in the event that a dispute or difference regarding such payment is referred to arbitration pursuant to clause 4.1 of this Agreement such interest to be charged on the amount outstanding each day from the date of issue of the decision of the arbitrator)

19.1.3 The greater of £5000 (Five thousand pounds) or 7½% of the Performance Figure (excluding the costs associated with statutory undertakers work and traffic management) for the Highway Works towards the costs and expenses of the County Council of checking the design of each and all of the Highway Works and inspecting each and all of the Highway Works such sum shall be payable prior to sealing of this Agreement

19.1.4 the reasonable cost to the County Council of undertaking Road Safety Audits and also the cost of the safety checks of details submitted which sum shall be payable prior to the safety audit commencing

19.1.5 the cost of any temporary and permanent traffic regulation orders which sum shall be payable prior to any work on the making of such order being commenced

19.1.6 the full cost of any other road traffic orders required to facilitate the Highway Works which sum shall be payable prior to any work on the making of such order being commenced

20 PARTS I AND II OF THE LAND COMPENSATION ACT 1973

Part I and II Claims

Part I Claims - Depreciation Caused By Public Works

20.1 The Developer hereby undertakes and agrees with the County Council that in the event of any claim for compensation or otherwise or costs or charges arising in connection with or incidental to or in consequence of the carrying out of the Highway Works whether mandatory or discretionary which may be incurred by virtue of any enactment or statutory instrument and otherwise hereby provided for he will hold the County Council fully indemnified from and against all claims charges costs and expenses in connection therewith or arising therefrom

Part II Claims

20.2 The Developer covenants with the County Council to comply with the requirements of the Noise Insulation Regulations 1975 (SI 1975/1763) as amended and to provide to the County Council such evidence as is required by the Director to demonstrate compliance with the Noise Insulation Regulations 1975 prior to the issuing by the County Council of the Certificate of Final Completion in accordance with paragraph 15.3 of this Schedule

SCHEDULE II

Performance Bond Agreement

DATED 14 MARCH 2024

DENBURY HOMES LIMITED (1)

- and –

HSBC UK BANK PLC (2)

PERFORMANCE BOND

relating to the development of land at South of Rougham Hill, Bury St Edmunds

---

BY THIS BOND DENBURY HOMES LIMITED of 02162164) of Westley Bottom, Westley, Bury St Edmunds IP33 3WD ("the Developer") and **HSBC UK BANK PLC** of GTRF, 51 De Montfort Street, Leicester LE1 7BB ("the Surety") are held and firmly bound to **SUFFOLK COUNTY COUNCIL** of Endeavour House 8 Russell Road Ipswich Suffolk IP1 2DH ("the County Council") in the sum of £1,554,454.26 (One Million Five Hundred and Fifty Four Thousand Four Hundred and Fifty Four Pounds and Twenty Six Pence) to be paid to the County Council for the payment of which sum the Developer and the Surety bind themselves their successors and assigns jointly and severally

IN WITNESS whereof the Developer and the Surety have hereunto executed and delivered the same on but not before this 14th day of MARCH Two Thousand and Twenty Four

1. The Developer has entered into an Agreement under seal with the County Council of even date made under Section 278 of the 1980 Act whereby the Developer undertook at its own expense to carry out works as set out in Schedule III of the said Agreement and shown in the Works Drawings annexed to the said Agreement ("the Highway Works")

2. It is intended that this Bond shall be construed as one with the said Agreement

NOW THE CONDITION of the above-written Bond is such that if the Developer shall duly perform and observe all the terms provisions conditions and stipulations of the said Agreement (in so far as they relate to the Highway Works) on the Developer's part to be performed and observed according to the true intent and meaning thereof or if

on default by the Developer the Surety shall duly satisfy and discharge the damages sustained by the County Council up to the amount of the above-written Bond then the above-written Bond shall be null and void but otherwise shall remain in full force and effect **PROVIDED ALWAYS** that the giving by the County Council of any extension of time for performing the said Agreement or any stipulations therein contained and on the part of the Developer to be performed or any other forgiveness or forbearance on the part of the County Council or its successors or assigns shall not in any way release the Surety from any liability under the above-written Bond the part of the County

Council or its successors or assigns shall not in any way release the Surety from any liability under the above-written Bond

EXECUTED as a deed by)
BIRKETTS LLP)
as attorney for)
DENBURY HOMES LIMITED)
In the presence of:

Attorney's signature:

Designated Member of Birketts LLP, as attorney for Denbury Homes Limited

Witness' signature:

Witness' name:

Witness' address:

Birketts LLP
Kingfisher House
1 Gilder's Way
Norwich
NR3 1UB

Witness' occupation: Paralegal.

IN WITNESS WHEREOF this document which is intended to take effect as a deed has been duly executed by a duly authorised Official of the Bank as Attorney of the Bank the day and year first above written

SIGNED AND DELIVERED By } HITEN HARID

Attorney of HSBC UK Bank plc

in the presence of:

Witness: NASALINA BASITA

Address

HSBC UK BANK PLC
51 DE MONTFORT STREET
LEICESTER, LE1 7BB, UK

GUARANTEE NO: PERSUKA001291

SCHEDULE III

The Highways Works comprising the following works:

Location	Description of Works
A134/Rougham Hill Roundabout, Bury St Edmunds	Signalisation and Improvements to existing roundabout and creation of new access into residential development. New footway links on Rushbrooke Lane and River Lane.

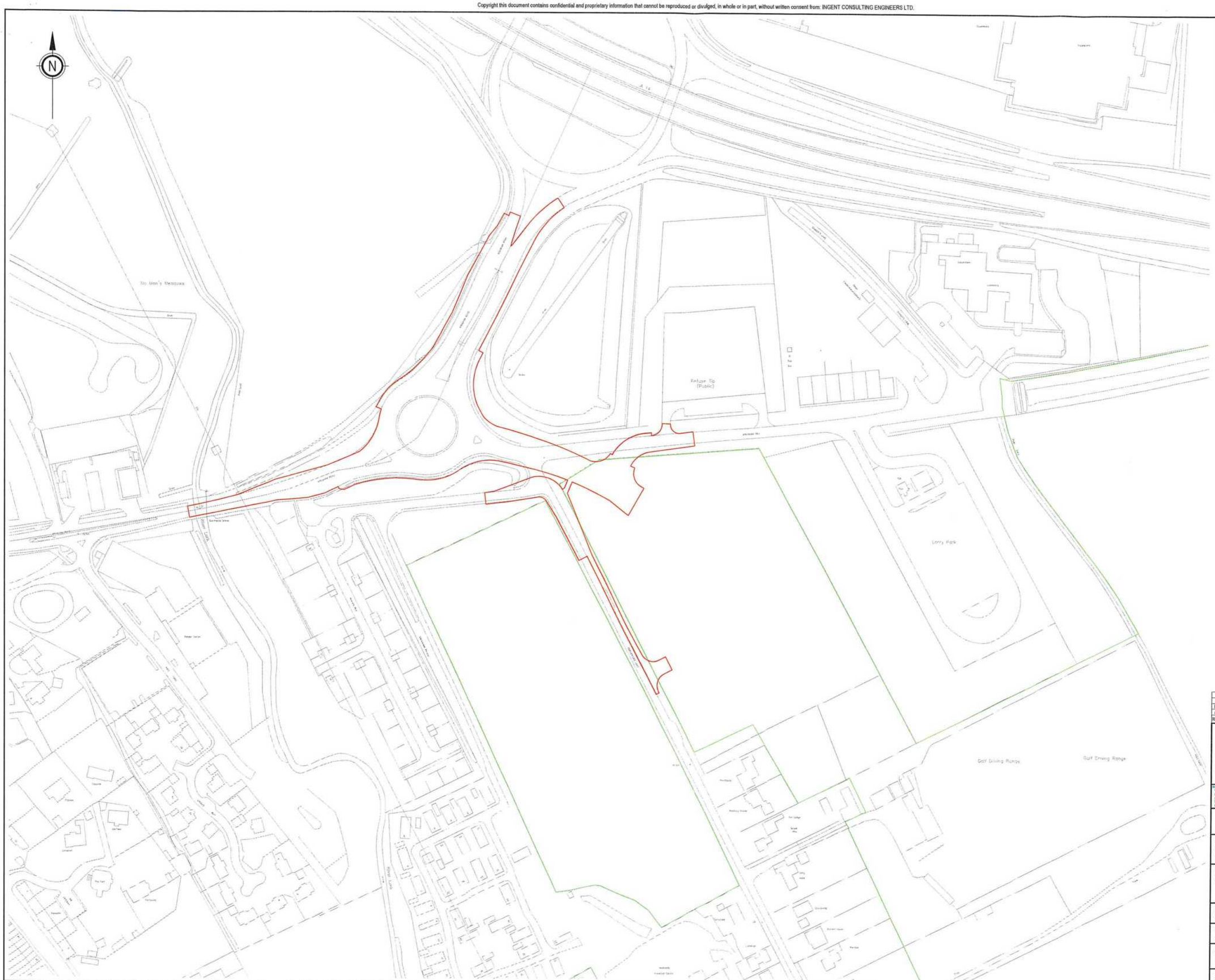
Timescales: The Highways Works are to be commenced within 12 (twelve) months of the date of this Agreement and completed within 9 (nine) months of commencement of the Highway Works unless otherwise agreed by the Developer and the County Council

SCHEDULE IV

Approved List of drawings

Drawing Title	Drawing No
S278 SITE LOCATION PLAN	2107-592-200B
S278 GENERAL ARRANGEMENT SHEET 1	2107-592-201K
S278 GENERAL ARRANGEMENT SHEET 2	2107-592-202J
S278 GENERAL ARRANGEMENT SHEET 3	2107-592-203L
S278 GENERAL ARRANGEMENT SHEET 4	2107-592-204L
S278 SETTING OUT SHEET 1	2107-592-205D
S278 SETTING OUT SHEET 2	2107-592-206D
S278 SETTING OUT SHEET 3	2107-592-207D
S278 SETTING OUT SHEET 4	2107-592-208C
S278 LONG SECTIONS SHEET 1	2107-592-209D
S278 LONG SECTIONS SHEET 2	2107-592-210C
S278 LONG SECTIONS SHEET 3	2107-592-211C
S278 LONG SECTIONS SHEET 4	2107-592-212A
S278 SITE CLEARANCE SHEET 1	2107-592-213D
S278 SITE CLEARANCE SHEET 2	2107-592-214D
S278 SITE CLEARANCE SHEET 3	2107-592-215E
S278 SITE CLEARANCE SHEET 4	2107-592-216D
S278 KERB LAYOUT SHEET 1	2107-592-217E
S278 KERB LAYOUT SHEET 2	2107-592-218D
S278 KERB LAYOUT SHEET 3	2107-592-219D
S278 KERB LAYOUT SHEET 4	2107-592-220D

S278 SIGNS & LINES SHEET 1	2107-592-221	E
S278 SIGNS & LINES SHEET 1	2107-592-222	D
S278 SIGNS & LINES SHEET 1	2107-592-223	E
S278 SIGNS & LINES SHEET 1	2107-592-224	E
S278 DRAINAGE LAYOUT SHEET 1	2107-592-225	
S278 DRAINAGE LAYOUT SHEET 2	2107-592-226	
S278 DRAINAGE LAYOUT SHEET 3	2107-592-227	
S278 DRAINAGE LAYOUT SHEET 4	2107-592-228	
S278 CROSS SECTIONS SHEET 1	2107-592-230	B
S278 CROSS SECTIONS SHEET 2	2107-592-231	C
S278 CROSS SECTIONS SHEET 3	2107-592-232	C
S278 CROSS SECTIONS SHEET 5	2107-592-234	
S278 CROSS SECTIONS SHEET 6	2107-592-235	
S278 CROSS SECTIONS SHEET 7	2107-592-236	B
S278 CONSTRUCTION DETAILS SHEET 1	2107-592-240	C
S278 CONSTRUCTION DETAILS SHEET 2	2107-592-241	C
S278 CONSTRUCTION DETAILS SHEET 3	2107-592-242	B
S278 CONSTRUCTION DETAILS SHEET 4	2107-592-243	
S278 SIGNS, POSTS & FOUNDATIONS SHEET 1	2107-592-244	A
S278 SIGNS, POSTS & FOUNDATIONS SHEET 2	2107-592-245	
S278 SIGNS, POSTS & FOUNDATIONS SHEET 3	2107-592-246	
S278 SIGNS, POSTS & FOUNDATIONS SHEET 4	2107-592-247	A
S278 SIGNS, POSTS & FOUNDATIONS SHEET 5	2107-592-248	
SWEPT PATH ANALYSIS SHEET 1	2107-592-270	
SWEPT PATH ANALYSIS SHEET2	2107-592-271	
SWEPT PATH ANALYSIS SHEET3	2107-592-272	
DETAILED TRAFFIC SIGNAL DESIGN	22-0316-001-D	
22-0316 Rougham Road Roundabout Appendix 12_5		
BSE - Rougham Hill R'bout S278 SREET LIGHTING 12th OCT 23		



GENERAL
1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERS AND ARCHITECTS DRAWINGS AND THE SPECIFICATION.

3. ANY EXISTING DETAILS WHICH ARE SHOWN ON THIS DRAWING ARE FOR GUIDANCE ONLY AND ARE TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY VARIATIONS ARE TO BE RECORDED AND REPORTED TO THE ENGINEER IMMEDIATELY.

DRAWING KEY

DEVELOPERS OWNERSHIP BOUNDARY	
S278 LIMIT OF WORKS	

Rev	Revision Notes	Dwn	Apvd	Date
B	S278 BOUNDARY AMENDED	JK	ROW	25.10.22
A	S278 BOUNDARY AMENDED	JK	ROW	06.10.22

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SITE LOCATION PLAN

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:1250 (10m 0m 10m 30m 50m 70m 90m)

Project No:	Drawing No & Revision:	Size:
2107-592	200B	A1

SCC SECTION 278 AGREEMENT KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- FLEXIBLE CARRIAGEWAY
- FLEXIBLE FOOTWAY
- GRASS VERGE
- 50mm SURFACE COURSE PLANE & INLAY
- SPLITTER ISLAND EXTENTS TO BE REMOVED
- BLOCK PAVED BUFFER STRIPS
- 68 PSV SURFACING
- HIGHWAYS DRAINAGE
- EXISTING SURFACE WATER
- FOUL DRAINAGE
- PHASE 1 & 2 SURFACE WATER DRAINAGE
- PHASE 1 & 2 FOUL WATER DRAINAGE
- FOUL RISING MAIN
- TACTILE/CYCLEWAY PAVING
- PROPOSED LEVEL
- EXISTING LEVEL
- S278 LIGHTING COLUMN
- SIGN REF 956
- SIGN REF 965
- KEEP LEFT BOLLARD (NON ILLUMINATED)
- PROPOSED SIGNS (REFER TO SIGNS LAYOUT)

50mm SURFACE COURSE PLANE & INLAY PROPOSED FOR FULL CARRIAGEWAY EXTENTS. WIDENING EXTENTS AS SHOWN TO BE TIED INTO EXISTING CARRIAGEWAY (REFER TO CONSTRUCTION DETAILS)

EXISTING HIGHWAY SURFACE WATER DRAINAGE PLOTTED FROM RIGOUR SURVEY RECORDS. ALL ROUTES AND LEVELS TO BE CONFIRMED PRIOR TO INSTALLING UPSTREAM CONNECTIONS

ALL SIGN LOCATIONS SHOWN ARE TO BE CONFIRMED BY THE SCC ENGINEER ON SITE PRIOR TO INSTALLATION. PLEASE REFER TO THE SIGNS & LINES LAYOUTS AND CONSTRUCTION DETAILS FOR MORE INFORMATION

ALL GULLY AND MANHOLE COVERS CONSTRUCTED WITHIN THE CARRIAGEWAY MUST BE IN ACCORDANCE WITH DMRB CD 534 - SKID RESISTANCE

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

EXISTING GULLY TO REMAIN

PINCH POINT FOR 3.5m CYCLEWAY WHERE LOCALISED NARROWING IS REQUIRED - CRASH BARRIER AND BANK EXTENTS BEYOND TO BE INVESTIGATING TO DETERMINE MAX WIDTH AVAILABLE FOR CYCLEWAY

3.5m CYCLEWAY TO TIE INTO EXISTING

PEDESTRIAN BARRIERS AS SHOWN

41m OF CRASH BARRIER TO REMAIN. (AWAITING CONFIRMATION FROM SCC ON WHETHER THIS CRASH BARRIER CAN BE FULLY REMOVED). REPLACEMENT TERMINAL REQUIRED. DETAILS TO BE PROVIDED FOLLOWING CONFIRMATION WITH SCC

CARRIAGEWAY WIDENING TIE IN TO EXISTING

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING LAMP COLUMN TO REMAIN

DOWNSTREAM DEFENDER TO BE INSTALLED WHERE EXISTING SURFACE WATER NETWORKS COMBINE. TO BE LOCATED AWAY FROM BT SERVICES, WHILE RELOCATING PROPOSED RISING MAIN IF REQUIRED. NEW ROUTE MAY BE REQUIRED IN ORDER TO AVOID BT, SUBJECT TO SPECIFICATION (TO FOLLOW).

FOOTWAY CONSTRUCTION TO REPLACE VERGE TO ACCOMMODATE HARDSTANDING AREA FOR BUS STOP

FIRST 29m OF CRASH BARRIER TO BE REMOVED, PRIOR TO NEW BUS STOP & MAINTENANCE PARKING BAY INSTALLATION.

TRAFFIC SIGNAL TO BE RELOCATED BACK, OUTSIDE OF ROAD WIDENING EXTENTS

CARRIAGEWAY WIDENING TIE IN TO EXISTING

TRAFFIC SIGNAL LOOPS TO BE REPLACED

EXISTING TOUCAN CROSSING TO REMAIN AS SHOWN

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

GRASSCRETE MAINTENANCE PARKING BAY

2m x 17m VISIBILITY SPLAY

3.5m CYCLEWAY TO TIE INTO EXISTING

EXISTING SPLITTER ISLAND TO BE REMOVED AS SHOWN AND REPLACED WITH NEW SPLITTER ISLAND ALONG EXISTING LEVELS. REFER TO SETTING OUT

INVESTIGATE AND ROTATE MANHOLE BISCUIT OUTSIDE OF PROPOSED KERB LINE

WIDENING OF ENTRY LANE TO TIE I TO EXISTING CARRIAGEWAY EDGE

EXISTING ILLUMINATED BOLL REPLACED. REFER TO SCC

EXISTING GULLY TO BI RELOCATED TO NEW C EXISTING CONNECTION

LEVELS OF EXISTING (PRIOR TO WIDENING T SPOTS SHOWN ON SU IN LOW SPOT OF WID

LP8 LP9 LP10 LP11 LP12 LP13

1.5m

BUS STOP

GENERAL

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERS AND ARCHITECTS DRAWINGS AND THE SPECIFICATION.
3. ANY EXISTING DETAILS WHICH ARE SHOWN ON THIS DRAWING ARE FOR GUIDANCE ONLY AND ARE TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY VARIATIONS ARE TO BE RECORDED AND REPORTED TO THE ENGINEER IMMEDIATELY.
4. ALL WORK ARE TO BE TO THE SATISFACTION OF THE ENGINEER AND LOCAL AUTHORITY BUILDING CONTROL.
5. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE STABILITY OF THE WORKS AT ALL TIMES DURING CONSTRUCTION.
6. ALL WORKMANSHIP AND MATERIALS ARE TO BE TO CURRENT BRITISH STANDARDS.
7. ALL SERVICES ARE TO BE LOCATED AND PROTECTED AS NECESSARY BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE WORKS.
8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.
9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.
10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.
11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.
12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.
13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

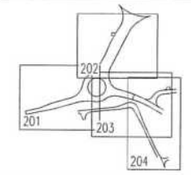
EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

REMOVAL OF EXISTING ROAD MARKINGS TO BE DONE SO BY METHODS TO THE SATISFACTION AND APPROVAL OF SUFFOLK COUNTY COUNCIL HIGHWAYS DEPT.

ALL VEGETATION AND CLEARANCE WORKS ARE TO BE IN ACCORDANCE WITH ECOLOGICAL AND ARBORICULTURAL REPORTS

CHECK ALL EXISTING ROAD SIGNS ARE SUITABLY SET BACK FROM ROAD EDGE AND/OR RAISED IN HEIGHT FOR PEDESTRIAN/CYCLIST MOVEMENTS.

ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.



Rev	Revision Notes	Dwn	Apvd	Date
K	SIGN SYMBOLS ADDED	JK	RGW	02.02.24
J	ROUGHAM ROAD WEST WIDENING CHANNEL TIE ALIGNED. LANE ARROW MARKING REVISED. CRASH BARRIER TERMINAL ADDED. SIGNALS DESIGN REVISED TO RSA 2 COMMENTS.	JK	RGW	08.11.23
H	ROUGHAM ROAD WIDENING EXTENTS AMENDED. ROAD MARKINGS REVISED. CYCLEWAY 'KS' SPLAYS ADDED.	JK	RGW	12.09.23
G	MSP/ SURFACING ADDED FOR CROSSINGS, GRASSCRETE MAINTENANCE BAY ADDED. CRASH BARRIER NOTES AMENDED.	JK	RGW	09.08.23
F	BUS STOP ADDED, REVISED TO COMMENTS	JK	RGW	05.06.23
E	ROUGHAM ROAD TOUCAN CROSSING AMENDED	LB	JK	06.03.23
D	0.5M BLOCK PAVED BUFFER STRIPS ADDED	LB	JK	21.02.23
C	ROUGHAM ROAD NORTH ROUNDABOUT EXIT WIDENING EXTENTS AMENDED. ADDITIONAL NOTES ADDED	JK	RGW	26.10.22
B	FOUL DRAINAGE ADDED	JK	RGW	13.10.22
A	CYCLEWAYS AMENDED, DRAINAGE ADDED, CROSS SECTION MARKERS ADDED	JK	RGW	05.10.22

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smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 GENERAL ARRANGEMENT
SHEET 1

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	201K	A1

ALL SIGN LOCATIONS SHOWN ARE TO BE CONFIRMED BY THE SCC ENGINEER ON SITE PRIOR TO INSTALLATION. PLEASE REFER TO THE SIGNS & LINES LAYOUTS AND CONSTRUCTION DETAILS FOR MORE INFORMATION

EXISTING HIGHWAY SURFACE WATER DRAINAGE PLOTTED FROM RIGOUR SURVEY RECORDS. ALL ROUTES AND LEVELS TO BE CONFIRMED PRIOR TO INSTALLING UPSTREAM CONNECTIONS

EXISTING SURFACE WATER DRAINAGE NOT DETERMINED. CONNECTION TO BE MAINTAINED IF POSSIBLE FOLLOWING ON SITE INVESTIGATION. ENGINEER TO BE CONTACTED IF NO CONNECTIONS CAN BE DETERMINED.

PINCH POINT FOR 3.5m CYCLEWAY WHERE LOCALISED NARROWING IS REQUIRED – CRASH BARRIER AND BANK EXTENTS BEYOND TO BE INVESTIGATING TO DETERMINE MAX WIDTH AVAILABLE FOR CYCLEWAY

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

EXISTING GULLY TO REMAIN

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING ACCESS RESURFACED TO BOUNDARY WITH NEW LEVELS SHOWN, WHICH TIES INTO NEW CYCLEWAY

EXISTING MANHOLE LEVEL ADJUSTED TO TO NEW CARRIAGEWAY

3.5m CYCLEWAY TO TIE INTO EXISTING

KERBING AND VERGE TO REMAIN AS EXISTING

CARRIAGEWAY WIDENING TIE IN TO EXISTING

INVERT LEVEL OF EXISTING CATCHPIT TO BE DETERMINE PRIOR TO INSTALLATION OF 2 X CATCHPITS SHOWN. ENGINEER TO BE PROVIDED WITH EXISTING INVERT LEVELS AND PROVIDE FURTHER DESIGN ON NEW CATCPITS AND SURFACE WATER SEWER.

EXISTING MANHOLE TO BE REMOVED AND REPLACED AS SHOWN

EXISTING DRAINAGE TO BE CONCRETE FILLED

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, CONNECTING TO NEW SURFACE WATER SEWER AS SHOWN

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, CONNECTING TO NEW SURFACE WATER SEWER AS SHOWN

INVERT LEVEL OF EXISTING CATCHPIT TO BE DETERMINE PRIOR TO INSTALLATION OF 2 X CATCHPITS SHOWN. ENGINEER TO BE PROVIDED WITH EXISTING INVERT LEVELS AND PROVIDE FURTHER DESIGN ON NEW CATCPITS AND SURFACE WATER SEWER.

EXISTING MANHOLE TO BE REMOVED AND REPLACED AS SHOWN

BEANIE BLOCKS & SIDE ENTRY GULLY TO BE REMOVED AND REPLACED ALONG NEW KERB LINE

EXISTING KERBING AND GRASS VERGE TO BE REMOVED AS SHOWN AND REPLACED WITH NEW CARRIAGWAY, ALL SET TO EXISTING LEVELS, REFER TO SETTING OUT

BEANIE BLOCKS TO BE REMOVED AND REPLACED ALONG NEW KERB LINE

PEDESTRIAN BARRIERS AS SHOWN

BEANIE BLOCKS & SIDE ENTRY GULLY TO BE REMOVED AND REPLACED ALONG NEW KERB LINE

EXISTING MANHOLE AND PIPE RUN TO BE REMOVED AND REPLACED WITH NEW NETWORK FOR BEANY BLOCKS

ALL GULLY AND MANHOLE COVERS CONSTRUCTED WITHIN THE CARRIAGEWAY MUST BE IN ACCORDANCE WITH DMRB CD 534 – SKID RESISTANCE

50mm SURFACE COURSE PLANE & INLAY PROPOSED FOR FULL CARRIAGEWAY EXTENTS. WIDENING EXTENTS AS SHOWN TO BE TIED INTO EXISTING CARRIAGEWAY (REFER TO CONSTRUCTION DETAILS)

LC538 LC537 LC539 LC540 LC1172 LC1175 LC1160 LC1159

LP13 LP14 LP15 LP16 LP17 LP18 LP19

1.5m

Rougham Road North (Roundabout Exit Alignment)

Splitter Island North East

Roughham Road

SCC SECTION 278 AGREEMENT KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- FLEXIBLE CARRIAGEWAY
- FLEXIBLE FOOTWAY
- GRASS VERGE
- 50mm SURFACE COURSE PLANE & INLAY
- SPLITTER ISLAND EXTENTS TO BE REMOVED
- BLOCK PAVED BUFFER STRIPS
- 68 PSV SURFACING
- HIGHWAYS DRAINAGE
- EXISTING SURFACE WATER
- FOUL DRAINAGE
- PHASE 1 & 2 SURFACE WATER DRAINAGE
- PHASE 1 & 2 FOUL WATER DRAINAGE
- FOUL RISING MAIN
- TACTILE/CYCLEWAY PAVING
- PROPOSED LEVEL
- EXISTING LEVEL
- S278 LIGHTING COLUMN
- SIGN REF 956
- SIGN REF 965
- KEEP LEFT BOLLARD (NON ILLUMINATED)
- PROPOSED SIGNS (REFER TO SIGNS LAYOUT)

GENERAL

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.
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4. ALL WORK ARE TO BE TO THE SATISFACTION OF THE ENGINEER AND LOCAL AUTHORITY BUILDING CONTROL.
5. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE STABILITY OF THE WORKS AT ALL TIMES DURING CONSTRUCTION.
6. ALL WORKMANSHIP AND MATERIALS ARE TO BE TO CURRENT BRITISH STANDARDS.
7. ALL SERVICES ARE TO BE LOCATED AND PROTECTED AS NECESSARY BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE WORKS.
8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.
9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.
10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.
11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.
12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.
13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

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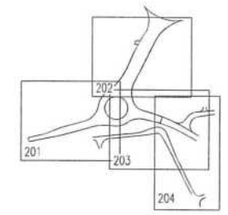
ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.



Rev	Revision Notes	Dwn	Apvd	Date
J	SIGN SYMBOLS ADDED	JK	RGW	02.02.24
H	SIGNAGE DESIGN & ROAD MARKINGS REVISED TO RSA 2 COMMENTS. STREET LIGHTING DESIGN REVISED.	JK	RGW	08.11.23
G	FOOTWAY EXTENTS AMENDED. ROAD MARKINGS REVISED.	JK	RGW	12.09.23
F	68PSV SURFACING ADDED TO CROSSINGS.	JK	RGW	09.06.23
E	BUS STOP REMOVED AND CHANNEL ANCHORED. REVISED TO COMMENTS	JK	RGW	05.05.23
D	DIMENSIONS ADDED	LB	JK	06.03.23
C	0.5M BLOCK PAVED BUFFER STRIPS ADDED	LB	JK	21.02.23
B	ROUGHAM ROAD NORTH ROUNDABOUT TOT WIDENING EXTENTS AMENDED ADDITIONAL NOTES ADDED.	JK	RGW	26.10.22
A	CYCLEWAYS AMENDED, DRAINAGE ADDED, CROSS SECTION MARKERS ADDED	JK	RGW	05.10.22

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PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 GENERAL ARRANGEMENT
SHEET 2

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	202J	A1

EXISTING MANHOLE AND PIPE RUN TO BE REMOVED AND REPLACED WITH NEW NETWORK FOR BEANY BLOCKS

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

EXISTING SPLITTER ISLAND TO BE REMOVED AS SHOWN AND REPLACED WITH NEW SPLITTER ISLAND ALONG EXISTING LEVELS. REFER TO SETTING OUT

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS AND REPLACED WITH D400 COVER & FRAME

EXISTING GULLY TO REMAIN

PEDESTRIAN BARRIERS AS SHOWN

BEANIE BLOCKS & SIDE ENTRY GULLY TO BE REMOVED AND REPLACED ALONG NEW KERB LINE

EXISTING ILLUMINATED BOLLARD TO BE REMOVED AND REPLACED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

WIDENING OF ENTRY LANE TO TIE IN TO EXISTING CARRIAGEWAY EDGE

3.5m CYCLEWAY/VERGE TO EXTEND THROUGH THE EXIT OF ROUNDABOUT AS SHOWN

PROPOSED 5m CYCLEWAY/VERGE FROM SPINE ROAD TO TIE INTO .5m CYCLEWAY/VERGE

EXISTING CARRIAGEWAY AND FOOTWAY TO BE REMOVED AND REINSTATED WITH VERGE

REMODELLED RUSHBROOK LANE TO TIE INTO EXISTING CARRIAGEWAY

EXISTING CYCLEPATH TO BE PLANED AND REGULATED UP TO PROPOSED ROAD RECONSTRUCTION

GULLY COVER & FRAME TO BE ADJUSTED TO NEW CARRIAGEWAY CHANNEL

LEVELS RAISED APPROXIMATELY 200mm FOR NEW FOOTWAY – UTILITY COVERS WITHIN NEW FOOTWAY TO BE ADJUSTED TO NEW FOOTWAY LEVELS, IF POSSIBLE. DIVERSIONS MAY BE REQUIRED

DROPPED KERB VEHICULAR ACCESS REQUIRED – REFER TO KERB LAYOUT

ALL GULLY AND MANHOLE COVERS CONSTRUCTED WITHIN THE CARRIAGEWAY MUST BE IN ACCORDANCE WITH DMRB CD 534 – SKID RESISTANCE

ALL SIGN LOCATIONS SHOWN ARE TO BE CONFIRMED BY THE SCC ENGINEER ON SITE PRIOR TO INSTALLATION. PLEASE REFER TO THE SIGNS & LINES LAYOUTS AND CONSTRUCTION DETAILS FOR MORE INFORMATION

50mm SURFACE COURSE PLANE & INLAY PROPOSED FOR FULL CARRIAGEWAY EXTENTS. WIDENING EXTENTS AS SHOWN TO BE TIED INTO EXISTING CARRIAGEWAY (REFER TO CONSTRUCTION DETAILS)

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING CARRIAGEWAY TO BE REMOVED AND REINSTATED WITH VERGE

EXISTING MANHOLE COVERS TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS

3.5m CYCLEWAY TO TRANSITION TO 3m CYCLEWAY

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

FOUL MANHOLE TO BE CONSTRUCTED OVER EXISTING FOUL SEWER. LEVELS AND DIAMETER ARE ASSUMED FROM SURVEY. EXACT POSITION, INVERT LEVEL AND DIA TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION OF UPSTREAM NETWORK, ANY DISCREPANCIES SHOULD BE REPORTED TO ENGINEER.

PROPOSED GULLY TO USE EXISTING CONNECTION

EXISTING SITE ACCESS TO BE RESURFACED TO NEW LEVELS PROVIDED (REFER TO SETTING OUT) AND TIE INTO EXISTING LEVELS AS SHOWN

DROPPED KERB FOR CYCLEWAY ACCESS ONTO CARRIAGEWAY (REFER TO KERB LAYOUT)

REMODELLED TO TIE INTO

EXISTING MANHOLE COVERS TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS

EXISTING HIGHWAY SURFACE WATER DRAINAGE PLOTTED FROM RIGOUR SURVEY RECORDS. ALL ROUTES AND LEVELS TO BE CONFIRMED PRIOR TO INSTALLING UPSTREAM CONNECTIONS

RUSHBROOK LANE WIDENED TO 5.5M ON NORTH EASTERN SIDE WITH 1:40 EXISTING CROSSFALL CONTINUED – REFER TO 'RUSHBROOKE LANE WIDENING' SETTING OUT DRAWINGS

REMODELLED RUSHBROOK LANE KERBS TO TIE INTO EXISTING KERB LINE

REMODELLED RUSHBROOK LANE TO TIE INTO EXISTING CARRIAGEWAY LEVELS

DROPPED KERB VEHICULAR ACCESS REQUIRED – REFER TO KERB LAYOUT

LP1 LP2 LP3 LP4 LP5 LP6 LP7 LP20 LP21 LP22 LP23 LP24 LP27 LP28 LP29

SCC SECTION 278 AGREEMENT KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- FLEXIBLE CARRIAGEWAY
- FLEXIBLE FOOTWAY
- GRASS VERGE
- 50mm SURFACE COURSE PLANE & INLAY
- SPLITTER ISLAND EXTENTS TO BE REMOVED
- BLOCK PAVED BUFFER STRIPS
- 68 PSV SURFACING
- HIGHWAYS DRAINAGE
- EXISTING SURFACE WATER
- FOUL DRAINAGE
- PHASE 1 & 2 SURFACE WATER DRAINAGE
- PHASE 1 & 2 FOUL WATER DRAINAGE
- FOUL RISING MAIN
- TACTILE/CYCLEWAY PAVING
- PROPOSED LEVEL
- EXISTING LEVEL
- S278 LIGHTING COLUMN
- SIGN REF 956
- SIGN REF 965
- KEEP LEFT BOLLARD (NON ILLUMINATED)
- PROPOSED SIGNS (REFER TO SIGNS LAYOUT)

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8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.
9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.
10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.
11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.
12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.
13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

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EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

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ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.

Rev	Revision Notes	Dwn	Apvd	Date
L	SIGN SYMBOLS ADDED, RUSHBROOKE LANE/ RIVER LANE CARRIAGEWAY CHANNEL AND FOOTWAY AMENDED TO SCC COMMENTS	JK	RGW	02.02.24
K	RUSHBROOKE LANE FOOTWAY EXTENTS REVISED TO SITE BOUNDARY. RUSHBROOKE LANE/ RIVER LANE CHANNEL REVISED. DRAINAGE UPDATED TO CURRENT PHASE 1 DESIGN	JK	RGW	23.01.24
J	SPOKES DESIGN REVISED TO RSP 2 COMMENTS. STREET LIGHTING DESIGN REVISED	JK	RGW	08.11.23
H	ROUGHAM ROAD NORTH FOOTWAY EXTENTS AMENDED. ROAD MARKINGS AMENDED	JK	RGW	13.09.23
G	KERBS ADDED TO CROSSINGS. ROUGHAM HILL NORTH FOOTWAY WIDENED TO 3M. BOLLARDS ADDED TO PED REFUGE ISLAND	JK	RGW	09.08.23
F	SPINE ROAD AMENDED. REVISED TO COMMENTS	JK	RGW	05.05.23
E	ROUGHAM HILL AMENDED	LB	JK	06.03.23
D	CSW BLOCK PAVED BUFFER STRIPS ADDED	LB	JK	21.02.23
C	ADDITIONAL NOTES ADDED, S278 BOUNDARY AMENDED, SPINE ROAD CYCLEWAY TAPER AMENDED	JK	RGW	26.10.22
B	DRWN A & B RELOCATED, FOUL DRAINAGE ADDED	JK	RGW	13.10.22
A	CYCLEWAYS AMENDED, DRAINAGE ADDED, CROSS SECTION MARKERS ADDED	JK	RGW	05.10.22

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project: ROUGHAM ROAD ROUNDABOUT BURY ST EDMUNDS

Drawing Title: S278 GENERAL ARRANGEMENT SHEET 3

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	203L	A1

50mm SURFACE COURSE PLANE & INLAY PROPOSED FOR FULL CARRIAGEWAY EXTENTS. WIDENING EXTENTS AS SHOWN TO BE TIED INTO EXISTING CARRIAGEWAY (REFER TO CONSTRUCTION DETAILS)

MANHOLE COVER TO BE ADJUSTED CARRIAGEWAY LEVELS AND) WITH D400 COVER & FRAME

EXISTING MANHOLE COVERS TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

3.5m CYCLEWAY TO TRANSITION TO 3m CYCLEWAY

EXISTING CARRIAGEWAY TO BE REMOVED AND REINSTATED WITH VERGE

EXISTING SITE ACCESS TO BE RESURFACED TO NEW LEVELS PROVIDED (REFER TO SETTING OUT) AND TIE INTO EXISTING LEVELS AS SHOWN

DROPPED KERB FOR CYCLEWAY ACCESS ONTO CARRIAGEWAY (REFER TO KERB LAYOUT)

REMODELLED CARRIAGEWAY TO TIE INTO EXISTING

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING MANHOLE COVERS TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS

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FOUL MANHOLE TO BE CONSTRUCTED OVER EXISTING FOUL SEWER. LEVELS AND DIAMETER ARE ASSUMED FROM SURVEY. EXACT POSITION, INVERT LEVEL AND DIA TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION OF UPSTREAM NETWORK, ANY DISCREPANCIES SHOULD BE REPORTED TO ENGINEER.

PROPOSED GULLY TO USE EXISTING CONNECTION

DROPPED KERB VEHICULAR ACCESS REQUIRED – REFER TO KERB LAYOUT

EXISTING HIGHWAY SURFACE WATER DRAINAGE PLOTTED FROM RIGOUR SURVEY RECORDS. ALL ROUTES AND LEVELS TO BE CONFIRMED PRIOR TO INSTALLING UPSTREAM CONNECTIONS

RUSHBROOK LANE WIDENED TO 5.5M ON NORTH EASTERN SIDE WITH 1:40 EXISTING CROSSFALL CONTINUED – REFER TO 'RUSHBROOKE LANE WIDENING' SETTING OUT DRAWINGS

REMODELLED RUSHBROOK LANE KERBS TO TIE INTO EXISTING KERB LINE

REMODELLED RUSHBROOK LANE TO TIE INTO EXISTING CARRIAGEWAY LEVELS

ALL GULLY AND MANHOLE COVERS CONSTRUCTED WITHIN THE CARRIAGEWAY MUST BE IN ACCORDANCE WITH DMRB CD 534 – SKID RESISTANCE

DROPPED KERB VEHICULAR ACCESS REQUIRED – REFER TO KERB LAYOUT

EXISTING LAYBY/PASSING PLACE TO BE REMOVED AS PART OF THE WIDENING

ALL SIGN LOCATIONS SHOWN ARE TO BE CONFIRMED BY THE SCC ENGINEER ON SITE PRIOR TO INSTALLATION. PLEASE REFER TO THE SIGNS & LINES LAYOUTS AND CONSTRUCTION DETAILS FOR MORE INFORMATION

WIDENING OF RUSHBROOKE LANE TO CONTINUE EXISTING CROSSFALL

DROPPED KERB VEHICULAR ACCESS REQUIRED – REFER TO KERB LAYOUT

NEW JUNCTION TO TIE INTO WIDENING EXTENTS

PHASE 2 DRAINAGE SHOWN FOR INFORMATION ONLY – SUBJECT TO CHANGE

WIDENING EXTENTS TO TIE INTO EXISTING UNKERBED CHANNEL WITH TRANSITION KERB

LP1 LP2 LP3 LP4 LP5 LP22 LP23 LP24 LP25 LP27 LP28 LP29 LP30 LP31

GENERAL

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EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

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ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.

SCC SECTION 278 AGREEMENT KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- FLEXIBLE CARRIAGEWAY
- FLEXIBLE FOOTWAY
- GRASS VERGE
- 50mm SURFACE COURSE PLANE & INLAY
- SPLITTER ISLAND EXTENTS TO BE REMOVED
- BLOCK PAVED BUFFER STRIPS
- 68 PSV SURFACING
- HIGHWAYS DRAINAGE
- EXISTING SURFACE WATER
- FOUL DRAINAGE
- PHASE 1 & 2 SURFACE WATER DRAINAGE
- PHASE 1 & 2 FOUL WATER DRAINAGE
- FOUL RISING MAIN
- TACTILE/CYCLEWAY PAVING
- PROPOSED LEVEL
- EXISTING LEVEL
- S278 LIGHTING COLUMN
- SIGN REF 956
- SIGN REF 965
- KEEP LEFT BOLLARD (NON ILLUMINATED)
- PROPOSED SIGNS (REFER TO SIGNS LAYOUT)

Rev	Revision Notes	Dwn	Apvd	Date
L	SIGN SYMBOLS ADDED, RUSHBROOKE LANE/ RIVER LANE CARRIAGEWAY CHANNEL AND FOOTWAY AMENDED TO SCC COMMENTS	JK	RGW	02.02.24
K	RUSHBROOKE LANE FOOTWAY EXTENTS REVISED TO SITE BOUNDARY. RUSHBROOKE LANE/ RIVER LANE CHANNEL REVISED. DRAINAGE UPDATED TO CURRENT PHASE 1 DESIGN	JK	RGW	23.01.24
J	STREET LIGHTING DESIGN REVISED	JK	RGW	08.11.23
H	S278 BOUNDARY AMENDED. PHASE 1 & 2 DRAINAGE UPDATED	JK	RGW	13.09.23
G	GRIPSY ADDED TO CROSSING ROUGHAM HILL NORTH FOOTWAY WIDENED TO 3M. BOLLARDS ADDED TO PED REFUGE ISLAND	JK	RGW	09.08.23
F	SPINE ROAD AMENDED. REVISED TO COMMENTS	JK	RGW	05.05.23
E	ROUGHAM HILL AMENDED	LB	JK	06.03.23
D	0.5M BLOCK PAVED BUFFER STRIPS ADDED	LB	JK	21.02.23
C	ADDITIONAL NOTES ADDED, S278 BOUNDARY AMENDED, SPINE ROAD CYCLEWAY TAPER AMENDED	JK	RGW	26.10.22
B	SWAY RELOCATED, FOUL DRAINAGE ADDED	JK	RGW	13.10.22
A	CYCLEWAYS AMENDED, DRAINAGE ADDED, CROSS SECTION MARKERS ADDED	JK	RGW	05.10.22

INGENT CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project: ROUGHAM ROAD ROUNDABOUT BURY ST EDMUNDS

Drawing Title: S278 GENERAL ARRANGEMENT SHEET 4

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	204L	A1

Rougham Road West (North Widening) Right Channel				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
4.765	586535.126	263370.283	37.028	Start
5.000	586534.821	263370.419	37.148	Straight
7.807	586531.238	263372.015	37.095	IP
7.807	586531.238	263372.015	37.095	Tangent Point
8.903	586530.225	263371.642	37.043	Curve Radius 0.0
10.000	586529.209	263371.275	36.990	Tangent Point
10.000	586529.209	263371.275	36.990	IP
10.000	586529.209	263371.275	36.990	Tangent Point
10.000	586529.209	263371.275	36.990	Curve Radius 197.024
15.000	586524.553	263369.670	36.738	Tangent Point
15.000	586524.553	263369.670	36.738	IP
15.000	586524.553	263369.670	36.738	Tangent Point
15.000	586524.553	263369.670	36.738	Curve Radius 197.031
17.959	586521.779	263368.775	36.581	Tangent Point
17.959	586521.779	263368.775	36.581	IP
20.000	586520.438	263366.370	36.415	Straight
21.000	586519.770	263365.023	36.208	End

Rougham Road West (Roundabout Entry Widening)				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586560.527	263398.083	38.160	Start
0.298	586560.480	263397.788	38.157	Tangent Point
5.000	586559.431	263393.209	38.105	Curve Radius 36.000
10.000	586557.672	263388.533	38.026	Curve
15.000	586555.282	263384.145	37.919	Curve
20.000	586552.308	263380.131	37.754	Curve
24.517	586549.167	263376.889	37.627	Tangent Point
24.519	586549.165	263376.888	37.627	IP
24.519	586549.165	263376.888	37.627	Tangent Point
25.000	586548.807	263376.567	37.614	Curve Radius 11.614
28.059	586546.254	263374.899	37.512	Tangent Point
28.059	586546.254	263374.899	37.512	End

Rougham Road West (North Widening)				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586539.546	263372.061	37.246	Start
0.000	586539.546	263372.061	37.246	Tangent Point
5.000	586534.906	263370.198	37.017	Curve Radius 200.0
10.000	586530.222	263368.451	36.781	Curve
15.000	586525.495	263366.822	36.529	Curve
20.000	586520.728	263365.311	36.262	Curve
22.860	586518.177	263364.566	36.119	Tangent Point
25.000	586515.930	263363.907	35.992	Straight
30.000	586511.126	263362.520	35.722	Straight
35.000	586506.322	263361.133	35.455	Straight
40.000	586501.518	263359.746	35.203	Straight
45.000	586496.714	263358.359	34.967	Straight
48.591	586493.265	263357.363	34.808	Tangent Point
50.000	586491.916	263356.953	34.745	Curve Radius 50.0
54.113	586488.054	263355.542	34.568	Tangent Point
55.000	586487.234	263355.204	34.532	Straight
60.000	586482.613	263353.296	34.343	Straight
65.000	586477.991	263351.388	34.179	Straight
70.000	586473.370	263349.480	34.021	Straight
75.000	586468.748	263347.572	33.882	Straight
78.142	586465.844	263346.373	33.837	End

Splitter Island South West			
Chainage (m)	Easting (m)	Northing (m)	Curve/Straight
0.000	586582.884	263376.216	Start
0.000	586582.884	263376.216	Tangent Point
0.897	586583.678	263376.565	Curve Radius 0.997
1.794	586584.445	263376.161	Tangent Point
1.794	586584.445	263376.161	IP
1.794	586584.445	263376.161	Tangent Point
5.000	586586.265	263373.522	Curve Radius 122.278
5.234	586586.396	263373.327	Tangent Point
6.403	586587.071	263372.374	Curve Radius 29.838
7.571	586587.800	263371.460	Tangent Point
7.571	586587.800	263371.460	IP
8.761	586588.245	263370.933	Tangent Point
10.000	586587.590	263369.427	Curve Radius 1.0
10.364	586587.651	263369.302	Tangent Point
15.000	586583.081	263368.517	Straight
20.000	586578.153	263367.670	Straight
23.212	586574.988	263367.126	Tangent Point
25.000	586573.819	263368.158	Curve Radius 1.000
25.924	586574.254	263368.937	Tangent Point
25.924	586574.254	263368.937	IP
28.315	586576.225	263370.290	IP
30.000	586577.537	263371.348	Straight
30.369	586577.817	263371.573	IP
30.369	586577.817	263371.573	Tangent Point
31.976	586579.077	263372.585	Curve Radius 46.660
33.592	586580.302	263373.639	Tangent Point
35.000	586581.333	263374.598	Curve Radius 32.285
37.242	586582.884	263376.216	Tangent Point
37.242	586582.884	263376.216	End

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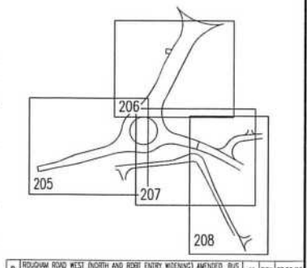

Rev	Revison Notes	Dwn	Ayvd	Date
D	ROUGHAM ROAD WEST (NORTH AND RDBT ENTRY WIDENING) AMENDED. BUS STOP & MAINTENANCE PARKING BAY ADDED TO ROUGHAM RD NORTH	JK	RGW	07.09.23
C	ROUGHAM ROAD NORTH (ROUNDABOUT EXIT WIDENING) AMENDED	LB	JK	09.05.23
B	FURTHER AMENDMENTS TO ROUGHAM ROAD NORTH (ROUNDABOUT EXIT WIDENING) EXTENTS	JK	RGW	24.10.22
A	ROUGHAM ROAD NORTH (ROUNDABOUT EXIT WIDENING) AMENDED	JK	RGW	04.10.22

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PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SETTING OUT
SHEET 1

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	205D	A1

Rougham Road North (Roundabout Entry Widening)				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586622.912	263404.137	38.878	Start
1.277	586622.440	263405.323	38.882	IP
1.277	586622.440	263405.323	38.882	Tangent Point
5.000	586621.225	263408.842	38.899	Curve Radius 40.000
10.000	586620.118	263413.714	38.985	Curve
15.000	586619.827	263418.687	38.952	Curve
20.000	586619.760	263423.682	38.985	Curve
25.000	586620.515	263428.621	39.044	Curve
30.000	586621.880	263433.426	39.144	Curve
35.000	586623.833	263438.027	39.362	Curve
36.213	586624.392	263439.103	39.398	Tangent Point
36.213	586624.392	263439.103	39.398	IP
40.000	586626.189	263442.437	39.503	Straight
45.000	586628.562	263446.838	39.566	Straight
50.000	586630.935	263451.239	39.780	Straight
55.000	586633.307	263455.640	40.009	Straight
56.665	586634.097	263457.106	40.085	IP
56.665	586634.097	263457.106	40.085	Tangent Point
60.000	586635.671	263460.047	40.236	Curve Radius 511.679
65.000	586637.993	263464.475	40.407	Curve
70.000	586640.272	263468.925	40.582	Curve
75.000	586642.507	263473.397	40.741	Curve
76.628	586643.225	263474.858	40.794	Tangent Point
76.628	586643.225	263474.858	40.794	IP
80.000	586644.709	263477.887	40.903	Straight
85.000	586646.908	263482.377	41.057	Straight
88.232	586648.329	263485.280	41.107	IP
88.232	586648.329	263485.280	41.107	Tangent Point
90.000	586649.108	263486.867	41.135	Curve Radius 1029.716
95.000	586651.326	263491.348	41.173	Curve
100.000	586653.566	263495.818	41.251	Curve
105.000	586655.827	263500.278	41.359	Curve
110.000	586658.110	263504.726	41.327	Curve
115.000	586660.414	263509.164	41.394	Curve
120.000	586662.740	263513.590	41.454	Curve
123.686	586664.469	263516.846	41.522	Tangent Point
123.686	586664.469	263516.846	41.522	IP
123.686	586664.469	263516.846	41.522	Tangent Point
125.000	586665.099	263517.998	41.546	Curve Radius 60.000
130.000	586667.727	263522.250	41.951	Curve
135.000	586670.699	263526.269	41.689	Curve
140.000	586673.995	263530.027	41.768	Curve
145.000	586677.593	263533.497	41.859	Curve
150.000	586681.467	263536.656	41.971	Curve
152.597	586683.579	263538.167	42.044	Tangent Point
152.597	586683.579	263538.167	42.044	End

Splitter Island North East			
Chainage (m)	Easting (m)	Northing (m)	Curve/Straight
0.000	586595.954	263422.007	Start
4.861	586599.362	263425.473	Tangent Point
5.000	586599.459	263425.572	Curve Radius 70.0
10.000	586602.828	263429.266	Curve
15.000	586605.924	263433.180	Curve
16.104	586606.569	263434.086	Tangent Point
16.712	586606.921	263434.582	Tangent Point
20.000	586609.825	263434.969	Curve Radius 2.0
22.214	586610.502	263432.978	Tangent Point
22.715	586610.390	263432.491	Tangent Point
25.000	586609.930	263430.252	Curve Radius 50.0
30.000	586609.281	263425.297	Curve
30.169	586609.268	263425.128	Tangent Point
32.549	586609.086	263422.756	Tangent Point
35.000	586608.958	263420.308	Curve Radius 50.000
37.453	586608.952	263417.815	Tangent Point
38.132	586608.966	263417.176	Tangent Point
40.000	586607.695	263416.191	Curve Radius 1.0
40.277	586607.441	263416.302	Tangent Point
40.540	586607.218	263416.449	Tangent Point
45.000	586603.251	263418.468	Curve Radius 28.0
50.000	586598.486	263419.961	Curve
51.828	586596.688	263420.291	Tangent Point
52.000	586596.518	263420.317	Tangent Point
53.100	586595.718	263420.989	Curve Radius 1.000
54.199	586595.954	263422.007	Tangent Point
54.199	586595.954	263422.007	End

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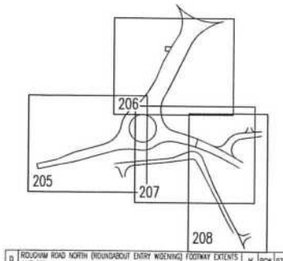
ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.



Rev	Revision Notes	Dwn	Apvd	Date
D	ROUGHAM ROAD NORTH (ROUNDABOUT ENTRY WIDENING) FOOTWAY EXTENTS AMENDED	JK	RGW	07.09.23
C	ROUGHAM ROAD NORTH (ROUNDABOUT EXIT WIDENING) AMENDED	LB	JK	09.05.23
B	FURTHER AMENDMENTS TO ROUGHAM ROAD NORTH (ROUNDABOUT EXIT WIDENING) EXTENTS	JK	RGW	24.10.22
A	ROUGHAM ROAD NORTH (ROUNDABOUT EXIT WIDENING) & SPLITTER ISLAND NORTH EAST AMENDED	JK	RGW	04.10.22

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

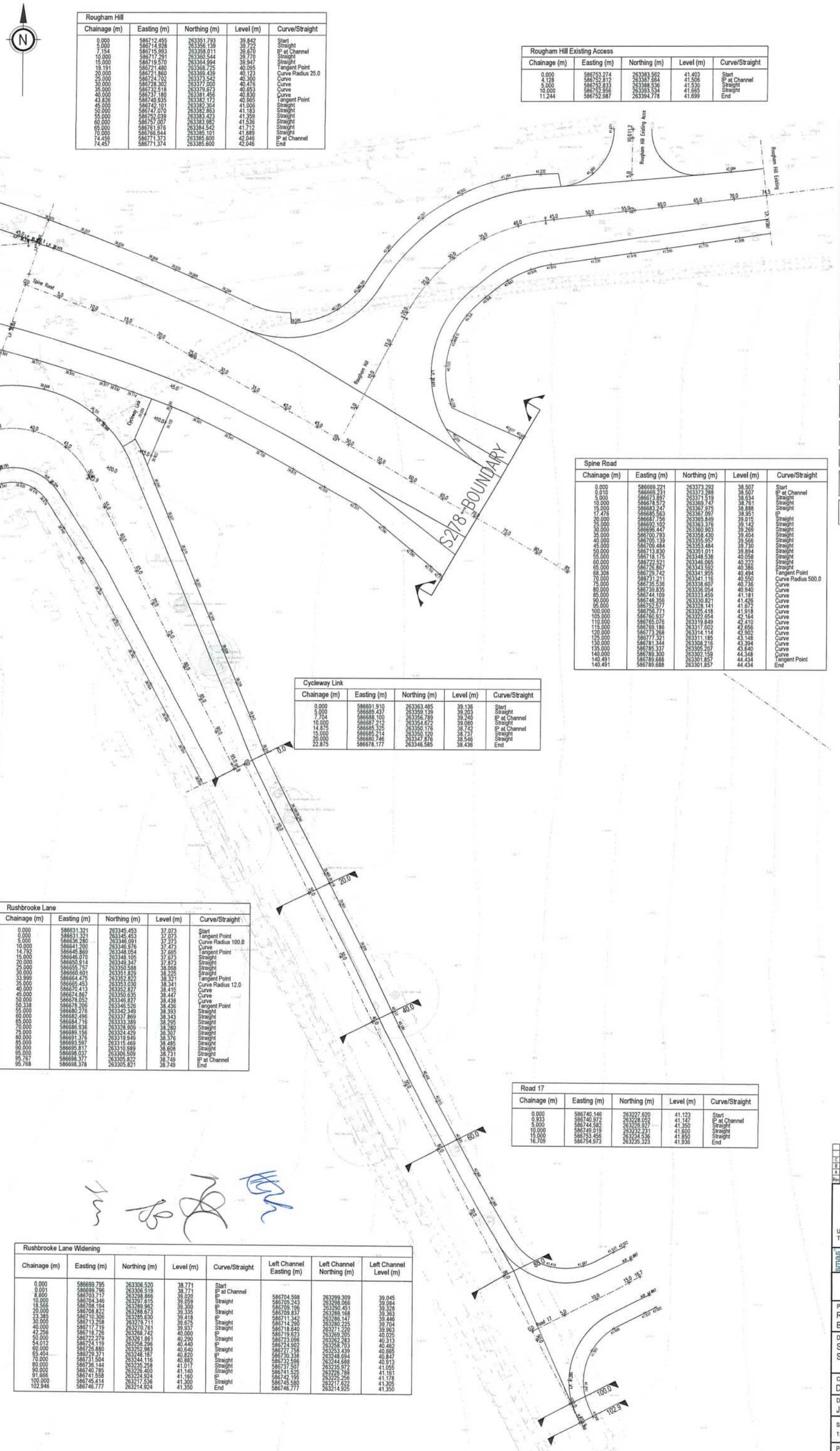
Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SETTING OUT
SHEET 2

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	206D	A1



Rougham Hill				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586712.455	263351.793	39.842	Start
5.000	586714.928	263356.139	39.722	Straight
7.154	586715.993	263358.011	39.670	IP at Channel
10.000	586717.291	263360.544	39.770	Straight
15.000	586719.570	263364.994	39.947	Straight
19.191	586721.480	263368.725	40.095	Tangent Point
20.000	586721.860	263369.439	40.123	Curve Radius 25.0
25.000	586724.702	263373.542	40.300	Curve
30.000	586728.302	263377.008	40.476	Curve
35.000	586732.518	263379.673	40.653	Curve
40.000	586737.180	263381.456	40.830	Curve
43.826	586740.935	263382.172	40.965	Tangent Point
45.000	586742.101	263382.304	41.006	Straight
50.000	586747.070	263382.863	41.183	Straight
55.000	586752.039	263383.423	41.359	Straight
60.000	586757.007	263383.982	41.536	Straight
65.000	586761.976	263384.542	41.712	Straight
70.000	586766.944	263385.101	41.889	Straight
74.456	586771.373	263385.600	42.046	IP at Channel
74.457	586771.374	263385.600	42.046	End

Rougham Hill Existing Access				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586753.274	263383.562	41.403	Start
4.128	586752.812	263387.664	41.506	IP at Channel
5.000	586752.833	263388.536	41.530	Straight
10.000	586752.956	263393.534	41.665	Straight
11.244	586752.987	263394.778	41.699	End

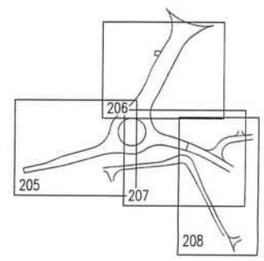
Spine Road				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586669.221	263373.292	38.507	Start
0.010	586669.231	263373.288	38.507	IP at Channel
5.000	586673.897	263371.519	38.634	Straight
10.000	586678.579	263369.747	38.761	Straight
15.000	586683.247	263367.975	38.888	Straight
17.476	586685.563	263367.097	38.951	IP
20.000	586687.756	263365.849	39.015	Straight
25.000	586692.102	263363.376	39.142	Straight
30.000	586696.447	263360.903	39.269	Straight
35.000	586700.793	263358.430	39.404	Straight
40.000	586705.139	263355.957	39.566	Straight
45.000	586709.484	263353.484	39.730	Straight
50.000	586713.830	263351.011	39.894	Straight
55.000	586718.175	263348.538	40.058	Straight
60.000	586722.521	263346.065	40.222	Straight
65.000	586726.867	263343.592	40.386	Straight
68.308	586729.742	263341.955	40.494	Tangent Point
70.000	586731.211	263341.116	40.550	Curve Radius 500.0
75.000	586735.536	263338.607	40.736	Curve
80.000	586739.835	263336.054	40.940	Curve
85.000	586744.109	263333.459	41.181	Curve
90.000	586748.356	263330.821	41.426	Curve
95.000	586752.577	263328.141	41.672	Curve
100.000	586756.771	263325.418	41.918	Curve
105.000	586760.937	263322.654	42.164	Curve
110.000	586765.076	263319.849	42.410	Curve
115.000	586769.186	263317.002	42.656	Curve
120.000	586773.268	263314.114	42.902	Curve
125.000	586777.321	263311.185	43.148	Curve
130.000	586781.344	263308.216	43.394	Curve
135.000	586785.337	263305.207	43.640	Curve
140.000	586789.300	263302.159	44.348	Curve
140.491	586789.688	263301.857	44.434	Tangent Point
140.491	586789.688	263301.857	44.434	End

Cycleway Link				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586691.910	263363.485	39.136	Start
5.000	586689.437	263359.139	39.203	Straight
7.704	586688.100	263356.789	39.240	IP at Channel
10.000	586687.212	263354.672	39.080	Straight
14.875	586685.325	263350.176	38.742	IP at Channel
15.000	586685.214	263350.120	38.737	Straight
20.000	586680.746	263347.876	38.546	Straight
22.875	586678.177	263346.585	38.436	End

Rushbrooke Lane				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586631.321	263345.453	37.073	Start
0.000	586631.321	263345.453	37.073	Tangent Point
5.000	586636.280	263346.091	37.273	Curve Radius 100.0
10.000	586641.200	263346.976	37.473	Curve
14.792	586645.869	263348.054	37.665	Tangent Point
15.000	586646.070	263348.105	37.673	Straight
20.000	586650.914	263349.347	37.873	Straight
25.000	586655.757	263350.588	38.058	Straight
30.000	586660.601	263351.829	38.225	Straight
33.999	586664.475	263352.822	38.321	Tangent Point
35.000	586665.453	263353.030	38.341	Curve Radius 12.0
40.000	586670.413	263352.827	38.415	Curve
45.000	586674.867	263350.635	38.447	Curve
50.000	586678.052	263346.827	38.438	Curve
50.338	586678.206	263346.526	38.436	Tangent Point
55.000	586680.276	263342.349	38.393	Straight
60.000	586682.496	263337.869	38.343	Straight
65.000	586684.716	263333.389	38.295	Straight
70.000	586686.936	263328.909	38.280	Straight
75.000	586689.156	263324.429	38.307	Straight
80.000	586691.376	263319.949	38.376	Straight
85.000	586693.597	263315.469	38.485	Straight
90.000	586695.817	263310.989	38.608	Straight
95.000	586698.037	263306.509	38.731	Straight
95.767	586698.377	263305.822	38.749	IP at Channel
95.768	586698.378	263305.821	38.749	End

Road 17				
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586740.146	263227.620	41.123	Start
0.933	586740.972	263226.662	41.147	IP at Channel
5.000	586744.582	263228.927	41.350	Straight
10.000	586749.019	263232.231	41.600	Straight
15.000	586753.456	263234.536	41.850	Straight
16.709	586754.973	263235.323	41.936	End

Rushbrooke Lane Widening							
Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight	Left Channel Easting (m)	Left Channel Northing (m)	Left Channel Level (m)
0.000	586699.795	263306.520	38.771	Start			
0.001	586699.796	263306.519	38.771	IP at Channel			
8.800	586703.717	263298.666	39.020	IP	586704.598	263299.309	39.045
10.000	586704.346	263297.615	39.059	Straight	586705.243	263298.066	39.084
18.566	586708.194	263289.962	39.309	IP	586709.196	263290.451	39.328
20.000	586708.822	263288.673	39.335	Straight	586709.837	263289.168	39.363
23.385	586710.306	263285.630	39.418	IP	586711.342	263286.147	39.446
30.000	586713.258	263279.711	39.575	Straight	586714.296	263280.225	39.704
40.000	586717.719	263270.761	39.937	Straight	586718.640	263271.220	39.963
47.256	586718.726	263268.742	40.000	IP	586719.623	263269.205	40.025
50.000	586722.279	263261.861	40.299	Straight	586723.096	263262.783	40.313
54.012	586724.119	263258.296	40.440	IP	586724.902	263258.703	40.462
60.000	586726.880	263252.983	40.640	Straight	586727.738	263253.439	40.665
65.404	586729.371	263248.187	40.820	IP	586730.338	263248.694	40.847
70.000	586731.504	263244.116	40.882	Straight	586732.596	263244.688	40.913
80.000	586736.144	263235.258	41.017	Straight	586737.597	263235.972	41.055
90.000	586740.785	263226.400	41.140	Straight	586741.525	263226.788	41.161
91.866	586741.558	263224.924	41.160	IP	586742.195	263225.256	41.178
100.000	586745.414	263217.536	41.300	Straight	586745.580	263217.622	41.305
102.946	586746.777	263214.924	41.350	End	586746.777	263214.925	41.350



GENERAL

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERS AND ARCHITECTS DRAWINGS AND THE SPECIFICATION.

3. ANY EXISTING DETAILS WHICH ARE SHOWN ON THIS DRAWING ARE FOR GUIDANCE ONLY AND ARE TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY VARIATIONS ARE TO BE RECORDED AND REPORTED TO THE ENGINEER IMMEDIATELY.

4. ALL WORK ARE TO BE TO THE SATISFACTION OF THE ENGINEER AND LOCAL AUTHORITY BUILDING CONTROL.

5. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE STABILITY OF THE WORKS AT ALL TIMES DURING CONSTRUCTION.

6. ALL WORKMANSHIP AND MATERIALS ARE TO BE TO CURRENT BRITISH STANDARDS.

7. ALL SERVICES ARE TO BE LOCATED AND PROTECTED AS NECESSARY BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE WORKS.

8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.

9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.

10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.

11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.

12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.

13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

REMOVAL OF EXISTING ROAD MARKINGS TO BE DONE SO BY METHODS TO THE SATISFACTION AND APPROVAL OF SUFFOLK COUNTY COUNCIL HIGHWAYS DEPT.

ALL VEGETATION AND CLEARANCE WORKS ARE TO BE IN ACCORDANCE WITH ECOLOGICAL AND ARBORICULTURAL REPORTS

CHECK ALL EXISTING ROAD SIGNS ARE SUITABLY SET BACK FROM ROAD EDGE AND/OR RAISED IN HEIGHT FOR PEDESTRIAN/CYCLIST MOVEMENTS.

ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.

Rev	Revision Notes	Dwn	Apvd	Date
C	SPINE ROAD ALIGNMENT AMENDED, ADJUSTED TO SUIT	LB	JK	09.05.23
B	S278 BOUNDARY AMENDED	JK	RGW	24.10.22
A	ADDITIONAL BACK OF FOOTWAY LEVELS ADDED	JK	RGW	04.10.22

INGENT
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PRELIMINARY

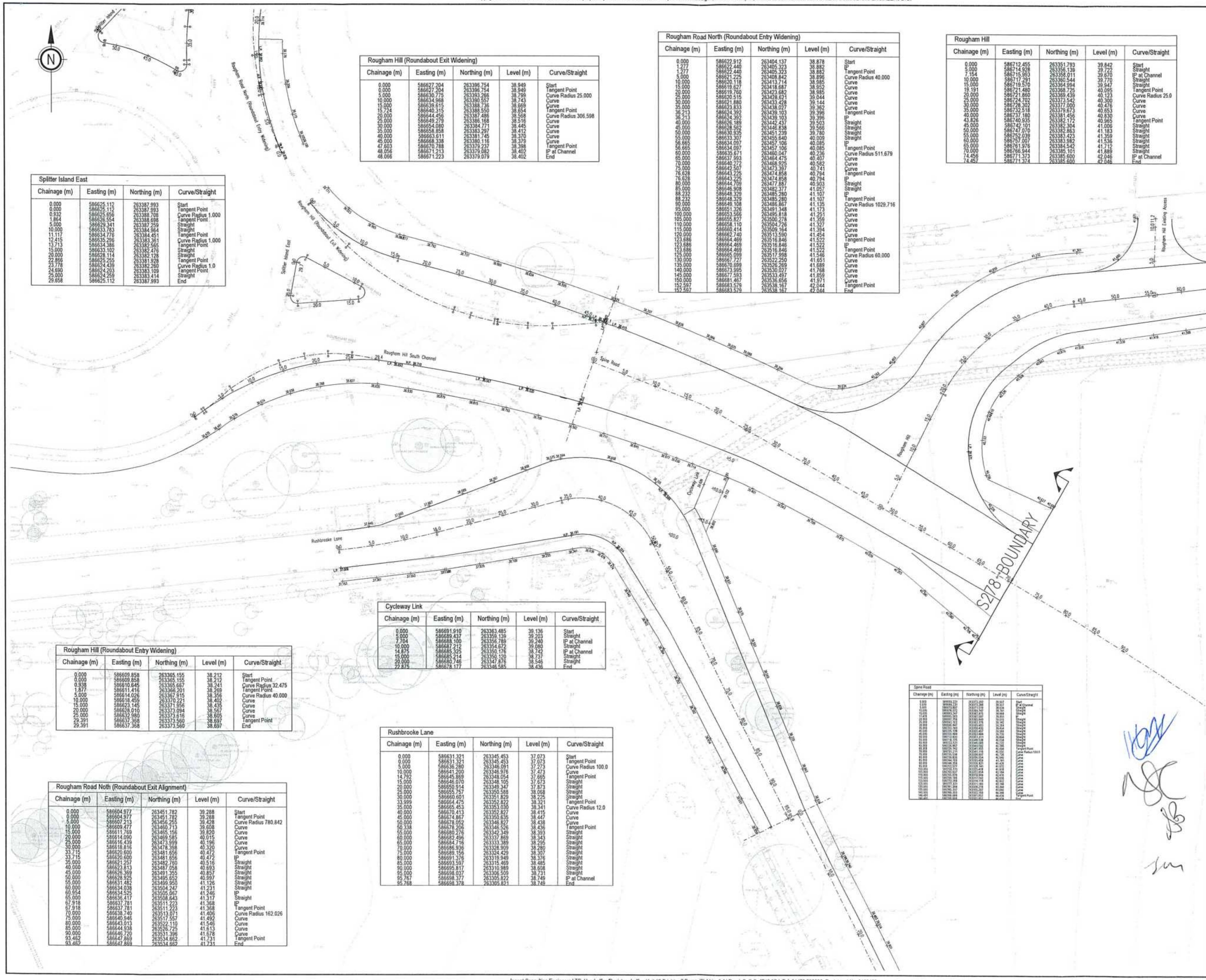
Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SETTING OUT
SHEET 4

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	208C	A1



Rougham Hill (Roundabout Exit Widening)

Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586627.204	263396.754	38.949	Start
0.000	586627.204	263396.754	38.949	Tangent Point
5.000	586630.775	263393.266	38.799	Curve Radius 25.000
10.000	586634.968	263390.557	38.743	Curve
15.000	586639.615	263388.736	38.669	Curve
15.724	586640.315	263388.550	38.654	Tangent Point
20.000	586644.456	263387.486	38.568	Curve Radius 306.598
25.000	586649.279	263386.168	38.516	Curve
30.000	586654.080	263384.771	38.445	Curve
35.000	586658.858	263383.297	38.412	Curve
40.000	586663.611	263381.745	38.370	Curve
45.000	586668.338	263380.116	38.379	Curve
47.603	586670.788	263379.237	38.398	Tangent Point
48.056	586671.213	263379.082	38.402	IP at Channel
48.066	586671.223	263379.079	38.402	End

Rougham Road North (Roundabout Entry Widening)

Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586622.912	263404.137	38.878	Start
1.277	586622.440	263405.323	38.882	IP
1.277	586622.440	263405.323	38.882	Tangent Point
5.000	586621.225	263408.842	38.896	Curve Radius 40.000
10.000	586620.118	263413.714	38.985	Curve
15.000	586619.627	263418.687	38.952	Curve
20.000	586619.760	263423.682	38.985	Curve
25.000	586620.515	263428.621	39.044	Curve
30.000	586621.880	263433.428	39.144	Curve
35.000	586623.833	263438.027	39.362	Curve
36.213	586624.392	263439.103	39.396	Tangent Point
36.213	586624.392	263439.103	39.396	IP
40.000	586626.189	263442.437	39.503	Straight
45.000	586628.562	263446.838	39.566	Straight
50.000	586630.935	263451.239	39.780	Straight
55.000	586633.307	263455.640	40.009	Straight
56.665	586634.097	263457.106	40.085	IP
56.665	586634.097	263457.106	40.085	Tangent Point
60.000	586635.671	263460.047	40.236	Curve Radius 511.679
65.000	586637.993	263464.475	40.407	Curve
70.000	586640.272	263468.925	40.582	Curve
75.000	586642.507	263473.397	40.741	Curve
76.628	586643.225	263474.858	40.794	Tangent Point
76.628	586643.225	263474.858	40.794	IP
80.000	586644.709	263477.887	40.903	Straight
85.000	586646.908	263482.377	41.057	Straight
88.232	586648.329	263485.280	41.107	IP
88.232	586648.329	263485.280	41.107	Tangent Point
90.000	586649.108	263486.867	41.135	Curve Radius 1029.716
95.000	586651.326	263491.348	41.173	Curve
100.000	586653.566	263495.818	41.251	Curve
105.000	586655.827	263500.278	41.359	Curve
110.000	586658.110	263504.726	41.327	Curve
115.000	586660.414	263509.164	41.394	Curve
120.000	586662.740	263513.590	41.454	Curve
123.686	586664.469	263516.846	41.522	Tangent Point
123.686	586664.469	263516.846	41.522	IP
123.686	586664.469	263516.846	41.522	Tangent Point
125.000	586665.099	263517.998	41.546	Curve Radius 60.000
130.000	586667.727	263522.250	41.651	Curve
135.000	586670.699	263526.269	41.689	Curve
140.000	586673.995	263530.027	41.768	Curve
145.000	586677.593	263533.497	41.859	Curve
150.000	586681.467	263536.656	41.971	Curve
152.597	586683.579	263538.167	42.044	Tangent Point
152.597	586683.579	263538.167	42.044	End

Rougham Hill

Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586712.455	263351.793	39.842	Start
5.000	586714.928	263356.139	39.722	Straight
7.154	586715.993	263358.011	39.670	IP at Channel
10.000	586717.291	263360.544	39.770	Straight
15.000	586719.570	263364.994	39.947	Straight
19.191	586721.480	263368.725	40.095	Tangent Point
20.000	586721.860	263369.439	40.123	Curve Radius 25.0
25.000	586724.702	263373.542	40.300	Curve
30.000	586728.302	263377.000	40.476	Curve
35.000	586732.518	263379.673	40.653	Curve
40.000	586737.180	263381.456	40.830	Curve
43.826	586740.935	263382.172	40.965	Tangent Point
45.000	586742.101	263382.304	41.006	Straight
50.000	586747.070	263382.863	41.183	Straight
55.000	586752.039	263383.423	41.359	Straight
60.000	586757.007	263383.982	41.536	Straight
65.000	586761.976	263384.542	41.712	Straight
70.000	586766.944	263385.101	41.889	Straight
74.456	586771.373	263385.600	42.046	IP at Channel
74.457	586771.374	263385.600	42.046	End

Splitter Island East

Chainage (m)	Easting (m)	Northing (m)	Curve/Straight
0.000	586625.112	263387.993	Start
0.000	586625.112	263387.993	Tangent Point
0.932	586625.656	263388.708	Curve Radius 1.000
1.864	586626.554	263388.698	Tangent Point
5.000	586629.341	263387.259	Straight
10.000	586633.783	263384.964	Straight
11.117	586634.776	263384.451	Tangent Point
12.415	586635.296	263383.361	Curve Radius 1.000
13.713	586634.386	263382.565	Tangent Point
15.000	586633.102	263382.476	Straight
20.000	586628.114	263382.128	Straight
22.866	586625.255	263381.928	Tangent Point
23.778	586624.439	263382.260	Curve Radius 1.0
24.690	586624.203	263383.109	Tangent Point
25.000	586624.259	263383.414	Straight
29.658	586625.112	263387.993	End

Cycleway Link

Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586691.910	263363.485	39.136	Start
5.000	586689.437	263359.139	39.203	Straight
7.704	586688.100	263356.789	39.240	IP at Channel
10.000	586687.212	263354.672	39.080	Straight
14.875	586685.325	263350.176	38.742	IP at Channel
15.000	586685.214	263350.120	38.737	Straight
20.000	586680.746	263347.876	38.546	Straight
22.875	586678.177	263346.585	38.436	End

Rougham Hill (Roundabout Entry Widening)

Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586609.858	263365.155	38.212	Start
0.000	586609.858	263365.155	38.212	Tangent Point
0.938	586610.645	263365.667	38.241	Curve Radius 32.475
1.877	586611.416	263366.201	38.269	Tangent Point
5.000	586614.026	263367.915	38.356	Curve Radius 40.000
10.000	586618.459	263370.221	38.402	Curve
15.000	586623.145	263371.956	38.435	Curve
20.000	586628.010	263373.094	38.567	Curve
25.000	586632.980	263373.616	38.605	Curve
29.391	586637.368	263373.560	38.697	Tangent Point
29.391	586637.368	263373.560	38.697	End

Rushbrooke Lane

Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586631.321	263345.453	37.073	Start
0.000	586631.321	263345.453	37.073	Tangent Point
5.000	586636.280	263346.091	37.273	Curve Radius 100.0
10.000	586641.200	263346.976	37.473	Curve
14.792	586645.869	263348.054	37.665	Tangent Point
15.000	586646.070	263348.105	37.673	Straight
20.000	586650.914	263349.347	37.873	Straight
25.000	586655.757	263350.588	38.068	Straight
30.000	586660.601	263351.829	38.225	Straight
33.999	586664.475	263352.822	38.321	Tangent Point
35.000	586665.453	263353.030	38.341	Curve Radius 12.0
40.000	586670.413	263352.827	38.415	Curve
45.000	586674.867	263350.635	38.447	Curve
50.000	586678.052	263346.827	38.438	Curve
50.338	586678.206	263346.526	38.436	Tangent Point
55.000	586680.276	263342.349	38.393	Straight
60.000	586682.496	263337.869	38.343	Straight
65.000	586684.716	263333.389	38.295	Straight
70.000	586686.936	263328.909	38.280	Straight
75.000	586689.156	263324.429	38.307	Straight
80.000	586691.376	263319.949	38.376	Straight
85.000	586693.597	263315.469	38.485	Straight
90.000	586695.817	263310.989	38.608	Straight
95.000	586698.037	263306.509	38.731	Straight
95.767	586698.377	263305.822	38.749	IP at Channel
95.768	586698.378	263305.821	38.749	End

Rougham Road Noth (Roundabout Exit Alignment)

Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	586604.977	263451.782	39.288	Start
0.000	586604.977	263451.782	39.288	Tangent Point
5.000	586607.213	263456.255	39.428	Curve Radius 780.842
10.000	586609.477	263460.713	39.608	Curve
15.000	586611.769	263465.156	39.820	Curve
20.000	586614.090	263469.585	40.015	Curve
25.000	586616.439	263473.999	40.196	Curve
30.000	586618.816	263478.398	40.320	Curve
33.715	586620.600	263481.656	40.472	Tangent Point
33.715	586620.600	263481.656	40.472	IP
35.000	586621.257	263482.760	40.516	Straight
40.000	586623.813	263487.058	40.693	Straight
45.000	586626.369	263491.355	40.857	Straight
50.000	586628.925	263495.652	40.997	Straight
55.000	586631.482	263499.950	41.126	Straight
60.000	586634.038	263504.247	41.231	Straight
60.954	586634.525	263505.067	41.246	IP
65.000	586636.417	263508.643	41.317	Straight
67.918	586637.781	263511.223	41.368	IP
67.918	586637.781	263511.223	41.368	Tangent Point
70.000	586638.740	263513.071	41.406	Curve Radius 162.026
75.000	586640.946	263517.557	41.492	Curve
80.000	586643.013	263522.110	41.546	Curve
85.000	586644.938	263526.725	41.613	Curve
90.000	586646.720	263531.396	41.678	Curve
93.462	586647.869	263534.662	41.731	Tangent Point
93.462	586647.869	263534.662	41.731	End

Spine Road

Chainage (m)	Easting (m)	Northing (m)	Level (m)	Curve/Straight
0.000	[illegible]	[illegible]	[illegible]	Start
0.000	[illegible]	[illegible]	[illegible]	IP at Channel
5.000	[illegible]	[illegible]	[illegible]	Straight
10.000	[illegible]	[illegible]	[illegible]	Straight
15.000	[illegible]	[illegible]	[illegible]	Straight
17.478	[illegible]	[illegible]	[illegible]	IP
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Straight
[illegible]	[illegible]	[illegible]	[illegible]	Tangent Point
[illegible]	[illegible]	[illegible]	[illegible]	Curve Radius [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	[illegible]	Curve
[illegible]	[illegible]	[illegible]	44.434	Tangent Point
[illegible]	[illegible]	[illegible]	44.434	End

GENERAL

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6. ALL WORKMANSHIP AND MATERIALS ARE TO BE TO CURRENT BRITISH STANDARDS.
7. ALL SERVICES ARE TO BE LOCATED AND PROTECTED AS NECESSARY BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE WORKS.
8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.
9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.
10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.
11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.
12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.
13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

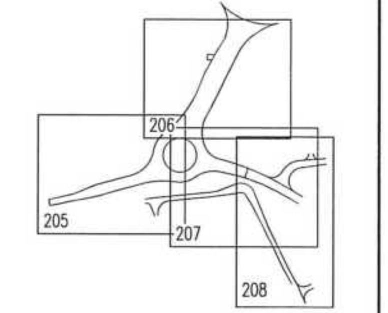
EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

REMOVAL OF EXISTING ROAD MARKINGS TO BE DONE SO BY METHODS TO THE SATISFACTION AND APPROVAL OF SUFFOLK COUNTY COUNCIL HIGHWAYS DEPT.

ALL VEGETATION AND CLEARANCE WORKS ARE TO BE IN ACCORDANCE WITH ECOLOGICAL AND ARBORICULTURAL REPORTS

CHECK ALL EXISTING ROAD SIGNS ARE SUITABLY SET BACK FROM ROAD EDGE AND/OR RAISED IN HEIGHT FOR PEDESTRIAN/CYCLIST MOVEMENTS.

ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.



Rev	Revision Notes	Dwn	Apvd	Date
D	ROUGHAM ROAD NORTH (ROUNDABOUT ENTRY WIDENING) FOOTWAY EXTENTS AMENDED	JK	RGW	07.09.23
C	SPINE ROAD ALIGNMENT AMENDED, ADJUSTED TO SUIT	LB	JK	09.05.23
B	S278 BOUNDARY AMENDED	JK	RGW	24.10.22
A	ADDITIONAL BACK OF FOOTWAY LEVELS ADDED	JK	RGW	04.10.22

INGENT
CONSULTING ENGINEERS

Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project: ROUGHAM ROAD ROUNDABOUT BURY ST EDMUNDS

Drawing Title: S278 SETTING OUT SHEET 3

Client: DENBURY HOMES			Date: AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW
Scale: 1:250			
Project No: 2107-592		Drawing No & Revision: 207D	Size: A1

Rougham Hill (Roundabout Entry Widening)

Rougham Hill South Channel

Datum: 32.000M AOD

Labels	T.P., I.P. L=38.382, T.P., I.P., T.P., I.P. L=38.420, T.P., I.P. L=38.585, T.P., I.P. L=38.599, T.P.
CHAINAGE ON CENTRELINE (m)	0.000, 3.958, 5.008, 6.058, 10.000, 12.900, 15.000, 17.100, 17.550, 20.000, 22.450, 23.800, 25.000, 26.200, 29.391
LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	38.212, 38.331, 38.356, 38.370, 38.402, 38.412, 38.435, 38.489, 38.504, 38.567, 38.592, 38.596, 38.603, 38.626, 38.697
LEVELS ON RIGHT HAND CHANNEL (m)	38.212, 38.331, 38.356, 38.370, 38.402, 38.412, 38.436, 38.489, 38.504, 38.566, 38.592, 38.596, 38.602, 38.626, 38.697
VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE	G = 3.0%; K= 0.96; G = 0.8%; G = 0.4%; SAG K = 1.429; HOG K = 1.623; G = 0.35%; K= 1.22; G = 2.2%
HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE	R= 32.48; CURVE R = 40.000 L = 27.514
EXISTING LEVELS (m)	38.212, 38.391, 38.393, 38.388, 38.498, 38.545, 38.697

Rougham Hill (Roundabout Exit Widening)

Datum: 32.000M AOD

Labels	I.P., I.P., I.P., I.P., I.P., I.P., I.P., I.P., I.P.
CHAINAGE ON CENTRELINE (m)	0.000, 5.000, 10.000, 15.000, 20.000, 25.000, 30.000, 35.000, 40.000, 45.000, 48.065
LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	38.949, 38.799, 38.743, 38.669, 38.568, 38.516, 38.445, 38.412, 38.370, 38.379, 38.402
LEVELS ON LEFT HAND CHANNEL (m)	38.949, 38.799, 38.743, 38.669, 38.568, 38.516, 38.445, 38.412, 38.370, 38.379, 38.402
VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE	G = -3.0%; G = -1.1%; G = -1.5%; G = -2.0%; G = -1.0%; G = -1.4%; G = -0.7%; G = -0.8%; G = 0.2%; G = 0.7%
HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE	CURVE R = 25.000 L = 15.724; CURVE R = 306.598 L = 31.879
EXISTING LEVELS (m)	38.949, 38.869, 38.900, 38.882, 38.784, 38.529, 38.405

Rougham Hill South Channel

Datum: 32.000M AOD

CHAINAGE ON CENTRELINE (m)	0.000, 1.127, 3.195, 5.262, 6.219, 8.325, 10.431, 11.526, [illegible], 19.604, [illegible], 24.402, [illegible], 28.315, [illegible]
LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	38.697, 38.681, 38.696, 38.710, 38.697, 38.675, 38.652, [illegible], 38.546, [illegible], 38.495, [illegible], 38.440, [illegible]
LEVELS ON RIGHT HAND CHANNEL (m)	38.694, 38.696, 38.710, 38.697, 38.675, 38.652, [illegible], 38.546, [illegible], 38.494, [illegible], 38.463, 38.458
VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE	G = 0.7%; G = 0.7%; G = -1.1%; G = -1.1%; [illegible]; G = -1.3%; G = -1.3%; [illegible]; G = -1.8%
HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE	CURVE R = 225.288 L = 30.464
EXISTING LEVELS (m)	38.697, 38.681, 38.696, 38.710, 38.697, 38.675, 38.652, 38.637, 38.629, 38.604, 38.567, 38.579, 38.561, 38.546, 38.533, 38.520, 38.499, 38.488, 38.440, 38.403

Rougham Road West (North Widening)

Datum: 27.000M AOD

Labels	T.P., I.P. L=36.707, T.P., T.P., I.P. L=35.210, T.P., T.P., I.P. L=34.417, T.P., I.P.
CHAINAGE ON CENTRELINE (m)	0.000, 5.325, 11.775, 18.225, 30.000, 31.820, 39.470, 47.120, 51.140, 57.440, 60.000, 63.740, 70.000, 73.894, 78.142
LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	37.246, 37.002, 36.694, 36.358, 35.722, 35.624, 35.229, 34.872, 34.695, 34.437, 34.343, 34.218, 34.021, 33.898, 33.837
LEVELS ON RIGHT HAND CHANNEL (m)	37.246, 37.002, 36.694, 36.358, 35.722, 35.624, 35.229, 34.872, 34.695, 34.437, 34.343, 34.218, 34.021, 33.898, 33.837
VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE	G = -4.6%; HOG CURVE K = 15.600 L = 12.900; GRADIENT -5.4% (-1 in 19) LENGTH = 13.595m; SAG CURVE K = 15.417 L = 15.300; G = -4.4%; SAG CURVE K = 10.011 L = 12.600; GRADIENT -3.2% L = 10.154m; G = -1.4%
HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE	CURVE R = 200.000 L = 22.660; STRAIGHT LENGTH = 25.930m; R = 50.000 L = 5.522; STRAIGHT LENGTH = 24.029m
EXISTING LEVELS (m)	37.246, 37.141, 36.869, 36.757, 36.476, 36.397, 35.901, 35.803, 35.430, 35.014, 34.811, 34.592, 34.411, 34.367, 34.136, 33.944, 33.837
PROPOSED CHAINAGE (m)	78.142
PROPOSED LEVELS (m)	33.837

Rougham Road West (Roundbaout Entry Widening)

Datum: 31.000M AOD

Labels	I.P., T.P., I.P. L=38.028, T.P., I.P., T.P., I.P. L=37.775, T.P., I.P., T.P., I.P. L=37.425, T.P.
EXISTING CHAINAGE (m)	0.000, 5.000, 7.700, 10.000, 12.300, 15.000, 17.400, 20.000, 22.600, 25.000, 28.050, 30.000, 31.950, 32.528
CHAINAGE ON CENTRELINE (m)	0.000, 5.000, 7.700, 10.000, 12.300, 15.000, 17.400, 20.000, 22.600, 25.000, 28.050, 30.000, [illegible]
LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	38.160, 38.105, 38.063, 38.024, 37.978, 37.919, 37.850, 37.771, 37.685, 37.602, 37.494, 37.426, [illegible]
LEVELS ON RIGHT HAND CHANNEL (m)	38.160, 38.105, 38.063, 38.024, 37.978, 37.919, 37.850, 37.771, 37.685, 37.602, 37.494, 37.426, [illegible]
VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE	G = -1.1%; G = -1.5%; HOG K = 7.187; G = -2.2%; G = -2.9%; HOG K = 8.966; G = -3.5%; G = -3.5%; SAG K = 14.282
HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE	CURVE R = 36.000 L = 12.009; CURVE R = 30.000 L = 20.221
EXISTING LEVELS (m)	60, 07, 72, 43, 18, 26, 53, 76, 37, 72, 21, 40, 64, 42

GENERAL

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10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.
11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.
12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.
13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

Rev	Revision Notes	Dwn	Apvd	Date
D	ROUGHAM ROAD WEST SECTIONS AMENDED	JK	RGW	26.10.23
C	ROUGHAM ROAD WEST SECTIONS AMENDED	JK	RGW	07.09.23
B	ALIGNMENTS AND LEVELS AMENDED AS REQUIRED	JK	RGW	05.05.23
A	MINOR UPDATES TO ROAD WIDENING LEVELS	JK	RGW	04.10.22

INGENT CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

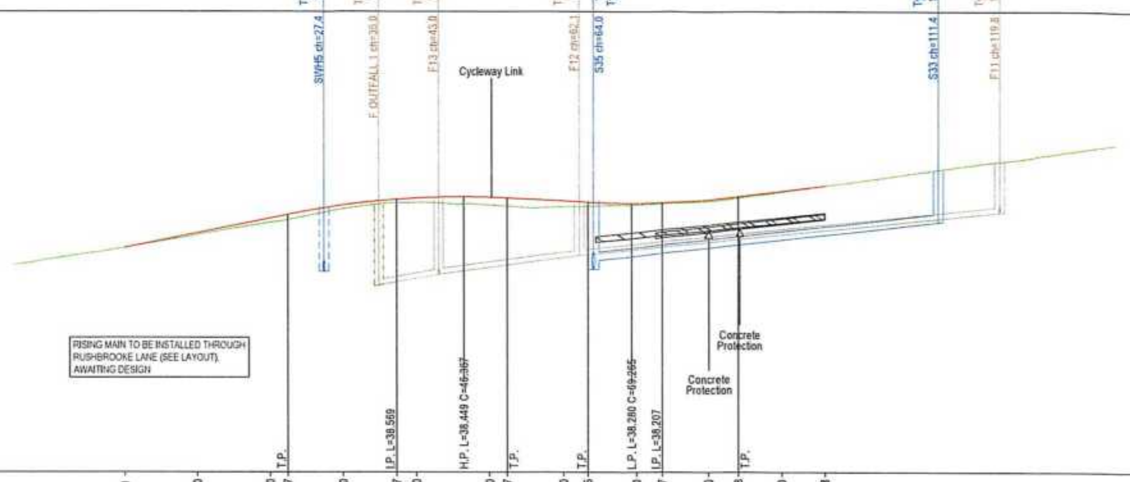
smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project: ROUGHAM ROAD ROUNDABOUT BURY ST EDMUNDS			
Drawing Title: S278 LONG SECTIONS SHEET 1			
Client: DENBURY HOMES			Date: AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW
Scale: Horizontal 1:500, Vertical 1:100			
Project No: 2107-592		Drawing No & Revision: 209D	Size: A1

Rushbrooke Lane

Row	Values
MANHOLE COVER LEVELS APPROX (m)	38.181, 38.220, 38.400, 38.277, 38.358, 39.191, 39.373
FOUL WATER SEWER INVERT LEVELS (m)	150Ø 1/[illegible] L=6.26 PN=1.000; 150Ø 1/35 L=17.70 PN=2.000; 38.885, 38.885; 150Ø 1/50 L=57.72 PN=2.000; 38.023
SURFACE WATER SEWER INVERT LEVELS (m)	36.430; 36.725; 225Ø 1/45 L=47.34 PN=7.000; 37.766
MANHOLE DIAMETER (mm)	Type C 1350; Type B 1200; Type B 1200; Type C 1350; 1500 Type C; Type C 1350; Type C 1350



Datum: 31.000M AOD

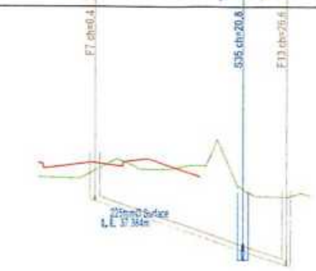
CHAINAGE ON CENTRELINE (m)	LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	LEVELS ON LEFT HAND CHANNEL (m)	LEVELS ON RIGHT HAND CHANNEL (m)	EXISTING LEVELS (m)
0.000	37.073	37.143	37.006	37.073
10.000	37.473	37.557	37.397	37.426
20.000	37.873	37.986	37.771	37.761
22.387	37.969	38.088	37.861	37.832
30.000	38.225	38.364	38.100	38.125
37.387	38.381	38.531	38.247	38.296
40.000	38.415	38.565	38.282	38.296
50.000	38.438	38.588	38.318	38.230
52.387	38.419	38.565	38.305	38.198
60.000	38.343	38.475	38.247	38.182
63.265	38.310	38.437	38.222	38.200
70.000	38.280	38.396	38.197	38.239
73.617	38.296	38.404	38.214	38.268
80.000	38.376	38.473	38.298	38.338
83.968	38.460	38.550	38.384	38.427
90.000	38.608	38.687	38.536	38.587
95.768	38.749			38.749

VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE: GRADIENT 4.0% (1 in 25) LENGTH = 22.387m; HOG CURVE K = 6.000 L = 30.000; GRADIENT -1.0% L = 10.878m; SAG CURVE K = 6.000 L = 20.703; GRADIENT 2.5% (1 in 41) LENGTH = 11.798m

HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE: CURVE R = 100.000 L = 14.792; STRAIGHT LENGTH = 19.207m; CURVE R = 12.000 L = 16.339; STRAIGHT LENGTH = 45.428m

Cycleway Link

Row	Values
MANHOLE COVER LEVELS APPROX (m)	39.448, 38.358, 38.400
FOUL WATER SEWER INVERT LEVELS (m)	38.090; 150Ø 1/17 L=30.29 PN=1.000; 38.355
SURFACE WATER SEWER INVERT LEVELS (m)	36.500
MANHOLE DIAMETER (mm)	Type C 1350; Type C 1500; Type B 1200



Datum: 32.000M AOD

CHAINAGE ON CENTRELINE (m)	LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	LEVELS ON LEFT HAND CHANNEL (m)	LEVELS ON RIGHT HAND CHANNEL (m)
0.000	39.136		
7.704	39.240	39.122	39.039
10.000	39.080		
14.875	38.742		
22.875	38.436		

VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE: GRADIENT -6.9% L = 7.172m

HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE: STRAIGHT L = 7.172m

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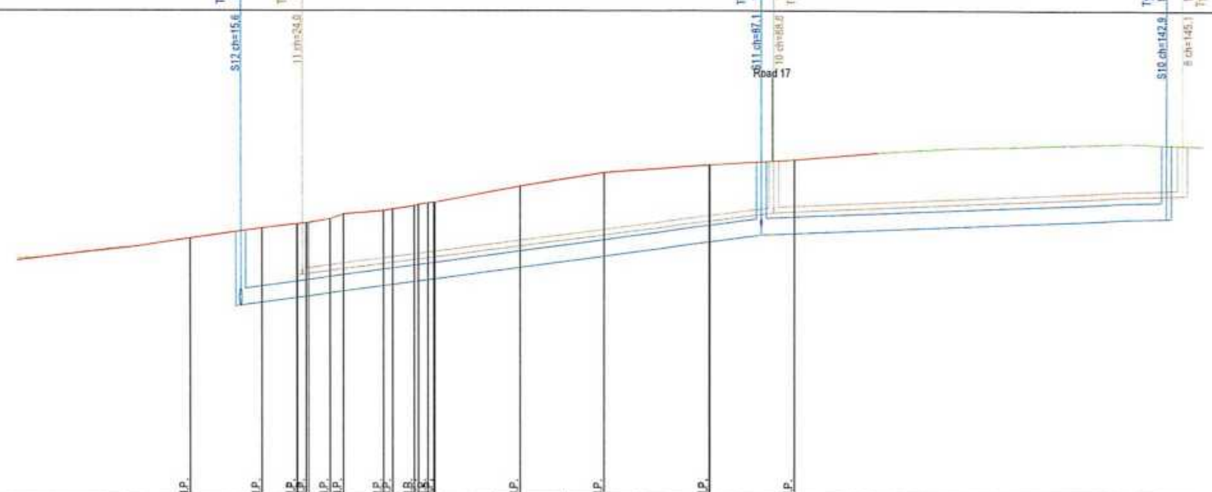
Rushbrooke Lane Widening

Row	Values
MANHOLE COVER LEVELS APPROX (m)	39.204, 39.392, 41.128, 41.122, 41.576, 41.555
FOUL WATER SEWER INVERT LEVELS (m)	38.042; 150Ø 1/39 L=64.83 PN=2.001; 39.724, 39.724; 150Ø 1/117 L=56.22 PN=2.000; 40.205
SURFACE WATER SEWER INVERT LEVELS (m)	37.200; 450Ø 1/37 L=71.46 PN=0.000; 39.128, 39.128; 450Ø 1/124 L=55.81 PN=0.000; 39.579
MANHOLE DIAMETER (mm)	Type B 1350; Type C 1350; Type B 1350; 1350 Type C; Type B 1350; 1350 Type C



Datum: 32.000M AOD

CHAINAGE ON CENTRELINE (m): 0.000, 8.600, 18.566, [illegible], 24.933, 27.956, 29.784, 35.313, 36.556, 39.415, [illegible], 42.06[illegible], 50.000, 54.012, 60.000, 65.404, 70.000, 86.078, 86.178, 91.666, 100.000, 102.946

LEVELS ON CENTRELINE OF CARRIAGEWAY (m): 38.771, 39.020, 39.300, 39.415, [illegible], 39.546, 39.671, 39.773, 39.812, 39.898, [illegible], 40.000, 40.290, 40.440, 40.640, 40.820, 40.882, 41.019, 41.021, 41.160, 41.300, 41.350

LEVELS ON LEFT HAND CHANNEL (m): 39.045, 39.328, 39.444, [illegible], 39.481, 39.575, 39.700, 39.801, 39.839, 39.924, [illegible], 40.025, 40.313, 40.462, 40.665, 40.847, 40.913, 41.058, 41.059, 41.178, 41.305, 41.350

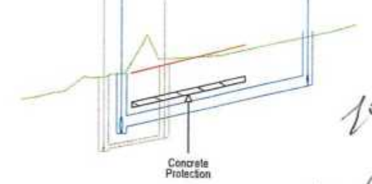
VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE: GRADIENT 2.9% L = 8.599m; GRADIENT 2.8% L = 9.966m; G = 2.4%; G = 2.05%; G = 3.1%; G = 6.8%; G = 1.9%; G = 3.1%; G = 3.0%; G = 3.75%; GRADIENT 3.7% (1 in 27) LENGTH = 11.756m; GRADIENT 3.3% L = 11.392m; GRADIENT 1.3% (1 in 74) LENGTH = 14.621m; GRADIENT 1.2% (1 in 83) LENGTH = 11.550m; GRADIENT 1.7% L = 11.279m

HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE: STRAIGHT L = 8.599m; STRAIGHT L = 9.966m; L = 4.82m; STRAIGHT LENGTH = 18.871m; STRAIGHT LENGTH = 11.756m; STRAIGHT L = 11.392m; STRAIGHT LENGTH = 26.263m; STRAIGHT L = 11.279m

EXISTING LEVELS (m): 38.771, 39.020, 39.059, 39.300, 39.335, 39.415, 39.415, 39.443, 39.546, 39.671, 39.773, 39.812, 39.898, 39.936, 39.966, 40.290, 40.440, 40.640, 40.820, 40.882, 41.017, 41.019, 41.160, 41.300, 41.350

Road 17

Row	Values
MANHOLE COVER LEVELS APPROX (m)	41.054, 41.160, 41.305, 42.335
FOUL WATER SEWER INVERT LEVELS (m)	300Ø 1/2[illegible] L=[illegible]29 PN=3.000
SURFACE WATER SEWER INVERT LEVELS (m)	39.660; 300Ø 1/22 L=25.50 PN=3.000; 40.835
MANHOLE DIAMETER (mm)	Type B 1350; 1350 Type C; Type B 1350; Type C 1350



Datum: 35.000M AOD

CHAINAGE ON CENTRELINE (m)	LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	LEVELS ON LEFT HAND CHANNEL (m)	LEVELS ON RIGHT HAND CHANNEL (m)	EXISTING LEVELS (m)
0.000	41.123			41.430
0.933	41.147			
10.000	41.600	41.532	41.533	41.595
16.709	41.936	41.867	41.867	41.793

VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE: GRADIENT 5.0% (1 in 20) LENGTH = 15.777m

HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE: STRAIGHT LENGTH = 15.777m

Rev	Revision Notes	Dwn	Apvd	Date
C	ALIGNMENTS AND LEVELS AMENDED AS REQUIRED	JK	RGW	05.05.23
B	FOUL DRAINAGE ADDED	JK	RGW	13.10.22
A	SURFACE WATER DRAINAGE ADDED TO SECTIONS	JK	RGW	06.10.22

INGENT CONSULTING ENGINEERS

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project: ROUGHAM ROAD ROUNDABOUT BURY ST EDMUNDS

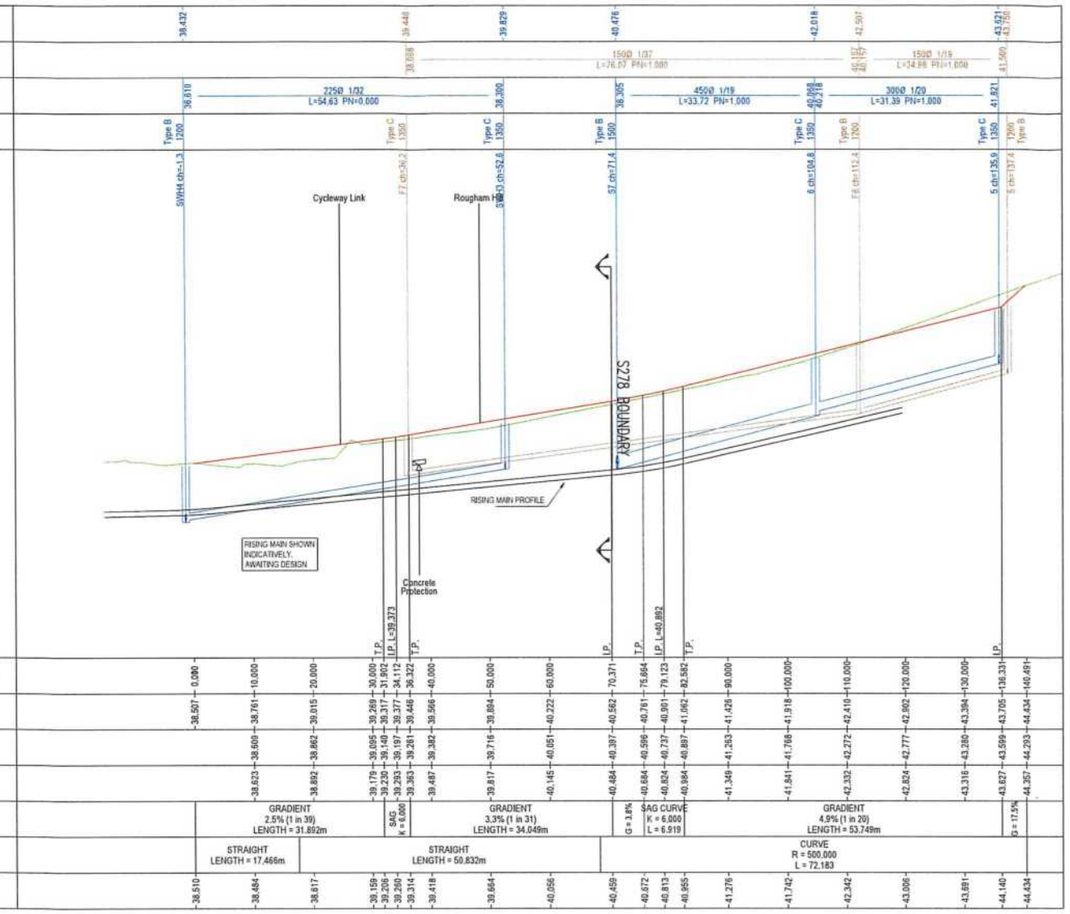
Drawing Title: S278 LONG SECTIONS SHEET 2

Client			Date
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

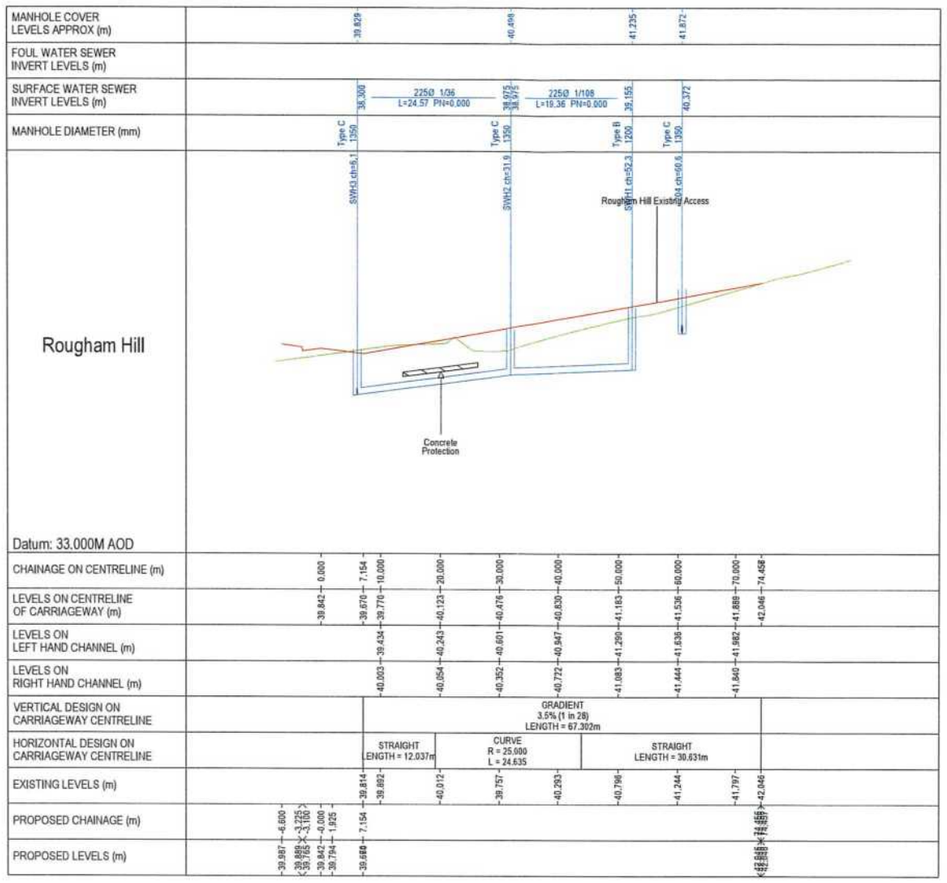
Scale: Horizontal 1:500, Vertical 1:100

Project No:	Drawing No & Revision:	Size:
2107-592	210C	A1

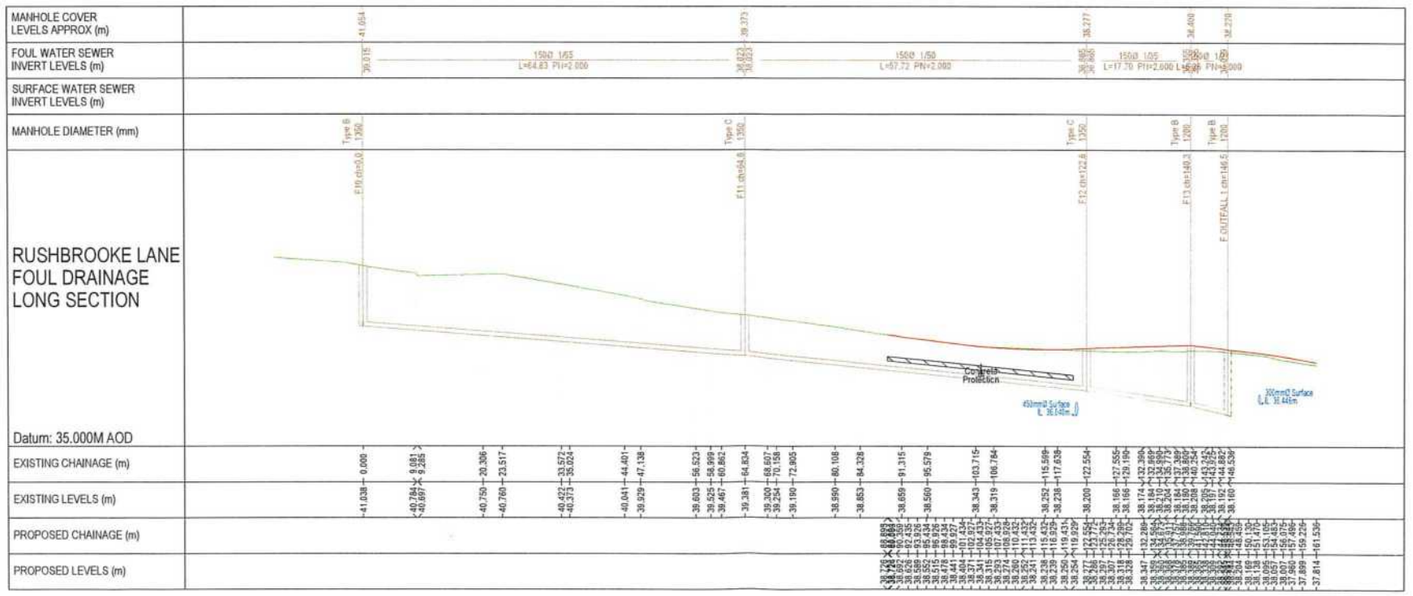
Spine Road S278



Rougham Hill



RUSHBROOKE LANE FOUL DRAINAGE LONG SECTION



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Rev	Revision Notes	Dwn	Apvd	Date
C	ALIGNMENTS AND LEVELS AMENDED AS REQUIRED	JK	RGW	05.05.23
B	FOUL DRAINAGE ADDED	JK	RGW	11.10.22
A	SURFACE WATER DRAINAGE ADDED TO SECTIONS	JK	RGW	06.10.22

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

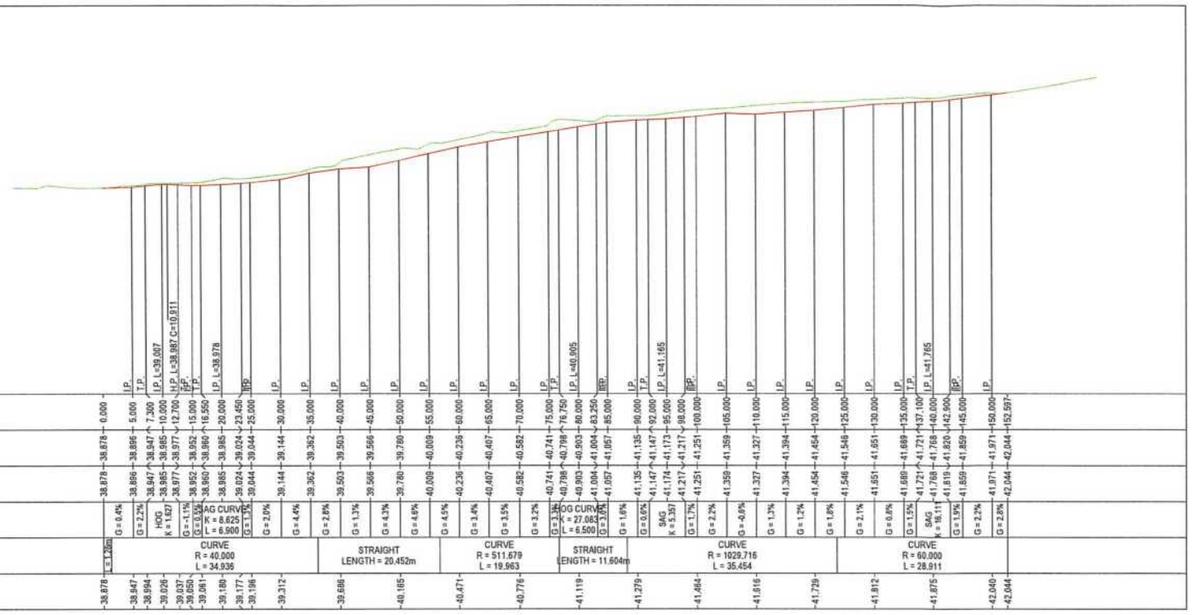
Drawing Title:
S278 LONG SECTIONS
SHEET 3

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

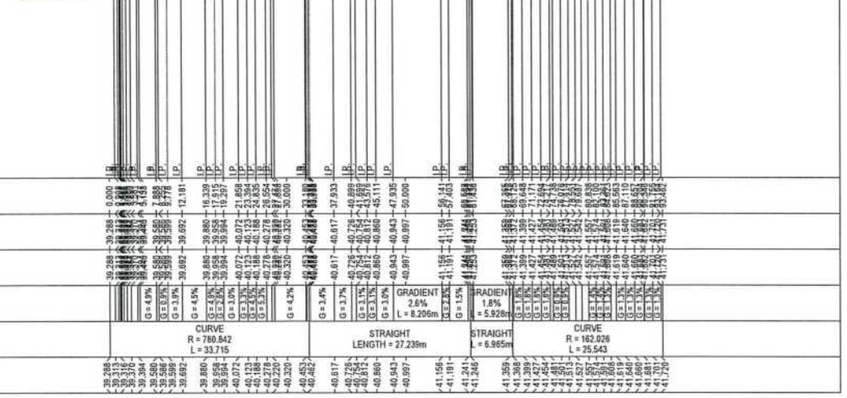
Scale:
Horizontal 1:500, Vertical 1:100

Project No.	Drawing No & Revision	Size
2107-592	211C	A1

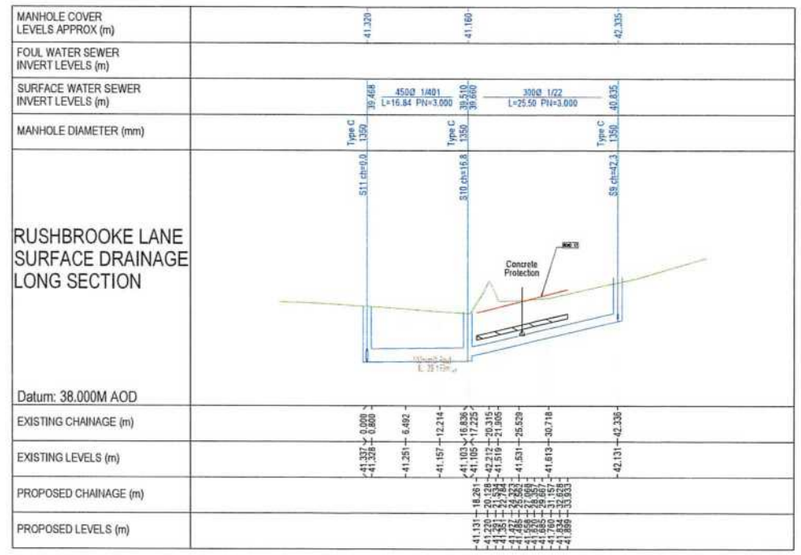
Rougham Road North (Roundabout Entry Widening)



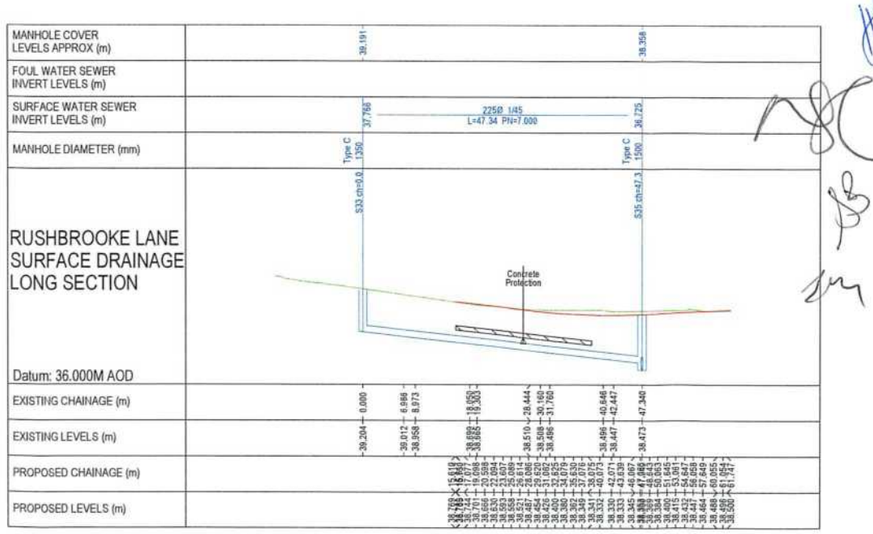
Rougham Road North (Roundabout Exit Widening)



RUSHBROOKE LANE SURFACE DRAINAGE LONG SECTION



RUSHBROOKE LANE SURFACE DRAINAGE LONG SECTION



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Rev.	Revision Notes	Dwn	Apvd	Date
A	ALIGNMENTS AND LEVELS AMENDED AS REQUIRED	JK	RGW	05.05.23

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PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 LONG SECTIONS
SHEET 4

Client:	Date:
DENBURY HOMES	OCT 2022

Drawn:	Designed:	Checked:	Approved:
JK	JK	RGW	RGW

Scale:
Horizontal 1:500, Vertical 1:100

Project No:	Drawing No & Revision:	Size:
2107-592	212A	A1

SITE CLEARANCE KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- CARRIAGEWAY TO BE REMOVED
- FOOTWAY/CYCLEWAY TO BE REMOVED
- GRASS VERGE /UNMADE GROUND TO BE REMOVED
- HEDGE/VEGATATION TO BE REMOVED
- 50mm SURFACE COURSE PLANE & INLAY
- SPLITTER ISLAND EXTENTS TO BE REMOVED
- EXISTING SURFACE WATER DRAINAGE TO BE REMOVED (FH, T, SW1, 225/FWS)
- REMOVE EXISTING KERB
- REMOVE EXISTING EDGING

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING BRICK SETTS AND EDGING WITHIN EXTENTS OF FOOTWAY TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING BOLLARD AND FOUNDATION TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

41m OF CRASH BARRIER TO REMAIN. (AWAITING CONFIRMATION FROM SCC ON WHETHER THIS CRASH BARRIER CAN BE FULLY REMOVED)

FIRST 29m OF CRASH BARRIER TO BE REMOVED, PRIOR TO NEW BUS STOP & MAINTENANCE PARKING BAY INSTALLATION.

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING 'DUAL CARRIAGEWAY AHEAD' SIGN, POST & FOUNDATION TO BE REMOVED

EXISTING ILLUMINATED ROAD SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO BACK OF WIDENED FOOTWAY. REFER TO SCC STREET LIGHTING DESIGN

ILLUMINATED BOLLARD TO BE REMOVED

INVESTIGATE AND ROTATE MANHOLE BISCUIT OUTSIDE OF PROPOSED KERB LINE

TRAFFIC SIGNAL TO BE RELOCATED BACK, OUTSIDE OF ROAD WIDENING EXTENTS

TRAFFIC SIGNAL LOOPS TO BE REPLACED

TACTILE PAVING TO BE REMOVED

EXISTING 'SHARED USE CYCLEWAY' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO BACK OF WIDENED CYCLEWAY

EXISTING 'MERGE IN TURN' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO BACK OF WIDENED CYCLEWAY

DENSE VEGETATION REMOVED TO PROVIDE 2m x 17m CYCLEWAY VISIBILITY SPLAY

EXISTING ILLUMINATED ROAD SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO BACK OF WIDENED FOOTWAY

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EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING LAMP C REFER TO SCC S

EXISTING LAMP COLUMN TO BE REM REFER TO SCC STREET LIGHTING DE

EXISTING EDGIN ALONG PROPOS

EXISTING 'ROUGHAM & FOUNDATION TO E

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FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

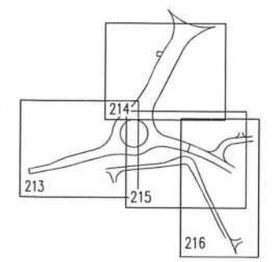
EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

REMOVAL OF EXISTING ROAD MARKINGS TO BE DONE SO BY METHODS TO THE SATISFACTION AND APPROVAL OF SUFFOLK COUNTY COUNCIL HIGHWAYS DEPT.

ALL VEGETATION AND CLEARANCE WORKS ARE TO BE IN ACCORDANCE WITH ECOLOGICAL AND ARBORICULTURAL REPORTS

CHECK ALL EXISTING ROAD SIGNS ARE SUITABLY SET BACK FROM ROAD EDGE AND/OR RAISED IN HEIGHT FOR PEDESTRIAN/CYCLIST MOVEMENTS.

ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.



Rev	Revision Notes	Dwn	Apvd	Date
D	VRS SPLAY CLEARANCE ADDED SOUTH OF BUS STOP. ROUGHAM ROAD WEST ENTRY SITE CLEARANCE EXTENTS AMENDED	JK	RGW	08.09.23
C	TRAFFIC SIGNALS AND CRASH BARRIER NOTES AMENDED	JK	RGW	24.07.23
B	ADDITIONAL SITE CLEARANCE EXTENTS ADDED FOLLOWING COMMENTS	LB	JK	20.05.23
A	ROUGHAM ROAD NORTH WIDENING EXTENTS & CYCLEWAY AMENDED	JK	RGW	23.10.22

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SITE CLEARANCE
SHEET 1

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	213D	A1

TREES TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING 'ROUNDABOUT DIRECTIONAL' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE BEHIND WIDENED CARRIAGEWAY/CYCLEWAY. LOCATION OF SIGN MAY REQUIRE ADJUSTING FOR INSTALLATION WITHIN VEGETATION, ROOTS AND BANK

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

TREE TO BE REMOVED

EXISTING 'HGV ROUTE' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE BEHIND WIDENED CARRIAGEWAY/CYCLEWAY. LOCATION OF SIGN MAY REQUIRE ADJUSTING FOR INSTALLATION WITHIN VEGETATION, ROOTS AND BANK

TACTILE PAVING TO BE REMOVED

TREE TO BE REMOVED

EXISTING BT CHAMBER TO BE RELOCATED OUT OF PROPOSED KERB LINE AND SET TO CYCLEWAY LEVELS. REFER TO UTILITY DIVERSION PLANS

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING BT CHAMBERS TO BE RELOCATED OUT OF PROPOSED KERB LINE AND SET TO CYCLEWAY LEVELS. REFER TO UTILITY DIVERSION PLANS

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING BRICK SETTS AND EDGING WITHIN EXTENTS OF FOOTWAY TO BE REMOVED

BEANY BLOCKS & SIDE ENTRY GULLY TO BE REMOVED. CONFIRMATION REQUIRED PRIOR TO REMOVAL THAT NO OTHER DRAINAGE IS CONNECTED TO THIS MANHOLE

EXISTING 'QUEUE IN BOTH LANES' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE BEHIND WIDENED CARRIAGEWAY

EXISTING 'BURY ST EDMUNDS' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE BEHIND WIDENED CARRIAGEWAY

EXISTING 'DUAL CARRIAGEWAY ENDS AHEAD' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE BEHIND WIDENED CARRIAGEWAY

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING 'ROUNDABOUT DIRECTIONAL & BROWN TOURIST' SIGNS, POSTS & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE BEHIND WIDENED CARRIAGEWAY

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING 'QUEUE IN BOTH LANES' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE BEHIND WIDENED CARRIAGEWAY

TACTILE PAVING TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING BT CHAMBER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS. REFER TO UTILITY DIVERSION PLANS

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING 'T JUNCTION AHEAD' SIGN, POST & FOUNDATION TO BE REMOVED

SITE CLEARANCE KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- CARRIAGEWAY TO BE REMOVED
- FOOTWAY/CYCLEWAY TO BE REMOVED
- GRASS VERGE /UNMADE GROUND TO BE REMOVED
- HEDGE/VEGATATION TO BE REMOVED
- 50mm SURFACE COURSE PLANE & INLAY
- SPLITTER ISLAND EXTENTS TO BE REMOVED
- EXISTING SURFACE WATER DRAINAGE TO BE REMOVED
- REMOVE EXISTING KERB
- REMOVE EXISTING EDGING

GENERAL

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.

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6. ALL WORKMANSHIP AND MATERIALS ARE TO BE TO CURRENT BRITISH STANDARDS.

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8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.

9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.

10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.

11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.

12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.

13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

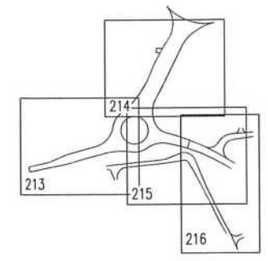
EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

REMOVAL OF EXISTING ROAD MARKINGS TO BE DONE SO BY METHODS TO THE SATISFACTION AND APPROVAL OF SUFFOLK COUNTY COUNCIL HIGHWAYS DEPT.

ALL VEGETATION AND CLEARANCE WORKS ARE TO BE IN ACCORDANCE WITH ECOLOGICAL AND ARBORICULTURAL REPORTS

CHECK ALL EXISTING ROAD SIGNS ARE SUITABLY SET BACK FROM ROAD EDGE AND/OR RAISED IN HEIGHT FOR PEDESTRIAN/CYCLIST MOVEMENTS.

ALL MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE REQUIREMENTS OF BS7903: 1997 BS EN 124 AND HA 104/09. FRAMES SHOULD BE 150MM DEEP.



Rev	Revision Notes	Dwn	Apvd	Date
D	REMOVAL OF DRAINAGE ON ROUNDABOUT ENTRY ADDED. SITE CLEARANCE EXTENTS AMENDED ON EASTERN SIDE OF ROAD. S278 BOUNDARY AMENDED	JK	RGW	08.09.23
C	ADDITIONAL SITE CLEARANCE EXTENTS ADDED FOLLOWING COMMENTS	LB	JK	03.05.23
B	ROUGHAM ROAD NORTH WIDENING EXTENTS & CYCLEWAY AMENDED	JK	RGW	25.10.22
A	SPLITTER ISLAND AMENDED. BT CHAMBERS DIVERSION TO NORTH REMOVED	JK	RGW	06.10.22

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PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SITE CLEARANCE
SHEET 2

Client:		Date:
DENBURY HOMES		AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW
Scale: 1:250		
Project No: 2107-592	Drawing No & Revision: 214D	Size: A1

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING 'T JUNCTION AHEAD' SIGN, POST & FOUNDATION TO BE REMOVED

BEANIE BLOCKS & SIDE ENTRY GULLY TO BE REMOVED AND REPLACED ALONG NEW KERB LINE

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING BT CHAMBER TO BE RELOCATED BACK FROM WIDENED CARRIAGEWAY CHANNEL. REFER TO UTILITY DIVERSION PLANS

BEANIE BLOCKS TO BE REMOVED AND REPLACED ALONG NEW KERB LINE

SERVICES TO BE RELOCATED BACK FROM WIDENED CARRIAGEWAY CHANNEL & COVER LEVELS ADJUST TO SUIT NEW CYCLEWAY. REFER TO UTILITY DIVERSION PLANS

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN. SIGN PLATES TO BE REPLACED

EXISTING 'NO THROUGH ROAD' SIGN, POST & FOUNDATION TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING ROAD GULLYS TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN. ADJOINED 'WEIGHT LIMIT' SIGN, POST AND FOUNDATIONS TO BE REMOVED

EXISTING UTILITY CABINET TO BE RELOCATED BEHIND PROPOSED CYCLEWAY. REFER TO UTILITY DIVERSION PLANS

EXISTING ROAD GULLYS TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING 'RUSHBROOKE & OAKLANDS BUSINESS PARK' SIGNS, POSTS & FOUNDATION TO BE REMOVED

EXISTING TELEGRAPH POLE AND OVERHEADS TO BE DIVERTED. REFER TO UTILITY DIVERSION PLANS

EXISTING LAMP COLUMN TO BE REMOVED/REL
REFER TO SCC STREET LIGHTING DESIGN

ROTATE MANHOLE BISCUIT
OSED KERB LINE

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING 'RUSHBROOKE LANE' SIGN, POSTS & FOUNDATION TO BE REMOVED

EXISTING TELECOMS CABINET TO BE REMOVED. REFER TO UTILITY DIVERSION PLANS

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING UTILITIES TO BE RELOCATED AWAY FROM PROPOSED CARRIAGEWAY. REFER TO UTILITY DIVERSION PLANS

TACTILE PAVING TO BE REMOVED

EXISTING GULLY TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING EDGING TO BE REMOVED ALONG PROPOSED FOOTPATH WIDENING

EXISTING 'ROUNDABOUT DIRECTIONAL' SIGN, POSTS & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE BEHIND WIDENED CYCLEWAY

TREE TO BE REMOVED

S278 BOUNDARY

EXISTING 'ROUGHAM HILL' SIGN, POST & FOUNDATION TO BE REMOVED

EXISTING UTILITY CHAMBER TO BE RAISED TO NEW CARRIAGEWAY LEVELS OR RELOCATED. REFER TO UTILITY DIVERSION PLANS

EXISTING 'CYCLE ROUTE' SIGN TO BE RELOCATED BACK WITHIN CYCLEPATH

EXISTING UTILITY CHAMBER TO BE RAISED TO NEW FOOTWAY LEVELS OR RELOCATED. REFER TO UTILITY DIVERSION PLANS

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING GULLY TO BE REMOVED

EXISTING TREES TO BE REMOVED TO ACCOMMODATE CARRIAGEWAY WIDENING & NEW FOOTWAY LINK

EXISTING GULLYS TO BE REMOVED

EXISTING 'SINGLE TRACK' ROAD SIGN TO BE REMOVED

ILLUMINATED 'JUNCTION AHEAD' ROAD SIGN TO BE REMOVED

N

SITE CLEARANCE KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- CARRIAGEWAY TO BE REMOVED
- FOOTWAY/CYCLEWAY TO BE REMOVED
- GRASS VERGE /UNMADE GROUND TO BE REMOVED
- HEDGE/VEGATATION TO BE REMOVED
- 50mm SURFACE COURSE PLANE & INLAY
- SPLITTER ISLAND EXTENTS TO BE REMOVED
- EXISTING SURFACE WATER DRAINAGE TO BE REMOVED
- REMOVE EXISTING KERB
- REMOVE EXISTING EDGING

GENERAL

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9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.

10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.

11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.

12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.

13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

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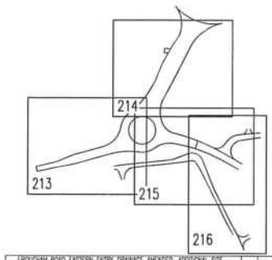

Rev	Revision Notes	Dwn	Apvd	Date
E	ROUGHAM ROAD EASTERN ENTRY DRAINAGE AMENDED, ADDITIONAL SITE CLEARANCE AREAS ADDED, S278 BOUNDARY AMENDED	JK	RGW	08.09.23
D	ADDITIONAL SITE CLEARANCE ADDED FOR WIDENED FOOTWAY ON ROUGHAM HILL	JK	RGW	08.08.23
C	ADDITIONAL SITE CLEARANCE EXTENTS ADDED FOLLOWING COMMENTS	LB	JK	05.05.23
B	ADDITIONAL EXTENTS ADDED FOR REMOVAL, S278 BOUNDARY AMENDED	JK	RGW	25.10.22
A	SURFACE WATER DRAINAGE TO BE REMOVED ADDED	JK	RGW	06.10.22

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smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SITE CLEARANCE
SHEET 3

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	215E	A1

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING BT CHAMBER TO BE RELOCATED BACK FROM WIDENED CARRIAGEWAY CHANNEL. REFER TO UTILITY DIVERSION PLANS

SERVICES TO BE RELOCATED BACK FROM WIDENED CARRIAGEWAY CHANNEL & COVER LEVELS ADJUST TO SUIT NEW CYCLEWAY. REFER TO UTILITY DIVERSION PLANS

EXISTING 'NO THROUGH ROAD' SIGN, POST & FOUNDATION TO BE REMOVED

EXISTING ROAD GULLYS TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN. ADJOINED 'WEIGHT LIMIT' SIGN, POST AND FOUNDATIONS TO BE REMOVED

GULLYS TO BE

ANDS &

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING TELEGRAPH POLE AND OVERHEADS TO BE DIVERTED. REFER TO UTILITY DIVERSION PLANS

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EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

TREE TO BE REMOVED

EXISTING UTILITY CHAMBER TO BE RAISED TO NEW CARRIAGEWAY LEVELS OR RELOCATED. REFER TO UTILITY DIVERSION PLANS

EXISTING GULLYS TO BE REMOVED

EXISTING TREES TO BE REMOVED TO ACCOMMODATE CARRIAGEWAY WIDENING & NEW FOOTWAY LINK

EXISTING 'SINGLE TRACK' ROAD SIGN TO BE REMOVED

ILLUMINATED 'JUNCTION AHEAD' ROAD SIGN TO BE REMOVED

30mph REPEATER SIGN TO REMAIN

LP1 LP2 LP3 LP4 LP5 LP22 LP23 LP24

S278 BOUNDARY

REFER TO 2107-592-250

N

GENERAL

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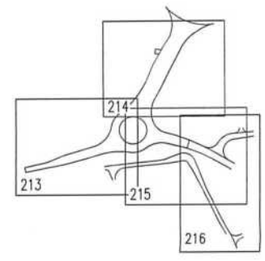
SITE CLEARANCE KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- CARRIAGEWAY TO BE REMOVED
- FOOTWAY/CYCLEWAY TO BE REMOVED
- GRASS VERGE /UNMADE GROUND TO BE REMOVED
- HEDGE/VEGATATION TO BE REMOVED
- 50mm SURFACE COURSE PLANE & INLAY
- SPLITTER ISLAND EXTENTS TO BE REMOVED
- EXISTING SURFACE WATER DRAINAGE TO BE REMOVED
- REMOVE EXISTING KERB
- REMOVE EXISTING EDGING



Rev	Revision Notes	Dwn	Apvd	Date
D	ADDITIONAL SITE CLEARANCE ADDED FOR WIDENED FOOTWAY ON ROUGHAM HILL	JK	RGW	08.08.23
C	ADDITIONAL SITE CLEARANCE EXTENTS ADDED FOLLOWING COMMENTS	LB	JK	05.05.23
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A	SURFACE WATER DRAINAGE TO BE REMOVED ADDED	JK	RGW	06.10.22

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PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SITE CLEARANCE
SHEET 4

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	216D	A1

KERB KEY

HB2 KERB (125mm)	
HB2 KERB (100mm)	
BULLNOSE KERB	
TRANSITION KERB	
CONCRETE EDGING	
SPLAYED KERB (125mm)	
BUS STOP (REFER TO CONSTRUCTION DETAILS)	
BEANIE BLOCKS	

GENERAL

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10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.

FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

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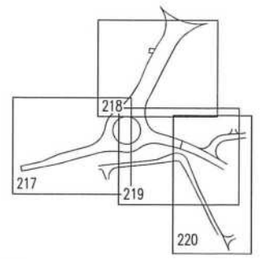

Rev	Revision Notes	Dwn	Apvd	Date
E	ROUGHAM ROAD WESTERN ENTRY WIDENING AMENDED	JK	RGW	11.09.23
D	GRASSCRETE MAINTENANCE PARKING AREA ADDED	JK	RGW	08.08.23
C	BUS STOP ADDED	LB	JK	05.05.23
B	ROUGHAM ROAD NORTH WIDENING EXTENTS AMENDED	JK	RGW	24.10.22
A	ROUGHAM ROAD NORTH CYCLEWAY WIDENED	JK	RGW	06.10.22

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 KERB LAYOUT
SHEET 1

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JS	Designed: JK	Checked: JK	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	217E	A1

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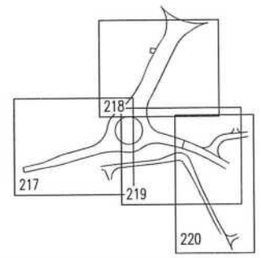
KERB KEY

HB2 KERB (125mm)	
HB2 KERB (100mm)	
BULLNOSE KERB	
TRANSITION KERB	
CONCRETE EDGING	
SPLAYED KERB (125mm)	
BUS STOP (REFER TO CONSTRUCTION DETAILS)	
BEANIE BLOCKS	



Rev	Revision Notes	Dwn	Apvd	Date
D	ROUGHAM ROAD NORTH ROUNDABOUT ENTRY FOOTWAY EXTENTS AMENDED. CONTROLLED CROSSING RELOCATED.	JK	RGW	11.09.23
C	ROUGHAM ROAD NORTH WIDENING AMENDED. BEANIE BLOCKS ADDED.	LB	JK	05.05.23
B	ROUGHAM ROAD NORTH WIDENING AMENDED. TACTILE PAVING ADDED.	JK	RGW	24.10.22
A	NORTH WESTERN CYCLEWAY AND CHANNEL AMENDED. SPLITTER ISLAND EXTENTS ADJUSTED.	JK	RGW	06.10.22

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PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 KERB LAYOUT
SHEET 2

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JS	Designed: JK	Checked: JK	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	218D	A1

S278 BOUNDARY

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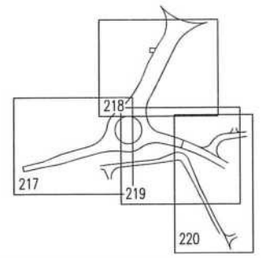
HB2 KERB (100mm)	
BULLNOSE KERB	
TRANSITION KERB	
CONCRETE EDGING	
SPLAYED KERB (125mm)	
BUS STOP (REFER TO CONSTRUCTION DETAILS)	
BEANIE BLOCKS	



Rev	Revision Notes	Dwn	Apvd	Date
D	ROUGHAM HILL CROSSING RELOCATED. ROUGHAM ROAD ROUNDABOUT ENERY FOOTWAY EXTENDS REVISED	JK	RGW	11.09.23
C	ROUGHAM HILL FOOTWAY WIDENED TO 3M CYCLEWAY (NORTHERN)	JK	RGW	08.08.23
B	SPINE ROAD ALIGNMENT AMENDED. BEANIE BLOCKS ADDED	LB	JK	05.05.23
A	S278 BOUNDARY AMENDED, SPINE ROAD CYCLEWAY TAPER AMENDED, TACTILE PAVING ADDED	JK	RGW	24.10.22

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PRELIMINARY

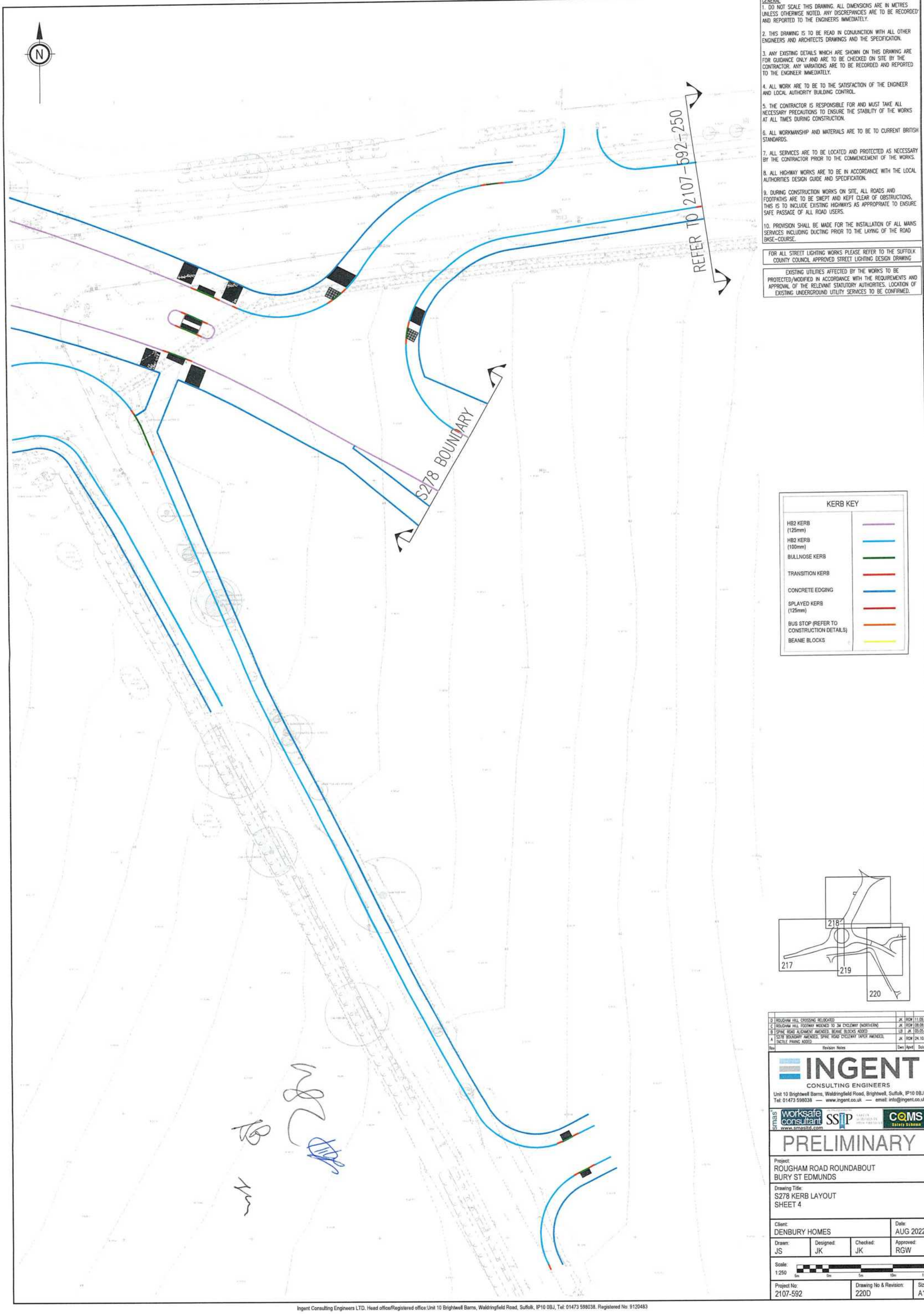
Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 KERB LAYOUT
SHEET 3

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JS	Designed: JK	Checked: JK	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	219D	A1



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KERB KEY

HB2 KERB (125mm)	
HB2 KERB (100mm)	
BULLNOSE KERB	
TRANSITION KERB	
CONCRETE EDGING	
SPLAYED KERB (125mm)	
BUS STOP (REFER TO CONSTRUCTION DETAILS)	
BEANIE BLOCKS	

Rev	Revision Notes	Dwn	Apvd	Date
D	ROUGHAM HILL CROSSING RELOCATED	JK	RGW	11.09.23
C	ROUGHAM HILL FOOTWAY WIDENED TO 3M CYCLEWAY (NORTHERN)	JK	RGW	08.08.23
B	SPINE ROAD ALIGNMENT AMENDED, BEANIE BLOCKS ADDED	LB	JK	05.05.23
A	S278 BOUNDARY AMENDED, SPINE ROAD CYCLEWAY TAPER AMENDED, TACTILE PAVING ADDED	JK	RGW	24.10.22

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PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 KERB LAYOUT
SHEET 4

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JS	Designed: JK	Checked: JK	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	220D	A1

MARKING QUANTITIES

TSR&GD DIAGRAM NO	UNIT
1001 (300MM WIDE)	M
1003 (200MM WIDE)	M
1003 (300 X 150) (100MM WIDE)	M
1004 (0MM WIDE)	M
1004 (100MM WIDE)	M
1005 (100MM WIDE)	M
1009 (100MM WIDE)	M
1012.1 (150MM WIDE)	M
1014 LEFT (4.5M LONG)	ITEM
1014 LEFT (6M LONG)	ITEM
1023 (3750MM LONG)	ITEM
1025 (100MM WIDE)	M
1038 AHEAD & LEFT (4M LONG)	ITEM
1038 AHEAD & RIGHT (4M LONG)	ITEM
1038 AHEAD (4M LONG)	ITEM
1038 LEFT (4M LONG)	ITEM
1038 RIGHT (4M LONG)	ITEM
1039 LEFT (8M LONG)	ITEM
1039 RIGHT (8M LONG)	ITEM
1040	SQ.M
1040.4	SQ.M
1041	SQ.M
BUS STOP CLEARWAY LINE (200MM WIDE)	M
PEDESTRIAN CROSSING STUD	ITEM
YELLOW TEXT (1600MM HIGH)	ITEM
ZIG-ZAG	ITEM
ZIG-ZAG END MARK	ITEM

DRAWING KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- SIGN REF 956
- SIGN REF 965
- KEEP LEFT BOLLARD (NON ILLUMINATED)
- S278 LIGHTING COLUMN — LC0
- SIGN DESIGN REFERENCE (SEE CONSTRUCTION DETAILS) — A

EXISTING DIRECTIONAL SIGN PLATE, POST AND FOUNDATIONS TO BE REMOVED AND REPLACED WITHIN NEW ISLAND EXTENTS

1001 Continuous line 300 wide

1041 150 width, 3000 spacing

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

1004 4000 mark, 2000 gap 100 wide

LP13

LC1158

1038

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

1004 4000 mark, 2000 gap 100 wide

1001 Continuous line 300 wide

1038

1005 1000 mark, 5000 gap 100 wide

LC1156

LP12

1.5m

1001 Continuous line 300 wide

EXISTING LAMP COLUMN TO BE REFER TO SCC STREET LIGHTING DE

EXISTING LAMP C REFER TO SCC S

EXISTING LAMP PLATES TO BE

1000 ma 10

1038

EXISTING DIRECTIONAL SIGN PLATE TO BE REPLACED – KEEPING EXISTING ILLUMINATED POSTS IF POSSIBLE.

41m OF CRASH BARRIER TO REMAIN. (AWAITING CONFIRMATION FROM SCC ON WHETHER THIS CRASH BARRIER CAN BE FULLY REMOVED)

FIRST 29m OF CRASH BARRIER TO BE REMOVED, PRIOR TO NEW BUS STOP & MAINTENANCE PARKING BAY INSTALLATION.

EXISTING DUAL CARRIAGEWAY AHEAD SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO VERGE FURTHER EAST BEYOND MAINTENANCE PARKING AREA (REF L)

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING ILLUMINATED ROAD SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO BACK OF WIDENED FOOTWAY (REF K). REFER TO SCC STREET LIGHTING DESIGN

1025.1

1004 4000 mark, 2000 gap 100 wide

LP11

LC1149

1.5m

K

LC1148

BUS STOP

BUS STOP

J

H

1040 150 width, 3000 spacing

LP9

LP8

1040 150 width, 3000 spacing

1004 4000 mark, 2000 gap 100 wide

ZigZags Continuous line 100 wide

LC1144

LC1145

LC1146

LC1147

EXISTING TRAFFIC SIGNAL (TOUCAN CROSSING) TO BE RELOCATED BACK, OUTSIDE OF ROAD WIDENING EXTENTS

ZigZags Continuous line 100 wide

Bus stop cage

1014

LP10

1025

Bus stop edge

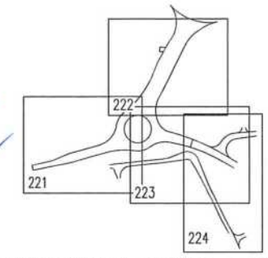
EXISTING 'SHARED USE CYCLEWAY' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO BACK OF WIDENED CYCLEWAY

EXISTING 'MERGE IN TURN' SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO BACK OF WIDENED CYCLEWAY

EXISTING ILLUMINATED ROAD SIGN, POST & FOUNDATION TO BE REMOVED & RELOCATED TO BACK OF WIDENED FOOTWAY

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN



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11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.
12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.
13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

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REMOVAL OF EXISTING ROAD MARKINGS TO BE DONE SO BY METHODS TO THE SATISFACTION AND APPROVAL OF SUFFOLK COUNTY COUNCIL HIGHWAYS DEPT.

ALL VEGETATION AND CLEARANCE WORKS ARE TO BE IN ACCORDANCE WITH ECOLOGICAL AND ARBORICULTURAL REPORTS

CHECK ALL EXISTING ROAD SIGNS ARE SUITABLY SET BACK FROM ROAD EDGE AND/OR RAISED IN HEIGHT FOR PEDESTRIAN/CYCLIST MOVEMENTS.

Rev.	Revision Notes	Dwn	Apvd	Date
E	VARIOUS SIGNS RELOCATED, ROAD WARNINGS REVISED FROM RSA 2	JK	RGW	08.11.23
D	ROAD WARNINGS REVISED, SIGN REFERENCES ADDED	JK	RGW	12.09.23
C	TOUCAN CROSSING SIGNALS NOTED FOR RELOCATION, NOTES ADDED FOR CRASH BARRIER ON WESTERN APPROACH TO ROUNDABOUT	JK	RGW	24.07.23
B	BUS STOP ADDED	LB	JK	05.05.23
A	SIGNAGE NOTES ADDED, CYCLEWAY SIGNS ADDED, BOUNDARY AMENDED	JK	RGW	26.10.22

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smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

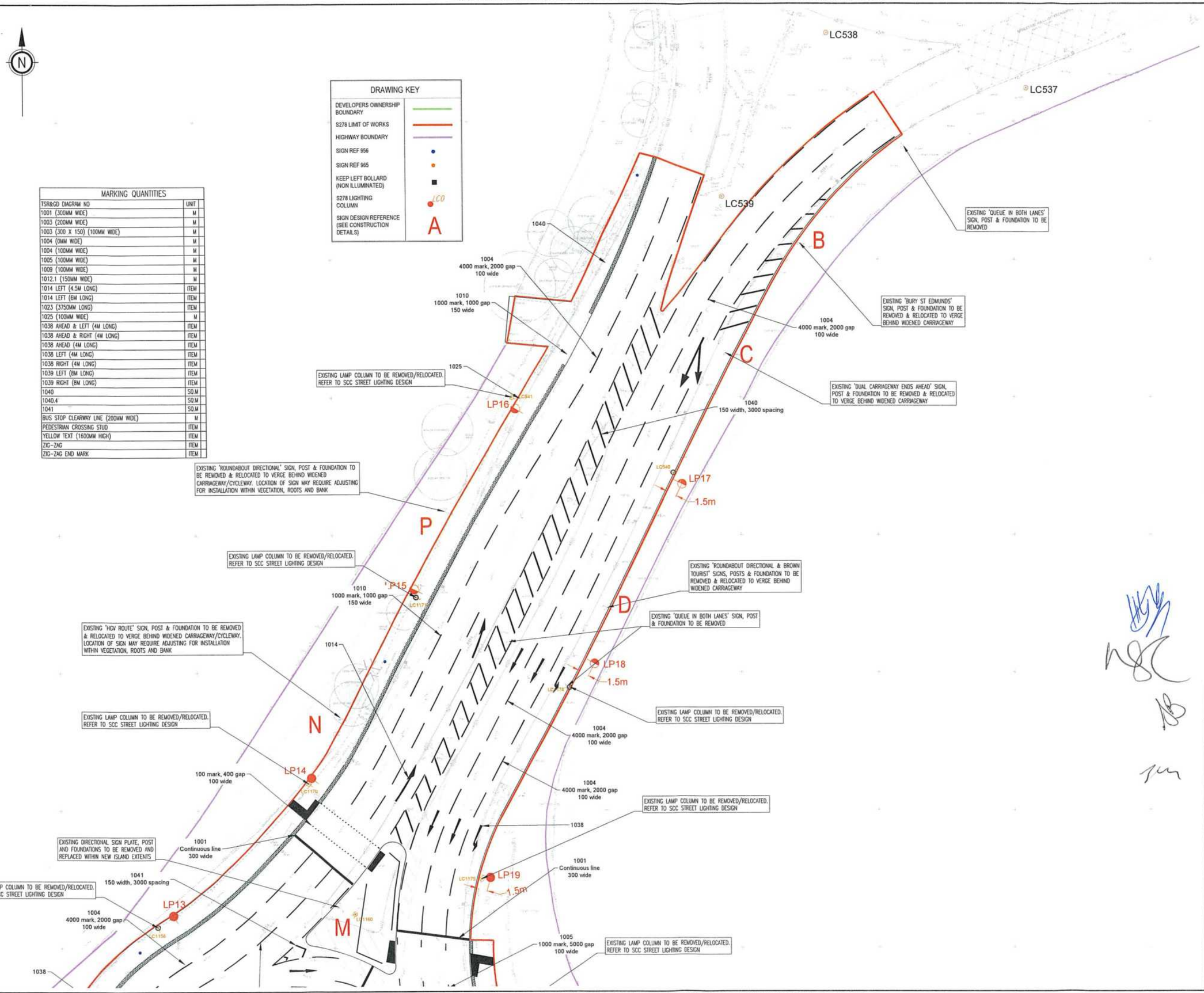
Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SIGNS & LINES
SHEET 1

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	221E	A1



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13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

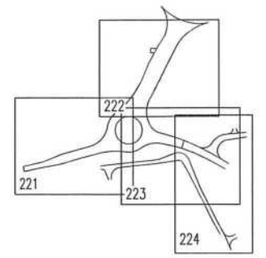
FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

REMOVAL OF EXISTING ROAD MARKINGS TO BE DONE SO BY METHODS TO THE SATISFACTION AND APPROVAL OF SUFFOLK COUNTY COUNCIL HIGHWAYS DEPT.

ALL VEGETATION AND CLEARANCE WORKS ARE TO BE IN ACCORDANCE WITH ECOLOGICAL AND ARBORICULTURAL REPORTS

CHECK ALL EXISTING ROAD SIGNS ARE SUITABLY SET BACK FROM ROAD EDGE AND/OR RAISED IN HEIGHT FOR PEDESTRIAN/CYCLIST MOVEMENTS.



Rev	Revision Notes	Dwn	Apvd	Date
D	QUEUE IN BOTH LANE SIGNS REMOVED, ROAD MARKINGS REVISED FROM RSA 2, STREET LIGHTING REVISED	JK	RGW	08.11.23
C	ROAD MARKINGS REVISED, SIGN REFERENCES ADDED	JK	RGW	12.09.23
B	BUS STOP REMOVED	LB	JK	05.05.23
A	SIGNAGE NOTES ADDED, CYCLEWAY SIGNS ADDED, BOUNDARY AMENDED	JK	RGW	26.10.22

INGENT
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Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SIGNS & LINES
SHEET 2

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	222D	A1

DRAWING KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- SIGN REF 956
- SIGN REF 965
- KEEP LEFT BOLLARD (NON ILLUMINATED)
- S278 LIGHTING COLUMN — LC0
- SIGN DESIGN REFERENCE (SEE CONSTRUCTION DETAILS) — A

GENERAL

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.

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4. ALL WORK ARE TO BE TO THE SATISFACTION OF THE ENGINEER AND LOCAL AUTHORITY BUILDING CONTROL.

5. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE STABILITY OF THE WORKS AT ALL TIMES DURING CONSTRUCTION.

6. ALL WORKMANSHIP AND MATERIALS ARE TO BE TO CURRENT BRITISH STANDARDS.

7. ALL SERVICES ARE TO BE LOCATED AND PROTECTED AS NECESSARY BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE WORKS.

8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.

9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.

10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE–COURSE.

11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH "THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS" 2016.

12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.

13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH "SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

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EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

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CHECK ALL EXISTING ROAD SIGNS ARE SUITABLY SET BACK FROM ROAD EDGE AND/OR RAISED IN HEIGHT FOR PEDESTRIAN/CYCLIST MOVEMENTS.

MARKING QUANTITIES

TSR&GD DIAGRAM NO	UNIT
1001 (300MM WIDE)	M
1003 (200MM WIDE)	M
1003 (300 X 150) (100MM WIDE)	M
1004 (0MM WIDE)	M
1004 (100MM WIDE)	M
1005 (100MM WIDE)	M
1009 (100MM WIDE)	M
1012.1 (150MM WIDE)	M
1014 LEFT (4.5M LONG)	ITEM
1014 LEFT (6M LONG)	ITEM
1023 (3750MM LONG)	ITEM
1025 (100MM WIDE)	M
1038 AHEAD & LEFT (4M LONG)	ITEM
1038 AHEAD & RIGHT (4M LONG)	ITEM
1038 AHEAD (4M LONG)	ITEM
1038 LEFT (4M LONG)	ITEM
1038 RIGHT (4M LONG)	ITEM
1039 LEFT (8M LONG)	ITEM
1039 RIGHT (8M LONG)	ITEM
1040	SQ.M
1040.4	SQ.M
1041	SQ.M
BUS STOP CLEARWAY LINE (200MM WIDE)	M
PEDESTRIAN CROSSING STUD	ITEM
YELLOW TEXT (1600MM HIGH)	ITEM
ZIG-ZAG	ITEM
ZIG-ZAG END MARK	ITEM

Rev	Revision Notes	Dwn	Apvd	Date
I	STREET LIGHTING REVISED. SIGN A AND F RELOCATED. NO THROUGH ROAD SIGN ADDED TO ROUGHAM HILL JUNCTION.	JK	RGW	26.10.23
D	ROAD MARKINGS REVISED. SIGN REFERENCES ADDED	JK	RGW	12.09.23
C	KEEP LEFT BOLLARDS ADDED TO REFUGE ISLAND	JK	RGW	08.08.23
B	SPINE ROAD MARKINGS AMENDED	JK	RGW	05.05.23
A	SIGNAGE NOTES ADDED, CYCLEWAY SIGNS ADDED, BOUNDARY AMENDED	JK	RGW	26.10.22

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SIGNS & LINES
SHEET 3

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	223E	A1

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN. ADJOINED 'WEIGHT LIMIT' SIGN, POST AND FOUNDATIONS TO BE REMOVED

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

EXISTING LAMP COLUMN TO BE REMOVED/RELOCATED. REFER TO SCC STREET LIGHTING DESIGN

NO THROUGH ROAD SIGN PLATE TO BE ATTACHED TO NEW LAMP COLUMN – REFER TO SIGN DESIGNS, SHEET 4

30mph REPEATER SIGN TO REMAIN

1004 4000 mark, 2000 gap 100 wide

1040 150 width, 3000 spacing

1009 600 mark, 300 gap 100 wide

1012.1 Continuous line 150 wide

1040 width, 3000 spacing

1003 600 mark, 300 gap 200 wide

1038

1003 (Cycle) 300 mark, 150 gap 100 wide

1023

LP1 LP2 LP3 LP4 LP5 LP22 LP23 LP24 LP25 LP27 LP28 LP29 LP30 LP31

A R

LC1180 LC1201 LC1202 LC1203

S278 BOUNDARY

REFER TO 2107-592-250

DRAWING KEY

- DEVELOPERS OWNERSHIP BOUNDARY
- S278 LIMIT OF WORKS
- HIGHWAY BOUNDARY
- SIGN REF 956
- SIGN REF 985
- KEEP LEFT BOLLARD (NON ILLUMINATED)
- S278 LIGHTING COLUMN (LC0)
- SIGN DESIGN REFERENCE (SEE CONSTRUCTION DETAILS) (A)

GENERAL

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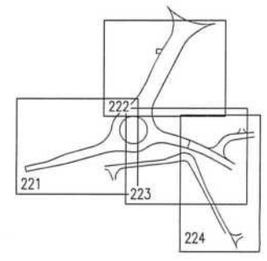
PEDESTRIAN CROSSING STUD	ITEM
YELLOW TEXT (1600MM HIGH)	ITEM
ZIG–ZAG	ITEM
ZIG–ZAG END MARK	ITEM



Rev	Revision Notes	Dwn	Apvd	Date
E	STREET LIGHTING REVISED. SIGN A RELOCATED. NO THROUGH ROAD SIGN ADDED TO ROUGHAM HILL JUNCTION	JK	RGW	08.11.23
D	ROAD MARKINGS REVISED, SIGN REFERENCES ADDED	JK	RGW	12.09.23
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A	SIGNAGE NOTES ADDED, CYCLEWAY SIGNS ADDED, BOUNDARY AMENDED	JK	RGW	26.10.22

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 SIGNS & LINES
SHEET 4

Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	224E	A1

N

SECTION 278 DRAINAGE KEY

HIGHWAYS DRAINAGE - BLUE	PN 1.001 225/187
S104 ADOPTABLE FOUL WATER - BROWN	PN 1.001 150/150
S104 ADOPTABLE SURFACE WATER - BLACK	PN 1.001 225/187
S104 ADOPTABLE FOUL WATER - BLACK	PN 1.001 150/150
EXISTING SURFACE WATER - GREY	
EXISTING FOUL WATER - GREY	

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

EXISTING GULLY TO REMAIN

EXISTING GULLY TO REMAIN

OFFSET FROM TRANSMISSION TOWER TO BE CONFIRMED BY UKPN BEFORE COMMENCEMENT OF UPSTREAM WORKS.

DOWNSTREAM DEFENDER TO BE INSTALLED WHERE EXISTING SURFACE WATER NETWORKS COMBINE. TO BE LOCATED AWAY FROM BT SERVICES, WHILE RELOCATING PROPOSED RISING MAIN IF REQUIRED. NEW ROUTE MAY BE REQUIRED IN ORDER TO AVOID BT, SUBJECT TO SPECIFICATION (TO FOLLOW).

RISING MAIN TO BE ROUTED AND CONSTRUCTED UNDER THE RIVER LARK. ADDITIONAL SURVEY REQUIRED TO FINALISE RISING MAIN DESIGN WHICH IS LIKELY TO REQUIRE ADDITIONAL WASHOUT AND/OR AIR RELEASE CHAMBERS.

FUTURE RISING MAIN SUBJECT TO A SECTION 98 AGREEMENT WITH WATER AUTHORITY.

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING GULLY TO BE RELOCATED TO NEW C EXISTING CONNECTION

F18
CL.34.810
IL.32.619

PN.4.003
150/149

F19
CL.34.580
IL.32.493

PN.4.004
150/149

T OUTFALL 2
CL.34.770
IL.32.335(150)
IL.32.260(225)

PN.4.005
150/149

GENERAL

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FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

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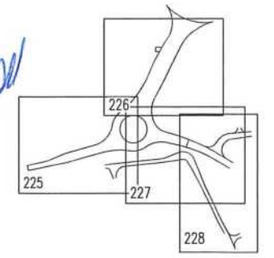

Rev	Revision Notes	Dwn	Apvd	Date

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

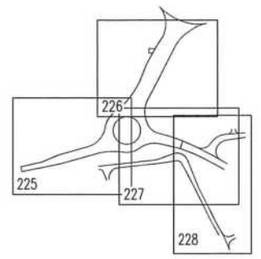
Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 DRAINAGE LAYOUT
SHEET 1

Client:			Date:
DENBURY HOMES			MAY 2023
Drawn: LB	Designed: JK	Checked: JK	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	225	A1



EXISTING HIGHWAY SURFACE WATER DRAINAGE PLOTTED FROM RIGOUR SURVEY RECORDS. ALL ROUTES AND LEVELS TO BE CONFIRMED PRIOR TO INSTALLING UPSTREAM CONNECTIONS

EXISTING SURFACE WATER DRAINAGE NOT DETERMINED. CONNECTION TO BE MAINTAINED IF POSSIBLE FOLLOWING ON SITE INVESTIGATION. ENGINEER TO BE CONTACTED IF NO CONNECTIONS CAN BE DETERMINED.

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

INVERT LEVEL OF EXISTING CATCHPIT TO BE DETERMINE PRIOR TO INSTALLATION OF 2 X CATCHPITS SHOWN. ENGINEER TO BE PROVIDED WITH EXISTING INVERT LEVELS AND PROVIDE FURTHER DESIGN ON NEW CATCPITS AND SURFACE WATER SEWER.

EXISTING MANHOLE TO BE REMOVED AND REPLACED AS SHOWN

EXISTING MANHOLE LEVEL ADJUSTED TO TO NEW CARRIAGEWAY

EXISTING DRAINAGE TO BE CONCRETE FILLED

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, CONNECTING TO NEW SURFACE WATER SEWER AS SHOWN

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, CONNECTING TO NEW SURFACE WATER SEWER AS SHOWN

INVERT LEVEL OF EXISTING CATCHPIT TO BE DETERMINE PRIOR TO INSTALLATION OF 2 X CATCHPITS SHOWN. ENGINEER TO BE PROVIDED WITH EXISTING INVERT LEVELS AND PROVIDE FURTHER DESIGN ON NEW CATCPITS AND SURFACE WATER SEWER.

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING MANHOLE TO BE REMOVED AND REPLACED AS SHOWN

BEANIE BLOCKS & SIDE ENTRY GULLY TO BE REMOVED AND REPLACED ALONG NEW KERB LINE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

EXISTING GULLY TO REMAIN

EXISTING MANHOLE TO BE RELOCATED BACK FROM NEW KERB LINE & COVER LEVEL ADJUSTED TO NEW CYCLEWAY

SECTION 278 DRAINAGE KEY

HIGHWAYS DRAINAGE - BLUE	PN 1.001 225/167 ► ◌
S104 ADOPTABLE FOUL WATER - BROWN	► ●
S104 ADOPTABLE SURFACE WATER - BLACK	PN 1.001 225/167 ► ◌
S104 ADOPTABLE FOUL WATER - BLACK	PN 1.001 150/150 ► ●
EXISTING SURFACE WATER - GREY	► ◌
EXISTING FOUL WATER - GREY	► ●

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smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 DRAINAGE LAYOUT
SHEET 2

Client:			Date:
DENBURY HOMES			MAY 2023
Drawn: LB	Designed: JK	Checked: JK	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	226	A1

EXISTING MANHOLE TO BE RELOCATED BACK FROM NEW KERB LINE & COVER LEVEL ADJUSTED TO NEW CYCLEWAY

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

EXISTING GULLY TO REMAIN

BEANIE BLOCKS & SIDE ENTRY GULLY TO BE REMOVED AND REPLACED ALONG NEW KERB LINE

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS AND REPLACED WITH D400 COVER & FRAME

EXISTING MANHOLE COVERS TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING CARRIAGEWAY TO BE REMOVED AND REINSTATED WITH VERGE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING CARRIAGEWAY AND FOOTWAY TO BE REMOVED AND REINSTATED WITH VERGE

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

EXISTING MANHOLE COVERS TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS

FOUL MANHOLE TO BE CONSTRUCTED OVER EXISTING FOUL SEWER. LEVELS AND DIAMETER ARE ASSUMED FROM SURVEY. EXACT POSITION, INVERT LEVEL AND DIA TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION OF UPSTREAM NETWORK, ANY DISCREPANCIES SHOULD BE REPORTED TO ENGINEER.

PROPOSED GULLY TO USE EXISTING CONNECTION

GULLY COVER & FRAME TO BE ADJUSTED TO NEW CARRIAGEWAY CHANNEL

S278 BOUNDARY

N

SECTION 278 DRAINAGE KEY

HIGHWAYS DRAINAGE - BLUE	PN 1.003 225/187
S104 ADOPTABLE FOUL WATER - BROWN	PN 1.001 150/150
S104 ADOPTABLE SURFACE WATER - BLACK	PN 1.001 225/187
S104 ADOPTABLE FOUL WATER - BLACK	PN 1.001 150/150
EXISTING SURFACE WATER - GREY	
EXISTING FOUL WATER - GREY	

GENERAL

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.

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4. ALL WORK ARE TO BE TO THE SATISFACTION OF THE ENGINEER AND LOCAL AUTHORITY BUILDING CONTROL.

5. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE STABILITY OF THE WORKS AT ALL TIMES DURING CONSTRUCTION.

6. ALL WORKMANSHIP AND MATERIALS ARE TO BE TO CURRENT BRITISH STANDARDS.

7. ALL SERVICES ARE TO BE LOCATED AND PROTECTED AS NECESSARY BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE WORKS.

8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.

9. DURING CONSTRUCTION WORKS ON SITE, ALL ROADS AND FOOTPATHS ARE TO BE SWEPT AND KEPT CLEAR OF OBSTRUCTIONS, THIS IS TO INCLUDE EXISTING HIGHWAYS AS APPROPRIATE TO ENSURE SAFE PASSAGE OF ALL ROAD USERS.

10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.

FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING

EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

226 225 227 228

Rev	Revision Notes	Dwn	Apvd	Date

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 DRAINAGE LAYOUT
SHEET 3

Client:			Date:
DENBURY HOMES			MAY 2023
Drawn: LB	Designed: JK	Checked: JK	Approved: RGW

Scale: 1:250 (5m 0m 5m 10m 15m)

Project No:	Drawing No & Revision:	Size:
2107-592	227	A1

MANHOLE COVER TO BE ADJUSTED CARRIAGEWAY LEVELS AND) WITH D400 COVER & FRAME

EXISTING MANHOLE COVERS TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING CARRIAGEWAY TO BE REMOVED AND REINSTATED WITH VERGE

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

EXISTING MANHOLE COVER TO BE ADJUSTED TO NEW CYCLEWAY LEVELS

FOUL MANHOLE TO BE CONSTRUCTED OVER EXISTING FOUL SEWER. LEVELS AND DIAMETER ARE ASSUMED FROM SURVEY. EXACT POSITION, INVERT LEVEL AND DIA TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION OF UPSTREAM NETWORK, ANY DISCREPANCIES SHOULD BE REPORTED TO ENGINEER.

PROPOSED GULLY TO USE EXISTING CONNECTION

EXISTING MANHOLE COVERS TO BE ADJUSTED TO NEW CARRIAGEWAY LEVELS

EXISTING GULLY TO BE REMOVED AND RELOCATED TO NEW CHANNEL AS SHOWN, WITH EXISTING CONNECTION MAINTAINED IF POSSIBLE

S278 BOUNDARY

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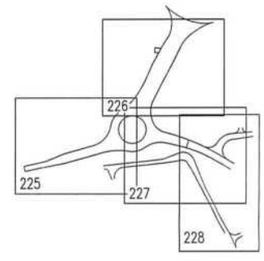
EXISTING UTILITIES AFFECTED BY THE WORKS TO BE PROTECTED/MODIFIED IN ACCORDANCE WITH THE REQUIREMENTS AND APPROVAL OF THE RELEVANT STATUTORY AUTHORITIES. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICES TO BE CONFIRMED.

SECTION 278 DRAINAGE KEY

HIGHWAYS DRAINAGE - BLUE	PN 1.001 225/167
S104 ADOPTABLE FOUL WATER - BROWN	PN 1.001 150/150
S104 ADOPTABLE SURFACE WATER - BLACK	PN 1.001 225/167
S104 ADOPTABLE FOUL WATER - BLACK	PN 1.001 150/150
EXISTING SURFACE WATER - GREY	
EXISTING FOUL WATER - GREY	



Rev	Revision Notes	Dwn	Apvd	Date

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

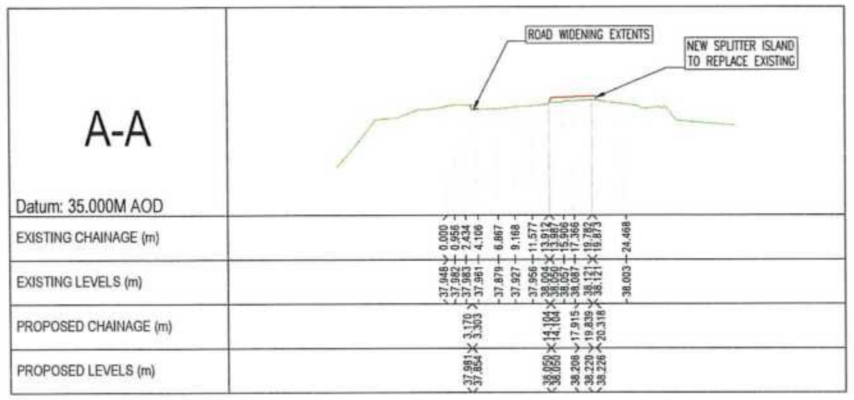
Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 DRAINAGE LAYOUT
SHEET 4

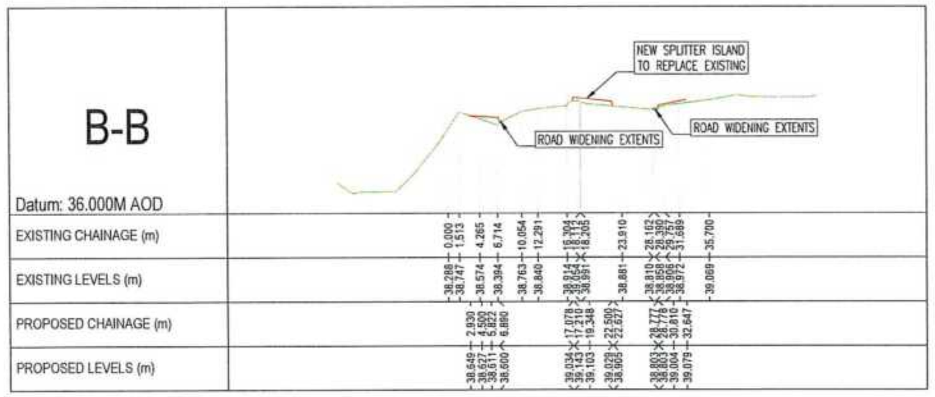
Client:			Date:
DENBURY HOMES			MAY 2023
Drawn: LB	Designed: JK	Checked: JK	Approved: RGW

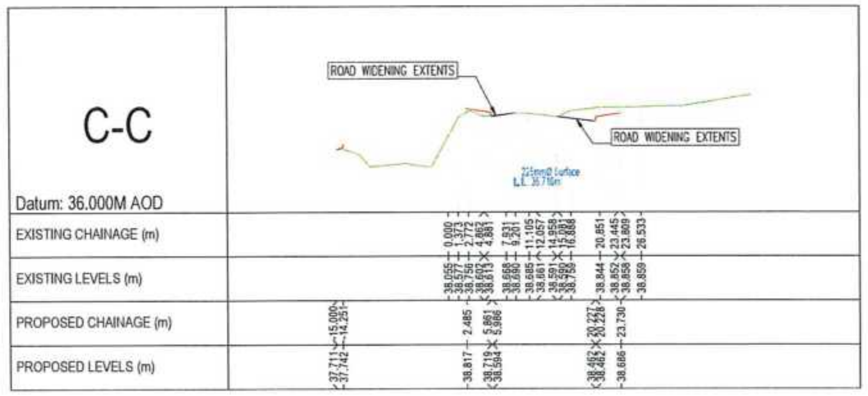
Scale: 1:250 (5m 0m 5m 10m 15m)

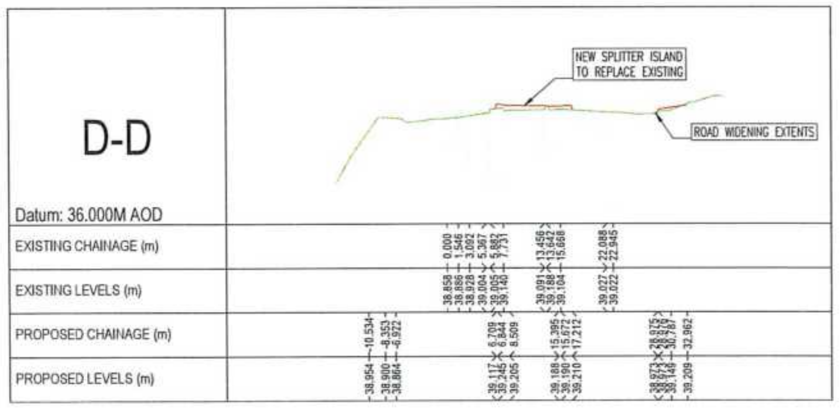
Project No:	Drawing No & Revision:	Size:
2107-592	228	A1



REFER TO CROSS SECTION MARKERS ON LAYOUT







GENERAL

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10. PROVISION SHALL BE MADE FOR THE INSTALLATION OF ALL MAINS SERVICES INCLUDING DUCTING PRIOR TO THE LAYING OF THE ROAD BASE-COURSE.

11. ALL ROAD MARKINGS AND SIGNS ARE TO BE IN ACCORDANCE WITH 'THE TRAFFIC SIGNS REGULATIONS AND DIRECTIONS' 2016.

12. ALL ADOPTABLE SURFACE WATER SEWERS WITHIN ADOPTABLE HIGHWAYS ARE TO BE A MINIMUM OF 225MM.

13. ALL WATER AUTHORITY SEWER WORKS ARE TO BE IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE APPENDIX C' DESIGN AND CONSTRUCTION GUIDANCE VERSION 1.0 25TH OCTOBER 2019 AND ANY ADDENDUM THEREAFTER.

Rev	Revision Notes	Dwn	Apvd	Date
B	SECTION D-D ROAD WIDENING EXTENTS AMENDED	JK	RGW	24.10.22
A	DRAINAGE ADDED TO SECTION C-C. SECTION D-D ADDED	JK	RGW	06.10.22

INGENT
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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

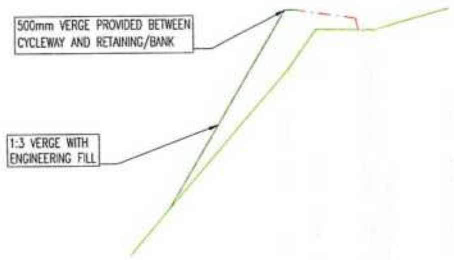
PRELIMINARY

Project: ROUGHAM ROAD ROUNDABOUT BURY ST EDMUNDS

Drawing Title: S278 CROSS SECTIONS SHEET 1

Client: DENBURY HOMES			Date: SEP 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW
Scale: Horizontal 1:500, Vertical 1:100			
Project No: 2107-592		Drawing No & Revision: 230B	Size: A1

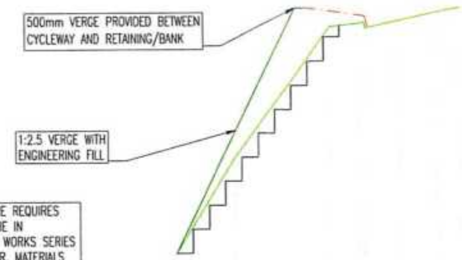
ROUGHAM ROAD NORTH – ROUNDABOUT EXIT WIDENING



Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 36.00M AOD

Existing Levels (m)	37.190, 39.176, 39.617, 39.607, 39.614, 39.647, 39.838
Offset (m)	-12.617, -3.901, -2.320, 0.283, 0.645, 1.530, 5.000
Proposed Levels (m)	39.830, 39.733, 39.608
Offset (m)	-3.500, -0.125, -0.000

Chainage : 10.000m

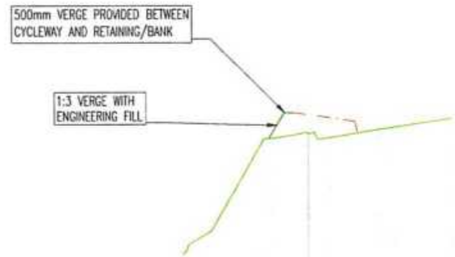


WHERE REALIGNMENT OF THE EXISTING BANK FEATURE REQUIRES EARTHWORKS BUILD UP, THE EARTHWORKS ARE TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS SERIES 600 AND TO THE APPROVAL OF THE LOCAL ENGINEER. MATERIALS USED TO BE IN ACCORDANCE WITH TABLE 6/1 & 6/2 COMPACTION TO BE IN ACCORDANCE WITH TABLE 6/4. MATERIAL TO BE BENCHED INTO EXISTING GROUND AND COMPACTED IN SUITABLE LAYERS.

Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 36.00M AOD

Existing Levels (m)	37.883, 38.916, 40.333, 40.365, 40.384, 40.397, 40.491, 40.534
Offset (m)	-10.533, -7.316, -2.072, -0.540, -0.190, 1.662, 3.832, 5.000
Proposed Levels (m)	40.542, 40.445, 40.320
Offset (m)	-3.500, -0.125, -0.000

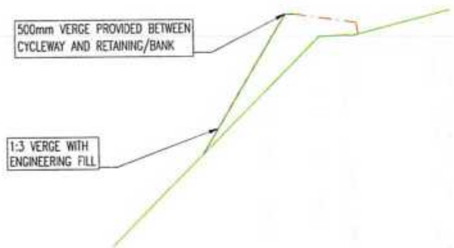
Chainage : 30.000m



Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 38.00M AOD

Existing Levels (m)	39.687, 39.936, 40.931, 40.940, 41.005, 40.989, 40.944, 41.035, 41.053, 41.149
Offset (m)	-9.593, -8.025, -5.125, -4.592, -2.724, -2.688, -1.534, 1.103, 1.873, 5.000
Proposed Levels (m)	41.219, 41.122, 40.997
Offset (m)	-3.497, -0.125, 0.000

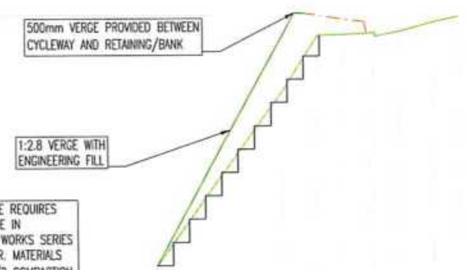
Chainage : 50.000m



Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 35.00M AOD

Existing Levels (m)	36.986, 38.706, 39.264, 39.278, 39.273, 39.505, 39.545
Offset (m)	-13.626, -4.948, -2.169, -0.722, -0.296, 4.266, 5.000
Proposed Levels (m)	39.511, 39.413, 39.288
Offset (m)	-3.500, -0.125, 0.000

Chainage : 0.001m

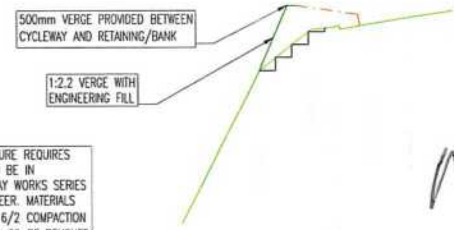


WHERE REALIGNMENT OF THE EXISTING BANK FEATURE REQUIRES EARTHWORKS BUILD UP, THE EARTHWORKS ARE TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS SERIES 600 AND TO THE APPROVAL OF THE LOCAL ENGINEER. MATERIALS USED TO BE IN ACCORDANCE WITH TABLE 6/1 & 6/2 COMPACTION TO BE IN ACCORDANCE WITH TABLE 6/4. MATERIAL TO BE BENCHED INTO EXISTING GROUND AND COMPACTED IN SUITABLE LAYERS.

Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 36.00M AOD

Existing Levels (m)	37.504, 39.404, 39.996, 40.003, 40.016, 40.028, 40.033, 40.138, 40.195
Offset (m)	-11.596, -4.636, -2.724, -1.265, 0.111, 0.410, 1.686, 3.616, 5.000
Proposed Levels (m)	40.237, 40.140, 40.015
Offset (m)	-3.500, -0.125, -0.000

Chainage : 20.000m



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Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 37.00M AOD

Existing Levels (m)	38.542, 40.205, 40.650, 40.681, 40.697, 40.718, 40.785, 40.855
Offset (m)	-9.807, -5.535, -2.713, -1.425, -1.172, 0.703, 2.737, 5.000
Proposed Levels (m)	40.915, 40.818, 40.693
Offset (m)	-3.497, -0.125, -0.000

Chainage : 40.000m

VERTICAL EXAGGERATION x5

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Rev	Revision Notes	Dwn	Apvd	Date
C	BUS STOP REMOVED. AMENDED TO SUIT	LB	JK	05.05.23
B	SECTIONS AMENDED TO NEW WIDENING EXTENTS	JK	RGW	24.10.22
A	CYCLEWAY EXTENTS AMENDED. DIMENSIONS ADDED	JK	RGW	04.10.22

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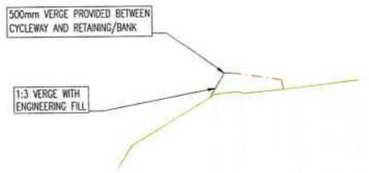
smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project: ROUGHAM ROAD ROUNDABOUT BURY ST EDMUNDS			
Drawing Title: S278 CROSS SECTIONS SHEET 2			
Client: DENBURY HOMES			Date: SEP 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW
Scale: 1:200			
Project No: 2107-592		Drawing No & Revision: 231C	Size: A1

ROUGHAM ROAD NORTH – ROUNDABOUT EXIT WIDENING

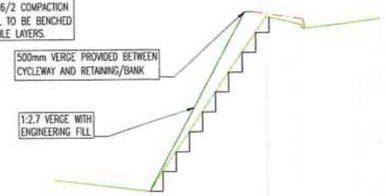


Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 39.00M AOD

Existing Levels (m)			40.376	40.671	41.344	41.377	41.396	41.425	41.479	41.523
Offset (m)			-11.241	-10.290	-4.638	-3.242	-2.767	-0.487	0.932	3.159	5.000
Proposed Levels (m)					41.628	41.531	41.406				
Offset (m)					-3.500	-0.125	0.000				

Chainage : 70.000m

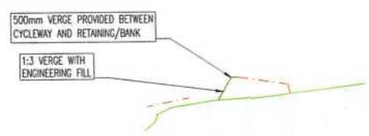
WHERE REALIGNMENT OF THE EXISTING BANK FEATURE REQUIRES EARTHWORKS BUILD UP, THE EARTHWORKS ARE TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS SERIES 600 AND TO THE APPROVAL OF THE LOCAL ENGINEER. MATERIALS USED TO BE IN ACCORDANCE WITH TABLE 6/1 & 6/2 COMPACTION TO BE IN ACCORDANCE WITH TABLE 6/4. MATERIAL TO BE BENCHED INTO EXISTING GROUND AND COMPACTED IN SUITABLE LAYERS.



Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 38.00M AOD

Existing Levels (m)	39.668		39.510	39.722	39.869	41.634	41.833	41.754	41.795	41.764	41.807
Offset (m)	-17.026		-10.504	-9.618	-9.179	-2.608	-2.553	-0.767	-0.324	3.601	5.000
Proposed Levels (m)						41.900		41.803	41.678		
Offset (m)						-3.501		-0.125	0.000		

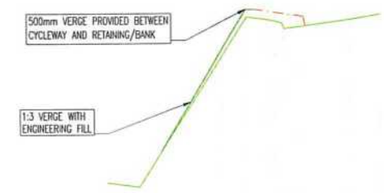
Chainage : 89.999m



Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 39.00M AOD

Existing Levels (m)		40.746	40.668	41.054	41.138	41.147	41.177	41.160	41.207	41.233	41.290	41.322	41.358
Offset (m)		-9.936	-9.190	-8.096	-5.524	-4.996	-2.847	-2.385	-0.912	0.059	2.417	3.717	5.000
Proposed Levels (m)		41.070	41.181		41.454		41.367	41.237					
Offset (m)		-9.778	-8.914		-3.466		-0.125	0.000					

Chainage : 60.000m



Cross Section for Rougham Road Noth (Roundabout Exit Alignment)
Datum: 38.00M AOD

Existing Levels (m)		39.451	39.396	41.143	41.667	41.630	41.653	41.507	41.536	41.628	41.697
Offset (m)		-13.401	-11.225	-5.581	-3.953	-2.624	-2.569	-1.432	-0.368	3.052	5.000
Proposed Levels (m)					41.768				41.671		
Offset (m)					-3.500				-0.125		

Chainage : 80.000m

VERTICAL EXAGGERATION x5

GENERAL
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Rev	Revision Notes	Dwn	Apvd	Date
C	BUS STOP REMOVED, AMENDED TO SUIT	EB	JK	05.05.23
B	SECTIONS AMENDED TO NEW WIDENING EXTENTS	JK	RGW	24.10.22
A	CYCLEWAY EXTENTS AMENDED, DIMENSIONS ADDED	JK	RGW	04.10.22

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

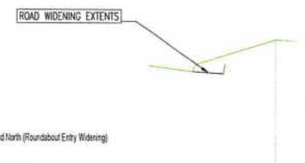
Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CROSS SECTIONS
SHEET 3

Client:			Date:
DENBURY HOMES			SEP 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:200 (5m 0m 5m 10m)

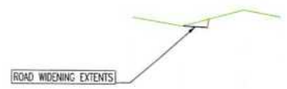
Project No:	Drawing No & Revision:	Size:
2107-592	232C	A1



Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 39.00M AOD

Proposed Levels (m)					40.238	40.238		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-5.000	-4.189	-2.081		3.487	3.507	5.000	
	40.335	40.315	40.260		40.689	40.687	40.669	
Offset (m)	-5.000	-4.189	-2.081		3.487	3.507	5.000	

Chainage : 60.000m



Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 40.00M AOD

Proposed Levels (m)					41.788	41.788		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-5.000	-3.862	-1.532		2.456	5.000		
	41.901	41.860	41.784		42.007	41.912		
Offset (m)	-5.000	-3.862	-1.532		2.456	5.000		

Chainage : 140.000m

Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 38.00M AOD

Proposed Levels (m)					39.503	39.503		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-5.000	-3.405	-2.130	-1.571	-0.778	0.362	1.650	3.501
	39.565	39.553	39.518	39.539	39.618	39.718	39.936	39.723
Offset (m)	-5.000	-3.405	-2.130	-1.571	-0.778	0.362	1.650	3.501
	4.612	4.884						
	39.937	39.952						

Chainage : 40.000m

Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 40.00M AOD

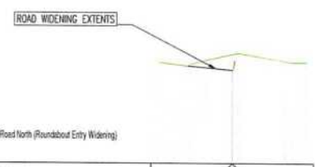
Proposed Levels (m)					41.454	41.454		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-5.000	-3.297	-2.350	-1.420	0.358	1.822	5.000	
	41.610	41.555	41.529	41.671	41.744	41.681	41.650	
Offset (m)	-5.000	-3.297	-2.350	-1.420	0.358	1.822	5.000	

Chainage : 120.000m

Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 37.00M AOD

Proposed Levels (m)					38.885	38.885		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-3.000	-4.536	-3.022	-1.102	-0.418	3.506	5.000	
	39.080	39.076	39.018	39.147	39.182	39.470	39.565	
Offset (m)	-3.000	-4.536	-3.022	-1.102	-0.418	3.506	5.000	

Chainage : 20.000m



Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 40.00M AOD

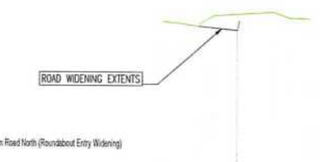
Proposed Levels (m)					41.251	41.251		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-5.000	-3.806	-3.034	-1.748	0.352	3.537	5.000	
	41.355	41.325	41.304	41.390	41.479	41.388	41.355	
Offset (m)	-5.000	-3.806	-3.034	-1.748	0.352	4.071	5.000	

Chainage : 100.000m

Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 37.00M AOD

Proposed Levels (m)					38.878	38.878		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-5.000	-4.229	-2.186	0.087	1.758	1.984	5.000	
	38.959	38.975	38.932	38.876	38.927	39.011	39.113	
Offset (m)	-5.000	-4.229	-2.186	0.087	1.758	1.984	5.000	

Chainage : 0.001m



Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 39.00M AOD

Proposed Levels (m)					40.903	40.903		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-5.000	-4.075	-2.577	-1.542	2.436	3.609	5.000	
	41.016	40.995	40.952	41.100	41.149	41.067	41.061	
Offset (m)	-5.000	-4.075	-2.577	-1.542	2.436	3.609	5.000	

Chainage : 80.000m

Cross Section for Rougham Road North (Roundabout Entry Widening)
Datum: 41.00M AOD

Proposed Levels (m)					42.044	42.044		
Offset (m)					0.000	0.001		
3DXX Topo (2022.09.01).dwg (m)	-5.000	-3.655	-2.385	0.018	0.131	1.347	3.566	5.000
	42.179	42.143	42.100	42.044	42.134	42.173	42.286	42.219
Offset (m)	-5.000	-3.655	-2.385	0.018	0.131	1.347	3.566	5.000

Chainage : 152.597m

ROUGHAM ROAD NORTH – ROUNDABOUT ENTRY WIDENING

GENERAL

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VERTICAL EXAGGERATION x5

Rev	Revision Notes	Dwn	Apvd	Date

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

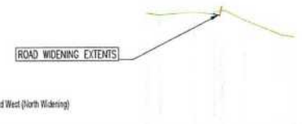
Drawing Title:
S278 CROSS SECTIONS
SHEET 5

Client:			Date:
DENBURY HOMES			SEP 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:200 (5m 0m 5m 10m)

Project No:	Drawing No & Revision:	Size:
2107-592	234	A1

ROUGHAM ROAD WEST – NORTH WIDENING



Cross Section for Rougham Road West (North Widening)
Datum: 34.00M AOD

Proposed Levels (m)				35.565	35.680		
Offset (m)				0.000	0.125		
3DXX Topo (2022.09.01).dwg (m)	35.586	35.599	35.573	35.606	35.522	35.488	35.290
Offset (m)	-5.000	-1.755	-0.455	-0.391	0.314	1.698	4.190
	35.563	35.599	35.573	35.606	35.522	35.488	35.290
	-4.083		-0.391	0.125			5.000

Chainage : 20.000m

Cross Section for Rougham Road West (North Widening)
Datum: 35.00M AOD

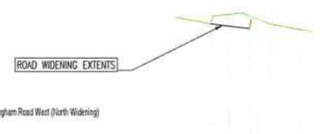
Proposed Levels (m)				36.614	36.739		
Offset (m)				0.000	0.125		
3DXX Topo (2022.09.01).dwg (m)	36.678	36.655	36.666	36.602	36.592	36.633	36.458
Offset (m)	-5.000	-3.794	-2.068	0.500	1.415	2.572	5.000

Chainage : 0.001m

Cross Section for Rougham Road West (North Widening)
Datum: 32.00M AOD

Proposed Levels (m)				33.892	33.892		
Offset (m)				0.000	0.125		
3DXX Topo (2022.09.01).dwg (m)	34.0115	34.015	33.996	33.901	33.936	33.915	33.882
Offset (m)	-5.000	-4.753	-3.685	-0.354	0.383	1.984	3.766
							4.190
							5.000

Chainage : 59.999m



Cross Section for Rougham Road West (North Widening)
Datum: 33.00M AOD

Proposed Levels (m)				34.495	34.626		
Offset (m)				0.000	0.125		
3DXX Topo (2022.09.01).dwg (m)	34.643	34.559	34.664	34.486	34.707	34.675	34.626
Offset (m)	-5.000	-2.635	-2.490	-1.451	-0.481	0.460	1.371
							3.243
							4.190

Chainage : 40.000m

VERTICAL EXAGGERATION x5

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Rev	Revision Notes	Dwn	Apvd	Date

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smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CROSS SECTIONS
SHEET 6

Client:			Date:
DENBURY HOMES			SEP 2022
Drawn:	Designed:	Checked:	Approved:
JK	JK	RGW	RGW

Scale: 1:200 (0m, 5m, 10m)

Project No:	Drawing No & Revision:	Size:
2107-592	235	A1

RUSHBROOKE LANE WIDENING

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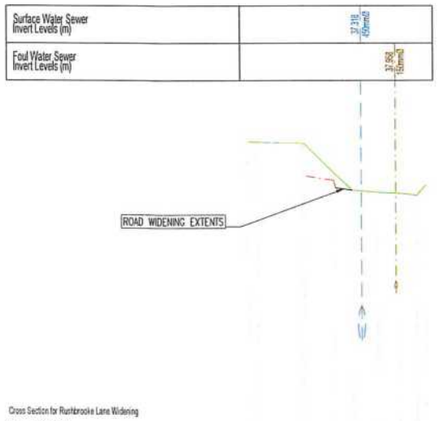
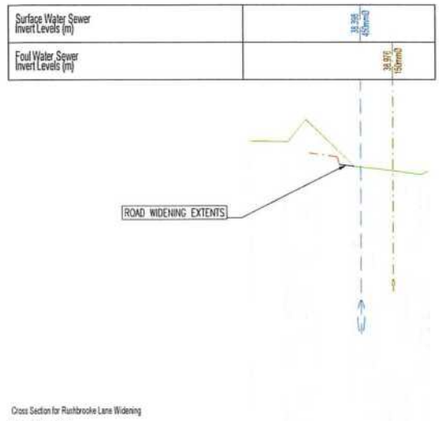
VERTICAL EXAGGERATION x5



Cross Section for Rushbrooke Lane Widening
Datum: 36.00M AOD

Existing Levels (m)	39.980	39.978	39.961	39.860	39.562	39.335	39.303	39.269	39.267	39.404
Offset (m)	-7.000	-6.419	-3.401	-3.262	-1.232	0.002	1.701	3.168	4.371	5.000
Proposed Levels (m)			39.519		39.463					
Offset (m)			-3.129		-1.254					
					-1.129					

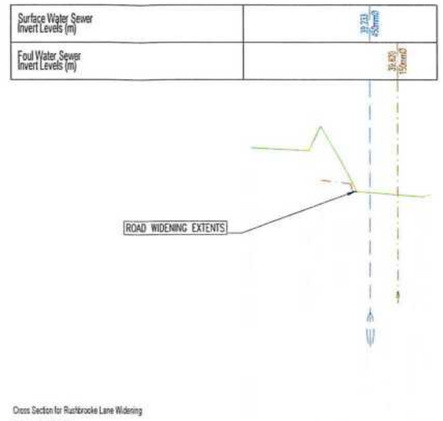
Chainage : 20.001m



Cross Section for Rushbrooke Lane Widening
Datum: 37.00M AOD

Existing Levels (m)	40.976	40.973	40.969	40.770	41.044	40.640	40.615	40.590	40.558	40.533	40.575
Offset (m)	-7.000	-4.891	-4.442	-3.256	-2.270	0.000	1.212	2.316	3.464	4.151	5.000
Proposed Levels (m)				40.821		40.765					
Offset (m)				-2.990		-1.115					
						-0.990					

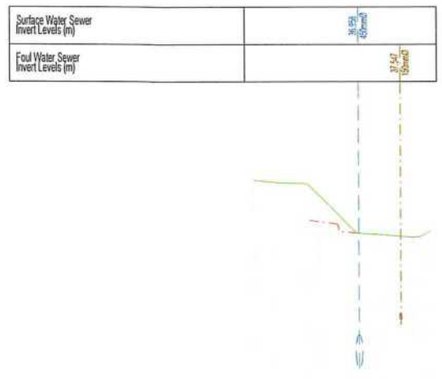
Chainage : 60.001m



Cross Section for Rushbrooke Lane Widening
Datum: 38.00M AOD

Existing Levels (m)	41.891	41.851	42.178	41.884	41.300	41.298	41.274	41.245	41.241	41.268
Offset (m)	-7.000	-3.145	-2.371	-0.982	0.000	0.598	2.171	3.880	4.485	5.000
Proposed Levels (m)			41.464		41.405					
Offset (m)			-2.327		-0.405					
					-0.279					

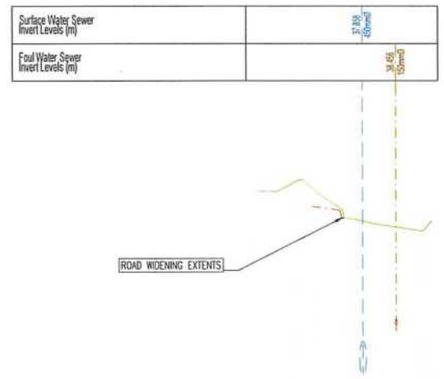
Chainage : 100.001m



Cross Section for Rushbrooke Lane Widening
Datum: 36.00M AOD

Existing Levels (m)	39.480	39.448	39.432	39.267	38.771	38.749	38.715	38.705	38.705
Offset (m)	-7.000	-5.412	-3.381	-2.958	-0.000	1.695	3.828	5.332	5.000
Proposed Levels (m)			38.941	38.887	38.771				
Offset (m)			-3.177	-1.206	-0.000				
				-1.170					
				-0.032					

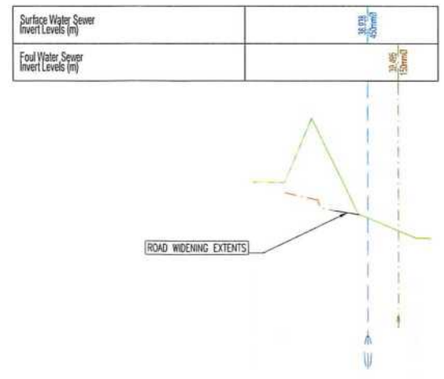
Chainage : 0.001m



Cross Section for Rushbrooke Lane Widening
Datum: 37.00M AOD

Existing Levels (m)	40.322	40.316	40.470	40.283	39.955	39.937	39.880	39.782	39.916
Offset (m)	-7.000	-5.367	-3.929	-2.600	0.870	0.021	1.203	4.472	5.000
Proposed Levels (m)			40.116		40.061				
Offset (m)			-3.029		-1.154				
					-1.029				

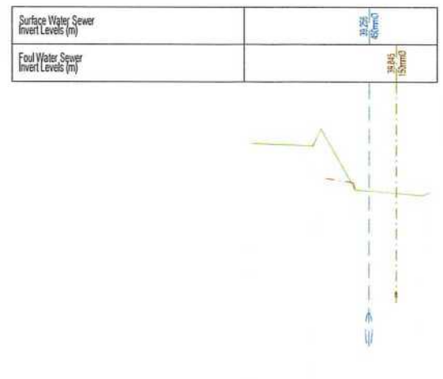
Chainage : 40.001m



Cross Section for Rushbrooke Lane Widening
Datum: 38.00M AOD

Existing Levels (m)	41.435	41.440	41.435	42.297	41.144	40.998	40.895	40.892	40.892
Offset (m)	-7.000	-6.275	-4.874	-3.088	0.314	0.259	3.886	3.978	5.000
Proposed Levels (m)			41.298		41.099				
Offset (m)			-4.821		-2.518				
					-1.539				

Chainage : 80.001m



Cross Section for Rushbrooke Lane Widening
Datum: 38.00M AOD

Existing Levels (m)	41.973	41.943	42.166	41.350	41.350	41.318	41.278	41.311
Offset (m)	-7.000	-3.931	-2.339	-0.000	2.129	4.478	5.000	
Proposed Levels (m)			41.504	41.459	41.350			
Offset (m)			-2.004	-0.125	-0.000			

Chainage : 102.945m

Rev	Revision Notes	Dwn	Apvd	Date
B	SURFACE WATER AMENDED, FOUL ADDED	JK	RGW	14.10.22
A	SURFACE WATER DRAINAGE ADDED TO SECTIONS	JK	RGW	06.10.22

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

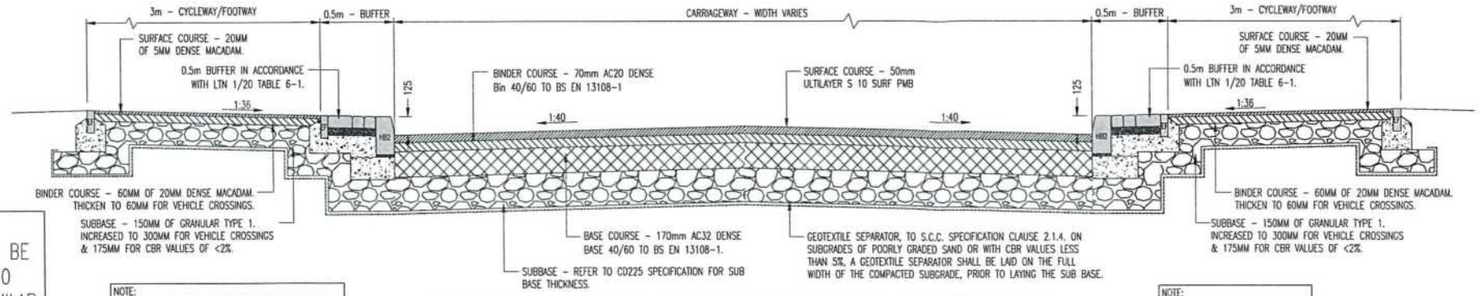
Drawing Title:
S278 CROSS SECTIONS
SHEET 7

Client:		Date:
DENBURY HOMES		SEP 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:200 (5m 0m 5m 10m)

Project No:	Drawing No & Revision:	Size:
2107-592	236B	A1

NOTE:
ROUNDABOUT RESURFACING TO BE 50mm 65 PSV ULTILAYER S 10 PMB SURFACE COURSE OR SIMILAR (SUBJECT TO SCC APPROVAL)



NOTE:
ASPHALT LAYER THICKNESSES DESIGNED FOR TRAFFIC FLOWS UP TO 22 MSA. APPROVAL FROM SCC REQUIRED

TYPICAL SECTION THROUGH FLEXIBLE LOCAL DISTRIBUTOR ROAD (SPINE ROAD & ROUGHAM HILL)
SCALE 1:20

NOTE:
SURFACE COURSE TO BE INCREASED TO 68 PSV 50m FROM ALL CONTROLLED AND UNCONTROLLED CROSSINGS, AS SHOWN ON LAYOUT

GENERAL
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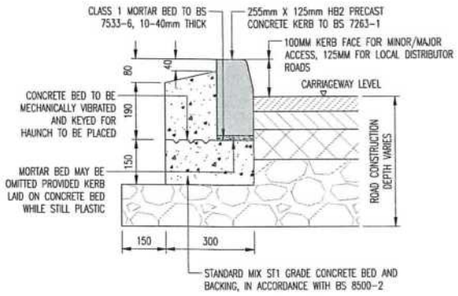
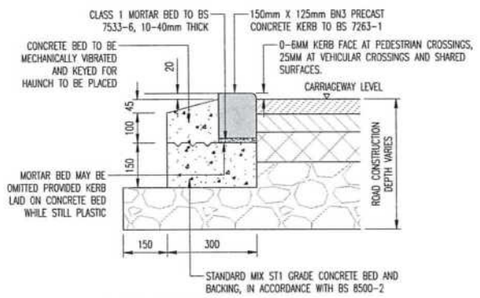
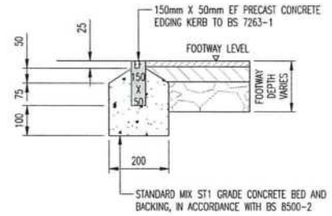


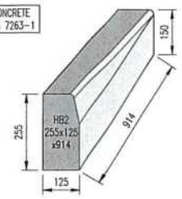
HALF-BATTERED KERB (HB2) DETAIL
SCALE 1:10



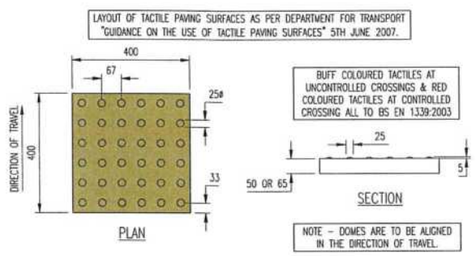
BULL-NOSE KERB (BN3) DETAIL
SCALE 1:10



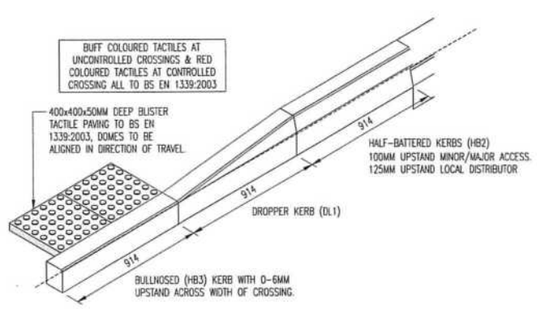
EDGING KERB (EF) DETAIL
SCALE 1:10



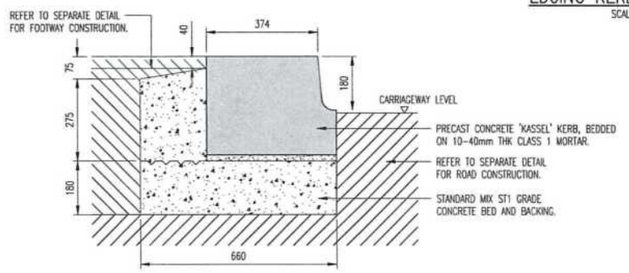
DROPPER KERB (DL1) LEFT
SCALE 1:10



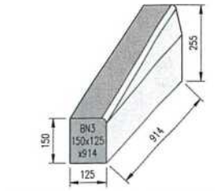
BLISTER TACTILE PAVING UNIT DETAIL
SCALE 1:10



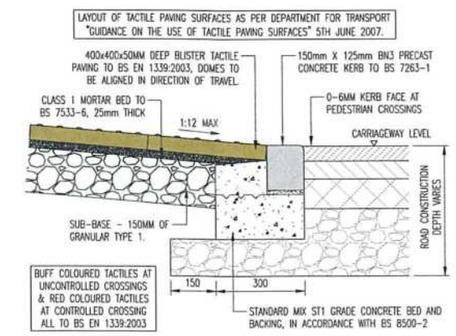
ISOMETRIC VIEW ON PEDESTRIAN CROSSING
SCALE 1:20



TYPICAL BUS STOP KERB DETAIL
SCALE 1:10



DROPPER KERB (DR1) RIGHT
SCALE 1:10



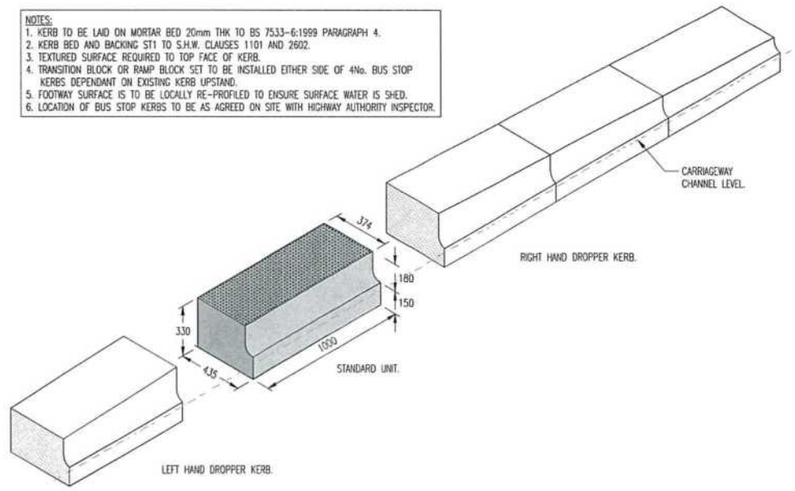
TYPICAL SECTION THROUGH PEDESTRIAN CROSSING
SCALE 1:20

ROAD PAVEMENT FOUNDATIONS
CD225 DESIGN FOR NEW PAVEMENT FOUNDATIONS

SUB BASE LAYER ONLY			SUB BASE AND CAPPING LAYER		
CBR	MPa	TYPE 1 (mm)	TYPE 1 (mm)	CAPPING (mm)	TOTAL
2.5%	30.0	NOT PERMITTED	250	430	680
3.0%	35.0	NOT PERMITTED	230	380	610
4.0%	40.0	NOT PERMITTED	220	330	550
5.0%	50.0	NOT PERMITTED	200	250	450
6.0%	55.0	260	190	240	430
7.0%	60.0	250	170	230	400
8.0%	65.0	240	160	220	380
9.0%	70.0	230	150	210	360
10.0%	75.0	230	150	200	350
11.0%	80.0	220	150	190	340
12.0%	85.0	220	150	180	330
13.0%	90.0	210	150	170	320
14.0%	95.0	210	150	160	310
15.0%	100.0	200	150	150	300

NOTES
1. SUB BASE - TYPE 1 UNBOUND MIXTURE TO SHW CLAUSE 803.
2. CAPPING TO SHW CLAUSE 613.
3. A GEOTEXTILE PRODUCT TO SHW CLAUSE 609 IS REQUIRED FOR SUB BASE ONLY OPTION TO SEPARATE FROM SUBGRADE LAYER; REFER TO APPENDIX 6/5 FOR SPECIFICATION.
4. FOR CBR VALUES LESS THAN 2.5%, GROUND STABILISATION IS REQUIRED.
5. THE DESIGN FOUNDATION LAYER THICKNESSES GIVEN ABOVE ARE IN MM AND DERIVED FROM FIGURES 3.18 AND 3.20 OF "CD 225 - DESIGN FOR NEW PAVEMENT FOUNDATIONS",

NOTES:
1. KERB TO BE LAID ON MORTAR BED 20mm THK TO BS 7533-6:1999 PARAGRAPH 4.
2. KERB BED AND BACKING ST1 TO S.H.W. CLAUSES 1101 AND 2602.
3. TEXTURED SURFACE REQUIRED TO TOP FACE OF KERB.
4. TRANSITION BLOCK OR RAMP BLOCK SET TO BE INSTALLED EITHER SIDE OF 4No. BUS STOP KERBS DEPENDANT ON EXISTING KERB UPSTAND.
5. FOOTWAY SURFACE IS TO BE LOCALLY RE-PROFILED TO ENSURE SURFACE WATER IS SHED.
6. LOCATION OF BUS STOP KERBS TO BE AS AGREED ON SITE WITH HIGHWAY AUTHORITY INSPECTOR.



ISOMETRIC VIEW ON BUS STOP KERBS & 'KESSEL' 180MM KERB DETAIL
SCALE 1:20

Rev	Revision Notes	Dwn	Apvd	Date
C	SUB BASE EXTENDED BEYOND EDGING KERBS. ROAD NAMES ADDED TO ROAD SECTION	JK	RGW	30.12.18 9
B	ROUNDABOUT AND SPINE ROAD SURFACE COURSE AMENDED TO SMA	JK	RGW	08.08.23
A	0.5M BLOCK PAVED BUFFER STRIPS ADDED	LB	JK	21.02.23

INGENT
CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

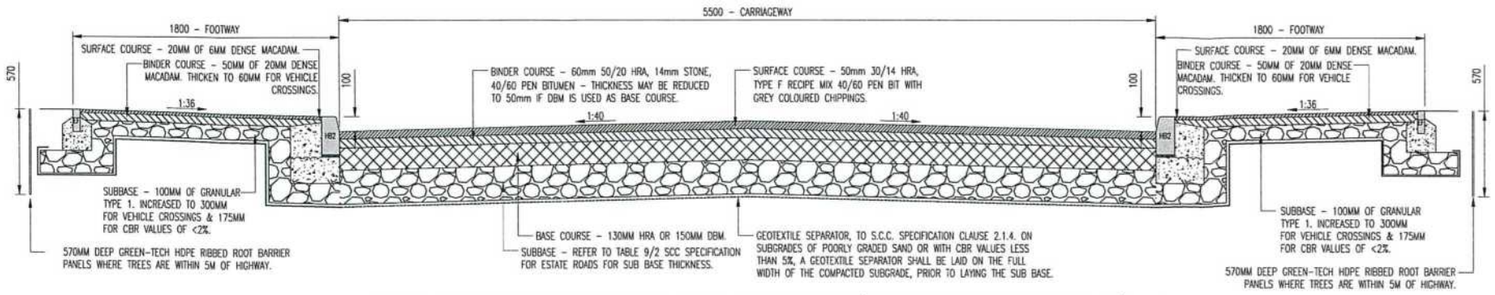
Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CONSTRUCTION DETAILS
SHEET 1

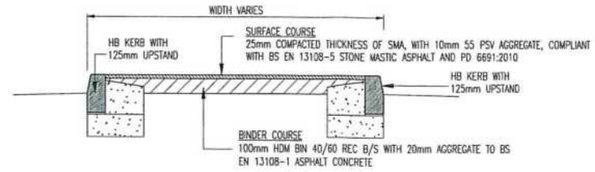
Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale:
As Shown

Project No:	Drawing No & Revision:	Size:
2107-592	240C	A1



TYPICAL SECTION THROUGH FLEXIBLE MAJOR ACCESS ROAD (RUSHBROOKE LANE & ROAD 17)
SCALE 1:20



TYPICAL SECTION THROUGH TRAFFIC ISLAND
SCALE 1:20

GENERAL
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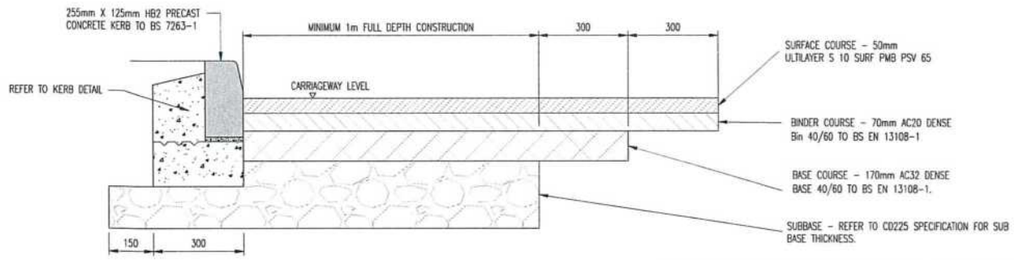
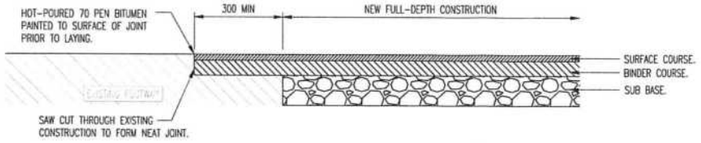
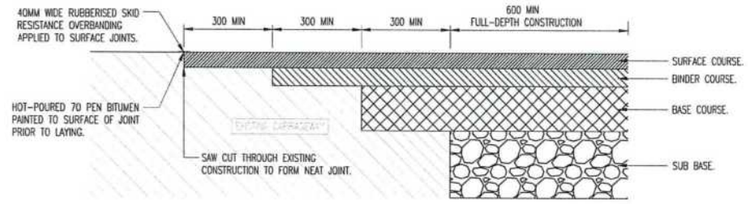


ROAD WIDENING TIE IN DETAIL
SCALE 1:10

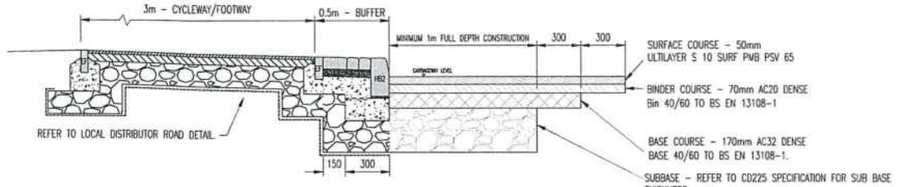
REFER TO ROAD WIDENING SETTING OUT FOR FULL EXTENTS AND PROPOSED LEVELS. ALL SETTING OUT TO CONTINUE EXISTING CAMBER OF RELEVANT CARRIAGEWAY



TYPICAL TIE-IN DETAIL TO EXISTING FOOTWAY CONSTRUCTION
SCALE 1:10

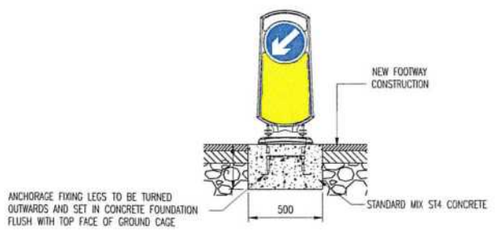


TYPICAL CARRIAGEWAY TIE-IN TO EXISTING CARRIAGEWAY DETAIL
SCALE 1:10



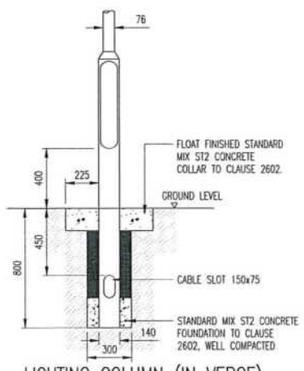
ROAD WIDENING TIE IN & CYCLEWAY DETAIL
SCALE 1:20

REFER TO ROAD WIDENING SETTING OUT FOR FULL EXTENTS AND PROPOSED LEVELS. ALL SETTING OUT TO CONTINUE EXISTING CAMBER OF RELEVANT CARRIAGEWAY

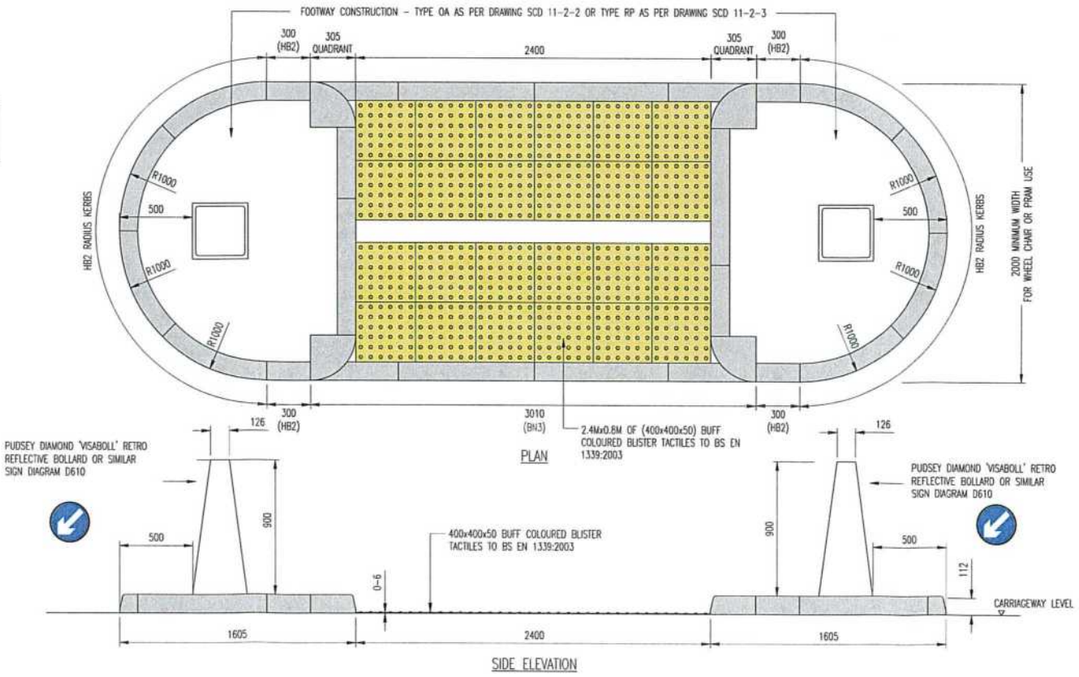


RETRO REFLECTIVE BOLLARD FOUNDATION DETAIL
SCALE 1:20

FOR ALL STREET LIGHTING WORKS PLEASE REFER TO THE SUFFOLK COUNTY COUNCIL APPROVED STREET LIGHTING DESIGN DRAWING



LIGHTING COLUMN (IN VERGE) DETAIL
SCALE 1:20



UNCONTROLLED PEDESTRIAN REFUSE ISLAND DETAIL
SCALE 1:20

Rev	Revision Notes	Dwn	Apvd	Date
C	SUB BASE EXTENDED BEYOND EDGING KERBS. ROAD NAMES ADDED TO ROAD SECTION	JK	RGW	20.12.1BB
B	ROUNDABOUT ROAD WIDENING SURFACE COURSE AMENDED TO SMA. TRAFFIC BOLLARD AMENDED ON REFUGE ISLAND	JK	RGW	08.06.23
A	ROAD WIDENING TIE IN & CYCLEWAY DETAIL ADDED	LB	JK	21.02.23

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smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CONSTRUCTION DETAILS
SHEET 2

Client: DENBURY HOMES
Date: AUG 2022

Drawn:	Designed:	Checked:	Approved:
JK	JK	RGW	RGW

Scale: As Shown

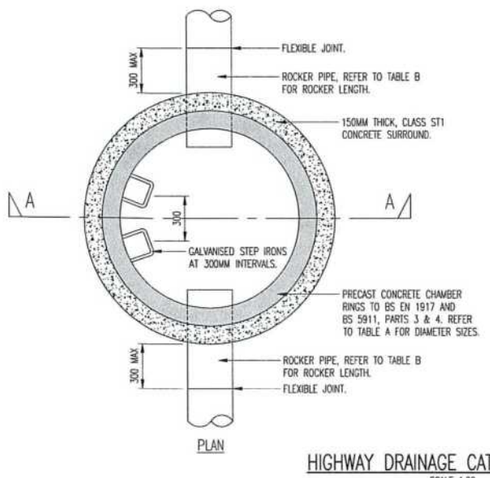
Project No: 2107-592
Drawing No & Revision: 241C
Size: A1

TABLE A

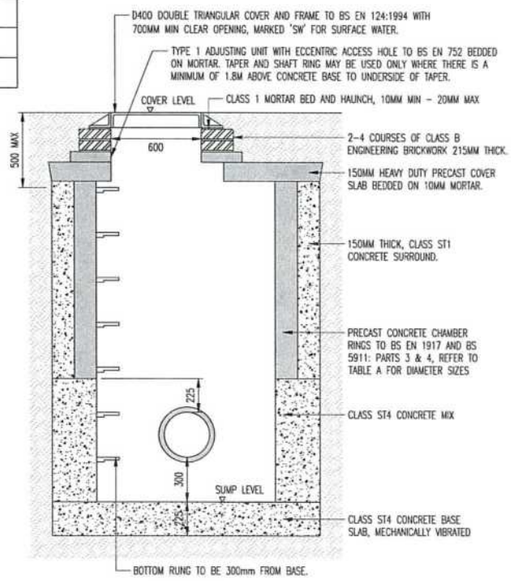
PIPE IN MANHOLE (MM)	CHAMBER SECTION DIAMETER (MM)
<375	1200
375-700	1500
700-900	1800
>900	PIPE DIAMETER + 900

TABLE B

PIPE IDIAMETER (MM)	ROCKER PIPE LENGTH (MM)
150-600	600
675-750	1000
750 AND OVER	1250



PLAN



SECTION A-A

HIGHWAY DRAINAGE CATCHPIT DETAIL

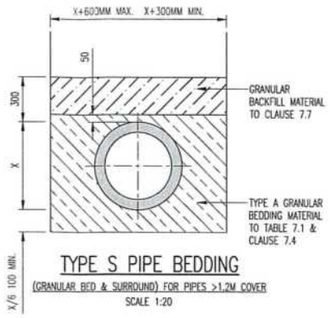
SCALE 1:20

ALL GULLY AND MANHOLE COVERS CONSTRUCTED WITHIN THE CARRIAGEWAY MUST BE IN ACCORDANCE WITH DMRB CD 534 - SKID RESISTANCE

TABLE 7.1

PIPE DIAMETER (mm)	SINGLE SIZED AGGREGATE (mm) TO BS: 882
LESS THAN 150mm	10
INCLUDING 150mm UP TO 300mm	10 OR 14
INCLUDING 300mm UP TO 525mm	14 OR 20
INCLUDING 525mm AND ABOVE	14, 20 OR 40

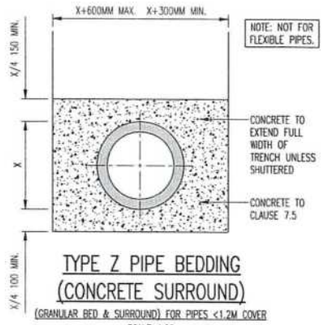
NOTES:
1. 20MM THICK FLEXCELL, OR SIMILAR APPROVED FILLER TO BE USED TO FORM A FLEXIBLE JOINT TO THE CONCRETE SURROUND AT THE LEADING EDGE OF A SLEEVED COUPLING. DIMENSIONS SHOWN ARE IRRESPECTIVE OF TYPE OR DIAMETER OF PIPE. THE SURROUNDS MUST TERMINATE AT A PIPE JOINT.
2. IF PIPES ARE SURROUNDED IN CONCRETE, THE JOINTS ARE TO BE PROTECTED FROM THE THE INGRESS OF CONCRETE BY WRAPPING THEM IN POLYTHENE SHEET OR BUILDING PAPER.



TYPE S PIPE BEDDING

(GRANULAR BED & SURROUND) FOR PIPES >1.2M COVER

SCALE 1:20



TYPE Z PIPE BEDDING (CONCRETE SURROUND)

(GRANULAR BED & SURROUND) FOR PIPES <1.2M COVER

SCALE 1:20

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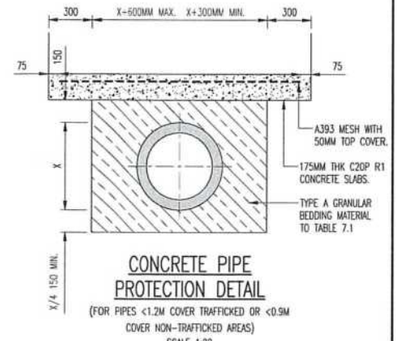
7. ANY EXISTING DETAILS WHICH ARE SHOWN ON THIS DRAWING AR FOR GUIDANCE ONLY AND ARE TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY VARIATIONS ARE TO BE RECORDED AND REPORT TO THE ENGINEER IMMEDIATELY.

8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.

TABLE 7.1

PIPE DIAMETER (mm)	SINGLE SIZED AGGREGATE (mm) TO BS: 882
LESS THAN 150mm	10
INCLUDING 150mm UP TO 300mm	10 OR 14
INCLUDING 300mm UP TO 525mm	14 OR 20
INCLUDING 525mm AND ABOVE	14, 20 OR 40



CONCRETE PIPE PROTECTION DETAIL

(FOR PIPES <1.2M COVER TRAFFICKED OR <0.9M COVER NON-TRAFFICKED AREAS)

SCALE 1:20

Signing Project	SICKLESMERE ROAD RBT				
Sign Reference	965	Width (mm)	295	Background	Blue
x Height	30.0	Height (mm)	325	Border	White
Material	Class Ref 2	Area (sq.m)	0.10	Legend	White

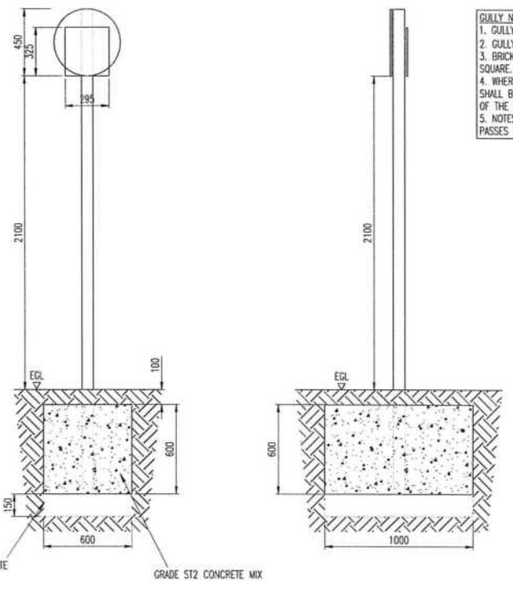
Signing Project	SICKLESMERE ROAD RBT				
Sign Reference	956	Width (mm)	450	Background	Blue
x Height	-	Height (mm)	450	Border	White
Material	Class Ref 2	Area (sq.m)	0.16	Legend	White

Structural Calculation Details

Signs:
- Reference: Sign 1
  Width: 295mm, Height: 325mm
  Shape: Rectangle
  Orientation: Facing front
  Mounted on posts: 1
  Mounting height: 2100mm, at post
- Reference: Sign 2
  Width: 450mm, Height: 450mm
  Shape: Roundel
  Orientation: Facing back
  Mounted on posts: 1
  Mounting height: 2100mm, at post

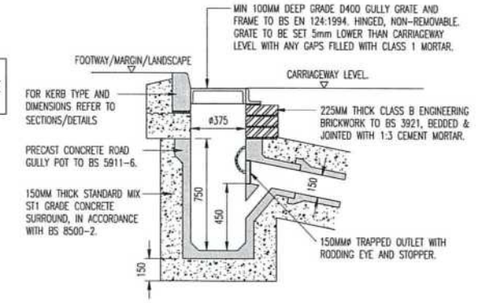
Posts:
- Quantity: 1
  Type: 76.1 x 3.2 CHS
  Spacing: N/A
  Post 1 Length: 3250mm

Base:
- Type: Combined
  Width: 600mm
  Length: 1000mm
  Depth: 600mm
  Volume: 0.36cu.m
  Earth cover: 100mm
  Blinding layer: 150mm



DIAG 956 ROUTE FOR USE BY CYCLES & PEDESTRIANS ONLY AND DIAG 965 END OF CYCLE ROUTE SIGN AND POST DETAILS

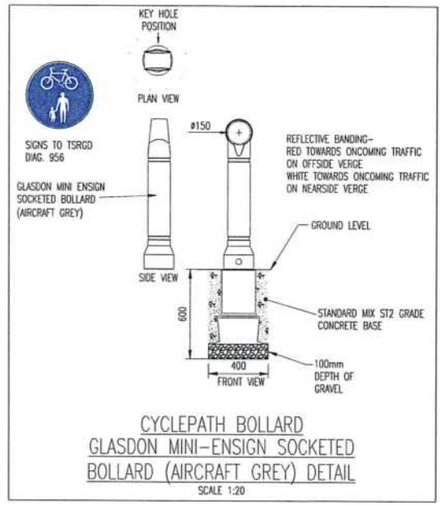
SCALE 1:20



TYPICAL ROAD GULLY DETAIL

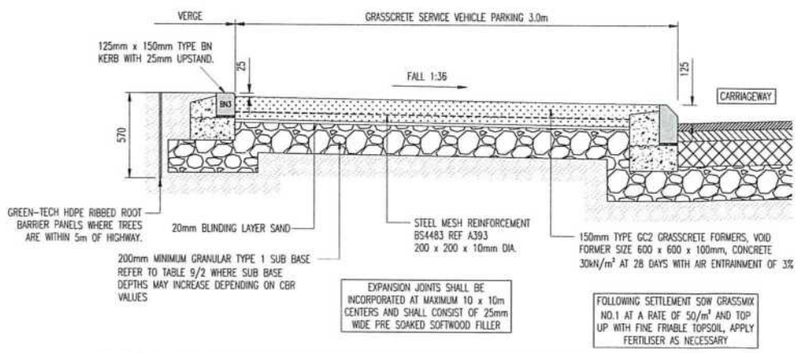
SCALE 1:20

GULLY NOTES
1. GULLY GRATING AND FRAME TO BS EN124. REFER TO SCC SPECIFICATION FOR ESTATE ROADS CLAUSE 7.13.4
2. GULLY FRAME TO BE SET ON 10-20MM THICK CLASS 1 CEMENT MORTAR BED TO CLAUSE 2404 (MCHW VOLUME 1).
3. BRICKWORK - MIN. ONE AND NOT MORE THAN THREE COURSES OF CLASS B ENGINEERING BRICKWORK LAID SQUARE. CHANGE IN PROFILE FROM SQUARE TO CIRCULAR TO BE SHAPED IN CLASS 1 MORTAR.
4. WHERE THE GULLY CONNECTION PIPE PASSES UNDER THE CARRIAGEWAY THE INVERT OF THE PIPE AT THE OUTLET SHALL BE SET AT LEAST 175MM BELOW FORMATION LEVEL. THE INVERT SHALL BE AT LEAST 315MM BELOW THE TOP OF THE SUB-BASE.
5. NOTES 3 & 4. WHERE THE TOTAL ROAD CONSTRUCTION DEPTH EXCEEDS 450MM AND THE GULLY CONNECTION PIPE PASSES UNDER THE CARRIAGEWAY UP TO 5 COURSE OF BRICKWORK ARE PERMITTED.



CYCLEPATH BOLLARD GLASDON MINI-ENSIGN SOCKETED BOLLARD (AIRCRAFT GREY) DETAIL

SCALE 1:20



TYPICAL SECTION THROUGH GRASSCRETE MAINTENANCE VEHICLE PARKING AREA

SCALE 1:20

Rev	Revision Notes	Dwn	Apvd	Date
B	CD534 GULLY/MANHOLE COVERS NOTE ADDED	JK	RGW	30.12.180
A	GRASSCRETE MAINTENANCE AREA DETAILS ADDED	JK	RGW	08.08.22

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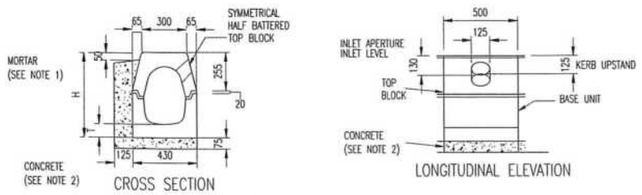
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CONSTRUCTION DETAILS
SHEET 3

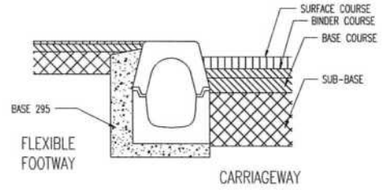
Client:			Date:
DENBURY HOMES			AUG 2022
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW
Scale: As Shown			
Project No: 2107-592	Drawing No & Revision: 242B		Size: A1



BASE UNIT	H (Mm)	h (Mm)	T (Mm)	DEPTH: C/WAY CHANNEL TO INVERT (125 KERB UPSTAND) (mm)
BASE 205	480	205	70	285

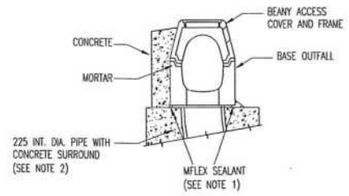
MARSHALLS BEANY BLOCK HALF BATTERED TOP BLOCK WITH BASE 205

SCALE 1:20



MARSHALLS BEANY BLOCK CROSS SECTION

SCALE 1:20



OUTFALL PIPE INVERT DEPTH FROM CARRIAGEWAY LEVEL (mm)		
BEANY BASE	150 DIA.	225 DIA.
BASE 205	701	738

OUTFALL DIRECT TO 225 DIA. PIPE

SCALE 1:20

1. MORTARS SHALL BE;
   i) A MORTAR CLASS 12 CEMENT MORTAR TO BS EN 998- FOR BEDDING THE TOP BLOCKS
   ii) MARSHALLS' M-FLEX FOR BEDDING BASE BLOCK OUTFALLS ONTO THE BEANY TRAPPED GULLY UNIT
   iii)MARSHALLS' M-FLEX FOR BEDDING THE SECTIONS OF THE MARSHALLS TRAPPED GULLY UNIT SECTIONS

2. CONCRETE BED, HAUNCH AND SURROUND SHALL BE;
   i) A MIX ST1 CONCRETE TO BS 8500-1&2 AND BS EN 206-1 FIR BASE BLOCKS USED IN THE NORMAL KERB APPLICATION
   ii) A MIX ST4 CONCRETE TO BS 8500-1&2 AND BS EN 206-1 FOR BASE BLOCKS USED WITHIN THE CARRIAGEWAY (i.e WHERE BASE BLOCKS ARE USED WITH COVER PLATES AND ARE TRAFFICKED)
   iii) A MIX ST4 CONCRETE TO BS 8500-1&2 AND BS EN 206-1 FOR BEANY TRAPPED GULLY, SILT TRAPS, CATCHPITS AND OUTFALL DETAILS
   iv) THE SPECIFICATION FOR CARRIER PIPE CONCRETE SURROUND IS BY OTHERS

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Rev	Revision Notes	Dwn	Apvd	Date

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

PRELIMINARY

Project: ROUGHAM ROAD ROUNDABOUT BURY ST EDMUNDS			
Drawing Title: S278 CONSTRUCTION DETAILS SHEET 4			
Client: DENBURY HOMES			Date: AUG 2023
Drawn: JS	Designed: JS	Checked: JK	Approved: RGW
Scale: As Shown			
Project No: 2107-592		Drawing No & Revision: 243	Size: A1

CROSS REFERENCE WITH SIGNS AND LINES LAYOUT DRAWING. SCC SITE ENGINEER TO DETERMINE IF SIGN PLATES NEED REPLACING. ALL POSTS TO BE REPLACED AS SHOWN.

GENERAL
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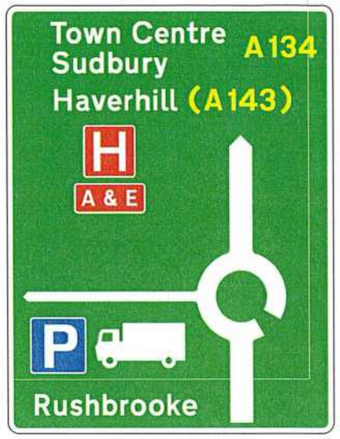
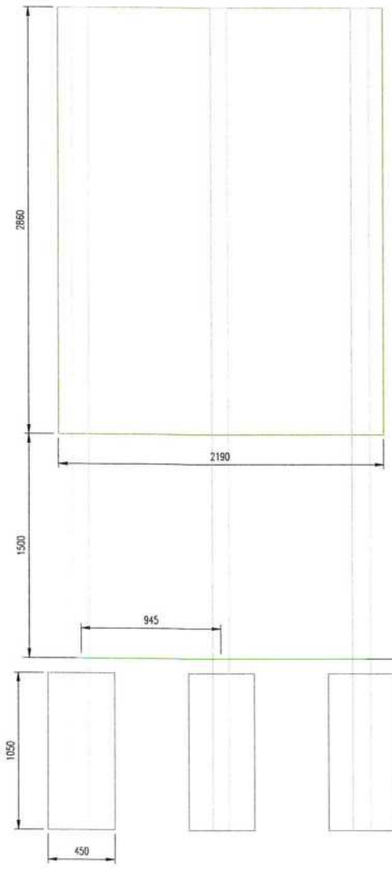
D



Signing Project	Rougham Road Roundabout eastern approach				
Sign Reference		Width (mm)	2190	Background	Green
x Height	100.0	Height (mm)	2860	Border	White
Material	Class RA2	Area (sq.m)	6.26	Legend	White



Structural Calculation Details

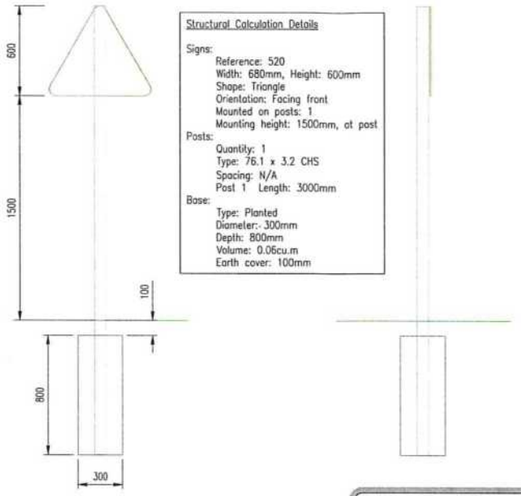
Signs:
- Reference: Sign 1
- Width: 2190mm, Height: 2860mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2, 3
- Mounting height: 1500mm, at post

Posts:
- Quantity: 3
- Type: 114.3 x 3.6 CHS (S355)
- Spacing: 945mm
- Post 1 Length: 5510mm
- Post 2 Length: 5510mm
- Post 3 Length: 5510mm

Base:
- Type: Planted
- Diameter: 450mm
- Depth: 1050mm
- Volume: 0.50cu.m
- Earth cover: 100mm

C

Signing Project	Rougham Road Roundabout eastern approach				
Sign Reference	520	Width (mm)	680	Background	White
x Height		Height (mm)	600	Border	Red
Material	Class RA2	Area (sq.m)	0.24	Legend	Black



Structural Calculation Details

Signs:
- Reference: 520
- Width: 680mm, Height: 600mm
- Shape: Triangle
- Orientation: Facing front
- Mounted on posts: 1
- Mounting height: 1500mm, at post

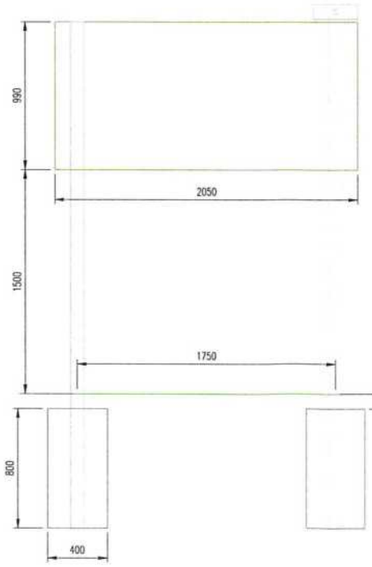
Posts:
- Quantity: 1
- Type: 76.1 x 3.2 CHS
- Spacing: N/A
- Post 1 Length: 3000mm

Base:
- Type: Planted
- Diameter:- 300mm
- Depth: 800mm
- Volume: 0.06cu.m
- Earth cover: 100mm

E

Signing Project	Rougham Road Roundabout southern exit				
Sign Reference		Width (mm)	28115	Background	White
x Height	100.0	Height (mm)	8950	Border	Black
Material	Class RA2	Area (sq.m)	240.07	Legend	Black

TO BE INSTALLED AT THE ROUGHAM ROAD ROUNDABOUT SOUTHERN EXIT (SPLITTER ISLAND), AND AT THE JUNCTION OF THE SPINE ROAD AND ROUGHAM HILL (WITHOUT ILLUMINATION)



Structural Calculation Details

Signs:
- Reference: Sign 1
- Width: 2050mm, Height: 990mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2
- Mounting height: 1500mm, at post

Posts:
- Quantity: 2
- Type: 88.9 x 3.2 CHS
- Spacing: 1750mm
- Post 1 Length: 3390mm
- Post 2 Length: 3510mm

Base:
- Type: Planted
- Diameter: 400mm
- Depth: 800mm
- Volume: 0.20cu.m
- Earth cover: 100mm

Illumination:
- Orientation: Facing front
- Light on posts: 2

Rev	Revision Notes	Dwn	Apvd	Date
A	SIGN REF 4 REMOVED (QUEUE IN BOTH LANES), SIGN REF D RE DESIGNED	JK	RGW	24.10.23

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PRELIMINARY

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CONSTRUCTION DETAILS
SIGNS, POSTS & FOUNDATIONS
SHEET 1

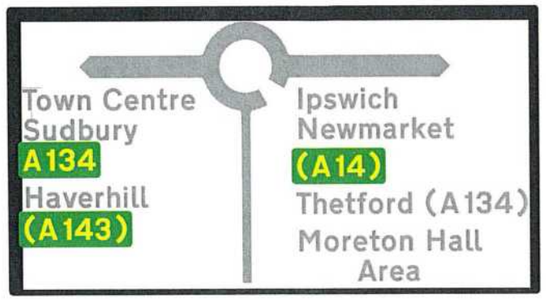
Client:			Date:
DENBURY HOMES			AUG 2023
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:20 (0.5m 0m 0.5m 1m)

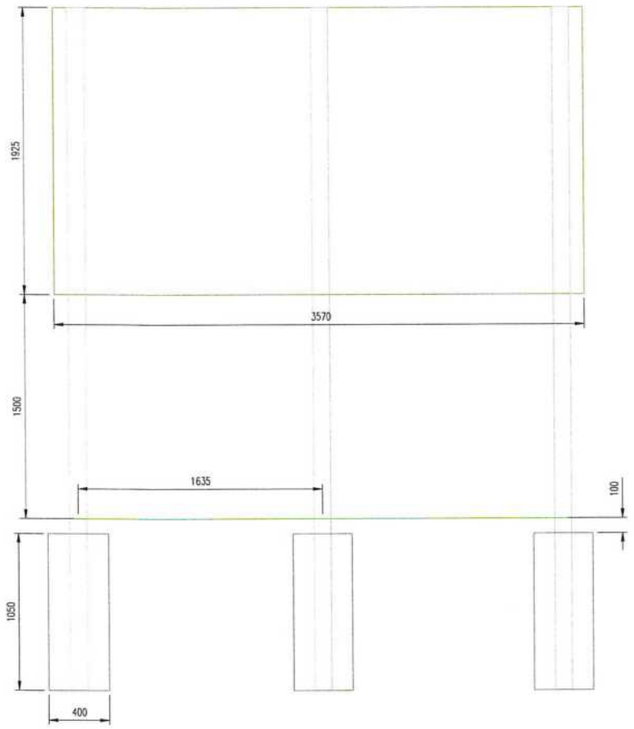
Project No:	Drawing No & Revision:	Size:
2107-592	244A	A1

CROSS REFERENCE WITH SIGNS AND LINES LAYOUT DRAWING. SCC SITE ENGINEER TO DETERMINE IF SIGN PLATES NEED REPLACING. ALL POSTS TO BE REPLACED AS SHOWN.

F



Signing Project	Rougham Road Roundabout southern entry				
Sign Reference		Width (mm)	3570	Background	Green
x Height	100.0	Height (mm)	1925	Border	White
Material	Class RA2	Area (sq.m)	6.87	Legend	White



Structural Calculation Details

Signs:
- Reference: Sign 1
- Width: 3570mm, Height: 1925mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2, 3
- Mounting height: 1500mm, at post

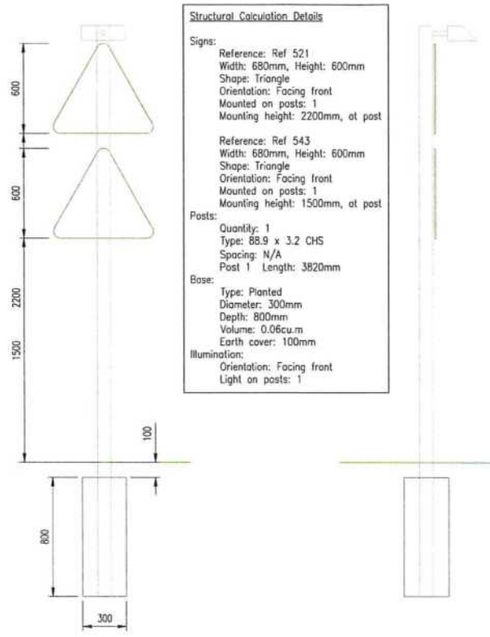
Posts:
- Quantity: 3
- Type: 114.3 x 3.6 CHS
- Spacing: 1635mm
- Post 1 Length: 4575mm
- Post 2 Length: 4575mm
- Post 3 Length: 4575mm

Base:
- Type: Planted
- Diameter: 400mm
- Depth: 1050mm
- Volume: 0.40cu.m
- Earth cover: 100mm

J

Signing Project	Rougham Road Roundabout western exit				
Sign Reference		Width (mm)	680	Background	White
x Height		Height (mm)	600	Border	Red
Material	Class RA2	Area (sq.m)	0.24	Legend	Black

Signing Project	Rougham Road Roundabout western exit				
Sign Reference		Width (mm)	680	Background	White
x Height		Height (mm)	600	Border	Red
Material	Class RA2	Area (sq.m)	0.24	Legend	Black



Structural Calculation Details

Signs:
- Reference: Ref 521
- Width: 680mm, Height: 600mm
- Shape: Triangle
- Orientation: Facing front
- Mounted on posts: 1
- Mounting height: 2200mm, at post

- Reference: Ref 543
- Width: 680mm, Height: 600mm
- Shape: Triangle
- Orientation: Facing front
- Mounted on posts: 1
- Mounting height: 1500mm, at post

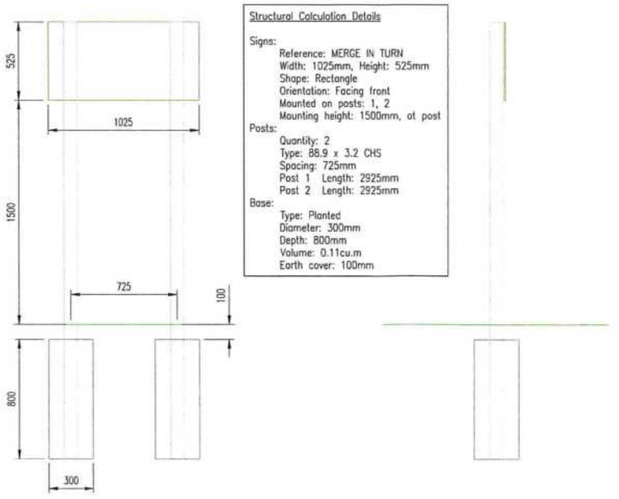
Posts:
- Quantity: 1
- Type: 88.9 x 3.2 CHS
- Spacing: N/A
- Post 1 Length: 3820mm

Base:
- Type: Planted
- Diameter: 300mm
- Depth: 800mm
- Volume: 0.06cu.m
- Earth cover: 100mm

Illumination:
- Orientation: Facing front
- Light on posts: 1

H

Width (mm)	1025	Background	Blue
Height (mm)	525	Border	White
Area (m²)	0.54	Legend	



Structural Calculation Details

Signs:
- Reference: MERGE IN TURN
- Width: 1025mm, Height: 525mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2
- Mounting height: 1500mm, at post

Posts:
- Quantity: 2
- Type: 88.9 x 3.2 CHS
- Spacing: 725mm
- Post 1 Length: 2925mm
- Post 2 Length: 2925mm

Base:
- Type: Planted
- Diameter: 300mm
- Depth: 800mm
- Volume: 0.11cu.m
- Earth cover: 100mm

GENERAL

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Rev.	Revision Notes	Dwn	Apvd	Date

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DRAFT

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CONSTRUCTION DETAILS
SIGNS, POSTS & FOUNDATIONS
SHEET 2

Client:			Date:
DENBURY HOMES			AUG 2023
Drawn:	Designed:	Checked:	Approved:
JK	JK	RGW	RGW

Scale: 1:20 (0.5m 0m 0.5m 1m)

Project No:	Drawing No & Revision:	Size:
2107-592	245	A1

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G

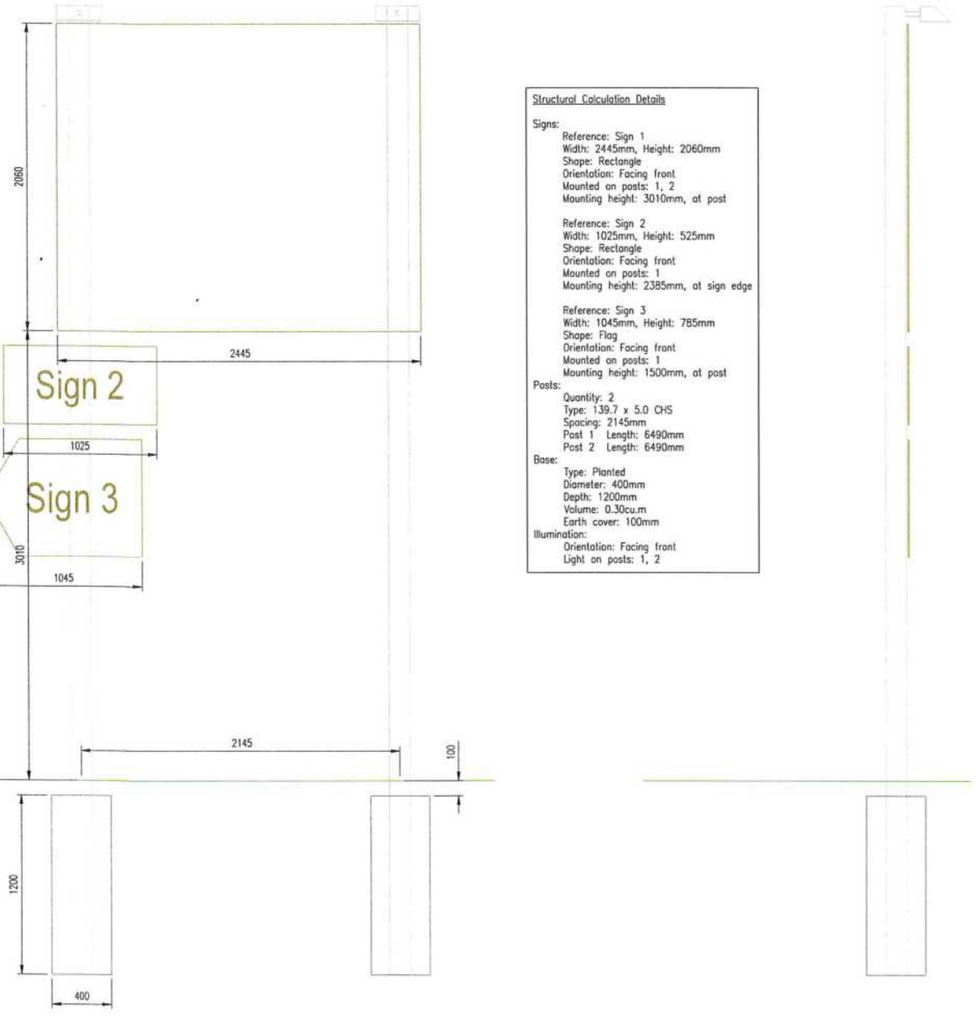
Signing Project	Rougham Road Roundabout western splitter island				
Sign Reference		Width (mm)	2445	Background	Grey
x Height	100.0	Height (mm)	2060	Border	
Material	Class RA2	Area (sq.m)	5.04	Legend	

G

Width (mm)	1025	Background	Blue
Height (mm)	525	Border	White
Area (m²)	0.54	Legend	

Signing Project	Rougham Road Roundabout western splitter island				
Sign Reference		Width (mm)	11555	Background	White
x Height	100.0	Height (mm)	8950	Border	Black
Material	Class RA2	Area (sq.m)	91.86	Legend	Black

G



Structural Calculation Details

Signs:
- Reference: Sign 1
- Width: 2445mm, Height: 2060mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2
- Mounting height: 3010mm, at post

- Reference: Sign 2
- Width: 1025mm, Height: 525mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1
- Mounting height: 2385mm, at sign edge

- Reference: Sign 3
- Width: 1045mm, Height: 785mm
- Shape: Flag
- Orientation: Facing front
- Mounted on posts: 1
- Mounting height: 1500mm, at post

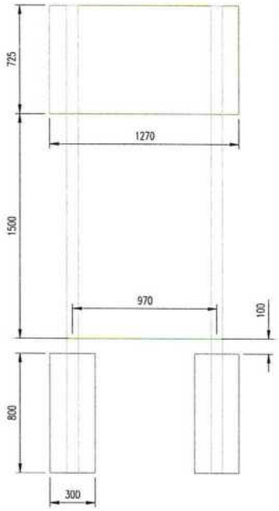
Posts:
- Quantity: 2
- Type: 139.7 x 5.0 CHS
- Spacing: 2145mm
- Post 1 Length: 6490mm
- Post 2 Length: 6490mm

Base:
- Type: Planted
- Diameter: 400mm
- Depth: 1200mm
- Volume: 0.30cu.m
- Earth cover: 100mm

Illumination:
- Orientation: Facing front
- Light on posts: 1, 2

L

Signing Project	Rougham Road Roundabout western entry				
Sign Reference		Width (mm)	1270	Background	Green
x Height	100.0	Height (mm)	725	Border	White
Material	Class RA2	Area (sq.m)	0.92	Legend	White



Structural Calculation Details

Signs:
- Reference: Sign 1
- Width: 1270mm, Height: 725mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2
- Mounting height: 1500mm, at post

Posts:
- Quantity: 2
- Type: 76.1 x 3.2 CHS
- Spacing: 970mm
- Post 1 Length: 3125mm
- Post 2 Length: 3125mm

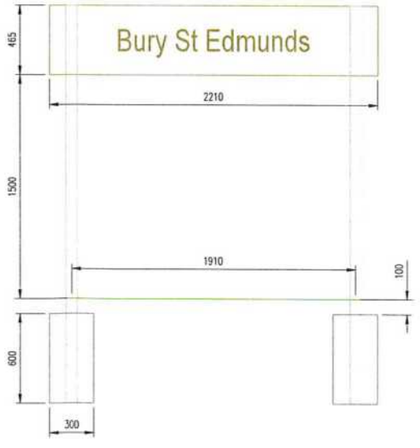
Base:
- Type: Planted
- Diameter: 300mm
- Depth: 800mm
- Volume: 0.11cu.m
- Earth cover: 100mm

J

Signing Project	Rougham Road Roundabout eastern exit				
Sign Reference		Width (mm)	680	Background	White
x Height		Height (mm)	600	Border	Red
Material	Class RA2	Area (sq.m)	0.24	Legend	Black

EXISTING BURY ST EDMUNDS SIGN PLATE TO BE REUSED – POSTS AND FOUNDATIONS TO BE REPLACED AS SHOWN BELOW

B



Structural Calculation Details

Signs:
- Reference: Bury St Edmunds
- Width: 2210mm, Height: 465mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2
- Mounting height: 1500mm, at post

Posts:
- Quantity: 2
- Type: 76.1 x 3.2 CHS (S355)
- Spacing: 1910mm
- Post 1 Length: 2665mm
- Post 2 Length: 2665mm

Base:
- Type: Planted
- Diameter: 300mm
- Depth: 600mm
- Volume: 0.08cu.m
- Earth cover: 100mm

Rev	Revision Notes	Dwn	Apvd	Date

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CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

DRAFT

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CONSTRUCTION DETAILS
SIGNS, POSTS & FOUNDATIONS
SHEET 3

Client:			Date:
DENBURY HOMES			AUG 2023
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:20 (0.5m 0m 0.5m 1m)

Project No:	Drawing No & Revision:	Size:
2107-592	246	A1

CROSS REFERENCE WITH SIGNS AND LINES LAYOUT DRAWING. SCC SITE ENGINEER TO DETERMINE IF SIGN PLATES NEED REPLACING. ALL POSTS TO BE REPLACED AS SHOWN.

GENERAL
1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.

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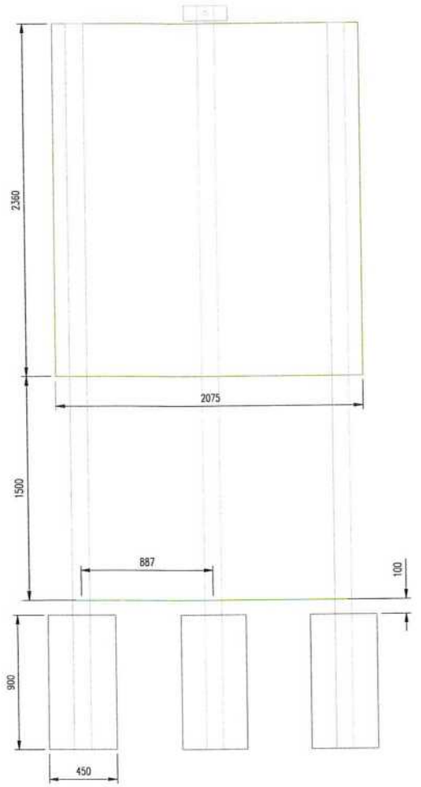
7. ANY EXISTING DETAILS WHICH ARE SHOWN ON THIS DRAWING ARE FOR GUIDANCE ONLY AND ARE TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY VARIATIONS ARE TO BE RECORDED AND REPORTED TO THE ENGINEER IMMEDIATELY.

8. ALL HIGHWAY WORKS ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITIES DESIGN GUIDE AND SPECIFICATION.

K

Signing Project	Rougham Road Roundabout western approach				
Sign Reference		Width (mm)	2075	Background	Green
x Height	100.0	Height (mm)	2360	Border	White
Material	Class RA2	Area (sq.m)	4.90	Legend	White



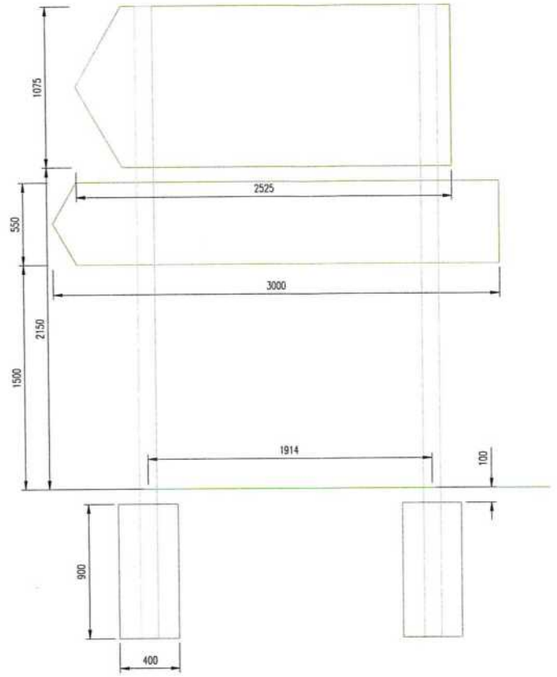
Structural Calculation Details

Signs:
Reference: Sign 1
Width: 2075mm, Height: 2360mm
Shape: Rectangle
Orientation: Facing front
Mounted on posts: 1, 2, 3
Mounting height: 1500mm, at post

Posts:
Quantity: 3
Type: 114.3 x 3.6 CHS
Spacing: 887mm
Post 1 Length: 4860mm
Post 2 Length: 4980mm
Post 3 Length: 4860mm

Base:
Type: Planted
Diameter: 450mm
Depth: 900mm
Volume: 0.43cu.m
Earth cover: 100mm

Illumination:
Orientation: Facing front
Light on posts: 2



Structural Calculation Details

Signs:
Reference: Sign 1
Width: 2525mm, Height: 1075mm
Shape: Flag
Orientation: Facing front
Mounted on posts: 1, 2
Mounting height: 2150mm, at post

Reference: Sign 2
Width: 3000mm, Height: 550mm
Shape: Flag
Orientation: Facing front
Mounted on posts: 1, 2
Mounting height: 1500mm, at post

Posts:
Quantity: 2
Type: 114.3 x 3.6 CHS
Spacing: 1914mm
Post 1 Length: 4225mm
Post 2 Length: 4225mm

Base:
Type: Planted
Diameter: 400mm
Depth: 900mm
Volume: 0.23cu.m
Earth cover: 100mm

M

Signing Project	Rougham Road Roundabout eastern exit splitter island				
Sign Reference		Width (mm)	50995	Background	Green
x Height	100.0	Height (mm)	22675	Border	White
Material	Class RA2	Area (sq.m)	1082.10	Legend	White

Signing Project	Rougham Road Roundabout eastern exit splitter island				
Sign Reference		Width (mm)	11820	Background	Brown
x Height	100.0	Height (mm)	8950	Border	White
Material	Class RA2	Area (sq.m)	94.23	Legend	White

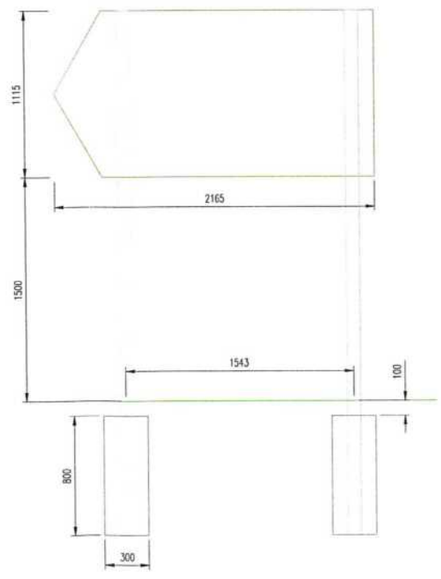
R

SIGN PLATE ATTACHED TO LAMP COLUMN WITHIN ROUGHAM HILL JUNCTION (LP2)

Signing Project	Rougham Hill junction				
Sign Reference		Width (mm)	400	Background	Green
x Height	100.0	Height (mm)	400	Border	White
Material	Class RA2	Area (sq.m)	0.16	Legend	White

A

Signing Project	Rougham Hill junction				
Sign Reference		Width (mm)	2165	Background	White
x Height	100.0	Height (mm)	1115	Border	Black
Material	Class RA2	Area (sq.m)	2.23	Legend	Black



Structural Calculation Details

Signs:
Reference: Sign 1
Width: 2165mm, Height: 1115mm
Shape: Flag
Orientation: Facing front
Mounted on posts: 1, 2
Mounting height: 1500mm, at post

Posts:
Quantity: 2
Type: 88.9 x 3.2 CHS (S355)
Spacing: 1543mm
Post 1 Length: 3515mm
Post 2 Length: 3515mm

Base:
Type: Planted
Diameter: 300mm
Depth: 800mm
Volume: 0.11cu.m
Earth cover: 100mm

Rev	Revision Notes	Dwn	Apvd	Date
A	ADDITIONAL SIGNS ADDED	JK	RGW	08.11.23

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CONSULTING ENGINEERS
Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

smas worksafe consultant www.smasltd.com SSIP CQMS Safety Scheme

DRAFT

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CONSTRUCTION DETAILS
SIGNS, POSTS & FOUNDATIONS
SHEET 4

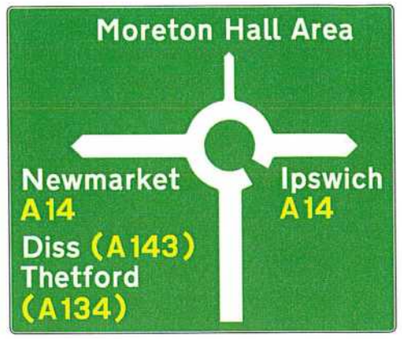
Client:			Date:
DENBURY HOMES			AUG 2023
Drawn: JK	Designed: JK	Checked: RGW	Approved: RGW

Scale: 1:20 (0.5m 0m 0.5m 1m)

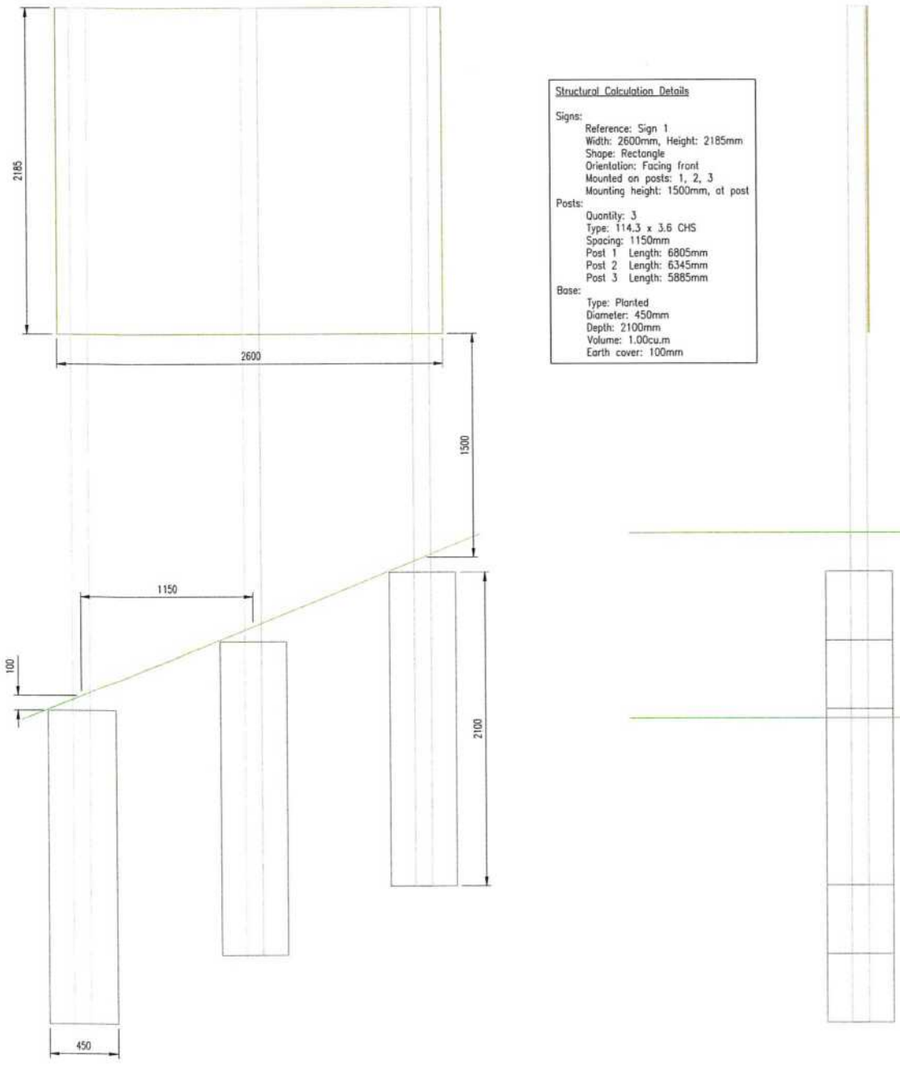
Project No:	Drawing No & Revision:	Size:
2107-592	247A	A1

CROSS REFERENCE WITH SIGNS AND LINES LAYOUT DRAWING. SCC SITE ENGINEER TO DETERMINE IF SIGN PLATES NEED REPLACING. ALL POSTS TO BE REPLACED AS SHOWN.

P



Signing Project	Rougham Road Roundabout eastern exit				
Sign Reference		Width (mm)	2600	Background	Green
x Height	100.0	Height (mm)	2185	Border	White
Material	Class RA2	Area (sq.m)	5.68	Legend	White



Structural Calculation Details

Signs:
- Reference: Sign 1
- Width: 2600mm, Height: 2185mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2, 3
- Mounting height: 1500mm, at post

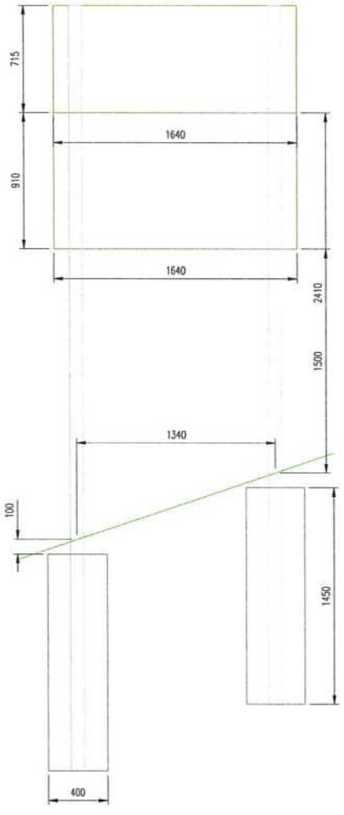
Posts:
- Quantity: 3
- Type: 114.3 x 3.6 CHS
- Spacing: 1150mm
- Post 1 Length: 6805mm
- Post 2 Length: 6345mm
- Post 3 Length: 5885mm

Base:
- Type: Planted
- Diameter: 450mm
- Depth: 2100mm
- Volume: 1.00cu.m
- Earth cover: 100mm

N

Signing Project	Rougham Road Roundabout eastern exit				
Sign Reference		Width (mm)	1640	Background	Green
x Height	100.0	Height (mm)	715	Border	White
Material	Class RA2	Area (sq.m)	1.17	Legend	White

Signing Project	Rougham Road Roundabout eastern exit				
Sign Reference		Width (mm)	1640	Background	Green
x Height	100.0	Height (mm)	910	Border	White
Material	Class RA2	Area (sq.m)	1.49	Legend	White



Structural Calculation Details

Signs:
- Reference: Sign 1
- Width: 1640mm, Height: 910mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2
- Mounting height: 1500mm, at post

- Reference: Sign 2
- Width: 1640mm, Height: 715mm
- Shape: Rectangle
- Orientation: Facing front
- Mounted on posts: 1, 2
- Mounting height: 2410mm, at post

Posts:
- Quantity: 2
- Type: 88.9 x 4.0 CHS
- Spacing: 1340mm
- Post 1 Length: 5121mm
- Post 2 Length: 4675mm

Base:
- Type: Planted
- Diameter: 400mm
- Depth: 1450mm
- Volume: 0.36cu.m
- Earth cover: 100mm

GENERAL

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Rev.	Revision Notes	Dwn	Apvd	Date

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Unit 10 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, IP10 0BJ.
Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

DRAFT

Project:
ROUGHAM ROAD ROUNDABOUT
BURY ST EDMUNDS

Drawing Title:
S278 CONSTRUCTION DETAILS
SIGNS, POSTS & FOUNDATIONS
SHEET 5

Client:			Date:
DENBURY HOMES			AUG 2023
Drawn:	Designed:	Checked:	Approved:
JK	JK	RGW	RGW

Scale: 1:20 (0.5m 0m 0.5m 1m)

Project No:	Drawing No & Revision:	Size:
2107-592	248	A1

GENERAL

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED. ANY DISCREPANCIES ARE TO BE RECORDED AND REPORTED TO THE ENGINEERS IMMEDIATELY.

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N

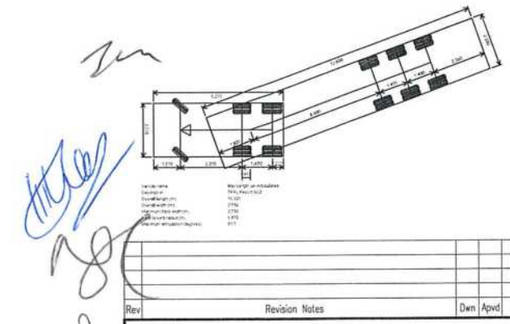
2.00

2.00

9.70

8.97

TRACKING KEY	
VEHICLE OVER HANG	
VEHICLE FRONT TYRES	
VEHICLE REAR TYRES	



Rev	Revision Notes	Dwn	Apvd	Date

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

smas worksafe consultant www.smasltd.com — as recognised by SSIP SAFETY SCHEMES IN PROCUREMENT — CQMS Safety Scheme

PRELIMINARY

Project:
ROUGHAM ROUNDABOUT
BURY ST EDMUND

Drawing Title:
SWEPT PATH ANALYSIS
SHEET 1

Client:			Date:
DENBURY HOMES			MAR 2023
Drawn: JS	Designed: JS	Checked: RGW	Approved: RGW

Scale: 1:500 (10m 0m 10m 20m 30m)

Project No:	Drawing No & Revision:	Size:
2107-592	270	A2

GENERAL

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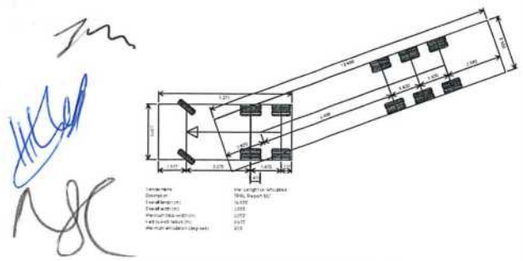
TRACKING KEY	
VEHICLE OVER HANG	
VEHICLE FRONT TYRES	
VEHICLE REAR TYRES	



Rev	Revision Notes	Dwn	Apvd	Date

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Tel: 01473 598038 — www.ingent.co.uk — email: info@ingent.co.uk

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PRELIMINARY

Project:
ROUGHAM ROUNDABOUT
BURY ST EDMUND

Drawing Title:
SWEPT PATH ANALYSIS
SHEET 2

Client:			Date:
DENBURY HOMES			MAR 2023
Drawn: JS	Designed: JS	Checked: RGW	Approved: RGW

Scale: 1:500 (10m 0m 10m 20m 30m)

Project No:	Drawing No & Revision:	Size:
2107-592	271	A2

GENERAL

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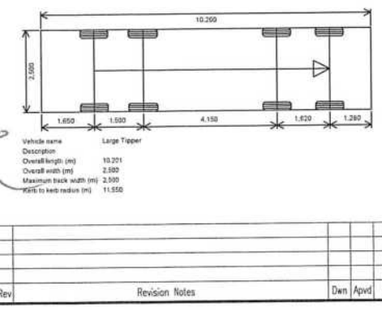
TRACKING KEY	
VEHICLE OVER HANG	
VEHICLE FRONT TYRES	
VEHICLE REAR TYRES	



Vehicle name	Large Tipper
Description	
Overall length (m)	10.201
Overall width (m)	2.500
Maximum track width (m)	2.500
Kerb to kerb radius (m)	11.550

Rev	Revision Notes	Dwn	Apvd	Date

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PRELIMINARY

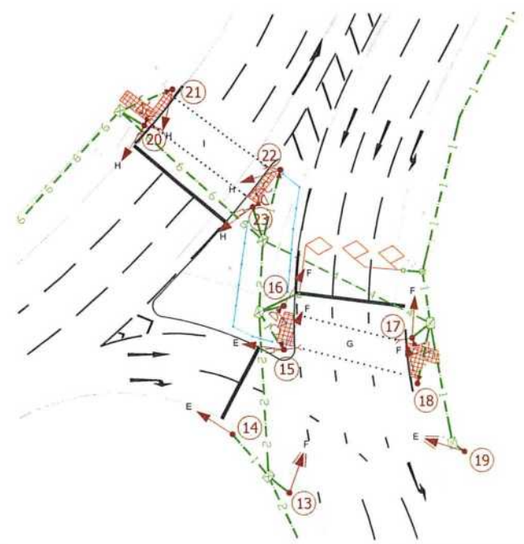
Project:
ROUGHAM ROUNDABOUT
BURY ST EDMUND

Drawing Title:
SWEPT PATH ANALYSIS
SHEET 3

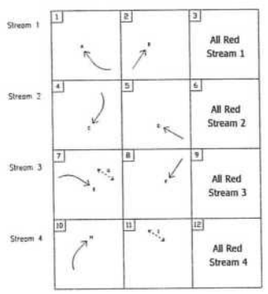
Client:			Date:
DENBURY HOMES			MAR 2023
Drawn: JS	Designed: JS	Checked: RGW	Approved: RGW

Scale: 1:500 (10m 0m 10m 20m 30m)

Project No:	Drawing No & Revision:	Size:
2107-592	272	A2



Stage / Phase Diagram



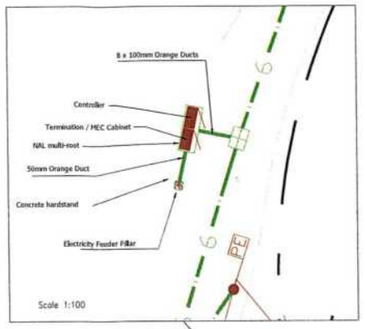
Permitted Stage Moves: All moves permitted

Intergreen Matrix

Starting Phase

Terminating Phase	A	B	C	D	E	F	G	H	I
A		5	-	-	-	-	-	-	-
B	5		-	-	-	-	-	-	-
C	-	-		5	-	-	-	-	-
D	-	-	5		-	-	-	-	-
E	-	-	-	-		5	-	-	-
F	-	-	-	-	5		5	-	-
G	-	-	-	-	-	5-12		-	-
H	-	-	-	-	-	-	-		5
I	-	-	-	-	-	-	5-12		

Intergreens calculated to Chapter 6 using QuickGreen. All intergreens to be validated and adjusted if necessary, at SAT.



Key

- 4m Straight Pole in RS1150F 650mm NAL socket
- RAG Signal Head with Primary or Secondary hoods
- Push Button Unit
- Toucan Nearside Display with push button
- Microwave Radar Vehicle Detector (MVD)
- On-crossing detector
- Photo-Electric solar cell
- Inductive loop
- Traffic Signal Controller and Termination Cabinet on NAL multiroot
- Electricity Feeder Pillar
- NAL Carriageway loop box + 50mm duct to chamber
- Twin Wall Chamber 600x600 / 600 x 450 / 450 x 450
- 100mm Orange Traffic Signal Duct, single, or no. of ducts as shown
- Red blister tactile paving
- Grasscrete maintenance parking area
- White thermoplastic pedestrian studs

Unusual Hazards and Risks

Construction:
- Consult statutory undertakers plans before construction.

Maintenance:
- Maintenance parking provided as shown.
- Inductive loops cut across multiple lanes due to lack of offside island. Requires multiple lane closure and TM for recutting.

Use:
- None. Passively safe poles not required as design speed is low and high energy absorption is required.

Decommissioning:
- None

Design Notes

1. All traffic signal equipment and works to comply with Appendix 12/5 .
2. Poles and equipment to be grey in colour.
3. A separate termination cabinet is provided adjacent to the controller, both on an NAL multi-root foundation. This can be used at the Signal Company's discretion, either for cable terminations, detector housing or communications etc.
4. Signal poles are not required to be passively safe as steel poles provide similar protection for required class.

Detector Functions

Stream 1

Detector Name	Input Name	Detector Type	Pole No.	MOVA Detector No.	Demand Phase	Extend Phase
CMVD_P5	CMVD	MVD	5		A	A (0.6)
DIN1	DIN1	Inductive Loop		1		
DIN2	DIN2	Inductive Loop		2		
DX3	DX3	Inductive Loop		3	B	B (4)
DX4	DX4	Inductive Loop		4	B	B (4)
DSL5	DSL5	Inductive Loop		5	B	B (1)
DSL6	DSL6	Inductive Loop		6	B	B (1)
DSL7	DSL7	Inductive Loop		7	B	B (1)

Stream 2

Detector Name	Input Name	Detector Type	Pole No.	MOVA Detector No.	Demand Phase	Extend Phase
CMVD_P9	CMVD	MVD	9		C	C (0.6)
DIN1	DIN1	Inductive Loop		1		
DX2	DX2	Inductive Loop		2	D	D (4)
DX3	DX3	Inductive Loop		3	D	D (4)
DSL4	DSL4	Inductive Loop		4	D	D (1)
DSL5	DSL5	Inductive Loop		5	D	D (1)

Stream 3

Detector Name	Input Name	Detector Type	Pole No.	MOVA Detector No.	Demand Phase	Extend Phase
CMVD_P15	CMVD	MVD	15		E	E (0.6)
FIN1	FIN1	Inductive Loop		1		
FIN2	FIN2	Inductive Loop		2		
FIN3	FIN3	Inductive Loop		3		
FX4	FX4	Inductive Loop		4	F	F (4)
FX5	FX5	Inductive Loop		5	F	F (4)
FX6	FX6	Inductive Loop		6	F	F (4)
FSL7	FSL7	Inductive Loop		7	F	F (1)
FSL8	FSL8	Inductive Loop		8	F	F (1)
FSL9	FSL9	Inductive Loop		9	F	F (1)
GPB1_P15	GPB1	Push Button	15		G	
GPB2_P16	GPB2	Push Button	16		G	
GPB3_P17	GPB3	Push Button	17		G	
GPB4_P18	GPB4	Push Button	18		G	
GDNC1_P15	GDNC1	On Crossing	15			(G 2)
GDNC2_P17	GDNC2	On Crossing	17			(G 2)

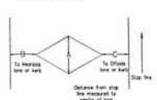
Stream 4

Detector Name	Input Name	Detector Type	Pole No.	MOVA Detector No.	Demand Phase	Extend Phase
HMVD1_P20	HMVD1	MVD	20		H	H (0.6)
HMVD2_P23	HMVD2	MVD	23		H	H (0.6)
IPB1_P20	IPB1	Push Button	20		I	
IPB1_P21	IPB2	Push Button	21		I	
IPB3_P22	IPB3	Push Button	22		I	
IPB4_P23	IPB4	Push Button	23		I	
IDNC1_P20	IDNC1	On Crossing	20			(I 2)
IDNC2_P23	IDNC2	On Crossing	22			(I 2)

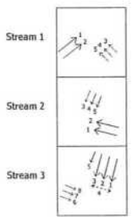
Detector Loop Dimensions

Detector Name	Distance to Stop Line (m)	Shape	Dimensions (m) A.	B.	C.
DIN1	70	DIAMOND	1.8	0.4	0.6
DIN2	72	DIAMOND	1.8	0.6	0.8
DX3	38	DIAMOND	1.8	0.4	0.6
DX4	40	DIAMOND	1.8	0.6	0.8
DSL5	5	DIAMOND	1.8	0.4	0.6
DSL6	5	DIAMOND	1.8	0.6	0.6
DSL7	5	DIAMOND	1.8	0.6	0.4
DIN1	74	DIAMOND	1.8	0.4	0.6
DX2	34	DIAMOND	1.8	0.4	0.6
DX3	35	DIAMOND	1.8	0.6	0.6
DSL4	5	DIAMOND	1.8	0.4	0.6
DSL5	5	DIAMOND	1.8	0.6	0.4
FIN1	87	DIAMOND	1.8	0.4	0.6
FIN2	88	DIAMOND	1.8	0.6	0.6
FIN3	89	DIAMOND	1.8	0.6	0.6
FX4	37	DIAMOND	1.8	0.4	0.6
FX5	38	DIAMOND	1.8	0.6	0.6
FX6	39	DIAMOND	1.8	0.6	0.6
FSL7	5	DIAMOND	1.8	0.4	0.6
FSL8	5	DIAMOND	1.8	0.6	0.6
FSL9	5	DIAMOND	1.8	0.6	0.4

Inductive Loop



MOVA Link Diagram



Revisions

Rev A. 07/09/22 Drawing updated with revised GA
Rev B. 01/10/22 Drawing updated with revised GA
Rev C. 09/08/23 Ducting amended
Rev D. 17/10/23 Drawing updated with revised GA and louvres

Chris Kennett Consulting Limited
Traffic Signal Engineering

Client: INGENT CONSULTING ENGINEERS

Title: Detailed Traffic Signal Design

Scheme: Roughom Road – Roughom Hill Roundabout, Bury St Edmunds

Drawing Number: 22-0316-001

Paper Size: A0 Drawn By: Chris Kennett 05/08/22

Chris Kennett
Consulting Limited
Traffic Signal Engineering

Specification for Highway Works

Series 1200 Appendix 12 / 5

Client: INGENT Consulting Engineers

04/08/2022

Contents

INTRODUCTION AND SCOPE

This specification fulfils the role of Appendix 12/5 and should be included in Series 1200 of the Manual for Contractors Highway Works.

This specification details the work required to construct, supply, install and commission the traffic signal related works which form part of the

A134 Rougham Road Roundabout, Bury St Edmunds

scheme and ensure that all the equipment is fully operational. Unless stated otherwise the work undertaken shall comply fully with the latest standards as detailed in the Highways Works Specification and/or the Traffic Signs Manual, Chapter 6. Where differences arise between the content of this Appendix and any referenced specifications/documents, the contents of this appendix shall be followed.

The work required as part of this contract is:

- All necessary civil engineering works
- Traffic Signals Ducting
- Traffic Signals Works
- Installation of a link cable
- Traffic Management Works
- Electrical Supply Works
- Communications Works
- Testing Services
- Validation Services

This document shall be read by all key parties who are involved with the installation, testing and commissioning of the traffic signal equipment.

The junction is located within the jurisdiction of

Suffolk County Council

and is maintained by

Swarco UK & Ireland

The reference to 'Overseeing Organisation' in this specification is the Local Highway Authority who has responsibility for the junction.

The reference to 'Traffic Signal Engineer' in this specification is the nominated Traffic Signal Engineer of the Local Highway Authority or their appointed representative. Contact Details shown below:

Karen Smith
Karen.Smith@suffolkhighways.org

CONTRACTOR RESPONSIBILITIES

Principal Designer

The Principal Designer shall be responsible for authorising any design changes that may become desirable or necessary during the construction phase(s). This will normally involve or be delegated to specialist Traffic Signal Designers, who should be consulted on matters outside the competency of the Principal Contractor. The Principal Designer for this scheme is:

INGENT Consulting Engineers

and can be contacted at:

Richard Wigzell
rwigzell@ingent.co.uk

Principal Contractor

The appointed Principal Contractor shall be responsible for the overall installation of the scheme, the programming and co-ordination of all installation activities, including the arrangement of traffic management. Should any changes to the design or specification be required or desired during construction, the Principal Contractor shall liaise with the Principal Designer to ensure the proposed changes are suitable.

The Principal Contractor shall appoint a Traffic Signal Contractor to undertake the works specified in the Appendix to this document, unless they can demonstrate that the Principal Contractor already has the required staff, skills and competency.

The Principal Contractor shall appoint Third Party Contractors to undertake the works specified in the Appendix to this document, unless they can demonstrate that the Principal Contractor already has the required staff, skills and competency. If specified below, the Principal Contractor shall appoint the Supplier identified, as the Third Party Contractor for the relevant service.

A copy of the proposed civil works and signal installation programme shall be presented to the Overseeing Organisation and their Traffic Signal Engineer (or representative) at a pre-construction meeting. The installation programme shall include the duration of all areas of works, including Factory Acceptance Test (FAT), Site Acceptance Test (SAT) and Commissioning.

The Principal Contractor shall be responsible for all safe working methods whilst on site. The Principal Contractor shall adhere to all relevant regulations, including Chapter 8 of the current Traffic Signs Manual, The Electricity at Work Regulations 1989, HSG47 "Avoiding Danger from Underground Services" as well as any site-specific rules or instructions.

The Principal Contractor shall co-ordinate with the Traffic Signal Contractor to arrange all necessary traffic management in accordance with the requirements of chapter 8 of "The Traffic Signs Manual - Road Works & Temporary Situations" (2009) Parts 1 & 2, to carry out all necessary works under this contract.

The Principal Contractor for this scheme is

To be determined by this tender

Traffic Signals Contractor

The Traffic Signal Contractor shall be the appointed organisation responsible for the provision, installation and commissioning of the traffic signal installation and all associated works as defined within this specification.

The Traffic Signals Contractor shall be approved to BS EN 9002 QAS 3433/287 or QSS 015. Evidence of certification should be provided on request by any party.

The Traffic Signals Contractor for this scheme is

To be determined and appointed by the Principal Contractor

The signal equipment layout that is shown on the signal design drawings in Appendix A shall be installed in accordance with the Design Manual for Roads and Bridges, Traffic Signs Manual, Chapter 6 and this specification. The signals equipment shall function in the manner specified in Appendix B and be registered and certified in accordance with relevant TOPAS specifications.

The Traffic Signal Contractor shall ensure that all staff involved in the installation have been fully made aware of all relevant specifications and have the information and equipment necessary to comply fully with all the requirements. The Traffic Signal Contractor must ensure that all staff involved in the installation attend the site induction.

Third Party Contractor(s)

Third Party Contractors may be appointed to undertake specialist roles on behalf of the Local Highway Authority and/or Principal Contractor. They shall be responsible for the (relevant) works outlined in the Appendix to this document.

Third Party Contractors for this scheme are:

Chris Kennett Consulting Limited,
to be appointed by the Principal Contractor and can be contacted at
Chris Kennett
chris@chriskennett.consulting
07753804411

Third Party Contractors shall engage and liaise with the Principal Contractor and shall ensure all staff involved in the scheme have been fully made aware of all relevant specifications and have the information and equipment necessary to comply fully with all the requirements. If instructed by the Principal Contractor, they shall attend site induction.

DESIGN WORKS

All traffic signal design works shall comply with the requirements specified in the Design Manual for Roads and Bridges / Traffic Signs Manual Chapter 6, and local standards issued by the Overseeing Authority.

TRAFFIC SIGNAL EQUIPMENT

Traffic Signal Controller

The Traffic Signal Controller shall conform to TOPAS 2500A. Output to all on-street-equipment shall be Extra Low Voltage (<50v) unless explicitly stated elsewhere in the Traffic Signals Design.

The Controller shall be fitted with an S18 main cabinet door lock, 900 Manual Panel keylock, "T" compression locks on the main door, and two sets of keys for each. An A5 maintenance log book shall be provided in a suitable document holder, built into the cabinet.
All IP communications enabled equipment shall be connected to the site communications media via appropriate network switches / hubs, power supplies and suitable Ethernet cables. A spare port shall be available for Engineer Handset use.

All cabinets shall be installed on an NAL Controller Root. Installation shall be in accordance with the manufacturer's instructions.

The Controller shall only be installed once a suitable power supply is available.

The Controller shall be fitted with a main door stay, Manual Panel and Detector Fault Monitoring light. The DFM light shall be clearly visible from outside of the cabinet, with all cabinet doors closed.

All cabinets shall be installed in a way that allows all doors to be fully opened.

The finished installation of the Controller Root(s) shall effectively prevent the ingress of animals, moisture and gases.

The Controller Cabinet and any other Miscellaneous Equipment Cabinets shall be of a colour specified in the Detailed Design, with sufficient internal space for all equipment required by the design and specifications. Equipment within cabinets shall generally be mounted securely in equipment racking within a swing-frame, except for cable terminations, which shall be secured against the cabinet walls. Incoming cabling shall be secured to castellation bars, fixed to the cabinet.

Where multiple controllers or cabinets are provided on the same site, a link cable and equipment allowing full IP communication between all equipment at both cabinets, shall be provided.

The installation of the Controller shall be neat and tidy. All cables shall be securely routed and tied back. All equipment shall be secured. Terminations, sockets and other connectors shall be likewise be secured. All spare cores shall be taped or capped and shall be routed so as not to interfere or block other equipment. Cabling shall be long enough to reach secured termination blocks and shall not be extended by crimping or other means. Cabling from street, including feeder cables, shall not be terminated directly to equipment within the swing-frame.

The Controller Cabinet and any Miscellaneous Equipment Cabinets shall be labelled with site and cabinet references in accordance with local standards and conventions. This will normally be using self adhesive white lettering on the cabinet-side facing the main carriageway.

Lamp monitoring, including Red Lamp Monitoring, and DFM functionality, shall be provided in accordance with the Controller Specification. At pedestrian crossings, where no controller specification is provided, red lamp monitoring shall be provided, operating in accordance with TOPAS2500A and shall result in the site switching off on second red lamp failure on an approach.

The controller shall be configured in accordance with the Controller Specification where provided, or otherwise in accordance with TSM Chapter 6 and the crossing timings provided. Junction configurations and hardware shall be proven in advance by means of a Factory Acceptance Test. All sites shall be subject to a Site Acceptance Test, before being switched on.

The Traffic Signal Contractor shall provide training for any new software, firmware or hardware not previously used within the Local Highway Authority's area.

Traffic Signal Poles

Unless the design specifically requires a different material and finish, poles shall be either hot-dipped galvanized steel, finished in a coloured plastic powder coating, or may be aluminium with a similar finish. The colour shall be as identified on the design. Galvanisation of steel poles shall be in accordance with BS729: 1971.

All signal poles shall be supplied without pre-drilled holes for pedestrian push buttons, but should be drilled on site to meet the requirements of the design.

The colour of poles and pole caps shall match the controller cabinet colour.

All heads on each approach are to be mounted at the same height to the centre of the amber, regardless of the type of pole, or arrangement of aspects. This may mean using non-standard brackets to compensate for swan-neck poles of 4-in-line heads. Regardless of the heads, poles and brackets used, a minimum clearance of 2.1m above footways or unmade verge and 2.4m above cycleways must be achieved.

Stub and short poles shall be supplied with welded pole caps and be earth-bonded via a brass stud tapped into the push button unit.

All poles 5m and shorter, are to have low access doors and terminations. Doors shall be fitted with suitable stays and retaining bolts/locks. Terminations shall be accessible through the access door and shall be protected against condensation and running water. The poles shall fit within an RS115 pole socket, however they may widen locally above ground level.

Tall poles between 6-8m in length are to be wide based (168mm) and have welded top caps, complete with access door and fitted backing board. Terminations shall be accessible through the access door and shall be protected against condensation and running water .

All signal poles shall be mounted in NAL pole retention sockets (or similar if agreed by Overseeing Organisation). The Pole retention socket and its foundation is to be designed and installed as per the manufacturer's guidelines. The top of the socket is to be level with the finished level of the footway. The Traffic Signal Contractor is to supply the appropriate length signal pole and cable entry system.

Where required in the design, passive poles and associated equipment shall comply with BS EN 12767:2007 and the relevant energy absorption class specified on the design.

Traffic Signal Heads

All signal heads and aspects shall be designed in accordance with BS EN 12368
All signal heads shall be ELV LED. The size, appearance and optical performance of all signal heads is to comply with the requirements of the Traffic Signs, Regulations and General Directions (TSRGD) 2016, BS 7987 (HD 638) and all relevant TOPAS 25** Series specifications for the equipment being installed.

All vehicle signals shall be fitted with primary, secondary or tunnel hoods as shown on the signal design drawing. The Traffic Signal Contractor shall be responsible for ensuring all signal equipment (including backings boards, visors and tunnel hoods) is installed achieving a minimum of 0.45m lateral clearance between the kerb edge and the equipment.

All heads shall be installed on poles, with the bottom of the signal head/bracket assembly mounted between 2.1 and 2.55 metres above ground level. All traffic signal heads on an approach shall be mounted on the same horizontal plane through the amber aspects.

Signal head mounting brackets are to be protected with an appropriate plastic coating or catalytic paint, or be manufactured from a non-ferrous material in a dark grey or black colour.

Brackets should be sufficiently long enough to provide at least 125 degree rotational adjustment movement on each traffic signal head where several are mounted on one pole. If a signal head is shown on the design drawing as being bracket mounted, a bracket is to be installed to allow for the signal head to be offset from the pole as specified.

Traffic signal heads shall be supplied and installed with backing boards (unless otherwise specified) that have been factory treated with BS EN 12899-1: 2001 Class 1 retro-reflective white borders.

Flexible tubing (Copex type), is to be installed to protect the external wiring between each signal head and pole. This tubing shall be fixed securely to the back of the signal head using a nylon or plastic gland. The length of this tubing should be sufficiently long enough to ensure that it remains within the pole to accommodate the signal head being flexed in all weathers.

No transformer or power supplies (for tactile devices, pedestrian detectors or audible/tactile equipment) shall be fitted in any traffic signal head.

All erected signal heads that have not been commissioned are to be covered at the end of each day of installation. The Traffic Signal Contractor is to provide durable waterproof orange coloured covers for this purpose. During the installation period the Traffic Signal Contractor will be responsible for the maintenance of the covers and their fitting.

Signal lamp dimming to 27.5V ELV shall be provided. A Photo Electric Control Unit (PE cell) shall be mounted on top of the signal head with the least effect from artificial light sources. Ideally this should be on the signal head closest to the controller and in a location that makes it easy to be serviced. Failure of the solar switch shall cause the signals to assume the 'bright' condition. Refer to the signal design drawing for details of which pole the PECU is to be installed.

Nearside Demand and Display Units

All nearside demand (push button) units, demand and display units and display-only units are to be ELV with a maximum voltage rating of 48V. All units fitted with a push button shall also be fitted with a wait lamp showing a steady red or deep orange demand indication.

Nearside pedestrian demand units are to comply with TOPAS 2511A 'Performance Specification for Nearside Signal and Demand Units'. All Cycle/Equestrian/Pedestrian aspects shall be LED design and fitted with 3M masks or other equivalent means of limiting phantom effects.

The demand unit shall be mounted between 1.0 and 1.1 metres above the pavement to the centre of the push button.

Where separate demand units and display units are used, a gap of approximately 150mm is to be provided between the top of the demand unit and the bottom of the display unit.

At sites where additional high level repeater display units are specified, these are to be located above the 'primary' nearside display. Refer to the detailed design to determine if these units are to be narrow field of view.

Audible devices shall comply with TOPAS 2509 'Performance Specification for Audible Equipment for use at Pedestrian Crossings'. Tactile devices shall comply with TOPAS 2508 'Performance Specification for Tactile Equipment for use at a Pedestrian Crossing' and have its own separate power supply.

UTC and MOVA

Where specified in Appendix B, MOVA and UTC equipment shall be demonstrated to be fully functional and to work in accordance with the documentation issued by the 'manufacturer' (TRL for MOVA, Siemens or Dynniq for UTC). Additionally, industry good practice and local specifications shall be followed as best fits the requirements of the site.

All UTC equipment shall be compatible and made to work with the Local Highway Authority's existing UTC System, including configuration of static routes and firewalls, if necessary. The Traffic Signal Contractor shall liaise with the Local Highway Authority to determine the requirements.

The UTC and/or MOVA functionality shall be provided within the main controller cabinet and may be integral or provided as additional hardware. If provided as additional hardware, it shall be considered to be part of the Controller and subject to the same requirements.

All UTC/MOVA equipment shall follow the UTMC2 UG405 protocol.

UTC and MOVA facilities shall include configuration of the hardware to enable those facilities and all necessary licenses for the site in perpetuity. Configuration of the hardware shall include allocation of hardware inputs and outputs.

MOVA Facilities (where required) shall be MOVA 8.

Installation of UTC is to include supply, installation and configuration of all necessary communications routers and other interfaces and devices, as required to provide the functionality described in the Detailed Design and Specifications.

Detection Requirements

Above Ground Detection (AGD)

Above Ground Vehicle Detection is to comply with the latest issue of TOPAS 2505 'Performance Specification for Above Ground Vehicle Detector Systems for use at Permanent Traffic Signal Installations'.

Above ground pedestrian detection is to comply with the latest issue of TOPAS 2506A "Performance Specification for Above Ground On-Crossing Pedestrian Detection Systems" and TOPAS 2507A "Performance Specification for Kerbside Detection Systems for use with Nearside Signals and Demand Units.

The supporting bracket for above ground detectors shall normally be mounted on top of a signal aspect bracket. The supporting bracket shall allow for the vertical and horizontal adjustment of the above ground detectors. When set in final position the detector should be able to be locked in that position.

The mounting method of the detector should ensure that other signal equipment, such as a backing board, does not obscure the field of detection. The above ground detector is to be secured by means of an anti-theft fixing.

Cables for the above ground detectors are to be neatly secured to the top signal bracket using tie-wraps.

Plug and socket cable connections are to be supplied for termination purposes. They are to be fitted to the stop of the signal head assembly, enabling easy removal of the detector units

Refer to the Detailed Design drawing for exact above ground detector requirements.

Inductive Vehicle Loop Detection

Inductive loop detection is to comply with TOPAS 2512 'Performance Specification for Below Ground Vehicle Detection Equipment'.

Vehicle detector loops are to be installed before/only after the road markings and any High Friction Surfacing has been laid, unless specific authorisation has been granted by the Traffic Signal Engineer.

The inductive loop cable is to comply with TR2029 'NMCS inductive Loop Detector Cable'

The feeder cable for the inductive loops is to comply with TR2031 'NMCS feeder cable for inductive loop detectors'. The colour of the outer sheath of the feeder cable is to be orange and not grey as specified in TR2031 clause 5.10.1

The Traffic Signal Contractor is to carry out tests and record the insulation and series resistance of the components of each loop detector installation. The results of the tests are to be completed prior to the SAT and handed over signed to the Traffic Signal Engineer.

Feeder cables shall not generally exceed 200 metres. This length can be increased to 300m in exceptional circumstances with the specific authorisation from the Traffic Signal Engineer.

Only Single pair feeder cable shall be used one for each detector. Should the Traffic Signal Contractor wish to use Twin pair feeder cable, a cable schedule, detailing all the cable runs and detector channels/packs is to be submitted to the Traffic Signals Engineer for specific authorisation. This process is required to eliminate cross talk between detector channels/packs.

No individual feeder cable is to be connected to more than one physical detector. Each loop is to be individually connected to separate channels of multi-channel detector units or as shown on the signal design drawing or as detailed on the MCH1827 forms.

Each feeder cable is to have a green 'pull tight' label securely fixed to each end. The identity of the loop is to be labeled, in indelible ink, in accordance with the signal design drawing.

All detector channels including spares are to be labeled with their respective loop identification.

The Traffic Signal Contractor is to adjust the detector sensitivity and frequency settings on the detector channels to achieve optimum performance for the detection system in operation and ensure cross-talk between adjacent channels is eliminated.

Wireless detection

Wireless detection is to comply with the latest issue of TOPAS 2512 'Performance Specification for Below Ground Vehicle Detection Equipment'.

The Wireless detection system comprises of magnetometers installed in the carriageway, access points/repeater points on poles/lamp columns and interface card(s) in the traffic signal controller. The Traffic Signal Contractor shall install and commission the equipment in accordance with the manufacturer's instructions.

The Traffic Signal Contractor is to provide the equipment detailed on the Signal Design Drawing and Appendix A Bill Items, including all the appropriate cables between the poles and the controller.

Slot Cutting

Slot cutting through kerbs is not permitted. Under kerb ducting is to be installed to connect the loop detector with the chamber in the adjacent footway/verge. Refer to the traffic signal design drawing and Appendix 5/2 for details of the ducting, carriageway box (if used) and chambers.

The minimum dimensions for slot cutting in porous or bitumen road surfaces shall be 8.0mm wide by 95mm in depth. This dimension is to be used for the actual loop perimeter and the cut back to the kerb/verge for single and double loop tails. The minimum dimension shall be increased to 110mm where three pairs of loop tails share a single cut back to the kerb/verge. The depths specified may be reduced by 30mm for concrete road surfaces.

Where armoured feeder cable is to be installed, the depth of slot cuts shall be increased to provide a minimum of 75mm and 45mm cover in asphalt and concrete surfaces respectively.

The depth of slot cutting on bridge decks is to be agreed with the Traffic Signal Engineer.

The loop cable turns will be in accordance with MCH1540.

All slots are to be free of debris and dry before loop cable is installed. The slots are to be kept clean and dry before the back fill is complete.

All loop tails are to be taken back to the joint with the feeder cable separately.

Slot cutting is to be carried out only during the hours identified by the Overseeing Organisation NRSWA coordinator Traffic Signal Engineer. Traffic Signal Contractor to liaise with the Overseeing Organisation NRWSA coordinator and Traffic Signal Engineer to determine the nominated hours.

Water Supply during Slot Cutting

A water supply is to be used for cooling saw blades during slot cutting. This water supply shall be provided either directly from a mains water feed or via a water bowser.

The Traffic Signal Contractor/Slot Cutting Sub-Contractor shall be responsible for gaining permission from the water supply company for the extraction of water required for slot cutting purposes.

A double non-return valve assembly on standpipe is to be used by the Slot Cutting operatives when connected to the water hydrant. This is required to minimise the possibility of damage to the mains or contamination of the water supply.

To supply high pressure water from the bowser to the slot cutting machine a water pump may be connected.

Slot cutting operations shall not be conducted when the ambient temperature is below 2°C. If in doubt the Engineer's representative should be consulted.

Inductive Loop Back Fill

The back fill for the loop cable is to be a one part process using hot pour bitumen.

When more than one pair of loop tails share the cut back slot a layer of epoxy resin is to be poured on each pair of loop tails . This is required to avoid entrapment of air amongst the loop cables.

The manufacturer's recommendations are to be followed regarding handling, mixing and use of resins. A 5mm cover of resin pour is to be used in all cases to cover the upper cable in the slot. The resin must be allowed to set before the application of hot pour bitumen or cold setting asphalt as appropriate.

Loop slots shall backfilled with oxidised grade bitumen R85/40 to BS3690 Part 2. The bitumen shall totally fill the slot and remain slightly proud of the carriageway surface by 3mm. Any cooling shrinkage shall be topped up to restore the level. Any excessive over spill shall be removed by the Signals Contractor prior to full setting.

The oxidised grade bitumen R85/40 shall be heated to a pouring temperature of 185°C, and poured from an enclosed container which shall be preheated before use.

Inductive Loop Jointing kits

Only re-useable joint are to be used. No chemical joints are permitted.

Approximately 0.5m of surplus loop cable and 0.5m of surplus feeder cable shall be left at the joint position in the roadside chamber.

All joint connections are to by means of a suitable terminal block arrangement within an enclosure to IP68 rating. A suitable bracket arrangement within each loop chamber is to be provided. This is to ensure that the enclosure is kept above the base of the chamber and any water likely to be at the base of the chamber.

The process of jointing is to be carried out in a dry environment. If the weather conditions are wet suitable protection is to be provided to ensure that the no moisture enters the joint during the jointing operation.

Service Duct Requirements

The ducting and access chambers are shown on the signal design drawing and are to be installed in accordance with Appendix 5/2 'Traffic Signals Service Duct Specification'.

Testing

Testing and Putting Into Service

The Principal Contractor shall make arrangement and cover all necessary costs to ensure the safe and independent testing of traffic signal equipment as it is being put into service by the Traffic Signal Contractor.

Testing and validation works may be provided by the Traffic Signal Engineer, on written agreement with that Local Authority. Otherwise, the Principal Contractor shall provide a competent person(s), independent of the Traffic Signal Contractor, to undertake the following works. Where the following paragraphs refer to the Traffic Signal Engineer, this would apply to either the Traffic Signal Engineer of the Local Authority, or whoever else undertakes the works.

Factory Acceptance Test (FAT)

A FAT is not usually required for Puffin and Toucan controllers, however for MOVA crossings, a FAT may be required.

The Traffic Signal Contractor shall provide, if requested by the Traffic Signal Engineer one printed copy of the user handbook or guide. The documentation is to include a full list of operator commands and their functions as well as details of the functions of all switches accessible to the Traffic Signal Engineer. This documentation is to be handed to the Traffic Signal Engineer at the FAT.

The Traffic Signal Contractor shall make all necessary arrangements for the Traffic Signal Engineer to attend the FAT at the local depot of the Traffic Signal Contractor. At least two weeks' notice is to be provided of the proposed FAT date. A copy of the configured specification in .PDF and Emulation Format is to be provided to the Traffic Signal Engineer at this time.

The Traffic Signal Contractor shall ensure that the control equipment on test during the FAT is the equipment to be installed on site as part of this contract. The Traffic Signal Contractor is to demonstrate compliance with the TOPAS 2500/MCH1827 work specification and configuration forms and signal design drawings. As part of the test suitable lamp mimics, adequate means of simulating detector inputs and an interface to simulate UTC shall be provided.

The FAT is to be undertaken by the Traffic Signal Engineer with the Traffic Signal Contractor's engineer present. Upon completion of a successful FAT a certificate is to be issued and signed by all parties as evidence of test compliance.

Following a successful FAT the Traffic Signal Engineer reserves the right to uniquely mark parts of the control equipment.

Repeat tests are to be arranged within one week of the initial test failure. The Traffic Signal Contractor will meet all costs incurred by the Traffic Signal Engineer in attending the retest.

Signal Installation Electrical Test

The Traffic Signal Contractor is to carry out Earth Leakage Impedance tests using appropriate test equipment, at each pole, controller cabinet and termination cabinet. These tests are to comply with BS 7671 'Requirements for electrical installation'.

A 'Signal Installation Electrical Test Certificate' is to be completed by the Traffic Signal Contractor and handed to the Traffic Signal Engineer at commissioning. The Traffic Signal Contractor is to notify the Traffic Signal Engineer in writing of any precautions that are required to safeguard the control equipment during the test process. A list of these precautions is to be left in the controller following commissioning.

Site Acceptance Test (SAT)

Commissioning of any traffic signal installation shall only be undertaken when all works at the installation, including surfacing, pedestrian guard railing and road marking activities are complete.

If requested by the Traffic Signal Engineer the Traffic Signal Contractor is to provide one set of Traffic Signal Controller keys prior to or at the SAT.

The Traffic Signal Contractor is to provide a SAT engineer to demonstrate to the Traffic Signal Engineer that the signal installation has been installed in accordance with all specification requirements. This includes such tests as safety checks i.e. Red Lamp Monitoring.

The Traffic Signal Contractor is to have carried out all pre-switch tests before confirming and inviting the Traffic Signal Engineer to attend the SAT.

The SAT will also include the commissioning of the fitted OMCU or OTU unit. The Traffic Signal Contractor is to provide the Traffic Signal Engineer with the OMCU Installation Details Certificate either prior to or during the SAT or follow up OMCU commissioning.

The SAT acceptance certificate/sheets are to be signed by both the Traffic Signal Contractor representative and the Traffic Signal Engineer. Detailed on this document will be a list of any outstanding items, which are to be addressed by the Principal Contractor within four weeks of switch on.

At commissioning the Traffic Signal Contractor is to complete and hand to the Traffic Signal Engineer the following documents: Inductive Loop Test Certificate, Cable Schematic, Signal Installation Electrical Test Certificate for all sites. For sites with OMCUs installed; OMCU installation Details Certificate. Without these documents the site will not be accepted by the Overseeing Organisation's Traffic Signal Engineer.

The Traffic Signal Contractor shall provide suitably competent and experienced personnel to set up the VA/CLF/MOVA/UTC/SCOOT control facilities and to test and validate VA/CLF/MOVA/UTC/SCOOT control operation in the presence of the Traffic Signal Engineer. The validation process shall include for a minimum of two peak periods, a morning and evening peak.

Validation shall include the optimisation of all relevant modes to ensure the traffic signals comply with the operational requirements of the Local Authority, including capacity, delay and safety considerations.

Following the successful commissioning, the Traffic Signal Contractor shall supply the Traffic Signals Engineer electronic details of the controller specific configuration data and shall retain sufficient records to provide replacements at reasonable cost, in the event of the EPROMS/configurations becoming damaged or requiring modification.

Equipment Handover and Warranty

Handover

All outstanding items are to be rectified within four weeks of switch on. After four weeks has expired the Traffic Signal Engineer reserves the right to employ the services of another signal company to complete outstanding work not resolved. Failure to complete outstanding items to the Traffic Signal Engineer's satisfaction will result in the 12-month warranty period being awarded to another signal company. Costs incurred when resolving outstanding work after the allocated timeframe, including the 12-month warranty period, shall be invoiced to the original Traffic Signal Contractor.

The traffic signals will only be accepted into maintenance of the Overseeing Organisation once all items have been completed to the satisfaction of the Traffic Signal Engineer. Until such time the Principal Contractor will be responsible for the signal equipment including the maintenance.

Warranty

The tender price shall include for the provision of 12 months warranty of all equipment supplied under this contract. The 12-month warranty period will not commence until all works (including outstanding items list) have been completed and signed by Traffic Signal Engineer. The warranty is to include for all necessary materials, labour, transport required to carry out these works and traffic management.

During the time period of site acceptance and handover the Traffic Signal Contractor shall comply with the Overseeing Organisation's current maintenance response times, which shall be as follows:-

- Urgent faults attendance within 2 contract hours
- Non-urgent faults attendance within 8 contract hours
- Full repair for both categories within 4 contract hours.
- Contract hours 08.00 - 18.00, Monday to Sunday including Bank Holidays.

An Urgent Fault is defined as:-

- All signals Unlit Signals failing to change
- Defective signals that are likely to cause excessive queues or danger and have caused abnormal traffic conditions requiring urgent attention
- Equipment damaged and in a dangerous condition
- Red Lamp failures

All faults will be reported by telephone or email by the Traffic Signal Engineer.

The Traffic Signal Contractor is to provide contact details for both during and outside office hours, together with the postal address of the proposed maintenance facility from which the service is to be provided. Should the response times not be adhered to, the Traffic Signal Engineer reserves the right to obtain quotes from other signal companies. The associated costs incurred shall be invoiced to the original Traffic Signal Contractor.

The warranty includes all of the on-site equipment provided by the Traffic Signal Contractor. Excluded from the warranty is the telecommunication connection facilities and the incoming power supply into the pillar up to excluding the cartridge fuse.

Prior to leaving site, the Traffic Signal Contractor is to inform the Traffic Signal Engineer by telephone (during office hours) of the following details:

- Time of arrival on site / time of leaving site
- Fault on arrival on site
- Works carried out

Upon return to the depot the Traffic Signal Contractor is to confirm by email, to both the Principal Contractor and Traffic Signal Engineer the details listed above.

Should six months have expired between commissioning and the formal site handover the Traffic Signal Contractor is to carry out Periodical Inspections (PI), in accordance with TD 24/97 "All-Purpose Trunk Roads Inspection and Maintenance of Traffic Signals and Associated Equipment". A PI will be required every six months until formal site handover.

Should 12 months have expired between commissioning and the formal site handover the Traffic Signal Contractor is to carry out the annual cleaning requirements detailed in TD 24/97.

The Traffic Signal Contractor is to invite the Overseeing Organisation's signal maintenance company to attend site at the SAT, to confirm that the installation is of a satisfactory standard. The Traffic Signal Contractor is to fund the site visit of the signal maintenance company of up to two persons. Any work required to ensure site is of a satisfactory standard shall be completed prior to hand over of the site.

Should there be conflicting views between the Traffic Signal Contractor and the signal maintenance company, the Traffic Signal Engineer's decision is final. The Traffic Signal Engineer reserves the right to employ the services of another signal company to complete outstanding work not completed at the time of takeover, after four weeks of the SAT. Any costs incurred to resolve such faults shall be invoiced to the original Traffic Signal Contractor.

A cost estimate is to be provided by the Traffic Signal Contractor for the supply of poles in barrels and associated works only if deemed necessary, to facilitate the installation of the new traffic signal installation. The Principal Contractor is to be responsible for the installation of any such system.

Timing Amendments - Revised Configurations

The Traffic Signal Contractor shall include in the cost estimate for the provision and installation of up three revised configurations within the twelve months warranty period for each controller provided under this contract. This shall incorporate any timing or configuration amendments deemed necessary by the Traffic Signal Engineer.

For every revised configuration the Traffic Signal Contractor shall provide an electronic copy of the configuration at least two weeks before FAT/SAT is scheduled to the Traffic Signal Engineer. Following successful commissioning of each revision, the Traffic Signal Contractor is to re-send the configuration electronically to the Traffic Signal Engineer.

Power Requirements

The site shall be supplied by a DNO single phase supply, of sufficient capacity for the equipment to be supplied. The Principal Contractor shall liaise with the Traffic Signal Contractor to determine the relevant information necessary and shall liaise with the DNO (or authorised contractor) to install a suitable supply.

Unless otherwise dictated by the DNO, the supply shall be unmetered. The Traffic Signal Contractor shall provide, via the Principal Contractor, to the DNO, Elexon codes and quantities for all installed equipment. Both the Principal and Traffic Signal Contractors shall work together to ensure that the installation electrical supply can be adopted by the Local Highway Authority.

All electrical work is to be undertaken in accordance with the latest edition of BS 7671.

The Traffic Signal Contractor shall design all site cabling, including the power supply feed from the feeder pillar to the controller, taking into consideration the specific power characteristics of the traffic signal equipment. Mains power supply power cable from the feeder pillar shall have a conductor size no less than $6mm^2$ and an earth cable no less than $10mm^2$.

APPENDIX A: TRAFFIC SIGNAL DESIGN DRAWINGS

Detailed Design Rougham Road Roundabout, Drawing No. 22-0316-001

APPENDIX B: CONTROLLER CONFIGURATION DATA

Controller Specification, Lynn Road – 22-0316 Rougham Road Roundabout Controller Specification

APPENDIX C: BILL ITEMS

Table 1. Cabinets and Enclosures		
Item	**Equipment**	**Location**
1	Controller Cabinet	As shown on drawing 22-0316-001
2	Miscellaneous Equipment and Termination Cabinet	As shown on drawing 22-0316-001
3	Electrical Feeder Pillar	As shown on drawing 22-0316-001

Table 2. Third Party Statutory Undertakers Services			
Item	**Location**	**Description**	**Supplier (if known)**
4	Electrical Feeder Pillar	New Single Phase 60A unmetered electricity supply.	
5	Controller Cabinet	ADSL Broandband communications and router, configured to SCC instation requirements	

Table 3. Works and Equipment Supplied by Principal Contractor	
Item	**Description**
6	Clearance of existing site,
7	All Civil Engineering works, including groundworks, excavations, reinstatements, paving etc.
8	Installation of all ducting, including linking to existing ducts at Toucan crossing west of Rougham Road roundabout
9	Supply and erection of permanent signs
10	Supply, erection and removal of temporary signs
11	Arrange supply of Third Party Statutory Undertakers Services
12	Supply and install NAL Multi-Controller Root
13	Contract and Project Management, including liaison with Contractors and Overseeing Organisation
14	Traffic Management
15	Supply and Install ducting and chambers.

Table 4. Works and Equipment Supplied by Traffic Signal Contractor	
Item	**Description**
16	Design of Traffic Signal cabling, including installation of a link cable to Toucan crossing west of Rougham Road Roundabout
17	Supply and Install Traffic Signal equipment as per detailed design, including controller(s), termination cabinets, poles, heads, push button, detectors, etc
18	Supply and Install UG405 OTU / MOVA 8 facility and associated communication equipment
19	Facilitate Factory Acceptance Test (FAT)
20	Facilitate Site Acceptance Test (SAT)

Table 5. Third Party Traffic Signal Services		
Item	**Description**	**Supplier (if known)**
21	Undertake Site Acceptance Test (SAT)	Chris Kennett Consulting Limited
22	Undertake Factory Acceptance Test (FAT)	
23	Undertake Validation of Traffic Signal Operation / MOVA / Timings	

STREET LIGHTING LEGEND:-

- EXISTING STREET LIGHTING COLUMNS TO REMAIN.
- EXISTING STREET LIGHTING COLUMNS AND LANTERNS TO BE DISCONNECTED FROM PRIVATE CABLE NETWORK AND REMOVED TO TIP FOR RECYCLING. TELENSA TELECELLS TO BE CAREFULLY REMOVED FROM REDUNDANT LANTERNS AND RETURNED TO SCC FOR RE-PROGRAMMING AND POTENTIAL RE-USE. **EXISTING PRIVATE CABLING IS TO BE JOINTED THROUGH TO ENSURE CONTINUITY OF REMAINING STREET LIGHTING CIRCUITS.**
- SUPPLY AND INSTALL NEW 10M GALVANISED TUBULAR STEEL LIGHTING COLUMN COMPLETE WITH GLASS FLAKE ROOT TREATMENT AND 1.5M 'WEBBED' STYLE OUTREACH BRACKET ARM MOUNTING 1NO. **SIDE ENTRY C U PHOSCO P863 128LED 10.50Klm (HIGH POWER VERSION) WARM WHITE (3000K) LED LANTERN WITH F3 OPTIC SETTING**. COMPLETE WITH DIMMABLE ELECTRONIC CONTROL GEAR. FACTORY FITTED 7-PIN NEMA SOCKET, 1-PART PHOTOCELL #(TELENSA TELECELL UNIT) AND CHARLES ENDIRECT L3 DOUBLE POLE ISOLATOR IN BASE OF COLUMN. **ALL NEW COLUMNS ARE TO HAVE STATUTORY MAINS ELECTRCITY SUPPLIES.**
- SUPPLY AND INSTALL NEW 8M GALVANISED TUBULAR STEEL LIGHTING COLUMN COMPLETE WITH GLASS FLAKE ROOT TREATMENT AND 1M 'WEBBED' STYLE OUTREACH BRACKET ARM MOUNTING 1NO. **SIDE ENTRY C U PHOSCO P863 128LED 5.24Km (HIGH POWER VERSION) WARM WHITE (3000K) LED LANTERN WITH C2 OPTIC SETTING** COMPLETE WITH DIMMABLE ELECTRONIC CONTROL GEAR. FACTORY FITTED 7-PIN NEMA SOCKET, 1-PART PHOTOCELL #(TELENSA TELECELL UNIT) AND CHARLES ENDIRECT L3 DOUBLE POLE ISOLATOR IN BASE OF COLUMN. **ALL NEW COLUMNS ARE TO HAVE STATUTORY MAINS ELECTRCITY SUPPLIES.**
- SUPPLY AND INSTALL NEW 8M GALVANISED TUBULAR STEEL LIGHTING COLUMN COMPLETE WITH GLASS FLAKE ROOT TREATMENT AND 1M 'WEBBED' STYLE OUTREACH BRACKET ARM MOUNTING 1NO. **SIDE ENTRY C U PHOSCO P863 128LED 6.12Klm (HIGH POWER VERSION) WARM WHITE (3000K) LED LANTERN WITH F3 OPTIC SETTING** COMPLETE WITH DIMMABLE ELECTRONIC CONTROL GEAR. FACTORY FITTED 7-PIN NEMA SOCKET, 1-PART PHOTOCELL #(TELENSA TELECELL UNIT) AND CHARLES ENDIRECT L3 DOUBLE POLE ISOLATOR IN BASE OF COLUMN. **ALL NEW COLUMNS ARE TO HAVE STATUTORY MAINS ELECTRCITY SUPPLIES.**
- SUPPLY AND INSTALL NEW 6M GALVANISED TUBULAR STEEL LIGHTING COLUMN COMPLETE WITH GLASS FLAKE ROOT AND 1NO. **POST TOP MOUNTED C U PHOSCO E950 28LED 2.59Klm (HIGH POWER VERSION) 425mA 19W WARM WHITE (3000K) LED LANTERN WITH F2P OPTIC SETTING**. COMPLETE WITH DIMMABLE ELECTRONIC CONTROL GEAR. FACTORY FITTED 7-PIN NEMA SOCKET, 1-PART PHOTOCELL #(TELENSA TELECELL UNIT) AND CHARLES ENDIRECT L3 DOUBLE POLE ISOLATOR IN BASE OF COLUMN. **ALL NEW COLUMNS ARE TO HAVE STATUTORY MAINS ELECTRCITY SUPPLIES.**
- SUPPLY AND INSTALL NEW 6M GALVANISED TUBULAR STEEL LIGHTING COLUMN COMPLETE WITH GLASS FLAKE ROOT AND 1NO. **POST TOP MOUNTED C U PHOSCO E950 28LED 2.48Klm (HIGH POWER VERSION) 425mA 19W WARM WHITE (3000K) LED LANTERN WITH P4P OPTIC SETTING**. COMPLETE WITH DIMMABLE ELECTRONIC CONTROL GEAR. FACTORY FITTED 7-PIN NEMA SOCKET, 1-PART PHOTOCELL #(TELENSA TELECELL UNIT) AND CHARLES ENDIRECT L3 DOUBLE POLE ISOLATOR IN BASE OF COLUMN. **ALL NEW COLUMNS ARE TO HAVE STATUTORY MAINS ELECTRCITY SUPPLIES.**

 # NOTE: TELENSA TELECELLS AND SUFFOLK COUNTY COUNCIL IDENTIFICATION NUMBER PLATES ARE TO BE SUPPLIED AND INSTALLED ON ALL STREET LIGHTING LANTERNS AND ILLUMINATED SIGNS BY SCC'S INCUMBENT STREET LIGHTING CONTRACTOR, UPON ADOPTION, AT DEVELOPERS EXPENSE. (APPROXIMATELY £124 PER LIGHTING UNIT).

PLEASE ENSURE CORRECT LANTERNS ARE INSTALLED ON CORRECT COUMNS AS PER SPECIFICATION ABOVE. A COPY OF THIS DRAWING IS TO BE ISSUED TO THE APPOINTED STREET LIGHTING CONTRACTOR AT ALL TIMES.

STREET LIGHTING NOTES:-

1) ALL NEW STREET LIGHTING COLUMNS ARE TO BE INSTALLED WITHIN THE REAR OF THE FOOTPATH OR WITHIN THE REAR OF THE SERVICE STRIP UNLESS OTHERWISE INDICATED. WHERE COLUMNS ARE TO BE INSTALLED WITHIN SERVICE STRIPS, IT IS STRONGLY ADVISED THAT THE POSITIONS OF THE PROPOSED LIGHTING COLUMNS ARE MARKED AT AN EARLY STAGE USING STAKES OR PIPING OF A SIMILAR DIAMETER TO THAT OF THE LIGHTING COLUMN BASE, SO AS TO ENSURE ADEQUATE SPACE FOR THE LIGHTING COLUMNS TO BE INSTALLED WHILST NOT BEING BLOCKED / IMPINGED ON BY OTHER SERVICES. INSTALLATION OF COLUMNS OUTSIDE OF SERVICES STRIPS WILL NOT BE ACCEPTED.

2) WHERE ROAD LIGHTING COLUMNS ARE TO BE INSTALLED IN VERGE THEY SHALL BE SET BACK FROM THE EDGE OF THE KERB / ROAD SURFACE SO THAT THE REAR OF THE COLUMN IS 1.0M BACK FROM THE KERB EDGE UNLESS OTHERWISE INDICATED. WHERE A LIGHTING COLUMN IS INSTALLED IN AN AREA WHERE THE SERVICE STRIP IS INDICATED AS BEING ONLY 0.5M WIDE, AN AREA OF LAND 1M X 1M SURROUNDING THE BASE OF THE LIGHTING COLUMN WILL NEED TO BE DEDICATED AS HIGHWAY THEREFORE WIDENING THE SERVICE STRIP AROUND THE COLUMN.

3) ALL NEW STREET LIGHTING COLUMNS AND ILLUMINATED SIGNS ARE TO HAVE DNO STATUTORY MAINS ELECTRICITY SUPPLIES UNLESS OTHERWISE INDICATED.

4) NO TREES ARE TO BE PLANTED WITH 5M OF ANY NEW STREET LIGHTING COLUMNS TO ENSURE BLOCKING EFFECT ON LIGHTING UNITS IS MINIMISED.

5) IF NO LIGHTING COLUMNS HAVE BEEN PLANTED WITHIN 18 MONTHS OF THIS LIGHTING DESIGN BEING APPROVED, THE DESIGN SHOULD BE RE-SUBMITTED TO SUFFOLK COUNTY COUNCIL'S STREET LIGHTING DEPARTMENT FOR RE-CHECKING / RE-APPROVAL.

6) NO CHANGES TO THE POSITIONS OR SPECIFICATION OF ANY LIGHTING EQUIPMENT SHOWN ON THIS APPROVED STREET LIGHTING DRAWING SHOULD BE MADE WITHOUT PRIOR AUTHORISATION FROM THE APPROVING SUFFOLK COUNTY COUNCIL OFFICER MR NEIL EVANS OR IN THE APPROVING OFFICERS ABSENCE, THE SUFFOLK COUNTY COUNCIL STREET LIGHTING MANAGER MR RICHARD WEBSTER.

STREET LIGHTING DESIGN

APPROVED

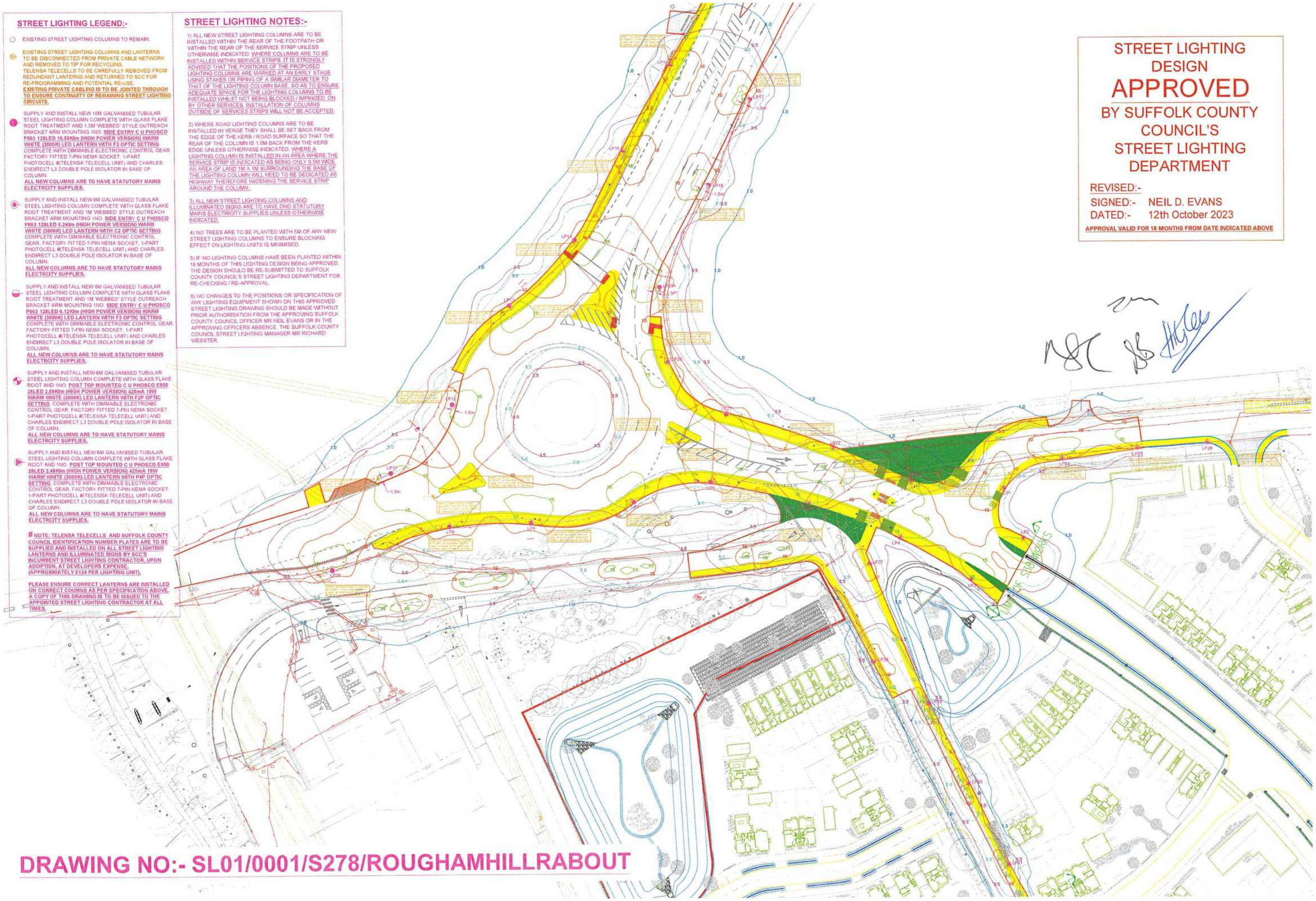
BY SUFFOLK COUNTY COUNCIL'S STREET LIGHTING DEPARTMENT

REVISED:-

SIGNED:- NEIL D. EVANS

DATED:- 12th October 2023

APPROVAL VALID FOR 18 MONTHS FROM DATE INDICATED ABOVE



DRAWING NO:- SL01/0001/S278/ROUGHAMHILLRABOUT