
British Standard

Construction drawing practice

Part 3. Recommendations for symbols
and other graphic conventions

Dessins de construction

Partie 3. Recommandations pour les symboles et autres conventions graphiques

Bauzeichnungen

Teil 3. Empfehlungen für Symbole und andere graphische Zeichen

Foreword

This Part of BS 1192, having been prepared under the direction of the Basic Data and Performance Criteria for Civil Engineering and Building Structures Standards Committee, is a revision of PD 6479 (which is withdrawn) and also completes the revision of BS 1192 : 1969 (withdrawn in February 1984). It has been written to bring the recommendations for construction drawing practice up to date and to comply with other national standards of the United Kingdom and with standards of the International Organization for Standardization (ISO) that have been accepted by the UK. (See also the introduction.)

BS 1192 comprises four Parts as follows:

- Part 1. Recommendations for general principles
- Part 2. Recommendations for architectural and engineering drawings*
- Part 3. Recommendations for symbols and other graphic conventions
- Part 4. Recommendations for landscape drawings

It gives recommendations regarding the production of graphical information needed to provide communication, with accuracy, clarity, economy and consistency of presentation, between all concerned with the construction industry, including architects, civil engineers, contractors, landscape architects, services engineers, site operatives and structural engineers.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

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0 Introduction

0.1 General

This Part of BS 1192 is intended for those concerned with the application of symbols and other graphic conventions on drawings, and for those concerned with the design, development and standardization of such conventions, for the construction industry.

0.2 Work within the International Organization for Standardization (ISO)

International agreement has not always been achieved in this field of work: 'acceptability' of symbols internationally is dependent partly on precedent and partly on rationale. Precedent in this context can be determined only by an international survey which, although advocated by the United Kingdom, has not been undertaken. The

development of a rationale for the design of new graphic conventions and for the selection of existing graphic conventions demands a major research programme. As yet such a programme has not been undertaken.

0.3 UK work

Although not the result of either an international survey or a major research programme, this Part of BS 1192 is based on principles of rationale and also on precedent. Graphic conventions proposed by ISO or other authorities that do not conform either to the stated rationale or to national precedent have not been included. This Part of BS 1192 is the first step towards a theoretical and practical basis for symbols and other graphic conventions for an industry that is constantly progressing and changing. It will, therefore, be necessary for this work to be regularly monitored, adjusted and extended.

Section one. General

1 Scope

This Part of BS 1192, which is primarily intended for those preparing drawings, gives recommendations for symbols and other graphic conventions for use on drawings for the construction industry.

It also describes a rationale of symbolism (clause 3) which establishes rules for the design of symbols and other graphic conventions, and gives recommendations for the application of those rules and the ways in which symbolism should be used (clause 4).

It does not include symbols applicable to signs for use on buildings or equipment, nor symbols for use on fire protection drawings (which are given in BS 1635).

NOTE. The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 1192, the definitions given in BS 1192 : Part 1 and BS 3975 apply, together with the following.

NOTE. Terms given in italic typescript are defined in this Part of BS 1192.

2.1 convention. An accepted way of drawing an item which may have the nature of a *representation*, a *simplified representation* or a *symbol*.

2.2 information device. A *convention* indicating an abstract item.

2.3 representation. A scale view of an object.

2.4 simplified representation. A scale view incorporating only the essential shape, size or features of an object.

2.5 symbol. A graphic device without scale used:

- (a) on a drawing to indicate the occurrence and/or location of an item;
- (b) in an annotation to indicate one or more of the attributes of an item.

2.6 symbol element (element). A graphic device without scale used only in combination with a *symbol* (or symbols) or with other *elements*, to form a *symbol*.

3 Rationale

3.1 Indication of all features of an object

Although all the features of an object (subject to the limitations of the scale of the drawing) can be shown on a detailed pictorial view (a *representation*, see 2.3), there are usually other attributes of the object which need to be described, annotated or referred to in other documents.

3.2 Limited indication of the features of an object

To reduce drawing effort and time, a pictorial view such as that described in 3.1 can sometimes, as appropriate, be

limited in detail (a simplified representation, see 2.4) but can still need a description, annotation or reference.

3.3 Non-realistic indication of objects

To reduce drawing effort and time still further for an object of which the size is not significant on a drawing, especially if many such objects occur, the object can be indicated non-realistically by using a symbol (see 2.5).

3.4 Symbols sharing common subsidiary features

Some symbols share common subsidiary features; this Part of BS 1192 refers to these features as elements (see 2.6). These can be incorporated in new symbols, can be added to established symbols or can be combined with other elements as needed.

A symbol element should not be used in isolation.

3.5 Types of symbol

The simplest form of symbol is the basic symbol. More complex types of symbol are derived from the basic symbol. There are three ways of deriving symbols:

- (a) by embellishment of a basic symbol;
- (b) by a combination of basic symbols;
- (c) by extension of a basic symbol.

Figure 1 gives examples of symbols/elements and constructed symbols.

3.6 Conventions showing abstract items

Conventions showing abstract items are referred to as information devices (see 2.2).

3.7 Comparison between representations, simplified representations and symbols

Figure 2 shows a comparison between representations, simplified representations and symbols.

4 Design and use of symbolism

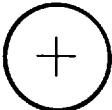
4.1 Graphic simplicity

4.1.1 The amount of detail in a representation should be appropriate to the scale of the drawing, taking account of the recommendations of BS 1192 : Part 1 regarding clarity of reproduction and microfilming.

4.1.2 The amount of detail in a simplified representation should be limited to the essential attributes of the object (see 2.4 and figure 2).

4.1.3 Geometric shapes for information devices, elements and symbols are limited. Precedent (see the introduction) can establish that one shape can have several meanings, the relevant meaning being determined normally by context and experience.

A geometric shape should not be used if its meaning is not determined by context and experience.

	1	2	3
Symbols/ elements	 any new tree	 luminaire  pole  arm	 fall of ground
Column 1: specific symbols with increasing embellishment	 short standard	 luminaire on pole	 bank
Column 2: constructed symbols, symbols combining	 half standard		
Column 3: symbol constructed by repetitive use of element	 light standard	 luminaire on pole- mounted arm	
	 standard		
	 tall standard		
	 selected standard		

NOTE. The symbols given in column 1 are shown in table 4.3.

Figure 1. Examples of symbols/elements and constructed symbols

4.1.4 Over-complexity of information devices, elements and symbols should be avoided by one of the following methods:

- (a) omitting unnecessary information (for example, if all the items in a project are of the same type);
- (b) annotating differences between one item and another;
- (c) referring differences to a schedule or other document.

4.2 Symbols (including elements of symbols)

4.2.1 The size of a symbol does not necessarily relate to the size of an object, nor to the scale of a drawing.

4.2.2 The shape of a symbol does not necessarily relate to the shape of an object.

4.2.3 A symbol does not necessarily indicate graphically all the attributes of an item. (See 4.1.4 and figure 3.)

4.2.4 A symbol can be combined with an element or a symbol to form another symbol. (See figure 3.)

4.2.5 A symbol can be added to a convention, a representation, a simplified representation or another symbol. (See figure 3.)

4.3 Graphics

4.3.1 The illustrations in section two (the compendium) indicate the size of symbolism that should typically be used on drawings. Account has been taken, in the light of evaluation tests, of producing symbolism by:

- (a) manual draughting using a 0.35 mm pen, including the manufacture of suitable templates (stencils);
- (b) computer draughting;
- (c) using dry transfer.

Item	Representation	Simplified representation	Symbol
Interlocking concrete block paving			
Fence			
Gas meter and shut-off valve			

Figure 2. Comparison between representations, simplified representations and symbols

Item	Symbolism	Component parts of symbolism			
		Elements	Conventions	Symbols	Simp. Rep'ns.
Street lamp		6.4E1 6.4E2	—	8.402	—
Sinktop (RH bowl) with mixer tap		7.4E2 7.4E3	—	7.405	7.4R4
Wheel valve on exposed pipe at high level		—	1.302	7.101 7.303	—
Metal faced plywood		—	—	2.205 2.207	—

4.3.2 Graphic techniques should follow the recommendations in BS 1192 : Part 1, and in particular:

- (a) line thickness should be not less than 0.25 mm on drawings to be reproduced without reduction, or to be microfilmed;
- (b) line thickness should be not less than 0.35 mm on drawings to be reduced by up to 50 %;
- (c) if different line thicknesses are used, each thickness should be at least twice the next thinner line;
- (d) the space between lines should be not less than 0.7 mm;
- (e) inclined lines should be at an angle of 15° or a multiple of 15° ;
- (f) solidly filled areas should be kept to a minimum (because they tend to disappear in successive reproductions): hatching is preferred;
- (g) lettering (including numbers) should have a capital height of:

- (1) not less than 2.5 mm for drawings as in (a) above;
- (2) not less than 3.5 mm for drawings as in (b) above.

4.3.3 The orientation of an element should always be as shown in section two (the compendium), but the orientation of other types of symbolism should not be regarded as affecting the meaning of the symbolism concerned.

4.4 Authority

4.4.1 Each drawing or set of drawings which uses symbolism drawn from this Part of BS 1192, should include a statement to that effect in the information panel of the drawing concerned.

4.4.2 Symbols derived from symbols in this standard should be illustrated and their meaning should be clearly explained on the drawings concerned. Care should be exercised to ensure that derived symbols do not become over-complicated.

4.4.3 When a symbol is taken from other sources, e.g. from BS 1553 : Part 1, BS 1635 or BS 3939 : Part 11, a statement to that effect should be included in the information panel of the drawing concerned, the symbol should be illustrated and its meaning should be clearly explained on the drawing.

5 Presentation of the compendium

5.1 General

Section two comprises a compendium of symbols and other graphic conventions that are recommended for use on construction drawings. Examples of the application of symbols are given as appropriate.

The compendium is organized by subject area.

5.2 Background matrix

5.2.1 Elements or symbols having significant relative sizes are illustrated against a matrix of 4 mm squares.

5.2.2 The background to some elements and symbols incorporates additional lines to indicate, as appropriate, how they should:

- (a) be drawn;
- (b) relate to the context in which they occur.

5.3 Reference system

5.3.1 Tables are grouped in broad categories in groups, and the group number is the first digit of the table number.

5.3.2 The second digit of the table number identifies that table within its group.

5.3.3 Elements are numbered sequentially within their table of origin, with E interposed between the table number and the sequential number.

5.3.4 Conventions and symbols are numbered sequentially (always with two digits) within their table of origin, the sequential number being suffixed to the table number.

5.3.5 Elements and symbols originating in other tables and used in a table are only listed in that table; they are illustrated in their tables of origin.

5.3.6 Applications illustrate examples of conventions and symbols in use, and are not numbered.

5.3.7 The numbers of the elements and symbols used in applications are listed.

5.3.8 In table 7.4 (which covers sanitary fittings), the simplified representations based on ISO 4067/2 are numbered similarly to elements (see 5.3.3). The difference is that R is interposed instead of E.

5.4 Arrangement of tables

5.4.1 The contents of each table are arranged in the following order:

- (a) elements;
- (b) elements and symbols from other tables;
- (c) conventions;
- (d) symbols;
- (e) simplified representations;
- (f) applications.

NOTE. Not every table includes all these contents.

5.5 Interdependence of tables

5.5.1 Although some groups of tables are related to particular aspects of the construction industry and professions, a group does not contain all the symbolism relevant to its particular aspect.

5.5.2 All the tables in the compendium should therefore be consulted for the symbolism relevant to a drawing.

Section two. Compendium

Group 1. Information devices

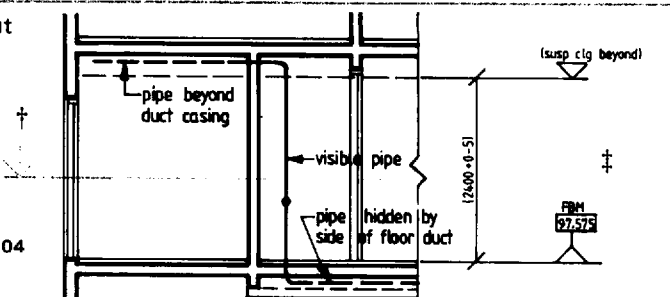
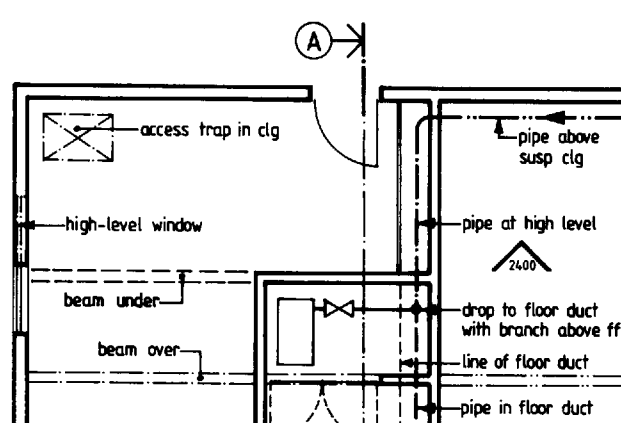
Table 1.1 Datums, levels, orientation

Symbols	Symbols (continued)	Applications
1.101 bench mark	1.107 North point	Change of suspended ceiling level at bulkhead
1.102 datum on plans		
1.103 datum on cuts, sections, elevations		
1.104 level on plans		
1.105 level on cuts, sections, elevations		
1.106 ceiling height above ffl, on plans		
*Location at cross.		

Table 1.2 Indication of planes and voids

Symbols	Symbols (continued)	Applications
1.201 direction of span, floor or roof structure		Part plan of floor with lift well opening
1.202 opening in ceiling/floor/ wall/etc.		
1.203 recess in ceiling/floor/ wall/etc.		

Table 1.3 Conventions for indicating zones

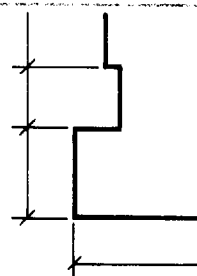
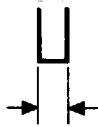
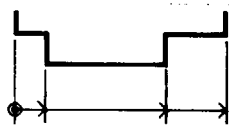
Conventions		Applications*
1.301 behind cutting plane, hidden		Example of cut (A-A on plan below)  1.103/1.105 1.301/1.303/1.304 1.403 1.602/1.607
1.302 behind cutting plane, visible		
1.303 beyond cutting plane, visible		
1.304 beyond cutting plane, hidden		
		Example of plan 

*Only part of the cut and plan drawing is shown.

†The cutting plane is not usually drawn on cuts, elevations and sections.

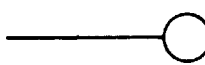
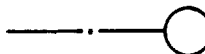
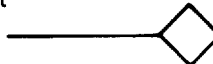
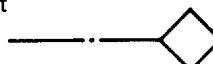
‡Floor bench mark (see BS 5606).

Table 1.4 Termination of dimension lines

Symbols		Symbols (continued)	Applications
1.401 open arrowhead		1.406 common datum point for running dimensions	Dimensions 
1.402 closed arrowhead		1.407 open arrow for small dimensions	
1.403 oblique stroke		1.408 closed arrow for small dimensions	
1.404 dot			
1.405 circle			1.403 Small dimension  1.408 Running dimensions  1.401/1.406 Small running dimensions  1.406/1.408

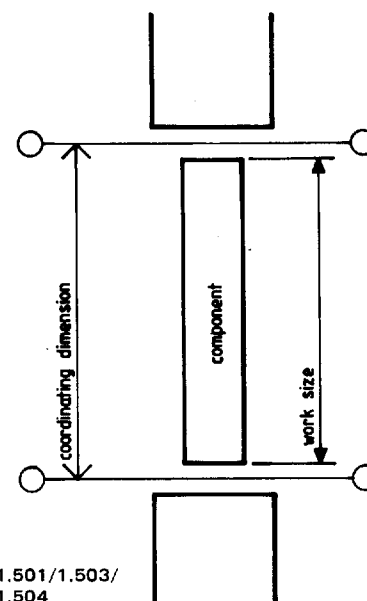
Group 1. Information devices

Table 1.5 Termination of modular coordination lines*

Symbols		Applications
1.501 key reference plane, any type		Reference line any type 
1.502 key reference plane, site setting out datum		1.501 Centre line, any type 
1.503 dimension line, co-ordinating dimension		1.501 Reference line, site setting out 
1.504 dimension line, work size		1.502 Centre line, site setting out 
		1.502

Applications (continued)

Dimension of coordinated
component, showing work
size of component



*See BS 6750.

Table 1.6 Referencing/cross-referencing

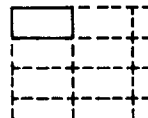
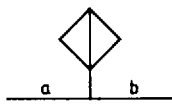
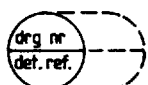
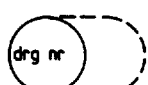
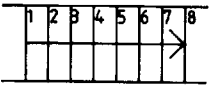
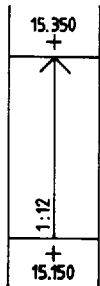
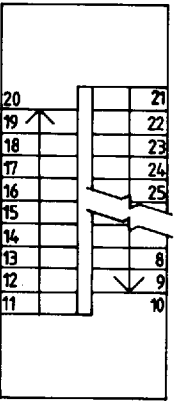
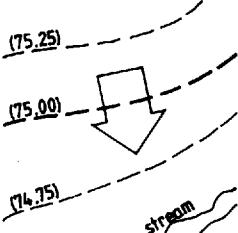
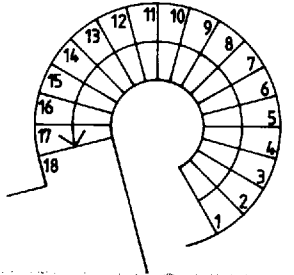
Symbols		Symbols (continued)	Applications
1.601 to note, from within outline		1.606 to schedule 	Plane of change 
1.602 to note, from outline		1.607 termination of cutting plane 	1.608 Point of change 
1.603 to detail, on same drawing		1.608 plane/point of change 	
1.604 to detail, on another drawing			
1.605 to another drawing			

Table 1.7 Handling of ironmongery for annotating schedules*

Symbols	Explanatory diagram	Explanatory diagram
1.701 clockwise closing	5 	6 
1.702 anti-clockwise closing	6 	5 
1.703 opening face	0 	1 
1.704 closing face	1 	0 

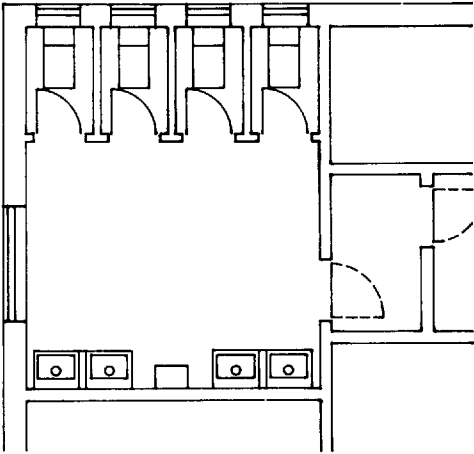
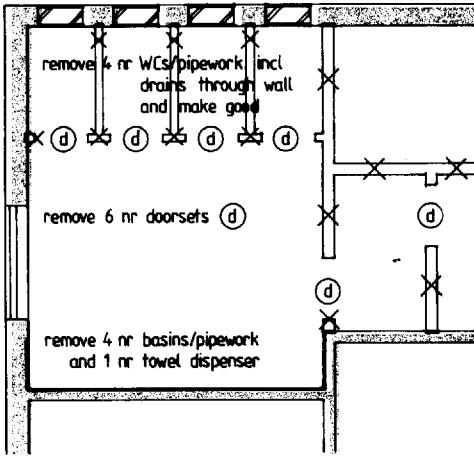
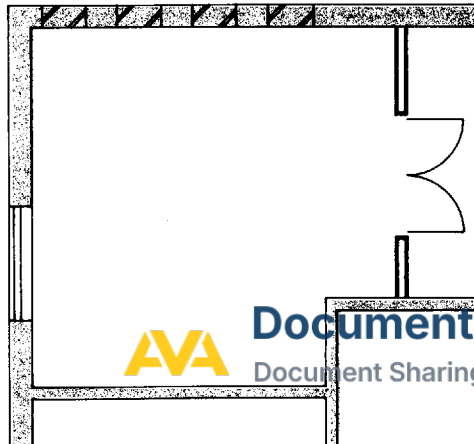
*See also ISO/R 1226.

Table 1.8 Steps and gradients

Symbols	Applications††	Applications (continued)
1.801 direction of RISE, ramp/ stair/steps	Straight stair/steps 	Ramp 
1.802 direction of FALL, slope	Dog leg stairs 	Part of ground survey 
1.803 direction of FALL, natural drainage	Helical stair 	Sloping paving 
1.804 direction of FLOW, watercourse		

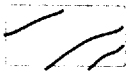
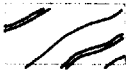
Group 1. Information devices

Table 1.9 Alterations and demolitions

Symbols		Applications
1.901 removal of part		Part of plan of survey
1.902 removal of area		
1.903 infilling opening		
1.904 making good after removal of part		 6.102 6.301/6.303 6.404 7.4R7/7.4R12
1.905 making good after forming opening		Part of plan showing alterations and demolitions (drawn on copy of survey drawing); shading used to emphasise walls to be retained; annotations used for some items to clarify drawing.
1.906 making good to surface		
1.907 sealing off		
		 1.901/1.903/1.904/1.906
		Part of plan of new work after alterations and demolitions (drawn on copy of alterations and demolitions drawing); shading used to emphasise walls retained and openings infilled.
		

Group 2. Materials in section

Table 2.1 Wood

Elements		Symbols		Symbols (continued)	
2.1E1 machining face		2.101 any type, sawn		2.105 softwood, machined all round	
2.1E2 straightening face		2.102 any type, machined one face		2.106 hardwood, machined all round	
		2.103 any type, straightened			
		2.104 any type, thickened			

*Softwood, see BS 4471; hardwood, see BS 5450.

Table 2.2 Manufactured materials

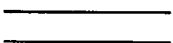
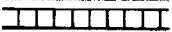
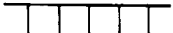
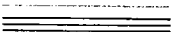
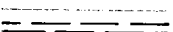
Symbols		Symbols (continued)		Applications	
2.201 board/layer/ membrane/quilt/ sheet, any type; small scale		2.207 metal sheet		Board with membrane or thin sheet facing 2.201/2.203	
2.202 sheet, any type; large scale		2.208 blockboard		Veneered blockboard	
2.203 board, any type; large scale		2.209 insulation board		2.201/2.208 Rolled steel angle	
2.204 quilt, any type; large scale		2.210 insulation quilt		2.207	
2.205 plywood sheet					
2.206 glass sheet					

Table 2.3 Masonry

Symbols

2.301

blockwork



2.302

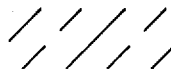
brickwork



Symbols (continued)

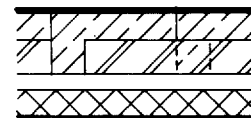
2.303

stonework



Application

Blockwork/brickwork
cavity wall with
keyed stonework facing
(ashlar)



2.301/2.302/2.303

Table 2.4 Site-formed materials

Elements and symbols
from other tables

2.201 board/layer/membrane/quilt/
sheet, any type, small scale

Symbols (continued)

2.406

granular fill



2.407

hard fill



2.408

subsoil



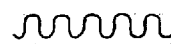
2.409

topsoil



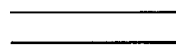
2.410

mulch



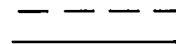
Symbols

2.401

layer, any type,
faced one side

2.201

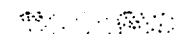
2.402

layer, any type,
irregular
surface

2.403

asphalt/
macadam

2.404

plaster/render/
screed

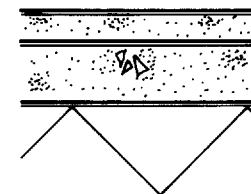
2.405

concrete



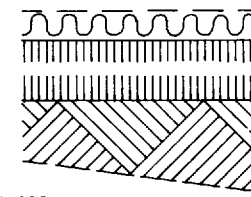
Applications

Thin flooring on screed on
damp proof membrane on concrete
slab on
separating
membrane
on hard fill



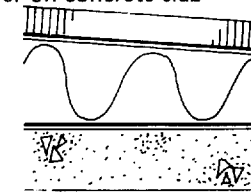
2.201
2.401/2.404/2.405/2.407

Mulched topsoil on subsoil



2.402/2.408/2.409

Asphalt roofing on separating layer
on tapered insulation board on
vapour barrier on concrete slab



2.201/2.209
2.401/2.403/2.405