RELEASE UPDATES

Release Date: Saturday 02 March, 2019

*Catch possible mistakes while inputing data

1002. Build 1002 Release updates

Release Date: Monday 18 February, 2019

This update changes the program entirely and there is no support for input files created using earlier versions. 1. Each part of the input file starts with the `PART` name and ends with `END PART`. Values that have to be changed are indicated in *italics*. The commands that tell the program what to do have been `highlighted`. The order of how these parts are added to the input file does not matter.

`COMMAND` *value1 value2*. Items are separated using spaces. The case of the commands and values is ignored, commands are only entered as upper case for clarity.

X means the parameter is not applicable

A line starting with an asterisk (`*`) is ignored. This is to all addition of **comments** to the input file

1002.1 Input File

1002.1.1. Build Number

The build number tells program what version of the program we are working with;

`BUILD` *build_number*

Example

`BUILD` *1002*

1002.1.2. Start Point

Start point is where the drawing the beam starts. The `x, y, z` coordinates are provided in that order as shown below

`START POINT` *x y z*

Example

`START POINT` *0 0 0*

1002.1.2. Beam Sections

The sections commands are used in specifying the beam(s) sections as illustrated below

`SECTIONS`
`SECTION` *section_1_name bw d bf_top df w_offset*

```
SECTION section_2_name bw d bf_top df w_offset
END SECTIONS
```

Example

```
SECTIONS
SECTION 1 200 450 500 150 150
SECTION 2 250 450 350 250 X
SECTION 3 200 450 350 200 150
SECTION 4 300 800
END SECTIONS
```

In this example, section *4* is a square section. The inapplicable parameters could have also been passed as *X*'s but not passing them at all works the same. Refer to *read_me.pdf* for explanation of the parameters used after the commands

1002.1.3. Beam Links (Shear reinforcement)

The section specifies shear reinforcement to be added to the different beams within the input

To add Links to your input, follow the format below

```
LINKS
LINK link_1_name diameter bar_mark shape_code spacing offset length
LINK link_2_name diameter bar_mark shape_code spacing offset length
END LINKS
```

Note: Refer to shear/links section of *Build 1001 Release update* notes for explanation of the parameters. These will be better explained when the docs are combined.

Example

```
LINKS
LINK 1 T8 03 51 200 0.05 X
LINK 2 T8 03 51 200 0.05 X
LINK 3 T8 03 51 150 X 1.3
END LINKS
```

1002.1.4. Beam Supports

Beam supports are basically to guide program on the type of columns at each point. Below is an illustration of how to input supports data.

```
SUPPORTS
SUPPORT support_1_name TOP section_d section_b column_h_m BOTTOM section_d section_b column_h_m
SUPPORT support_2_name TOP section_d section_b column_h_m BOTTOM section_d section_b column_h_m
SUPPORT support_3_name TOP section_d section_b column_h_m
SUPPORT support_4_name BOTTOM section_d section_b column_h_m
END SUPPORTS
```

Note: Not specifying either `TOP` or `BOTTOM` commands means support does not have columns that are not specified. In example below, support *2* has no top column and support *3* has no bottom column

Example

```
SUPPORTS
SUPPORT 1 TOP 200 200 3 BOTTOM 200 200 3
SUPPORT 2 TOP 200 300 3
SUPPORT 3 BOTTOM 200 300 3
END SUPPORTS
```

Note: Refer to *read_me.pdf* for an explanation of the parameters. The explanation will be added directly to this section when the documentation is unified.

1002.1.5. Beams

This is section is used to specify beams using the parameters that have been explained above (or rather added to the input file). Below is how beams should be specified.

```
BEAMS
BEAM name beam_depth
SPAN span_name length_m section link_1_name link_2_name . . .
SUPPORT name beam_support_name grid_label
END BEAM
END BEAMS
```

Note: As many as possible link types can be added to the end the span. "But not so many that would otherwise abuse the program."

Example

```
BEAMS
BEAM 1 450
SPAN 1 4.15 2 1
SPAN 2 3 4 1
SPAN 3 3.2 1 2
SPAN 4 2 3 3
SUPPORT 1 2 2
SUPPORT 2 1 3
SUPPORT 3 1 4
SUPPORT 4 3 5
SUPPORT 5 2 6
END BEAM
BEAM 2 600
SPAN 1 4.15 2 1 2 3
SPAN 2 3 4 1
SPAN 3 3.2 1 2
SPAN 4 2 3 3
SUPPORT 1 1 2
```

```
SUPPORT 2 3 3
SUPPORT 3 1 4
SUPPORT 4 2 5
SUPPORT 5 1 6
END BEAM
END BEAMS
```

Beam *2* span *1* has multiple (3) shear link types specified for it

See *sample1.trad* file for a fully working example. All the examples used in the explanations have been picked from that very sample file

Build 1001 Release updates

Release Date: Monday 11 February, 2019

1. Build Number

The build number tells the software which version of the program the input file was made for. This enables backward compatibility of new software versions with files made for older versions. **Please do not tamper with the build number unless you are sure of what you are doing**

2. Specifying a single section per span

- Two or one section(s) can be specified for a span. If the beam requires two sections for a single span, represent them as shown in the main document. If the beam only requires a single section, simply specify either of the sections, left or right or specify a section parameter as shown below.

For single section span

```
        "span_x":{
                "length_m": "4.15",
                "section": "section_2",
        },
```

3. Stirrups / Links Input

Links represent share reinforcement in the beam. This section in the input file is dedicated to entering shear reinforcement data. At this point, only the parameters below are required.

1. The `bar diameter` entered as `diameter`. Since no mathematics is done using this value, it is entered as a string literal (text). For example `H8` means an 8mm high strength bar.
2. The `shape code` of the bar entered as `shape_code`. Refer to `BS 8666: 2005` for standard shape codes used in detailing.
3. The `bar mark`; This is important for dimensioning, the bar bending schedule and when making the sections
4. `offset`: This is the offset of the shear reinforcement from the near edge (column edge before the shear reinforcement) of the column. Value is in `metres`. A default value of `0.05m` is used if no offset is

provided. When using multiple shear link types per span. Offset is considered from the end of the previous shear_link_type

5. `spacing`: Shear reinforcement centre to centre spacing specified in `mm`.
6. `length`: Length specifies how far shear reinforcement should go. This is an **optional** parameter and if specified the offset is considered from the **left support** of the span. If this value is not specified, the offset is considered from both ends of the span. Length is input in m.

Length is import if you want to specify multiple shear reinforcement in a single span.

Multiple Links Per Span Specification

- If no length is provided in the case of multiple links, the span length is shared equally among the multiple links
- If one of many links with no lengths has a length specified, its length will be maintained and rest of the span length shared among the remaining link types
- Multiple links are added to the span in the order they are specified in a a particular span inside the beam data. For example `links: ["link_type_2", "link_type_1", "link_type_2"]"]` would add type2 links to spans then type1 and finally type2

links specification sample, see sample1.trad file

```
        "link_types": {
            "link_type_1":{
                "diameter": "R8", //bar strength and diameter
                "bar_mark": "03",
                "shape_code": 51, //BS 8666:2005
                "spacing": 200, //in mm
                "offset": 0.2, //from edge of column in m; if not provided, 0.05m
is used as default
                "length": 2.36 //optional in m, important if you to specify
multiple shear link types
            }
    },
```

4. Specifying shear links for each beam

Shear links specified inside the spans. See sample snipet below. This is extracted from sample1.trad file

```
        "beam_x": {

                //other beam parameters

                "span_1":{
                        "length_m": "4.15",
                        "section_left": "section_2",
                        "links": ["link_type_3"] //links are specified inside
square brackets to allow for multiple types input
                },
```

```
                "span_x":{
                        "length_m": "3.15",
                        "section_left": "section_2",
                        "links": ["link_type_3", "link_type_1"] //two link types
specified for a single span, it would make to specify the length inside link_types
to let the program where each link_type stops and where the other starts
                }

        }
```

5. Specifying grid number

The grid number appears on top of the centre line, if no grid numbers are provided, this value would left empty for example if you run the program with a version 1 input file. Grid numbers are specified together with the supports, each support with its grid number. This is done inside the beams sections

In this update, beam supports data is entered inside square brackets to allow for entering of the grids labels

Look at sample1.trad file to view how this is done as demonstrated below

```
        "beam2": {

                // ... other beam parameters

                "supports":{
                        "support_1": ["support_type_1", "2"],
                        "support_2": ["support_type_2", "3"],
                        "support_3": ["support_type_1", "4"],
                        "support_4": ["support_type_2", "5"],
                        "support_5": ["support_type_1", "6"]
                }

                //the numbers represent the grid labels and can be specified as a
letter or number or anything else that is used to specify grids
        }
```