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|  |  | **Article Title: Article Subtitles**  **First Author**1**, Second Author**2\***, Other Co-authors**1  1Faculty of Civil Engineering and Built Environment,  Universiti Tun Hussein Onn Malaysia, Batu Pahat, 86400, MALAYSIA  2Second Author Affiliation,  Organization Address, City, Postcode, COUNTRY  \*Senior Lecturer, Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia  DOI: https://doi.org/10.30880/rtcebe.0000.00.00.000  Received 00 Month 2021; Accepted 01 Month 2021; Available online 02 Month 2021  **Abstract**: First abstract sentence introduces the research background information and the problem statement. The second sentence explains the main research objectives and their scopes of study. The third sentence describes the materials, methods, and standard procedures used to conduct the study. The fourth sentence presents key findings and trends that can be observed from the data. The fifth sentence summarizes the discussion regarding those findings and some suggestions for future work.  **Keywords**: Keyword 1, Keyword 2, Other Keywords |

1. **Introduction**

The determination of the existing structure conditions and predicts past and future conditions of the structure are very important. After the construction has been complete, the evaluation of the performance must be done periodically to detect any defects or failure that occurs on the structure. One of the most common and popular test carried out on concrete is the compression test. Concrete compressive strength being used so often because of the concrete characteristic is directly related to strength from the design point of view. In designs, concrete is mostly used under compression loading, since it is tensile strength is low. Other than compression test, the compressive strength of the hardened concrete also can be determined using the non-destructive testing (NDT) methods. The rebound (Schmidt) hammer and Ultrasonic Pulse Velocity are the most popular of NDT methods used to determine the strength of concrete. This is due to their relatively low cost and simplicity in handling the test. Although the non-destructive testing (NDT) results are much quicker compared to the destructive methods, they are more of an approximation than exact compressive strength values1 In as much as the rebound hammer results are quicker and do not destroy the surface of concrete tested, there is no established relationship between the compressive strength obtained using NDT and DT.

The aim of this research is to compare concrete compressive strength measured using destructive method and those measured using the NDT and established the correlation between these two methods. Conducting the NDT test will cause minor damage to the structure but do not affect their performance and appearance. An important feature of NDT is that they permit retesting at the same or nearly location so that changes of time can be monitored. The strength of concrete is assessed and not measured through an experimental relation between the property and value of compressive strength. The understanding of the physical relation between the NDT and compressive strength is essential for engineering judgment and it should be exercised in interpreting the test results. The destructive test is conducted to verify some properties of a material, determines quality of concrete and in reducing the failures of the existing structure that can cause accidents and require high costs for repair. To ensure compliance with regulations, the comparison between Ultrasonic Pulse Velocity (UPV), Rebound Hammer test and coring test were established. These relations were widely used to verify the concrete strength.

**2. Assessment of Concrete Structure**

Non-destructive testing (NDT) is the quality control methods of inspecting, testing, or evaluating materials, components or assemblies for discontinuities, or differences in characteristics without doing harming the serviceability of the part or structure and are enable the repetitions of the test in the same sample at different times. In other words, when the inspection or test is completed the concrete structure can still be used. The test of the concrete structures need to be carried out after the concrete has hardened to find out whether the structure is suitable for its designed use3. Basically, the discontinuities and differences in material characteristics are more effectively found by using non-destructive test.

Increasing the use of modern non-destructive test plays a crucial role in ensuring the integrity and reliability of material, control manufacturing processes, lower production costs and to maintain a uniform quality level. Unfortunately, it is valuable only as a qualitative tool since it measures the relative surface hardness of the concrete4. The good thing about the non-destructive test is it can be applied to old and new structure. Usually, the testing of existing or old structures is related to make an assessment of structural integrity or adequacy. Meanwhile, the principal applications for new construction are likely to be for quality control or the resolution of doubts about the quality of materials or construction. There are typical examples are found in bridges, highways buildings and oil platforms which are all inspected using NDT.

1. **Materials and Methods**

The materials and methods section, otherwise known as methodology, describes all the necessary information that is required to obtain the results of the study.

2.1 Materials

Specifications and properties of materials, equipment, and other resources used in the current study should be described in this section. Should a bulleted list be required, it may be included and should look like this:

• First point

• Second point

• And so on

Lists using items marked with a,b,c, or i, ii, iii, and so on can also be considered. Items in the list should be indented similar to paragraph indentation.

2.2 Methods

Procedures can be described using flowcharts and algorithms, in which case the chart will be considered as a figure (see section 3.4). Include the appropriate references to standards. Authors can also explain the scope and limitations of the methods.

2.3 Equations

Equations and formulae should be typed in equation editors such as Mathtype. Equations should not be presented in the form of an image. Equations should be numbered based on the section number as the following:

Each numbered equation should be in its line and be separated from the surrounding text by the default line spacing.Eq. 1, as are all equations, should be referenced in the text.

1. **Results and Discussion**

The results and discussion section presents data and analysis of the study. This section can be organized based on the stated objectives, the chronological timeline, different case groupings, different experimental configurations, or any logical order as deemed appropriate.

3.1 Results

Resultscan be presented in the form of tables, figures, charts, diagrams or other suitable formats. If required, raw data that is too lengthy to be put in this section can be moved to the appendix.

3.2 Discussions

Accompanying discussions that further explain observations of the results are usually placed immediately below the results paragraph.

3.3 Tables

Tables should be numbered based on the section number and formatted based on the style as presented in the following:

**Table 1: Example of presenting data using a table**

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Parameter Name | Variable Value | Unit or Dimension |
| 1 | Data Point 1 | 0.001 | Kilograms (kg) |
| 2 | Data Point 2 | 1.000 | kg∙m/s2 |
| 3 | Data Point 3 | 1.0 x 104 | psi |
| 4 | Data Point 4 | -1.0 x 10-4 | Dimensionless |

Table 1, as are all tables, should be referenced in the text. Items in the table can be aligned to the cell-centre, the right, or the left whenever appropriate. All tables must have a caption that is aligned left.Only horizontal lines should be used within a table, to distinguish the column headings from the body of the table, and immediately above and below the table. Tables must be embedded in the text and not supplied separately.

3.4 Figures

Figures should be numbered based on the section number and formatted based on the style as presented in the following:

**Figure 1: Example of presenting data using a figure**

Figure 1, as are all figures, should be referenced in the text.Figures should be placed at the top or bottom of a page wherever possible, as close as possible to the first reference to them in the paper. Please ensure that all the figures are of 300 DPI resolutions as this will facilitate good output. The preferred format of figures is PNG, JPEG, GIF etc. Items in the figure should be aligned to the centre whenever applicable. Figure caption is aligned to thecentre. All writings, symbols, and data markers in the figure should be legible and discernible, even in black-and-white. If a figure is copyrighted by a third party, the authors bear the responsibility to obtain licensing or permission to use the figure in the paper. In this case, proper citation is required to be added in the figure caption.

1. **Conclusion**

The conclusion should summarize the main findings of the study, and restate the key points inferred from trends observed and discussed regarding the data. Some suggestions should be included to encourage the continuation of the current research.

**Acknowledgement**

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**Appendix A (Optional)**

Any extra data, equations or information that is beneficial to the discussion of the paper should be included here. More appendices can be added as deemed necessary.

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