

# The Personality Type of Engineers in Construction Project in Thailand

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**Abstract**— This research aims to study types of personality of engineers working on construction project sites by using a newly developed personality test to test with the sample from different sectors, i.e. construction contractor companies, design consultants and construction supervision companies, and engineers who are state officers who are working in construction project sites. The sample (participants) is persons who are granted a license for professional practice in each level B.E. 2551 (2008), for control engineers according to Ministerial Regulation on a Determination of Field in Professional Engineering and Controlled Professional Engineering B.E.2550 (2007), and types and scales of the controlled professional engineering work in the field of civil engineering (Clause 4). The study results found that 1) The sample of 380 persons, divided by the fields of controlled professional engineering, in civil engineering, electrical engineering, and environmental engineering most likely were people with rational decision-making (T:Thinking), with the mean scores at 81.5%, 71.67%, and 82.06% respectively. For those from mechanical engineering, 95.68% of them were people who work with plans (J: Judgment) and 95.00 percent of those from industrial engineering had a sensing personality trait as they seek information based on the truth (S: Sensing). It was also found that types of personality trait of civil engineers working in construction projects most likely encompassed ESTJ personality by 14.4 % 2) It was found that 2 types of personalities that were not found in civil engineers working in construction projects were ISTP and ESTP being in the group of SP, causing civil engineers had shortcomings, i.e they typically do not disclose important information to others, they rely on their skills too much. In this regard, procedures that should be provided are cut off, lack of decision-making, advice, and it may seem so harsh to other people's feelings. Suggestion for development: They should disclose some information to other people and express themselves. They should be patient, have a plan and make an effort to achieve the goals. They should take others into consideration and lower how they express their feelings unlimitedly, view things from multiple angles and

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they should not find the pleasure of objects only 3) Analysis The difference between the sexes Personality types of Civil Engineers using statistical tests T-Test found that the relationship is different. Significantly more important is personality type Sensing-S / Judgment-J, which could explain that. Gender differences in civil construction projects. To pay attention (S) for recognizing the uniqueness of each event. A summary of the procedure and the fact carefully studied (J) is responsible for planning and plan to tell attendees acknowledged. Organizing things. The preparations lives desk appliances. Different

**Index Terms**— Carl G Jung, Personality Type, Attitude Test

## I. INTRODUCTION

Civil engineer is one of leading dream careers for youths and it has been considered a good-looking and high paying career. Actually, to work in this field successfully requires great endeavor and love in this career. The major task for civil engineering is construction which is an important fundamental for the country's economics. Civil engineers require those who have academic skills, ethics, and human relationship for communication with people in other agencies. A study on personality traits of professional civil engineers who performs their works on construction projects will enable people to learn about shortcoming in improving and correcting them for a better change in the future. The study results can be applied to individuals for consistency with civil engineering career that regularly requires self-development or agencies having duties of monitor can apply the study results to issue rules and regulations to be consistent with personality traits of Thai engineers and meet with current situations accordingly.

## II. THE OBJECTIVES AND THE INSTRUMENTS

The objectives and the instruments used in the research. This research aims to study. The relationship between Personality type theory of personality Carl G Jung attitude in the practice of engineering in Civil Engineering. The civil engineer who has been licensed by the Engineering Council, control engineers and workers in the construction project. The instruments used in the study A personality test According personality theories of Carl G. Jung developed a new condensed form (Short Version Survey) questionnaire of 32 questions and using multiple choice answers (Multiple Choices test) 5 Options [1]

## III. PERSONALITY THEORIES

Personality theories of Carl G. Jung classification (Type Theories) personality is 8: 1) a global dimension. With a focus on the world outside their own. (Extraverts-E) 2) dimension

of looking at the world with a focus on the inner self. (Introverts-I) 3) dimensional perception. Directly from the senses (Sensing-S) 4) recognition that forecasts future. Or from past experience (Intuition-N) 5) dimension of the decision. The main rationale (Thinking-T) 6) The decision by the feeling (Feeling-F) 7) dimension of life. A pattern rules (Judgment-J) 7) lifestyle. Flexible adapted to the situation. (Perception-P) would be a mix of personality in a different dimension to the personality types, 16 models (16 Type), which is the difference of the attitudes, perceptions, decisions and way of life is ISTJ. / ISTP / ESTP / ESTJ / ISFJ / ISFP / ESFP / ESFJ / INFJ / INFP / ENFP / ENFJ / INTJ / INTP / ENTP / ENTJ. [2],[3],[4], [5], [6]

IV. RELATED RESEARCH STUDIES

1. Culp & Smith [7] employed the MBTI with a group of engineers of engineering consultant companies in the U.S. and found that they had ISTJ personality. It is interesting information that helps describe difference behaviors of individuals in each field of careers.
2. K. Gautam [8] conducted a study on Personality types of civil engineers and their roles in team performance and found that the most outstanding personality of engineers was ISTJ. The meaning is they are very private persons using intuition, thinking and judgment preference. The study also indicated that overall among 16 types of personality, ENTJ, ENTP, and INTJ were not found in a group of civil engineers. Since people with NT preference are missing, organizations are in need of engineers who have vision and individuals with ENTJ. As a result, there are none of engineers who can provide a good rationale. The fact that organizations are in need of individuals with INTJ can be said that there are none of persons with scientific thinking, while organizations that do not have persons with ENTP show that they lack of persons with appropriate personality to solve new and challenging problems. An interesting point is public agencies do not have management executives who possess ENTJ personality which is an outstanding personality in speaking in public.

V. RESULTS

Results showed that the sample of 380 engineers working on construction project sites comprised 305 civil engineers, 33 electrical engineers, 17 environmental engineers. 78.2 percent of them were male and most of them aged 26 – 30 years (26.1 percent). They graduated with a bachelor’s degree (68.7 percent) and most likely possessed an active license for controlled professional engineering, the associate engineer level (82.4 percent). They performed their tasks in accordance with Ministerial Regulation on a Determination of Field in Professional Engineering and Controlled Professional Engineering B.E.2550 (2007) on design and calculation (38.7 percent), construction supervision or manufacturing (26.3 percent), and structure installation (15.3 percent). The first three types and scales of the controlled professional engineering work in the field of civil engineering as prescribed in the Ministerial Regulation on a Determination of Field in Professional Engineering and Controlled

Professional Engineering B.E.2550 (2007) included a building and/or all scales of public buildings (61.6 percent), a railway, highway, public way (8.7 percent), and a dam, weir, tunnel, drainage pipe, or irrigation system (3.7 percent) respectively. Most of them worked in contracting business (33.2 percent) and were practitioners (78.7 percent). 97.6 percent of them did not identify the status of registrants on the APEC Engineer Register or ASEAN Engineer and 72.1 percent of them have never attended courses or activities aiming at developing knowledge skills for practicing the controlled engineering profession of persons who received the license in a field of the controlled engineering profession (Continuing Professional Development-CDP) as determined by the regulations of the Council of Engineers on Continuing Professional Development B.E.2551 (2008).

The analysis of data Found that personality traits of the sample by professional engineering concluded that civil engineering. Electronic engineering Environmental Engineering Most of personality, personality and decision logic (T: Thinking) were found to have an average rate of 81.5, 71.67 and 82.06 respectively mechanical engineering percent majority 95.68 personality types work using Plan (J: Judgement) The analysis of data Found that personality types of the civil and electrical engineers in construction projects that are most ESTJ 14.4 percent and 26.7 percent for mechanical engineers. The analysis of data Personality of Mechanical Engineering and environmental construction projects that are most ENFJ 40 and 50 percent, respectively.

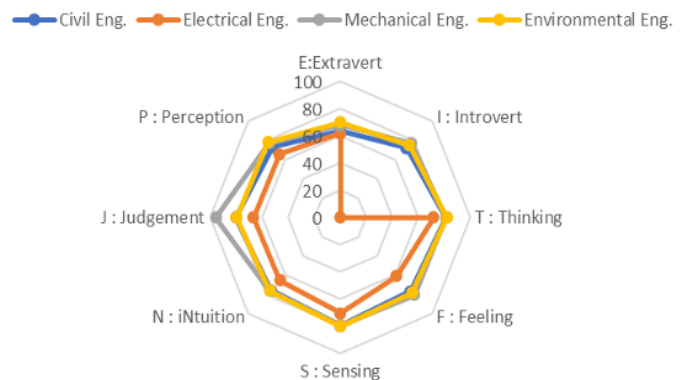


Fig. 1. Personality Traits of Engineers in Construction Project

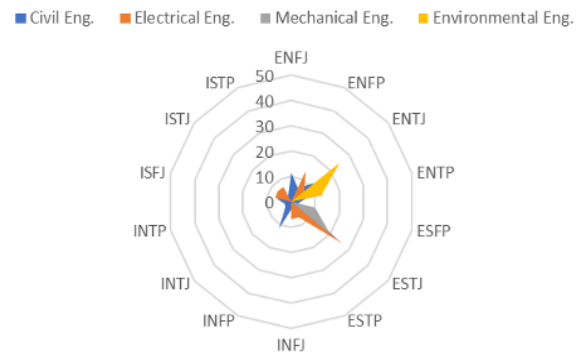


Fig. 2. Personality Types of Engineers in Construction Project

Data analysis results in types of personality traits of civil engineers working on construction projects from the sample of 305 persons revealed that they most likely had an ESTJ

personality (14.4 percent), followed by INFJ and ISTJ personalities by 12.8 percent and 10.5 percent

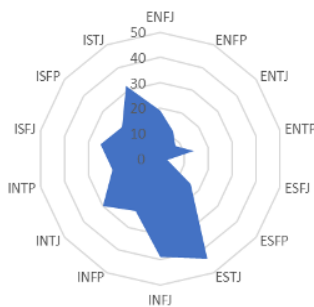


Fig. 3. Personality Types of Civil Engineers in Construction Project

## VI. CONCLUSION AND DISCUSSION

1. The personality of a group of civil engineers, electrical engineers, and environmental engineers working on construction project sites is thinking trait (T: Thinking). They tend to be calm and relaxed towards situations that everyone is worried or frightened. They can provide fairness and seek truth to describe arguments rather than paying attention to please other people. They prefer to seek clarity and accuracy than discuss and argue endlessly [2],[3],[4], [5], [6]
2. The personality trait of mechanical engineers working on construction projects is judgment (J: Judgment). They tend to have responsibility for their duties. They prefer to make a plan what they have to do daily and inform plans to their colleagues for acknowledgement. They take a note in what they have to do, and arrange things to be in a good order. They like to work until it ends or finishes though they know that they have to repeat it [2],[3],[4], [5], [6]
3. The personality trait of industrial engineers working on construction projects is sensing (S: Sensing). They prefer things with clarified and specific meaning. They think and act spontaneously rather than paying attention to what will happen in the future or next procedures. They prefer doing than thinking and are happy with activities showing accurate performance. They prefer procedural explanation than unorganized explanation. They do not like imagination and dream. They feel angry and are in a bad mood when being given unclear explanation [2],[3],[4], [5], [6]
4. The personality trait of civil engineers working on construction project is ESTJ characteristics (Extraversion, Sensing, Thinking, Judgment). They have rationale and prefer to make an analysis. They are brave to make decision and do well in arranging facts. They are good at making a plan in advance. They are good operators and do not pay attention to personal relationship that much. They are charming and like to socialize. When they finish their work, they enjoy themselves and have funny stories to tell other people. They are a good temper person with high responsibility. They hold accuracy and

precision which enable them to do repair works quite well. The strength of ESTJ is ability to make decision on people and objects. The weak point is they typically do not give importance to other people's feelings and they fail to manage other people's emotions. They keep what they feel inside and do not know how to release their emotions. They are patriot and have conservative belief in the virtues of tradition. Under stress conditions, such persons often use drugs or alcohol to relieve their stress, they prefer to stay alone, get angry easily which sometimes they are doubtful of their own ability and their self-esteem. Tendencies and behaviors can be summarized as follow: Organizational behavior; they know background of things and criticize projects rationally. They manage productivity process and personnel, oversee tasks to meet their goals or reach the work plans in a sequence. Leadership; they are straightforward and perform their duties rapidly. They employ their experience to improve themselves and solve problems. They make a quick decision and are leaders who follow rules and regulations.

5. Viewing the big picture, there are 2 types of personality that are not found in civil engineers working on construction project sites. They are ISTP and ESTP being classified in the SP group. General behaviors of persons with SP personality are freedom-loving and starting to do. They prefer to manage realistic problems. They are flexible and broad-minded and fluent in negotiation. Therefore, missing behaviors in civil engineers are lack of decision-making and being unable to work in environment full of strict rules and regulations. As a consequence, shortcomings of civil engineers working on construction project are non-disclosure of important information to other people, they employ their expertise so much that other procedures that should be available are cut off. They lack decision-making and do not give advice, which may seem so harsh to other people's feelings. They stick with materialism. Suggestion for development: They should disclose some information to other people and express themselves. They should be patient, have a plan and make an effort to achieve the goals. They should take others into consideration and lower how they express their feelings unlimitedly, view things from multiple angles and they should not find the pleasure of objects only [2],[3],[4], [5], [6]
6. The analysis results of personal traits of civil engineers classified by work characteristics in the controlled professional engineering in accordance with the Ministerial Regulation on a Determination of Field in Professional Engineering and Controlled Professional Engineering B.E.2550 (2007) found that design and calculation works encompassed the ISFJ personality trait and the works with the greatest number of samples. It can be described that civil engineers working on construction project sites having duties in design and calculation as prescribed in the Ministerial Regulation B.E.2550 (2007) have ISFJ personality trait (Introversion, Sensing, Feeling, Judgment). They are sympathy, loyal,

generous, go out of their way to help others who are in trouble. Persons with ISFJ personality trait have their own complicated private world. They rarely refuse but pay attention to others whether or not those people have necessity. They employ skills to enable tasks in their organizations to achieve the goals. Their shortcomings are they are too pessimistic. They are underestimated their abilities as they are silent. They do not have flexibility. Suggestion for development: They should see things positively and view things from multiple angles. They should be brave to express themselves confidently and right to the point. They should learn how to publicize or inform their success and disclose how they work or perform their tasks to other people.

### VII. EPILOG

Benefits from this research are 1) individuals practicing professional engineering and other fields of professional engineering working on construction project sites know about which types of personality they have and apply them as a guideline for improvement or develop their potential, 2) educational institutes can employ the study results as a guideline for student recruitment, 3) both public and private workplaces can employ the study results as a guideline for employee recruitment, 4) professional council can apply the study results for issuing rules and regulations used with engineers so that the rules and regulations will be consistent with personality traits of Thai engineers and up-to-date to current situations. By the way, the personality test based on Carl G. Jung's personality type theory conceptualized that each individual has satisfactory choices in each function or modes of orientation. When choices of each function are combined, specific personality of each individual will be obtained. The combination of personality in different functions or modes of orientation brings about 16 types of personality as the difference of individuals in terms of attitude, perception, decision-making, and way of life. Therefore, the 16 types of personality cannot be identified as which one is good and which one is bad. There is no assessment of rightness and wrongness and no cause of frustration or worry in those who participated in the test [2], [3], [9]

### REFERENCES

- [1] Thawut L., Kongsong W., Piyamanotham P., Usahanunth N., Development of Personality Test to Be Used With Engineers Working On Construction Project Sites in Thailand, *International Journal of Engineering Research And Management (IJERM)* Volume-06, Issue-05, May 2019, 16-18
- [2] Myers, K. D., and Kirby, L. 1994. *Introduction to type dynamics and development, exploring the next level of type*, Consulting Psychologists Press, Inc., Mountain View, Calif.
- [3] Myers, I. B., McCaulley, M. H., Quenk, N. L., and Hammer, A. L. 1998. *MBTI Manual: A guide to the development and use of the Myers-Briggs Type Indicator*, Consulting Psychologists Press, Inc., Mountain View, Calif.
- [4] Brownsword, A. *It Take All Type*. New York: Consulting Psychologists Press, Inc., 1998.

- [5] Kummerow, J. *Talking in Type*. New York: Center for Application of Psychological Type, 1985.
- [6] M. H. McCaulley, E. S. Godleski, C. F. Yokomoto, L. Harrisberger and E. D. Sloan, Applications of psychological type in engineering education, *Engineering Education*, 73, 5, (1983) pp. 394-400.
- [7] Gordon Culp and Smith. 2009. "Consulting Engineers: Myers-Briggs Type and Temperament Preferences" *Leadership and Management in Engineering*, 65-70.
- [8] K. Gautam and A. Singh. 2010. "Personality types of civil engineers and their roles in team performance" *Challenges, Opportunities and Solutions in Structural Engineering and Construction*, 829-834.
- [9] O'Brien, T.P., Bernold, L.E. and Akroyd, D. (1998) Myers-Briggs Type Indicator and academic achievement in engineering education. *International J. of Engineering Education*, 14(5), 311-315.