Accidents of Foreign Workers at Construction Sites in Korea

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Abstract

The purpose of this study is to introduce accident prevention remedies (APRs) and prioritize them according to accident-causing factors (ACFs), which were drawn from survey data analysis regarding the type and extent of dangers to which foreign workers in Korea are exposed at construction sites. First, 12 ACFs and 11 APRs were identified from a statistical analysis of questionnaires administered to 59 foreign industrial trainees working at construction sites in the Seoul-Kyunggi area. The APRs were then prioritized according to their relative importance as determined through the analytic hierarchy process and through a second survey administered to 96 safety and civil engineers who had experience in managing foreign workers at construction sites all over the country.

Keywords: ACFs; APRs; AHP; foreign workers

1. Introduction

Foreign workers in Korea have unique characteristics that differentiate them from the local workforce, both as a result of their different backgrounds and cultures and as a consequence of their lack of knowledge about national practices and the Korean language. These features cause foreign workers to form a particular attitude towards work that is reflected in their risk of work-related accidents, which tends to be higher than that of Korean workers (Kang, 2002).

Therefore, a study was undertaken to identify factors that influence the accident rate among foreign workers in Korea and to suggest measures for reducing this rate. This study was based on Korean data, but several aspects of the situation in Korea, as well as some of the conclusions, seem to be of a more general nature and may well be relevant to local contexts in other countries.

One recent study (Lim 2004) showed that buildings in Korea have become larger and taller and that conventional accidents such as falls, drops, and joint jams continue to occur. Statistics show that 21,871 foreign workers were injured in Korea from 1997 to 2006. The annual accident statistics indicate that there is a critical problem, with the rate of foreign worker injuries increasing dramatically over the four years between 1999 and 2003, with 617 injuries registered in 2003. Kim (2001) concluded that an accident prevention policy is necessary for foreign workers in Korea.

These considerations motivated the present study. First, a questionnaire was distributed to 59 industrial foreign trainees who, at the time, were working at construction sites in the Seoul-Kyunggi metropolitan area of Korea, and a second questionnaire was given to 96 people who had experience in managing foreign workers; 48 people in the latter group responded effectively. Approximately 60 percent of construction projects in Korea are carried out in the Seoul-Kyunggi area. The contracts of the top 30 Korean construction companies consist of 90 percent social overhead capital (SOC) stemming from the government. For the first survey, 59 foreign workers were selected in consideration of this situation.

The first survey was conducted in February and March of 2004 and mainly concerned practical work duties that can cause actual accidents at work sites. The survey results were analyzed using the SPSS package to identify the causes of accidents through correlation and frequency analysis. These accident-causing factors (ACFs) were then analyzed to derive accident prevention remedies (APRs), with 11 items found. The second survey was conducted in April of 2004, making use of the 11 fundamental remedies for accident prevention that were derived from the first survey.

2. Statistics on Foreign Construction Workers

Only main contractors (not subcontractors) can request the Korea Construction Association (KCA) to supply the required number of workers at their sites. The KCA then distributes the foreign workers to the main contractors as requested, and the newly employed foreign workers are then interviewed and trained by the
foreigners on the main contractors' teams before being assigned to their work sites. The system is organized in this way in an effort to avoid illegal employment.

Table 1. Foreign Trainees Working at Construction Sites as of April 30, 2004

| Country of origin | Planned Number of Persons | Number of Incoming Persons | Number of Trainees [working persons] |
|-------------------|---------------------------|----------------------------|-------------------------------------|
| Thailand          | 3,410 (45.5%)             | 4,316 (49.8%)              | 2,689 [537] (46.6%)                |
| China             | 2,130 (28.4%)             | 2,414 (27.8%)              | 1,561 [323] (27.1%)                |
| Philippines       | 1,210 (16.1%)             | 1,307 (15.1%)              | 1,004 [67] (17.4%)                 |
| Vietnam           | 500 (6.7%)                | 430 (5.0%)                 | 371 (6.4%)                         |
| Uzbekistan        | 250 (3.3%)                | 199 (2.3%)                 | 143 [-] (2.5%)                     |

(Data: Construction status 2007, Korea Construction Association)

As Table 1 shows, foreign workers in Korea come mainly from five countries: Thailand, China, the Philippines, Vietnam, and Uzbekistan.

The first column in Table 1 indicates the entry quota planned by the government, while the second column shows the number of persons who actually entered the country. The third column indicates the number of trainee positions available, and the square brackets contain the number of working persons who obtained an official employment visa. Originally, the government's plan was to secure 7,500 work positions, as shown in the first column, but 8,666 were actually accepted. However, 5,768 persons were effectively accommodated, as the others failed to appear (MCT, 2003).

Training companies provide each worker with an accommodation measuring 4.5 square meters and three meals per day.

Table 2. Accident Rate for Foreign Workers Over 12 Years (1995-2006) for Construction and Whole Industry

| Year | Number of injuries | Number of deaths | Number of foreign workers | Accident rate (%) |
|------|--------------------|-----------------|---------------------------|-------------------|
| 1995 | 364                | 0               | 128,906                   | 0.282%            |
| 1996 | 412                | 0               | 210,494                   | 0.338%            |
| 1997 | 479                | 0               | 245,399                   | 0.305%            |
| 1998 | 755                | 20              | 157,689                   | 0.478%            |
| 1999 | 715                | 20              | 217,384                   | 0.328%            |
| 2000 | 1,197              | 39              | 285,506                   | 0.419%            |
| 2001 | 1,491              | 67              | 329,555                   | 0.452%            |
| 2002 | 1,954              | 63              | 362,597                   | 0.538%            |
| 2003 | 2,666              | 79              | 381,634                   | 0.698%            |
| 2004 | 2,724              | 74              | 421,641                   | 0.538%            |
| 2005 | 2,794              | 74              | 425,107                   | 0.698%            |
| 2006 | 2,517              | 94              | 435,579                   | 0.801%            |

(Table: Labour status 2007, The Ministry of Labor)

Table 3. Accident Statistics for Foreign and Domestic Construction Workers, 1997-2006

| Year | Number of worker accidents | Total number of foreign workers | Rate of increase compared to the previous year |
|------|-----------------------------|---------------------------------|-----------------------------------------------|
|      | NOW | AR   | NOW | AR  | Total NOW | ++,- | IR  | ++,- | IR  |
| 1997 | 104 | 0.042| 18,291| 7.45 | 245,599 | +   | 60.11% | +   | 12.07% |
| 1998 | 107 | 0.068| 13,172| 8.35 | 157,689 | (+)  | 60.11% | (+)  | 12.07% |
| 1999 | 65  | 0.030| 10,966| 5.04 | 217,384 | (-)  | 55.93% | (-)  | 39.61% |
| 2000 | 102 | 0.036| 13,500| 4.73 | 285,506 | (+)  | 19.48% | (+)  | 6.27% |
| 2001 | 210 | 0.064| 16,771| 5.09 | 329,555 | (+)  | 78.36% | (+)  | 7.62% |
| 2002 | 462 | 0.127| 19,925| 5.50 | 362,597 | (+)  | 99.95% | (+)  | 7.98% |
| 2003 | 617 | 0.162| 22,680| 5.94 | 381,634 | (+)  | 26.89% | (+)  | 8.15% |
| 2004 | 665 | 0.158| 18,896| 4.48 | 421,641 | (+)  | 2.45%  | (+)  | 24.59% |
| 2005 | 753 | 0.218| 15,918| 4.61 | 345,579 | (+)  | 38.16% | (+)  | 2.78% |
| 2006 | 820 | 0.193| 17,955| 4.22 | 425,107 | (+)  | 11.47% | (+)  | 8.30% |
| Total | 3,305|        | 168,074|    | 3,172,091 | -    | -    | -    | -    |

(Data: Labor status 2007, the Ministry of Labor, Korea)

*NOW: Number of Workers  *AR: Accident Rate  *IR: Rate of Increase
*Accident Rate = (NOW of present year / Total NOW) x 100 (%)
*Rate of Increase = (AR of Present year – AR of previous year) / AR of previous year x 100 (%)
that year (Table 3.) among the 7,500 foreign industrial trainees allowed by the government for 2004 (Table 1.). This number is 9.3 times greater than the 0.86% accident rate for domestic construction workers in 2003 as reported by the government. Of course, these results may differ due to the contribution of foreign construction workers and workers who were illegal residents, but even an accident rate of 0.86% is serious.

Table 4. Accident Statistics by Type of Accident for Foreign Construction Workers, 2002-2003

| Type of accident | 2002     | 2003     |
|------------------|----------|----------|
| Falling          | 187 (40.5%) | 248 (40.2%) |
| Dropping         | 98 (21.2%)  | 117 (19.0%)  |
| Overturning      | 40 (8.7%)   | 63 (10.2%)   |
| Struck           | 39 (8.4%)   | 51 (8.2%)    |
| Jamming          | 51 (11.0%)  | 61 (9.9%)    |
| Others           | 47 (10.2%)  | 77 (12.5%)   |
| Total            | 462 (100.0%)| 617 (100.0%)|

※ The above numbers show a simple trend of accident type

Table 4 shows government data for the years 2002 and 2003 only. Looking at Table 4, one can observe that the accidents resulting from falls, drops, and overturning account for more than 70.4% of total accidents involving foreign construction workers. These are conventional accidents, similar to those involving domestic workers.

3. Design of the Questionnaire

Two methods of comparison are used in the analytic hierarchy process (AHP) in order to produce the rate scale and measure both the absolute and relative scale.

Absolute remedy (quantified or rated) is used for determining the hierarchy of alternatives: excellent, very good, good, average, below average, bad, and very bad. The AHP technique uses procedures that change and maintain order (Saaty 1994).

Questionnaires were designed for foreign workers and safety-related supervisors with experience in managing them. The first questionnaire, for foreign workers, was drafted based on safety management problems related to the prevention of accidents involving foreign workers as identified in previous studies (Kim 2001, Lee 2002, Kim 2002). Foreign workers entering the country mainly work in groups and are managed by foremen from the same country who can speak Korean. The authors visited foreign workers’ managers, who had collected workers in their own countries and interviewed them in cooperation with separate interpreters. The second survey, for experienced safety managers, was drafted with consideration given to response reliability, the estimated response rate, and the perceived level of importance. The questionnaire was conducted by mail, telephone, fax, or personal interviews. The questionnaire was sent to a total of 142 safety-related parties (safety managers), with a response rate of 67.6%. The questionnaire answer sheets received from inexperienced managers and those considered to be improperly completed were excluded for the sake of reliability. Finally, only 48 sheets were considered in the AHP analysis, which was used to establish priorities and enhance the level of applicability.

Table 5. Responders and Survey Methods

| Types                  | Responder       | Number of responders | Survey method       |
|------------------------|-----------------|----------------------|---------------------|
| First survey           | Foreign workers | Thailand 35          | Group & individual  |
|                        |                 | Philippines 11       | Group & individual  |
|                        |                 | Chinese 7            | Group & individual  |
|                        |                 | Chinese Korean 6     | Group & individual  |
|                        | Sub-total       | 59                   | Distributed: 39     |
|                        |                 |                      | (Response rate: 100%)|
| Second survey          | Safety managers | Distributed 77       | E-mail, Telephone, Fax|
|                        |                 | Replied 52           | E-mail, Telephone, Fax|
|                        |                 | Effective 25         |                     |
|                        | Supervisors     | Distributed 65       |                     |
|                        |                 | Replied 44           |                     |
|                        |                 | Effective 23         |                     |
|                        | Sub-total       | Distributed 142      | Distributed: 142    |
|                        |                 | Replied 96           | (Response rate: 33.8%)|
|                        |                 | Effective 48         |                     |

※ Effective refers to the questionnaire sheet applied to the actual analysis directly. Some sheets with invalid answers were removed from the analysis.
The first questionnaire was completed by 59 foreign workers who were Thai, Korean-Chinese, Chinese, and Filipino. Twelve ACFs and 11 APRs were produced, as shown in Table 6. below.

| Aspects       | Accident-Causing Factors (12)                                                                 | Accident Prevention Remedies (11)                                                                 |
|---------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Technical     | 1) Urged to work faster by the foreman or company                                             | 1) Work order and progress reports with detailed plan                                             |
|               | 2) Sensing frequently or ignoring hazard situations during work                                | 2) Increasing investment and welfare for foreign workers by the employer                          |
|               | 3) Not understanding well what unsafe behavior and unsafe facilities are                        | 3) Training in simple Korean language                                                              |
|               | 4) Assigned more frequently to hazardous work than local employees                              | 4) Improving training program                                                                     |
|               | 5) Having comparative difficulty with the work content and experiencing physical overload       |                                                                                                |
| Educational   | 6) Not interested in training time as safety training goes on                                   | 5) Work disposition considering skill and ability                                                  |
|               | 7) Not recognizing the relationship between safety and field work                              | 6) Identification of training to remove potential hazards                                          |
|               | 8) Conspicuously low understanding of safety training                                          | 7) Developing and managing a psychological stability program                                       |
|               | 9) Not speaking the Korean language and not feeling the need to learn it                        | 8) Step-by-step training regarding unsafe behavior and facilities                                 |
| Managerial    | 10) Habitual heavy drinking before having to report to the work area the next day               | 9) Developing and systemizing a health management program                                          |
|               | 11) Low interest in improving workers' welfare                                                | 10) Step-by-step training for standard safe work procedures                                      |
|               | 12) Almost no cultural activities, hobbies, or life outside of working time                     | 11) Undertaking a follow-up assessment program for safety training                                 |

※ Please respond to the questions below after reading the above materials.
※ Numbers 4 and 5 of the 12 ACFs can be covered with only number 4 of the 11 APRs

4. Analysis of Survey
The first questionnaire contained mainly four (4) items covering the length of stay in Korea, age, school career, and type of work. Foreign workers in Korea come mainly from five countries: Thailand, China, the Philippines, Vietnam, and Uzbekistan. The first questionnaire was given to foreign workers from only four of these countries, with none from Uzbekistan.

Regarding the length of stay and age distribution, authors only considered foreign workers who had been in Korea at least three years. Regarding the age of responders, those in their 20s to 40s were considered.

The school career distribution refers to school achievement level: finishing elementary school (six years), junior high school (three years), and high school (three years) for an even distribution.

The questions regarding work type were asked in a manner which ensured an even distribution of work types, such as form work, rebar work, semi-skilled labor (more skilled than common labor but not as skilled as form or rebar workers) for structural work, tunnel work, common labor, and the job of foreman.

The AHP technique was introduced in the second questionnaire in an effort to determine the weight of remedies in order to suggest prompt improvements that can prevent foreign worker accidents. The statistical value of the AHP technique can be determined only if the hierarchy structures, relative importance levels (weights), and logical consistency can be established. Therefore, responders should have sufficient theoretical safety knowledge, a minimum of ten (10) years of experience in safety management, and preferably employment experience with foreign workers. One hundred forty-two experts responded to the second survey, selected from 15 local government areas in Korea.

With regard to the nationality of the 59 foreign workers who responded, 35 (59.3%) are from Thailand, 11 (18.6%) are from the Philippines, 7 (11.9%) are from China, and 6 (10.2%) are Chinese-Koreans, as summarized in Table 5. The age range included those in their 20s (16.9%), 30s (54.2%), and 40s (28.8%).

Considering the education level of each nationality, 59.3% of the total foreign workers had graduated from high school, 23.7% had graduated from junior high school, 13.6% had graduated from elementary school, and two (3.3%) had graduated from a university in the Philippines.

Regarding responders' length of stay, it was noted that 25 workers (42.4% of the total) stayed longer than six months but less than one year. In addition, 21 workers (35.6%) stayed for a period shorter than two years, while there were 11 workers (18.6%) who had been in Korea for less than six months.

All of the 59 workers who responded to the questionnaire were working as industry trainees, working ten hours per day and earning basic wages, which ranged from USD 2.30/hour to USD 2.7/hour, for a total of USD 27/day, corresponding to a monthly salary of between USD 900 to 1200.

Correlation analysis was done by determining the relationship between data with more than two variables. The correlation analysis was carried out using the SPSS software. The 59 survey sheets were
classified with a code for each item by inputting the impact data of each variable condition related to the questionnaire response, resulting in the analysis of correlation factors shown in Table 7. and 8. (KOSHA 2000, MCT 2003, and Lim 2004.)

Table 7. shows the linguistic description of the correlation levels that were adopted in the study, while Table 8. includes the statistics of the variables associated with the school career. Finally, Table 9. shows the results of the correlation analysis with the school career.

Table 7. Linguistic Presentation of the Correlation Factors

| Correlation factors | Linguistic presentation |
|---------------------|------------------------|
| ±0.00 ~ ±0.20       | Almost no correlation  |
| ±0.21 ~ ±0.40       | Low correlation        |
| ±0.41 ~ ±0.60       | Standard correlation   |
| ±0.61 ~ ±0.80       | High correlation       |
| ±0.80 ~ ±1.00       | Very high correlation  |

A code with no units was given to every variable. The survey answers were entered in the SPSS program. It was thought that the longer the workers had stayed in Korea, the more they would understand the work process and recognize the need for training.

For the length of stay variable, four related items were positively correlated.

The correlation between the length of stay and understanding of safety training content had a high correlation factor of 0.716, meaning that the longer workers stay, the higher the rate of comprehension regarding safety training content.

The correlation between work procedures and methods and the length of stay had a direct relationship, showing a reasonable correlation factor of 0.505, which implies that the longer workers stay, the better they understand the work procedures and methods.

Authors also studied the impact that workers’ level of education or their school career had on their performance. Table 8. shows the statistics, and Table 9. correlates these variables with the others.

The correlation between school career and the ability to speak the Korean language had a correlation factor of 0.506, meaning that the longer the school career, the better the workers were at speaking Korean. It was shown that the better they were at speaking Korean, the better they understood safety training, although here the correlation factor is low, with a value of 0.387.

4.1 Relative Importance of First Hierarchy

The technical, educational, and management areas have first priority in the APRs against foreign worker accidents. They were classified for the second questionnaire. In addition, the analysis showed that 10 cases out of a total of 48 are significant, as shown in Table 10. and Table 11. The data were collected using the geometric average of the significant responses with a frequency of 0.1 or less. Questionnaire sheets collected from responders without satisfactory consistency levels were essentially not effective. Nineteen cases with a consistency level of 0.1 or less of frequency were identified automatically once the 48

Table 8. Correlation Analysis with the School Career Variable for the 59 Cases

| Variable                                            | Average | Standard deviation |
|-----------------------------------------------------|---------|--------------------|
| School career                                       | 35.42   | 7.73               |
| Recognition frequency of dangerous work             | 31.69   | 10.03              |
| Understanding level of the safety training content  | 28.47   | 7.61               |
| Understanding work procedures and methods           | 41.53   | 6.38               |
| Ability to speak the Korean language                | 20.17   | 11.22              |

*School career is classified into elementary school, junior high school, high school, and university.

Table 9. Correlation Analysis with the School Career Variables for the 59 Cases

| Variable                                            | School career | Recognition frequency of dangerous work | Understanding level of safety training and its contents | Understanding the work procedure and methods | Ability to speak the Korean language |
|-----------------------------------------------------|---------------|----------------------------------------|------------------------------------------------------|------------------------------------------|-------------------------------------|
| School career                                       | Correlation   | 1.00                                   | -.276*                                               | .202                                     | .506**                              |
|                                                     | Significance  | .003                                   | .054                                                 | .126                                     | .000                                |
| Recognition frequency of dangerous work             | Correlation   | -.276*                                 | 1.00                                                 | -.349**                                  | -.263*                              |
|                                                     | Significance  | .034                                   | .054                                                 | .126                                     | .007                                |
| Understanding level of safety training and its contents | Correlation   | .202                                   | -.349**                                              | 1.000                                   | .387**                              |
|                                                     | Significance  | .026                                   | .007                                                 | .010                                     | .002                                |
| Understanding the work procedure and method         | Correlation   | -.066                                  | -.068                                                | .333*                                    | .093                                |
|                                                     | Significance  | .621                                   | .609                                                 | .010                                     | .485                                |
| Ability to speak the Korean language                | Correlation   | .506**                                 | -.263*                                               | .387**                                   | 1.000                               |
|                                                     | Significance  | .000                                   | .044                                                 | .002                                     | .002                                |

**: Correlation factor is significant at the 0.01 level (both sides)
*: Correlation factor is significant at the 0.05 level (both sides)
cases were put into the program.

4.2 Relative importance of the technical aspects of the second priority of the hierarchy

Four APRs related to technical aspects of the second priority on the lowest hierarchy level were analyzed. Fifteen out of the total of 48 cases were significant, as shown in Table 12. They were collected using the geometric average of significant responses with a consistency rate of 0.1 or less.

4.3 Relative importance of the training aspects of the hierarchy

Four APRs for the training aspects of the second priority of the lowest hierarchy were analyzed. Sixteen out of the total of 48 cases were significant, as shown in the Table. They were collected using the geometric average of significant responses with a consistency rate of 0.1 or less.

4.4 Relative importance of the management aspects of the second hierarchy

Three APRs for the management aspects of the second priority of the lowest hierarchy are analyzed. Nineteen out of the total of 48 cases were significant. They were collected using the geometric average of significant responses with a constancy rate of 0.1 or less.

4.5 Results and Analysis of the Questionnaire Survey

The survey focused on determining ACFs through correlation and frequency analyses using the SPSS software. Twelve ACFs were analyzed on a factor-by-factor basis. Finally, 11 APRs were identified from the above analysis.

Field safety managers who did not have much experience in managing foreign workers were not aware that these workers' had their own cultural differences and life characteristics that stemmed from changes in their lives as foreigners in Korea. Therefore, at the second stage of the questionnaire, only safety managers with experience in managing foreign workers were selected for the interviews.

The order of priority for the 11 APRs and their relative levels of importance were determined based

### Table 10. Analysis Results Regarding the Relative Importance Level of the First Hierarchy

| Serial number | Frequency | Relative importance level |
|---------------|-----------|--------------------------|
|               |           | Technical aspect | Training aspect | Management aspect |
|               |           | VS | VS | VS |
| 1             | 0.0251    | 3  | 1/5 | 1/9  |
| 2             | 0.0061    | 1/3| 3  | 7    |
| 3             | 0.0000    | 1  | 5  | 5    |
| 4             | 0.0000    | 3  | 1  | 1/3  |
| 5             | 0.0000    | 3  | 9  | 3    |
| 6             | 0.0000    | 1  | 3  | 3    |
| 7             | 0.0061    | 3  | 7  | 3    |
| 8             | 0.0692    | 3  | 1/7| 1/9  |
| 9             | 0.0559    | 7  | 3  | 1/5  |
| 10            | 0.0061    | 1/3| 1/7| 1/3  |
| 11            | 0.0000    | 5  | 1  | 1/3  |
| 12            | 0.0000    | 1/9| 1/9| 9    |
| 13            | 0.0559    | 1/7| 1/5| 9    |
| 14            | 0.0000    | 1  | 1  | 1    |
| 15            | 0.0061    | 7  | 1  | 1/3  |
| 16            | 0.0061    | 1/7| 1  | 9    |
| 17            | 0.0692    | 7  | 9  | 3    |
| 18            | 0.025     | 9  | 5  | 1/3  |
| 19            | 0.0559    | 1/5| 3  | 7    |

Geometric average: 1.318, 1.353, 1.266

* 19 cases of a total of 48 cases for workers are significant with a frequency of 0.1 or less

### Table 11. Matrix of the Relative Importance of the First Hierarchy

| Type       | Technical aspect | Training aspect | Management aspect |
|------------|-----------------|----------------|------------------|
| Technical aspect | 1,000 | 1,318 | 1,353 |
| Training aspect    | 0.759 | 1,000 | 1,266 |
| Management aspect  | 0.739 | 0.790 | 1,000 |

* Frequency is 0.00465

The second priority on the hierarchy of the lowest hierarchy contains 11 APRs.

### Table 12. Matrix of the Relative Importance Level of the Technical Aspects of the Second Hierarchy

| Type | E1   | E2   | E3   | E4   |
|------|------|------|------|------|
| E1   | 1,000| 1,913| 2,370| 1,828|
| E2   | 0.523| 1,000| 1,058| 0.929|
| E3   | 0.422| 1,000| 1,000| 0.697|
| E4   | 0.547| 1,076| 1,435| 1,000|

* Frequency = 0.00211"
on the analysis by applying the AHP to the results of the first survey. The second survey was analyzed using Expert Choice Program in order to obtain the final results.

The top six APRs, with high relative importance levels, accounted for 70 percent of the total relative importance values selected, as follows.

5. Conclusions
This study concentrated on the industrial training of foreign workers at construction sites.

It was based on a questionnaire research design, and it sought to complement the weak points of this method empirically and scientifically.

First, it is important to present the direction and work plan for construction projects in a more accurate and detailed manner. Just as with domestic workers, urging foreign workers who are not fully aware of the operation or plan to work results in instability.

Second, it is necessary for the owners or presidents of companies to increase investments for maintaining or improving the welfare of foreign workers in order to minimize potential human errors from environmental differences.

Third, it is essential to solve the problem of communication between managers and workers by operating educational programs related to the Korean language.

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