Appendix 5

Workshop Minutes

Workshop Summary Report

Dhaka Metrorail Rules and Technical Standards

INTRODUCTION

On May 8th, 2014 JICA and DTCA hosted a full day workshop entitled **Dhaka Metrorail Rules and Technical Standards** at Hotel 71,176 Shaheed Nazrul Islam Sarani. The workshop was held to clarify the outline of draft Rules and Technical Standards for Dhaka Metrorail to deepen the understanding of key stakeholders of Bangladesh.

PARTICIPANTS

No.		Name	Designation
1.	MOC	M.A.N. Siddique	Secretary
2.	MOC	MD Alauddin Fokir	Joint Secretary
3.	MOC	Md. Abdul Malek	Joint Secretary
4	MOC	Chandan Kumar Dey	Deputy Secretary
5	MOC	Md. Matiul Islam Chowdhury	Senior Assistant Secretary
6.	MOC	Jinnat Rehana	Senior Assistant Secretary
7.	MOC	Md. Nazmul Abedin	Senior Assistant Secretary
8.	MOC	Dipankar Mondal	Deputy Secretary
9.	MOC	Harun-ur -Rashid	Project Director
10.	DTCA	Md. Kaikobad Hossain	Executive Director
11.	DTCA	Md. Rafiqul Islam	Executive Director
12.	DTCA	Md.Amjad Hossain Khan	Additional Executive Director
13.	DTCA	Dr. Engr. Mosharrof Hossain	Training Advisor
14.	DTCA	Md. Anisur Rahman	Traffic Engineer
15.	DTCA	Md. Sabbir Iqbal	Pollution Control Officer
16.	DMTC	Md. Mofazzel Hossain	Project Director, DMRTDP, Managing Director DMTCL
17.	DMTC	Md. MahbubulAlam	Additional Project Director
18.	DMTC	Mohammad Harun-ur Rashid	Joint Secretary, General Manager(Administration)
19.	DMTC	Shukumar Chandra Kunda	Chief Engineer(Electrical & Mechanical)

20.	DMTC	Md. Rashidul Hassan	Deputy Secretary, DGM(Project Management)
21.	DMTC	Mohammad Sarwar Uddin Khan	DGM(Transport Planning)
22.	DMTC	Mohammad Nurul Amin	Joint Secretary, Director (F&A)MRT
23.	DMTC	Krishna Kanta Biswas	DGM(E&R)
24.	DMTC	Md. Shahjahan	DGM(T&E)
25.	DMTC	A.B.M. Arifur Rahman	DGM(Electrical & Mechanical)
26.	DMTC	A.K.M. Shafiquzzaman	Manager(UP)
27.	DMTC	Md. Atiqur Rahman	Assistant Manager(Mechanical)
28.	DMTC	Mr. Philip Old	Demand Forecast
29.	NKDM	Mr. Hideo Omori	Team Leader
30.	NKDM	Mr. Takayuki Fujitomi	Sub-Structure
31.	NKDM	Mr. Tomoharu Miyashita	Rolling Stock
32.	NKDM	Mr. Katsumi Fuji	AFC Expert
33.	NKDM	Mr. Masaru Furuta	Senior Engineer
34.	NKDM	Mr. Nurul Islam	Safe Guard Expert
35.	NKDM	Mr. Katsumi Ueda	Signalling Ueda
36.	MOL	Md. Munirujjaman	Senior Assistant Secretary
37.	MOL	Dr. Mohammad Mohiuddin	Deputy Secretary, Legislative& Parliamentary Affairs Division
38.	JICA	Mr. Kei Toyoma	Senior Representative
39	JICA	Mr. Yushi Nagano	Representative
40.	JICA	Mr. Suman Das Gupta	Senior Program Manager
41	JIC	Mr. Masanori Tanaka	President
42	JIC	Mr. Jyunichi Kino	

INAUGURAL SESSION:

This session started at 9:30 AM. Mr. Amjad Hossain Khan, Director (Administration)DTCA introduced the participants at 9:50 AM.

At 9:55AM, **Mr. Kei Toyama**, Senior Representative, JICA made his welcome address. He thanked for the involvement of Md. Kaikobad Hossain, Md. Mofazzal Hossain, Md. Toru Hiraide in the workshop. He told that it is his pleasure to join the workshop, jointly organized by DMTC and JICA. He expressed his happiness seeing all the participants of different ministries and agencies like-DTCA, DMTC, MOC. He told that JICA's involvement in this project is one of the largest construction projects in Bangladesh. He appreciated the government of Bangladesh identifying this project as a first track project. He mentioned that, the current truck station significantly hampers the life of people and mind of potentiality according to inventions. He gave emphasis on the establishment of legal framework of the construction and appreciation of MRT

project. He told that safety, efficiency is must here in this project. To make the project technically sustainable safety and efficiency management is must. To make contest in the entry and exit in MRT market it is essential. He mentioned, on that background JICA is providing technical operations for the formation of act, rules and technical standards of MRT. He told that, they are happy to announce that, cabinet has approved the draft. JICA is thankful to MOC concerning in this regards. He told that, he is eagerly waiting for the approval of Parliament regarding this act. According to him, it is the high time to materialize this act in real life. To do so, to forecast the act in practice a concrete action plan is a must. He told that, this workshop is a good opportunity for all stakeholders to confirm specific features of materialization and action plan under the umbrella of the act. He mentioned that the JICA Study Team made a detail presentation on the draft, rules and technical standards on this regards. They took the experience of Metro Rail in Japan, the longest successful operation in history. He expected the cooperation and recommendation of the study, for that it would be helpful to come out in a definite conclusion. Finally he thanked all the participants and providing them proper help to make the whole process successful.

At the time of 10:00AM Mr. Toru Hiraide started his valuable presentation. Where he discussed about the Dhaka Urban Transport Plan, JICA's cooperation for Dhaka MRT Project. He also provided information regarding work objectives, work flow chart, work schedules, present state of MRT project and information toward the opening of MRT Line 6.

After completing Mr. Hiraide's informative presentation, the honorable special guest Mr. Md. Mofazzel Hossain, Managing Director, DMTC presented his speech. At first he thanked the chairperson, chief guest, Mr. Toyoma, Mr. Toru Hiraide, JICA Study Team and all participants of the session. He told that, it is a great honor attending the workshop session .JICA Study Team and the members of DTCA worked for the rules and technical standards under the guideline of JICA, he mentioned. He thanked for the action of work in a short time with sincerity. He told that, it is a fact of joy that the cabinet has approved the draft and the way of passing of the rule is going on. He told that MRT rule is going in the right time. Technical Specification is very important guideline here. He mentioned the importance of the receiving of design, specification and other documents. That will be a guideline for us he told. He wished that, it will be completed as early as possible. He told that, working on detail design, construction, rolling stock, track will take to follow many guidelines. He told, Technical standard is our guideline. At will incorporate all their aspects to design and efficient way to set MRT in Dhaka for time saving material. He wanted to say that, there must be some amendments in this draft. He asked everyone to concentrate in this matter. He told that he himself and his team also undergone with this matter. He finally told that, he has some points to discuss about during the Technical Session. He then thanked everyone for their attention.

At10:20AM the honorable chief guest Mr. M.A.N. Siddique started his speech. He firstly gave thanks to the honorable chairperson, Mr. Toyoma, Md. Mofazzel Hossain, Mr. Hiraide and all the participants who attended the workshop. He felt very delighted and honored presenting the occasion. He wanted to say something about the presentation of Md. Toru Hiraide. He told that it was an excellent presentation. Among all his experiences of attending different types of workshops, Mr. Hiraide's presentation was one of the best. After uttering that, he wanted to go back in the year 2012.Some uncertainty was there .When JICA will come, how route alignment will be finalized, these were huge questions there. But after that, we and JICA worked as a team. He has given credit on JICA, Japan Government, MOC, Government of Bangladesh, Roads division for better support. He said that, it is not a dream now, it is now a reality. He said that, we the people of Dhaka city eagerly waiting for Metrorail as early as possible. He mentioned that, when signing the contract with JICA, our honorable Finance Minister expressed his intention to break all the records of past. Mr. Siddique said that records are made to be broken. He mentioned the name of India, pioneer of completing Metrorail within 10 years. He said that, they are decided and committed to break the record. He beliefs that his team will be able to break the record. For that he expected the support from all stakeholders. He told that, it is a good thing to get Metrorail as a first track project monitoring by the Prime minister herself. He told that the act and technical standards has 2 things. One is setting standards for Metrorail. He said that, the standards of UK, India are not the same as the standards of Bangladesh. Considering the behavior of other countries to Bangladesh is totally different. Here he mentioned the example of London. There we could not see anyone crossing the Metrorail tracks. But in case of Bangladesh, it would be possible to see someone crossing the rail tracks. So it should be in mind of everyone setting the Metrorail tracks. He told that, the consultants must set a roadmap, that is good. So the PD,MD of DMTC,ED must do things together to meet up the roadmap. He told that he did not get the rule which already drafted. But it is the duty of everyone to get started in the work from the day one. He mentioned that, license, fare work plan are not properly included there. He requested the consultants and team leaders to do stakeholders job. He told Metrorail is new in this country. They do not have any knowledge regarding this. But there is the Railway department. They have some knowledge regarding railway provisions. So it should be followed. He is not sure that the MD of DMTC is ready or not. The rule must be faster so that there must not be any problem in the processing of future action. It also needs proper training process, Those countries where Metrorail is running should be introduced with them to meet up the goal .Finally he gave thanks to JICA, other consultants, DTCA for arranging this workshop, and allowed him to attend there.

At 10:40 AM the honorable chairperson Md. Kaikobad Hossain, Executive Director, DTCA made his valuable speech. He firstly thanked the chief guest, Mr. Toyoma,

and all participants. He ensured that he will not utter the same word like other. He wanted to replace something from there. He mentioned that, law is supported by the rule. The rule is now is under process. He told that, considering Delhi, the project is like a challenge. So he mentioned that, we are just waiting for the rule. He told that, he is happy to see that acts and rules are making in a parallel way. During the cabinet meeting he was not there, he mentioned. But he followed MRT drafted rules of 9th chapter and 45 sections. He wished the rules must be more, but there only 2/3 materials-license, fare and technical standards. He given emphasis on the rules related to- during construction, after construction and operational maintenance. He was hopeful for the commercial starting of Dhaka MRT within 2021. He mentioned the rules must be good and supportive to the law. Finally he thanked everyone.

AT the time of 10:45 AM the Inaugural Session ended and a short tea break was held before the next session.

INSTITUTIONAL SESSION:

11:05 AM: Institutional session started. The session was chaired by Mr. Md. Amjad Hossain Khan, Director (Administration), DTCA

11:05 AM: Mr. Takayuki Hagiwara, Legal Expert, JICA Study Team, started his presentation on Metrorail Rules.

Following are some of the questions asked by participants after the presentation Presenter's replies are also provided below

Question (Asked by Mr. Md. Kaikobad Hossain, Executive Director, Dhaka Transport Coordination Authority): How can be maintain the schedules if the Parliament does not pass the rule on time?

Reply: As far as I understand, the process of item 1 and 2 can be done without act. If we have any delay, spare time kept will be reduced. According to current schedules, we have about 1 month 3 weeks as spare time.

Question (Asked by Mr. Md. Mofazzel Hossain, Managing Director, Dhaka Mass Transit Company Ltd.): Is the prepared technical standards valid for MRT Line 6 only?

Reply: For time being, yes. If you want to develop some new line, you have to supplement required parts.

Question (Asked by Mr. Md. Kaikobad Hossain, Executive Director, Dhaka Transport Coordination Authority): In the presentation, you have mentioned about fixation of upper limit of fare. Is there any example of company fix their rate below the standard rate set by the regulator?

Reply: It's possible according to the law. But it happens only in some cases in case of Japan. As fare revenue is determined by (Fare Price) x (Ridership), lower fare does not always mean lower revenue. That's why this depends on Corporate Strategy.

Question (Asked by an anonymous participant): In case of Bangladesh, fare assessment turns out be an increase in fare event. At this circumstance, yearly fare assessment review may go against general people of Bangladesh.

Reply: Review does not mean automatic adjustment. (i.e. adjustment will not happen yearly)

Presenter's Recommendation: Do not set the fare too low in the beginning, because it will be extremely difficult to increase the fare later.

Mr. Amjad Hossain concluded this session at 11.35 am

TECHNICAL SESSION

11:40 AM: Technical Session started. The session was chaired by Mr. Md. Rafiqul Islam, Additional Executive Director (P & P), DTCA

11:40 AM: Mr. Toru Yoshikawa, Rolling Stock and Mechanical Expert, JICA Study Team, started his presentation on Outline of Technical Standards.

Following are some of the questions asked by participants after the presentation. Presenter's replies are also provided below.

Question (Asked by Mr. Md. Kaikobad Hossain, Executive Director, Dhaka Transport Coordination Authority): Now we are going to establish MRT Line 6. For when, we will construct MRT Line 4 or all Lines, will need change rules and regulation of Formulation of Technical Standards for MRT Line?

Reply: Rules and regulation of Formulation of Technical Standards for MRT Line will be changed. Formulation of Technical Standards are depends on another succeeding line. So, Check the adaptability, consistency, safety measures for fire protection, carrying out through operation, common use of workshop.

Question (Asked by Mr. Md. Safiquzzaman, Manager, BATC): What is basic different between Technical Standard and Implementation Technical Standard?

Reply: Technical Standard is Metrorail technical regulation established by DTCA and Implementation Standard is the detail standard which shall be established by the operator (DMTC) within the regulation by DTCA.

Question (Asked by Mr. Md. Safiquzzaman, Manager, BATC): Why isn't mention about Depot facilities for Formulation of Technical Standards?

Reply: Basically the facilities in the depot shall obey the standards of civil, track, and electrical. And also the operator shall obey other related laws and regulations in Bangladesh. Although the minimum requirement of depot is mentioned in the technical standard, the detail design of the depot shall be decided by the operator.

12:10 AM: Mr. Osamu Sato, Rolling Stock and Mechanical Expert, JICA Study Team, started his presentation on Rolling Stock

Following are some of the questions asked by participants after the presentation. Presenter's replies are also provided below.

Question (Asked by Mr.Md. Kaikobad Hossain, Executive Director, Dhaka Transport Coordination Authority): The car body material is used Aluminum alloy; Aluminum alloy is so soft that it seems unsuitable for Rolling Stock car body structure in our country. Why will we not use stainless steel materials in our country?

Reply: In Japan, Aluminum alloy is commonly used for Rolling Stock car body structure as well as stainless steel. The cost of aluminum car body is little bit higher than the stainless steel, but both will be applicable for Dhaka MRT.

12:30 AM: Mr. Akihiko Kawasaki, Rolling Stock and Mechanical Expert, JICA Study Team, started his presentation on AFC and Fall prevention facility.

Following are some of the questions asked by participants after the presentation. Presenter's replies are also provided below.

Question (Asked by Additional Chief Engineer, Bangladesh Railway): For Contact–less IC Cards, ISO/IEC18092 Felica I/F, ISO/IEC14443 Type A or ISO/IEC15693 Type B. Is it technical matter or like this?

Reply: ISO/IEC 18092, 14443, 15693 are the international standards for contactless IC card and Felica I/F, Type A, or Type B are the types of the IC card corresponding to these standards. S-pass service which has already started on Bus employs Felica card. So it is recommended that MRT will employ the same card.

Question (Asked by Additional Chief Engineer, Bangladesh Railway): I think many people will buy their ticket at ticket counter instead of using ticket vending machine.

Reply: The ticket shall be contactless IC card. IC card ticket can be sold not only by the ticket vending machine but also at ticket counter.

12:45 PM: Mr. Hisao Matsumoto, Train Operation Expert, JICA Study Team, started his presentation on Technical Standards for Train Operation
Following are some of the questions asked by participants after the presentation. Presenter's replies are also provided below.

Question (Asked by Mr. A.B.M. Arifur Rahman, DGM (E & M)),In the presentation, you have mentioned that 20 years old or more are eligible for the Driver license exam but in our country 18 years or more are eligible for Driver license.
Reply: Operator can apply Bangladesh Government rule. But before the issuance of the driver license, education and training for some duration shall be needed.

2:15 PM: Mr. Teruo Kunizawa, Electrical Facilities and Signaling Expert, JICA Study Team, started his presentation on Electrical Technical Regulatory Standards for Dhaka MRT-6.
Following are some of the questions asked by participants after the presentation. Presenter's replies are also provided below.

Question (Asked by Mr. Md. Mofazzel Hossain, Managing Director DMTC)
There are two distribution companies DPDC & DESCO in Dhaka. Some Metrorail areas are under DPDC and other are under DESO. Will Metrorail received power area wise dedicated distribution company or any one company?
Reply: This issue depends upon some matters .After some investigation General consultant will decide.
Question (Asked by Mr. Shukumar Chandra Kundo, Chief Engineer (E&M))

In the presentation, you have mentioned that Rectifier will convert 1200 V AC to 1500 V DC. How can it be possible? As we know rectifier always decreases voltage.
Reply: This is a special type of 3Φ full wave rectifier for traction substations.
Question (Asked by Mr. Shukumar Chandra Kundo, Chief Engineer (E&M))
You have mentioned that, if regenerative braking used some current will back to the feeder. So what will be percentage or amount of this current?
Reply: It's depending on train speed; if train speed is high then the possibility of current produce is high and vice versa.

2:50 PM: Mr. Michio Kato, Civil Structure Expert, JICA Study Team, started his presentation on Civil Structure
Following are some of the questions asked by participants after the presentation. Presenter's replies are also provided below.
Question (Asked by Mr. A. K. M. Shafiquzzaman, Manager (UP), Dhaka Mass Transit Company Ltd.): No specific standards for design life are mentioned in the technical standards. Differential settlement loading is missing from the list provided in the design loading section of technical standards. Combination of loading has not been mentioned in the design loading section of technical standards. What will be the combination for the designers?
Reply: Required design life is obtained by the use period and environmental condition. Design life for civil structures is usually 100 years.
Differential settlement loading shall be added in the "Design Loading" section of technical standards. Please find the number 16 of loading list for added loading.
Combination of loading shall be also described in the design standards mentioned "Codes and standards" section of technical standards.

3:00 PM: Mr. Naonori Yamada, Track and Stations Expert, JICA Study Team, started his presentation on Track and Station.

3:10 PM: Mr. Yoshio Otsuki, Underground Structure and Architecture Expert, JICA Study Team, started his presentation on Underground and Architecture.

3:20 PM: Session Chairperson Mr. Md. Rafiqul Islam, Additional Executive Director (P&P), DTCA, requested the participants to submit their feedback within the scheduled date. After that he concluded the session.

CLOSING SESSION

At the time of 3:25 PM honorable chairperson Mr. Md. Kaikobad Hossain made his closing remarks. He thanked all the members of JICA Study Team for the nice arrangement and he also thanked all the guests for their attendance. Mr. Kaikobad Hossain mentioned about the Japan-Bangladesh close friendship, from the beginning of independent Bangladesh. He also asked all to make any suggestion or raise question if required within 7 days, because the Study Team will stay in Bangladesh in this span of time. Mr. Kaikobad Hossain then formally concluded the occasion and a closing tea break occurred

Appendix 6

Technical Standards Concerning Metrorail Driver Certification English Version

第一章　総則	**I. GENERAL PROVISIONS**
（目的） **第一条** この規則は、METRORAIL　RULES 第52条（別表9　3h. c）の都市鉄道運転士（以下、運転士という。）の資格に関する事項が満たすべき具体的要件について定めることにより、鉄道事業者が運転士の資質を向上し、輸送の安全の確保を図ることを目的とする。	1. Objective The purpose of these regulations is for the licensee to improve a driver's ability and to ensure transportation safety through establishing and satisfying concrete requirements for the certification of Metrorail drivers (hereinafter “driver”), as prescribed in item (Provision c, Subsection h) of Section (3) in the Schedule 9 of Rule 52 of METRORAIL RULES.
（規則の適用） **第二条** 運転士の資格認定については本規則の定めによることとし、鉄道事業者は本規則に則り Safety　Management System の運転士の資格認定に関する事項を定めるものとする。	2. Scope of Regulations The driver’s certification depends on these regulations, and the licensee shall establish the driver’s certification system prescribed in the Safety Management System in conformity with such regulations.
（Safety Management System への記載事項） **第三条**　鉄道事業者は、Safety Management System の運転士の資格に関する事項（METRORAIL　RULES 第52条（別表9　3h. c））については、以下を必ず記載すること。 一　養成施設の場所、収容人員及び規模（平面図を添付） 二　教育カリキュラム 三　資格認定検査の項目、検査方法及び合格基準 四　資格認定証の様式および交付方法 五　資格認定者の管理方法	3. Matters to be included in Safety Management System The licensee shall list the following about the driver’s certification system prescribed in the Safety Management System(Provision c , Subsection h of Section(3) in Schedule 9 of Rule 52 of METRORAIL RULES): (1) Location, seating capacity and dimensions of land and building of training facility.(in Attached floor plan) (2) Course curriculum (3) Test items, testing/inspection methods and acceptance criteria (4) Format of the driver’s certificate and delivery method (5) Method of management of persons to whom a driver’s certification was authorized

第二章　運転士資格	**Ⅱ　DRIVER CERTIFICATION**
（資格制限） **第四条**　次のすべての条件に該当する者が、運転士の資格認定検査を受けることができる。 ただし、他の鉄道事業者の運転士資格を有する者、及びこれに類する資格を有するもの（以下、有資格者という）は、この限りでない。 一　年齢は18才以上30才まで 二　高等学校（科学グループ）卒業生	4. Certification restrictions A person shall meet the following conditions to obtain driver certification. This conditions does not apply, However, when a person having the driver certification of other railway companies or having similar certification（hereinafter “certificated person”）; (1)Age within 18-30 years old (2)Educational qualification should be H.S.C(Science)
（養成施設） **第五条**　鉄道事業者は、係員が運転士業務に必要な知識及び技能を十分習得できる養成施設を設置する。	5. Training facility The licensee establishes the training facility which are made to learn enough the required knowledge and skills to be mastered for driver operations.
（教育カリキュラム） **第六条**　鉄道事業者は、係員が運転士業務に必要な知識及び技能を習得できる教育カリキュラムを策定する。 ただし、有資格者に限り、特例の教育カリキュラムを定めることができる。	6. Educational curriculum The licensee creates the course curriculum detailing the required knowledge and skills to be mastered for driver operations. However, the special course curriculum may design only for the certificated person.
（資格認定検査） **第七条**　鉄道事業者は次の各号に掲げる検査を行う。 一　適性検査 二　知識検査 三　技能検査	7. Certification testing The licensee performs the following tests: (1) Aptitude Test (2) Knowledge Test (3) Skill Test
（適性検査） **第七条の二**　適性検査は、必要な身体機能及び精神機能を検査するために行う。	7-2　Aptitude Test The purpose of the Aptitude Test is to examine a person’s physical and mental ability.

（知識検査） **第七条の三**　知識検査は、次に掲げる事項について行う。 一　動力車の操縦に関する法令 二　動力車の構造及び機能 三　動力車操縦理論 四　非常の場合の措置	7-3　Knowledge Test The Knowledge Test is performed on the following: (1) Laws and ordinances on operating motive power cars (2) Structure and function of motive power cars (3) Motive power car operations theory (4) Emergency measures
（技能検査） **第七条の四**　技能検査は、次に掲げる事項について行う。 一　運転操縦 二　ブレーキの操作 三　ブレーキ以外の機器の取扱い 四　非常の場合の措置	7-4　Skills Test The Skills Test is performed on the following: (1) Driving operations (2) Braking operations (3) Handling of equipment other than brakes (4) Measures in case of an emergency
（資格認定） **第八条**　鉄道事業者は、資格認定検査に合格した者でなければ資格を認定してはならない。なお、条件付きで資格認定検査に合格した者については、その条件と書面を付して認定する。 **2**　第一項の規定による資格認定は、資格認定証を交付して、これを行う。 **3**　前項の資格認定証には、次に掲げる事項を記載するものとする。 一　氏名、生年月日及び性別 二　資格認定の年月日 三　条件付きで資格認定検査に合格した者は、その条件	8. Certification (1) A person shall not be accredited with driver certification unless they have passed the necessary tests. Furthermore, those who have provisionally passed the necessary tests may only be certified if the provisional conditions and documents are attached. (2) If the certification is in accordance with Section (1) a certificate maybe issued. (3) The driver's certificate under Section (2) shall state the following matters. 1) Name, Date of Birth, Gender 2) Date of certification 3) A person who has conditionally passed the tests for driver's certification
（資格認定の停止、取り消し） **第九条**　鉄道事業者は、資格認定者が酒気を帯びた状態又は禁止薬物を使用した状態で動力車を操縦したとき、その他悪質な行為が認められたときには、その資格認定者の資格停止や資格取り消しを行うものとする。	9. Suspension or rescission of certification When a person issued with a driver's certificate operates a motive power car while under the influence of alcohol, banned drugs or other such circumstances, the licensee shall suspendor rescind that person's certification.

Appendix 7

Manual
of
Licensing,
Safety Management System
&
Construction Plan
for Metrorail

Manual

of

Licensing, Safety Management System

&

Construction Plan for Metrorail

in accordance with

Metrorail Act, 2015

&

Metrorail General Rules, 2015

July 2015

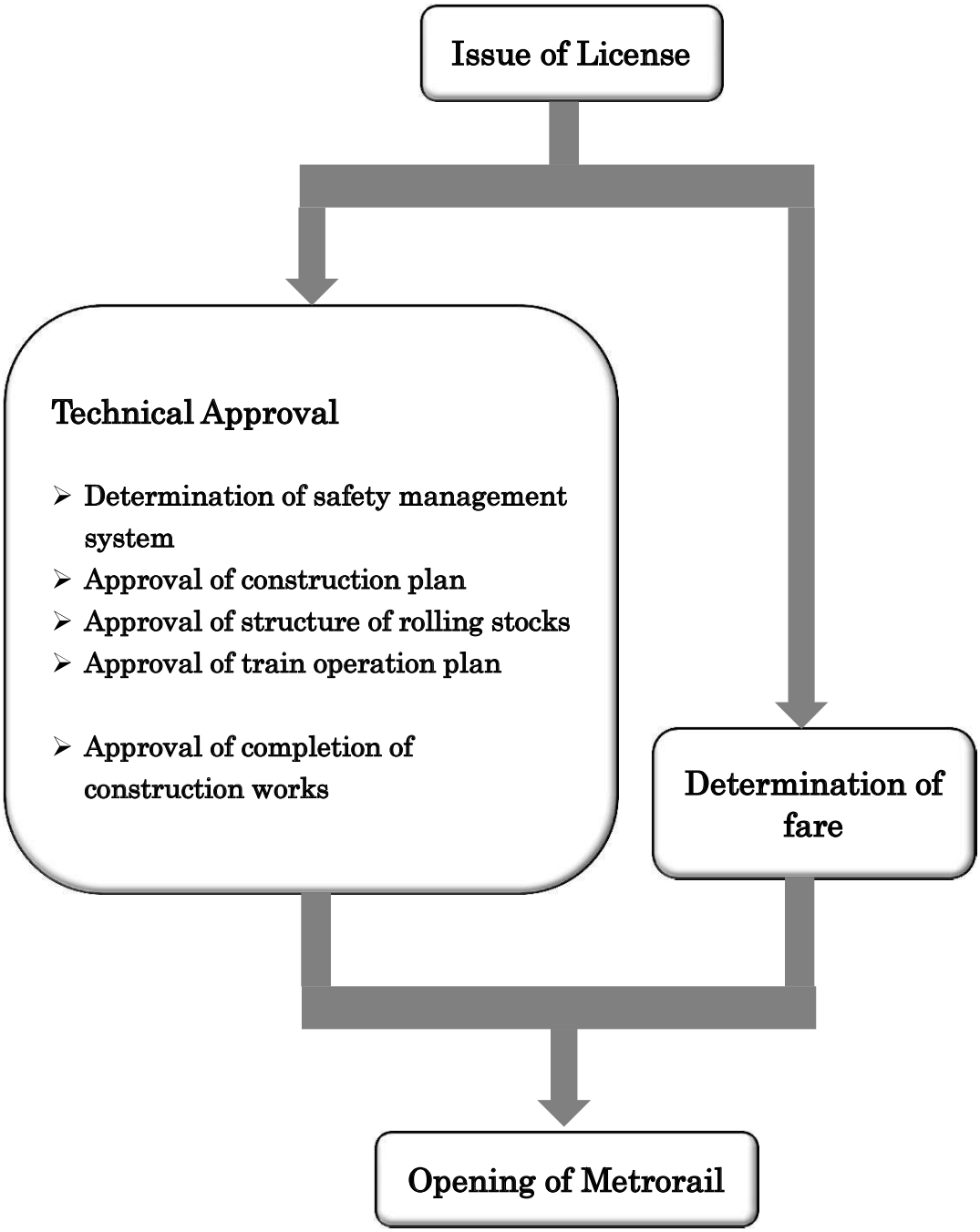
Dhaka Transport Coordination Authority (DTCA)

CONTENTS

Chapter- Ⅰ

Flow Chart of Approval Procedure

1. Legal procedure for Metrorail



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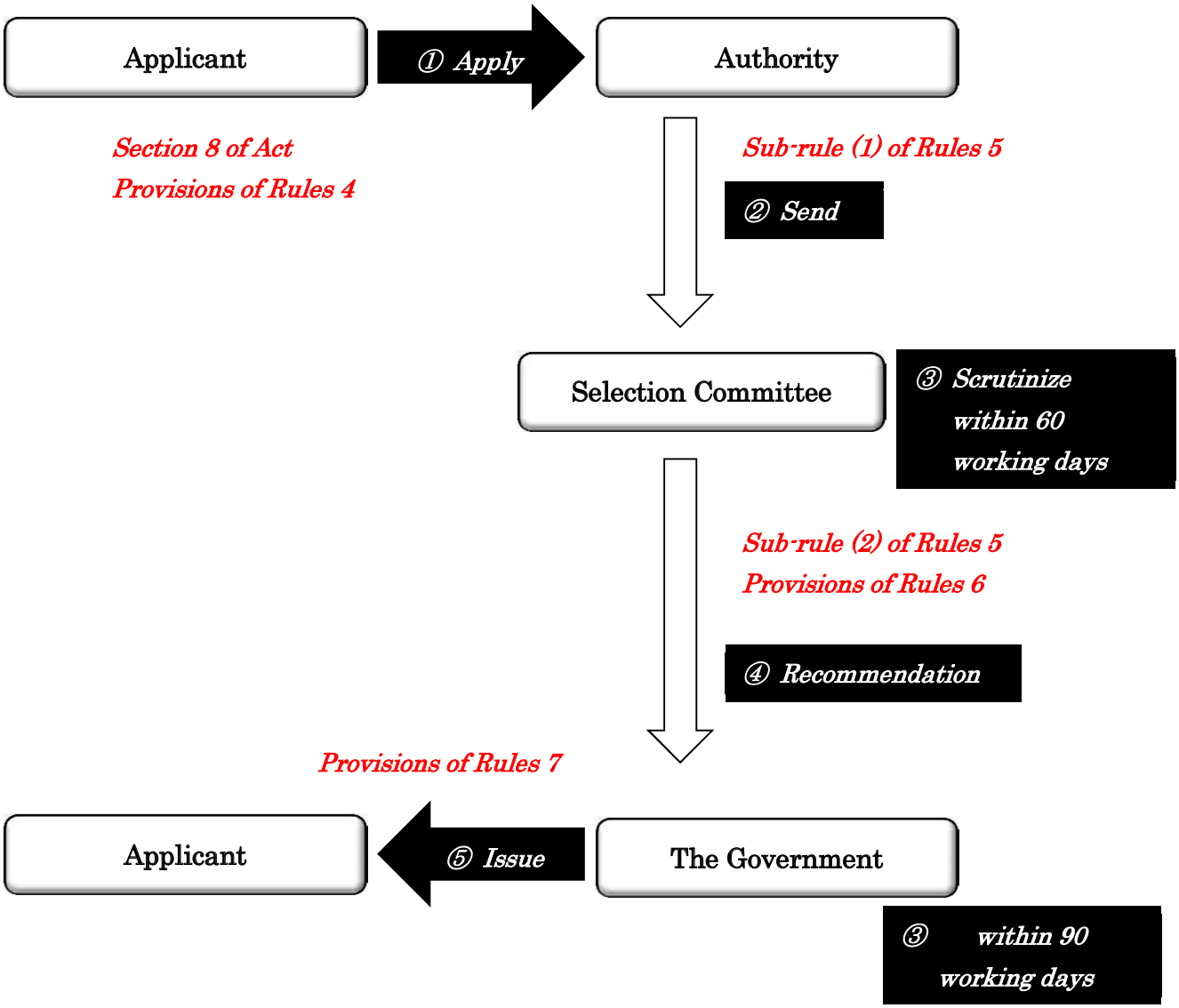
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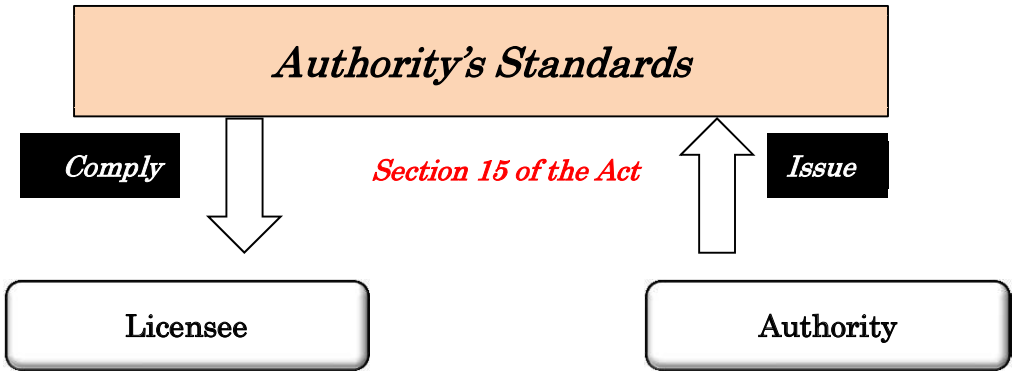
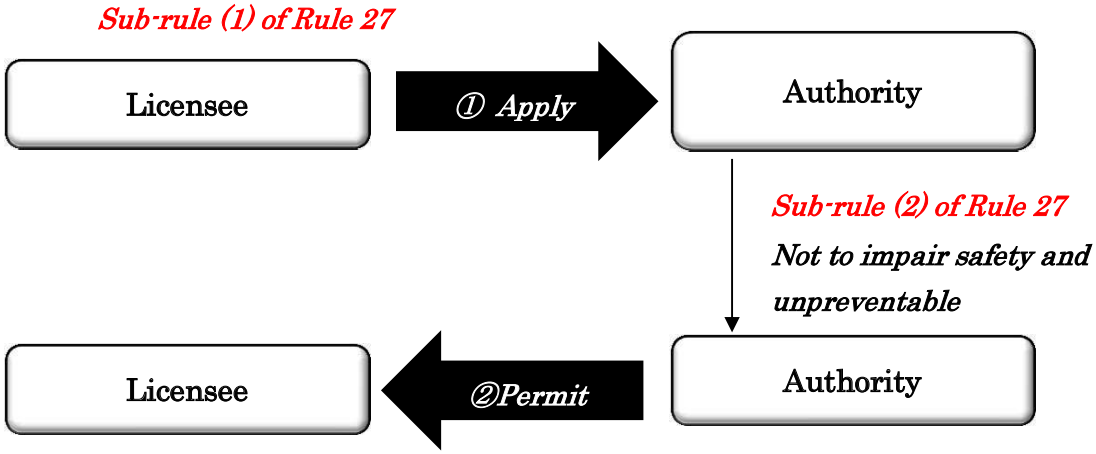
① Apply
Authority
Section 8 of Act
Provisions of Rules 4
Sub-rule (1) of Rules 5
② Send
Selection Committee
③ Scrutinize within 60 working days
Sub-rule (2) of Rules 5
Provisions of Rules 6
④ Recommendation
Provisions of Rules 7
Applicant
⑤ Issue
The Government
③ within 90 working days

3. Permission for alteration from Authority's Standards

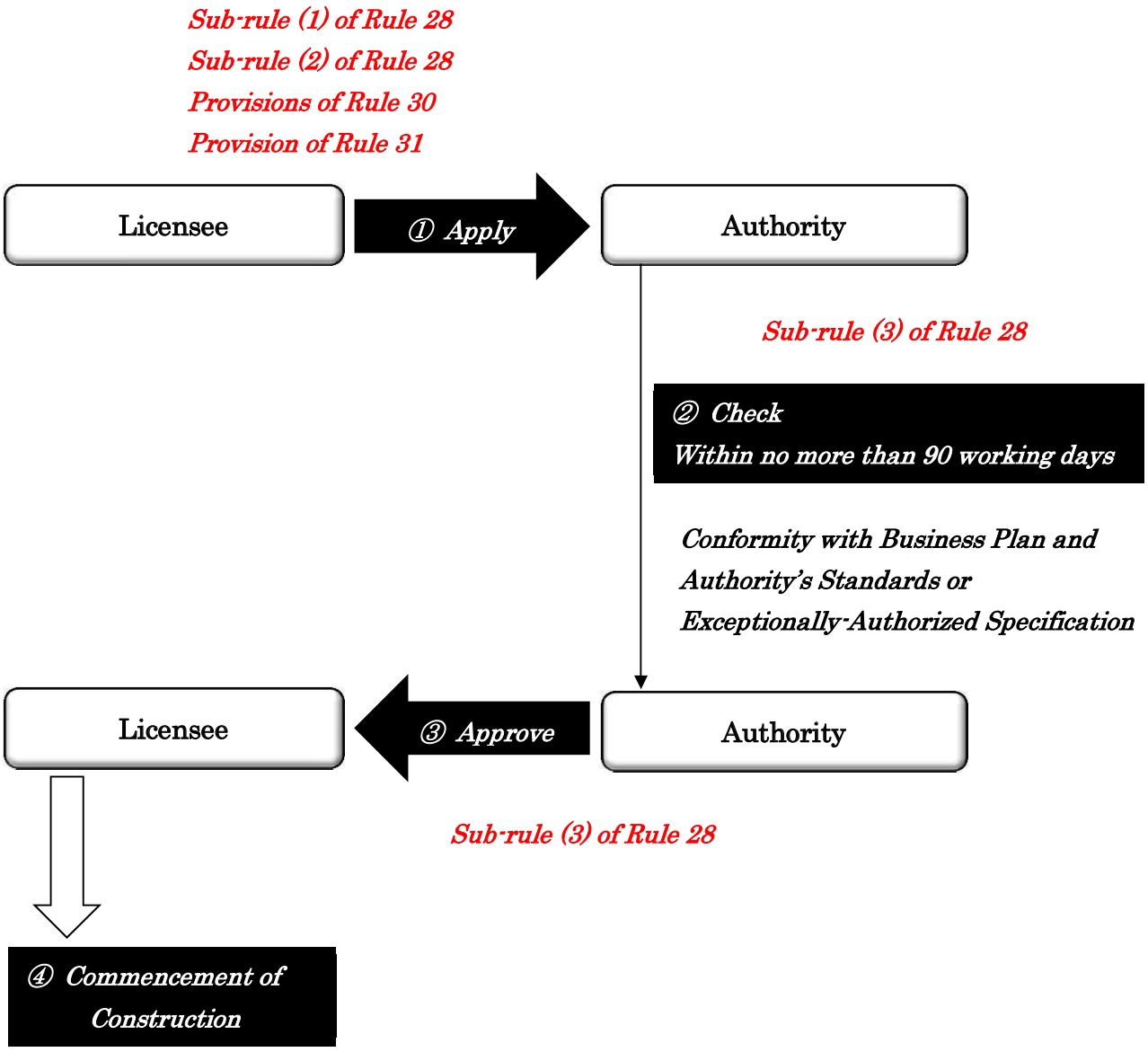


Permission for alteration from Authority's Standards
(In case any alteration is required from Authority's Standards)

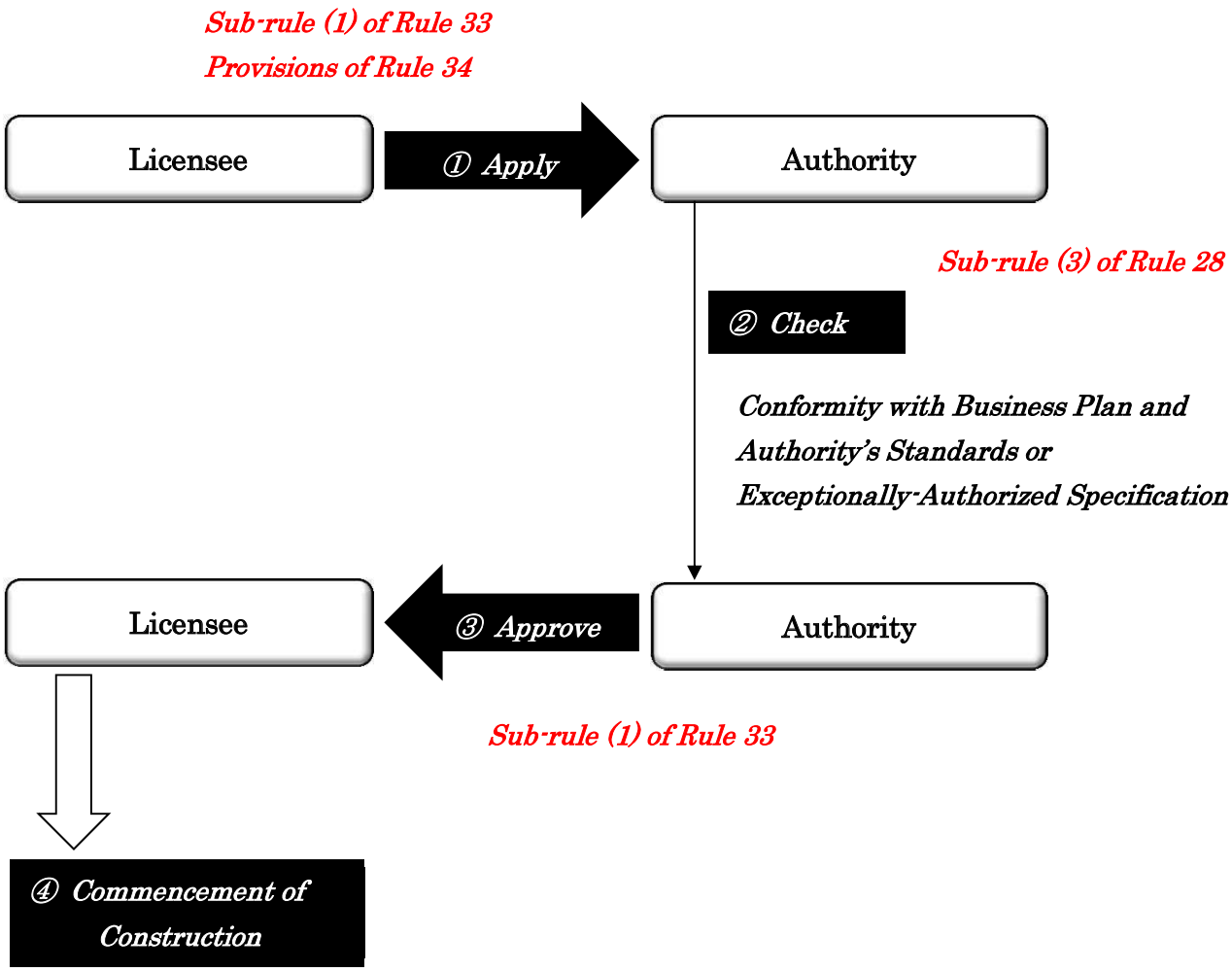
Sub-section (3) of section 15 of the Act



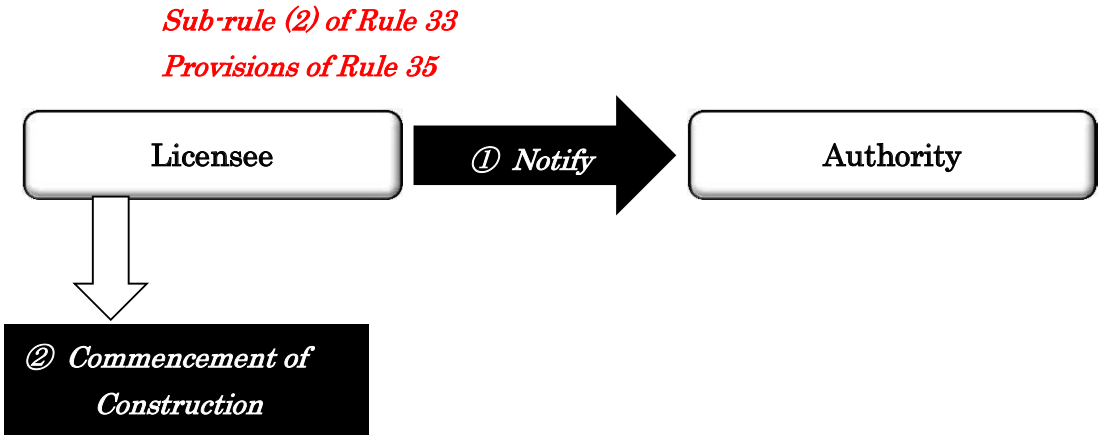
4. Approval of Construction Plan



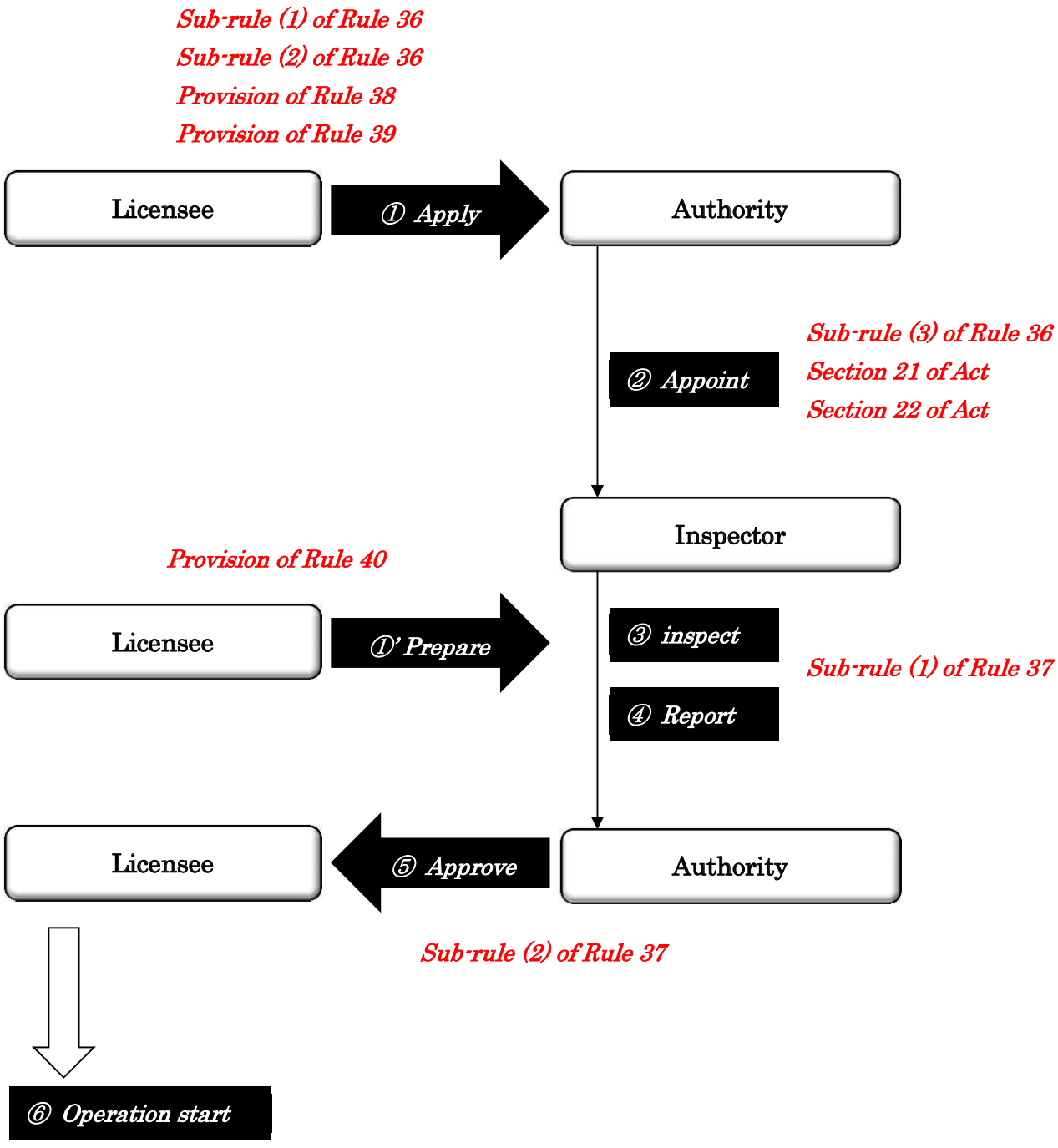
5. Approval of Alteration of Construction Plan



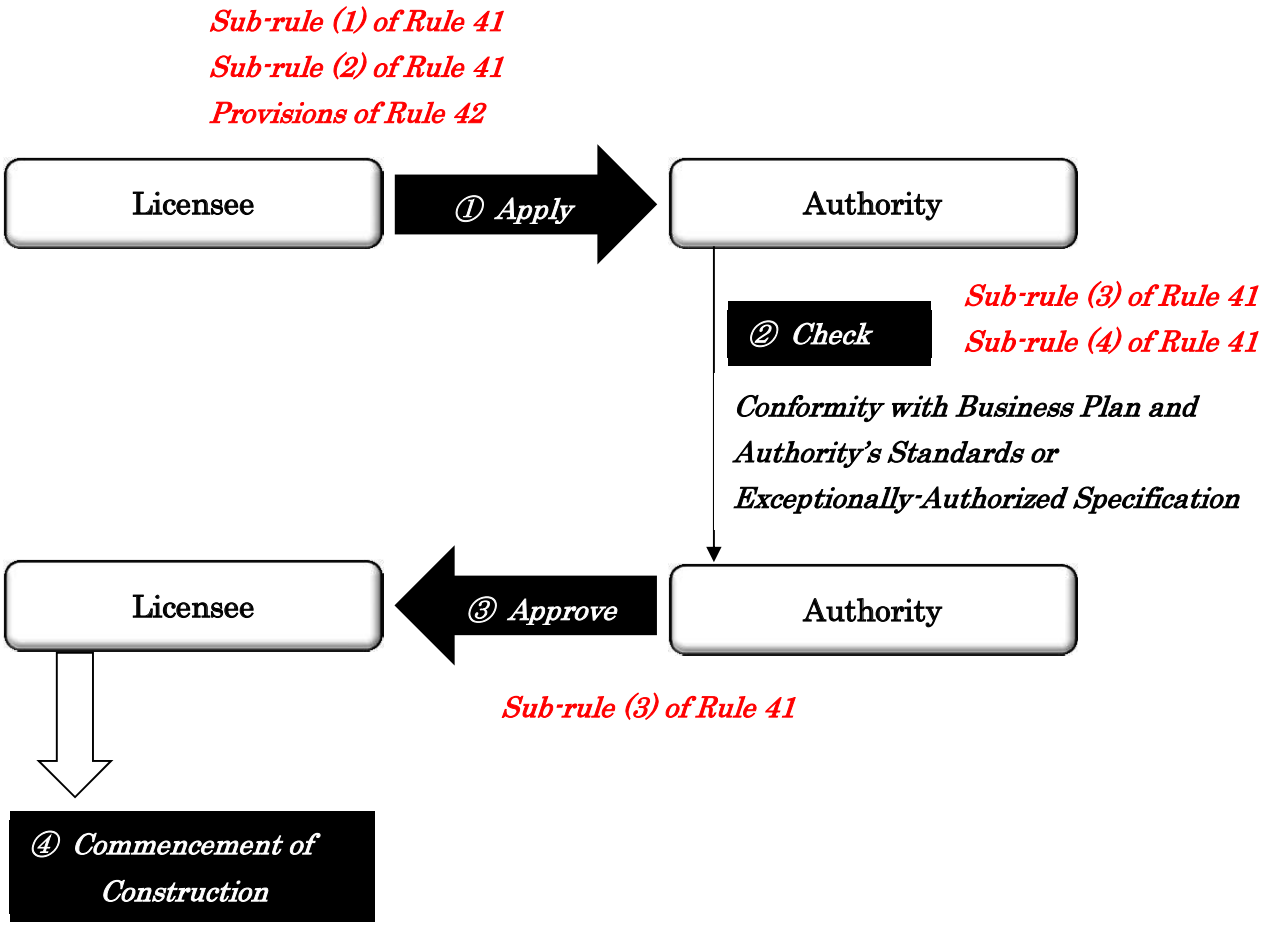
In case of minor alteration of construction plan



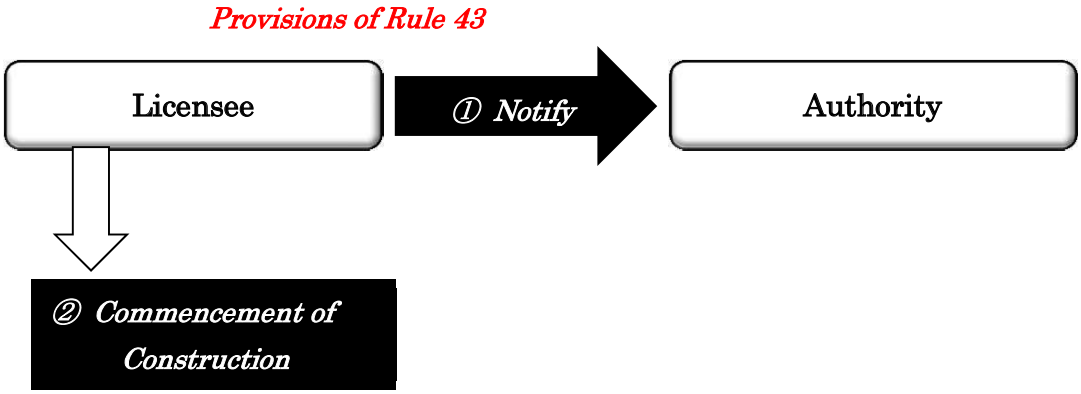
6. Approval of Completion of Construction Works



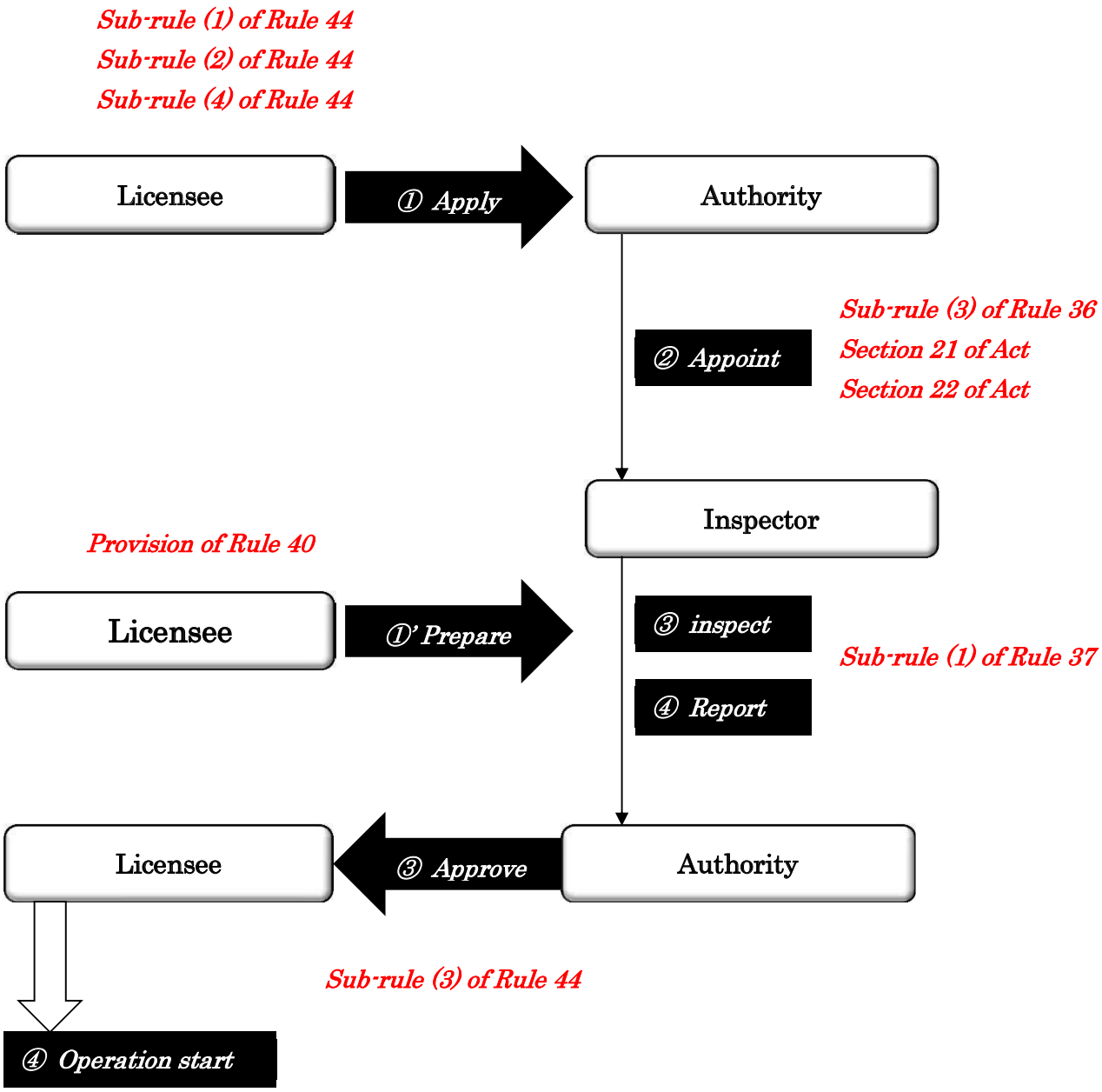
7. Approval of Construction Plan for alteration of existing Metrorail facility



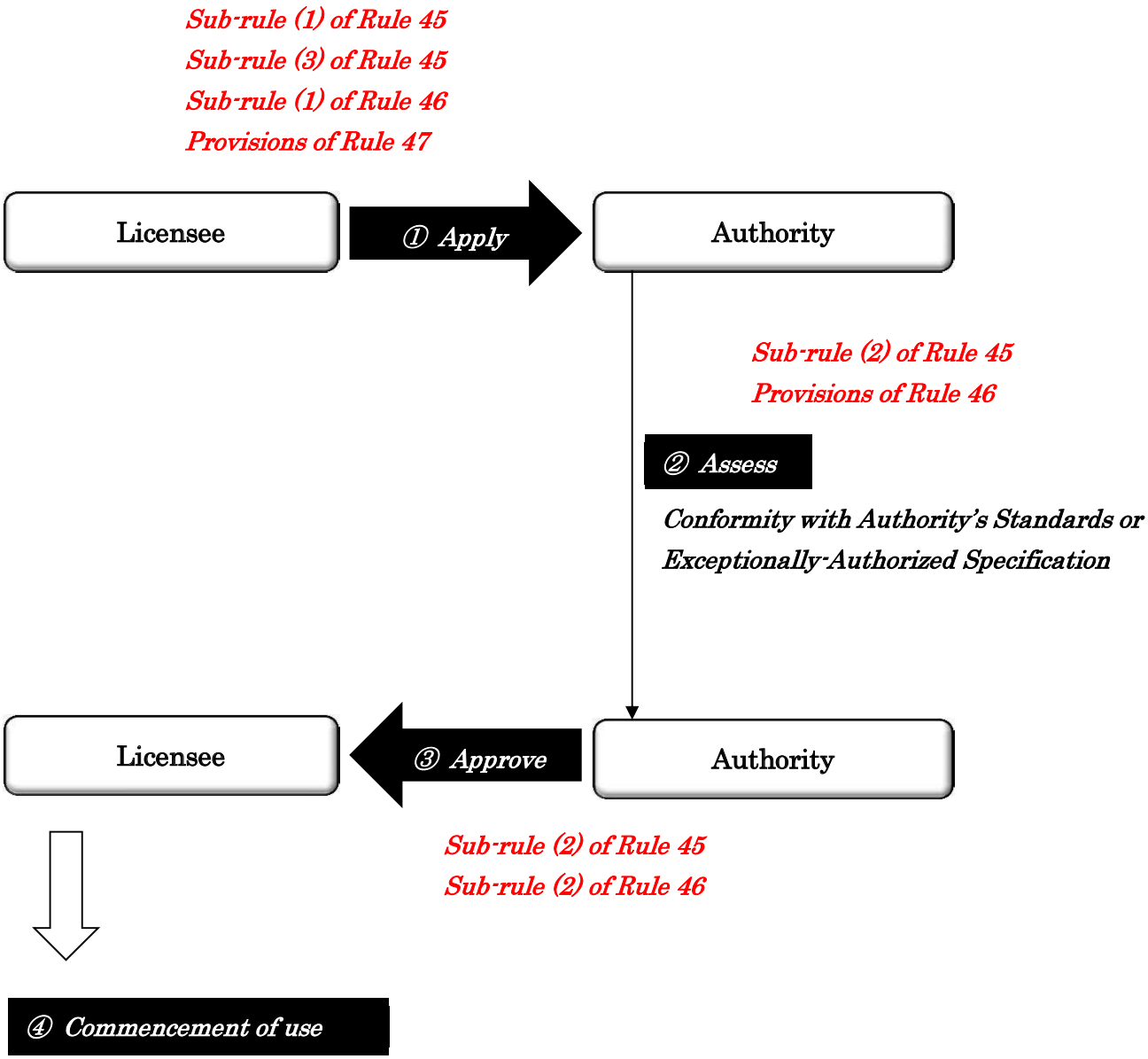
In case of minor alteration of existing Metrorail facility



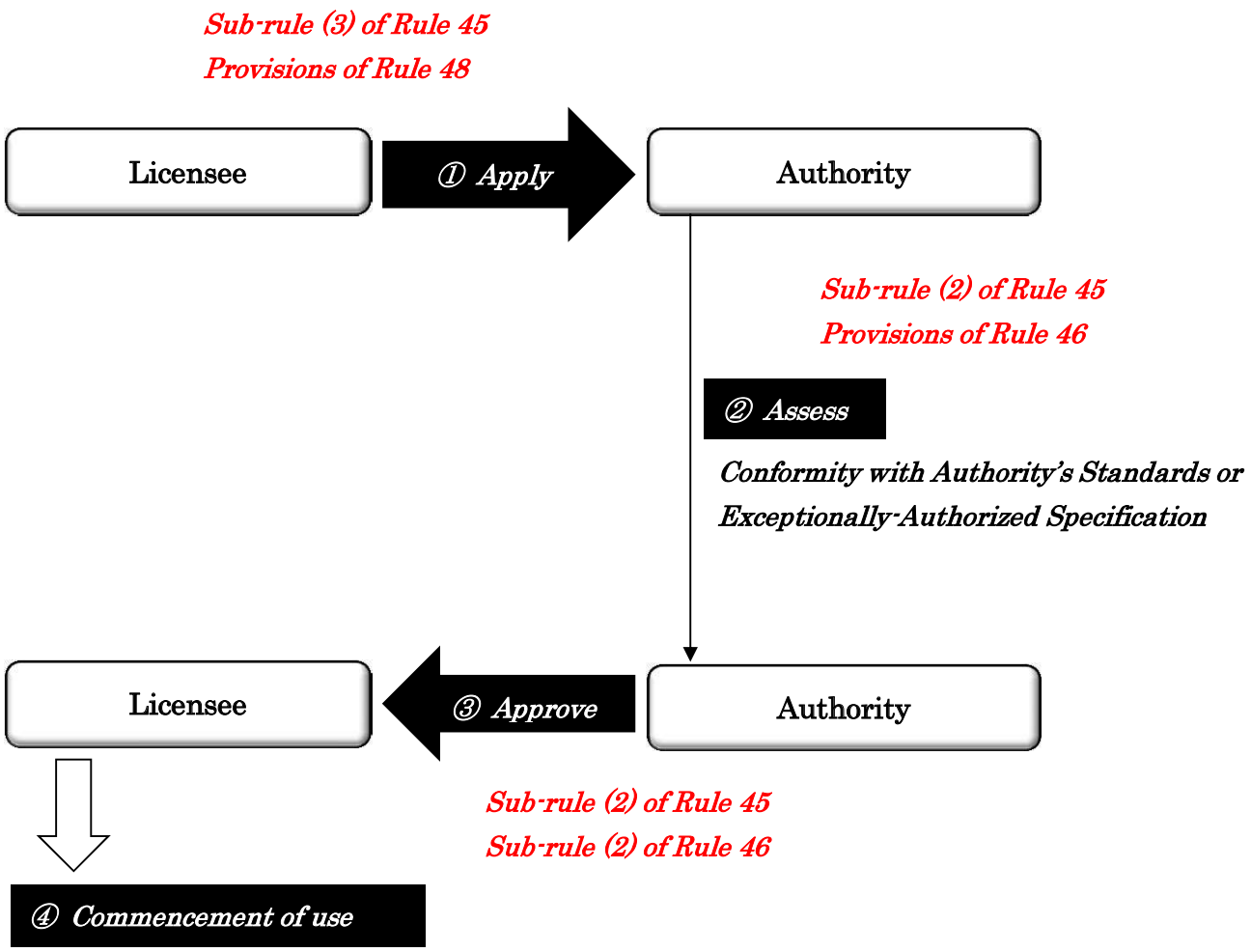
8. Approval of Completion of revised Metrorail facility



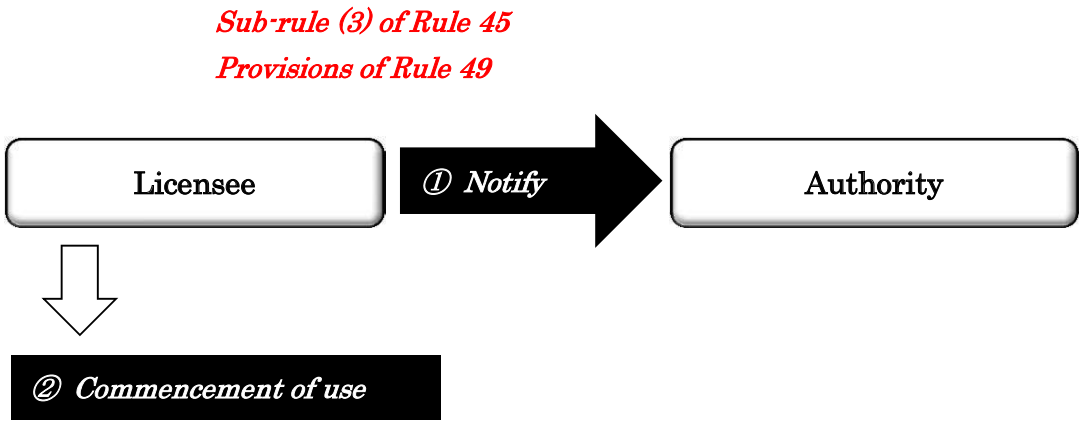
9. Approval of Structure of rolling stock



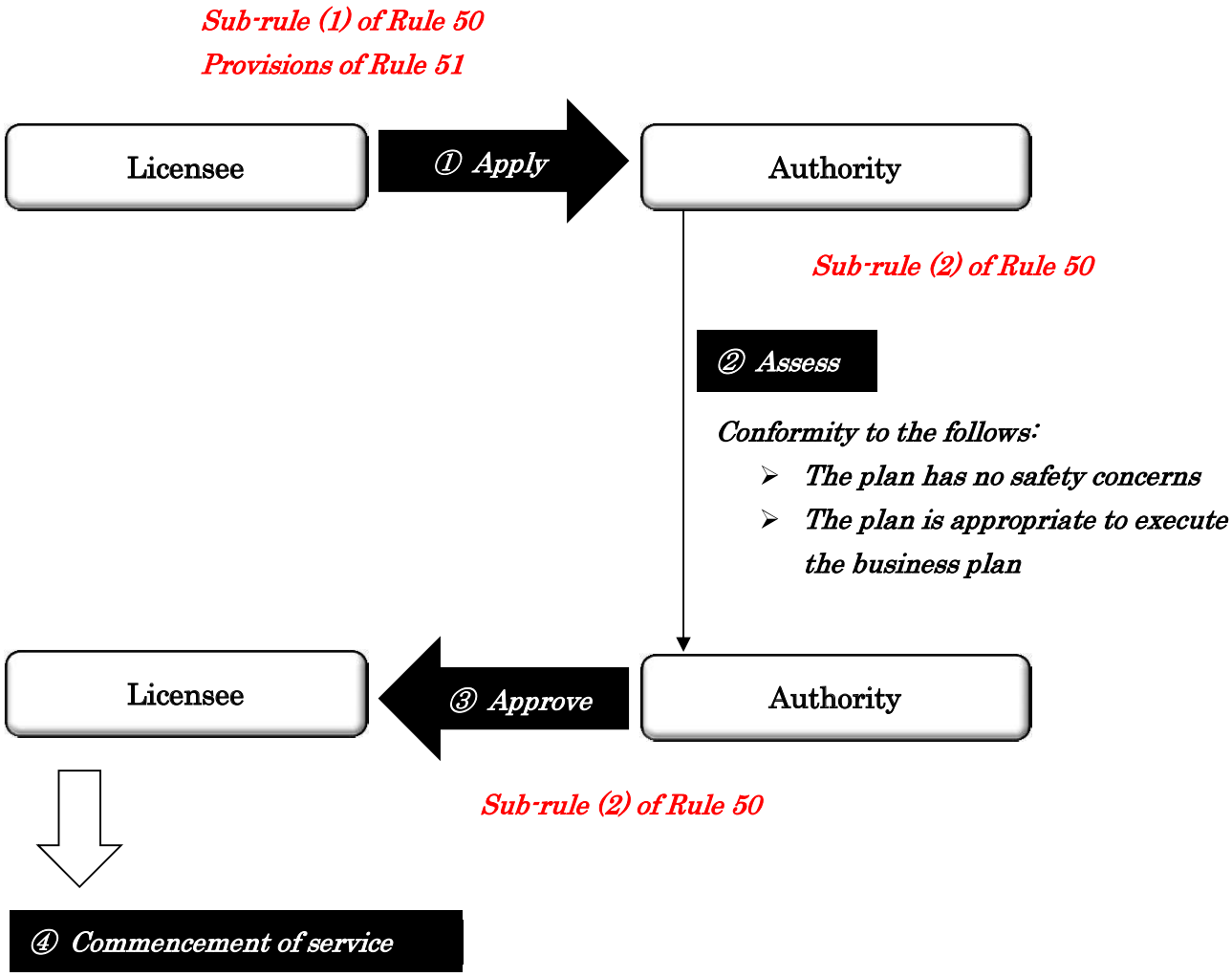
10. Approval of Alteration of Structure or Device of rolling stock



In case of minor alteration of structure or device of rolling stock

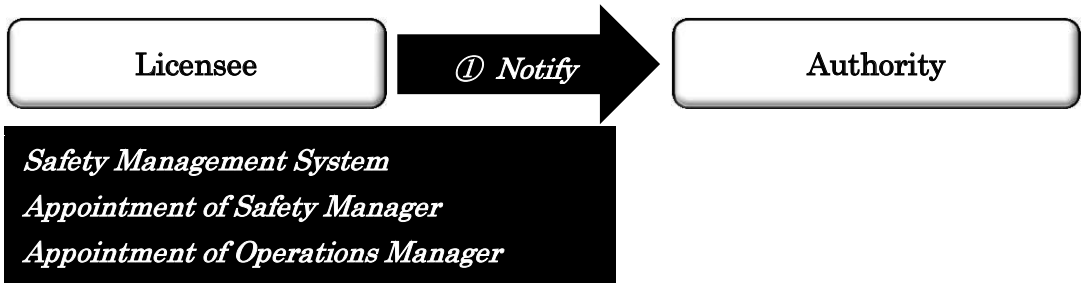


11. Approval of Train Operation Plan



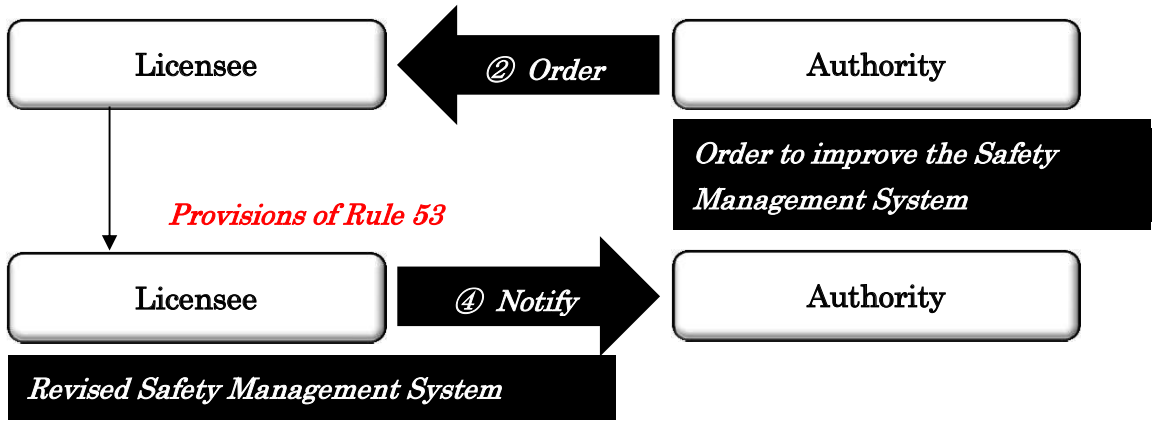
12. Determination of Safety Management System

Provisions of Rule 52, 53, 54, 54, 55 and 56



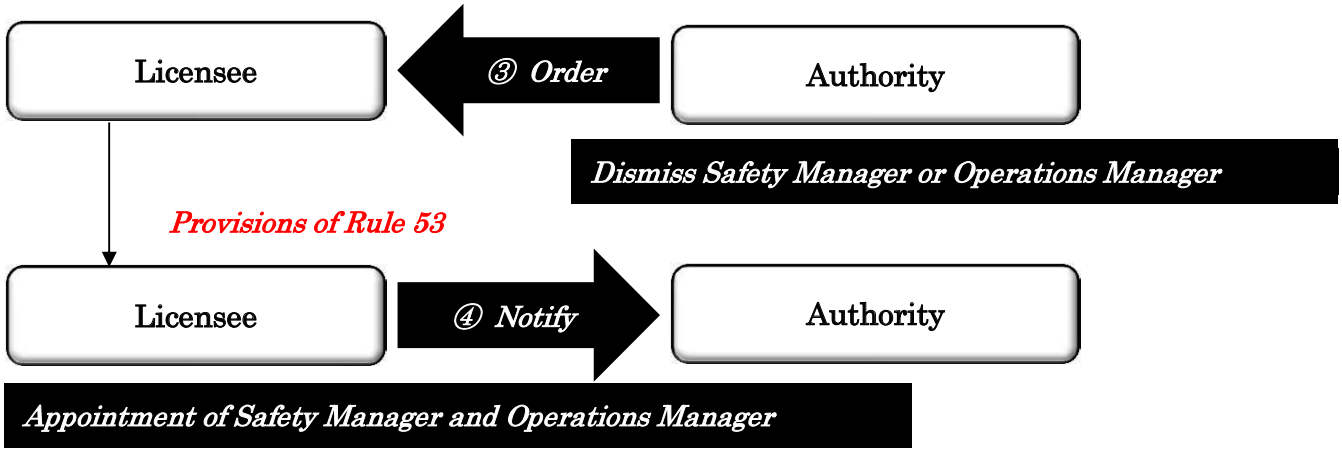
In case, Safety Management System does not conform to regulations

Sub rule (4) of Rule 52



In case, Safety Manager or Operations Manager has neglected their duties and it may extremely hinder safety of transportation

Sub-rule (8) of Rule 52
Provisions of Rule 56



Chapter-Ⅱ

Licensing for Metrorail

(Application and Approval Procedure)

1. Purpose of obtaining a license

A license gives a licensee monopolistic power for Metrorail Business under provision 7 of Metrorail Act. Also a licensee is given some special power and much responsibility for their activities for Metrorail.

Only a person whose plan of Metrorail is reasonable, feasible and sustainable, and who has ability to do such activities for Metrorail may obtain a license.

Outline of special power and responsibility given by the Metrorail Act is following

Special power;

1. Land acquisition
2. Right to entry
3. Fare collection

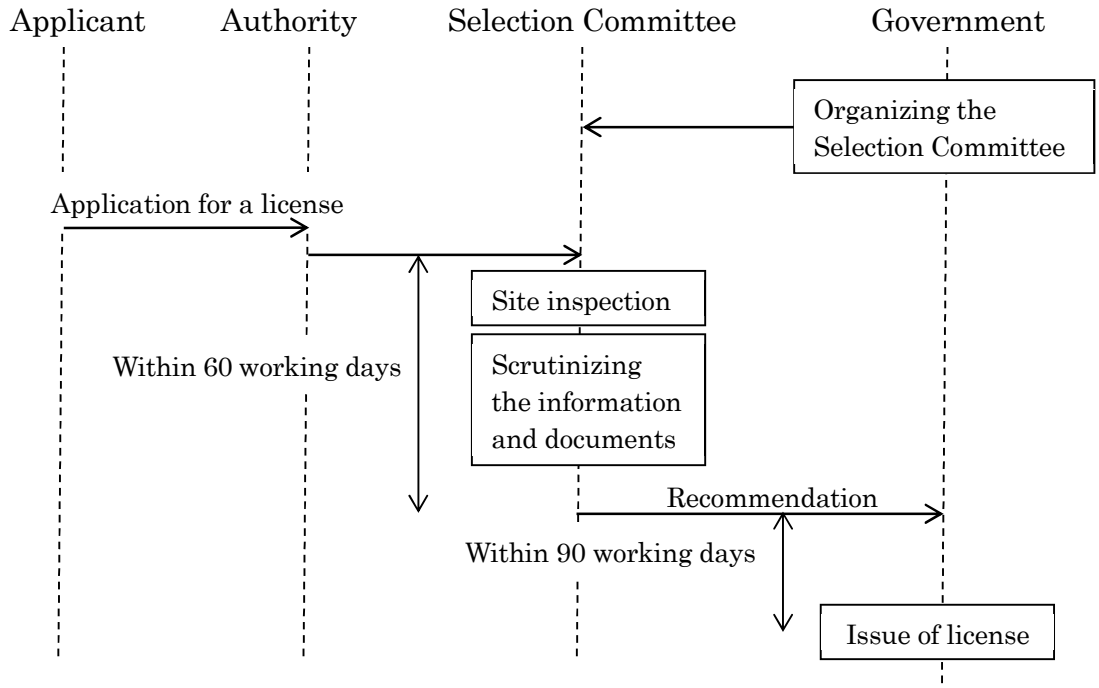
Responsibility

1. No cancelation to operation without permission
2. Technical Approval for some activities of Metrorail
3. Submission of report to the Authority
4. Accepting and providing assistance for inspection
5. Paying compensation to a person or his family when he injured or died due to Metrorail accident.

2. Procedures for licensing

A license is given by submission from an applicant after organizing the Selection Committee by the Government

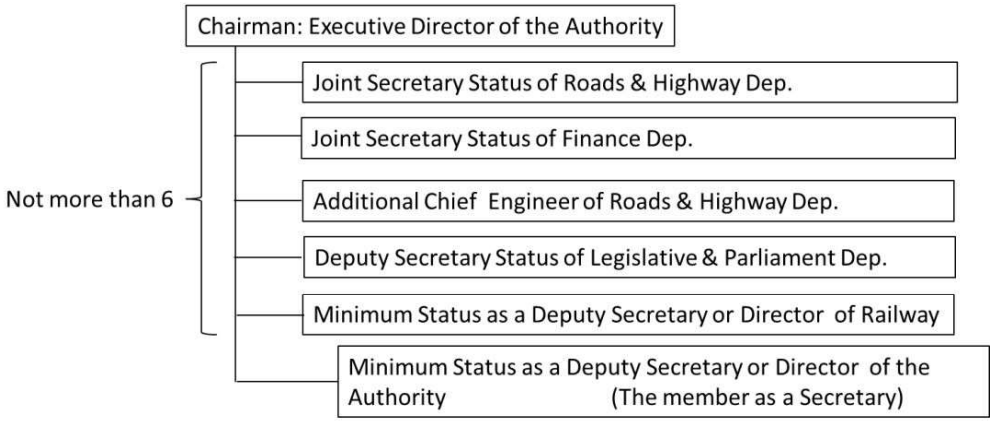
The procedures for licensing is shown in the following drawing



3. Selection Committee

The Government shall constitute the Selection Committee.

The organization of the Selection Committee is prescribed as the following drawing in Metrorail Act and Metrorail General Rules.



4. Application of a license

(1)Application (Form-A)

(a)Name and address of the applicant and his representative

(b)Detailed description of the area where the applicant is to establish, develop, operate Metrorail system or conducting any construction activity of that system; Description of addresses of the origin, the destination and some main transit points

(c)Scope of Metrorail business; Establishment, Operation and/or any other categories

(d)Desired period of operation; if the applicant desires a license of temporary operation

(e)Business plan that specifies-

(i) Type of Metrorail system; Ordinary Metrorail System, Suspended Transit System, Straddled Transit System, Guide-rail Transit System, Levitation Transit System or any other mass transit systems

(ii) Salient features of Metrorail system; single or double track, propulsion system and gauge

(iii)Maximum design speed

(iv) Designed transportation capacity per day

(v) Station locations and names; Description of names and addresses of stations.

(2)Attached Documents

(a) Necessary documents regarding financial ability of the business

for establishment, development, operation of Metrorail system and conducting any construction activity of that system including following explanations;

(i) An estimate of revenues and expenditures with the basis of such estimate;

(ii) An estimate of construction costs;

(iii) Total amount of funds, financing programs, and procurement of land and properties required to initiate construction;

(iv) An estimate of cash flow;

(v) A balance sheet of the preceding fiscal year;

(b) Planned schedule to open Metrorail service to public;

(c) Proposed route alignment as specified; maps and vertical alignment drawings along with specification of the following table

1) Plan and Profile: scale shall be larger than 1 to 25,000. Such drawings shall show -
   a) Name of the terminal stations
   b) Prime locations on the route
   c) Name and chainage of the stations
   d) Track centerline and successively increasing distance per kilometer
   e) Geographic formation and planimetric features
   f) Scale and directions
2) Vertical Cross-section: With the scale larger than 1 to 25,000 in horizontal and 1 to 2,000 in vertical, such drawings shall show -
   a) Chainages of existing ground level and formation level at track centerline in every 200m.
   b) Gradient at the track centerline
   c) Name and chainage of the stations
   d) Length and chainage of tunnels and bridges
   e) scale

(d) A copy of approved Environmental Impact Assessment (EIA) report, if necessary;

(e) Documents which describe that the applicant does not meet cause of disqualification specified rule 8;

(f) Type and brief outlines of other by-business, if any

(g) A copy of the bank draft or pay order of the prescribed license fee for application of license

(3)Attached documents if an applicant is a company

(a) A copy of the certificate of incorporation regarding registration of the applicant;

(b) A copy of the up to date trade license; and

(c) A copy of the national identity card of the directors of the applicant.

(4)Additional documents if an applicant has no experiences of Metrorail (as additional documents under 4(6) of the rules according to request of the Authority)

(a) Documents about the organization plan and the recruiting plan

(b) Documents about power supply

Item (on Rules)	Detail Item	Checking Point	✔	Comments
a) Financial condition of the business plan				
	i) Reasonability of estimate of construction cost	・ Reasonability of estimate of construction cost; volume and price		
		・ Adequacy of risk assessment for increasing construction cost		
	ii) Reasonability of estimate of revenues and expenditures	(Revenues)		
		・ Reasonability of demand estimate		
		・ Reasonability of fare level		
		・ Reasonability of estimate of revenue out of fare		
		(Expenditures)		
		・ Reasonability of estimate of Construction cost	i)	Already written in i)
		・ Reasonability of estimate of operation and maintenance cost of railway operation (operation management cost, cost of electric power and maintenance cost) and operation cost of the company		

	iii)Adequacy of funding plan	・ Confirmation of capital which has already been collected and will be collected		
		・ Confirmation of possibility of governmental fund		
		・ Confirmation of possibility of private fund		
	iv) Reasonability of the construction period	・ Confirmation of reasons to estimate the construction period		
		・ To understand the necessity of land acquisition and period to acquire		
	v) Soundness of cash flow of the licensee company	・ Confirmation of value of a deficit/surplus, subsidy, a cumulative deficit and necessary loan every year		
		・ Confirmation of possibility of subsidy		
		・ Confirmation of the maximum borrowing power of the company		
		・ Reasonability of period to eliminate a cumulative deficit		
		・ Confirmation of the target period of elimination of a cumulative deficit		
		・ Verification of feasibility of the target period above-mentioned		

b) Safety of transportation				
	i) Credibility of safety of proposed railway system	・ Confirmation that the proposed railway system is proven/ If the proposed railway system is new, verification of safety and feasibility of the system		
	ii)Confirmation of technical problems in proposed area	・ Problems on safety for line alignment; consistency with running speed, etc.		
		・ Problems on safety for construction at crossing any other facilities; other railways, roads, rivers etc.		
		・ Confirmation of technical problems in construction, and verification of measures for them		
c) Adequacy of environmental safeguard				
	i) Accomplishment of EIA	・ Confirmation of accomplishment of appropriate EIA		
	ii) Reflection for conditions and considerations proposed in the EIA report	・ Confirmation of consistency between the conditions proposed in the EIA report and the plan of alignment and Metrorail system		
		・ Confirmation that the plan of alignment and Metrorail system has considered the recommendations of EIA		

	iii)Conditions for construction	・ Examine whether any conditions for construction should be provided with licensing for environmental matters		
d) Adequacy of the business plan on any other matters to soundly operate Metrorail service				
	i) Suitability of route plan on the view of city plan and transportation plan	・ Confirmation of suitability of route plan and locations of stations on the view of city plan		
		・ Confirmation of consistency between locations of stations and transportation plan		
	ii) Adequacy of railway system for transporting the demand	・ Confirmation of consistency between designed transport capacity and demand forecast		
		・ Confirmation of consistency between railway system and designed transport capacity		

e) Ability to maintain an adequate and satisfactory Metrorail service				
	i) Adequacy of management system for railway business	・ Confirmation of qualification of the managers		
	ii) Adequacy of organization for appropriate Metrorail service	・ Confirmation of organization plan for providing appropriate Metrorail service		
	iii) Adequacy of organization for keeping safety	・ Confirmation of organization plan for safety management		
		・ Confirmation of organization plan for maintenance		
	iv) Confirmation of energy supply system	・ Confirmation of energy supply system; especially for electric power		
	Remarks; ▭ Additional documents under 4 (6) of the rules are need for explanation of these items.			

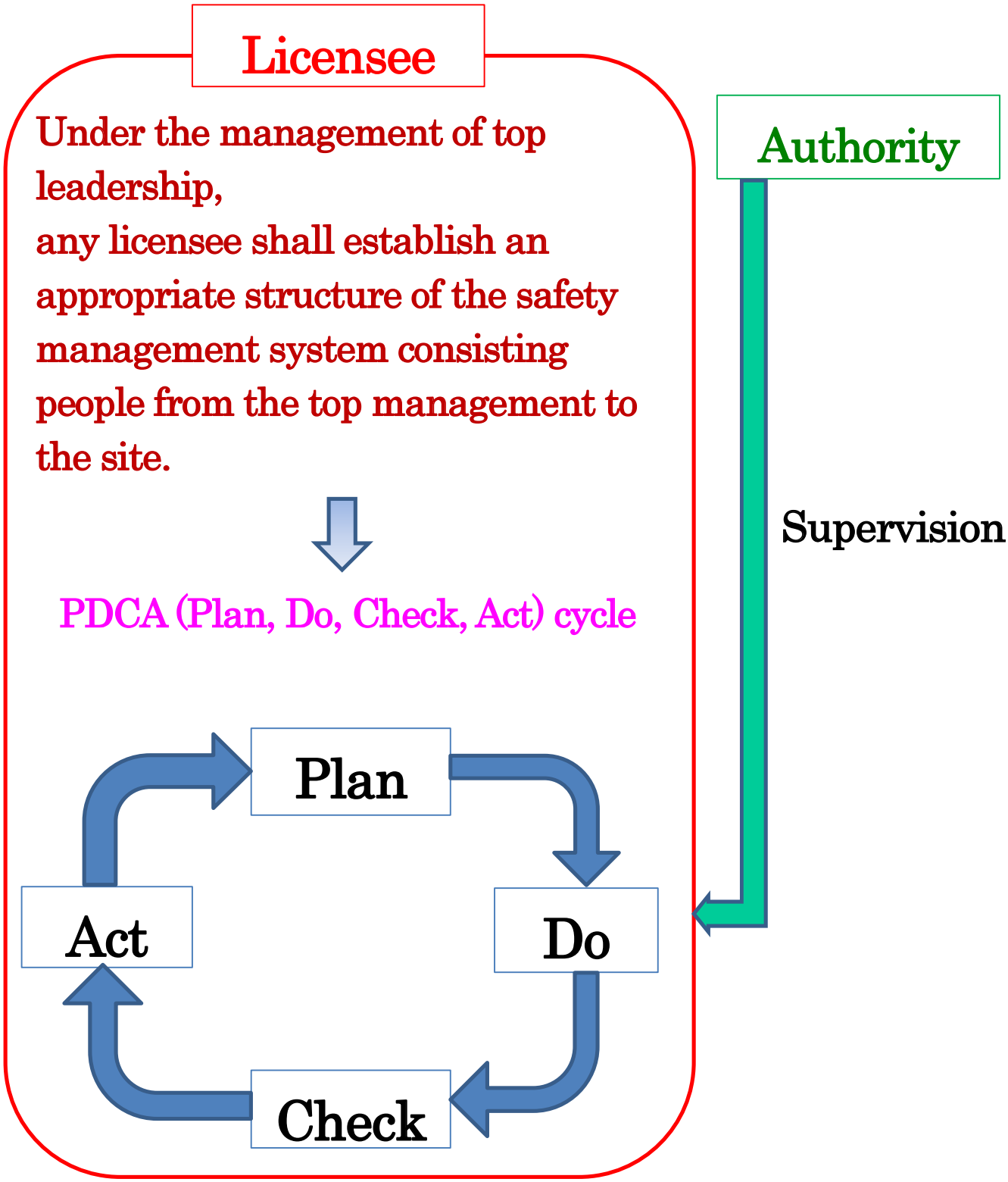
f) Disqualification of the applicant				
	i) Confirmation that the applicant does not fit the following criteria	• any company or person whose license has been cancelled and 2 (two) years have not been elapsed from the date of such cancellation; or		
		• any company whose any member of board of directors or officer falls or any person who falls under any of the following disqualifications:- 1) has been, on conviction for a criminal offence involving moral turpitude, sentenced to imprisonment for a term of not less than two years, unless a period of five years has elapsed since his release; 2) is an undischarged insolvent.		

Chapter-Ⅲ

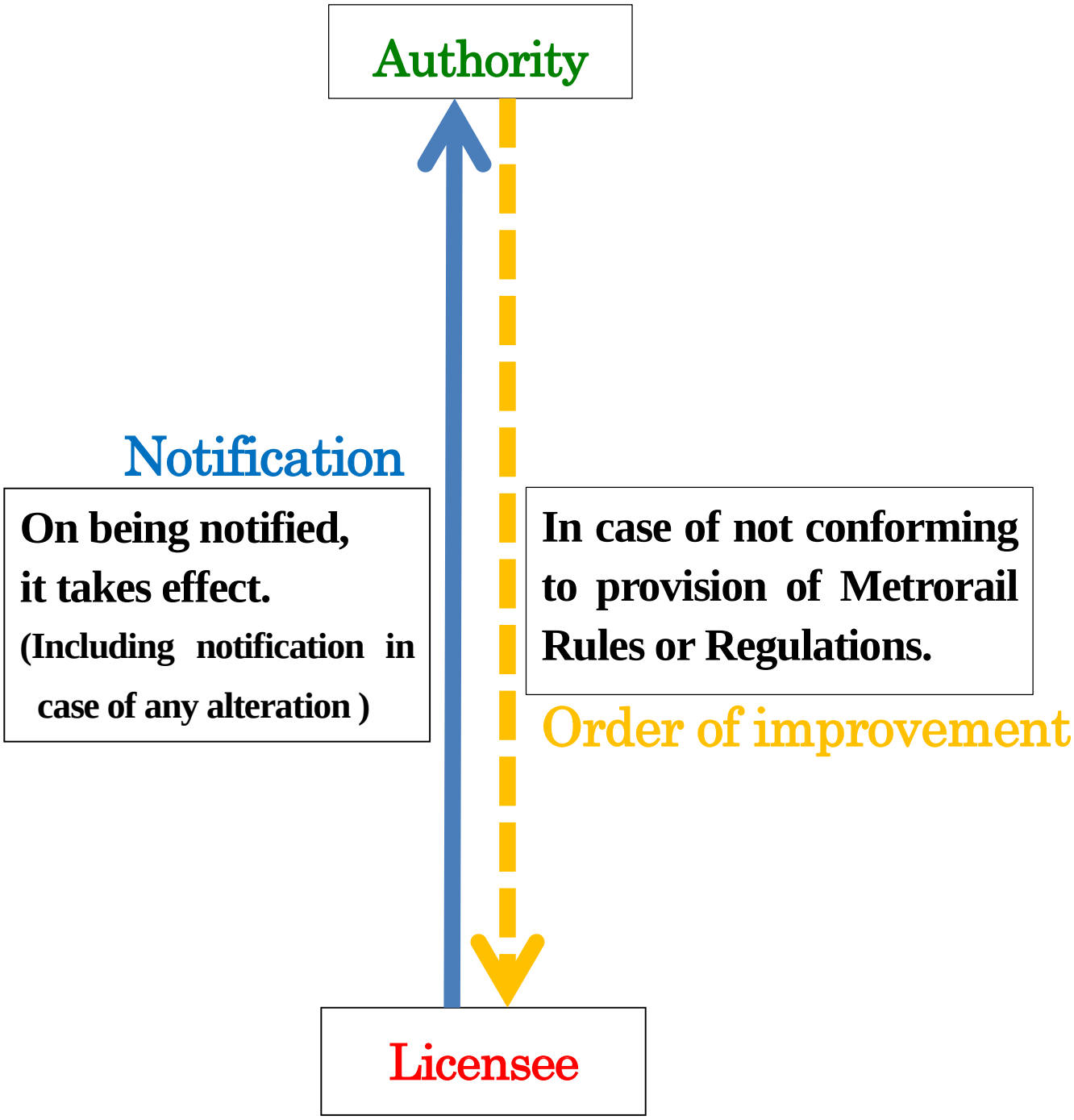
Safety Management System for Metrorail

(Application and Approval Procedure)

1. Purpose to set forth Safety Management System



2. Procedure of Safety Management System



3. Application for Determination of Safety Management System

(1) Any licensee to determine the safety management system shall submit the application to the Authority which shall specify -
(a) name and address of the applicant; and
(b) date of implementation;

(2) The application specified in (1) shall enclose the following documents:
(a) safety management system; and
(b) documents prescribing other necessary items as specified in the System.

(3) The licensee to determine the safety management system shall submit the application as specified hereunder by type of Metrorail business by the specified date-
(a) Licensee to construct Metrorail facility – the date of application for approval of the first construction plan of Metrorail facility as specified under rule 30;
(b) Licensee to manufacture new rolling stocks – the date of application for approval of the first structural design of rolling stock as specified under rule 47;
(c)Licensee to provide Metrorail operation – the date of application for approval of the first train operation plan as specified under rule 51.

(4) Any licensee to make any alteration in the approved safety management system shall, by the date of enforcing the revised safety management system, submit the application to the Authority which shall specify –
(a) name and address of the applicant;
(b) date of enforcement; and
(c) reasons for such alteration.

(5) The application under (4) shall enclose the following documents-
(a) revised safety management system;
(b) a table illustrating the difference between before and after such alteration; and
(c) other documents prescribing the necessary items as determined in the revised safety management system.

4. Contents of Safety Management System

Safety Management System shall set forth and comply with the code of practice, in respect to the matters listed in the following –

(1) Philosophy of Metrorail Service to ensure safety of transportation
(a) General principles
(b)Compliance to the relevant legislations (relevant legislations and other rules/regulations to ensure safety of transportation)
(c) Safety management activities

(2) Institutional structure for execution of Metrorail Service and administration to ensure safety of transportation

(a) Organizational structure
(b) Mandates of corporate managers for safety of transportation
(c) Mandates of Safety Manager
(d) Mandates of Operations Manager
(e) Selection and mandates of Driver Instruction Manager
(f) Selection and mandates of other managers necessary to ensure safety of transportation

(3) Method statements for execution of Metrorail Service and administration to ensure safety of transportation
(a) Transmission and sharing of information
(b) Development and execution of accident prevention measures
(c) Accident and disaster management
(d) Monitoring of execution and administration
(e) Promulgation of Safety Management System
(f) Preparation and control of documents on the relevant legislations, records of decisions pertaining to Metrorail Service, and other documents on safety management
(g) Execution and improvement of administration
(h) Train operation and administration, including -
a) Determination and alteration of train operation plan
b) Rostering plans of train crews and rolling stock
c) Capacity certification of train drivers and other key operating personnel
d) Capacity building and retaining for train crews and others involved
e) Controlling/dispatching of train operation
f) Collection and transmission of information required for safe train operation
g) Management in the event of accidents, disasters, and other urgencies
h) Subcontracting of works
(i) Execution and administration regarding Metrorail Facility, including -
a) Construction, improvement, and maintenance of Metrorail Facility
b) Safety assurance during construction and maintenance
c) Retaining of capacity for construction and maintenance workers
d) Subcontracting of works
(j) Execution and administration regarding rolling stock
a) Manufacturing, rehabilitation and maintenance of rolling stock
b) Retaining of capacity for rolling stock maintenance personnel
c) Subcontracting of works

(4) Appointment and dismissal of Safety Manager

(5) Appointment and dismissal of Operations Manager

【Application for Determination of Safety Management System】

Item & Check Point	✔	Comment
(1) Application		
1) Name and Address of the applicant		
2) Date of implementation		
(2) Attached documents		
1) Safety Management System (*)		
2) Documents prescribing other necessary items as specified in the system		
(3) Submission of the application forms by the specified date		
1) Licensee to construct Metrorail facility The date of application for approval of the first construction plan of Metrorail facility as specified under Rule 30		
2) Licensee to manufacture new rolling stocks The date of application for approval of the first structural design of rolling stock as specified under Rule 47		
3) Licensee to provide Metrorail Operation The date of application for approval of the first train operation plan as specified under Rule 51		
(4) Submission of the application forms in case of any alteration		
1) Name and Address of the applicant		
2) Date of enforcement		
3) Reasons for such alteration		
4) Attached documents		
4-1) Revised Safety Management System		
4-2) A table illustrating the difference between before and after such alteration		
4-3) Other documents prescribing the necessary items as determined in the revised Safety Management System		

(*) Contents of Safety Management System (Page 3-7)

Application Form (Sample)

Application for Determination of Safety Management System

1. Applicant Name

2. Applicant Address

3. Date of implementation

≪Attached document≫

(a) Safety Management System

(b) Documents prescribing other necessary items as specified in the Safety Management System

Application for making any alteration of Safety Management System

1. Applicant Name

2. Applicant Address

3. Date of enforcement

4. Reasons for such alteration

≪Attached document≫

(a) Revised Safety Management System

(b) A table illustrating the difference between before and after such alteration

(c) Other documents prescribing the necessary items as specified in the revised Safety Management System

【Contents of Safety Management System (*)】

Key Points Applicable to All Items

For all items, verify that 1) "who" (the person responsible), 2) "when" (period, timing), and 3) "what" will be done are indicated and that the details are reasonable and feasible from an organizational perspective.

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
			(1) Philosophy of Metrorail Service to ensure safety of transportation		
○	○	○	**a. General principles** Checkpoint Is the following indicated? ○ Metrorail Service guidelines (safety first principle, verification of Safety Management System's continuity) related to ensuring safety of transportation must be stipulated.		
			b. Compliance to the relevant legislations (relevant legislations and other rules/regulations to ensure safety of transportation) Checkpoint Is the following indicated? ○ Legislations related to ensuring safety of transportation must be complied with.		
			c. Safety management activities Checkpoint Is the following indicated? ○ Formulation, framework, review, etc., relating to facility development plan, equipment investment plan, etc., required for ensuring safety of transportation.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
—	—	—	**(2) Institutional structure for execution of Metrorail Service and administration to ensure safety of transportation**		
○ To exclude Operations Manager, Driver Instruction Manager	○ To exclude Operations Manager, Driver Instruction Manager	○	**a. Organizational structure** Checkpoint Is the following indicated? ○ Diagram outlining structure, etc. ○ Roles of Safety Manager, Operations Manager, Driver Instruction Manager, and managers of other departments with significant involvement in ensuring safety of transportation.		
○	○	○	**b. Mandates of corporate managers for safety of transportation** Checkpoint Is the following indicated? ○ Mandates and powers of managers in the central administration, including chief executive. ○ Maintenance and management of safety principles, safety-focused measures, etc., by managers in the central administration, including chief executive.		
			c. Mandates of Safety Manager Checkpoint Is the following indicated? ○ Items that should be carried out by the safety manager for the purpose of consistent implementation of safety-focused measures and the like, such as establishment, implementation, maintenance, and verification of methods required by the Safety Management System.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
×	×	○	**d. Mandates of Operations Manager** Checkpoint Is the following indicated? ○ Matters that should be carried out by the Operations Manager. ・ Train operation (instructions for train driving, signal handling, and operation) ・ Establishing and revising train operation plan ・ Driver and rolling stock management plan ・ Retaining capacity of drivers and other persons engaged in tasks relating to train operation ○ Specific method of carrying out general supervision of the above items.		
			e. Selection and mandates of Driver Instruction Manager Checkpoint Is the following indicated? ○ Specific mandates, powers, requirements, and position ○ Retaining and managing crew capacity, including aptitude, knowledge, and skills.		
○	○	○	**f. Selection and mandates of other managers necessary to ensure safety of transportation** Checkpoint Is the following indicated? ○ Selection of managers with important role in safety of transportation. ○ Specific mandates, powers, and positions of said managers.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
○	○	○	**(3) Method statements for execution of Metrorail Service and administration to ensure safety of transportation**		
			a. Transmission and sharing of information Checkpoint Is the following indicated? ○ Content and method of reports to central administration managers, including chief executive, Safety Manager, and other key managers with regard to accidents, situations in which there is concern about an accident, other situations that pose a risk to safety of transportation, and relevant information about accident prevention measures. ○ Content and method of communications about safety of transportation by central administration managers, including chief executive, and departments carrying out work.		
			b. Development and execution of accident prevention measures Checkpoint Is the following indicated? ○ Method of handling relevant internal and external information related to prevention measures for accidents and the like. ○ Discussing and developing accident prevention through regular meetings and the like.		
			c. Accident and disaster management Checkpoint Is the following indicated? ○ Notification in the event of an accident. ○ Formulation of directions and information that clarifies system for dispatching emergency services, etc. ○ Promulgation to all employees.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
○	○	○	**d. Monitoring of execution and administration** Checkpoint Is the following indicated? ○ Method of verifying that the Safety Management System is being implemented appropriately. ○ Reports on management status from managers. ○ Verification frequency.		
			e. Promulgation of Safety Management System Checkpoint Is the following indicated? ○ Safety Management System must be promulgated to all employees.		
			f. Preparation and control of documents on the relevant legislations, records of decisions pertaining to Metrorail Service, and other documents on safety management Checkpoint Is the following indicated? ○ Items relating to the development of rules required to ensure safety of transportation. ○ Procedures for managing and recording documents such as records required to ensure safety of transportation. ○ Procedures for managing and recording documents relating to records of the Safety Manager's opinions, deliberations and decisions concerning important Metrorail Service matters with respect to ensuring safety of transportation, and so forth.		
			g. Execution and improvement of administration Checkpoint Is the following indicated? ○ Method of reviewing and improving Safety Management System. ○ Education and training to maintain and improve Safety Management System.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
×	×	○	**h. Train operation and administration, including –** Checkpoint ○ Are diagrams and the like included that outline the operation task-related chain of command, the system pertaining to relations between relevant managers, etc. ?		
			h-1) Determination and alteration of train operation plan Checkpoint Is the following indicated? ○ Items of note such as the time required between stations for each train, station embarkation/disembarkation conditions, constraints arising from railway facilities, and constraints relating to crew and rolling stock management, as well as the method of verifying safety and feasibility. ○ Rapid verification of adequacy after implementation. ○ Considerations for run curve diagrams, such as performance of deployed rolling stock (acceleration/deceleration speed, maximum speed, curving performance), track conditions such as curves and gradients, and driver's operating conditions. ○ Method of preparing records necessary in order to align railway facilities and rolling stock to be deployed in terms of rolling stock performance required for establishing and revising operation plan, speed limits due to track conditions or curves, and so forth, as well as method of collaboration between managers.		
			h-2) Rostering plans of train crews and rolling stock Checkpoint Is the following indicated? ○ Suitability of working hours for crew on trains assigned to each operating section, equalization of on-board working hours, etc., and restrictions/requirements relating to stipulated duties, based on the crew posted to each section. ○ Considerations such as rolling stock structure and performance required for operation of allocated trains, track structure and operational safety facilities for operating sections, specified times for rolling stock inspections, fuelling, etc.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
×	×	○	**h-3) Capacity certification of train drivers and other key operating personnel** Checkpoint Is the following indicated? ○ Certification requirements, training curriculum, testing method in order to grant certifications, pass criteria (based on points of note for drivers indicated below). ○ Persons responsible for certifying certifications.		
			Points of Note Are the following indicated for drivers, based on Technical Standards Concerning Metrorail Driver Certification (Provisional name)?		
			(1) Location, seating capacity and dimensions of land and building of training facility. (in Attached floor plan)		
			(2) Course curriculum		
			(3) Test items, testing/inspection methods and acceptance criteria		
			(4) Format of the driver's certificate and delivery method		
			(5) Method of management of persons to whom a driver's certification was authorized		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
×	×	○	**h-4) Capacity building and retaining for train crews and others involved** Checkpoint Is the following indicated? ○ Actions to be taken by driver instruction manager to verify that crew capacity is sufficient, such as conducting ongoing periodic checks and reporting the status to the operations manager, as well as the method of handling issues. ○ Accompanying crew members while on duty in cases where there is deemed to be concern that they may not meet the qualification requirements with regard to physical capacity, mental capacity, knowledge, or skills and response measures taken by the driver instruction manager or other managers in cases where there are doubts about sufficient situation of the crew capacity needing the education by a halt of crewing. ○ Measures to be taken by the driver instruction manager or other managers in cases where crew members are returned to duty or no longer accompanied while on duty, based on the measures described above. ○ Management method, procedures, etc., with respect to maintaining the aptitude, knowledge, and skills of operation-related personnel. ○ Jurisdiction and powers of operation-related personnel manager and operations manager in cases where they are not the same person. ○ Management and supervision of operation-related personnel, such as the receipt of reports about necessary operation-related matters or issuing of directions before work, during work, or at other appropriate times by persons occupying positions that involve directing and supervising operation-related personnel. ○ Recording the status of operation-related personnel's capacity and managing changes in this status.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
×	×	○	**h-5) Controlling / dispatching of train operation** Checkpoint Is the following indicated? ○ Comprehending operating conditions during transportation disruptions. ○ Temporary alterations to operating plan (e.g., rescheduling). ○ Important operational safety-related directions such as changes to blocking system. ○ Gathering and communicating information on abnormal weather, etc. ○ Communicating information about start approval and the end of the work that might affect train operation to effect the right or wrong of the train operation.		
			h-6) Collection and transmission of information required for safe train operation Checkpoint Is the following indicated? ○ With regard to information about train operating conditions, track conditions, and abnormal weather: ・ Measures to be taken by persons involved in train operation when there is concern that the safe operation of trains may be impeded, including immediate, specific measures that take priority over all else. ・ On-site safety verification when restarting operation in sections where operation was suspended and items to be performed by train operation managers such as direction chiefs. ・ Items relating to measures performed by train operation managers such as direction chiefs and to the method and procedures for communication between relevant persons in cases where the operating plan is temporarily modified in the event of disrupted train operation due to an accident. ・ Items relating to halting operations and other measures in the event that there is deemed to be a risk to the safe operation of trains or other impediment over a broad area due to a typhoon or other abnormal weather conditions. ・ Items relating to coordinating and managing the recording of information pertaining to train operating conditions, communications between relevant persons, measures for ensuring accurate train operation, etc.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
×	×	○	**h-7) Management in the event of accidents, disasters, and other urgencies** Checkpoint Is the following indicated? ○ Measures method and procedures		
			h-8) Subcontracting of works Checkpoint Is the following indicated? ○ Items relating to type and scope of subcontracted work, management of information required for work (including communication and reporting system in the event of an abnormality), and subcontractor work management system and education/training system. ○ Items relating to jurisdiction and powers of subcontracted work manager and Operations Manager in cases where the subcontracted work manager is not the same person as the Operations Manager.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
○	×	×	**i. Execution and administration regarding Metrorail Facility, including –** Checkpoint ○ Are diagrams and the like included that outline the facility work-related chain of command, the system pertaining to relationships between relevant managers, etc.?		
			i-1) Construction, improvement, and maintenance of Metrorail Facility Checkpoint Is the following indicated? ○ Facility design ・ Allocation of responsibilities with respect to design and verification method ・ Allocation of responsibilities with respect to design modifications following verification and verification method ○ Facility construction and upgrading ・ Formulation and management of regulations, supervision of construction work, inspections upon completion of railway facilities, etc. ○ Facility maintenance ・ System, management, formulation and management of regulations, etc.		
			i-2) Safety assurance during construction and maintenance Checkpoint Is the following indicated? ○ Verification of work method, procedures, etc., that give thorough consideration to train and worker safety measures. ○ Items relating to verification of work method, procedures, etc., stipulated in advance with regard to train operation conditions, response in the event of problems occurring, and verifying safety following work. ○ Provision of required information such as train operating conditions to construction contractors, etc.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
			i-3) Retaining of capacity for construction and maintenance workers Checkpoint Is the following indicated? ○ Providing education and training to personnel engaged in work directly related to train operation, etc., and to personnel engaged in facility maintenance and similar work. ○ Method of verifying that personnel engaged in work directly related to train operation, etc., retain their aptitude, knowledge, and skills. ○ Persons responsible for the above.		
○	×	×	**i-4) Subcontracting of works** Checkpoint Is the following indicated? ○ Items relating to method of selecting subcontractors based on scope and content of facilities work to be subcontracted. ○ Items relating to scope and details of facilities work to be subcontracted. ○ Work management system and education/training system for subcontractors in cases where facilities work is subcontracted. ○Credentials required of persons in charge in cases where facilities work is subcontracted.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
×	○	×	**j. Execution and administration regarding rolling stock** Checkpoint ○ Are diagrams and the like included that outline the rolling stock-related chain of command, the system pertaining to relationships between relevant managers, etc.?		
			j-1) Manufacturing, rehabilitation and maintenance of rolling stock Checkpoint Is the following indicated? ○ Rolling stock design ・ Allocation of responsibilities with respect to design and verification method ・ Allocation of responsibilities with respect to design modifications following verification and verification method ○ Rolling stock production and remodeling ・ Formulation and management of required regulations, etc. ・ Method and management of inspections, etc. ○ Rolling stock maintenance ・ System and management ・ Formulation and management of regulations, etc.		
			j-2) Retaining of capacity for rolling stock maintenance personnel Checkpoint Is the following indicated? ○ Providing education and training to personnel. ○ Verification that personnel retain their knowledge and skills. ○ Persons responsible for the above.		
			j-3) Subcontracting of works Checkpoint Is the following indicated? ○Items relating to type and scope of subcontracted work, management of information required for work (including communication and reporting system in the event of an abnormality), and subcontractor work management system and education/training system. ○ Jurisdiction and powers of each manager in cases where the subcontracted work is assigned to multiple managers.		

Licensee			Item & Check Point	✔	Comment
to construct Metrorail facility	to manufacture new rolling stocks	to provide Metrorail Operation			
○	○	○	**(4) Appointment and dismissal of Safety Manager** Checkpoint ○ At the very minimum, is the content of "The Metrorail Rules, 2015" Article 56-1 and 2a and Article 54 indicated?		
×	×	○	**(5) Appointment and dismissal of Operations Manager** Checkpoint ○ At the very minimum, is the content of "The Metrorail Rules, 2015" Article 56-1 and 2b and Article 55 indicated?		

Application Form (Sample)

Application for appointment of Safety Manager

1. Applicant Name

2. Applicant Address

3. Name of the appointed Safety Manager

4. Date of appointment

≪Attached document≫

The documents to certify that the selected person is in the managerial position for Metrorail Service and satisfies the qualifications as specifies in Rule 54.

Application for dismissal of Safety Manager

1. Applicant Name

2. Applicant Address

3. Name of the dismissed Safety Manager

4. Date of dismissal

5. Reasons for dismissal

Application Form (Sample)

Application for appointment of Operations Manager

1. Applicant Name

2. Applicant Address

3. Name of the appointed Operations Manager

4. Date of appointment

≪Attached document≫

The documents to certify that the selected person satisfies the qualifications as specifies in Rule 55.

Application for dismissal of Operations Manager

1. Applicant Name

2. Applicant Address

3. Name of the dismissed Operations Manager

4. Date of dismissal

5. Reasons for dismissal

Chapter-Ⅳ

Construction Plan for Metrorail

(Application and Approval Procedure)

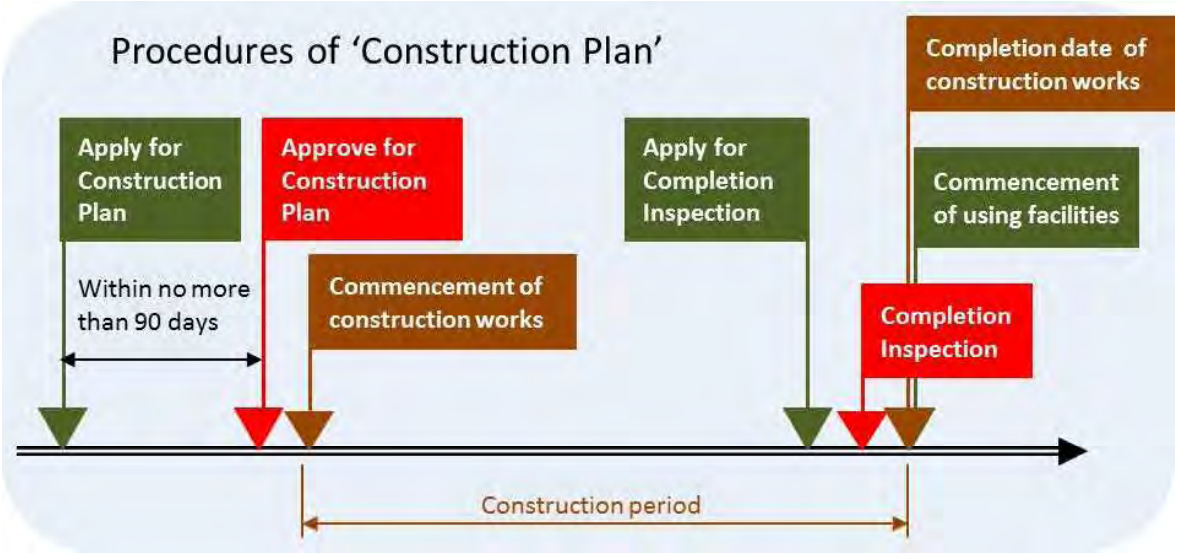
Part - 1

Procedure for newly construction of Infrastructures, Track, Stations and Depots From Construction Plan to Commencement of using facility

1. General

The Applicant, who has been issued license from the Government, shall obtain the approval of Construction Plan of Metrorail facilities from the Authority prior to the commencement of construction works.

Related provisions: rule 28, 29, 30, 31, and 32



The Applicant shall be required to undergo a completion inspection and obtain the approval from the Authority prior to the commencement of using facilities.

Related provisions: rule 36, 37, 38, 39 and 40

2. Construction plan of Metrorail facility

2.1 Application for approval of construction plan

Application form for approval of construction plan shall describe or attach the following contents.

a) Name and address of the Applicant

b) Beginning and end of the section of construction works

c) Construction plan

The construction plan shall describe the items, specified in "**Schedule 2 of Metrorail General Rules, 2015**", using the attached documents and drawings by type of Metrorail facilities.

d) Track alignment drawings and soil profile drawing

There are two types of track alignment drawings : Horizontal drawings and Vertical drawings specified in "**Schedule 3 of Metrorail General Rules, 2015**".

e) Cost estimate of the said construction works

f) Date of commencement and completion of construction

g) Agreement or copy of acceptance
In case of crossing or connecting with the other railways

Refer to rule 30

2.2 Separate application for approval of construction plan

The Applicant may submit the applications for approval of construction plan separately. Application form for approval of construction plan shall describe contents provided in the preceding paragraph 2.1 and following contents.

a) Reasons to separate the applications

b) The documents and drawings showing brief outlines of the remaining construction works

Refer to rule 30

2.3 Alteration of construction plan

The Applicant, when trying to alter the construction plan, shall obtain the approval from the authority. However, minor alteration (which means relatively small alteration and revision) shall not follow the above condition.

2.3.1 Application for alteration of construction plan

Application form for alteration of construction plan shall describe or attach the following contents.

a) Name and address of the applicant

b) Proposed alteration

c) Reasons for such alteration

d) Documents and drawings specified in the preceding paragraph 2.1 with necessary revision to fit the alteration in the construction plan

Refer to rule 34

2.3.2 Notification of minor alteration of construction plan

The minor alteration shall be as such listed in "**Schedule 4 of Metrorail General Rules, 2015**". The Applicant (Licensee), when making minor alteration, shall notify the authority. The notification form shall describe following contents.

a) Name and address of the applicant
b) Proposed alteration
c) Documents and drawings specified in the preceding paragraph 2.1 with necessary revision to fit the minor alteration in the construction plan

Refer to rule 35

2.4 Approval of Construction Plan

The Authority shall grant the approval to the applicant within no more than 90 working days if the construction plan has conformity with the business plan and Technical Standards or Exceptionally-authorized specification.

Refer to rule 28

3 Completion Inspection of construction works

3.1 Application for approval of completion of construction works

The Applicant shall complete the construction works until the period of construction works specified in approved construction plan by the Authority, and the Applicant shall apply for the inspection of the construction works to the Authority.
Application form for approval of completion of construction works shall describe following contents.

a) Name and address of the Applicant
b) Metrorail facility to be inspected
c) Completion date of construction works of Metrorail facility
d) Preferred date of implementation of the inspection
e) Power-on date of Metrorail facility
f) Commencement date of using Metrorail facility for Metrorail service

Refer to rule 39

3.2 Inspection of the construction works

The Authority, who has received the application from the Applicant, shall appoint an Inspector and direct him to inspect the completion of construction works.
The Inspector shall examine whether or not the construction works conforms to the specifications of approved construction plan, Technical Standards and the others. And then the Inspector shall submit report of the result to the Authority.
The Applicant (Licensee) shall carry out the preparation for the inspection works according to the instruction of the Authority.

Refer to rule 36 37 and 40

3.3 Approval for completion of construction works

When the Authority finds that construction works conforms to the said specifications and appropriate to use for Metrorail facility by the inspection report, the Authority shall grant the approval to the Applicant.

Refer to rule 37

Check list of
‘Construction Plan’

(for infrastructures, track, stations and depots)

in

Metrorail Act, 2015

Metrorail General Rules, 2015

Required items of 'Construction plan' (by Schedule 2 of Metrorail General Rules, 2015)	How to describe the required items	Relevant provisions of Technical Standards	check
1. Infrastructures and track			
(1) General			
(a) Rail centerline and track centerline	**(by attached drawings)** These items shall be described in track alignment drawing (plan and profile)	Provision 4.2	
(b) Curve radius at track centerline		Provision 4.3	
(c) Transition curve length and circular curve length at track centerline		Provision 4.5 Provision 4.8	
(d) Height of formation level at track centerline	**(by attached drawings)** These items shall be described in track alignment drawing (vertical drawings)	Provision 4.2	
(e) Gradient at track centerline		Provision 4.9	
(f) Vertical curve radius at track centerline		Provision 4.10	
(g) Construction gauge and rolling stock gauge	**(by attached drawings)** Standard section view showing these items shall be drawn clearly on arbitrary places in track alignment drawings (plan and profile).	Provision 4.11	
(h) Width of formation level		Provision 4.12	
(i) Distance between track centerlines		Provision 4.13	
(2) Earth structures			
(a) Structure of embankment and cutting	**(by attached drawings)** Main dimensions as following shall be described in standard structure drawings: - Width of formation level - Distance between track centerlines	Provision 3.1 Provision 3.10	

	- Gradient of slope - Length of embankment, and - The others		
(3) Retaining wall			
(a) Structure type (b) Material (c) Dimensions	**(by attached drawings)** Main dimensions as following shall be described in standard structure drawings: - Type: L or U shape - Length of retaining wall - Width of footing foundation - Height between footing bottom and wall top - Diameter and length of pile (additional for U-shape) - Whole width - Width of formation level - Distance between track centerlines - The others	Provision 3.1 Provision 3.10	
(d) Stress intensity, Permissive stress intensity and Stability factor table	**(by attached documents)** Picking out from design result	Provision 3.1 Provision 3.3	
(4) Bridge			
(a) Design load of train	(for example) **load pattern M-16 specified in technical standards**	Provision 3.5	

(b) Structure type of superstructure and substructure	**(by attached drawings)** Main dimensions as following shall be described in general drawings of whole bridge structure: (for super structure)	Provision 3.1 Provision 3.8 Provision 3.12 Provision 3.13	
(c) Material of main structure	- Width of bridge	Provision 3.1	
(d) Dimensions	- Width of formation level - Distance between track centerlines - Girder height - Length of the bridge - Span length (for sub structure) - Width of bridge sheet (upper edge) - Width of center section - Width of footing foundation - Height between footing bottom and bridge sheet (box culvert for road) - Length of the bridge - Cross dimensions of inside (width and height) - External dimensions (width and height)	Provision 3.1	
(e) Load arrangement diagram and Stress diagram (in case of statically	**(by attached documents)** Picking out from design resultant	Provision 3.1 Provision 3.3	

indeterminate structure)		Provision 3.5	
(f) Stress intensity table		Provision 3.1 Provision 3.5	
(g) Permissive stress intensity table		Provision 3.1 Provision 3.5	
(h) Stability factor table		Provision 3.1 Provision 3.5	
(i) Maximum deflection table of girder		Provision 3.1 Provision 3.5	
(5) Tunnel			
(a) Structure type	(for example) **Type: shield** **Material: reinforced concrete** **Ventilation: artificial** **(by attached drawings)** Location of the tunnel shall be indicated in track alignment drawing (plan and profile) and (vertical drawings).	Provision 13.1	
(b) Material		Provision 13.1	
(c) Ventilation method		Provision 13.1 Provision 13.2	
(d) Type of smoke ventilation method		Provision 13.1 Provision 13.2	
(e) Structure dimension	**(by attached drawings)** Main dimensions as following shall be described in standard structure drawings: - Cross dimensions of inside - Lining thickness	Provision 13.1 Provision 13.2	
(f) Location of drainage facility		Provision 13.1 Provision 13.2	
(g) Firefighting facility		Provision 13.1	

	- Width of formation level - Distance between track centerlines	Provision 13.2	
(h) Load arrangement diagram	**(by attached documents)** Picking out from design resultant	Provision 13.1 Provision 13.2	
(i) Stress diagram		Provision 13.1 Provision 13.2	
(j) Stress intensity table		Provision 13.1 Provision 13.2	
(k) Permissive stress intensity table		Provision 13.1 Provision 13.2	
(l) Function of ventilation facilities		Provision 13.1 Provision 13.2	
(m) Function of smoke ventilation facilities		Provision 13.1 Provision 13.2	
(6) Level crossing			
(a) Type	**(by attached drawings)** Location and dimensions of the crossing shall be indicated in track alignment drawing (plan and profile) and (vertical drawings).	Provision 8.9	
(b) Angle		Provision 8.9	
(c) Width		Provision 8.9	
(d) Traffic volume (Result of traffic survey)	**(by attached documents)** Picking out from traffic survey resultant	Provision 8.9	
(7) Track			
(a) Gauge	(for example)	Provision 4.1	

	Standard gauge 1,435 mm		
(b) Rail and rail assembles	**(by attached drawings)**	Provision 4.14	
(c) Turnout	Items as following shall be described in track	Provision 4.15	
(d) Sleeper and interval of laying each sleeper	structure general drawings:	Provision 4.14	
(e) Rail fastening	- Type and dimensions of rail	Provision 4.14	
(f) Track base	- Type and dimensions of turnout - Material and size of sleeper - Interval of laying each sleeper - Type and dimensions of rail fastening device - Type and dimensions of ballast or slab ballast	Provision 4.14	
2. Stations **(1) Station**			
(a) Chainage of the station	**(by attached drawings)** Name and location shall be indicated in track alignment drawing (plan and profile) and (vertical drawings).	Provision 6.1	
(b) Effective length of main line and location of the extent of rolling stock	**(by attached drawings)** These items shall be described in station plan view (1/500).	Provision 6.1	
(c) Location of passenger guidance facilities	**(by attached drawings)** Location of facilities as following shall be	Provision 5.3 Provision 5.5	

	described in station plan view (1/500). - Passageway and stair - Control gate - Ticket booths/vending machines - Toilets - Concourses - Escalators - Elevators/lifts - Waiting area, and - The others		
(d) Platform	**(by attached drawings)** Dimensions as following shall be described in platform general drawing. - Length and width of platform - Height between rail level and platform floor - Distance between platform edge and track center - Distance between platform edge and column - Distance between platform edge and wall - Drainage slope of floor	Provision 5.4 Provision 6.2	
(e) Width of passageway	**(by attached drawings)** Width dimensions of passageway, stair and concourse shall be described in station plan	Provision 5.5	

<table>
<tr><td></td><td>view (1/500).</td><td></td><td></td></tr>
<tr><td>(f) Structure dimension of platform shed, over-bridge, and the like</td><td>(by attached drawings)
Items of platform shed as following shall be described in general drawing.
- width of platform shed
- Distance between platform edge and column
- length of platform shed
- Type and shape of structure
- Material of shed roof</td><td>Provision 5.4</td><td></td></tr>
<tr><td>3. Depots and maintenance facilities

(1) Depot</td><td></td><td></td><td></td></tr>
<tr><td>(a) Stabling capacity</td><td>(for example)<table><tr><th>Name</th><th>Stabling capacity</th></tr><tr><td>△△ depot</td><td>132 cars</td></tr><tr><td>○○ station</td><td>12 cars</td></tr></table>(by attached drawings)
Name and location of depot shall be indicated in track alignment drawing (plan and profile) and (vertical drawings).</td><td>Provision 9.29</td><td></td></tr>
<tr><td>(2) Train maintenance facilities</td><td></td><td></td><td></td></tr>
<tr><td>(a) Layout of inspection and repair facilities</td><td>(by attached drawings)
Name and location of facilities shall be indicated</td><td>Provision 9.29</td><td></td></tr>
</table>

<table>
<tr><td></td><td>in track alignment drawing (plan and profile) and (vertical drawings).
Layout of inspection and repair facilities shall be drawn in depot plan view (S=1/500).</td><td></td><td></td></tr>
<tr><td>(b) Inspection capacity</td><td>(for example)<table><tr><th>Inspection types</th><th>Capacity</th></tr><tr><td>○○ test</td><td>00 cars / day</td></tr><tr><td>□□ test</td><td>00 cars / month</td></tr><tr><td>△△ test</td><td>00 cars / month</td></tr></table>(by attached documents)
Picking out the basis for calculating each inspection capacity from design resultant</td><td>Provision 9.29</td><td></td></tr>
</table>

Schedule 2

Schedule 3

Schedule 4

In Metrorail General Rules, 2015

(Required contents for 'Construction Plan')

Schedule 2 (Construction Plan)

(With reference to Rule 30, 31 and 42)

Metrorail Facilities	Construction Plan	Attached Documents and Drawings
1. Metrorail Track		
(1) General	1. Rail centerline and track centerline 2. Curve radius at track centerline 3. Transition curve length and circular curve length at track centerline (for main line only) 4. Height of formation level at track centerline 5. Gradient at track centerline 6. Vertical curve radius at track centerline (for main line only) 7. Construction gauge and rolling stock gauge (in drawing) 8. Width of formation level (for main line only) 9. Distance between track centerlines	
(2) Earth ￥Structures	Structure of embankment and cutting (in standard drawings of embankment and cutting)	
(3) Retaining Wall	1. Structure type 2. Material 3. Dimension (in standard structure drawing)	1. Stress intensity table 2. Permissive stress intensity table 3. Stability factor table

(4) Bridge	1. Design load of train 2. Structural type of superstructure and substructure 3. Material of main structure 4. Dimension (in standard structure drawing)	1. For statically indeterminate bridge structure (1) Load arrangement diagram (2) Stress diagram 2. Stress intensity table 3. Permissive stress intensity table 4. Stability factor table 5. Maximum deflection table of girder
(5) Tunnel and Anti-stone fall Cover, etc.	1. Type 2. For tunnel (1) Material (2) Structure dimension (in standard structure drawing and design drawing) (3) Ventilation method (4) Location of drainage facilities (5) Fire fighting facility - Type and location of fire fighting, evacuation, alarm facilities (in drawing) - Type of smoke ventilation method 3. Location of anti-stone fall facility	1. Drawings about tunnels (1) Load arrangement diagram (2) Stress diagram (3) Stress intensity table (4) Permissive stress intensity table 2. Documents about tunnels (1) Functions of ventilation facilities (2) Functions of smoke ventilation facilities
(6) Level Crossing	1. Type 2. Angle 3. Width	Result of traffic survey
(7) Track	1. For ordinary Metrorail (1) Gauge (2) Type and structure dimension of rail and rail assemblies (in drawing) (3) Type and structure dimension of turnout (in drawing) (4) Material and structure dimension of sleeper (in drawing)	

	(5) Interval of laying each sleeper (or fastening) (6) Type and structure dimension of rail fastening (in drawing) (7) Type and structure dimension of track base (or thickness of ballast) (in drawing, except ballasted track)	
2. Station, Signalling Station, and Depot		
(1) Station	1. Chainage and cumulative chainage at the Station center 2. Locations of signage indicating effective length of main line and the extent of rolling stock 3. Location of passenger handling facilities 4. For platform (1) Effective length, effective width and effective height (2) Distance between the edge of platform and track centerline 5. Width of access for passengers 6 Structure dimension of platform shed, overbridge, and the like (in standard structure drawing and design drawing) 7. Ventilation method (for underground station only) 8. Fire fighting facilities (for underground station only) (1) Fire fighting, evacuation, alarm facilities and (2) Type of facilities and functions of disaster prevention control room (3) Smoke ventilation method	Explanatory documents about underground stations (1) Functions of ventilation facilities (2) Functions of smoke ventilation facilities
(2) Signalling Station	Locations of signage indicating effective length of main line and the extent of rolling stock	

3. Depot and Workshop		
(1) Depot	Stabling capacity	
(2) Train Maintenance Facilities	1. Layout of inspection facilities and repair facilities 2. Inspection capacity (by type of inspection)	
4. Train Control Facility		
(1) Train Control Facility	1. Blocking system and method of ensuring safety distance between trains 2. Action of blocking system (in schematic drawing) 3. Type and location of wayside signals (in drawing) 4.For cab signals, (1) Method and type of signal display (2) Beginning location of signal display section and varieties of display (in writing) 5. Type and action of interlocking system (in schematic drawing) 6. Method, items and location of remote control devices and centralized train control system 7. ATP, ATC, and ATO system (1) Type and action (with explanatory documents of functions or in schematic drawings) (2) Location and structure dimension (in drawing) (3) For blocking method, linkage with wayside signals or cab signals and linkage with conditions of tracks (in drawing) (4) For the device to secure distance between trains, varieties of control items of ATC or linkage between ATO and	Explanatory documents about functions

	varieties of control items (in drawing)	
(2) Communication Facilities	1. Type and location (in communication line drawing) 2. For wired communication facilities, type of wire and method of installation (in electrical facility drawing) 3. For radio communication facilities, frequency band and communication method	Explanatory documents of train radio functions
(3) Level Crossing Safety Facility	Control method and action (in schematic drawing)	
5. Substation, etc.		
(1) Substation	1. Location 2. Total capacity of converter device (indicating for regular use or spare) 3. Type, quantity, voltage, electric current, phase and frequency of rectifier, rotary inverter, transformer (except for auxiliary power transformer), power generator, and the like 4. Type of main circuit and breaking capacity of automatic breakers 5. Electrical connection (in schematic) and location (in mechanical drawing) of electrical devices listed in 3. and 4. 6. Type and action of protection device (in schematic drawing) 7. Method, items and location of remote control devices and centralized train control system	1. Capacity calculation sheet 2. Explanatory documents about functions

(2) Power Substation	1. Items listed in 1. 4. and 6. of 2 of (1) 2. Type, quantity, voltage, electric current, phase and frequency of transformer (except for auxiliary power transformer) and power generator 3. Electrical connection (in schematic) and location (in mechanical drawing) of electrical devices and automatic breakers of main circuit listed in 2.	
(3) Switching Station	1. Items listed in 1. 4. and 6. And 7. of 2 of (1) 2. Electrical connection (in schematic) and location (in mechanical drawing) of automatic breakers of main circuit	
6. Electrical Facilities		
(1) Power Transmission Line, Distribution Line and Feeder Line	1. Length and number of circuit 2. Electrical mode and standard voltage 3. Type and cross section of electric wire 4. Method of installation (in electrical system drawings) 5. For feeder line (1) Electrical connection (in schematic drawing) (2) Feeder mode (for AC only) and quantity and capacity of auto transformer	1. Schematic drawing of power transmission 2. Schematic drawing of power distribution 3. Schematic drawing of feeder line

(2) Catenary	1. Electrical mode and standard voltage 2. Method of installation 3. In case of simple overhead catenary, (1) length (2) Type, cross section and trolley method (3) Method of installation (in electrical system drawing) (4) Type of supporting structure and maximum interval between the structures (5) Type and cross section of auxiliary line and rail bond 4. In case of third rail (1) Items listed in (1) and (3) of 3. (2) Type and cross section of third rail (3) Type and cross section of rail bond (4) Location (for expansion joint and anchoring) and structure dimension of expansion joint, anchoring, end approach (in drawing) (5) Structure dimension of protection facility (in drawing) 5. In case of rigid double catenary, (1) Items listed in (1), (3) of 3 and (4), (5) of 4 (2) Type and cross section of electrical line 6. In case of overhead double catenary, items listed in (1) – (4) of 3	

Remarks

1. Items listed in 1. – 3. of 1. (Metrorail Track) and 3. of (5) (Tunnel and Anti-stone fall Cover, etc.) of (1) (General) shall be indicated in the plan and profile drawing prescribed in Section 1 of Schedule 3.
2. Items listed in (3) of 1. (For ordinary Metrorail) of (7) (Track) of 1 (Metrorail Track), 1. – 5. of (1) (Station), (2) (Signalling Station) of 2. (Station, Signalling Station, and Depot) and 1. of (2) (Train Maintenance Facilities) of 3. (Depot and Workshop) shall

be indicated in the plan and profile drawing prescribed in the conditional clause of Section 1 of Schedule 3.

3. Items listed in 5. of (1) (General) of 1. (Metrorail Track) and 1. of (1) (Station) of 2. (Station, Signalling Station, and Depot) shall be indicated in the plan and profile drawing prescribed in Section 1 and in the vertical drawings prescribed in Section 2 of Schedule 3.
4. Items listed in 4. and 6. of (1) (General) and (4) of 2. (For Tunnel) of (5) (Tunnel and Anti-stone fall Cover, etc.) of 1. (Metrorail Track) shall be indicated in the vertical drawing prescribed in Section 2 of Schedule 3.

Schedule 3 (Track Alignment Drawing for Construction Plan)

(with reference to Rule 32)

1) Plan and Profile: the scale shall be over 1 to 2,500. The drawings shall provide the following information, provided, however, the drawings with the scale over 1 to 500 shall be attached additionally for the sections of stations, depots and other rolling stock maintenance facilities.

a. Name of the terminal stations, name of area with boundaries where the track centerline of the alignment passes by
b. Geographic formation and planimetric features of the areas within the distance of at least 100m from the track centerline
c. Track centerline and successively increasing distance per kilometer
d. Chainage of the beginning and end of circular curves at the track centerline, length of the circular curves, crossing angle, tangential line length and radius of the circular curves
e. Chainage of the beginning and end of the circular curves at the track centerline and chainage of the beginning and end of the transition curves at the track centerline
f. Gradient and chainage of the transition points at the rail centerline
g. Name of the bridges, chainage at the midpoint of the bridges and length of the bridges
h. Name of the tunnels, chainage at the midpoint of the tunnels and length of the tunnels
i. Name the level crossings and chainage at the midpoint of the level crossings
j. Name and chainage of the stations
k. Name of the depots and rolling stock maintenance facilities and chainage at the midpoint of the depots and rolling stock maintenance facilities
l. Scale and directions

2) Vertical drawings – Scale shall be over 1 to 2,500 in horizontal and 1 to 400 in vertical and such drawings shall provide the following information –

a. Chainages of existing ground level, embankment and cutting earth at track centerline in every 20m.
b. For Metrorail project with underground profile, chainage of tunnel in every 20m
c. Offset at the track centerline of the vertical curves in every 20m
d. Chainage of the beginning and end of circular curves at track centerline, radius and directions
e. Chainage of crossings with other Metrorail, railway, track, cableway and road

f. The items listed from c. to d. and from g. to k. of the preceding section

g. Scale

Schedule 4 (Minor Alteration of Construction Plan)

(with reference to Rule 35 and 43)

Metrorail Facilities	Minor Alteration
1. Metrorail Track	
(1) General	1. Alteration of rail centerline or track centerline within the shift of 20 meters at both sides (length of alteration shall be within 1 km)
	2. Alteration of curve radius of track centerline (1) Enlargement (2) Reduction within 240 meters
	3. Alteration of transition curve length or circular curve length (for main line only) associated with the alteration prescribed in 1. and 2.
	4. Alteration of height of formation level at track centerline within the height of 1 meter
	5. Alteration of gradient at track centerline (1) Reduction (2) Increment within 2.5%
	6. Alteration of radius of vertical curve at track centerline (for main line only)
	7. Enlargement of width of formation level (for main line only)
	8. Enlargement of distance between track centerlines
	9. In addition to 1., 2., 4., and 5., for siding lines, (1) Alteration of rail centerline or track centerline (2) Alteration of radius of curve at track centerline (3) Alteration of height of formation level at track centerline

	(4) Alteration of gradient at track centerline
(2) Earth Structures	1. New construction of embankment or cutting earth within the height or depth of 6 meters
	2. Alteration of embankment or cutting structure within the height or depth of 6 meters after such alteration
	3. Demolishment of embankment or cutting earth
(3) Retaining Wall	1. Alteration of retaining wall within the height of 6 meters (1) New construction (2) Structure type (3) Material
	2. Alteration of structure dimension (1) Under similar design (2) Within the height of 6 meters
(4) Bridge	1. Alteration of structure dimension after modification within the span of 40 meters and under similar design
	2. Demolishment
(5) Tunnel and Anti-stonefall, etc.	1. Alteration of tunnel (1) Alteration of structure design after modification within the span of 200 meters and under similar design (2) Demolishment
	2. Anti-stonefall (1) Installation (2) Change of location (3) Demolishment
(6) Level Crossing	1. Alteration of type, angle or width
	2. Demolishment

(7) Track	1. Alteration for ordinary Metrorail, (1) Type or structure dimension of rail for increase of rail weight (2) Type or structure dimension of rail assemblies (3) Type or structure dimension of turnout (4) Material or structure dimension of sleeper (5) Reduction of interval between each sleeper (or fastening) (6) Type or structure dimension of rail fastening (7) Structure type (except for ballasted track) of track base or increase of thickness of ballast (for ballasted track only)
2. Station, Signalling Station and Depot	
(1) Station	1. Alteration of chainage at the center of station within 20 meters
	2. Alteration of locations of signage indicating effective length of main line and the extent of rolling stock
	3. Alteration of passenger handling facilities
	4. Alteration of platform (1) Enlargement of effective length or effective width (except for those requiring change in track centerline) (2) Reduction of distance between platform edge and track centerline (except for those requiring change in track centerline)
	5. Alteration of width of access for passengers
	6. Alteration or demolishment of platform shed, overbridge, and the like
(2) Signalling Station	1. Establishment
	2. Alteration of locations of signage indicating effective length of main line and the extent of rolling stock
	3. Demolishment
3. Depot and Workshop	
(1) Depot	1. Establishment
	2. Alteration of handling capacity

	3. Demolishment
(2) Workshop	1. Establishment
	2. Alteration of layout of inspection or repair facilities
	3. Alteration of inspection capacity
	4. Demolishment
4. Train Control Facilities	
(1) Signalling Facilities	1. Alteration of wayside signalling (1) Installation (2) Alteration of location
	2. Alteration of cab signalling (1) Installation of beginning point of signal display section (2) The alteration of beginning point of the signal display section
	3. Alteration of location of remote control device or centralized train control device
	4. Alteration of ATP, ATC, or ATO, (1) Alteration of location or structure dimension (2) (In case of blocking system) alteration of linkage between wayside signals or cab signalling, or linkage with the condition of track
(2) Communication Facilities	1. Installation (except train radio facilities)
	2 Alteration of location (except train radio facilities)
	3. For wired communication facilities, alteration of type or installation method of wire
	4. Alteration of radio communication facilities (1) Alteration of frequency band (2) Alteration of communication mode (except train radio facilities)
(3) Level	1. Alteration of control method

Crossing Safety Facility	2. Alteration of action
	3. Demolishment (associated with the demolishment of level crossing)
5. Substation Facility, etc.	
(1) Substation	1. Alteration of location
	2. Alteration of transformer (except for auto transformer and within the capacity of 500 KVA only) (1) Installation (2) Alteration of type, quantity, capacity, voltage, electric current, phase or frequency
	3. Alteration of rectifier, rotary inverter and the like (within the capacity of 500 KW only) (1) Installation (2) Alteration of type, quantity, capacity, voltage, electric current, phase or frequency
	4. Alteration of total capacity of converter device associated with 2. and 3.
	5. Alteration of automatic breaker of main circuit (for receiving breaker only) (1) Installation (2) Alteration of type or breaking capacity
	6. Alteration of electrical connection of electrical devices, including rectifier, rotary inverter, transformer (except auxiliary power transformer), power generator, and automatic circuit breaker associated with the alteration of 5.
	7. Alteration of layout of electrical devices prescribed in 6.
	8. Alteration of actions of protection device
	9. Alteration of control items of remote control device or automatic control devices associated with the alteration prescribed in (1) of 5.
	10. Alteration of supervisory location of remote control device or

	automatic control device
(2) Power Substation	1. Alteration prescribed in 1., 2., 5., and 8. of (1)
	2. Alteration of electrical connection of transformer (except auxiliary power transformer), power generator and automatic breaker of main circuit associated with the alteration prescribed in 5. of (1)
	3. Alteration of layout of electrical devices prescribed in 2.
(3) Switching Station	1. Alteration prescribed in 1., 5., 8., and 9. of (1)
	2. Alteration of electrical connection of automatic breaker of main circuit associated with the alteration prescribed in 5 of (1)
	3. Alteration of layout of automatic breaker of main circuit
6. Electrical Facilities	
(1) Power Transmission Line, Power Distribution Line and Feeder Line	1. Alteration of power transmission line installed outside of the metrorail area, (1) Installation (2) Alteration of length or number of circuit (3) Alteration of electrical mode or standard voltage (4) Alteration of type or cross section of electric wire (5) Alteration of method of installation
	2. Alteration of power transmission line installed within the premise of metrorail area, (1) Installation (within the service voltage of 10,000V) (2)Alteration of length or number of circuit (within the service voltage of 10,000V) (3) Alteration of type (except for changing to bare wire) or increase of cross section of electric wire
	3. Alteration of type or increase of cross section of feeder line (except for changing to bare wire)
	4. Alteration of power distribution line or installation method
(2) Catenary, etc.	1. Alteration of simple overhead catenary

	(1) Increase of cross section of electrical wire (2) Alteration of installation method (3) Alteration of supporting structure or reduction of maximum interval between each supporting structure (4) Alteration of type or cross section of auxiliary wire or rail bond
	2. Alteration of third rail (1) Alteration of installation method (2) Increase of cross section of third rail (3) Alteration of type of rail bond or alteration of cross section (4) Installation or location (for expansion joint and anchoring only) or structure dimension of expansion joint, anchoring, end approach (5) Installation of protection facilities or alteration of structure dimension
	3. Alteration of rigid double catenary (1) Alteration prescribed in (1), (4) and (5) of 2. (2) Increase of cross section of electrical wire
	4. Alteration of overhead double catenary prescribed in (1), (2) and (3) of 1.

Application form

1. **Application for construction plan**
2. **Application for construction plan**
   (in case of separate submission)

Application for construction plan

1. Applicant Name:

License No:

Date of Issue:

Date of Expire:

Registration No:

Address:

Phone:

Fax:

Email:

2. Beginning and end of the section or location to execute construction works:

3. Date of commencement and completion of construction:

4. Construction Plan:

5. Attached documents and drawings of the Construction Plan:

6. Track alignment drawings and soil profile drawings for track works:

7. Cost estimate:

8. Agreement or copy of acceptance to allow the Metrorail transit facility to cross or connect with the interfaced Metrorail or other railways:

Application for construction plan

(in case of separate submission)

1. Applicant Name:

License No:

Date of Issue:

Date of Expire:

Registration No:

Address:

Phone:

Fax:

Email:

2. Beginning and end of the section or location to execute construction works:

(a) Beginning and end of the section or location of said application:

(b) The statement of reasons to separate the applications:

(c) The documents and drawings showing brief outlines of the remaining construction works:

3. Date of commencement and completion of construction:

4. Construction Plan

5. Attached documents and drawings of the Construction Plan

6. Track alignment drawings and soil profile drawings for track works

7. Cost estimate

8. Agreement or copy of acceptance to allow the Metrorail transit facility to cross or connect with the interfaced Metrorail or other railways

Appendix 8

Minutes of seminar

Minutes of

Seminar at DTCA Seminar Room, Dhaka South City Corporation Building on Presentation on Administrative Procedure System under Metrorail Act and Metrorail Rules on July 27th 2015

Meeting called to order at 10:00 AM headed by Mr. Md. Kaikobad Hossain, Executive Director, DTCA.

Members Present from DTCA (11)

1. Mr. Md. Kaikobad Hossain, Executive Director
2. Mr. Md. Rafiqul Islam, Additional Executive Director
3. Mr. Md. Gulzar Hossain, Additional Executive Director
4. Mr. Md. Anisur Rahman, Traffic Engineer
5. Mr. Md. Zabid Hasan, Transport Planner
6. Mr. Md. Moniruzzaman, Traffic Enforcement Officer
7. Mr. Md. Nahmadul Hasan, Urban Planner
8. Mr. Dr. Engr. Mosharrof Hossain, Training Advisor
9. Mr. A.K.M Zulfiker Islam
10. Mr. Md. Nasir Uddin Tarafder, Transport Engineer
11. Mr. A.T.M Helaluddin Nagari, Advisor

Members Present from DMTC (05):

1. Mr. Md. Saidur Rahman, Director (ST&P), DMRTDP
2. Mr. Mohammad Nurul Amin, Director (F&A), DMRTDP
3. Mr. Mohammad Harun-ur Rashid, GM (Admin), DMRTDP
4. Mr. Rashidul Hassan, DGM (PM), DMRTDP
5. Mr. BKM Ashraful Islam, Manager (PM), DMRTDP

Members Present from the General Consultants (01):

1. Mr. Takayuki Fujitomi, Sub-Structure Engineer

Members Present from the Institutional Building Consultants (03):

1. Mr. Kiyoshi Miyamoto, Project Manager
2. Mr. Abdul Khaleque, Deputy Project Manager
3. Mr. Shinji Kakinaka, Transport Economist

Members Present from the Dhaka South City Corporation (01):

1. Mr. Rajib Khadem, Executive Engineer

Members Present from the JICA Study Team (11):

1. Mr. Toru Hiraide
2. Mr. Akihiko Kawasaki
3. Mr. Masahito Ogawa
4. Mr. Kazuhiro Tanaka
5. Mr. Takayuki Hagiwara
6. Mr. Shunji Morihara
7. Mr. Michio Kato
8. Mr. Md. Ramjan Tutul
9. Mrs. Farzana Nazrul
10. Mr. Md. Joynal Abedin
11. Mr. Md. Omar Mannaf

Seminar Agenda:
Presentation on Administrative Procedure System under Metrorail Act and Metrorail Rules

Meeting Summary:

10:10 AM: Meeting started at the DTCA seminar room. At first, Mr. Md. Kaikobad Hossain requested everyone to introduce themselves.

10:15 AM Opening Address by Mr. Md. Rafiqul Islam, Additional Executive Director, DTCA

Mr. Md. Rafiqul Islam thanked all the participants to join the meeting. He informed that MRT Act has been passed by the Parliament on February 2015 and General Rules of MRT Act already has been send to Ministry for approval. He added in accordance with MRT Act and Rules, Technical Standards has been prepared by JICA Study Team and approved by DTCA Board in its 6th board meeting. Mr. Rafiqul Islam reviewed meeting objectives and encouraged participants to ask question after presentation.

10:20 AM Address by Mr. Toru Hiraide, Team Leader, JICA Study Team

Mr. Toru Hiraide delivered his valuable Speech. Firstly he thanked Mr. Md. Kaikobad Hossain and others to give JICA Study Team the opportunity to arrange the program.

He told the audience that JICA Study Team started their journey on September 2013, nearly two years ago. He gladly informed that the Japanese Railway Institutional System has been introduced for the Dhaka Metro rail Development.

He emphasized the importance of Government's control for the orderly and consistent development of Metro rail Network. He also mentioned the importance of two independent entities, Regulator and Operator is important to secure safety, efficiency, economy and balance of Metro rail System.

He told that JICA Study Team has made Technical Standards universal and flexible as much as possible so that it should able to adapt innovation and development of evolving Railway Technologies. He also mentioned deviations from the standards are allowable, but should undergo the strict examination of DTCA to prevent self-indulgence. Mr. Hiraide told that the technical standards were prepared giving priority to the matters necessary for the Line 6 development so it should be updated and adjusted with future extensions.

He emphasized that other related legal systems like architectural standard law, urban redevelopment law, land reorganization law, special building design system etc. make it easier to create spaces in the private property to set railway facilities like entrance/exit, elevator, and escalators connecting passageways. Though he admitted that the establishment of such legislation will be difficult, but DTCA has the power to make relevant regulations. He hoped that in DTCA, responsible staff should be assigned sufficiently and the organization strengthened as early as possible for the proper execution of the metro rail development policies.

Mr. Hiraide expressed his desire to assist DTCA successively until the opening of Line 6. He hoped that the presentation program regarding Manual of Licensing, Safety Management System & Construction Plan for Metro rail presented by four presenters will help deepen stakeholders' understanding of the Metro rail project execution system.

He concluded his speech by again thanking Mr. Kaikobad and staff of DTCA for close cooperation during study.

10:25 AM Presentation 1: Flow Chart of Approval Procedure by Mr. Takayuki Hagiwara, Legal Expert, JICA Study Team

<u>Q/A on Presentation 1</u>

Question (from Mr. Md. Kaikobad Hossain): Why did you put the name DMTC in the presentation? Other parties maybe apply also.

Reply (from Mr. Takayuki Hagiwara): That is why I mentioned DMTC inside brackets. For the time being, DMTC shall be the one. In future, maybe different party can apply for License.

Question (from Mr. Rashidul Hassan): According to your presentation, it may

almost take five months for applicant to get his application approved.

Reply (from Mr. Takayuki Hagiwara): The mentioned time limit is absolute maximum. Of course DTCA shall make effort to make it short.

Question (from Mr. Mohammad Nurul Amin): Is the time limit mentioned on Metrorail Act?

Reply (from Mr. Takayuki Hagiwara): No, it is mentioned in Metrorail Rules.

Question (from Mr. Mohammad Nurul Amin & Mr. Rashidul Hassan): As the Metrorail Rules are still under consideration, should we minimize the time limit?

Reply (from Mr. Md. Kaikobad Hossain): In the coming 10-20 years, four or five applications will come to DTCA. Construction of Metrorail generally takes 10-12 years. During the construction parties can discuss on time limit. It should not be a major problem.

Question (from Mr. Mohammad Nurul Amin): As there is no time limit on alteration, it may take much more time.

Reply (from Mr. Takayuki Hagiwara): We find it difficult to specify the time limit as it depends on the kinds of alteration or departure.

Question (from Mr. Md. Saidur Rahman): Many things have not been included in Technical Standards, what are reasons behind this?

Reply (from Mr. Takayuki Hagiwara): It means DMTC has freedom to specify in the areas not mentioned in the Standard.

Question (from Mr. Abdul Khaleque): Metrorail Line 6 is a unique case as far the funding, licensing and other legal procedures are concern. But in future when a private company may apply for the License, the applicant cannot gather other necessary documents prior having the license. So License application shall be granted so that applicant can manage investment and other requirements.

Reply (from Mr. Takayuki Hagiwara): That’s right, this is the right procedure. But in this case, unfortunately we are behind schedules (delay in establishment of Rules). So this is an exceptional case.

Question (from Md. Saidur Rahman): Construction work may start within next five months. Still we don’t have the License.

Reply (from Mr. Takayuki Hagiwara & Mr. Md. Rafiqul Islam): Metrorail Rules are on the way to be established. So DMTC are highly recommended to prepare the license application and construction plan without waiting for the establishment of Rules.

Question (from Md. Saidur Rahman): DTCA should have very strong organizational setup to approve all those applications and plans.

Reply (from Mr. Md. Kaikobad Hossain): A process has been going on about recruiting around 390 persons by the Government. So DTCA shall have a very strong organizational setup.

Question (from Mr. Mohammad Harun-ur Rashid): Within a couple of months DMTC shall submit the documents to DTCA for approval. But to setup the organizational structure for DTCA needs time. How do we (DMTC) get assurance of technical support for DTCA for the approval?

Reply (from Mr. Md. Kaikobad Hossain): As our Honorable Prime Minister looks after Metrorail Line 6 personally, recruitment for DTCA shall not be a problem if DMTC submit the documents for approval.

Question (from Mr. Mohammad Harun-ur Rashid): In case of minor alteration, the licensee shall only notify to the authority, is that right?

Reply (from Mr. Md. Rafiqul Islam): Yes, in case of minor alteration, licensee shall only notify the authority. But in case of alteration they must take approval from the authority.

11:00 AM Presentation 2: Licensing for Metrorail (Application and Approval Procedure) by Mr. Kazuhiro Tanaka, Legal Expert, JICA Study Team

Q/A on Presentation 2

Question (from Mr. Rashidul Hassan): Construction of CP-1 may start March, 2016. But according to the presentation construction can be started end of July, 2016.

Reply (from Mr. Md. Kaikobad Hossain): That shall not be a problem, because the Metrorail Rules shall be vetted by the Ministry of Law and Rules shall be ready.

Question (from Mr. Rashidul Hassan): What do you mean by site inspection? What kind of site inspection?

Reply (from Mr. Kazuhiro Tanaka): Members of Selection Committee visit the route alignment and shall scrutinize the information in and documents attached to the License application.

Question (from Mr. BKM Ashraful Islam): Documents for application about business plan, where is it specified?

Reply (from Mr. Kazuhiro Tanaka): In the Rules.

Question (from Md. Nasir Uddin Tarafder): What is meant by EIA?

Reply (from Mr. Kazuhiro Tanaka): Environmental Impact Assessment.

Question (from Mr. Rashidul Hassan): Plan for depot land and applicant's office shall be included in financial ability? Why isn't this included?

Reply (from Mr. Kazuhiro Tanaka): They are included in the checklist.

Question (from Mr. Abdul Khaleque): SIA (Social Impact Assessment) should be mentioned in Rules or Checklist.

Reply (from Mr. Kazuhiro Tanaka): Alright.

Question (from Mr. BKM Ashraful Islam): In future, in case of multiple Metrorail lines, will there be any kind of regulations to unify them?

Reply (from Mr. Md. Kaikobad Hossain): This is up to DTCA. Companies shall prepare a construction plan and DTCA shall check and approve that.

11:30 AM Presentation 3: Safety Management System for Metrorail (Application and Approval Procedure) by Mr. Shunji Morihara, Train Operation Expert, JICA Study Team

Q/A on Presentation 3

Question (from Mr. Mohammad Harun-ur Rashid): What do you mean by the deadline in the presentation?

Reply (from Mr. Kazuhiro Tanaka): Safety management system shall be submitted before the date of application for approval of the first construction plan. So when the licensee submit application for first construction plan, they shall apply for safety management system for construction.

11:40 AM Presentation 4: Construction plan for Metrorail (Application and Approval Procedure) by Mr. Michio Kato, Civil Structure Expert, JICA Study Team

Q/A on Presentation 4

Question (from Mr. Mohammad Nurul Amin): Will this manual/checklist be sufficient for underground metro rail?

Reply (from Mr. Akihiko Kawasaki): No, this manual shall not be sufficient for the underground metro rail. Our work scope in this project is limited. Rules are general, but the manual isn't. We prepared this manual only for basically the licensing, safety management system and earthwork for depot. So this manual does not include the approval of E&M system and Rolling Stock Structure.

General Q/A

Question (from Mr. Abdul Khaleque): E&M is an integral part of Railway infrastructure and also for MRT line 6. But we can't find anything about signaling system, train control system, traction system, traction control strata in the manual. These items should be included in the checklist.

Reply (from Mr. Toru Hiraide): As I mentioned at the beginning, our technical standards were prepared keeping the priority of line 6 in mind. In future, of course you will have underground lines. Underground lines require countermeasures against fire, flooding in the stations and tunnels. So many standards should be added and present standard should be upgraded.

Question (from Md. Saidur Rahman): Earlier in response to my question about why many things are not incorporated in the Technical Standard, Mr. Hagiwara replied, "DMTC has freedom to adopt". In my opinion it will not be a good practice. In future there will be many companies shall have different standards. So, technical standards should have every items described.

Reply (from Mr. Takayuki Hagiwara): This is a very sensitive issue. Development of technology might be prevented if we bind everything, yet technical standards must be comprehensive. When we prepared technical standards, we paid attention so that all the metro rail systems in the city of Dhaka will be integrated having consistency with other lines, and also technically sound. At the same time, we secured some freedom so as not to hinder development of technology.

Question (from Mr. Md. Gulzar Hossain): How many license shall be issued for a particular line?

Reply (from Mr. Kazuhiro Tanaka): In the act or rules, you can divide some parts, for example, one company for construction and one company for operation. But for MRT Line 6, maybe just one license shall be issued (to DMTC) for all the activities.

Question (from Mr. Md. Gulzar Hossain): Hopefully in less than 12 months, construction works shall start for MRT Line 6. At present only DMTC is ready to apply for the license. For better competition, we hope that the number of participants be as many as possible. So what can we do to attract more applicant?

Reply (from Mr. Kazuhiro Tanaka): If you want competition from other companies you should use some methods to attract them.

Reply (from Mr. Takayuki Hagiwara): This kind of competition normally happens for assigning private operators. In the case of private operators, they must be selected through bidding. Once selected as a kind of concessionaire to operate and maintenance system, then that selected concessionaire shall apply for the license, to become a licensee. It's not like that different applicants will compete for one license. The bidding shall happen first and only the selected concessionaire shall apply for the license.

12:10 PM Closing Speech by Mr. Md. Kaikobad Hossain, Executive Director, DTCA

Honorable chairperson Mr. Md. Kaikobad Hossain made his closing remarks. He thanked all the members of JICA Study Team for presenting Manual of Licensing, Safety Management System & Construction Plan for Metro Rail and he also thanked all the guests for their active participation. He told that it is a top priority project for Government and another Metrorail MRT-5 will be coming soon. He informed that MRT-5 might be underground or partially underground structure so manual should be universal or general for all type of Metro rail. He told that he can understand some topics like E&M, Underground structures, and some facilities etc. were not included in Manual as JICA Study Team has time limit and limited scope of work. He ensured that he will request JICA for further assistance of JIC to make the Rules and Manual complete.

12.20 PM Mr. Md. Kaikobad Hossain formally concluded the occasion

Appendix 9

PROPOSAL
OF
TECHNICAL COOPERATION

PROPOSAL OF TECHNICAL COOPERATION

1. Technical Cooperation (T/C) Title: Legal and technical assistance under Metrorail Act for Dhaka Metrorail project

2. Background of the T/C

Dhaka, capital city of Bangladesh, and the surrounding areas (Dhaka Metropolitan Area: DMA), have a population of around 12 million people. In the DMA, urban transport depends heavily on road transport, and traffic congestion due to the intermingling of different modes of transportation such as automobiles, buses, and rickshaws has become a severe problem.

Given that the number of automobiles is also expected to increase further with the growth of the economy and the urban population in future, developing an urban public transport system aimed at improving traffic conditions and the urban environment in the DMA has become a pressing issue. In light of these circumstances, in 2005 the Government of Bangladesh, with the collaboration of the World Bank, formulated the Dhaka Strategic Transportation Plan (STP) for the region. The STP proposed that three Bus Rapid Transit lines and three Metrorail lines were required.

Japan International Cooperation Agency (JICA) then conducted the Dhaka Urban Transport Network Development Study (DHUTS; 2009-2011) with the aim of constructing a Metrorail line. Based on the results, it launched the Dhaka Mass Rapid Transit Development Project I (2012; loan-assisted; hereafter hereinafter referred to as MRT Line 6).

At the present time, the General consultant (GC) for the MRT Line 6 project has been selected by the DMTC and basic design, detailed design, and preparations for bidding have been underway since February 2014.

Meanwhile, the legal system for the construction and operation of Metrorail had been arranged by the assistance of the study team of “JICA Preparation of Rules and Regulations under Urban Mass Rapid Transit Act for Dhaka project”, and the Metrorail Act 2015 published in February 2015 followed by the approval of the parliament. “Technical Standards for the Metrorail” had also been approved as a directive by Dhaka Transport Coordination Authority (DTCA) board in May 2015 and the “Metrorail General Rules 2015” that specifies the procedures required before the commencement of operation is in the final stage for approval. Moreover, “Manual of Licensing, Safety Management System & Construction Plan for Metrorail” that gives explanations about the procedures for Licensing,

procedures for approval of Safety Management System, and check lists for approval of Construction Plan regarding the depot earth work which will start in early 2016 has been prepared.

However, additional rules required after the commencement of operation, such as transportation rule, project auditing rule, and accident reporting rule, shall be prepared before the commencement of operation. In addition, the tasks for approval of construction plan for the main part of civil construction work and the construction of E&M system, and the tasks for the inspection up on the completion of construction work are the first experience for DTCA. Therefore, further assistance for DTCA seems to be indispensable.

3. Outline of the T/C

(1) Overall Goal

- The legal system required for the construction and operation of Metrorail (Line6 and future lines) is developed.
- DTCA acquires the ability for supervising the construction and operation of Metorail appropriately as the regulatory authority.

(2) T/C Purpose

- Rules required after the commencement of operation is prepared and approved.
- Manuals regarding the approval of construction plan for the main part of civil construction work and the construction of E&M system are prepared and the procedures for approval of construction plan are completed
- The capacity of the officials in DTCA is developed enough for the executing the procedures for approval of construction plan.

(3) Outputs

- Rules required after the commencement of operation
- Manuals regarding the approval of construction plan for the main part of civil construction work and the construction of E&M system
- Completion of the procedures regarding the approval of construction plan for the main part of civil construction work and the construction of E&M system

(5) T/C Activities

Phase 1

- Confirmation of the progress and future schedule of the construction of MRT

Line6
- Preparing the framework of Rules
- Preparing the framework of Manuals regarding the approval of construction plan
- Organizing the officials in DTCA for this project

Phase 2
- Preparing the first draft of Rules
- Preparing the Manuals regarding the approval of construction plan
- Coordination with relevant organizations

Phase 3
- Finalizing Rules, Presenting for approval process
- Executing the approval process of construction plan based on the Manuals

Phase 4
- Following up the approval process for Rules
- Completion of the approval process of construction plan

(6) Input from the Recipient Government

- At least 8 officials (Legal system, Operation, Safety management, Civil, Track, Power supply, and Signaling) in DTCA shall be assigned as counterparts for Japanese experts.

(7) Input from the Japanese Government

- 9 experts (Team leader, Legal system, Operation, Safety management, Civil, Track, Power supply, and Signaling) and 4 months' work are estimated to be needed. A local legal consultant shall also be hired.

8. Implementation Schedule

Month April Year 2016 ～Month January Year 2017

9. Description of Implementing Agency

Dhaka Transport Coordination Authority (DTCA) will be the Implementing Agency