Construction Management in New Songdo International City

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- c. Cost Management
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- e. Design Coordination

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- b. PMIS Messenger Tool in PMIS

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1. Project Overview

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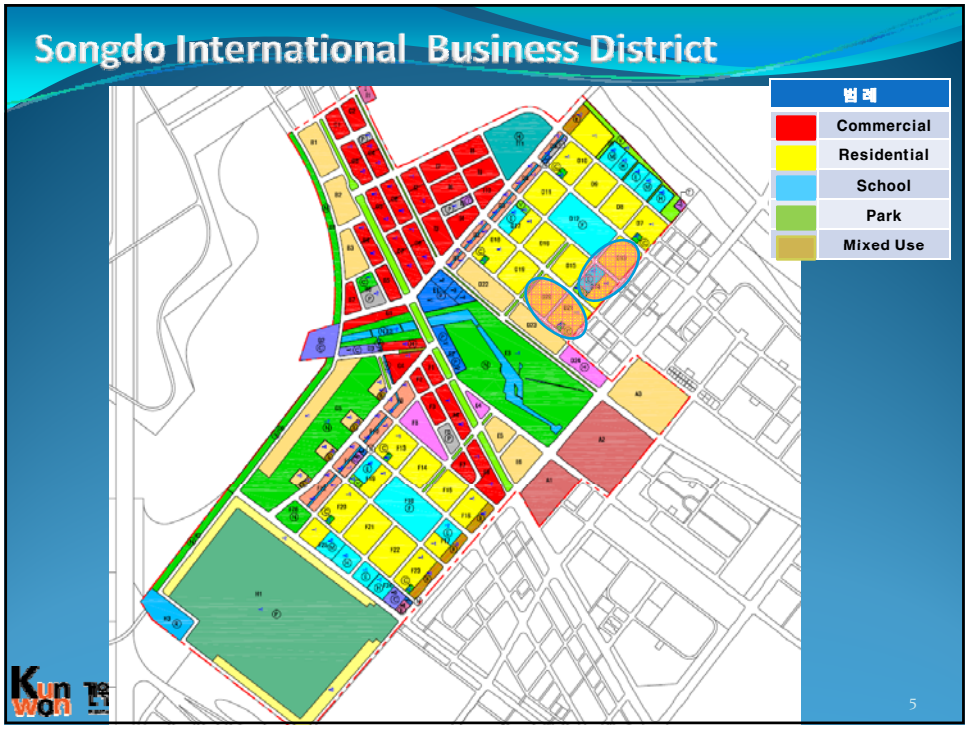
Songdo International Business District
범례
Commercial
Residential
School
Park
Mixed Use
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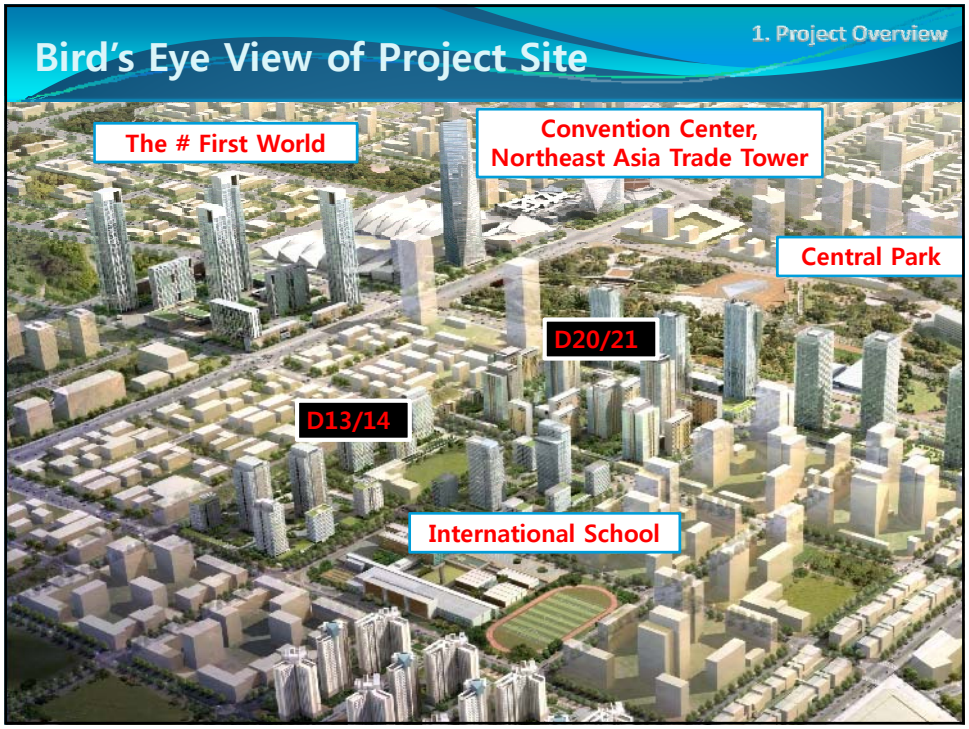
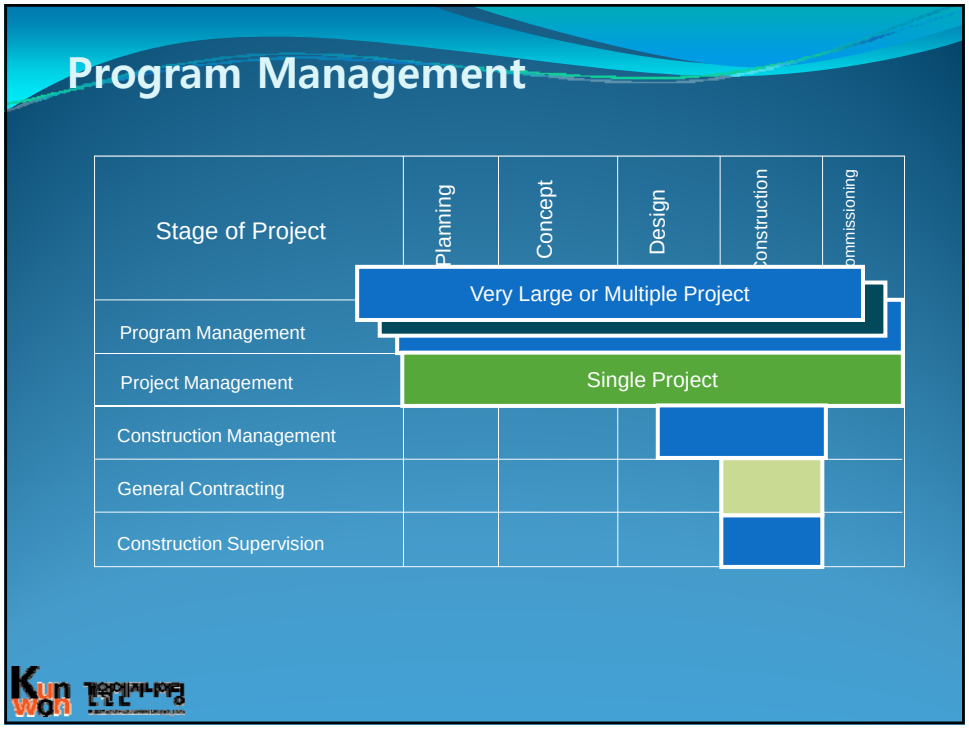

1. Project Overview
Bird's Eye View of Project Site
The # First World
Convention Center,
Northeast Asia Trade Tower
Central Park
D20/21
D13/14
International School

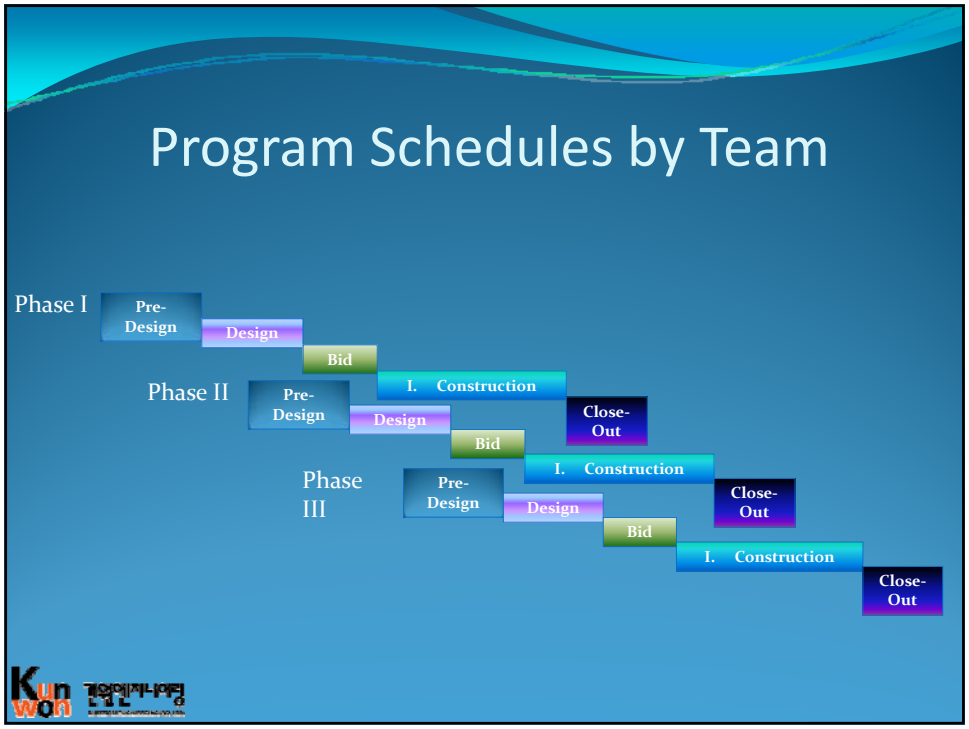
Project Plan – Portfolio / Program Management

Block	Block	Project Name	Classification	Participants
				Owner/ Developer
Under, or Completed Construction	A02	Songdo ConvensiA (NSIC)	Public	NSIC
	A03	Songdo the# 1st World (NSIC)	Project	NSIC (Linkage I)
	D12	New Songdo City Int'l School (NSIC)	Public	NSIC
	A02	NE Asia Trade Tower (NSIC/MS)	Excluded	NSIC (Linkage II)
		NEATT BOAT (NSIC/MS)		
	E03	Central Park & Canal (NSIC)	Supplemental	NSIC
		Central Park Garage (NSIC)	Supplemental	NSIC
	D22	Songdo the # Central Park I (NSIC)	Project	NSIC
	D20/21	Songdo Xi Harbor View (NSIC/MS)	Excluded	NSIC (Linkage II)
	D19	Songdo Prugio (NSIC/Daewoo)	Excluded	NSIC
	C08-2	Int'l Business Square (NSIC/Daewoo)	Excluded	NSIC
	D23	Songdo the # Central Park II (NSIC)	Excluded	NSIC
	D13/14	Songdo the# Harbor View (NSIC)	Project	NSIC
	D01~04	Canal Walk (NSIC)	Excluded	NSIC
	A02	Sheraton Incheon Hotel (Daewoo)	Excluded	Kumho Songdo Hotel
	H01	Jack Nicklaus Golf Club (NSIC/Kitson)	Excluded	NSIC
	H01	Golf Villas (NSIC/Kitson)	Excluded	NSIC
	A01/02	RiverStone (NSIC/Taubman)	Excluded	NSIC
	A01	Office (TBD)	Excluded	NSIC
	A01	Business Hotel (TBD)	Excluded	NSIC
	A01	BOAT	Excluded	NSIC
	D15	Residential (NSIC)	Project	NSIC
	Subtotal - Under/Completed Construction		22 Projects	

Project Plan – Portfolio / Program Management

Block	Block	Project Name	Classification	Participants
				Owner/ Developer
Pre-Construction	D07-1/08	Residential (NSIC)	Project	NSIC
	D11	Residential (NSIC)	Project	NSIC
	D16		Project	NSIC
	D24	Songdo the # Central Park III (NSIC)	Excluded	NSIC
	F03-1 (F03)	International Plaza (NSIC)	Excluded	NSIC
	F03-3 (F04-2)	International Plaza (NSIC)	Excluded	NSIC
	F21/22/23	Residential (NSIC)	Supplemental	NSIC
	G01-1/02-1/2	Arts Center	Supplemental	NSIC
	D17	Residential (NSIC)	Project	NSIC
	D18	Residential (NSIC)	Project	NSIC
	Subtotal - Pre-Construction		9 Projects	
NSIC Projects			31 Projects	
Third Party (Land-Sale) Projects	E04	Daeduk Hotel (Daeduk)	Supplemental	DongMyung C&C
	D06/09/10	Songdo the# EXPO (PHP)	Supplemental	PHP
	F01	POSCO E&C Songdo HQ (PSIB)	Supplemental	PSIB
	B04-1/2	Centroad (SD Advisor(Saehan))	Supplemental	SD Advisor
	B05	Daeduk Office (Songdo Best)	Supplemental	Songdo Best
Third Party (Land-Sale) Projects			5 Projects	
Grand Total			36 Projects	


Program Management
Stage of Project
Planning
Concept
Design
Construction
Commissioning
Very Large or Multiple Project
Program Management
Project Management
Single Project
Construction Management
General Contracting
Construction Supervision


Program Schedules by Team
Phase I
Pre-Design
Design
Bid
I. Construction
Close-Out
Phase II
Pre-Design
Design
Bid
I. Construction
Close-Out
Phase III
Pre-Design
Design
Bid
I. Construction
Close-Out

1. Project Overview

D13/14 Block

1. Project : NSIC D13/14 Block Const.
2. Location : 17-5, 18-10 Songdo-Dong YonSoo-Gu, Incheon-Si
3. Land Area : 50,773m²
4. Building : **B2F~33F, 845 units, 12 Residential Bldg., 5 Amenity Bldg.**
   - Building Area : 10,184m²
   - Total Floor Area : 190,933m²
   - B.L.R : 20.06%
   - F.A.R : 241.54%
   - Landscape Area : 20,688m²
5. Structural Type : R.C.
6. Cost : ₩300,000,000,000
7. No. of Parking : 1,764
8. Period : 2007.12 ~ 2011.04 (41Mth)
9. Client(Owner):
   New Songdo International City Development Limited Liability Company

10. Contractor / Designer

MC	Address	568-1,Goidong-Dong,Nam-Gu,Pohang-Si,Gyeongsangbuk-Do		
	Company	Posco E&C	Telephone	054-223-6114
	Reader	Su-yang Han	ID Number	
Design	Address	726-1, Suseo-Dong, Gangnam-Gu, Seoul		
	Company	Heerim	Telephone	02-3410-9000
	Reader	Young-Gyun Jung	ID Number	

1. Project Overview

D20/21 Block

1. Project : NSIC D20/21 Block Const.
2. Location : 19-6 Songdo-Dong Yonsoo-Gu, Incheon-Si
3. Land Area : 65,555m²
4. **Building : B2F~41F, 1069 Units, 17 Residential Bldg., 15 Amenity Bldg.**
   - Building Area : 13,975m²
   - Total Floor Area : 266,822m²
   - B.L.R : 20.06%
   - F.A.R : 273.5%,
   - Landscape Area : 26,719m²
5. Structural Type : R.C.
6. Cost : ₩398,000,000,000
7. No. of Parking : 2,221
8. Period : 2007.07~ 2011.02 (44Mth)
9. Client(Owner):
   NSC Linkage II Co. Ltd. (Gale International Korea)

10. Contractor / Designer

MC	Address	537, Namdaemoon-Ro 5Ga, Jung-Gu, Seoul		
	Company	GS E&C	Telephone	02-2005-1114
	Reader	Gab-Lyeol Kim	ID Number	
Design	Address	945-30, Daechi-Dong, Gangnam-Gu, Seoul		
	Company	MooYoung	Telephone	02-3011-1400
	Reader	Gil-Won An	ID Number	

2. Major CM Works

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a. General Tools and Procedure

- Project Teams

Descr.	Block	D20	D21	D13	D14	Remarks
Owner	Intl.	Gale International (70%)				NSIC (Joint Developer)
	Local	Posco E&C (30%)				
CM	Intl.	Heery International				Co-work & Separate Contract
	Local	Kunwon Engineering				
Designer	Intl.	KPF				DD Phase
	Local	Mooyoung		Heerim		CD Phase
Quantity Surveyor	Intl.	David Langdon & Seah Korea				
CS	Local	Chungmok	Hwankyung	Chonil	Potek	Based on Housing Law
MC	Local	GS E&C		Posco E&C		

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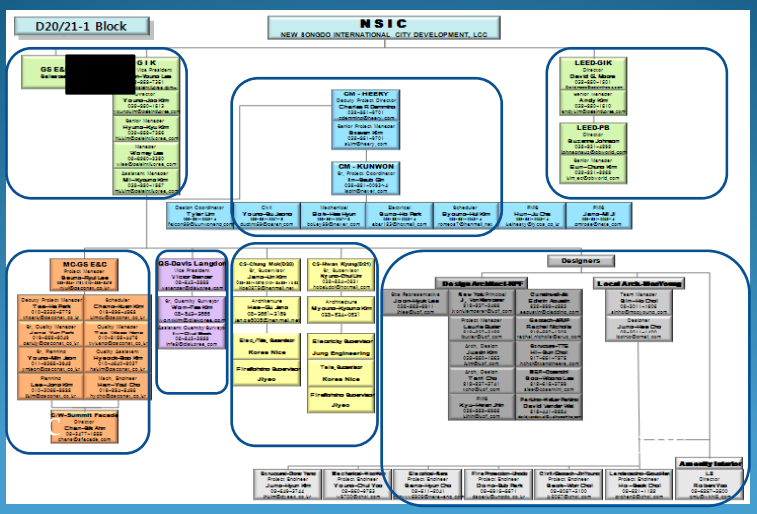
2. Major CM Works

a. General Tools and Procedure

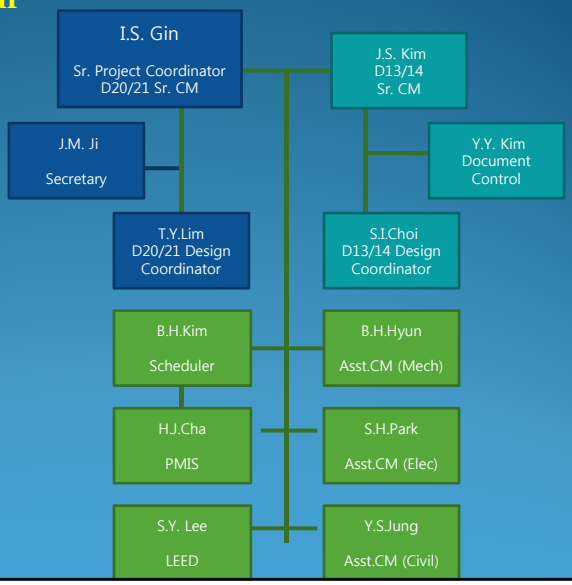
Project Organization Chart



2. Major CM Works

a. General Tools and Procedure

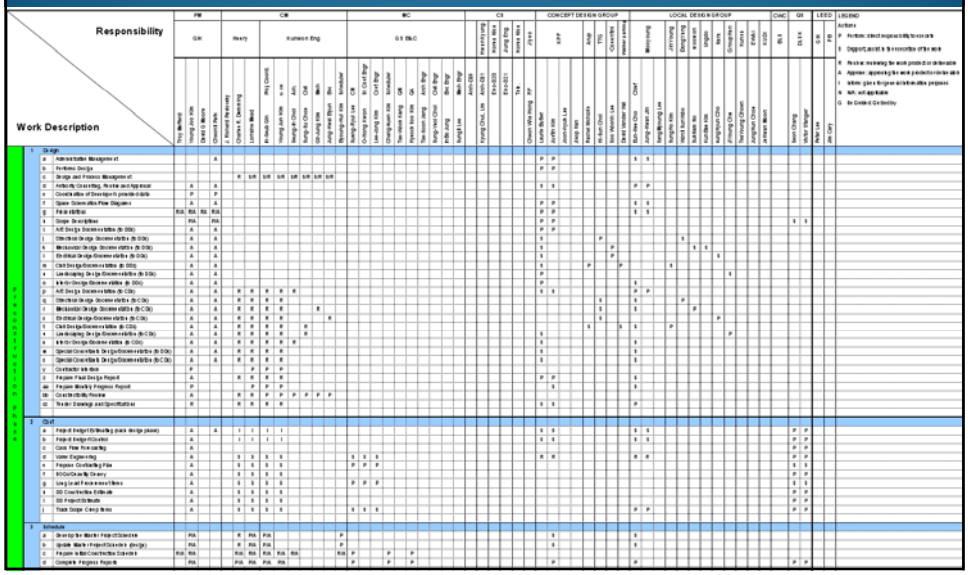
CM Organization Chart



2. Major CM Works

a. General Tools and Procedure

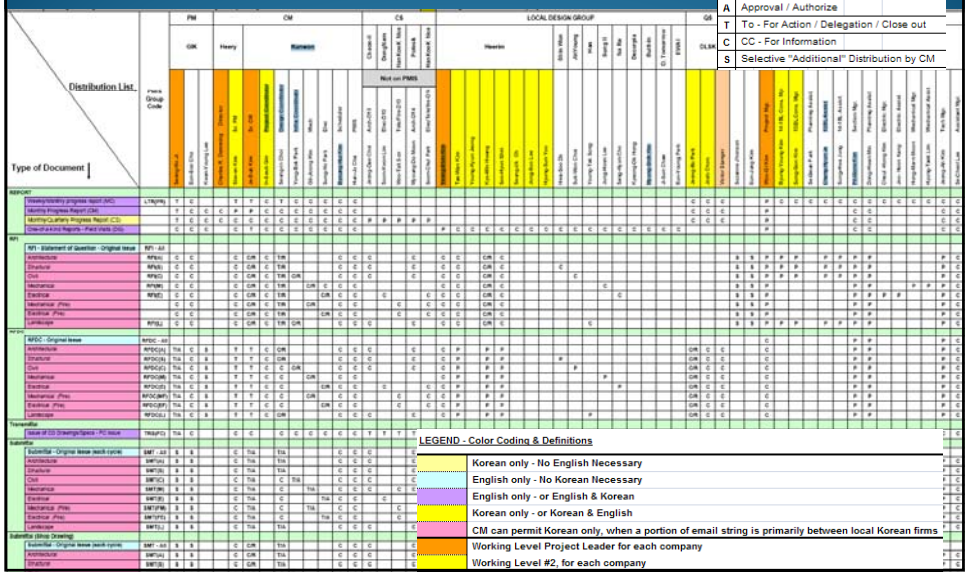
Responsibility Matrix



2. Major CM Works

a. General Tools and Procedure

Project Document Distribution Matrix



LEGEND	
P	Prepare / Performance / Initiate
R	Reply / Respond
A	Approval / Authorize
T	To - For Action / Delegation / Close out
C	CC - For Information
S	Selective "Additional" Distribution by CM

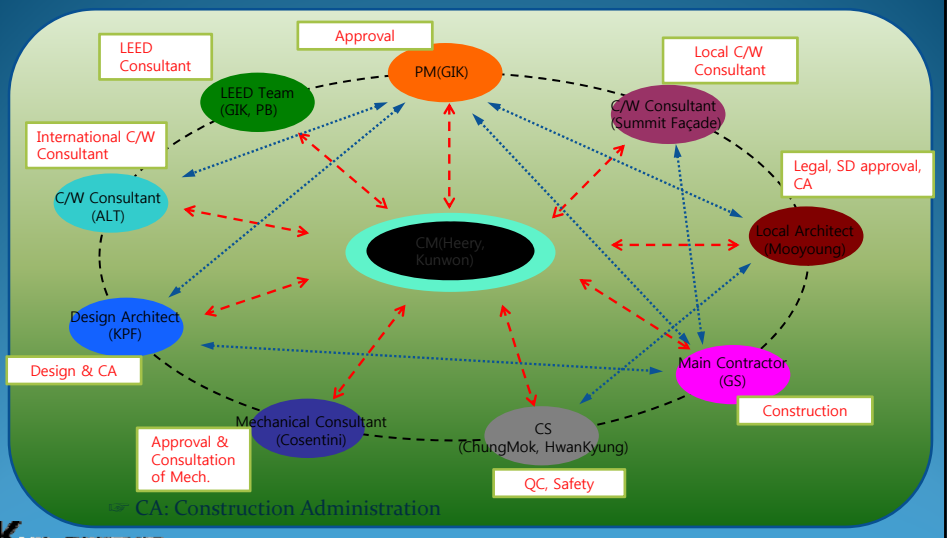
LEGEND - Color Coding & Definitions

- Korean only - No English Necessary
- English only - No Korean Necessary
- English only - or English & Korean
- Korean only - or Korean & English
- CM can permit Korean only, when a portion of email string is primarily between local Korean firms
- Working Level Project Leader for each company
- Working Level #2, for each company

2. Major CM Works

a. General Tools and Procedure

Work Coordination



☞ CA: Construction Administration

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2. Major CM Works

a. General Tools and Procedure

Meeting Attendance Matrix

	D20/21							D13/14						
	Weekly Progress	Pre-weekly Progress	Contract Meeting	Design Meeting	LEED Meeting	OS Meeting	Schdule Meeting	Weekly Progress	Pre-weekly Progress	Contract Meeting	Design Meeting	LEED Meeting	OS Meeting	Schdule Meeting
Charles Demming	O	O	O					O	O	O				
Steven Kim	O	O	O				O	O	O	O				O
InSeub Gin	O	O	O			O								
JeSeub Kim	O	O	O			O		O	O	O			O	
YongBok Park														
SeungIn Choi								O	O	O	O	O	O	
TeaYoen Lim	O	O	O	O	O	O								
SungSu Choe														
GiJoong Kim					O							O		
SungHo Park					O							O		
ByoungHui Kim	O					O	O						O	O
HunJu Cha							O	O						O
SoYoung Lee	O		O	O	O		O			O	O	O		
JangMi Ji								O						
YeonJin Kim						O							O	

In Charge of MOM :

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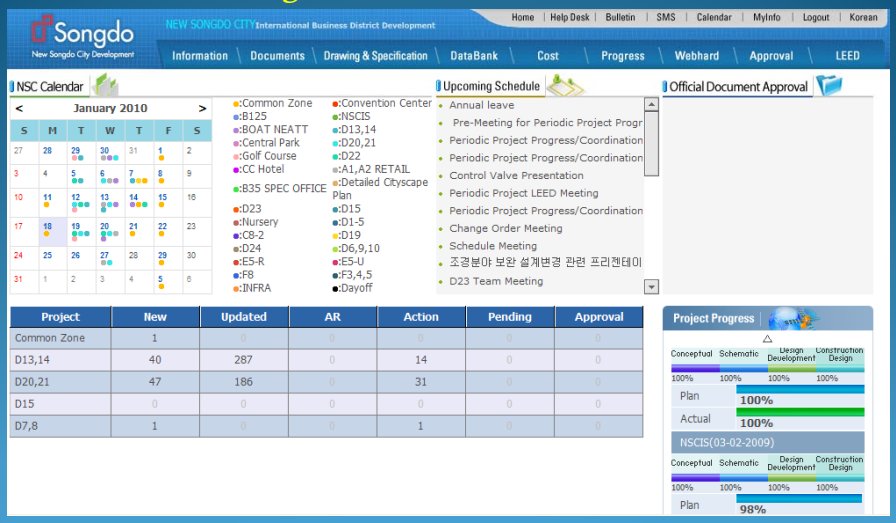
2. Major CM Works

a. General Tools and Procedure

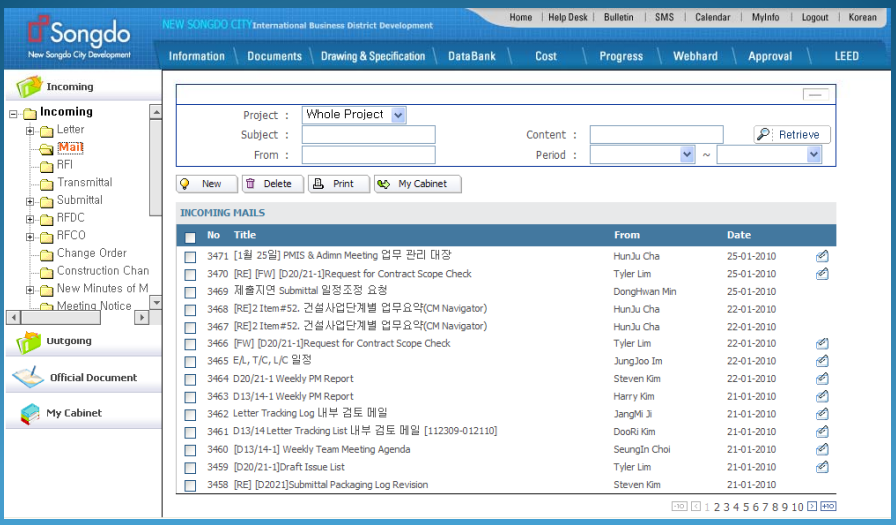
PMIS Home Page



2. Major CM Works

a. General Tools and Procedure

PMIS > Documents



2. Major CM Works

a. General Tools and Procedure

- **Means of Communication for Different Views**
  - **Meeting**
    - Review & Comments on Draft MOM
    - Agree & Accept
    - Follow up
  - **PMIS Process**
    - RFI, RFDC, SUBMITTAL
    - **Reply, Comment, Discussion**
    - Conclusion

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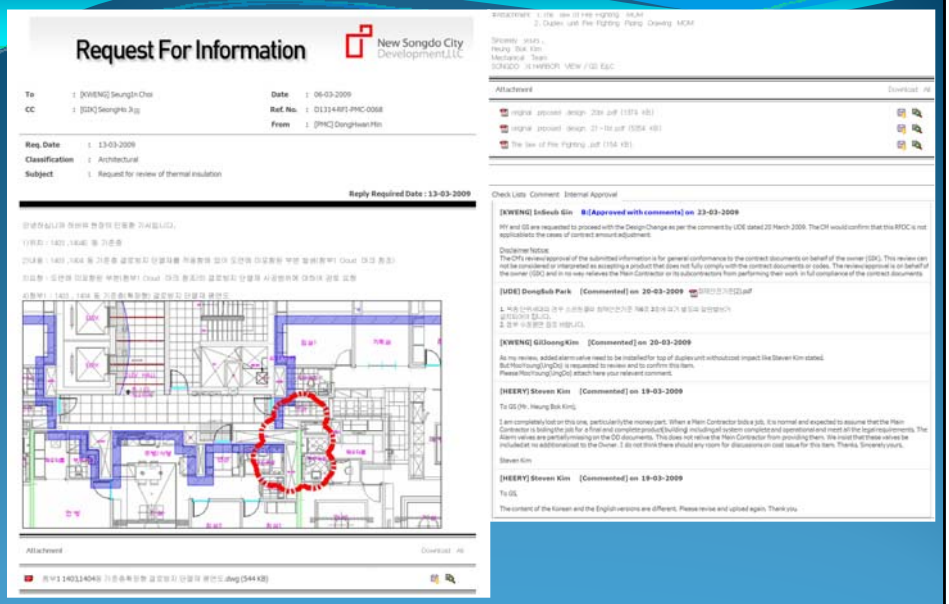
Reply & Comments



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Reply & Comments

2. Major CM Works

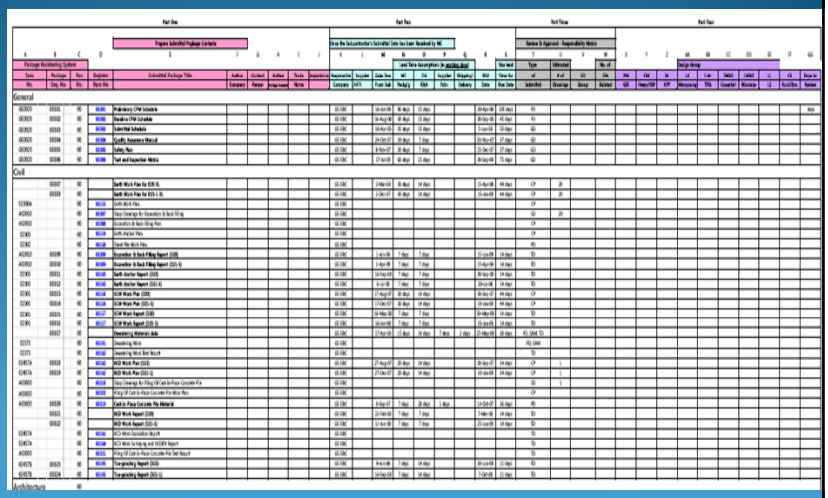
b. Quality Management

- **Coordination with CS**
  - Quality Inspection
  - Design Change Coordination
  - Safety Management, Quality Management
  - Coordination between Owner and CS
  - Coordination in PMIS

2. Major CM Works

b. Quality Management

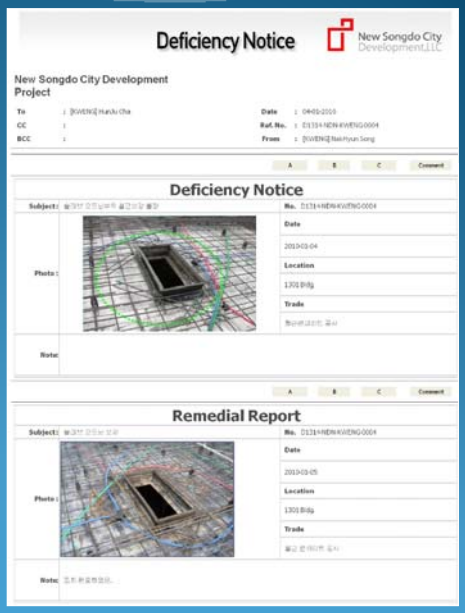
- **Submittal Packaging Log**



2. Major CM Works

b. Quality Management

- Inspection Reports
  - Deficiency Notice (DN)
  - Non Conformance Report (NCR)
  - Safety Corrective Action Request (SCAR)
  - Field Instruction (FI)
  - Punch List



2. Major CM Works

c. Cost Managment

- **Risk Management for Cost Overrun**
  - **Issue List**

No	Subject	Reference	Issued Date (dd-mm-yyyy)	Originator	Original Contract Amount	Cost Impact: Contractor	Cost Impact: DLSK	Cost Impact: CM/(GIK) Other	Status
2	KPF Curtain Wall "Stick Built" drawings and specs (as specified in condition of contract).	Design Meeting PMIS RFI #19 D0021-L-TR-GERVIC-0076 D0021-L-TR-JLT-0003 D0021-L-TR-JLT-0006 D0021-L-INT-GERVIC-0027 Consolidated PMIS RFI glass calculation method	21-12-2007 19-09-2008 22-Oct-08 27-Oct-08 06-Nov-08 28-Nov-08 08-Dec-08	GS - TWK GS-JK JLT-KEWN JLT-KEWN GS-TWK KW-TL					CM to ask the Design Group to work on specs and details of . GS issued RFI regarding Spandrel / Shadow Box Glass and Detail. KPF answered on 9/26 to proceed with back color panel to match Viking glass. KPF and GS have come up with how to proceed. The final decision will be made at mockup. . The VSL/PMIS is scheduled for October 27, 2008. GS resubmitted the corrected VMU/PMIS chart on October 1st and the rest of the samples for approval. . GS asked for decision on glass mullions building, whether tempered, 20 or 24mm. . JLT asked more data as to percentage of tempered glass. . JLT asked total glass of glass each building. . GS submitted the first 20 for building 201. CM directed GS to follow the JLT's and JLT's suggest on for applying the deflection criteria (to use 24mm IGU for Shadow Glass)
4	Minus Option by Tenant's choice	Progress MOM#26 PMIS email - Minus Option Cost Calculation for D20/21-1 QS Report for New BOQ Pre-Meeting	06-07-2008 16-07-2008 22-Dec-08 21-Jan-09	GS DLSK DLSK CM-GK			D20-2,061,120,001 D21-1,751,700,000 Sum-3,812,820,000 - 2,457,454,428	D20-2,061,120,001 D21-1,751,700,000 Sum-3,812,820,000	DLSK to separate D20 D21-1 and direct/ direct cost + indirect cost as well. DLSK waiting for GIK confirmation. DLSK to transmit supporting data to CM to prepare CO CM to prepare CO after minus option is closed and confirmed by DLSK. . Summary of recommended costs for various minus options submitted to GS for review and agreement. . GS stated in the Progress Meeting on 6/12/2008 that they were in agreement with DLSK's numbers. CM to draft CO for approval. . CM to draft COs after COM9 Declaration#3 is finalized. . CM to draft CO for GIK approval regardless of COM9 (Issue #2).
6	Mechanical Material Upgrade - IFEZA's Requirement	GS Meeting MOM #22 GS Meeting MOM #27 PMIS email / mechanical pipe material document QS Report for New BOQ D0021-L-TR-GERVIC-0042 D0021-L-TR-GIK-0066 D0021-L-TR-GIK-0071	08-09-2008 22-09-2008 22-Oct-08 03-Dec-08 18-Dec-08 23-Dec-08 23-Jan-09	CM CM DLSK GS GIK-KKK GIK-KKK		D20 D21-1 8,171,923,440 7,403,127,187	D20 D21-1 7,005,405,401 7,403,127,187		DLSK to separate cost impact for D20 and D21-1 . GS requested that anti-corrosion piping be upgraded to IFEZA's current standards. . GIK met to GS to explain situation however, GS continue to demand that the piping be upgraded. . CM/PM to submit this issue to the Regulation Review Committee for a Ruling. . CM was requested in the pre-meeting to hold no submit to RRC and try IE for minimum cost. . PM/CM will send a letter to IFEZA asking for confirmation on Jt 1 and are discussing about re-siting. . GS asks for GIK's guide decision. . GIK asked GS to provide preventive measure for late decision on piping materials. GIK advised GS that the 100% CD document are the currently valid standard for mechanical piping material selection.

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2. Major CM Works

c. Cost Management

- **Risk Management for Cost Overrun**
  - **Potential Change Orders** in the Monthly Report
  - Ex)

6.1 General

- **6.1.1** CS for D20 - Acceleration Packages to complete the mitigation of the D20 delay.
- **6.1.2** GIK Marketing Requested Design Change for Retail Space Increase to MY and GS.
- **6.1.3** LEED Elements.
- **6.1.4** IFEZA Impacts – Earth Anchor Conflicts / Site Access.
- **6.1.5** Curtain Wall System including Delays based on Negotiations.
- **6.1.6** Temporary Electrical Service.
- **6.1.7** External Finishing Materials.
- **6.1.8** Minus Options by Tenant's Choice.
- **6.1.9** Mechanical Material Upgrade – IFEZA's Requirement.
- **6.1.10** Increases for International DD Requirements not part of the estimate condition.
- **6.1.11** Additional CA work for Amenity Design to L2.
- **6.1.12** Preparation of Completion Drawings for the Project.
- **6.1.13** Temporary Road Costs.
- **6.1.14** Traffic Impact Analysis requirements.
- **6.1.15** Trash Collection System.
- **6.1.16** Amenity Finish Changes.
- **6.1.17** Delay due to Trucker's Strike.

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2. Major CM Works

c. Cost Management

➢ **Review of MC's Claim and Reporting**

Item Description	GC's New BOQ (Sep 2008)				CM's Review (million krw)			
	Original Contract	Reason of Cost Difference	New BOQ	Diff. Amount	CM's Opinion / DLSK's Opinion	Category O	Category X	Diff. Amount
SCW Work	-	The depth of H-Pile was changed from 21.5m to 18.5 m.	-10	-10	Based on the Lump Sum Contract, these are not contractual change issues. Therefore cost change is not acceptable.		1	-
Earth Anchor Work	-	The length of Anchor was extended to 21.5m	520 (Add.	520				
Earth Work	-	The distance of soil disposal was extended from 25km to 35km	170	170	Same as CM (Already Solved)			
Sum	-		680	680				-

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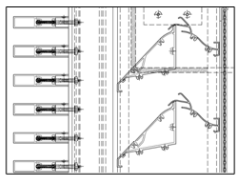
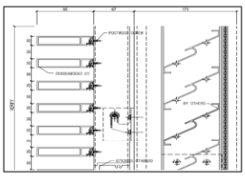
2. Major CM Works

c. Cost Management

➢ Main Contractor's Claim (**40bil. won -> 10bil. won**)

- Value Engineering for Owner as well as MC
- Limited Value Engineering during the Construction Phase

Item 9	제안명	Decorative Grill	대상분야	건축
	요약설명	그릴의 시공 상세 단순화 및 자재 변경을 통한 원가절감 도모	도면번호	D20D-A-387.1

	기 존 안	개 선 안
내용		
장단점	우수 유입방지 성능 우수 외관 미려 시공성 저하 자재비용 고가	시공성 우수 원가 절감 우수 유입방지 성능 저하
검토내용	외부 그릴의 시공 상세를 단순화하고 알루미늄으로 대체 및 우수 유입방지 시스템의 단순화를 통한 시공성 및 원가절감 확보	

비용	기존안	개선안	절감비용	비 고
	4,125,000,000원	2,514,000,000 원	1,611,000,000원	향후 추가협상 필요

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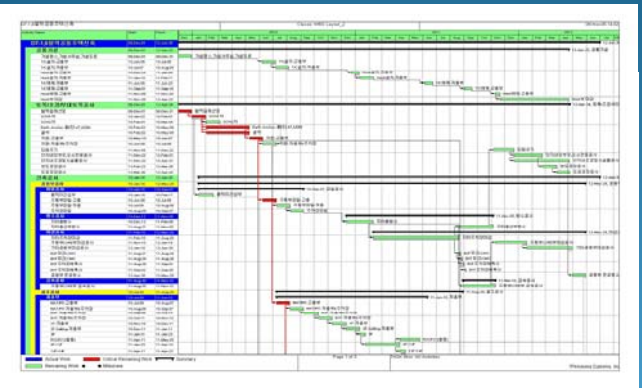
2. Major CM Works

d. Schedule Management

- Developing and updating Project Master Schedule (**Premavera 3**)



- Checking the Baseline Schedule, Catch-up Schedule and Schedule Delay

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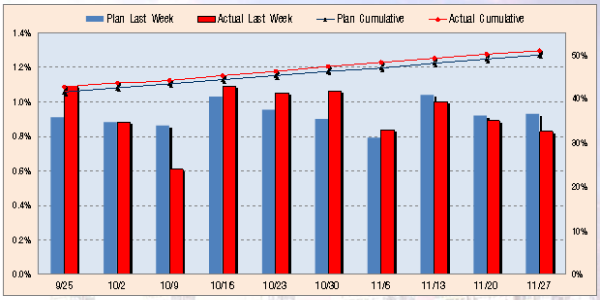
2. Major CM Works

d. Schedule Management

- **Biweekly Schedule Meeting**
- Critical Path Analysis



구 분	9월 25일	10월 2일	10월 9일	10월 16일	10월 23일	10월 30일	11월 6일	11월 13일	11월 20일	11월 27일
Plan Last Week	0.91%	0.88%	0.86%	1.03%	0.95%	0.90%	0.79%	1.04%	0.92%	0.93%
Plan Cumulative	41.57%	42.45%	43.31%	44.34%	45.29%	46.19%	46.98%	48.02%	48.94%	49.87%
Actual Last Week	1.09%	0.88%	0.61%	1.09%	1.05%	1.06%	0.84%	1.00%	0.89%	0.83%
Actual Cumulative	42.65%	43.53%	44.14%	45.23%	46.28%	47.34%	48.18%	49.18%	50.07%	50.90%

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2. Major CM Works

d. Schedule Management

- Catch-up of 4 months' delay of the Construction Supervisor's assignment for D20 block; Costing 1 bil KRW

- 1st Stage: 50 days catch-up
  - Night Work for RCD & SCW
  - Payment for Overtime Work of CS (Construction Supervisor)
- 2nd Stage: 40 days catch-up
  - Night Work for Excavation, Earth Anchor & Piling
  - Additional Access Ramp
  - Rush Work for Substructure of Critical Path High-rise Bldg
- 3rd Stage: 33 days catch-up
  - Rush Work for Superstructure of Critical Path High-rise Bldg

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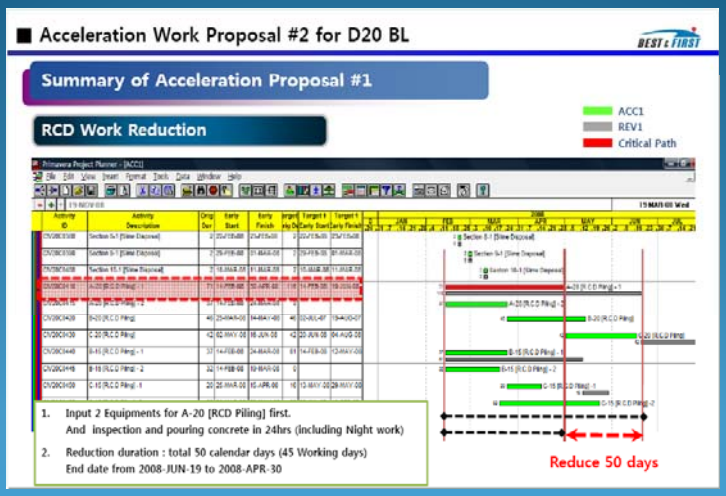
2. Major CM Works

d. Schedule Management

- Schedule Catch-up Plan for 4 months delay by CS Problem



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2. Major CM Works

e. Design Coordination

- **Constructability Review for the final CD Drawing**
  - Schedule Review
  - Workability Review at the site condition
  - Review for detailed method statements
- **Value Engineering during Construction Phase**
- Review, Distribution and Approval of Shop Drawings
  - Coordination of Approval Process by Design Group & Consultants

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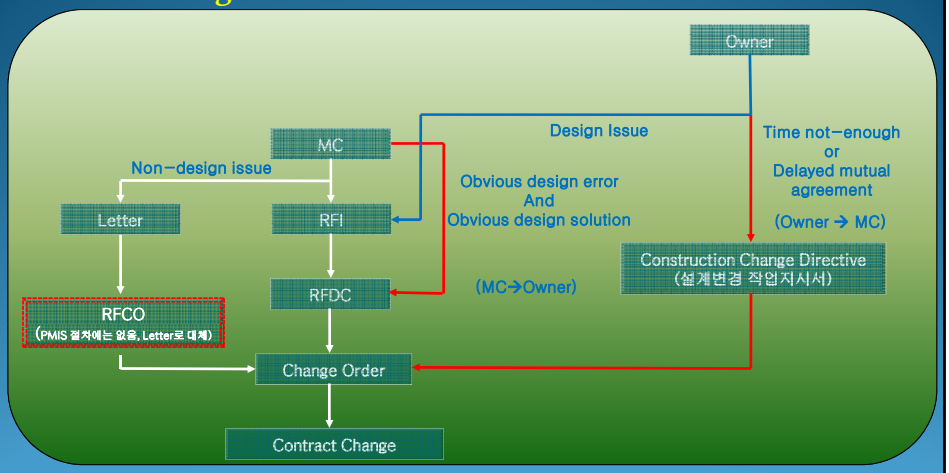
2. Major CM Works

e. Design Coordination

- **Change Order Procedure**



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3. Others

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2. Major CM Works

a. LEED Certification

- **Definition**
  - LEED: Leadership in Energy and Environmental Design by US Green Building Council (USGBC)
- **Credit & Grade**
  - Minimum point to get the LEED Certificate is 26 point and maximum is 69 point.
  - Higher point makes the Certificate degree up to Silver, Gold and Platimum.

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3. Othes

a. LEED Certification

➢ **LEED Certifications (Version 2.2)**

Points	Certification
26-32 points	LEED Certified Project
33-38 points	LEED Silver Certification
39-51 points	LEED Gold Certification
52-69 points	LEED Platinum Certification

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➢ **Credits for Certification**

1) Sustainable Sites (SS): 14 points available
2) Water Efficiency (WE): 5 points available
3) Energy and Atmosphere (EA): 17 points available
4) Materials and Resources (MR): 13 points available
5) Indoor Environmental Quality (EQ): 15 points available
6) Innovation and Design Process (ID): 4 points available
+ 1 point

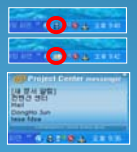
Sum : 69 points

3. Othes

b. PMIS Messenger Tool in PMIS

- Real-time Communication and Data Transmission
- Easy Recording and Documentation
- Easy Talks with Co-workers

D20/21BL



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Thank you!

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