

ENVIRONMENT IMPACT ASSESSMENT

Y COMPLEX PROJECT DAGON TOWNSHIP, YANGON

Project Proponent

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DISCLAIMER

This report has been prepared by a 3rd party, E Guard Environmental Services Co., Ltd for Y Complex Co., Ltd for the project of Y Complex located at Plot No. 11-A/15-16-17, Land Survey Block No. 68/45D, Dagon Township, corner of Shwedagon Pagoda Road and Pan Tra Street, Yangon Region, Myanmar. The report preparation was done inside the framework of Myanmar EIA Procedure 2015.

The analysis works had been done based on the provided data of the proposed plan of the project from (the client) and onsite observations of environmental parameters guided by Myanmar Government Environmental Authority, Environmental Conservation Department, hereinafter ECD.

The impact assessment and mitigation measures are prepared based on the facts and figures of the detail plan/process of the project obtained from YCP.

Moreover, this report has been prepared in line with the prevailing active Laws, Rules, Procedures, Guidelines, and Standards, etc. of Myanmar Legal System on (July 2019).

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LIST OF ABBREVIATIONS

ABBREVIATION DESCRIPTION	
ACGIH	: American Conference of Governmental Industrial Hygienists
BOD	: Biochemical Oxygen Demand
CCTV	: Closed-circuit television
CO	: Carbon Monoxide
CO ₂	: Carbon Dioxide
COD	: Chemical Oxygen Demand
CSR	: Corporate Social Responsibility
DO	: Dissolved Oxygen
ECD	: Environmental Conservation Department
EMP	: Environmental Management Plan
HSE	: Health, Safety and Environment
IFC	: International Finance Corporation
IEMA	: Institute of Environmental Management and Assessment
IRR	: Internal Rate of Return
NO ₂	: Nitrogen Dioxide
MMK	: Myanmar Kyat
MIC	: Myanmar Investment Commission
MONREC	: Ministry of Natural Resource and Environmental Conservation
MSDS	: Material Safety Data Sheets
NEQ	: National Environmental Quality (Emission) Guideline
NO ₂	: Nitrogen Dioxide
NO _x	: Nitrogen Oxide
NTU	: Nephelometric Turbidity Units
°C	: Degrees Celsius
PM ₁₀	: Particulate Matters Equal to or Less than 10µm
PM _{2.5}	: Particulate Matters Equal to or Less than 2.5µm
PPE	: Personal Protective Equipment
SO ₂	: Sulphur Dioxide
SWG	: Sustainable Water Group
TDS	: Total Dissolved Solid
TSP	: Total Suspended Particulates, Particulate Matters Equal to or less than 50µm
VOC	: Volatile Organic Compounds
USD	: American Dollar
WHO	: World Health Organization
YCDC	: Yangon City Development Committee
YESC	: Yangon Electricity Supply Corporation
DIMENSION	
%	: Percentage
cbm	: Cubic meter
dB (A)	: A Weighted Decibel
ft	: Feet
g	: Gram
HT	: Hoppus Ton
in	: Inches
KV	: Kilo Volt

ABBREVIATION DESCRIPTION	
L	: Liter
m ²	: Square Meter
m ³	: Cubic Meter
mg / l	: Milligram Per Liter
ppm	: Part Per Million
µm	: Micro Milligram
µg/m ³	: Micro Gram Per Cubic Meter
mg/m ³	: Milligram Per Cubic Meter
KWh	: Kilo Watt Hour
Km	: Kilometer

အစီရင်ခံစာအကျဉ်းချုပ်

ဤပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာကို Y Complex Project (YCP) စီမံကိန်းအတွက် နိုင်ငံတော်က ထုတ်ပြန်ထားသည့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂)၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ (၂၀၁၄) နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ ပြုစုထားပါသည်။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂) အရ ဖွံ့ဖြိုးမှုစီမံကိန်းများကို ဆောင်ရွက်မည့် စီမံကိန်းအဆိုပြုသူအနေဖြင့် ကနဦးပတ်ဝန်း ကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း သို့မဟုတ် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာ သို့မဟုတ် ပတ်ဝန်းကျင်စီမံ ခန့်ခွဲမှုအစီအရင်ခံစာ ကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) နှင့် အညီရေးဆွဲပြုစုပြီး

သယံဇာတနှင့်ပတ်ဝန်းကျင်ထိန်းသိမ်း ရေးဝန်ကြီးဌာနသို့ ရေးဆွဲတင်ပြရမည်ဖြစ်သည်။ ဤပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင် ခံစာကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၊ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးနည်းဥပဒေနှင့် သက်ဆိုင်သည့် လမ်းညွှန်ချက်များနှင့်အညီ ရေးဆွဲပြီး ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဦးစီးဌာနသို့ တင်ပြရမည်ဖြစ်သည်။

YCP ၏ အဆိုပြုထားသော ရင်းနှီးမြှုပ်နှံမှုမှာ ဘက်စုံသုံးရုံးနှင့် ဟိုတယ်အခန်းကွဲများစွာပါရှိသည့် အဆောက်အအုံကြီးများတည်ဆောက်ပြီး ဝန်ဆောင်မှုများပေးခြင်းနှင့် အရည်အသွေးရှိသည့် စီမံခန့်ခွဲမှုခြင်းကို လုပ်ဆောင်ပေးရန်ဖြစ်သည်။

စီမံကိန်းမစတင်မီ ဒဂုံမြို့နယ်၊ ရွှေတိဂုံဘုရားလမ်းနှင့် ပန်တျာလမ်း ဆုံသည့်နေရာရှိ အကွက်အမှတ် ၁၁-က/၁၅-၁၆-၁၇ ရှိ စစ်သမိုင်းပြတိုက်အဟောင်းအား ဖျက်သိမ်းကို Yangon Technical and Trading Co., Ltd (YTTC) မှ လုပ်ဆောင်ခဲ့ပါသည်။

အဆောက်အအုံဖျက်သိမ်းခြင်းခွင့်ပြုချက်ကို YCDC အင်ဂျင်နီယာဌာနမှ ၁၈-၃-၂၀၁၇ တွင် ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးဥပဒေ၊ အခန်း (၁၁)၊ အဆောက်အအုံဆိုင်ရာနည်းဥပဒေ အပိုဒ် (၁၀/၁၁/၁၂) နှင့်အညီ အောက်ပါအခြေအနေများပေါ်မူတည်ပြီး ခွင့်ပြုခဲ့သည်။

- ✓ လိုင်စင်အင်ဂျင်နီယာကြီးကြပ်မှုဖြင့် ဖျက်သိမ်းရမည့်အပြင် ကျန်းမာသည့် အမျိုးသားလူ လုပ်သား များကိုသာ အသုံးပြုရမည်။
- ✓ အဆောက်အအုံအပေါ်ဖက်အစိတ်အပိုင်းများကို လုံးဝဖျက်သိမ်းပြီးမှသာ အခွေ အဆောက်အအုံအောက် ဖက်အစိတ်အပိုင်းများကို ဖျက်သိမ်းရမည်။
- ✓ ဖျက်သိမ်းထားသည့် ပစ္စည်းများကို မိမိပိုင်မြေပေါ်တွင်သာ စုပုံထားရမည်ဖြစ်ပြီး အခွေ အဆောက် အအုံထပ် အခင်းများပေါ်နှင့် စည်ပင်မြေ၊ နေ နောက်ဖေးလမ်းကြားမြေပေါ်တွင် စုပုံထားခြင်း (လုံးဝ) လုံးဝမပြုလုပ်ရ။
- ✓ ဖျက်သိမ်းထားသည့်အဆောက်အအုံမှ ထွက်ရှိလာသည့်ပစ္စည်းများကြောင့် ပတာ ပတ်ဝန်းကျင်လုပ်သား ပြည်သူများကို အန္တရာယ်မဖြစ်ပေါ်စေရန်လိုအပ်ပါက အကာအ ရံများ ကာ ကာရံပိတ်ဆို့ထားရမည်။

- ✓ ကာရံမှုများကို မိမိပိုင်မြေတွင်သာ ကာ
ကာရံထားရမည်ဖြစ်ပြီး စည်ပင်မြေပေါ်သို့ ကျူးကျော်ကာရံခြင်း (လုံးဝ) လုံးဝမပြုလုပ်ရ။
- ✓ မိမိအဆောက်အအုံ ဖျက်သိမ်းမှုကြောင့် အနီးအနားကပ်လျက်ရှိသည့် အခ
အဆောက်အအုံများအား ပျက်စီးထိခိုက်ခြင်းမဖြစ်စေရ။

ယခင်စစ်သမိုင်းပြတိုက်ဟောင်းအားဖျက်သိမ်းပြီးနောက် အကွက်အမှတ် ၁၁-က/၁၅-၁၆-၁၇ ကို YTTTC မှ BOT စနစ်ဖြင့် ကာကွယ်ရေးဝန်ကြီးဌာနမှ ငှားရမ်းခဲ့ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း(၂၀၁၅) အရ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆ
ဆန်းစစ်ခြင်း စီမံကိန်းများ ဆောင်ရွက်မည့် ဝန်ကြီးဌာန၊ အစိုးရဌာန အဖွဲ့အစည်းများနှင့်
ဖွံ့ဖြိုးတိုးတက်ရေး ကော်မတီ အစရှိသည့် လုပ်ငန်းဆောင်ရွက်မည့်သူများအနေဖြင့် ယင်းတို့
လုပ်ကိုင်ဆောင်ရွက်မည့် စီမံကိန်းကြောင့် ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများအတွက်
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ ပုဒ်မ ၂၁ အရ သော်လည်းကောင်း၊ ပတ်ဝန်းကျင်ထိခိုက်မှု
ဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း အပိုဒ် ၆၂ အရသော်လည်းကောင်း
ကြိုတင်ခွင့် ပြုချက်ရယူရမည် ဖြစ်ပါသည်။ စီမံကိန်းကြောင့် ပတ်ဝန်းကျင်ထိခိုက်မှု
အလားလာရှိသည့် စီမံကိန်းများအနေဖြင့် ကနဦးပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းနှင့်
ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန၏
ဆုံးဖြတ်ချက်အရ ဆောင်ရွက်ရမည်ဖြစ်ပြီး ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ
လုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာ လိုက်နာဆောင်ရွက်မှု
သက်သေခံလက်မှတ်ကို ရရှိရန်အတွက် ကနဦးပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း (သို့မဟုတ်)
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (သို့မဟုတ်) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု
အစီရင်ခံစာကို ရေးဆွဲရမည် ဖြစ်သည်။

YCP ၏ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်၏ရည်ရွယ်ချက်မှာ အဆိုပြုစီမံကိန်းကြောင့်
ဖြစ်ပေါ်လာမည့် ပတ်ဝန်းကျင်ဆိုင်ရာထိခိုက်မှုများကြောင့်
အဓိကသက်ရောက်ခံရမည့်သူများကို ဖော်ထုတ်ပြီး
ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် အသေးစိတ်ဖော်ပြထားပါသည်။
မူလကောက်ခံရရှိသည့် ကိန်းဂဏန်းအချက်အလက်များနှင့် တဆင့်ခံရရှိနိုင်သည့် အချက်အလက်
များ အပေါ်မူတည်ပြီး ပတ်ဝန်းကျင်ပေါ်ထိခိုက်နိုင်သည့်
အချက်အလက်များကို ဖော်ထုတ်ခဲ့ပါ သည်။ အဆိုပါ မူလကောက်ခံရရှိသည့်
ကိန်းဂဏန်းအချက်အလက်များနှင့် ရှုပ၊ ဇီဝနှင့် လူမှုစီးပွား အချက်အလက်များကို
တိုက်ရိုက်ကောက်ခံခြင်း သို့မဟုတ် ထုတ်ပြန်ထားသည့် အစီရင်ခံစာများ၊ အင်တာနက်မှ
သတင်းအချက်အလက်များကို အခြေပြု၍ ကောက်ခံထားပါသည်။

ကွင်းဆင်းလေ့လာမှုများကို မြန်မာနိုင်ငံတွင် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း စီမံကိန်းများကို
လုပ်ကိုင်ဆောင်ရွက်ရာတွင် အတွေ့အကြုံများစွာရှိသည့် အီးဂတ်ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်
ဝန်ဆောင်မှုကုမ္ပဏီမှ ဆောင်ရွက်ခဲ့ပါသည်။ ဤအဖွဲ့အစည်းအနေဖြင့် စီမံကိန်း

ကာလများဖြစ်သည့် တည်ဆောက်ခြင်းကာလ၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းကာလ၊ လုပ်ငန်း ရပ်စဲခြင်းကာလတို့အတွက် ဆန်းစစ်ခဲ့ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်များဆောင်ရွက်ရာတွင် စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွား ရှုထောင့်မှ သက်ဆိုင်သည့် မြန်မာနိုင်ငံနှင့် နိုင်ငံတကာ မူဝါဒ၊ ဥပဒေ နှင့်အညီ သုံးသပ်လေ့လာခဲ့ပါသည်။

YCP နှင့် သက်ဆိုင်သည့် ဥပဒေနှင့် လိုက်နာဆောင်ရွက်ရမည့် ဥပဒေဆိုင်ရာ ကတိကဝတ်များ

- ၁။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂)
- ၂။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ (၂၀၁၄)
- ၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅)
- ၄။ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)
- ၅။ မြန်မာ့ရင်းနှီးမြှုပ်နှံမှုဥပဒေ (၂၀၁၆)
- ၆။ မြန်မာ့ရင်းနှီးမြှုပ်နှံမှုနည်းဥပဒေ (၂၀၁၇)
- ၇။ လျှပ်စစ်ဥပဒေ (၂၀၁၄)
- ၈။ ပြည်ထောင်စုမြန်မာနိုင်ငံပြည်သူ့ကျန်းမာရေးဆိုင်ရာဥပဒေ (၁၉၇၂)
- ၉။ လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေးဆိုင်ရာဥပဒေ (၂၀၁၉)
- ၁၀။ ကူးစက်ရောဂါများကာကွယ်နိုင်နင်းရေးဥပဒေ (၁၉၉၅)
- ၁၁။ ဆေးလိပ်နှင့်ဆေးရွက်ကြီးထွက်ပစ္စည်းသောက်သုံးမှုထိန်းချုပ်ရေးဥပဒေ (၂၀၀၆)
- ၁၂။ မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ ဥပဒေ (၂၀၁၅)
- ၁၃။ မော်တော်ယာဉ်ဥပဒေ (၂၀၁၅) နှင့် နည်းဥပဒေ (၁၉၈၇)
- ၁၄။ မြန်မာ့အာမခံဥပဒေ (၁၉၉၃)
- ၁၅။ အလုပ်သမားအဖွဲ့အစည်းဥပဒေ (၂၀၁၁)
- ၁၆။ အလုပ်သမားရေးရာအငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ (၂၀၁၂)
- ၁၇။ အလုပ်အကိုင်နှင့်ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတက်ရေးဥပဒေ (၂၀၁၃)
- ၁၈။ အနည်းဆုံးအခကြေးငွေဥပဒေ (၂၀၁၃)
- ၁၉။ အခကြေးငွေပေးချေရေးဥပဒေ (၂၀၁၆)
- ၂၀။ အလုပ်သမားလျော်ကြေးအက်ဥပဒေ (၁၉၅၁)
- ၂၁။ ခွင့်နှင့်အလုပ်ပိတ်ရက်များအက်ဥပဒေ (၁၉၅၁)
- ၂၂။ လူမှုဖူလုံရေးဥပဒေ (၂၀၁၂)

- ၂၃။ ရေနံနှင့်ရေနံထွက်ပစ္စည်းဥပဒေ(၂၀၁၇)
- ၂၄။ ရေနံနည်းဥပဒေ (၁၉၃၇)
- ၂၅။ မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင်ဥပဒေ (၂၀၁၅)
- ၂၆။ ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများကာကွယ်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၉)
- ၂၇။ ရှေးဟောင်းဝတ္ထုပစ္စည်းများကာကွယ်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၅)
- ၂၈။ ရှေးဟောင်းအဆောက်အအုံများကာကွယ်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၅)
- ၂၉။ မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီဥပဒေ (၂၀၁၃)
- ၃၀။ ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးဥပဒေ (၂၀၁၈)

ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့အစည်း၏ လမ်းညွှန်ချက်များ

- ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့အစည်းမှ သတ်မှတ်သည့် သောက်သုံးရေအရည်အသွေး လမ်းညွှန် ချက်များ (၂၀၁၁)
- ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့အစည်းမှသတ်မှတ်သည့်မြေမအောက်ရေကာကွယ်ထိန်းသိမ်းရေး လမ်းညွှန်ချက်များ (၂၀၀၆)

မြန်မာနိုင်ငံအနေဖြင့် ပတ်ဝန်းကျင်နှင့်ဆက်စပ်သည့် နိုင်ငံတကာနှင့် ရေးထိုးထားသည့်သဘောတူစာချုပ်များ

- ကျိုတိုသဘောတူညီနှိုင်းချက်မှတ်တမ်း (၁၉၉၇)
- ဇီဝမျိုးစုံ၊ မျိုးကွဲများနှင့် ပတ်သက်သည့် ညီလာခံ (၁၉၉၂)
- ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာ ညီလာခံ (၁၉၉၂)
- အာရှအနည်းဆုံးကုန်ကျစားရိတ်ဖြင့်ဖန်လုံအိမ်အာနိသင်ဓာတ်ငွေ့များလျော့ချသည့် နည်းဗျူဟာ (၁၉၉၈)

ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းရေးစံသတ်မှတ်ချက်

လုပ်ငန်းခွင်အတွင်း ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေးအတွက် ၂၀၀၉ခုနှစ်တွင် ထုတ်ပြန်ထားသည့် FUJITA ၏ “Overseas Construction Work Health and Safety Voluntary Standard” ကို လိုက်နာကျင့်သုံးမည် ဖြစ်ပါသည်။ ဤစံသတ်မှတ်ခြင်းကို သုံးစွဲရသည့် အဓိကရည်ရွယ်ချက်မှာ စီမံကိန်း တည်ဆောက်ခြင်းကာလတွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် လုပ်ငန်းခွင် ထိခိုက်မှု မဖြစ်ပေါ်စေရေးအတွက် ယင်းကုမ္ပဏီအနေဖြင့် နိုင်ငံတကာစီးပွားရေး လုပ်ငန်းများတွင် ဆောင်ရွက်သည့်အတိုင်း မြန်မာနိုင်ငံတွင် ကျင့်သုံးလျက်ရှိသည့် ဥပဒေ၊ နည်းဥပဒေများ၊ လုပ်ငန်းခွင် အန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေးများကိုလည်း ဆောင်ရွက် သွားမည် ဖြစ်သည်။

ဤစံသတ်မှတ်ချက်တွင် အောက်ပါအချက်များ အကျုံးဝင်ပါသည်။

- ဤစံသတ်မှတ်ချက်သည် နိုင်ငံတကာစီးပွားရေးလုပ်ငန်းများတွင် အဆောက်အအုံ ဆောက်လုပ်ခြင်းနှင့် မြို့ပြလုပ်ငန်းများအတွက် အကျုံးဝင်ပါသည်။
- ဤကဲ့သို့ ကျင့်သုံးရာတွင် ယင်းနိုင်ငံရှိ စံချိန်၊ စံညွှန်းများသည် ယခု ဖော်ပြသည့် စံချိန်၊ စံညွှန်းများထက် ပိုမိုကောင်းမွန်ပါက ယင်းနိုင်ငံ၏ စံချိန်၊ စံညွှန်းများကို လိုက်နာရမည်။

ယင်းစံချိန်၊ စံညွှန်းများတွင် အောက်ပါ အချက်အလက်များ အကျုံးဝင်ပါသည်။

- အထွေထွေ လိုက်နာရမည့် အချက်များ
- လုပ်ငန်းစီမံအုပ်ချုပ်ခြင်း
- အမြင့်မှ လိမ့်ကျခြင်းကို ကာကွယ်ခြင်း
- မြေပြိုခြင်းကြောင့် ဖြစ်ပေါ်လာနိုင်သော အန္တရာယ်များကို ကာကွယ်ခြင်း
- ငြမ်းပြိုကျခြင်းကြောင့် ဖြစ်ပေါ်လာမည့် အန္တရာယ်များကို ကာကွယ်ခြင်း
- ဆောက်လုပ်ရေးယန္တရားများကြောင့် ဖြစ်ပေါ် လာနိုင်သည့်အန္တရာယ်များကိုကာကွယ် ခြင်း
- လျှပ်စစ်ကြောင့် ဖြစ်ပေါ်လာသော အန္တရာယ်များကို ကာကွယ်ခြင်း

ရန်ကုန်မြို့တော် စည်ပင်သာယာရေးကော်မတီမှ ထုတ်ပြန်ထားသည့် ဥပဒေ၊ နည်းဥပဒေများကို လိုက်နာပြီး အ ထပ်မြင့်အဆောက်အအုံ ဆောက်လုပ်ရာတွင် အောက်ဖော်ပြပါ အခ အချက်အလက် များကို လိုက်နာပါမည်။

- ရန်ကုန်မြို့တော် စည်ပင်သာယာရေးကော်မတီမှ ထုတ်ပြန်ထားသည့် ဥပဒေ၊ နည်းဥပဒေ များကို လိုက်နာပါမည်။
- အနီးပတ်ဝန်းကျင်ရှိ ရုံးများနှင့်အိမ်နီးနားချင်းများမှ သဘောတူညီချက် ရရ ရရှိရမည် ဖြစ်ပြီး သက်ဆိုင်ရာ ရပ်ကွက်အုပ်ချုပ်ရေးမှူးထံမှ ထောက်ခံချက်များ ရယူပါမည်။
- အဆိုပြုထားသောအဆောက်အအုံတွင် ရေဆိုးစနစ်ပါရှိပါမည်။
- ဆက်သွယ်ရေးတာဝါတိုင်များကို အနှောင့်အယှက် မဖြစ်စေရန် ဆောင်ရွက်ပါမည်။
- အဆောက်အအုံများအတွက် မီးသတ်ဌာန၏ အကြံဉာဏ်ကို ရယူပါမည်။
- စီ/မြေပုံ နှင့် ဒီ/မြေပုံများ ပါရှိပါမည်။
- ထင်ရှားသည့် အဆောက်အအုံများနှင့် ရှေးဟောင်းအဆောက်အအုံများ အန အနီးနား တွင် ရှိပါက ယင်းတို့ကို ဗိသုကာမြေပုံဖြင့် ဖော်ပြပါမည်။
- အဆောက်အအုံပုံစံသည် လေဝင်လေထွက်ကောင်းပြီး အလင်းရောင်ရရှိရပါမည်။
- ပိုင်ရှင်ပါက ဇန် (ဘီ) ၏ ငလျင်ဖြစ်ပေါ်နိုင်မှုကို ထည့်သွင်းစဉ်းစား၍ CQHP အရ လေတိုက်နှုန်း တစ်နာရီ ၁၂၀မိုင်ကို ထည့်သွင်းပြီး အထ အထပ်မြင့်အဆောက်အအုံ ဒီဇိုင်းများကို တွက်ချက်မည်။ (အသေးစိတ်ကို အခန်း (၃) တွင်လေ့လာနိုင်သည်)

ထို့အပြင် အထပ်မြင့်အဆောက်အအုံများ၏အရည်အသွေးများအတွက် CQHP လမ်းညွှန်ချက်များကို စဉ်းစားရာတွင် အောက်ပါအကြောင်းအရာများကို ထည့်သွင်းစဉ်းစားထားပါသည်။

- ဗိသုကာပညာ
- တည်ဆောက်မှုပုံစံ
- မြေအောက်တူးဖော်ခြင်း
- ယာယီလျှပ်စစ်ဓာတ်အားတပ်ဆင်ခြင်း
- ရေထောက်ပံ့ပေးမှုနှင့် ကျန်းမာရေးအခြေအနေများ နှင့်
- စက်များဖြင့် လေဝင်လေထွက်ကောင်းမွန်အောင်လုပ်ခြင်း

YCP စီမံကိန်းအဆိုပြုသူသည် စင်ကာပူနိုင်ငံမှ ရင်းနှီးမြှုပ်နှံသူဖြစ်ပြီး ယင်း၏ စီးပွားဖက်မှာ YTTC ကုမ္ပဏီ ဖြစ်ပါသည်။ စုစုပေါင်း ရင်းနှီးမြှုပ်နှံမှု အမေရိကန် ဒေါ်လာသိန်း (၁,၇၆၀) ဖြစ်ပြီး ပြင်ပမှ ဝင် ရောက်လာမည့် ရင်းနှီးမြှုပ်နှံငွေမှာ အမေရိကန် ဒေါ်လာသိန်း (၁,၄၀၈) ဖြစ်ပြီး ပြည်တွင်း ပံ့ပိုး ငွေမှာ အမေရိကန်ဒေါ်လာသိန်း (၃၅၂) ဖြစ်ပါသည်။

YCP ၏ ရင်းနှီးမြှုပ်နှံမှုမှာ မြန်မာနိုင်ငံတွင် ဘက်စုံသုံးရုံးနှင့် ဟိုတယ်လုပ်ငန်းတို့ ဖြစ်ပါသည်။ ထို့အပြင် YCP အနေဖြင့် အခြားဝန်ဆောင်မှု လုပ်ငန်းများကိုလည်း ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။

ဤလုပ်ငန်းပြီးမြောက်ပါက ကြယ်ငါးပွင့်ဟိုတယ်နှင့်အဆင့်မြင့်ရုံးလုပ်ငန်းများကို စွမ်းဆောင်ပေးနိုင် မည်ဖြစ်ပါသည်။ ဟိုတယ်လုပ်ငန်း ဆောင်ရွက်ရာတွင် ဂျပန်နိုင်ငံမှ ဟိုတယ်လုပ်ငန်း ကျွမ်းကျင် သူများကို ခေါ်ယူသွားပါမည်။

ဤအဆောက်အအုံသည် ရွှေတိဂုံစေတီတော်နှင့် နီးကပ်မှု ရှိသဖြင့် နိုင်ငံခြားခရီးသွား ဧည့်သည်များကို ဆွဲဆောင်နိုင်မည် ဖြစ်ပါသည်။

အဆိုပါ လုပ်ငန်းပြီးစီးပါက တိုးတက်လာသည့် ခရီးသွားလုပ်ငန်း လိုအပ်ချက်များကို ဖြည့်ဆည်း ပေးနိုင်ရန်အတွက် ဟိုတယ်အခန်း (၂၅၂) ခန်း၊ အထူးခန်း (၁၄၀) ခန်းပါရှိပြီး၊ ရံရုံးအကျယ်အဝန်း အနေဖြင့် (၂,၃၄၄) စတုရန်းမီတာ ရှိမည်ဖြစ်ပါသည်။ YCP အနေဖြင့် ရုံးခန်းများကို ကြီးကြပ်မည့် ဝန်ဆောင်မှုလုပ်ငန်း ဆောင်ရွက်သည့် Tokyo Tatemono ကုမ္ပဏီနှင့် ချိတ်ဆက်ဆောင်ရွက်သွား မည် ဖြစ်ပါသည်။

ရန်ကုန်စည်ပင်သာယာနယ်နိမိတ်အတွင်း အထူးသဖြင့် ရွှေတိဂုံစေတီတော် ကန့်သတ်ဧရိယာတွင် စီးပွားဖြစ် အဆောက်အအုံများ ဆောက်လုပ်ပါက သတ်မှတ်ချက်များရှိရာ ဇုန်(၁) တွင် အဆောက်အအုံ၏ အမြင့်သည် ၆၂ ပေ မှ ၇၈ ပေ အောက်သာ ခွင့်ပြုပြီး ဇုန် (၂) တွင် ပေ ၁၁၉၀ အောက်သာရှိရမည်။ YCP ၏ အဆောက်အအုံပုံစံအရ စီမံကိန်းဧရိယာသည် ဇုန် (၂) တွင် တည်ရှိပြီး အမြင့်မှာ ၁၈ ၄ ပေ ၅ လ က်မ ဖြစ်သဖြင့် ကန့်သတ်ဘောင်အတွင်း ဝင်ပါသည်။ ထိုထို့အပြင် ရွှေတိဂုံစေတီနှင့် စီမံကိန်းဧရိယာမှာ ပေ ၄၇၄၀ ကွာဝေးပါသည်။

စီမံကိန်းတည်နေရာ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ ကိန်းဂဏန်းအချက်အလက်များမှာ ရာသီဥတု၊ လေအရည်အသွေး၊ ဆူညံသံနှင့် တုန်ခါမှု၊ ရေအရည်အသွေး၊ မြေသုံးစွဲမှု၊ ဘူမိဗေဒအချက်အလက်များ၊ အမှိုက်နှင့် မီးသတ်လုပ်ငန်းသုံး အထောက်ပံ့ပစ္စည်းများ ပါဝင်ပါသည်။ ၎င်းအပြင် လူမှုစီးပွားနှင့် ယဉ်ကျေးမှုဆိုင်ရာ အချက်အလက်များနှင့်

လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ပတ်သတ် သ

ည

သည့် အချက်အလက်များကိုလည်း အကျဉ်းချုံး ဖော်ပြထားပါသည်။

ဤပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ငန်းတွင် စီမံကိန်းတည်ဆောက်ခြင်းကာလနှင့်

နှင့် လုပ်ငန်း လည်ပတ်ဆောင်ရွက်ခြင်းကာလများတွင်

တိုက်ရိုက်နှင့် သွယ်ဝိုက်ထိခိုက်မှုများကိုစူးစမ်း

လေ့လာ နိုင်ရန်အတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုသိမ်းဆည်းရေးနှင့် လူမှုစီးပွားကိန်းဂဏန်းအချက်အလက်များ ကောက် ခံခဲ့ပါ သည်။

ယင်းကဲ့သို့ ကောက်ခံရသည့် ရည်ရွယ်ချက်မှာ

၁။ စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာသည့် ကောင်းကျိုး၊ ဆိုးကျိုးများကို ဖော်ထုတ်ပြီး ယင်းတို့၏

အရေးပါမှုကို စူးစမ်းလေ့လာသွားရန်

၂။ ယင်းကို အသုံးပြုပြီး စံသတ်မှတ်ချက်အဖြစ် ထားရှိ၍ စီမံကိန်း တည်ဆောက်ခြင်းကာလ၊

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းကာလတွင်စီမံအုပ်ချုပ်မှုအနေအထားကိုပတ်ဝန်း

နားကျင့်နှင့်လူမှုစီးပွား ပေါ်မူတည်၍ အကဲဖြတ်သွားရန် ဖြစ်သည်။

ပတ်ဝန်းကျင် ထိခိုက်မှုရှိနိုင်သော

အလားအလာများနှင့် ယင်းထိခိုက်မှုများကို လျော့ချရန်အတွက် နည်းလမ်းများကို IEMA (2004)

နိုင်ငံတကာလမ်းညွှန်ချက်များနှင့်အညီ လုပ်ဆောင်ခဲ့ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုများကို အောက်ပါအတိုင်းခွဲခြားနိုင်ပါသည်။ အကြိုတည်ဆောက်ခြင်းကာလ၊

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းကာလနှင့်

လုပ်ငန်းရပ်စဲခြင်းကာလတို့သာ အ ကျိုးဝင်ပြီး ယခင် အဆောက်အအုံအား ဖျ

ဖျက်သိမ်းပြီး ဖြစ်သဖြင့် ဤစီမံကိန်းနှင့် ပတ်သက်၍ သက်ဆိုင် ခြင်းမရှိပါ။

ပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှုများကို ဆန်းစစ်ရန်အတွက် အောက်ပါအတိုင်း ဆောင်ရွက်ခဲ့ ပါ သည်။

- တိုက်ရိုက် သက်ရောက်မှု
- သွယ်ဝိုက် သက်ရောက်မှု
- ဆက်စပ် သက်ရောက်မှု

အလားအလာရှိနိုင်သော သက်ရောက်မှုများကို အတည်ပြုထားသော လမ်းညွှန်မှု၊ ဥပ

ဥပဒေ နှင့် ပညာရှင်များ၏ သုံးသပ်ချက်များအပေါ်မူတည်ပြီး ဆုံးဖြတ်ပါသည်။ သိ

သိသာထင်ရှားသည့် သ က်ရောက်မှုများသည် ထိ

ထိခိုက်ခံရမည့် ပတ်ဝန်းကျင်နှင့် ပြောင်းလဲမှုပမာဏ အပေါ်မူတည်သည်။

အလားအလာရှိသော သ

သက်ရောက်မှုများနှင့် လျော့ပါးစေရေးနည်းလမ်းများကို တည်

တည်ဆောက်ရေး ကာလ၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ရေးကာလနှင့် လူ

လုပ်ငန်းရပ်စဲခြင်းကာလများအတွက် ဆုံး ဖြတ်ပါသည်။

REM-UAE အဖွဲ့သည် ယောမင်းကြီးရပ်ကွက်၊ ဦးဝိစာရရပ်ကွက် နှင့် ဘုရားကြီးရပ်ကွက်များမှ

အိမ်ထောင်စု ၁၂၀ အား လူမှုစီးပွားရေး စ

စ်တမ်းကောက်ယူခဲ့ပါသည်။ စီမံကိန်းအပေါ်သဘော ထာ

ထားအမြင်များ၊ လက်ရှိအခြေအနေများနှင့် ထိခိုက်နိုင်ခြေရှိသည့် သက်ရောက်မှုများအကြောင်းကို ကောက်ယူခဲ့ပါသည်။ အဆိုပါစစ်တမ်းမှ စီမံကိန်းနှင့်ပတ်သက်သော သတင်းအချက်အလက်ရရှိမှု၊ စီမံကိန်းအပေါ် ထားရှိသော သဘောထား၊ ကုစားမည့်နည်းလမ်းများအပေါ် ထင်မြင်ချက်၊ အစည်းအဝေး တက်ရောက်သူများ၏ အကြံပြုချက်များ၊ စစ်တမ်းဖြေသူများ၏ အမြင်၊ စိုးရိမ်ပူပန်မှုများ၊ လူထု၏ ဒေသဆိုင်ရာ ဖွံ့ဖြိုးတိုးတက်မှုနှင့်ဆိုင်သော သဘောထားအမြင်များ စသည်တို့ကို အခြေခံပြီး အချက်အလက်များကောက်ယူခဲ့ပါသည်။

လူမှုစီးပွားပတ်ဝန်းကျင်ဆိုင်ရာ လေ့လာမှုအနေဖြင့် ဒဂုံမြို့နယ်၏ လူမှုစီးပွားဆိုင်ရာအကျဉ်းချုပ် အစီရင်ခံစာကို တင်ပြထားပါသည်။ အဆိုပါအစီရင်ခံစာတွင် စီမံကိန်းတည်နေရာ၊ ဒဂုံမြို့နယ်၏ လူဦးရေအချက်အလက်နှင့် တိုင်းရင်းသားလူမျိုးစုများ၊ စီးပွားရေးအခြေအနေ၊ ပို့ဆောင်ဆက်သွယ်ရေး၊ ပညာရေး၊ ကျန်းမာရေး၊ ယဉ်ကျေးမှုအမွေအနှစ်များကို တင်ပြထားသည်။ လေ့လာမှု ပြုလုပ်ရာတွင် အသုံးပြုသောနည်းလမ်း၊ စီမံကိန်းနှင့် ထိစပ်နေသော ရပ်ကွက်များ၏ လူဦးရေ၊ ကျား၊ မ၊ မိသားစုအရွယ်အစား၊ ပိုင်ဆိုင်မှုပုံစံ၊ ဝင်ငွေအခြေအနေနှင့် ဝင်ငွေရရှိမှုနှင့် ပိုင်ဆိုင်မှုများကို တင်ပြ ထားပါသည်။

စောင့်ကြပ်ကြည့်ရှုခြင်းသည် သက်ရောက်ခံရမည့်ပတ်ဝန်းကျင်တွင် ပတ်ဝန်းကျင်ဆိုင်ရာနှင့် လူမှုရေးဆိုင်ရာသက်ရောက်မှုများ ကိ

ကို လက်ရှိတွင်ပြဌာန်းထားသော ဥပဒေများနှင့်အညီ ရေး ဆွဲထားသော လျော့ပါးစေရေးအစီအစဉ်၏ ထိရောက်မှုရှိ/မရှိကို အကဲဖြတ်ရာတွင် အရေးပါသည်။ တည်ဆောက်ရေးကာလနှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလတို့တွင် ဆိုးကျိုးသက်ရောက်မှုများ အတွက် အဆိုပြုထားသောလျော့ပါးစေရေးနည်းလမ်းများသည် ထိရောက်မှုရှိ/မရှိ သေချာစေရန် စေ စောင့်ကြပ်ကြည့်ရှုခြင်းကို လုပ်ဆောင်ရမည်။

စောင့်ကြပ်ကြည့်ရှု စစ်ဆေးမည့် တိုင်းတာမှုများကို ရွေးချယ်ရာတွင် စီမံကိန်းကာလဖြစ်သည့် တည်ဆောက်ခြင်းကာလ၊ လုပ်ငန်းလည်ပတ်ခြင်းဆောင်ရွက်ခြင်းကာလနှင့် လုပ်ငန်းရပ်စဲခြင်း ကာလ တို့တွင် ရှိမည့် ထိခိုက်မှုပမာဏပေါ် မူတည်ပြီး ဆောင်ရွက်သွားမည်ဖြစ်သည်။

ပတ်ဝန်းကျင်ထိခိုက်မှု

ပတ်ဝန်းကျင်ထိခိုက်မှုနှင့် ပတ်သက်၍ တည်ဆောက်ခြင်းကာလတွင် အောက်ပါအချက်များ ပါဝင်ပါ သည်။

အနှုတ်လက္ခဏာဆောင်သည့် ထိခိုက်မှု

အဆောက်အအုံ၏ အခြေခံ အုတ်မြစ်ကို တူးဆွခြင်း၊ ပိုင်ရှိက်ခြင်း၊ ဆူညံသံနှင့် တုန်ခါမှု၊ မော်တော်ယာဉ် စီးရေ၊ သိုလှောင်သည့် ပစ္စည်း ပမာဏ၊ အမှိုက်စွန့်ပစ်ခြင်းနှင့် မိလ္လာစွန့်ပစ်ခြင်း။

အပေါင်းလက္ခဏာဆောင်သည့် လုပ်ငန်းစဉ်

အပေါင်းလက္ခဏာဆောင်သည့် လုပ်ငန်းစဉ်များမှာ အလုပ်ရရှိမှု အခွင့်အလမ်း၊
မြင်ကွင်းပသာဒ ကောင်းမွန်မှုလုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းကာလတွင် ဧ
အောက်ပါ အနှုတ်သဘောဆောင် သည့် ထိခိုက်မှု များကို တွေ့ရှိရပါသည်။

- ရေသုံးစွဲခြင်း
- လျှပ်စစ်သုံးစွဲခြင်း
- မိလ္လာစွန့်ပစ်ခြင်း
- ရေဆိုးစွန့်ပစ်ခြင်း
- အမှိုက်စွန့်ပစ်ခြင်း
- မော်တော်ယာဉ်စီးရေ
- မြေနိမ့်ဆင်းခြင်း

လုပ်ငန်းတည်ဆောက်ခြင်းကာလတွင် ဖြစ်ပေါ်လာမည့် အနှုတ်သဘောဆောင်သည့် ထိခိုက်မှုများ
ကို ဒီဇိုင်းကို အခြေခံပြီး Overseas Construction Work Health and Safety Voluntary
Standard ကို အသုံးပြု၍ လျော့ချသွားပါမည်။ သိသာထင်ရှားသော အပေါင်း
လက္ခဏာ ဆောင်သည့် သက်ရောက်မှုများမှာ လုပ်သား ၅၁၀ ယောက်အတွက် အလုပ်အကိုင်
အခွင့်အလမ်းများကို အချိန်ကာလအားဖြင့် (၂၈)လခန့် အလုပ်အကိုင်များပေးသွားနိုင်မည်ဖြစ်ပါ
သည်။

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းကာလအတွင်း အနှုတ်သဘောဆောင်သည့် ထိခိုက်မှုများကို
အထက်တွင် ဖော်ပြခဲ့သည့် နည်းလမ်းများကို အသုံးပြု၍ လျော့ချသွားနိုင်ပါသည်။ အဓိအားဖြင့်
သယံဇာတ သုံးစွဲခြင်း၊ မိလ္လာစွန့်ပစ်ခြင်း၊ အမှိုက်စွန့်ပစ်ခြင်းနှင့် မြေနိမ့်ဆင်းခြင်း တို့ဖြစ်ပါသည်။
လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းကာလအတွင်း အပြုသဘောဆောင်သည့် သက်ရောက်မှုများမှာ
ဒေသခံအလုပ်သမားဦးရေ (၆၅၂) ယောက်နှင့် နိုင်ငံခြားအလုပ်သမားဦးရေ (၂၀) ယောက်
တို့အတွက် နှစ်ကြာ ရှည်စွာ အလုပ်အကိုင်ရရှိခြင်းတို့ ဖြစ်ပါသည်။

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းကာလအတွင်း အနှုတ်သဘောဆောင်သည့် လုပ်ငန်းတို့မှာ ရေ
သုံးစွဲမှုနှင့် စွ

စွမ်းအင်သုံးစွဲမှုတို့ ဖြစ်ပါသည်။ ယင်းတို့ကို စိစစ်တွက်ချက်ပြီး ရေသုံးစွဲမှုကို လျော့ချနိုင်ရန် တစ်ဦး
ဦးချင်း ရေသုံးစွဲမှု ပမာဏ ကို ဆန်းစစ်ပြီး လျှပ်စစ်သုံးစွဲမှုကိုလည်း ဦးစားပေးသုံးစွဲခြင်း ဖြင့် ဒီ
ဒီဇယ်ကုန်ကျမှုကိုလဲ လျော့ချပေးနိုင်မည် ဖြစ်သည်။ ခန့်မှန်း ကုန်ကျမည့် လျှပ်စစ် သုံးစွဲမှု
ပမာဏမှာ တစ်နာရီလျှင် ၅၇၆၀၀ ကီလိုဝပ် ဖြစ်ပါသည်။ အကယ်၍ မဟာဓာတ်အားလိုင်းမှ
လျှပ်စစ်လိုအပ်ချက်ကို ရရှိမည်ဆိုပါက တစ်နေ့လျှင် လောင်စာဆီ သုံးစွဲမှုကို ၂၈ လ အတွက်
၃၁၀,၀၀၀ လီတာ လျော့ချနိုင်မည် ဖြစ်ပါသည်။ အကယ်၍ မဟာ
ဓာတ်အားလိုင်းမှ လျှပ်စစ်မရရှိပါက ၂၈ လအတွက် ၁၀၅၃,၀၀၀ လီတာ ကုန်ကျမည်ဖြစ်ပါသည်။

ကျန်းမာရေးဆိုင်ရာ အကျိုးသက်ရောက်မှုများ

ကျန်းမာရေးဆိုင်ရာ အကျိုးသက်ရောက်မှုကို လေ့လာတင်ပြရာတွင် ကျန်းမာရေးနှင့်
သက်ဆိုင် သော ဥပဒေမူဘောင်၊ လေ့လာမှုအတိုင်းအတာနယ်ပယ်၊ လေ့လာသည့်နည်းလမ်းများ၊

အခြေခံ အချက်အလက်များ ကောက်ယူခြင်း၊ သတင်းအချက်အလက်ရင်းမြစ်များ၊ စီမံကိန်းနေရာ တဝိုက်ရှိ ကျန်းမာရေးအခြေအနေ၊ ကျန်းမာရေးဆိုင်ရာ ထိခိုက်မှုအကဲဖြတ်လေ့လာချက်နှင့် ကုစားရန် နည်းလမ်းများ နှင့် ဖြစ်နိုင်ချေရှိ၊ မရှိဆန်းစစ်ချက်များကို တင်ပြထားပါသည်။

ဖန်လုံအိမ် အာနိသင် ထွက်ရှိခြင်း

ဖန်လုံအိမ် အာနိသင် ထွက်ရှိခြင်း ၏ အဓိကဖြစ်စဉ်မှာ မဟာဓာတ်အားလိုင်းမှ လျှပ်စစ်ပမာဏ လုံလောက်စွာမရရှိခြင်းကြောင့် သီးခြားမီးစက်များမှ သုံးစွဲသည့်ဓာတ်ဆီ ၂၉,၅၂၃ ဂါလံနှင့် ဒီဇယ် ၁၀၀,၂၈၅ ဂါလံ တို့ကြောင့်ဖြစ်ပါသည်။

ဆူညံသံနှင့် တုန်ခါမှု

အဆောက်အဦများအတွက် အခြေခံအုတ်မြစ်ခိုင်မာစေရန်အတွက် ပိုင်ရှိက်ခြင်းနည်းလမ်း ထက်ဆူညံသံနှင့်တုန်ခါမှုနည်းသော တူး၍ ပိုင်ရှိက်ခြင်းနည်းလမ်းကို အသုံးပြုမည်။ ထိ ထို့အပြင် ပတ်ဝန်းကျင်ရှိပြည်သူများအတွက် အခန္ဓာအနာအယုတ်မဖြစ်အောင် နေ့အချိန်တွင်သာ လှ လုပ်ငန်းကို ဆောင်ရွက်မည်။ ဆောက်လုပ်ရေးလုပ်ငန်းဆောင်ရွက်သည့်နေရာအနီးနားရှိ ရှိ နေထိုင်သူများ အတွက် ဆောက်လုပ်ရေးလုပ်ငန်းဆောင်ရွက်စဉ်ကာလအတွင်းတွင် ဆူညံသံများ ထွက်ရှိ သည့် လုပ်ငန်းများဆောင်ရွက်သည့်အခါ သတိထားစေရန်ကြေညာမည်။ အကယ်၍ ဆူညံသံ နှင့်တုန်ခါမှုများ သတ်မှတ်ထားသည့်ပမာဏထက်များလျှင် ဆူညံသံနှင့်တုန်ခါမှုကို ဟန့်တားနိုင် သည့် အကာအကွယ်များ ယူဆောင်ပြီး အသုံးပြုမည်။ ဆူညံသံနှင့်တုန်ခါမှု လေ့လာမှုများကို ၂၈ရက်၊ မေလ၊ ၂၀၁၉ မှ ၃၁ ရက်၊ မေလ၊ ၂၀၁၉ တွင် YCP မှ ၂၀၀ မီတာ အချင်းဝက်အတွင်းရှိသော ယဉ်ကျေးမှုဆိုင်ရာအဆောက်အအုံ(၃)ခုတွင် တိ တိုင်းတာ မှုပြုလုပ်ခဲ့ပါသည်။ ရရှိလာသော ရလဒ်များသည် ဆူညံသံနှင့် တုန်ခါမှုအတွက် ၁ ခွင့်ပြုထားသော သတ်မှတ်စံနှုန်း အတွင်းရှိသည်ကို တွေ့ရှိရပါသည်။

ယာဉ်စီးရေ

Khaing Engineering Group (KEG) သည် သွားလာရေးအပေါ် သက်ရောက်မှုများကို ဆန်းစစ်ခြင်းဆိုင်ရာလမ်းညွှန်ချက်များနှင့်အညီ လက်ရှိနှင့် အနာဂတ်တွင်ဖြစ်လာမည့် ယာဉ်ကြော အခြေအနေများကို လမ လမ်းဆုံလမ်းခွ (၆) ခုကို လေ့လာမှုဧရိယာထားပြီး လေ့လာခဲ့ပါသည်။ လေ့လာမှု အစီအစဉ်တွင်ယာဉ်ကြောအခြေအနေများကို လက်ရှိ (၂ ၀၁၉) ခုနှစ်၊ တည တည်ဆောက်ရေး ကာလအပါအဝင် အခ အဆောက်အအုံဆောက်လုပ်ပြီးအခြေအနေ(၂၀၂၆) ခုနှစ်နှင့် အဆောက်အအုံ တည်ဆောက်ခြင်းမရှိသည့်အခြေအနေ (၂၀၂၆) ခုနှစ် ဟူ၍ လေ့လာခဲ့သည်။

ခန့်မှန်းခြေအားဖြင့် ပျမ်းမျှရက်သတ္တပတ်တွင် ယာဉ်အသွားအလာလမ်းကြောင်းအသစ် ၅, ၅,၅၄၉ (၁,၉၄၂ အဝင် နှင့် ၁,၉ ၄၂ အထွက်) ကြောင်း သွားလာပြီး၊ မနက်ပိုင်း ယာဉ် သွားလာမှုအများဆုံးအချိန်တွင် ယာဉ်အသွားအလာလမ်းကြောင်းအသစ် ၄၃၀ (၂၂ ၄ အဝင် နှင့် ၇၆ အထွက်)ကြောင်း နှင့် ညနေ ပိုင်းယာဉ်သွားလာမှုအများဆုံးအချိန်တွင် ယာဉ်အသွားအလာ လမ်းကြောင်းအသစ် ၄၉၀ (၁၁ ၃ အဝင် နှင့် ၂၃၀ အထွက်) အထွက်)

ကြောင်း သွားလာသည်ဟု မျှော်မှန်းရသည်။ ခန့်မှန်းခြေအားဖြင့် ပျမ်းမျှစနေနေ့တိုင်းတွင် ယာဉ်အသွားအလာလမ်းကြောင်း သစ် ၃,၇၂ ၆ (၁,၃ ၀၄ အဝင် နှင့် ၁ ,၃၀၄ အ ထွက်) ကြောင်း သွားလာပြီး၊ စနေနေ့လယ် ယာဉ်သွားလာ မှုအများဆုံးအချိန်တွင် ယာဉ်အသွားအလာလမ်းကြောင်းသစ် ၃၉၉ (၁၅ ၅ အဝင်နှင့် ၁၂၅ အထွက်) ကြောင်းသွားလာသည် ဟုမျှော်မှန်းရသည်။

အဆိုပြုထားသောစီမံကိန်းနေရာသို့ /မ

/မှ ယာဉ်အဝင်အထွက်လမ်းကြောင်းကို ရွှေတိဂုံဘုရားလမ်း၊ ပန်တျာလမ်းနှင့် ဦးဝိစာရလမ်း တို့ကို အသုံးပြုမည်။ လမ်းကြောင်း အဝင်အထွက်အတွက် YCP ၏ တောင်ဘက်ရှိ ရွှေတိဂုံဘုရားလမ်းနှင့် ဦးဝိစာရလမ်းကို ဆက်သွယ်ထားသော ၂၁ ပေအကျယ်ရှိ လမ်းကြောင်းအသစ်တစ်ခုရှိသည်။ ထို့ အပြင် လမ်းကြောင်း အဝင်အထွက်အတွက် YCP ၏ အနောက်ဘက်ရှိ ပန်တျာလမ်းနှင့် လမ်းကြောင်းအသစ်ကို ဆက်သွယ်ထားသော ၂၈ ပေအကျယ်ရှိ အခြားလမ်းကြောင်းသစ်တစ်ခုရှိသည်။ ထိ

ထိုလမ်းကြောင်းကို ပြည်သူများအတွက် အဝင်တွင်သွားလာခြင်းနှင့် စီမံကိန်းမြေနေရာသို့သွားသည့် လမ်းကြောင်းအတွက် အထွက်လမ်း အဖြစ်အသုံးပြုနိုင်သည်။ ထိထို့ကြောင့် လမ်းလေးခွဆုံနေရာနှင့် ထောင့် တို့မှ စီမံကိန်းနေရာသို့ သွားရာတွင် ရွှေတိဂုံဘုရားလမ်းတစ်လျှောက်တွင် အဝင်/အထွက်လမ်းကြောင်းတစ်ခု၊ အဝင်လမ်း ကြောင်း တစ်ခုနှင့် အထွက်လမ်းကြောင်းနှစ်ခု၊ ပန်တျာလမ်းတစ်လျှောက်တွင် အထွက်လမ်း ကြောင်းနှစ်ခု နှင့် ဦးဝိစာရလမ်းတစ်လျှောက်တွင် အဝင်လမ်းကြောင်းရော၊ အထွက်လမ်းကြောင်း ပါသွားလာနိုင်သည်။

ရေသုံးစွဲမှု

YCP သည် YCDC ၏ ဇုန် (၂) ဧရိယာတွင် တည်ရှိပြီး လက်ရှိတွင် YCDC ၏ ရေထောက်ပံ့မှုရရှိရန် ရေသုံးစွဲခွင့်လျှောက်ထားပါသည်။ YCDC ၏ ရေဖြန့်ဖြူးရေးစနစ်ကို YCDC ၏ ရေနှင့် သန့်ရှင်းရေး ဌာနမှ ချုပ်ကိုင်ထားပြီး ရန်ကုန်မြို့ရှိ လူဦးရေ ၅.၁၄ သန်းအတွက် ဂါလံသန်းပေါင်း ၉၀ ကို ဖြန့်ဖြူး ပေး လျက်ရှိပါသည်။ YCP ၏ နေ့စဉ်ရေသုံးစွဲမှုပမာဏ ခန့်မှန်းခြေအားဖြင့် တည်ဆောက်ရေး ကာလတွင် တ

တစ်ရက်လျှင် ဂါလံ ၈,၈၀၀ သုံးစွဲမည်ဖြစ်ပြီး လုပ်ငန်းလည်ပတ်စဉ်ကာလတွင် ရုံးများ၊ ဟော
ဟော်တယ်အခန်းများ၊ ရေကူးကန်၊ အဝတ် လျှော်ဖွတ်ခြင်းနှင့် SPA အတွက် တစ်ရက်လျှင် ဂါလံ
၁၁၂,၀၃၆ သုံးစွဲမည်ဖြစ်သည်။ ပထမဦးဆုံး YCDC
၏ ရေဖြန့်ဖြူးမှုအစီအစဉ်ကို ကုက္ကိုဝ စီမံကိန်းမှ ၂၀ ၂၅ တွင် ရရှိမည် ဟုမျှော်မှန်းထားသည်။ ၈.
၈.၄.၂၀၁၈ နှင့် ၃၁. ၈.၂၀၁၈ တွင် ပြုလုပ်ခဲ့သော အမ
အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးခြင်းအခမ်းအနားတွင် ဒဂုံမြို့နယ်နှင့် အန
အနီးနား ဒေသများမှ တ က်ရောက်လာသောလူများသည် YCP မှ ရေသုံးစွဲမှုကြောင့် အန
အနာဂတ်တွင် ၎င်းတို့၏ ရေတွင်းများမှ ရေပြတ်တောက်မှုပြဿနာများကို ကြ
ကြံတွေ့နိုင်ခြင်းနှင့် ပတ်သက်သည့် အကြောင်းအရာများ ကို ပိုမိုစိတ်ဝင်စားကြသည်။ YCP သည်
မြို့ပြနှင့် အိမ်ရာဖွံ့ဖြိုးရေးဦးစီးဌာနမှ အဝီစိရေတွင်း ၅ တွ
တွင်းတူးရန် ခွင့်ပြုမိန့်ရရှိထားပြီး ဆောက်လုပ်ရေး လုပ်ငန်းလည်ပတ်စဉ် ကာလတွင် ရေတွင်း ၁
၁ တွင်းကို အ သုံးပြုမည်။ YCP သည် YCDC
မှ ရေထောက်ပံ့မှုရရှိထားပြီး ဂျပန်အစိုးရနှင့် မြန်မာအစိုးရတို့၏ အစိုးရအချင်းအချင်းချိတ်
ဆက်ဆောင်ရွက်မှုဖြင့် ကုက္ကိုဝ စီမံကိန်းမှ ၂ ၀၂၅ တွင် ရေရရှိပါမည်။ YCP သည်
အနီးနားရှိနေထိုင်သူများနှင့်အတူ မြေအောက် ရေ
ရေကို ရ ယူသုံးစွဲမည်ဖြစ်သောကြောင့် အကယ်၍ ရေရရှိမှုနှင့်ပတ်သက်၍ ပြဿနာ တစ
တစုံတရာ ဖြစ်ခဲ့သော် YCP မှတာဝန်ယူဖြေရှင်းပေးမည်ဖြစ်ကြောင်း YCP ၏
စီမံကိန်းဆောင်ရွက်မှုများတွင် ဖော်ပြထားသည်။
ဒေသခံတို့၏ရေတွင်းများမှာ ပုံမှန်အားဖြင့် ၂၀၀ ပေ အနက်တူးကြပြီ YCP သည် ၃၀၀
ပေအနက်တူးသည်။ ဆောက်လုပ်ရေးကာလအတွင်းနှင့် ဆောက်လုပ်ပြီးနောက်ကာလတ
လတွင် အကြောင်းတစုံတရာပေါ်ပေါက်လာလျှင် YCP
အနေဖြင့် ပြဿနာရပ်အားလုံးကို အတူတကွ ဖြေရှင်းပေးမည်ဖြစ်သည်။ YCP သည်
ထုံးစံအတိုင်းပင် ကိုကိုဝစီမံကိန်းမှ YCDC ၏ ရေရရှိမည်ဖြစ်သည်။ ၂၀ ၂၅ တွ
တွင် လွှန်းပြင်နှင့် ကုက္ကိုဝ စီမံကိန်းတို့မှ ရန်ကုန်မြို့၏ အရှေ့၊ အ
အနောက်နှင့် တောင်ဘက်ဧရိယာများသို့ ရေထောက်ပံ့ပေးမည်ဖြစ်သောကြောင့် YCP
သည်လည်း ရေရရှိ မည်ဖြစ်ပါသည်။ လ
လွှန်းပြင်ရေစီမံကိန်းသည် တစ
တစ်ရက်လျှင် ရေဂါလန်ပေါင်းသန်း ၄၀ ထောက်ပံ့မည်ဖြစ်ပြီး ကု
ကုက္ကိုဝစီမံကိန်းသည် တစ်ရက်လျှင် ရေဂါလန်ပေါင်းသန်း ၆၀ ထောက်ပံ့ ပါမည်။
ဆောက်လုပ်ရေးလုပ်ငန်းလည်ပတ်စဉ်ကာလတွင် ရေကို ရေတွင်းတစ်တွင်းထဲမှ သု
သုံးစွဲမှုသည် လုံလောက်သောကြောင့် ဤကာလ အတွက် ရေ
ရေလိုအပ်ချက်မှာ ပြဿနာမရှိနိုင်ပါ။ သို့သော်လည်း လုပ်ငန်းလည်ပတ်ဆောင်ရွက်စဉ်က
ကာလတွင် ရေတွင်းများမှရေကို အသုံးပြုပြီး YCDC မှ
ရေရရှိ သောအခါ ရေတွင်းမှ ရေသုံးစွဲမှုကို ရပ်စဲမည်။ တည

တည်ဆောက်ရေးကာလတွင် ရေသုံးစွဲသောအခါ ရေတွင်းတစ်တွင်းကို တစ်ချိန်လျှင် ၁၀ နာ နာရီကြာသာသုံးစွဲမည်ဖြစ်ပြီး တစ်ရက်ထဲ ရေတွင်း နှစ်တွင်းထက်ပို၍ မသုံးစွဲပါ။

ရေကြီးမှု

အနီးပတ်ဝန်းကျင်တွင် နေထိုင်သူအချို့သည် မိုးရာသီတွင် ရေစီးဆင်းမှုများနှင့် YCP မှ ရေစွန့်ခြင်းကြောင့် ရေကြီးမှုကို စိုးရိမ်နေသည်။ YCP သည် OJI ရေးဆွဲသည့်လမ်းမှု ပြုပြင်စွန့်ပစ်သည့် နည်းလမ်းကို အသုံးပြုပြီး ထွက်လာသောရေကို ခွင့်ပြု BOD နှင့် COD ပမာဏဖြင့် စွန့်ပစ်မည်။ စွန့်ပစ်မည့် လမ်းကြောင်းများသည် လက်ရှိရှိနေသည့် လမ်းကြောင်းများထက် ကျယ်ဝန်းပြီး YCDC ၏ ညွှန်ကြားချက်အတိုင်းပြန်လည်ပြုပြင်ခြင်းကြောင့် ရေကြီးမှုဒဏ်ကို ဟန့်တား နိုင်မည် ဖြစ်သည်။ YCDC ၏ ညွှန်ကြားချက်များအရ ပန်တျာလမ်းမှ ဦးစိစာရလမ်းသို့ မြောင်းအသစ်တစ်ခုဆောက် လုပ်ပါမည်။ အဆ အဆိုပြုထားသော ရေမြောင်း၏စုစုပေါင်းအရှည်မှာ ၃၇၄.၈၁ မီတာဖြစ်သည်။ ပြ ပြန်လည်ပြုပြင်ထားသောစွန့်ပစ်ရေကို ရေမြောင်းအသစ်ထဲသို့စွန့်ပစ်မည်။ မိုးရာသီတွင် စီ စီမံကိန်းဧရိယာ၏အထက်မှ ၇ ၀% သ သည် ဦးစိစာရလမ်းနှင့် လက်ရှိရှိနေသော မြေအောက်ရေမြောင်းထဲသို့ စီးဝင်မည်ဟု ယူ ယူဆရပြီး ၃၀% သည် ရွှေတိဂုံဘုရားလမ်းဘေးရှိ ရေမြောင်းထဲသို့စီးဝင်မည်ဟု ဖြ ဖြစ်သည်။ ထိုသို့ပြုလုပ်ပြီး ပတ်ဝန်းကျင်ရေကြီးမှုကို YCP မှ ဟန့်တားထားသည်။

လျှပ်စစ်ဓာတ်အားသုံးစွဲမှု

လျှပ်စစ်ဓာတ်အားသုံးစွဲမှုနှင့်ပတ်သက်၍ ဒေသ ခံများထဲမှ တစ တစ်ယောက်တင်ပြထားသည့် ဘွိုင်လာနှင့်ထရန်စဖော်မာ ပေါက်ကွဲခြင်းမှာ ကေ ကောလဟလ တ စံချစ်ပါသည်။ YCP သည် ဆောက်လုပ်ရေးလုပ်ငန်းလုပ်ဆောင်စဉ်ကာလတွင် ဘွိုင်လာအသုံးမပြုပါ။ ဆောက်လုပ်ရေး လုပ်ငန်းလုပ်ကိုင်စဉ်ပြီးနောက်တွင် လျှပ်စစ်ဓာတ်အားလောက်မှုမရှိလျှင်လည်း YCP မှ တာဝန်ယူ မည်။ YCP သည် YESC မှ လျှပ်စစ်ဓာတ်အားသုံးစွဲရန်တောင်းခံထားပြီး လက်ရှိအားဖြင့် မီ မီးစက်ကိုသာသုံးစွဲမည်ဖြစ်သည်။ လျှပ်စစ်ဓာတ်အားပြတ်သောအခါမှာသာ မီးစက်ကို အသုံးပြု ရန်ဖြစ်ပါသည်။ လျှပ်စစ်ဓာတ်အားရလျှင် YESC နှင့် အလုပ်၏ စည်းမျဉ်းစည်းကမ်းသဘောတရား အတိုင်း လိုက်နာဆောင်ရွက်မည်ဖြစ်သည်။

အမှိုက်စွန့်ပစ်မှု

YCP မှ ထွက်လာသောစွန့်ပစ်မည့် အမှိုက်အမျိုးအစား (၂) မျိုးမှာ ဘေးအန္တရာယ်မရှိသော အမှိုက် နှင့် ဘေးအန္တရာယ်ရှိသော အမှိုက်တို့ဖြစ်ပါသည်။ ဘေးအန္တရာယ်မရှိသော အမှိုက်များကို YCP အတွင်း သတ်မှတ်ထားသော နေရာတွင် ယာယီသိမ်းဆည်းထားပြီး YCDC နှင့် ချ

ချိတ်ဆက်ပြီး သ

သတ်မှတ်သောနေရာများတွင် နေ

နေစဉ်စွန့်ပစ်သွားမည် ဖြစ်သည်။ ဘေးအန္တရာယ် ရှိသောအမှိုက်များကို YCDC

သို့ပို့ဆောင်ပြီး စွန့်ပစ်သွားမည်ဖြစ်သည်။ YCDC သည် ရွှေပြည်သာ မြို့နယ်တွင် အမှိုက်မှစွမ်းအင်သို့ ပြောင်းသည့် စက်ရုံကို ၂ ၀၁၇ ခုနှစ်တွင် တည်ဆောက်ပြီးဖြစ် သဖြင့် ဘေးအန္တရာယ်မရှိသောအမှိုက်များကို ယင်းစက်ရုံသို့ ပို့ဆောင်ပြီး အမှိုက်စွန့်ပစ်နိုင်ပါသည်။

ဆက်စပ်သက်ရောက်မှု ဆန်းစစ်ခြင်း

YCP

၏

ဆက်စပ်သက်ရောက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းကိုလူမှုအဖွဲ့အစည်း၊ စီးပွားရေးနှင့် ပတ်ဝန်းကျင်တို့အပေါ် စီမံကိန်းတစ်ခု (သို့မဟုတ်) စီ

စီမံကိန်းများ ၏တိုက်ရိုက်သက်ရောက်မှုနှင့် ပေါင်းစပ်သက်ရောက်မှုများသည် အခြေခံ၍ ဆောင်ရွက်ခဲ့ပါသည်။ ယင်းသက်ရောက်မှုများမှာ တူညီသည့်ကာလတွင် အခြားစီမံကိန်းများလုပ်ဆောင်ခြင်းမှဖြစ်ပေါ်လာနိုင်သည့် သက်ရောက်မှု များပေါင်းစည်းလာခြင်းနှင့်အပြန်အလှန်သက်ရောက်ခြင်းတို့ကြော

ကာင့် ဖြစ်ပေါ်လာသည်။ အဆောက် အဦများ၊ ဝန်ဆောင်မှုများ နှင့် သယံဇာတများကို အသုံးပြုခြင်း ကဲ့သို့သော YCP

၏

ဖွံ့ဖြိုးရေး လုပ်ဆောင်မှုများသည် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများဖြစ်နိုင်သည်။ YCP

နှင့် အခြား စီမံကိန်းများကြောင့် အနီးပတ်ဝန်းကျင်တွင် အဓိကဆက်စပ်သက်ရောက်မှုများဖြစ်နိုင်ပါ သည်။ လေအရည်အသွေးနှင့်ပတ်သက်၍ သက်ရောက်မှုများမှာ အထူးသဖြင့် စီမံကိန်း ဒေသမှ မီတာ (၂၀၀) အကွာအတွင်းသို့ ဖုန်ထူထပ်ခြင်း၊ မြေအောက် ရေဖြန့်ဖြူးရေး၊ ဆူညံသံ၊ တုန်ခါမှုနှင့် ယာယဉ်အသွားအလာ ဆန်းစစ်ထားပါသည်။ YCP နှင့် အနီးဆုံးတွင် ရှိသော အခြားစီမံကိန်းမှာ YOMA CENTRAL စီမံကိန်းဖြစ်ပြီး ဆူးလေဘုရားလမ်းနှင့် ဗိုလ်ချုပ်လမ်း တို့ဆုံရာ YCP နှင့် မီတာ ၅၀၀ အကွာတွင် ရှိပါသည်။

ဆက်စပ်သက်ရောက်မှုကို ဆန်းစစ်ရန်အတွက် နေရာဒေသနှင့်ယာယီနယ်နိမိတ်ပြီး ဆက်စပ် သက်ရောက်မှုမက်ထရစ်နှင့် ထင်ရှားသောဆက်စပ်သက်ရောက်မှုသတ်မှတ်ချက်တို့ကို အခြေခံ၍ သုံးသပ်ရမည်။ ယင်းတို့ကိုဆက်စပ်တွေးတောပြီး ဖြစ်ပေါ်လာသည့် ရလဒ်မှာ အောက်ပါ အတိုင်း ဖြစ်ပါသည်။

ဆက်စပ်သက်ရောက်မှုနည်းသည့် အခြေအနေများမှာ

- လေအရည်အသွေး
- ဖုန်လုံအိမ် အာနိသင် ထုတ်လွှတ်မှု
- ယာယဉ်အစီးရေ/လမ်းပန်းဆက်သွယ်ရေး
- ဆူညံသံ/တုန်ခါမှု

- စွန့်ပစ်ပစ္စည်း တို့ဖြစ်ပါသည်။

ဆက်စပ်သက်ရောက်မှု အလယ်အလတ် ဖြစ်ပေါ်မှု အခြေအနေမှာ အောက်ပါအတိုင်းဖြစ်ပါသည်။

- ဖြန့်ဖြူးရေး
- မြေအောက်ရေ တို့ဖြစ်ပါသည်။

YCPအကောင်အထည်ဖော်နေချိန်တွင် ဖော်ပြပြီးဖြစ်သည့်လျော့ချမှုလုပ်ငန်းစဉ်များကို
 ၂ ဆောင်ရွက် ပါက ထိရောက်စွာစီမံအုပ်ချုပ်သွားနိုင်မည် ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု စီမံချက်

ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့ချမည့် အစီအစဉ်များကို အကောင်အထည်ရန်အတွက် ပတ်ဝန်းကျင် ဆိုင်ရာသက်ရောက်မှုများကို ခွဲခြမ်းစိတ်ဖြာခြင်း၊ YCP ၏ ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု အ စီအစဉ် များတွင် အောက်ဖော်ပြပါလုပ်ငန်းအစီအစဉ် ပါဝင်မည် ဖြစ်ပါသည်။

- ၁။ ပတ်ဝန်းကျင် စီမံအုပ်ချုပ်မည့် အစီအစဉ်
- ၂။ ပတ်ဝန်းကျင် စောင့်ကြပ်ကြည့်ရှုမှု အစီအစဉ်
- ၃။ လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး အစီအစဉ်
- ၄။ ရေစီမံခန့်ခွဲမှု အစီအစဉ်
- ၅။ အရေးပေါ် တုံ့ပြန်မှု အစီအစဉ်
- ၆။ ငလျင်ဘေးအန္တရာယ်စီမံခန့်ခွဲမှု အစီအစဉ်
- ၇။ မီးဘေးအန္တရာယ်စီမံခန့်ခွဲမှု အစီအစဉ်
- ၈။ ဆီဖိတ်စင်မှု အရေးပေါ် အစီအစဉ်
- ၉။ စိမ်းလန်းစိုပြေရေး အစီအစဉ်
- ၁၀။ စွမ်းအင်ချွေတာရေး အစီအစဉ်
- ၁၁။ ယာဉ်ကြောပိတ်စို့မှု စီမံခန့်ခွဲမှု အစီအစဉ်
- ၁၂။ လူမှုစီးပွားအုပ်ချုပ်မှု အစီအစဉ်
- ၁၃။ လူမှုရေးဆိုင်ရာ တာဝန်ခံမှု အစီအစဉ် တို့ဖြစ်ပါသည်။

ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုစီမံချက်၏ ရည်ရွယ်ချက်မှာ

- ၁။ စီမံကိန်းအဆိုပြုသူအနေဖြင့် စီမံချက်များကို အကောင်အထည်ဖော်မည့် ကတိကဝတ်နှင့်စီမံကိန်း သက်တမ်းတစ်လျှောက် တည်ဆောက်ခြင်းကာလ၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်မှုကာလနှင့် လုပ်ငန်းရပ်ဆိုင်းခြင်းကာလတို့ အကျုံးဝင်ပါသည်။
- ၂။ သယံဇာတနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီး လက်အောက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန၏ လိုအပ်ချက်တို့ ဖြည့်ဆည်းပေးရန်။
- ၃။ စီမံကိန်း စောင့်ကြပ်ကြည့်ရှုခြင်းနှင့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးလိုအပ်ချက်များ အကောင်အထည်ဖော်ရာတွင် လမ်းညွှန်ချက်အဖြစ် အသုံးပြုရန်။

၄။ ပတ်ဝန်းကျင်ပေါ် အနှုတ်လက္ခဏာဆောင်သည့် ဆိုးကျိုးများကို လျော့ချရာတွင် မူဘောင် အတွင်း အသုံးပြုသွားရန်။

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

စီမံကိန်း တည်ဆောက်ခြင်းကာလ၊ လုပ်ငန်း လည်ပတ်ဆောင်ရွက်မှု ကာလနှင့် လုပ်ငန်း ရပ်ဆိုင်းခြင်း ကာလတို့ တွင် စီမံကိန်းကြောင့် သက်ရောက်မှုများကို စေ စောင့်ကြပ်ကြည့်ရှုရန်နှင့် စီမံကိန်းစီမံခန့်ခွဲခြင်း တို့ကိုအကောင်အထည်ဖော်နိုင်ရန်အတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရေးဆွဲပြီးဖြစ်သည်။ စောင့်ကြည့်လေ့လာခြင်းအစီအစဉ်အကျဉ်းချုပ်ကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ အ တည် ပြုရန် EIA အစီရင်ခံစာတွင် ထည့်သွင်းဖော်ပြထားသည်။ စောင့်ကြပ်ကြည့်ရှုခြင်း အစီရင်ခံစာတွင် အောက်ဖော်ပြပါ ပါ အချက်အလက်များ ပါဝင်ပါသည်။

- စောင့်ကြည့်လေ့လာမည့်အစီအစဉ်အတွက် လိုအပ်ချက်များကို အက အကျဉ်းချုပ်ဖော်ပြ ထားခြင်း
- စီမံကိန်းကို အထောက်အပံ့ပေးရန်အတွက် ထိ ထိရောက်သောအတိုင်းအတာများနှင့် စောင့်ကြပ် ကြည့်ရှုခြင်းပြုလုပ်မည့်လုပ်ဆောင်မှုများ
- အသုံးပြုမည့် နည်းလမ်းများနှင့် စောင့်ကြပ်ကြည့်ရှုမည့်အကြိမ်အရေအတွက်
- အစီရင်ခံစာတင်မည့် အကြိမ်ရေအတွက်

စောင့်ကြပ်ကြည့်ရှုခြင်း အစီရင်ခံစာတွင်

- ကိန်းဂဏန်း အချက်အလက်များ စုဆောင်းခြင်း
- ပြဌာန်းထားသည့် သတ်မှတ်ကန့်သတ်ချက်များထက်ကျော်လွန်နေသည့် ရလဒ် များကို အလေးထား၍ ဆွေးနွေးဖော်ပြခြင်း

စောင့်ကြပ်ကြည့်ရှုမည့် သတ်မှတ်ကန့်သတ်ချက်များ

စီမံကိန်း၏ တည်ဆောက်ခြင်းကာလ၊ လုပ်ငန်း လည်ပတ်ဆောင်ရွက်မှု ကာလနှင့် လုပ်ငန်း ရပ်ဆိုင်းခြင်းကာလတို့တွင် သက်ရောက်မှုအမျိုးအစားခွဲခြားမှုအပေါ်မူတည်ပြီး ကန့်သတ်ချက် များကို ရွေးချယ်သတ်မှတ်မည်။ စီမံကိန်း၏ ယေဘုယျပတ်ဝန်းကျင်အပေါ်ဆောင်ရွက်မှုများနှင့် ထိခိုက်မှု လျော့ချမည့် နည်းလမ်းတို့၏ ထိရောက်မှုအပေါ်မူတည်ပြီး ကန့်သတ်ချက်များကို စဉ်းစားမည်။ စီမံကိန်း၏ လုပ်ဆောင်မှုအဆင့်ဆင့်တွင် လုပ်ဆောင်မည့် စောင့်ကြပ်ကြည့်ရှုမည့် သတ်မှတ် တိုင်းတာ မှုများကို အောက်တွင်ဖော် ဖော်ပြထားပါသည်။

တည်ဆောက်ခြင်းကာလ : တည်ဆောက်ရေးကာလအတွင်းတွင်ရှိသော ညစ်ညမ်းမှုများကို စောင့်ကြည့်ရန်

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်မှုကာလ : စီမံကိန်း၏ လုပ်ဆောင်စဉ်ကာလအတွင်းမှ ထွက်လာ သော သက် ရောက်မှုများကို ရှာဖွေသတ်မှတ်ရန်

ဖျက်သိမ်းခြင်းကာလ : ဖျက်သိမ်းသည်ဟု ယူဆထားပြီး တည်ဆောက်ရေးကာလတွင် ထွက်လာ သော သက်ရောက်မှုများနည်းတူ လုပ်ဆောင်ရန်

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် လုပ်ငန်းတာဝန်များ

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ကို ထိရောက်စွာ အကောင်အထည်ဖော်နိုင်ရန်အတွက် အားလုံးပူးပေါင်း တာဝန်ယူဆောင်ရွက် လိုက်ရန်လိုအပ်ပါသည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု လုပ်ဆောင်မှု များသည် မြန်မာနိုင်ငံအစိုးရ၏ လက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာ မူဝါဒ၊ ဥပဒေများ၊ နည်းဥပဒေများ၊ လုပ်ထုံးလုပ်နည်းများနှင့် အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် များအတိုင်း လိုက်နာဆောင် ရွက်သင့်သည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အကောင်အထည်ဖော်ရန် အတွက် အောက်ပါတို့ကို တာဝန်ယူ ဆောင်ရွက်ရန် လိုအပ် ပါသည်။

YCP ကုမ္ပဏီလီမိတက်အနေဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅)၊ အပိုဒ် ၁၀၃ တွင် ဖော်ပြထားသော "စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်စီမံ ခန့်ခွဲမှုအစီအစဉ်၊ စီမံကိန်း ကတိကဝတ်အားလုံးနှင့် စည်းကမ်းချက်များကို အပြည့်အဝ အကောင်အထည်ဖော်ရမည့်အပြင် ယင်း၏ ကိုယ်စားစီမံကိန်းကို ဆောင်ရွက်ပေးသူ ကန်ထရိုက်တာ နှင့်လက်ခွဲဆောင်ရွက်ပေးသူ ဆပ်ကန်ထရိုက်တာများ အားလုံးက စီမံကိန်းအတွက် လုပ်ငန်းများ ဆောင်ရွက်ရာတွင်သက်ဆိုင်ရာဥပဒေ၊ နည်းဥပဒေများ၊ ဤလုပ်ထုံးလုပ်နည်း၊ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် စည်းကမ်းချက်များအားလုံးကို အပြည့်အဝလိုက်နာ ဆောင်ရွက်စေရန်တာဝန် ရှိသည်" အတိုင်း ဆောင်ရွက်ရမည်။

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနအနေဖြင့် သု သုံးသပ်ရာတွင် အောက်ပါလုပ်ငန်းနှစ်မျိုးပါဝင် သည်။

စီမံအုပ်ချုပ်မှုရှုထောင့်မှ သုံးသပ်ခြင်း အစီရင်ခံစာတွင် စီမံကိန်းအဆိုပြုသူမှ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်းအရ လိုက်နာမှု ရှိ/မရှိ ကို သုံးသပ်ရန်။

နည်းပညာရှုထောင့်မှ သုံးသပ်ခြင်း အစီရင်ခံစာကို အတည်ပြုနိုင်ရန်အတွက် စီမံကိန်းနှင့် ဆက် ဆက်စပ်သည့် နည်းပညာအချက်အလက်များ ပြည့်စုံမှု ရှိ၊ မရှိ နှင့် လိုက်လျော ညီထွေရှိမှု၊ လုံလောက်မှု ရှိ၊ မရှိ နှင့် လုံလောက်မှု ရှိ၊ မရှိ သုံးသပ်ရန်။

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့်ပတ်သက်သော တာ ဘာဝန်ဝတ္တရား များမှာ

- စီမံကိန်းအပေါ်အန္တရာယ်ရှိသောပတ်ဝန်းကျင်ဆိုင်ရာသက်ရောက်မှုများနှင့်ပတ်သက်၍ ကာလအပိုင်းအခြားအလိုက် သွားရောက်၍ လေ့လာဆောင်ရွက်ခြင်း။
- စီမံကိန်းအပေါ်သိသာထင်ရှားစွာအန္တရာယ်ရှိသောပတ်ဝန်းကျင်ဆိုင်ရာသက်ရောက်မှုများနှင့် ပတ်သက်၍ အသေးစိတ်ဆွေးနွေးပြီး လိုအပ်သောသလိုပြင်ဆင်ဆောင်ရွက်ခြင်း။
- အန္တရာယ်ရှိသောပတ်ဝန်းကျင်ဆိုင်ရာသက်ရောက်မှုများကို လျော့ပါးစေရေးနည်းလမ်းများ နှင့် သဘောတူညီမှုများကို ကာလအပိုင်းအခြားအလိုက် စောင့်ကြပ်ကြည့်ရှုရေး အစီရင်ခံစာများကို ပြန်လည် သုံးသပ် ခြင်း။

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာနမှ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာအတွက် သုံးသပ် ရေးကော်မတီဖွဲ့စည်းပြီး ညှိနှိုင်းစေ့စပ်ရေးမှူးမှဦးဆောင်၍ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အကြောင်း ကို သုံးသပ်ဆွေးနွေးမည်။ သုံးသပ်ရေးအဖွဲ့တွင် နည်းပညာကျွမ်းကျင်သူများနှင့် သက်ဆိုင်ရာနယ်ပယ်တွင် ကျွမ်းကျင်သူများပါဝင်ပြီး ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာကို အကဲဖြတ်ရာတွင် တာဝန်ယူ မှုရှိရမည်။ အစီရင်ခံစာတွင် အောက်ပါအကြောင်း အရာများ ကို သုံးသပ်ရမည်။

- စီမံကိန်းအကြောင်းအရာဖော်ပြချက်၊ လုပ်ဆောင်ချက်များနှင့် နည်းလမ်းများ
- စီမံကိန်း၏ ပတ်ဝန်းကျင်ဆိုင်ရာ တည်ခင်းမှုပုံစံ
- စီမံကိန်း၏ သက်ရောက်မှုများ
- ထင်ရှားသည့်သက်ရောက်မှုများ
- ဆက်စပ်သက်ရောက်မှုများ
- သိသာထင်ရှားသော ကြွင်းကျန်သက်ရောက်မှုများ
- ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအရင်ခံစာသည်သင့်လျော်မှုရှိသဖြင့် ကြွင်းကျန်သက်ရောက်မှုများကို စောင့် ကြည့်ရန်နှင့် စီမံခန့်ခွဲခြင်း
- အများပြည်သူဘက်မှ တတင်ပြထားသောသဘောထားများနှင့် အဆအဆိုပြုထားသော ဖြေရှင်းချက်များအတိုင်း အမျိုးအစားသတ်မှတ်ခြင်းနှင့်
- အချက်အလက်များစုဆောင်းရာနှင့် ကောက်ချက်ချရာတွင် လက်ခံထားသော သိသိပုံပညာရပ်ဆိုင်ရာ စည်းမျဉ်းစည်းကမ်းများနှင့် ကျင့်ဝတ်များအတိုင်းအသုံးပြုခြင်း

တတိယအဖွဲ့အစည်း၏ ပတ်ဝန်းကျင်ဆိုင်ရာ အကြံပေးအဖွဲ့

ပတ်ဝန်းကျင်ဆိုင်ရာတတိယအကြံပေးအဖွဲ့သည်ခေတ်နှင့်အညီရေးသားထားသော ပတ်ဝန်းကျင်ထိန်းသိမ်းခြင်းစီမံချက်ကို YCP မှ လိုက်နာဆောင်ရွက်ရမည်။ လုပ်ငန်းစဉ် အလိုက်စစ်ဆေးမှုများကို လုပ်ငန်းလည်ပတ်မှုစံနှုန်းများနှင့် နှိုင်းယှဉ်ပြီး မျှော်မှန်းထားသည့် ကာလအတိုင်း ရရှိနိုင်မှုကိုရှာဖွေဖော်ထုတ်ရမည်။ အကယ်၍မျှော်မှန်းထားသည့်တို့ဖြစ်မလာလျှင် သင့်လျော် သောလုပ်ဆောင်မှုများကို လုပ်ဆောင်ရမည်။

ထို့ကြောင့် တတိယအဖွဲ့အစည်း၏ ပတ်ဝန်းကျင်ဆိုင်ရာ စိစစ်မှုကို စီမံကိန်း၏အမျိုးမျိုးသော ကာလများတွင် လုပ်ဆောင်ရန်လိုအပ်ပြီး စီမံအုပ်ချုပ်မှုအစီစဉ်တွင် လျော့ပါးစေရေးနည်းလမ်းများ ကို ဖော်ပြရမည်။

ပတ်ဝန်းကျင်ဆိုင်ရာစိစစ်ခြင်း၏နယ်ပယ် အောက်ပါအကြောင်းအရာများပါဝင်သင့်သည်။

- ဖော်ပြထားသော လျော့ပါးစေရေးနည်းလမ်းများ၏ ရည်မှန်းထားသည့် ညံ့အတိုင်း ရောက်ရှိ မှုကို လိုက်နာဆောင်ရွက်မှုကို အတည်ပြုခြင်း။
- သက်ဆိုင်သောပတ်ဝန်းကျင်ဆိုင်ရာ ဥပဒေနှင့်အညီ ဆောင်ရွက်ခြင်း။
- လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့်ကျန်းမာရေးအတွက် ထိခိုက်မှုလျော့နည်းစေရန် အလုပ် သမားများအား လက်တွေ့လေ့ကျင့်ပေးထားခြင်း။
- ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာကိစ္စမဲ့များနှင့် ပတ်သက်၍ တိုးတက်မှုများဖြစ်အောင် အကြံပေးခြင်း။
- အထူးသဖြင့် တတည်ဆောက်ရေးကာလတွင် အများပြည်သူများ၏တိုင်တန်းမှုများကို ကျေနပ်မှုရှိစေရစေရန် ပူးပေါင်းဆောင်ရွက်မှုများပြုလုပ်ခြင်း။
- စိစစ်ခြင်း၏ရလဒ်များကို အများပြည်သူသို့တင်ပြခြင်း။

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အကောင်အထည်ဖော်ရန်အတွက် လိုအပ်သည့် ရန်ပုံငွေအစီအစဉ်

စဉ်	စီမံကိန်းကာလ	နှစ်စဉ်ကုန်ကျငွေ	မှတ်ချက်
၁	တည်ဆောက်ရေးကာလ	၄၁,၀၆၀	၂၈ လ
၂	လုပ်ငန်းလည်ပတ်စဉ်ကာလ	၃၂,၅၀၀	၃၀ နှစ်
၃	ဖျက်သိမ်းသည့်ကာလ	၅,၀၀၀	၃ လ

အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်းနှင့် အများပြည်သူသို့ ထုတ်ဖော်တင်ပြခြင်း

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် (၆၃) အရ စီမံကိန်းအဆိုပြုသူ သည် နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာတွင် စီမံကိန်းနှင့်သက်ဆိုင်သည့် သတင်း အချက်အလက်များကို အများပြည်သူသို့သတင်းအချက်အလက်များရရှိစေပြီး စီမံကိန်းကို ကောင်းစွာ နားလည်သဘောပေါက်စေရန် အများပြည်သူသဘောထားရယူခြင်းအခမ်းအနားကို လုပ်ဆောင်ရမည်။ အလားတူပင် ပြည်သူ့ အသံကြားနားခြင်းအခမ်းအနားကို ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာနောက်ဆုံးအဆင့်(အကြမ်း)တွင်လုပ်ဆောင်ပြီး ပတ်ဝန်းကျင်

ထိခိုက်မှုအစီ ရင်ခံစာတွင် ထည့်သွင်းဖော်ပြရမည်။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာ လုပ်ထုံးလုပ်နည်းအပိုဒ် (၆၅) အရ စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာကို ဦးစီးဌာနသို့တင်သွင်းပြီးနောက် ၁၅ ရက်ထက်နောက်မကျစေဘဲ၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာကို လူမှုအဖွဲ့အစည်း၊ စီမံကိန်းကြောင့် ထိခိုက်ခံစားရသူများ၊ သက်ဆိုင်ရာအစိုးရအဖွဲ့အစည်းများ၊ ဒေသခံလူမှုအဖွဲ့ အစည်းများနှင့် အခြားအကျိုးသက်ဆိုင်သူများသိရှိနိုင်ရန် သတင်းစာကဲ့သို့သော နိုင်ငံပိုင် မီဒီယာများမှ လည်း ကောင်း၊ စီမံကိန်း သို့မဟုတ် စီမံကိန်းအဆိုပြုသူ၏ ဝက်ဘ်ဆိုဒ်မှ လည်းကောင်း၊ စာကြည့် တိုက်များ၊ ပြည်သူ့ခန်းမများစသည့် အများပြည်သူစုဝေးရာ နေရာများတွင် လည်းကောင်း၊ စီမံကိန်းအဆိုပြုသူ၏ ရုံးဌာနများတွင် လည်းကောင်း ထုတ်ဖော်ကြေညာရမည်။

အများပြည်သူလိုက်နာဆောင်ရွက်ခြင်းလုပ်ငန်းများကို စီမံကိန်းပိတ်သိမ်းခြင်းနှင့် အများပြည်သူ ပူးပေါင်း ပါဝင်မှုကဏ္ဍတွင် အသေးစိတ်ဖော်ပြထားသည်။ အများပြည်သူမှချိတ်ဆက် ပါဝင်မှုများသည် ဆွေးနွေး မှုများ အပေါ်မူတည်သည်။ ထို့ကြောင့် အကြံပေးကုမ္ပဏီသည် ဖိတ်ကြားလွှာများ၊ သတင်းစာတွင် ကြေညာခြင်းတို့ကို သေချာစွာ စီစဉ်ပေးရမည်။ အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးပွဲများကျင်းပခြင်း၊ အမေးအဖြေကဏ္ဍများ၊ ဖုန်း နှင့် မေးလ်များ မှလည်း အများပြည်သူတို့၏ သဘောထားအမြင်များကို ရရှိနိုင်သည်။ ပြန်ဖြေကြားသူ အများစုမှာ အစိုးရဝန်ထမ်းများနှင့် ပညာရှင်အဆင့်ရှိသူများဖြစ်သည်။ ဆွေးနွေးပွဲနှစ်ခုမှ ရရှိလာသော သဘောထားအမြင်များသည် အစီရင်ခံစာနှင့် အရေးကြီးသော တုံ့ပြန်မှုတို့အတွက် အလွန်အသုံး ဝင်သည်။

ပထမဆုံးအများပြည်သူသဘောထားရယူခြင်းအခမ်းအနားကို ၈ ရက်၊ ဧပြီလ၊ ၂၀၁၈ တွင် ကျင်းပခဲ့ပြီး ဒုတိယအကြိမ် အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးပွဲကို ၃၁ ရက်၊ သြဂုတ်လ၊ ၂၀၁၈ တွင် ကျင်းပခဲ့သည်။ ပထမအကြိမ်နှင့် ဒုတိယအကြိမ် ဆွေးနွေးပွဲများတွင် စီမံကိန်းကို ကောင်းမွန်စွာ အကောင်အထည်ဖော်နိုင်ရန်အတွက် စီမံကိန်းအကြောင်းအရာများ၊ အလားအလာ ရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာသက်ရောက်မှုများနှင့် လူမှုရေးဆိုင်ရာသက်ရောက်မှုများ၊ ပြည်သူ များ၏သဘော ထားအမြင်များ၊ အမြင်များအပေါ်ပြန်လည် ဖြေကြားချက်များ၊ လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ် အပေါ် သဘောထားအမြင်များနှင့် အရေးကြီးသော အကြံပြုချက်များကို REM-UAE Co., Ltd မှ ရှင်းပြပေးသည်။

နိဂုံးချုပ်နှင့် အကြံပြုချက်များ

ရုံးနှင့် ဟိုတယ်လုပ်ငန်းတို့သည် ရေသုံးစွဲခြင်း၊ စွမ်းအင်သုံးစွဲခြင်း ကဲ့သို့သောသဘာဝ သယံဇာတအရင်းမြစ်များကို များစွာသုံးစွဲသဖြင့် ရေဆိုးနှင့် စွန့်ပစ်ပစ္စည်းများထွက်ရှိသောကြောင့် ကောင်းမွန်သောစီမံအုပ်ချုပ်မှုလိုအပ်ပါသည်။ ရေသုံး စွဲခြင်းသည် ဧည့်သည်များ၏ တကိုယ် ရည်သုံးစွဲခြင်းနှင့် သန့်ရှင်းရေး၊ လျှော်ဖွတ်ရေး၊ ချက်ပြုတ်ရေး၊ ရေကူးကန်၊ SPA တို့တွင် အသုံးများသောကြောင့် မြေအောက်ရေကို

ထိမ်းသိမ်းခြင်းပြုလုပ်ရမည်။ သင့်လျော်သော နေရာ၊ ဒီဇိုင်း နှင့် ဆောက်လုပ်ခြင်း တို့တွင် သင့်လျော်သောနည်းလမ်းကို အသုံးပြုခြင်းဖြင့် ရေသုံးစွဲမှုကို ထိန်းသိမ်းနိုင်သည်။ အဝိစိတွင်းမှ မြေအောက်ရေကို သုံးစွဲပါက ရေရှည်သုံးစွဲနိုင်ရန်အတွက် စနစ်တကျ သုံးစွဲရန် လိုအပ်ပြီး ပတ်ဝန်းကျင်ရှိ ဒေသခံများအတွက် လိုအပ်ချက် ထိခိုက်မှုမရှိစေရန် ဆောင်ရွက်ထား ရှိပါမည်။

စွမ်းအင်သုံးစွဲခြင်းအတွက် ဟိုတယ်နှင့် ရုံးတို့သည် စွမ်းအင်ကို အပူနှင့် လျှပ်စစ်စွမ်းအင်ပုံစံဖြင့် အများအပြားသုံးစွဲကြသည်။ အဆောက်အဦးနေရာ၊ ဒီဇိုင်း၊ ဆောက်လုပ်ခြင်းနှင့် လုပ်ငန်းဆောင် ရွက်မှုပုံစံများသည် စွမ်းအင်ကို အများအပြားသုံးစွဲကြသည်။ စွမ်းအင်သုံးစွဲခြင်းကို စွမ်းအင်နှင့်ဆက်စပ်၍ သုံးစွဲသည့် အပူပေးခြင်း၊ လေဝင်လေထွက်နှင့် လေအေးပေးစက် သုံးစွဲခြင်းတို့တွင် စနစ်တကျ သုံးစွဲခြင်းဖြင့် စွမ်းအင်သုံးစွဲမှုကို လျော့ချနိုင်သည်။ ၎င်းအပြင် မီးထွန်းခြင်းနှင့်ပတ်သက်၍လည်း အောက်ပါကဲ့သို့နည်းလမ်းများအသုံးပြုခြင်းဖြင့် စွမ်းအင်သုံးစွဲမှု ကိုလျော့ချနိုင်သည်။

- အာရုံခံကိရိယာအသုံးပြုခြင်း
 - မီးလင်းအားကောင်းသည့် မီးလုံးများအသုံးပြုခြင်း
 - ထိရောက်စွာ စွမ်းအင်ရင်းမြစ်ကိုစွမ်းအင် စီမံခန့်ခွဲသည့်နည်းလမ်းကို အသုံးပြုခြင်း
 - စွမ်းအင်သုံးစွဲမှုနှင့်ပတ်သက်သည့် ချ
- ချက်ပြုတ်ခြင်းနှင့် ရေခဲသေတ္တာအသုံးပြုခြင်းစသော ကိ
ကိရိယာများတွင် စီးအင်သုံးစွဲမှုကို လျော့ချခြင်း

မိလ္လာရေဆိုး၊ အခြားရေဆိုးများကို သန့်စင်နိုင်ရန်အတွက် YCP အနေဖြင့် OJI ရေဆိုးသန့်စင် သသည့် စနစ်ကို အသုံးပြုသွားမည် ဖြစ်ပါသည်။ ထိုစနစ်တွင် ရေညှိများပေါက်ဖွားခြင်းကဲ့သို့သော ရေကိုထိခိုက်စေမှုများကို သန့်စင်နိုင်သည့် အရည်များပါဝင်ပါသည်။ နောက်ဆုံးရေဆိုးများနှင့် ရေနံနှင့်အမဲဆိကို စွန့်ပစ်ရာတွင် YCDC နှင့် ချိတ်စပ်ဆောင်ရွက်ပြီး စွန့်ပစ်မည်။ YCP မှ ရေဆိုးစွန့်ပစ်မှုခန့်မှန်းခြေအရ ထွက်ရှိမှုပမာဏ ၀.၀၁၅၈ m³/sec ရှိပါသည်။

အမှိုက်များတွင် အော်ဂဲနစ်နှင့် အင်အော်ဂဲနစ်ကဲ့သို့သော အမှိုက်များပါဝင်ပြီး အန္တရာယ်ရှိ သည့်ပစ္စည်းများဖြစ်သည့် ဘက်ထရီ၊ သုတ်ဆေးများနှင့် အချို့ထုပ်ပိုးထားသော ပစ္စည်းများ ပါဝင်သည်။ အမှိုက်စွန့်ပစ်ရန်အတွက် EIA လေ့လာမှုတွင် စွန့်ပစ်ပစ္စည်း စီမံမှုအစီအစဉ်ကို ရေးဆွဲထားပြီး ဘေးအန္တရာယ်မရှိသည့် အမှိုက်များကို သ သင့်လျော်သော နေရာတွင် စု စုပုံခြင်းနှင့် သိုလှောင်ခြင်းတို့ပြုလုပ်ပြီး ဘေးအန္တရာယ်မရှိသောအမှိုက်များအတွက် သင သင့်လျော်စွာစွန့်ပစ်နိုင် ရန်အတွက် ရန်ကုန်မြို့ တော်စည်ပင်သာယာရေးအဖွဲ့နှင့် ချိတ်ဆက်ပြီး စွန့်ပစ်သွားမည် ဖြစ်ပါသည်။ ဘေးအန္တရာယ်ရှိ သည သည့်အမှိုက်များအတွက် ရ ရန်ကုန်မြို့တော် စည်ပင်သာယာရေးအဖွဲ့ နှင့် ချိတ်ဆက်၍ စွန့်ပစ်သွားမည်။

YCP စီမံကိန်းပေါ်ပေါက်ခြင်းကြောင့် ယာဉ်ကြောကြပ်တည်းခြင်းနှင့် ပတ်သက်၍ ရွှေတိဂုံဘုရားလမ်းအဝင်/အထွက်ကို လေ့လာဆန်းစစ်ထားပါသည်။ ရွှေတိဂုံဘုရားနှင့် ဦးဝိစာရလမ်းကို ဆက်သွယ်ပေးမည့် ၁၁ ပေ အကျယ်လမ်းကို စီမံကိန်းတောင်ဘက်တွင် ဖောက်လုပ်ရန် လျာထားပါသည်။ ၎င်းအပြင် အဆိုပါလမ်းနှင့် အနောက်ဘက်တွင် ပန်တျာလမ်းတို့ကို ဆက်သွယ်ရန်အတွက် ၂၈ ပေ အကျယ်ရှိလမ်းတစ်လမ်းဖောက်လုပ်ရန် စီစဉ်ထားပါသည်။ အဆိုပါပြုပြင်မှုများနှင့် ယာဉ်ကြပ်တည်းမှုကို လျော့ချနိုင်ရန် ကားစီးရေအများအပြားသုံးစွဲမည့်အစား ဖယ်ရီကားစီးခြင်း၊ယာဉ်ပူးပေါင်းသုံးစွဲခြင်းနှင့် လေဆိပ်အမြန်ကားများသုံးစွဲခြင်းအားဖြင့် လျော့ချနိုင်မည်ဖြစ်ပါသည်။ ၎င်းအပြင်ဝန်ထမ်းများကို အနီးဆုံးဘူတာမှ လုပ်ငန်းခွင်သို့ သွားနိုင်ရန် ဖယ်ရီစီစဉ်ပေးမည်။

အဓိက ရေသုံးစွဲသည့် အရင်းမြစ်မှာ အဝီစိတွင်းမှဖြစ်ပါသည်။ မြေအောက်ရေသုံးစွဲမှုနှုန်းသည် ပြုပြန်လည်ဖြည့်တင်းမှုနှုန်းထက်ပိုများလျှင် မြေနိမ့်ဆင်းမှုကဲ့သို့သောပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာများ ဖြစ်နိုင်သည်။ ထိုသို့သော ဖြစ်ရပ်မျိုးကို လျော့ချနိုင်ရန် မိုးရေကို ဖမ်းပြီး မြေအောက်ရေပြန်လည်ဖြည့်ဆည်းခြင်းကို ဆောင်ရွက်မည်ဖြစ်သည်။ စီမံကိန်းတွင် ရေသုံးစွဲမှုကို ထိန်းချုပ်နိုင်ရန်အတွက် ရေမီတာများ တပ်ဆင်သွား မည်။

YCP ၏ သိသာထင်ရှား၍ အလားအလာရှိသော လူမှုရေးဆိုင်ရာသက်ရောက်မှုများမှာ လူဦးရေနှင့် လူဦးရေပြောင်းအလဲများ၊ လက်ရှိတည်ရှိနေမှုနှင့် ပြောင်းရွှေ့လာမှု၊ အလုပ်အကိုင်၊ ကျွမ်းကျင်မှုနှင့် စီးပွားရေးလုပ်ငန်းများ၊ မြေအ သုံးအချမှုနှင့် ပိုင်ဆိုင်မှုများ၊ လူထုတန်ဖိုး၊ နေထိုင်မှုပုံစံနှင့် လူထုစည်းလုံးညီညွတ်မှု၊ ဒေသစီးပွားရေး၊ ကျန်းမာရေးနှင့် လူချိုမှုနှင့် ပတ်ဝန်းကျင်တို့ဖြစ်သည်။ ထို့အပြင်CSR အစီအစဉ်တွင် ဘာသာရေးဆောင်ရွက်မှု၊ အလုပ်သမားများနှင့် ၎င်းတို့ မိသားစုများ၏ကျန်းမာရေး၊ ဒေသ အတွင်းဆက်သွယ်ရေးလုပ်ငန်းများဖွံ့ဖြိုးလာမှု၊ အလုပ်သမားများ၏ ကလေးများပညာရေးနှင့် ဒေသခံဖွံ့ဖြိုးရေးတို့ ပါဝင်သည်။

အကြံပြုချက်များ

ရုံးအဆောက်အဦနှင့် ဟိုတယ်စီးပွားရေးလုပ်ငန်းသည် ရေသုံးစွဲခြင်း၊ စွမ်းအင်သုံးစွဲခြင်းကဲ့သို့သော သဘာဝသယံဇာတများကို အများအပြားသုံးစွဲပြီး ရေဆိုးနှင့် စွန့်ပစ်ပစ္စည်းများထွက်ရှိပါသည်။ ရေသုံးစွဲမှုသည် ဧည့်သည်များ၏ တစ်ကိုယ်ရည်အသုံးပြုခြင်း ငါး၊ သ နံ့ရှင်းရေးပြုလုပ်ခြင်း၊ အဝတ်လျှော်ခြင်း၊ ချက်ပြုတ်ခြင်း၊ SPA ရေကူးကန်များတွင်အသုံးပြုခြင်းတို့ကြောင့် မြေအောက်ရေကို ထိန်းသိမ်းရမည်။ ရေကိုရေရှည်သုံးစွဲနိုင်ရန် ရေရှည်အသုံးပြုနိုင်သော ဒီ ဒီဇိုင်းနှင့် ဆောက်လုပ်ခြင်း တို့ကို အသုံးပြုရမည်။ ရေကို မြေအောက်ရေအဖြစ် ရယူပါက ရေရှည်သုံးစွဲနိုင်ရန် စူးစမ်းလေ့လာမှုများ လိုအပ်ပြီး ပတ်ဝန်းကျင်ရှိ အိမ်ထောင်စုများ၏ ရေသုံးစွဲမှုကို မထိခိုက်အောင် စီစဉ်ထားရှိမည်။

စွမ်းအင်အသုံးချရာတွင်လည်း ရုံးလုပ်ငန်းနှင့် ဟိုတယ်လုပ်ငန်းအနေဖြင့် အပူနှင့်လျှပ်စစ်ဓာတ်အား များပြားစွာအသုံးပြုလိမ့်မည်။ အဆောက်အဦအထိုင်၊ ဒီဇိုင်း၊ ဆောက်လုပ်ခြင်းနှင့် လုပ်ငန်းလည်ပတ်မှုပုံစံသည်

စွမ်းအင်သုံးစွဲမှုအပေါ်အများကြီးမူတည်သည်။ အလေ့အထအပြုပြင်မှုများ၊ လေဝင်လေထွက်နှင့် လေအေးပေးစက်သုံးစွဲခြင်းတို့တွင် စွမ်းအင်ကို ဂရုတစိုက်သုံးစွဲခြင်းဖြင့် စွမ်းအင်သုံးစွဲခြင်းကို လျော့ချနိုင်သည်။ ထို့အပြင် မီးထွန်းခြင်းကဲ့သို့သော စွမ်းအင်သုံးစွဲမှုတွင် စွမ်းအင်သုံးစွဲမှု လျော့ချနိုင်ရန်

- အာရုံခံကိရိယာအထိုင်ထား၍ မီးအဖွင့်အပိတ်ကို ထိန်းချုပ်အသုံးပြုခြင်း
- မီးလင်းအားကောင်းသည့် မီးလုံးများကို အသုံးပြုခြင်း
- နေ့အလင်းရောင်ကို အသုံးပြုခြင်း
- ထိရောက်သော စွမ်းအင်အရင်းအမြစ်များကို အသုံးပြုသည့် စွမ်းအင်စီမံခန့်ခွဲမှုနည်းလမ်းကို ရွေးချယ်ခြင်း
- ချက်ပြုတ်ခြင်းတွင် အအေးခံသည့်ကိရိယာကို အသုံးပြုခြင်းဖြင့် စွမ်းအင်သုံးစွဲမှုကို လျော့ချခြင်း စသည့်နည်းလမ်းများကို လုပ်ဆောင်မည်။

မိလ္လာရေဆိုး၊ အခြားရေဆိုးများကို သန့်စင်နိုင်ရန်အတွက် YCP အနေဖြင့် OJI ရေဆိုးသန့်စင်သည့် စနစ်ကို အသုံးပြုသွားမည် ဖြစ်ပါသည်။ ထိုစနစ်တွင် ရေညှိများပေါက်ဖွားခြင်းကဲ့သို့သော ရေကိုထိခိုက်စေမှုများကို သန့်စင်နိုင်သည့် အရည်များပါဝင်ပါသည်။ ရေချိုသန့်စင်ရန်အတွက် YCP သည် နေ့စဉ်အသုံးပြုသည့်ရေအတွက် OJI ရေချိုသန့်စင် သည့်နည်းလမ်းကို အသုံးပြုမည်။

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့်ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်တို့ အကောင်အထည်ဖော်ရန်အတွက် HSE Coordinator နှင့် လက်ထောက်(၂) ယောက်ခန့်ထားမည်ဖြစ်သည်။ ၎င်းတို့၏တာဝန်မှာ ၆ လ တစ်ကြိမ်ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီရင်ခံစာကို ပြင်ဆင်ရန်နှင့် အစီရင်ခံစာကို ပတ်ဝန်းကျင်ထိန်းသိမ်းဦးစီးဌာနသို့တင်ပြပြီး အစီရင်ခံစာတွင် စီမံကိန်းကြောင့် ထိခိုက်ခံစားရသူများမှ တင်ပြချက်များကို ထည့်သွင်းတင်ပြပါမည်။ တည်ဆောက်ရေးကာလနှင့် အကောင်အထည်ဖော်ဆောင်ရွက်ခြင်း (သို့) လုပ်ငန်းလည်ပတ်စဉ်ကာလတွင် ပတ်ဝန်းကျင်ဆိုင်သက်ရောက်မှုများ (သို့) လူမှုရေးဆိုင်ရာသက်ရောက်မှုများဖြစ်ပေါ်ခဲ့လျှင် စီမံကိန်းအဆိုပြုသူသည် ပြုပြင်ပေးသည့် ဆောင်ရွက်မှုအစီအစဉ်များကို လုပ်ဆောင်ပေးရမည်။

ဤ EIA အစီရင်ခံစာသည် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ သက်ရောက်မှုများကို အမျိုးအစားသတ်မှတ်ရန်အတွက် စုံစမ်းစစ်ဆေးမှုများပြုလုပ်ထားပြီးဖြစ်သည်။ လက်ခံနိုင်သော သက်ရောက်မှုများဖြစ်အောင် လမ်းညွှန်ချက်များ၊ စည်းမျဉ်းစည်းကမ်းများနှင့် စက်မှုလုပ်ငန်းဆိုင်ရာ နိုင်ငံတကာမူကျင့်သုံးလျက်ရှိသောအလေ့အကျင့်ကောင်းများ (GIIP) နှင့်အညီ လျော့ပါးစေရေးနည်းလမ်းများကို လုပ်ဆောင်မည်။

EIA မှ တွေ့ရှိချက်များသည် ဆောက်လုပ်ရေးလုပ်ငန်းလုပ်ဆောင်စဉ်ကာလ နှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလတို့တွင် ပတ်ဝန်းကျင်ဆိုင်ထိခိုက်မှု အနည်းငယ်သာရှိကြောင်း ညွှန်ပြ

ထားသည်။ YCP အနေဖြင့်လည်း အနီးပတ်ဝန်းကျင်ကို ရေရှည်ထိခိုက်မှုမျိုးကို မဖြစ်အောင် လျော့ပါးစေ ရေးနည်းလမ်းများအားလုံးကို အကောင်အထည်ဖော်ဆောင်ရွက်မည်ဖြစ်သည်။

လုပ်ငန်းတည်ဆောက်ရေးကာလတွင် ဖြစ်နိုင်ခြေရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာထိခိုက်မှုများကို လျော့ပါးစေရန် စီမံကိန်းအဆိုပြုသူမှ YCP ဒီဇိုင်းတွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်များကို ထည့်သွင်းစား၍ ရေးဆွဲထားပြီး ဖြစ်ပါသည်။ YCP သည်ပတ်ဝန်းကျင်ဆိုင်ရာ ဒီဇိုင်းနှင့် ဆောက်လုပ်ရေးလုပ်ငန်းတွင် အကောင်းဆုံးနည်းလမ်းများကို ပေါင်းစပ်လုပ်ကိုင်နေသော ဂျပန်နိုင်ငံ၏ ဆောက်လုပ်ရေးကုမ္ပဏီဖြစ်သည့် FUJITA ၏ Overseas Construction Work Health and Safety Voluntary Standard ကို ရွေးချယ်ထားပြီးဖြစ်သည်။ လုပ်ငန်းလည်ပတ်စဉ်ကာလတွင် ဂျပန်နိုင်ငံ၏ ဖွံ့ဖြိုးရေးနှင့် စီမံခန့်ခွဲရေးကုမ္ပဏီဖြစ်သော Tokyo Tatemo Asia Pte. Ltd., သည် စီမံကိန်းအပေါ် အကောင်အထည်ဖော်ခြင်းနှင့် ဖွံ့ဖြိုးရေးဆိုင်ရာလုပ်ငန်းများတွင် ကြီးကြပ်ပေးခြင်း၊ စီမံပေးခြင်းနှင့် ထောက်ပံ့မှုများပြုလုပ်ပေးသည်။

နိဂုံးချုပ်ရသော် YCP သည် ရန်ကုန်မြို့တော် စီးပွားရေးလုပ်ငန်းများ ဖွံ့ဖြိုးတိုးတက်မှုတွင်ရှိသော မြို့ပြပြန်လည်ဖွံ့ဖြိုးမှုလုပ်ငန်းတွင် ဖြည့်ဆည်းနိုင်သည်ဟု မျှော်လင့်ထားသည်။ ၎င်းသည် ရန်ကုန်မြို့တော်၏ကြီးထွားဖွံ့ဖြိုးလာမှုနှင့်အတူ လူဦးရေအဆင့်အတန်းပါ မြင့်မားလာမှုကို အကျိုးဖြစ် ထွန်းစေပါသည်။

ဤအစီရင်ခံစာကို အောက်ပါလင့်ခ်တွင် ရယူနိုင်ပါသည်။

http://www.mediafire.com/folder/y4vxyo7uw9ys7/Y_Complex_EIA_Report_Version-02

CHAPTER 1: EXECUTIVE SUMMARY

This Environmental Impact Assessment (EIA) report is prepared for the Y Complex Project (hereinafter mentioned as YCP) to initiate the required EIA process under Myanmar Environmental Conservation Law (2012), Myanmar Environmental Conservation Rules (2014) and Environmental Impact Assessment Guidelines (2015). According to Myanmar Environmental Conservation Law, 2012, it requires that the proponents of every development project in the country, to submit either an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) or an Environmental Management Plan (EMP) to the Ministry of Natural Resources and Environmental Conservation (MONREC), which is in line with Environmental Impact Assessment Procedure (2015). This EIA report is to be submitted to the Environmental Conservation Department (ECD), in accordance with the Environmental Conservation Law, Environmental Conservation Rules and related guidelines, enacted by MONREC.

The proposed investment of YCP is the development of mixed-use property development and management of office and hotel complex to undertake services and property management

Before the initiation of the said project, an application for the demolition of the previous building (Military Museum: an old building) on the Plot No. 11-A/15-16-17, Land Survey Block No. 68/45D, Dagon Township, corner of Shwedagon Pagoda Road and Pan Tra road was made by Yangon Technical and Trading Co. Ltd (YTTC).

The permit for demolishing the existing building was granted on 18-3-2017 by YCDC Engineering Department, based on the following conditions under Yangon Municipal Act, Chapter (11) in accordance with Building Construction Rule section (10/11/12) in line with the conditions stated below:

- ✓ Demolition was to be carried out under the supervision of the licensed engineer and done by healthy male workers.
- ✓ The upper story of the building has to be demolished firstly followed by lower stories.
- ✓ The demolished materials have to dump at their own land and not placed at municipal land nor at the backyard land.
- ✓ In order to prevent the danger of being harmful to the local people nearby, barriers have to be placed where necessary.
- ✓ Barriers have to be placed at their own land without encroaching the municipal land.
- ✓ During the demolition, process care has to be been taken not to damage the buildings

After the Military Museum was demolished, YTTC has leased the land Plot No. 11-A/15-16-17 from the Ministry of Defence on a BOT basis

For conducting EIA projects according to the Environmental Impact Assessment Procedure (2015), it can be undertaken by an organization or any ministry, government department, organization, corporation, board, development committee, local government or authority, company, cooperative , institution , enterprise, firm, partnership, or individual etc., which may cause impact on environmental quality, are required to obtain prior permission, in accordance with section (21) of the Environmental Conservation Law (2012) and article (62) of the Environmental Conservation Rules (2014). Projects having the potential to cause

adverse impacts are required to undertake IEE or EIA or to develop an EMP, which is decided by the Environmental Conservation Department (ECD) to obtain an Environmental Compliance Certificate (ECC) in accordance with the EIA procedure (2015).

The purpose of the EIA process of YCP is to identify key environmental issues specific to the proposed project or the receiving environment (receptor), which are addressed in detail in this EIA report. The determination of the significant issues to be assessed for the potentially significant impacts is determined through primary and secondary data. Regarding the collection of the primary data, baseline environmental data, relating to physical, biological and socio-economic sources were collected by direct observation, secondary data from published reports and literature from the internet.

Field studies on environmental quality were carried out by E Guard Environmental Services team, with vast experiences in conducting Environmental Impact Assessment (EIA) projects in Myanmar. The team had determined the potential impacts during the construction, operation and decommissioning phases of the project with the exclusion of pre-construction (demolition) phase, which involves the dismantling of the existing buildings to be carried out by another party.

Relevant policies, legislation and institutional framework of Myanmar and International guidelines in the context of environmental and socio-economic aspects of the project have been reviewed in the EIA process.

Applicable Laws and Legal Commitments for YCP

1. The Environmental Conservation Law (2012)
2. The Environmental Conservation Rules (2014)
3. Environmental Impact Assessment Procedure (2015)
4. National Environmental Quality (Emission) Guidelines (2015)
5. The Myanmar Investment Law (2016)
6. Myanmar Investment Rule (2017)
7. The Electricity Law (2014)
8. The Public Health Law (1972)
9. Occupational Safety and Health Law (2019)
10. Prevention and Control of Communicable Disease Law (1995)
11. The Control of Smoking and Consumption of Tobacco Product Law (2006)
12. Myanmar Fire Force Law (2015)
13. The Motor Vehicle Law (2015) and Rules (1987)
14. Myanmar Insurance Law (1993)
15. Labor Organization Law (2011)

16. The Law Amending the Settlement of Labor Disputes law (2012)
17. Employment and Skill Development Law (2013)
18. Minimum Wages Law (2013)
19. Payment of Wages Law (2016)
20. Workmen's Compensation Act (1923)
21. The Leaves and Holiday Act (1951)
22. Social Security Law (2012)
23. Petroleum and Petroleum and Product of petroleum law (2016)
24. The Petroleum Rules (1937)
25. Myanmar Port Authority Law (2015)
26. The Protection and Preservation of Cultural Heritage Regions Law (2019)
27. The Protection and Preservation of Antique Objects Law (2015)
28. The Protection and Preservation of Ancient Monument Law (2015)
29. The Law Amending the Engineering Council Law (2019)
30. Yangon City Development Committee Law (2018)

WHO Guidelines

- WHO Guidelines for Drinking Water Quality (2011)
- WHO Protecting Groundwater for Health (2006)

Signatory of International Treaties and Conventions related to Environment by Myanmar

- Kyoto Protocol (1997)
- Convention on Biodiversity (United Nations, 1992)
- Convention on Climate Change (1992)
- Asia Least Cost Greenhouse Gas Abatement Strategy (ALGAS), 1998

Health and Safety Standard

For Health and Safety at work, "Overseas Construction Work Health and Safety Voluntary Standard"(FUJITA, 2009) will be adopted (**see Appendix I**). The purpose of this standard is to secure the safety of construction works and to prevent the accidents by providing a voluntary standard of the International Business as well as for abiding applicable laws and regulations of the safety and health in a country concerned (Myanmar).

The standard covers the following aspects:

- This standard is applied to the building work and the civil work of the International Business Division
- However, if the safety and health regulations, that are applicable in a country concerned, will supersede the Myanmar standard, provided these applicable laws and regulations are more stringent than the Myanmar standard.

The Health and Safety standard covers the following measures;

- General Rules
- General Management of work
- Prevention of dangers due to falling
- Prevention of dangers due to the collapse of natural ground, etc.
- Prevention of dangers due to the collapse of scaffolding and/or form propping, etc.
- Prevention of danger with construction machines, etc.
- Prevention of danger by the electricity

It is also necessary to abide by, “By-laws of Yangon City Development Committee”, particularly concerning with ‘**High-Rise Building Construction**’ for which the following conditions must be met:

- Must be in accordance with YCDC rules and regulations
- Must get agreement from neighborhoods and offices together with recommendations of corresponding Ward Office
- Wastewater flow system of the proposed building
- Not to disturb the telecommunication tower nearby
- To get advice from the Fire Department about the water requirement for the building
- To include C/Map and D/Map
- The prominent and antique buildings surrounding the proposed ones must be illustrated in architectural drawings
- The building design must have good ventilation and lighting
- Pile foundation, earthquake Zone B, wind speed 120mph and by reference of CQHP High-Rise Building design must be calculated (to activate after getting approved in principle permission (A I P)).

Furthermore, guidelines for “**Committee for Quality Control of High Rise Building Construction Projects (CQHP)**” has been taken into consideration for the following aspects:

- Architecture
- Design of Structure
- Basement Excavation
- Temporary Electrical Installation
- Water Supplies and Sanitation, and
- Mechanical Ventilation (see details in Chapter 3)

The proponent for the YCP is a holding company from Singapore for investments into real estate development in Myanmar. The Joint Venture partner of YCP is Yangon Technical and Trading Company Limited (hereinafter mentioned as YTTC). The total investment of the

project will be USD 176,000,000 of which the amount of foreign capital to be brought in is USD 140,800,000 and the amount of local capital to be contributed is USD 35,200,000.

The investment of YCP is the development of a hotel and mixed-use property development and management in Myanmar. In addition, YCP will also undertake services ancillary or incidental to the proposed investment, including property management and retail

The development will serve both tourism and commerce by providing a five-star hotel and first-class working facilities for offices. YCP will contract with an internationally recognized prominent Japanese hotel operator to manage and operate the hotel. The hotel operator will provide international standard services, in synergy with its convenient location to the Shwedagon Pagoda that will attract foreign tourists into Myanmar.

The development will provide 392 hotel rooms, 2,344.96 m² of office space to accommodate the increasing demand. The YCP will also contract with Tokyo Tatemono, a Japanese real estate development, and property management company, who will manage and operate the office space, as well as the common areas of the development.

According to YCDC regulations in the Yangon Municipality Territory for construction of commercial buildings in the "Shwedagon Restricted Area", the specifications for the height of the building must not be more than 62' to 78' in the Zone 1 and <190' in the Zone 2 area. According to YCP design requirements, the project site is located in Zone 2 and the height of the office building and the hotel is at the maximum height of 184'5" (56.2m) above mean sea level, and found to be well within the permissible limit of 190'0" (58m), according to YCDC regulations. Moreover, the distance between the Shwedagon Pagoda and the project site is 4,740' (1.44 km) apart.

Generally, project alternatives are based on location or site alternatives, activity alternatives, process or technology alternatives or "No Action" alternatives. Between the two alternatives alternative for the development of Hotel and Office Complex is selected against "No Action Alternative" has been identified and is discussed in detail. **(see details in Chapter 4)**

The description of the environmental and social conditions is presented, based on the latest available primary information. The environmental data includes climate, air quality, noise and vibration, water quality and consumption, regional geology, waste, fire-fighting facilities, etc. Also, social and cultural resources and occupational status are briefly described. **(see details in Chapter 5)**

In the EIA study, it is necessary to establish baseline information on the environmental and socio-economic setting of an area, which could receive direct and indirect impacts during the project construction and operation phases. The baseline information was collected during the EIA process and serves two purposes;

- Firstly, it is used in conjunction with the information on the project, for the identification of potential impacts of the project and assessment of their significance, and
- Secondly, it serves as the benchmark for evaluating environmental and social management performance of the project during construction and operation phases.

The potential impact on the environment and mitigation measures are identified by their relevant significance in line with the requirements set out by international guidelines for Environmental Impact Assessment (IEMA, 2004).

Potential impacts have been classified into the following project phases: Construction, Operation and Decommissioning phases (Note: Pre-Construction phase for demolishing the existing building has been excluded, as it is not included in the scope of the project).

Potential impacts are categorized into the following:

- Direct Impact
- Indirect Impact, and
- Cumulative Impacts

Criteria for the determination of sensitivity or of importance or value of receptors have been broadly established based on approved guidance, legislation, statutory designation and /or professional judgment. Significant of Impacts are assessed based on a matrix taken into account the sensitivity of the receiving environment and magnitude of change.

Potential significant impacts and potential mitigation measures are also determined for the construction phase, operation phase, and decommissioning phase.

REM-UAE team had conducted the socio-economic survey based on 120 households from Yawmingyi quarter, U Wisara quarter and Bayargyi quarter. The respondents' answers have reflected the attitude on the project, existing conditions, and potential impacts. This interview collected information about YCP, opinion on the project, opinion on mitigation measures, suggestions from meeting participants, their concerns on the project, public's opinion and on the regional development conditions.

The socio-economic profile of Dagon Township was prepared as of socioeconomic study. This socio-economic profile expresses the location of the project, population and demographic information, ethnic groups, economic conditions, transport and communications, education, health condition, and cultural resources. In addition, explained about the study methodology, population information of Yawmingyi quarter, Bayargyi quarter and U Wisara quarter, gender status, family size, property, income source and possession of household.

Monitoring of the environmental and social impacts in the receiving environment is important in evaluating the effectiveness of the mitigation plan, so as to comply with the existing regulatory measures. During the construction and operation phase, monitoring will be undertaken to ensure the proposed mitigation measures for negative impacts as well as enhancement measures for positive impacts.

The monitoring parameters are selected based on impacts identified in the construction, operation and decommissioning phases of the YCP. The parameters determined will reflect the effectiveness of the mitigation measures and general environmental performance of the project.

Environmental Impacts

The potential significant negative environmental impacts on YCP, during the Construction Phase, are as follows:

- Excavation for basement
- Bored Piling for the foundation
- Ambient air quality
- Noise and Vibration
- Traffic Load
- Material storage
- Waste disposal, and
- Sewage Disposal

The positive impacts during the Construction Phase are:

- Employment opportunities, and
- Improved landscape and scenery

During Operation Phase, most of the negative impacts are few compared to construction impacts. The negative impacts on the environment are concerned with the following:

- Water consumption
- Electricity consumption
- Sewage disposal
- Wastewater disposal
- Waste Management
- Traffic load, and
- Land subsidence

Most of the negative impacts during the construction can be mitigated, by following the design requirements and also by following the 'Overseas Construction Work Health and Safety Voluntary Standard (FUJITA, 2009). A significant positive impact during the construction phase is the job opportunities of 510 persons for a period of 28 months.

During the operation stage, most of the negative impacts can be reduced by following the mitigation measures already mentioned in the specific sections. The impacts are mostly concerned with resource consumption, sewage disposal, waste disposal, traffic load, and land subsidence. The positive impact during the operation stage is the employment opportunities for the majority for the locals (652 persons) as well as some foreign experts (20 persons) which is long-term in nature.

Most of the negative impacts during the operation phase can be mitigated by the sustainable use of resources such as water consumption and energy consumption. The water consumption is properly calculated, on per capita basis as well as consumption of diesel in case of power interruption. Most of the electricity will be obtained from the national grid and that will reduce the diesel consumption to some extent. The estimated electricity consumption from the national grid is 57,600 kWh/day. If the electricity is obtained from the national grid the

estimated fuel consumption will be 310,000 liters (28 months): if not, the total fuel consumption will be 1053,000 liters (28 months).

Health Impacts

In the Health Impact Assessment (HIA) a study was made on the legal and institutional framework of the health sector. A scoping study, study methodologies, baseline health data collection methods, source of information, health conditions around the project area, health impact assessment and mitigation measures and analysis of potential impacts were described.

GHG Emissions

The potential climate change impacts of YCP may be due to fuel consumption for supplementing electricity from the national grid, which will be 29,523 gallons of diesel for standby generators and 100,285 gallons of diesel for standalone generators.

Noise and Vibration

For the construction of the foundation of the buildings, the bored pile method will be applied which has low noise and vibration compared to driven pile method. Moreover, in order not to disturb the nearby communities, the operation will be carried out during the day time. Local residents near the construction site will be given prior notice for intended noisy operations to be carried out during the construction period. If the noise and vibration exceed the permissible limit, Noise and Vibration Barriers have to be erected to bring down the noise and vibration levels below the permissible limit.

Noise and Vibration studies were made at the receptors (3 Cultural Heritage Buildings) within 200 m radial distance from YCP (source) from 28th May 2019 to 31st May 2019, and found out that the results were well within the permissible limit of the respective standards for noise and vibration.

Traffic Study

Khaing Engineering Group (KEG) has evaluated the traffic operations for the study area at intersections under existing and future conditions consistent with the Transport Impact Assessment Guidelines issued by HCM 2010. The future planning horizon examines traffic operations under existing condition (2019 traffic count year), as well as 5-year planning after opening the project (construction period two years inclusive) 2026 No-build conditions, 2026 Build condition (with the proposed project), with mitigation measures.

The YCP is anticipated to generate approximately 5,549 new vehicle trips (1,942 enterings and 1,942 exiting) during the average weekday, with 430 new vehicle trips (224 entering and 76 exiting) during the weekday morning peak hour and 490 new vehicle trips (113 entering and 230 exiting) during the weekday evening peak hour. Approximately 3,726 new vehicle

trips (1,304 enterings and 1,304 exiting) are anticipated during the average Saturday, with 399 new vehicle trips (155 entering and 125 exiting) during the Saturday midday peak hour.

As an ingress and egress for a proposed development project, Shwedagon Pagoda Road, Pan Tra Street, and U Wisara Road will be accessed/egress from/to the site. A full access/full-egress, 21 feet wide new site driveway which is connecting between Shwedagon Pagoda Road and U Wisara Road will be provided on the southerly side of YCP. In addition, a full-access/full-egress, 28 feet wide another one new site driveway which is connecting between Pan Tra Street and new site driveway will also be provided on the westerly side of YCP. This site driveway can also be used as ingress for public and egress for site generated trips. Therefore, one ingress/egress, one ingress, and two egresses will be accessed/egress along Shwedagon Pagoda Road, two egresses along Pan Tra Street and a full ingress/egress along U Wisara Road from/to the site within the study area corridor and intersections.

Water Consumption

YCP is located in YCDC Zone 2 area and has applied permission for the use of surface water from the current water supply system of YCDC. The water supply of YCDC is controlled by YCDC Water and Sanitation Engineering Department and provides at least 90 million gallons per day of potable water for its 5.14 million citizens. The daily water consumption of YCP is estimated to be approximately 8,800 gal/day during the construction phase and 112,036 gals/day during the operation phase, which covers such facilities as offices, hotel rooms, swimming pool, spa, and laundry, etc. The earliest water supply from YCDC is expected to be in 2025 from Kokkowga Project. During the Stakeholders' meeting in 8-4-2018 and Public Consultation meeting on 31-8-2018, The attendees from Dagon Township and nearby areas were quite concerned about the water shortage problems due to the usage of YCP tube wells in future. YCP got permission to drill 5 tube wells from the Urban and Housing Development Department and has been using 1 tube well during the construction phase. YCP had already applied portable water supply from YCDC and could be supplied from the Kokogwa Water Supply Project in 2025 when it is functional through G to G approach with Japan and Myanmar Government. YCP mentioned that as they are sharing underground water sources with the neighbors, if there are any problems concerning the availability of water, YCP will take responsibility for any kind of incidents which will happen because of the Project Activities of YCP

The resident's tube wells are normally dug up to the depth of 200' while YCP drilled to a depth of over 300' from the ground level. If something happens during and after the construction by YCP they will solve out the problem together with those that are affected. YCP inquired YCDC for the Kokkogwa Project and observed that it is intended to supply water for the Eastern, Western and Southern areas of Yangon from Lagunbyin and Kokkowga water supply projects by 2025. The Lagunbyin water project will provide 40 million gallons and the Kokkowga project will supply 60 million gallons per day.

During the construction phase, water consumption is not a problem as the water supply from one tube well will be sufficient for construction use. Nevertheless, during the operation phase

water will be used from the tube wells and once YCP receives potable water from YCDC, they will stop using water from the tube wells. When using tube wells during the construction phase they will use 1 well for 10 hrs at a time for not more than 2 wells a day.

Flooding

Also, some of the residents are quite concerned about flooding due to poor drainage facilities during the rainy season and also from the discharge water from YCP once it is functional. YCP explained that they will use the OJI Wastewater Treatment System that will discharge treated water having BOD and COD levels within the permissible limit.

A new drain will be constructed by YC from Pantra Road to Uwisara Road as per YCDC instructions. The total proposed drain length is 374.81 m. The treated wastewater from the treatment plant will be discharged into the new drain. It is assumed that 70% of the stormwater from the upstream of the project area flows into Uwisara Road side drain and existing underground drain and 30% of stormwater runoffs into Shwedagon Pagoda Road side drain, thereby preventing the YCP and its environ from flooding during the rainy season.

Electricity

Concerning electricity one of the residents wanted to clarify the rumor about one of the boiler and transformer from YCP were broken. Actually, that is not true and YCP did not use boilers during the construction phase. They would also like to know who will take the responsibility after the construction phase in order to manage the electricity shortage. YCP replied that they have applied permanent electricity from YESB and for the time being they have to use generators for electricity. Once YESB gives green light about the electricity, YCP will follow rules and regulations of YESB and work accordingly.

Waste Disposal

Waste from YCP is in the form of Non-Hazardous (NHZ) and Hazardous Wastes. (HZ). NHZ will be properly collected and temporarily stored at dedicated locations at YCP site and disposed of on a daily basis after contacting YCDC for final disposal. Hazardous waste will be sent to YCDC for the final disposal. YCDC is constructing Waste-to-Energy facilities in Shwe Pyi Thar, which was completed in 2017 and as the plant is in operation, NHZ could be sent to that plant for the final disposal. **(see details in Chapter 6)**

Cumulative Impact Assessment

Cumulative Impact Assessment of YCP is also assessed which covers successive and combined impacts of the one or more projects upon the society, economy and the environment. Such impacts may occur due to the accumulation and interaction of other developments, being developed within the same area or over a similar time frame of operation to the project being assessed. Development activities such as YCP may impact upon environmental values as a result of overlap locations, scheduling overlap or utilization

of the same infrastructure, services, and resources. The majority of the cumulative impacts may be associated with YCP and other/proposed projects in the vicinity of the project. Impacts related to air quality, particularly dust generation, groundwater, surface water, noise/vibration, and traffic condition are assessed, within a 200m radial distance from the project site. The nearest another project adjacent to YCP is the Yoma Central Project at the junction of Sule Pagoda Road and Bogyoke Road which is about 500 m apart from YCP.

The cumulative assessment defined the spatial and temporal boundary for assessment and review impact significance based on “Cumulative Impact Assessment Matrix“ and “Cumulative Impact Significance Criteria” and considering the impacts from other projects in the vicinity of YCP.

The following provides a summary of the findings.

Cumulative Impacts having “Low Significance”, which includes,

- Air Quality
- GHG Emissions
- Noise/ Vibration, and
- Waste

Cumulative Impacts having a “Medium Significance” includes:

- Surface Water, and
- Ground Water
- Traffic/Transport

Implementation of the proposed YCP, in line with the mitigation measures described, indicated that the Cumulative Impacts of YCP could be negligible.(see details in Chapter 7)

Environmental Management Plan

For the implementation of the proposed mitigation measures described in the environmental impact analysis, the Environmental Management Plan of YCP is organized with the following sections:

1. Environmental Management Plan
2. Environmental Monitoring Plan
3. Occupational Health and Safety Plan
4. Water Management Plan
5. Emergency Response Plan
6. Earthquake Management Plan
7. Fire Management Plan
8. Oil Spill Contingency Plan
9. Green Space/Landscape Plan

- 10.. Energy Saving Plan.
11. Traffic Management Plan
- 12.. Socio-economic Management Plan
13. Corporate Social Responsibility Plan

The objectives of the Environmental Management Plan are:

1. As a reference and commitment for the proponent to implement the EMP for three phases of the project lifecycle, construction, operation and decommissioning phases of the project
2. It will fulfill the needs of the Environmental Conservation Department of the Ministry of Natural Resources and Environmental Conservation (MONREC)
3. Serve as a guiding document for the monitoring of environmental and social activities of the project
4. Provide a detailed framework for mitigating negative impacts on the environment and management actions to be adopted for the proper implementation of the project

Environmental Management and Monitoring Plan

Environmental Management and Monitoring Plan (EMMP) has been developed for managing the YCP and monitor implementation of the project impacts during construction, operation and decommissioning phases of the project.

An outline for the monitoring program has also been included in the EIA report, which will be submitted to the Environmental Conservation Department for approval. The monitoring report includes the following:

- Outlining the need for a monitoring program
- Activities to be monitored and parameters are chosen effectively for supporting the project
- The methodology to be employed and the frequency of monitoring
- Frequency of reporting

The monitoring report also includes:

- Raw data collected
- Discussion of the results highlighting any parameters that exceed the predetermined standards

Monitoring Parameters

The monitoring parameters are selected, based on impacts identified in the construction, operation and decommissioning phases of the YCP. The parameters determined will reflect the effectiveness of the mitigation measures and general environmental performance of the project. Monitoring of the parameters has been determined, at the various stages of the project as follows:

Construction Phase: To monitor pollution levels that exist during the construction activities

Operation Phase: To determine the impacts that might arise from the operation of hotel and office complex activities

Decommissioning Phase: Decommissioning is assumed to have the same impact as the construction phase and may entail parameters similar to those at the construction phase.

Responsibilities of the EMP

In order to effectively implement the EMP, it will be necessary to define the responsibility of various stakeholders. The environmental management activities should comply with the existing environmental policy, laws, rules, procedures and emission standards of the Government of the Republic of the Union of Myanmar. The following entities are responsible for the implementation of the EMP:

YCP Company Ltd,

According to the Environmental Impact Assessment Procedure (2015), clause 103, it is stated that:

“The Project Proponent shall fully implement the EMP, all Project commitments, and conditions, and is liable to ensure that all contractors and sub-contractors of the Project comply fully with all applicable Laws, Rules, this procedure, the EMP, Project commitments, and conditions when providing services to the Project”.

The proponent has to monitor the project’s compliance with provisions of the environmental and social conditions set out in the EMP and fully comply with existing laws, rules and regulations.

Environmental Conservation Department

EIA review consists of two stages:

Administrative Review: To assess how well the proponent has complied with the EIA procedure for the report.

Technical Review: To assess whether the technical information is appropriate, sufficient and adequate for a decision on project approval.

The Environmental Management Responsibilities of ECD is to:

- Conduct periodic site visits for projects with adverse environmental impacts
- Conduct supervision missions for detailed review for projects with significant adverse environmental impacts
- Review the periodic environmental monitoring reports submitted to ensure that adverse impacts are mitigated as planned and as agreed.

The EIA report review committee will lead by EIA Review Coordinator from ECD and the review committee members will comprise of technical and professional experts

from various ministries/departments and are responsible for evaluating the information in the EIA report on the following:

- Project description, activities, and alternatives
- Environmental setting of the project
- Impacts of the project
- The significance of the impacts
- Cumulative Impacts
- The significance of residual impacts
- EMP is reasonable to manage and monitor residual effects
- Issues raised by the public and proposed solutions to those issues are identified, and
- Use of accepted scientific principles and practices during data gathering and interpreting

Third-Party Environmental Consultant Firm

The Third-Party Consultant Firm is to ensure that the EMP developed up-to-date has been followed up properly by YCP. Periodic Audits shall be performed in order to find out whether the expected outcomes are achieved as envisaged in the plan by comparing with the operating standards. If not, corrective actions have to be followed.

Thus, it is necessary to conduct independent third-party Environmental Audit at various stages of the project to find out whether the mitigation measures prescribed in the management plan are attained and if not what kind of alternatives to be suggested.

The scope of the Environmental Audit should cover the following topics:

- Verify compliance with the stated mitigation/performance targets
- Comply with the relevant environmental legislation
- Ensure that workers are exposed to minimize risks for Occupational Safety and Health
- Advise improvements concerning with Health, Safety and Environment matters
- Liaise closely with all stakeholders concerning the effectiveness of Grievance Redress Mechanisms, particularly during the construction stage
- The results of the Audits are to be disclosed to the public. (see details in Chapter 8)

Budget Requirement for the Implementation of Environmental Management Plan

Sr.	Project Phase	Annual Expenditure (US\$)	Remarks
1.	Construction Phase	41,060	28 months
2.	Operation Phase	32,500	30 years
3.	Demolition Phase	5,000	3 months

Public Consultation and Disclosure

According to the EIA procedure (Article, 63), the Project Proponent has to perform a Stakeholders' Meeting during the preparation of the Scoping Report, where information about YCP has to be made available to the stakeholders, so as to clearly understand the project. Likewise, a Public Consultation has to be made, during the final stage of the draft EIA report and the comments have to be included in the final EIA report. According to article (65) of the EIA procedure, the Project Proponent, after submission of the EIA report to ECD, has to disclose the EIA report to civil society, PAPs, local communities and other concerned stakeholders, not later than 15 days by means of a national media (i.e., newspapers, the website(s), at public meeting places (i.e., libraries, community halls) and at the offices of the Project Proponent.

Stakeholder engagement is described in detail in the public involvement and project disclosure section. Stakeholder engagements are focused to be meaningful consultations. So, Consultant Company had arranged invitations, newspaper advertisement, follow up and confirm properly. Stakeholders were defined by systematic stakeholder mapping and public opinions were collected through public consultation meetings, questionnaire interviews, via email and telephone. Most of the respondents are the government employees and the education status is also high. There are very useful opinions for the report and important feedbacks from two stakeholder meetings.

The first stakeholder meeting was held on 8th April 2018 and the second public consultation meeting was organized on 31st August 2018. During the first and second meetings, REM-UAE Co., Ltd had explained about project descriptions, potential environmental and social impacts due to YCP and discussed on public opinions, responses on opinions, social management plan on opinions and important suggestions to be a better implementation of the project. (see details in Chapter 9)

Conclusion and Recommendations

Office and hotel business consumes a lot of natural resources such as water consumption, energy consumption and production of wastewater and waste which needs proper management. Water consumption is related to personal use by guests and facility requirements for housekeeping, laundry, cooking, swimming pool, spa facilities, and grounds maintenance. Water efficiency can be promoted by selecting a suitable location, design, and construction. When water is drawn from natural resources such as tube wells, a water sustainability study (based on current and future water withdrawal without impairing the needs from the community) should be conducted to demonstrate the amount of water needed is sustainable and does not affect the local communities.

For energy consumption, the hotel/office consumes large amounts of energy in the form of heat and power. Building location, design, construction, and operation patterns all heavily influence energy use. Energy consumption can be reduced by the cautious use of energy associated with heating, ventilation and air conditioning. In addition to that, the reduction of energy consumption associated with lightning, such as:

- Use of occupancy sensors
- Use of high-efficiency light bulbs
- Adoption of energy management for the effective use of energy sources
- Reduction of energy consumption associated with cooking and refrigeration equipment, etc.

For sewage/wastewater treatment, YCP will use OJI Wastewater Treatment facilities for proper disposal of cleaning agents, including liquid bleach and detergents that can cause eutrophication of watercourses, if not properly controlled and for effluents from the kitchen, which may contain oil and grease and final disposal will be made after contacting YCDC. Wastewater discharge will be 0.0158 m³/sec according to estimates made by YCP.

Wastes generated by YCP include inorganic and organic wastes and to some extent hazardous wastes like batteries, solvents, paints and some packaging wastes. For the proper disposal of waste, a Waste Management Plan has been developed during the EIA study for proper collection and storage on site and proper disposal of the waste by contacting YCDC for effective disposal of non-hazardous waste. For hazardous waste disposal, YCP has to contact YCDC.

The main source of freshwater is groundwater from tube wells. It is generally assumed that the rate of groundwater extraction is higher than the recharge rate, which may cause many environmental problems such as land subsidence resulting from the reduction of yield in the aquifer system. Water meters would be assembled during the supply for control of the water consumption at the project site.

The social impacts and significance of YCP are population and demographic change, access and movement, employment, skill and business, land use and property, community value, lifestyle and social cohesion, local economy, community health, and safety and environment. Moreover, Corporate Social Responsibility (CSR) plan consists of religious affairs, the health of employees and their families, communication development in the region, education matter for the children of employees and regional development.

Recommendations

Office and Hotel business consumes a lot of natural resources such as water consumption, energy consumption, and wastewater generation and waste. Water consumption is related to personal use by guests and facility requirements for housekeeping, laundry, cooking, swimming pool spa facilities and grounds maintenance. Water efficiency can be promoted by sustainable siting, design, and construction. When water is drawn from natural resources such as tube wells, a water sustainability study (based on current and future water withdrawal without impairing the needs from the community) has to be conducted to demonstrate the amount of water needed is sustainable and does not affect the local communities.

For energy consumption, the Hotel/Office consumes large amounts of energy in the form of heat and power. Building siting, design, construction, and operation patterns all heavily influence energy use. Energy consumption can be reduced by the cautious use of energy

associated with heating, ventilation and air conditioning. In addition to that, the reduction of energy consumption associated with lightning, such as:

- Use of occupancy sensors
- Use of high-efficiency light bulbs
- Daylight controls
- Adoption of energy management for the effective use of energy sources
- Reduction of energy consumption associated with cooking refrigeration equipment, etc.

For sewage/wastewater treatment, YCP will use OJI Wastewater Treatment facilities for proper disposal of cleaning agents, including liquid bleach and detergents that can cause eutrophication of watercourses, if not properly controlled and also for effluents from the kitchen which may contain oils and grease. For freshwater treatment, YCP will use OJI freshwater treatment facilities to get clean water for daily use.

For the relief of traffic congestion along Shwedagon Pagoda Road, carpooling, ferry and other transportation system such as Airport Shuttle Bus and ferry service to train station have to be considered to reduce private car usage. With the implementation of the proposed improvements, the anticipated traffic generated by the proposed development could be efficiently accommodated.

The Environmental Management Plan and the Environmental Monitoring Plan have to be implemented by the proponent by appointing HSE Coordinator and two assistants. They are responsible to prepare the periodic (semi-annual) Environmental Monitoring Reports and submitted to ECD and disclosed such reports to Project Affected Persons (PAPs) upon request. If unanticipated environmental and or social risks and impacts arise during construction and implementation or operation of, the proponent has to propose the corrective action plan.

This EIA report has identified environmental and social issues, which need to be investigated. In order to keep the impacts in an acceptable manner, mitigation measures have to be carried out in line with applicable guidelines, regulations and Good International Industry Practice (GIIP).

The findings of the EIA indicated that while there are some environmental impacts during construction an operation phases, YCP is not likely to have significant long-term residual impacts to the surrounding environment, provided that all mitigation measures are properly implemented.

During the construction phase, the proponent has to be well aware of the potential impacts on the environment and in order to overcome this, the proponent will design YCP, taken into consideration the environmental management concerns. Also, YCP will adopt Overseas Construction Work Health and Safety Voluntary Standard of FUJITA which is a renowned construction company in Japan, integrating best practices in environmental design and construction. During the operation phase, Tokyo Tatemo Asia Pte. Ltd., a Japanese real estate development and property management company, will supervise, manage and facilitate the overall implementation and completion of the development.

In conclusion, YCP is expected to complement the process of urban renewal in the Yangon City business development. It will contribute towards the growth and development of Yangon City as well as raising of the living standard within the city. **(see details in Chapter 10)**

This report is available from the following link:

http://www.mediafire.com/folder/y4vxyo7uw9ys7/Y_Complex_EIA_Report_Version-02

CHAPTER 2: INTRODUCTION

2.1 The Project Proponent

This Environmental Impact Assessment (EIA) report is presented for the proposed Y Complex Project (hereinafter referred to as YCP to initiate the required EIA processes under Myanmar's Environmental Impact Assessment Guidelines, 2015. The scope of information to be provided in the report is mentioned here, in order to submit to the Environmental Conservation Department (ECD) in line with the Environmental Law, Environmental Rules and related guidelines enacted by the Ministry of Natural Resources and Environmental Conservation (MONREC).

2.2 Project Background

The proponent of the proposed project is YCP, a holding company from Singapore for investments into real estate development in Myanmar.

Contact person with related information

Project Owner – Yoshio Saeki (Managing Director)

Company: Y-Complex Company Limited

Ph.No. – 09420188843

Address – No. 37, La Pyi Wun Plaza, Alan Pya Pagoda Road, No. 612, (6th Floor), Dagon Township, Yangon, Myanmar

Email – khaing.fujita@gmail.com

Contact Person – Khaing Thu Zar Nyo

Ph.No. – 09420188843

Address – No. 37, La Pyi Wun Plaza, Alan Pya Pagoda Road, No. 612, (6th Floor), Dagon Township, Yangon, Myanmar

Email – Khaing.fujita@gmail.com

The project will serve both tourism and commerce by providing a five-star hotel and first class working facilities for offices. YCP will contract with an internationally recognized prominent Japanese hotel operator to manage and operate the hotel. The hotel operator will provide international standard service, which will in synergy with its convenient location to the Shwedagon Pagoda, will attract foreign tourists into Myanmar. In addition, as foreign investors continue to invest in Myanmar, the demand for international standard office space will continue to rise. The project will provide 252 hotel guest rooms, 140 units of long-term hotel suites, office space to accommodate the increasing demand in the Yangon Mega City. YCP will also contract with Tokyo Tatemono, Japanese real estate development and property management company, who will manage and operate the office space, as well as the common areas of the Development

The purpose of YCP is to identify key issues specific to the project or the receiving environment (receptor), which are addressed in detail in the EIA report. The determination

of the significant issues to be assessed for potentially significant impacts will be determined through the primary and secondary data. Regarding the collection of primary data, baseline environmental data relating to physical, biological and socio-economic sources are collected by direct observation, secondary data from published reports and literature from the internet. Data from State/Regional Government bodies, relevant ministries, and research institutions will be used as secondary data (reference material) in the preparation of this EIA report.

2.3 Environmental and Social Experts

2.3.1 E Guard Environmental Services Company Limited

E Guard is responsible for overall EIA studies based on environmental quality assessment and data analysis. E Guard team has vast experiences in conducting Environmental Impact Assessment (EIA) projects in Myanmar. The team had conducted preliminary scoping process by determining the potential impacts during the Construction, Operation, and Decommissioning Phases of the project, with the 'exclusion of Pre-Construction Phase (demolition phase), which involves dismantling of the existing buildings to be carried out by another party in due course. The significance and magnitude of impacts during the Construction Phase, Operation Phase, and Decommissioning Phase were thoroughly evaluated. For those impacts requiring mitigation, suitable measures have been proposed, in the EIA report.

Table 2. 1 Environmental Impact Assessment Team (E Guard)

No	Name	Qualifications	Work Experience	Responsibility	Address
1.	U Saw Win (ECD Reg. No. 10068) (Principal Consultant)	B.Sc. (Forestry), Grad. Dip. Sc. (Australian National University)	<ul style="list-style-type: none"> • The East-West Economic Corridor Highway Development Project • Y Complex Project • Dala Project • ESIA for Exploitation, Production, and Marketing of Crushed Stones • IEE Seismic Studies for Block AD-5 and Block A-7 • Preparatory Survey on Thilawa SEZ Development Project • EMP for Moeyungyi Wildlife Sanctuary • ESIA on Production of Cane Sugar 	Overall responsibility for EIA Project Report Preparation	E-mail: sawwin@eguardservices.com Ph. no: 09797005162
2.	Daw Yadanar Swam Htet Kyaw (Associate Consultant)	B.Agr.Sc (Yezin), M.Sc. (NRM) AIT	<ul style="list-style-type: none"> • The East-West Economic Corridor Highway Development Project • EMP of 1.8MW Gross Rice Husk BTG Power Plant • Y Complex Project • Villager's Assessment of the Impacts of Eucalyptus Plantations in the Mandalay Region of 	Natural Resources Management (Impact Identification and Analysis)	E-mail: yadanar@eguardservices.com Ph. no: 09797005179

No	Name	Qualifications	Work Experience	Responsibility	Address
			Myanmar <ul style="list-style-type: none"> Assessment on resource allocation of rice-based farmers in Zayyarthiri Township, Nay Pyi Taw 		
3.	U Pyae Phyo Maung (Project Associate)	Third Year (Geography) (UDE)	<ul style="list-style-type: none"> Y Complex Project IEE for Small Scale Gold Mining Operation Project EMP for Small Scale Gold Mining Operation Project 	Environmental Quality Assessment	E-mail: pyaephyomaung@eguardservices.com Ph. no: 09799527752
4.	U Pyae Phyo Kyaw (Project Assistant)	B.Sc. (Forestry)	<ul style="list-style-type: none"> Y Complex Project The East-West Economic Corridor Highway Development Project Dala Project 	Field Surveyor for Traffic Study	E-mail: pyaephyokyaw@eguardservices.com Ph. no: 097996175541
5.	U Kaung Htet Aung (Project Assistant)	B.Sc. (Forestry)	<ul style="list-style-type: none"> The East-West Economic Corridor Highway Development Project EMP of Than Htike Shwe Sin Gold Mining Project ESIA for Exploitation, Production and Marketing of Crushed Stones Y Complex Project 	Assist for database requirements (Secondary Data)	E-mail: kaunghtetaung@eguardservices.com Ph. no: 09797005210

2.3.2 REM-UAE Laboratory and Consultant Company Limited

REM-UAE is responsible for social and health impact assessment. It was carried out by an expert team, conducting social and health survey, based on 120 samples of respondents who were selected from 3 wards, namely, Yaumingyi, Phyargyi and U Wizara within the project area. To understand their existing situations, attitudes, and impacts from the project development, the interviews were undertaken with the help of the structured questionnaires, which cover the contents of basic information of interviewees. In addition to that, their socio-economic conditions, education and current environmental issues, facilities and social problems, perceptions of the project, attitudes of the project, regarding impacts due to the project development were also determined.

Table 2. 2 Social Impact Assessment Team (REM-UAE)

No	Name	Qualifications	Work Experience	Responsibility	Address
1.	Daw Khin Ohnmar Htwe (ECD Reg No. 10032)	BA(Geography), M.A.(Geography), Diploma in English	<ul style="list-style-type: none"> • ESIA of Dawei Deep Sea Port and Industrial development Project • SIA of Shweli River II Hydropower Project • Social Assessment for Thilawa Special Economic Zone (Nippon Koie, JICA) • IEE for 500KV Power Transmission Line and Substation Facilities • Project Preparatory TA for the Greater Mekong Subregion (GMS), East-West Economic Corridor (EWEC), Eindu to Kawkareik Road 	Social Impact	E-mail: khinohnmarhtwe@gmail.com Ph. no: 09 402505886
2.	U Win Naing Tun	M.A. (Business Law), MPA, M.Res (Archaeology), PGDip. Arch, B.Sc. (Geology), D.B.L, Dip. GIS, D.I.R	<ul style="list-style-type: none"> • ESIA of Dawei Deep Sea Port and Industrial development Project • SIA of Shweli River II Hydropower Project • Social Assessment for Thilawa Special Economic Zone • IEE for 500KV Power Transmission Line and Substation Facilities • Project Preparatory TA for the Greater Mekong Subregion (GMS) East-West Economic Corridor (EWEC) Eindu to Kawkareik Road 	Social Impact	E-mail: kokowinnaingtun@gmail.com Ph. no: 09 5196758
3.	U Hein Htet Soe	MBBS	<ul style="list-style-type: none"> • Chiphwe Nge Hydropower Project 	Health Impact	Ph. no: 09 791718325
4.	U Ye Naing	MBBS	<ul style="list-style-type: none"> • NawChangKha Hydropower Project • Tachileik Coal-Fired Thermal Power Plant • YeYwar(2) Hydropower Project 	Health Impact	Ph. no: 09780225846
5.	Daw Phyu Phyu Shein	B.Sc Physics, DBS, Dip R.S	<ul style="list-style-type: none"> • Dawei Industrial Estate Project • Chiphwe Nge Hydropower Project 	Social Impact	E-mail: snowshein@enviromyanmar

No	Name	Qualifications	Work Experience	Responsibility	Address
			<ul style="list-style-type: none"> Gas Pipe line from Dagon Myo Thit (Seikkan) , Thanlyin and Kyauktan to Thilawa 230kV Bahmaw-Naba-Shwebo-OhntawTransmission Line Project 500kV transmission line and TOTAL LNG to power plant Project 		r.net Ph. no: 09 250149930
6.	Daw Nan Thazin Oo	B.A Geography	<ul style="list-style-type: none"> Dawei Industrial Estate Project Chiphwe Nge Hydropower Project Gas Pipeline from Dagon Myo Thit (Seikkan), Thanlyin and Kyauktan to Thilawa 230kV Bahmaw-Naba-Shwebo-OhntawTransmission Line Project 500kV transmission line and TOTAL LNG to power plant Project 	Social Impact	E-mail: thazinoo.nan@gmail.com Ph. no: 09 425302677
6.	U Aung Thu Phyoe	B.Sc Physics	<ul style="list-style-type: none"> Hantharwaddy International Airport Project Gas Pipeline from Dagon Myo Thit (Seikkan), Thanlyin and Kyauktan to Thilawa 230kV Bahmaw-Naba-Shwebo-OhntawTransmission Line Project Mong Ton Hydropower Project Disaster Risk Assessment Project Woodside, Offshore Oil and Gas Exploration 	Social Impact	E-mail: saweijin@gmail.com Ph. no: 09 253522549

The objectives of the EIA study according to EIA Procedure (2015) are as follows:

- To determine the potential impacts between the proposed project and key environmental receptors
- To identify the baseline environmental data in order to monitor the changes that have taken place during the project life cycle
- To identify and evaluate the potential environmental impacts
- To recommend mitigation measures in order to reduce or remove potential adverse impacts
- To prepare an Environmental Management Plan (EMP) for the proper implementation of the project

The EIA process is explained in the diagram below. **(Figure 2.1)**

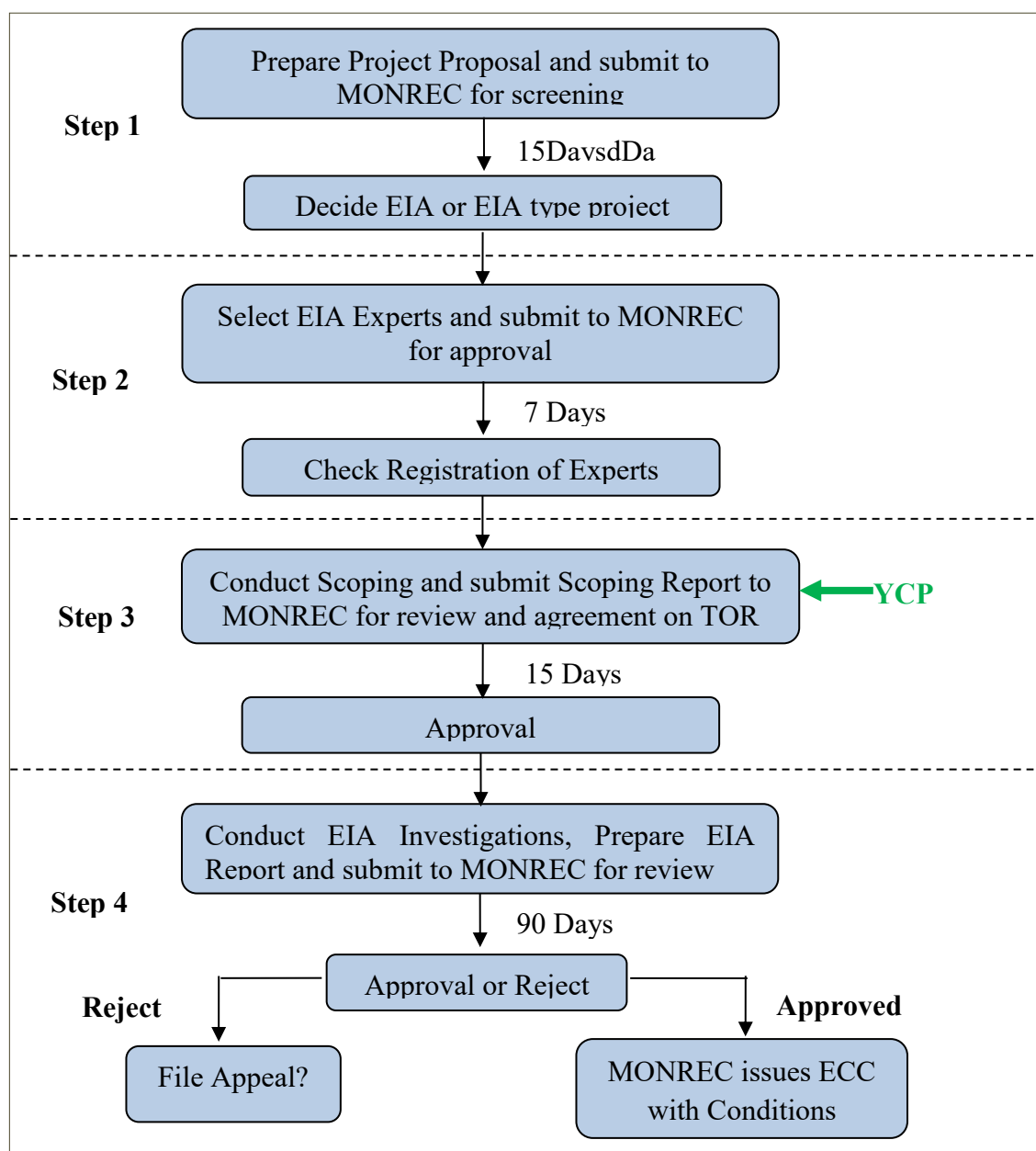


Figure 2. 1 Environmental Impact Assessment Process

CHAPTER 3: POLICY LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Introduction

The section reviews the relevant policies, legislation, and institutional framework of Myanmar and International guidelines relevant in the context of an environmental and socio-economic aspect of YCP. The activities carried out under the project are subject to these legal requirements and the proponent has to comply with the laws, rules, regulations and international guidelines hereinafter mentioned.

The Ministry of Environmental Conservation and Forestry (MOECF) was reformed as the Ministry of Natural Resources and Environmental Conservation (MONREC) in April 2016 to be the focal point and coordinating agency for environmental management.

The Environmental Conservation Department (ECD) was established in October 2012 based on Environmental Conservation Law (2012). ECD is responsible for managing the EIA process in Myanmar.

3.2 Relevant Policies, National Laws and Regulations

The national policies, national laws, and regulations for environmental protection, applicable to the proposed project are compiled and presented below:

National Myanmar Environmental Policy (2019)

Purpose: The National Myanmar Environmental Policy (2019) builds on the previous policy (1994) expressing the core value as:

“The wealth of a nation is its people, its cultural heritage, its environment, and its natural resources. It is the responsibility of the state and every citizen to preserve its natural resources in the interest of present and future generations. Environmental protection should be the primary objective of seeking development.”

National Land Use Policy (2016)

Purpose: To promote sustainable land use with land tenure security and protect against customary land tenure rights. Also, to promote people-centered development so as to have economic development of the country.

- a) To promote sustainable land use management and protection of cultural heritage areas, environment, and natural resources for the interest of all people in the country;
- b) To strengthen land tenure security for the livelihoods improvement and food security of all people in both urban and rural areas of the country;
- c) To recognize and protect customary land tenure rights and procedures of the ethnic nationalities;
- d) To develop transparent, fair, affordable and independent dispute resolution mechanisms in accordance with the rule of law;
- e) To promote people-centered development in land resources and accountable land use administration in order to support the equitable economic development of the country;

Applicable Laws and Legal Commitments for Y Complex Project

1. The Environmental Conservation Law (2012)
2. The Environmental Conservation Rules (2014)
3. Environmental Impact Assessment Procedure (2015)
4. National Environmental Quality (Emission) Guidelines (2015)
5. The Myanmar Investment Law (2016)
6. Myanmar Investment Rule (2017)
7. The Electricity Law (2014)
8. The Public Health Law (1972)
9. Occupational Safety and Health Law (2019)
10. Prevention and Control of Communicable Disease Law (1995)
11. The Control of Smoking and Consumption of Tobacco Product Law (2006)
12. Myanmar Fire Force Law (2015)
13. The Motor Vehicle Law (2015) and Rules (1987)
14. Myanmar Insurance Law (1993)
15. Labor Organization Law (2011)
16. The Law Amending the Settlement of Labor Disputes law (2012)
17. Employment and Skill Development Law (2013)
18. Minimum Wages Law (2013)
19. Payment of Wages Law (2016)
20. Workmen's Compensation Act (1923)
21. The Leaves and Holiday Act (1951)
22. Social Security Law (2012)
23. Petroleum and Petroleum and Product of petroleum law (2016)
24. The Petroleum Rules (1937)
25. Myanmar Port Authority Law (2015)
26. The Protection and Preservation of Cultural Heritage Regions Law (2019)
27. The Protection and Preservation of Antique Objects Law (2015)
28. The Protection and Preservation of Ancient Monument Law (2015)
29. The Law Amending the Engineering Council Law (2019)
30. Yangon City Development Committee Law (2018)

1. The Environmental Conservation Law (2012)

Purpose: To construct a healthy and clean environment and to conserve natural and cultural heritage for the benefit of present and future generations; to maintain the sustainable development through effective management of natural resources and to enable to promote international, regional and bilateral cooperation in the matters of environmental conservation.

- The project proponent has to pay the compensation for damages if the project will cause injuries to the environment, under the sub-section (o) of section 7 of said law
- The project proponent has to purify, emit, dispose and keep the polluted materials in line with the stipulated standards, under section 14 of said law
- The project proponent has to install or use the apparatus which can control or help to reduce, manage, control or monitor the impacts on the environment, under section 15 of said law.
- The project proponent has to allow a relevant governmental organization or department to inspect whether performing in conformity with the terms and condition included in prior permission, stipulated by the ministry, or not, under section 24 of said law.
- The project proponent has to comply with the terms and conditions included in prior permission, under section 25 of said law.
- The project proponent has to abide by the stipulations included in the rules, regulation, by-law, order, notification, and procedure, which are issued by said law, under section 29.

2. The Environmental Conservation Rules (2014)

- The project proponent has to avoid emit, discharge or dispose of the materials which can pollute to the environment, or hazardous waste or hazardous material prescribed by notification in the place where directly or indirectly injure to the public, under sub-rule (a) of rule 68.
- The project proponent has to avoid performing to damage to the ecosystem and the environment generated by said ecosystem, under sub-rule (b) of rule 68.

3. Environment Impact Assessment Procedure (2015)

- The project proponent has to be liable for all adverse impacts caused by doing or omitting of project owner or contractor, sub-contractor, officer, employee, representative or consultant who is appointed or hired to perform on behalf of the project owner, under sub-clause (a) of clause 102.
- The project proponent has to support, after consultation with affected persons by project, relevant government organization, government department and other related persons, to resettlement and rehabilitation for livelihood until the affected persons by the project receiving the stable socio-economy which is not lower than the status in pre-project, under sub-clause (b) of clause 102.

- The project proponent has to fully implement all commitments of project and conditions included in EMP. Moreover, the project proponent has to be liable for contractor and sub-contractor who perform on behalf of him/her have to fully abide by the relevant laws, rules, this procedure, EMP and all conditions, under clause 103.
- The project proponent has to be liable and fully & effectively implement all requirements included in ECC, relevant laws and rules, this procedure and standards under clause 104.
- The project proponent has to inform the completed information, after specifying the adverse impacts caused by the project, from time to time, under paragraph 105.
- The project proponent has to continuously monitor all adverse impacts in the pre-construction phase, construction phase, operation phase, suspension phase, closure phase and post-closure phase, moreover has to implement the EMP with abiding all conditions included in ECC, relevant laws & rules and this procedure, under clause 106.
- The project proponent has to submit, as soon as possible, the failures of his or her responsibility, other implementation, ECC or EMP. If dangerous impact caused by this failure or failure should be known by the Ministry the project proponent has to submit within 24 hours and other than this situation has to submit within 7 days from knowing it, under clause 107.
- The project proponent has to submit the monitoring report dually or prescribed time by Ministry in line with the schedule of EMP, under clause 108.
- The project proponent has to prepare the monitoring report in accord with the clause 109.
- The project proponent has to show this monitoring report in public places such as library, hall and website and the office of the project for the purpose to know this report by the public within 10 days from the date which the report is submitted to the Ministry. Moreover has to give the copy of this report, by email or another way which way agreed with the person, to any asked person or organization, under clause 110.
- The project proponent has to allow the inspector to enter and inspect in working time and if it is needed by Ministry has to allow the inspector to enter and inspect in the office and work-place of the project and other work-place related to this project in any time, under clause 113.
- The project proponent has to allow the inspector to immediately enter and inspect in any time if it is emergency or failure to implement the requirements related to social or environment or caused to it, under clause 115.
- The project proponent has to allow the inspector to inspect the contractor and sub-contractor who implement on behalf of the project, under clause 117.

4. National Environmental Quality (Emission) Guidelines (2015)

- The project proponent has to control, discharge or dispose of in line with the standards stipulated in the said guidelines.

5. The Myanmar Investment Law (2016)

Purpose: To ensure the appointing of employees, fulfilling the rights of employees, avoiding any injury to the environment, social and cultural heritage, ensure the prescribed insurance in line with the above law. This law focuses as follows;

- The project proponent has to appoint the nationalities in the various levels of administrative, technical and expert work by the arrangement to develop their expertise, in line with the sub-section (b) of section 51 of said law.
- The project proponent has to appoint the nationalities only in normal work without expertise, in line with the sub-section (c) of section 51 of said law.
- The project proponent has to appoint either foreigner or nationality with the appointment agreement in accord with the law, in line with the sub-section (d) of section 51 of said law.
- The project proponent has to comply with the international best practices, existing laws, rules and procedures to not damage, pollute, and injure to the environment, cultural heritage and social, in line with the sub-section (g) of section 65 of said law.
- The project proponent has to close the project after paying the compensation to the employees in accord with the existing laws if violates the appointment agreement or terminate, transfer or suspend the investment or reduce the number of employees, in line with the sub-section (i) of section 65 of said law.
- The project proponent has to pay the wages or salary to the employees in accord with the laws, rules, order, and procedures in the suspension period, in line with the sub-section (j) of section 65 of said law.
- The project proponent has to pay the compensation or injured fees to the respected employees or their inheritors if the injury in or loss of part of body or death caused by work, in line with the sub-section (k) of section 65 of said law.
- The project proponent has to stipulate the foreign employees to respect the culture and custom and abide by the existing laws, rules, orders, directives, in line with the sub-section (l) of section 65 of said law.
- The project proponent has to abide by labor laws, in line with the sub-section (m) of section 65 of said law.
- The project proponent has to pay the compensation, to the injured person for damages if damage to environment or socio-economy is occurred by misuse of the project, in line with the sub-section (o) of section 65 of said law.
- The project proponent has to allow to inspect in anywhere of the project if Myanmar Investment Commission informs to inspect the project, in line with the sub-section (p) of section 65 of said law.
- The project proponent has to obtain the permission of MIC before EIA process and report back this process to Myanmar Investment Commission, in line with the sub-section (q) of section 65 of said law.
- The project proponent has to ensure the prescribed insurance by rules, under section 73 of said law.

6. Myanmar Investment Rules (2016)

Purpose: To comply with the conditions of the permit and to settle the grievance with the local community. Also, to submit necessary documents to MIC office for the appointment of a foreigner as senior management or technician expert or a consultant.

- The project proponent has to comply with the conditions of the permit issued by the MIC and applicable laws when making the investment, under rule 202.
- The project proponent has to fully assist while negotiating with the authority for settling the grievance of the local community which has been affected due to investment, under rule 203.
- The project proponent has to submit the passport, expert evidence or document of degree and profile to the MIC office for approval if decide to appoint a foreigner as senior management, technician expert or consultant according to subsection (a) of section 51 of Myanmar Investment Law, under rule 206.

7. The Electricity Law (2014)

Purpose: To ensure compliance with the conditions of permission for productions of electricity, abiding by any stipulation, implementing with the best practices and paying compensation in line with the above law. This law focuses as follows;

- The project proponent will implement the project with the best practices to reduce the damages on the environment, health and socio-economy also will pay compensation for the damages and will pay the fund for environmental conservation, under subsection (b) of section 10 of said law.
- The project proponent has to take the certificate of electric safety, issued by the chief-inspector, before the commencement of power generation, under section 18 of said law.
- The project proponent has to be liable for damages to any person or enterprise by failure to abide by the quality standards or rules, regulation, by-law, order, and a directive issued under the said law according to subsection (a) of section 21 of said law.
- The project proponent has to be liable for damages to any person or enterprise by the negligence of project owner according to subsection (a) of section 22 of said law.
- The project owner has to comply with the permission for electric searching and generation, under sub-section (a) and (b) of section 26 of said law.
- The project proponent will inform promptly to chief-inspector and head officer of related office while occurring of accident in electricity generation, under section 27 of said law.
- The project proponent will comply with the standards, rules, and procedure. Moreover will allow the inspection by respected governmental department and organization if it is necessary, under section 40 of said law.
- The project proponent will pay the compensation to anyone who is injured or caused to death in electric shock or fire caused by the negligence or omitting of the project owner or representative of the project owner, under section 68 of said law.

8. The Public Health Law (1972)

Purpose: To ensure public health include not only employees but also resident people and cooperation with the authorized person or organization of the health department. This law focuses as follows;

- The project owner has to cooperate with the authorized person or organization in line with section 3 and 5 of said law.
- **Section 3** - The project proponent has to abide by any instruction or stipulation for public health.
- **Section 5** - The project proponent has to allow any inspection, anytime, anywhere if it is needed

9. Occupational Safety and Health Law (2019)

Purpose: To effectively implement measures related to safety and health in every industry and to set occupational safety and health standards;

- The project proponent has to carry out as necessary the scale assessment management of the equipment used in the industry, under the sub-section (a) of section-26 of the said law.
- The project proponent has to carry out as necessary to assess the situation of the region of occupational environmental risk capabilities, under the sub-section (b) of section-26 of the said law.
- The project proponent has to appoint a certified doctor for the employees, under the sub-section (c) of section-26 of the said law.
- The project proponent has to provide adequate and relevant personal protective equipment to workers free of charge and make them wear it during work so as not to expose workers to any serious occupational diseases or hazards, under the sub-section (e) of section-26 of the said law.
- The project proponent has to develop a preventive plan and also a plan of action for any emergency situation, under the sub-section (f) of section-26 of the said law.
- The project proponent has to make systematic arrangements for ensuring safety and the absence of health risks to persons at the workplace and nearby, in connection with the use of machines, any parts of a machine, buildings, tools, substances, or handling and transportation of wastes relating to any process or workplace, under the sub-section (j) of section-26 of the said law.
- The project proponent has to arrange and display occupational safety and health instructions, warning signs, notices, posters, and signboards, under the sub-section (l) of section-26 of the said law.
- The project proponent has to formulate a fire prevention plan; arrange fire drills; and train workers on the systematic use of fire extinguishers, under the sub-section (o) of section-26 of the said law.
- The project proponent has to allow the chief inspector and the inspectors access to the workplace to carry out inspections or investigations and provide them with documents

and other forms of evidence on request, under the sub-section (p) of section-26 of the said law.

- The project proponent has to ensure that workers, who are engaged in any hazardous industries prescribed by the Ministry, work only the hours per day as specified, under the sub-section (q) of section-26 the said law.
- The project proponent has to pay for any expenditure regarding occupational safety and health measures, under the sub-section (r) of section-26 the said law.

10. Prevention and Control of Communicable Diseases Law (1995)

Purpose: To ensure the healthy work environment and prevention the communicable diseases by the cooperation with the relevant health department. This law focuses as follows;

- The project proponent has to build the housing in line with the health standards, distribute the healthful drinking water & using water and arrange to systematically discharge the garbage & sewage, under clause (9) of subsection (a) of section 3 of said law.
- The project proponent has to abide by any instruction or stipulation by the Department of Health and Ministry of Health, under section 4 of said law.
- The project proponent has to inform promptly to the nearest health department or hospital if the following have occurred: (section 9)
 - (a) The mass death of animals included in birds or chicken;
 - (b) The mass death of the mouse;
 - (c) The suspense of occurring of communicable disease or occurring of communicable disease;
 - (d) Occurring of communicable disease which must be informed.
- The project proponent has to allow any inspection, anytime, anywhere if it needs to inspect by the health officer, under section 11 of said law.

11. The Control of Smoking and Consumption of Tobacco Product Law (2006)

Purpose: To ensure the creation of a smoking area and the non-smoking area in the power plant area for health and control of smoking. This law focuses as follows;

- The project proponent has to keep the caption and mark referring that is a non-smoking area in the project area, under subsection (a) of section 9 of said law.
- The project proponent has to arrange the specific place for smoking in the project area and keep the caption and mark in accordance with the stipulations, under subsection (b) of section 9 of said law.
- The project proponent has to supervise and carry out the measures so that no one shall smoke at the non-smoking area, under subsection (c) of section 9 of said law.
- The project proponent has to allow the inspection of a supervisory body in the power plant area, under subsection (d) of section 9 of said law.

12. The Myanmar Fire Force Law (2015)

Purpose: To ensure to prevent the fire, to provide the precautionary material and apparatuses, if the fire caused in the project area to be defeated because the project is business in which electricity and any inflammable materials such as petroleum are used. So, the project owner has to institute the specific fire service in line with the above law. This law focuses on the following

- The project proponent has to institute the specific fire services, under subsection (a) of section 25 of said law.
- The project owner has to provide materials and apparatuses for fire precaution and prevention, under subsection (b) of section 25 of said law.

13. The Motor Vehicles law (2015) and Rules (1987)

Purpose: When the construction period and if it is needed in the operation and productive period for all vehicles.

The project proponent has to promise to abide by the nearly all provisions of said law and rules, especially the provisions related to air pollution, noise pollution and life safety.

14. Myanmar Insurance Law (1993)

Purpose: The project can cause the damages to the environment and injuries to the public so to ensure the needed insurances are insured at Myanmar Insurance. This law focuses on the following matters;

Section 15 - If the project proponent uses the owned vehicles the project owner has to ensure the insurance for the injured person.

Section 16 The project proponent has to ensure insurance to compensate for general damages because the project may cause damages to the environment and injury to the public.

15. Labor Organization Law (2011)

Purpose: To ensure protection the rights of the employees, having good relationships between the employees and employer and enabling to form and carry out the labor organizations systematically and independently.

- **Section 17** - The project owner has to allow the labor organization to negotiate and settle with the employer if the workers are unable to obtain and enjoy the rights of the workers contained in the labor laws and to submit demands to the employer and claim in accord with the relevant law if the agreement cannot be reached.
- **Section 18** - The project proponent has to allow the demand for the re-appointment of a worker who is dismissed by the employer without the conformity with the labor laws.

- **Section 19** - The project proponent has to send the representatives to the Conciliation Body in settling a dispute between the employer and the worker.
- **Section 20** - The project proponent has to allow the labor organization to participate and discuss in discussing with the government, the employer and the complaining employees in respect of employee's rights or interest contained in the labor laws.
- **Section 21** - The project proponent has to allow the labor organization to participate in solving the collective bargains of the employees in accord with the labor laws.
- **Section 22** - The project proponent has to allow the labor organization to carry out the holding the meetings, going on strike and other collective activities in line with the procedure, regulation, by-law, and directive of relevant Chief Labor Organization.

16. The Law Amending the Settlement of Labor Dispute Law (2019)

Purpose: To ensure negotiation and discussion between employees and project proponent, aiding the decision of Tribunal. This law focuses as follows;

- The project proponent has to not absent to negotiation within the stipulated time for complaint, under section 38 of said law.
- The project proponent has to not change the existing stipulations for employees within the conducting period before Tribunal, under section 39 of said law.
- The project proponent has to not close the work without negotiation, discussion on the dispute in accord with this law, a decision by Tribunal, under section 40 of said law.
- The project proponent has to pay the compensation decided by Tribunal if violates any act or any omission to damage the interest of labor by reducing of the product without efficient cause, under section 51 of said Law.

17. Employment and Skill Development Law (2013)

Purpose: To ensure job security and to develop the employee's skill with the fund of the project owner. This law focuses as followings;

- The project proponent has to appoint employees with the contract in line with the provision of section 5 of said law.
- The project proponent has to carry out the training programs with the policy of Skill Development Body to develop the employment skill of employees who are appointed or will be appointed, under section 14 of said law.
- The project proponent has to monthly payments to the fund, which is a fund for the development of the skill of employees, not less below 0.5 percentage of the total payment to the level of worker supervisor and the workers below such level under subsection (a) of section 30 of said law.

The project proponent has to promise not to deduct from the payment of employees for the above-mentioned fund under subsection (b) of section 30 of said law.

18. The Minimum Wages Law (2013)

Purpose: To ensure the project owner pays the wages not less than prescribed wages and notify obviously this wages in the workplace, moreover to be inspected. This law focuses as followings;

- The project proponent has to pay the wages in line with section 12 of said law.
- The project proponent has to notify the prescribed wages obviously in the workplace, under subsection (a) of section 13 of said law.
- The project proponent has to correctly record the lists, schedules, documents, and wages and report these to the relevant department and give if these are asked while inspecting, in accord with the stipulations under sub-section (b), (c) and (d) of section 13 of said law.
- The project proponent has to allow to be inspected by the inspector, under subsection (d) and (e) of section 13 and section 18 of said law.
- The project proponent has to allow holiday for medical treatment if the employee's health is not fit to work, under subsection (f) of section 13 of said law.
- The project proponent has to allow holidays without deducting from the wages if one of the parents or one of a family dies, under subsection (g) of section 13 of said law

19. Payment of Wages Law (2016)

Purpose: To ensure the way of payment and avoiding delay payment to the employees. This law focuses as follows;

- The project proponent has to pay the wages in accord with section 3 and 4 of said law, under section 3 & 4 of said law.
- The project proponent has to submit with the agreements of employees & reasonable ground to the department if it is difficult to pay because of force majeure included in a natural disaster, under section 5 of said law.
- The project proponent has to abide by the provisions of section 7 to 13 in the chapter (3) in respect of deduction from wages.
- The project proponent has to pay the overtime fees, prescribed by law, to the employees who work over working hours, under section 14 of said law.

20. Workmen's Compensation Act (1923)

Purpose: To ensure the compensations to the injured employee while implementing in line with the above law and to pay the prescribed compensations in various kinds of injury. This law focuses as follow;

Section 13 The project proponent has to pay the compensation in line with the provisions of said law base on kind of injury and case by case.

21. The Leaves and Holiday Act (1951)

Purpose: The employees can take the leaves and get the holidays legally and ensure the right to get the holidays and leaves. This law focuses on the following;
The project proponent has to allow the leaves and holidays in line with the law.

22. Social Security Law (2012)

Purpose: The project proponent has to create social security for the employees because the project is the business under the Myanmar Citizen Investment Law. To ensure the social security for employees of the project, the project owner has to register to the social security offices and to pay the prescribed fund. This law focuses as follows;

- The project proponent has to register to the respected social security office, under subsection (a) of section 11 of said law
- The project proponent has to pay the social security fund for at least four types of social security included in subsection (a) of section 15, under section 15 of said law.
- The project proponent has to pay the fund which has to be paid by myself and together with the fund which has to be paid from their salary by the employees. Moreover, the project owner will pay the cost for paying the above-mentioned fund only myself under sub-section (b) of section 18 of said law.
- The project proponent has to pay the fund for accident, under subsection (b) of section 48 of said law. (but this fund is not related to workmen compensation)
- The project proponent has to make corrections and submit the list and record provided in section 75 to the respected social security office, under section 75 of said law.

23. Petroleum and Product of Petroleum Law (2016)

Purpose: The project will transport and store the fuel in any phrase. To ensure to take the license for importation and storage and abide by the stipulations in the license

- The project proponent has to transport the fuel by the vehicle or vessel which is licensed by the Ministry of Transportation and Communication under sub-section (a) of section 9 of said law.
- The project proponent has to abide by the procedures and conditions specified by the Ministry of Transportation and Communication under sub-section (e) of section 9 of said law.
- The project proponent has to transport after obtaining the transportation license issued by the Ministry of Natural Resource and Environmental Conservation under sub-section (b) of section 10 of said law.

- The project proponent has to allow inspection by the Ministry of Natural Resource and Environmental Conservation under sub-section (d) of section 10 of said law.
- The project proponent has to store the fuel in the tank which is licensed by the Ministry of Natural Resource and Environmental Conservation under sub-section (a) of section 10 of said law.
- The project proponent has to show the notice of danger on the tank or container of fuel under section 11 of said law.

24. The Petroleum Rules (1937)

Purpose: To ensure the project owner has to abide by the stipulations for the transportation of oil.

- The project proponent will abide by the provision of the chapter (3) of the Petroleum Rules for transportation and the provisions of the chapter (4) of said rules for storage.

25. Myanmar Port Authority Law (2015)

Purpose; To ensure that any natural resources within a port are free and safe from all dangerous and toxic materials and so far from any unsafe activities. This law focuses as follows;

- The project proponent shall not discharge, dispose or cause to fall dangerous materials, toxic materials, garbage, sludge and waste from the vessels, above and underwater natural resource exploration rigs and structures within a port limit, in line with the sub-section (b) of section 80 of said law.
- The project proponent shall not discharge, dispose or cause to fall other materials which cause an obstacle to the navigation, from the vessels, into a port, in line with the sub-section (c) of section 80 of said law.
- The project proponent shall not dispose or drop the materials that may slide into the port because of tide, storm or flood on land, in line with the sub-section (d) of section 80 of said law.

The project proponent shall not, without permission of the Myanmar Port Authority, wield or heat pitch, tar, resin, dammar, turpentine, oil or other flammable materials on board a vessel or at the restricted area within a port, in line with the sub-section (b) of section 81 of said law.

26. The Protection and Preservation of Cultural Heritage Regions Law (2019)

Purpose: To ensure the protection of cultural heritage and the cultural heritage area from the damage by the natural disaster or man-made. This law focuses as follows;

- Section 13 - The project proponent has to apply to get the prior permission of Directorate of Ancient-Research to build the road, bridge or dam in the cultural heritage area.

- Section 22 - The project proponent promises not to build the building which is not in line with the stipulations prescribed by the Ministry of Culture in the cultural heritage area.

27. The Protection and Preservation of Antique Objective Law (2015)

Purpose; To ensure the protection of the ancient monument and to inform about it if it was in the project area. This law focuses as follow;

- The project proponent has to inform to the village-tract or ward administrator if any antique objective is found in the project area under section 12 of said law.

28. The Protection and Preservation of Ancient Monument Law (2015)

Purpose: To ensure the protection of the ancient monument and information about it if it was in the project area. This law focuses as follows;

- **Section 12** - The project proponent has to report to the village-tract or ward administrators if the project proponent will find any ancient monument under the ground or on the ground or under the water.
- **Section 15** - The project proponent has to obtain the prior permission of the Department of Ancient Research Museum if the project area is in the prescribed area of the Ancient monument.
- **Sub-section (f) of section 20** - The project proponent has to obtain the prior permission, by written, of Department of Ancient Research and National Museum if the project proponent disposes of the chemical and solid waste in the Ancient Monument.

29. The Law Amending the Engineering Council Law (2019)

Purpose: To ensure safety in technical and engineering work in the project. This law focuses on the following;

- The project proponent has to appoint the employees, who obtained the registration certificate issued by the Myanmar Engineering Council, in the technical and engineering work, under section 37 of said law.

The project proponent has to ensure the employees who are engineers abide by the provisions of Myanmar Engineering Council law, prohibitions included in the rules, order, and a directive issued under said law, conditions included in the registration certificate issued by the Myanmar Engineering Council, under section 34 of said law.

30. Yangon City Development Committee Law (2018)

Purpose: To ensure sustainable development of the city so as to increase the standard of living of the city dwellers through the leadership of the City Development Committee. To promote clean, pleasant, beautiful and a habitable city like most developed cities around the world through the participation of city dwellers and to develop a people-oriented

management system concerning with municipal works through responsibility, accountability, and transparency.

- The proponent shall not block the natural river channel, change the course, and disrupt the water channel, filling with soil within the city boundaries without the consent of the Committee under section (317) of said law
- The project proponent shall not construct buildings, factories, and industries without sewage, toilet, septic tanks, and wastewater treatment system under section (318) of the said law
- The project proponent is not allowed to make activities that will produce noise pollution, water pollution, air pollution, and soil pollution to impact the environment within the city's boundaries under section (322) of the said law

3.3 Facts about YCDC (2014)

Yangon City Development Committee (YCDC) is the administrative body of Yangon which covers a total land area of 306.73 square miles. YCDC Mayor's Office is shown in **Figure 3.1**. To maintain and develop the city within its territory, YCDC carries out the following duties and responsibilities:

- Drawing and implementing land policies, administration of lands, developing and enforcing planning controls, protection of heritage buildings, regulation of construction sites.
- Construction and maintenance of parks, gardens, playgrounds, recreation centers.
- Promoting events and exhibitions to enhance the work of YCDC.
- Providing parking spaces for vehicles and reducing traffic congestion.
- Construction, maintenance, upgrading and administration of markets.



Figure 3. 1 YCDC Mayor's Office

3.4 By-laws of Yangon City Development Committee

3.4.1 High-Rise Buildings Construction

For constructing above 81/2 high-rise buildings:

1. It must be in accordance with Y.C.D.C rules and regulations.
2. The agreement by neighborhoods and offices must be reported by the recommendations of the corresponding ward office to build the high-rise buildings.
3. If there is a telecommunication tower nearby the proposed building the system must not be disturbed due to the building height.
4. To report the flow system of wastewater from the proposed building.
5. To report including the amount of water specified by the fire department and the required amount of water used in building, the place and the way which water can be available. The sanitation system, the size, and location of the septic tank for the proposed building must be expressed.
6. The land property must be right. C/Map and D/Map remarked by “to construct the building” must be included.
7. The comments of the Fire Department must be included.
8. The prominent and antique buildings surrounding the proposed ones must be illustrated in architectural drawings.
9. The height of the building must be assumed from above mean sea level.
10. The building design must be good ventilation and lighting.
11. The parking place for one car must be at least (8' x 16') (2.4 m x 4.8 m).
12. The waste disposal system must be described.
13. Pile Foundation, Earthquake Zone 2B, and Wind Speed 120 mph and by reference of CQHP High-Rise Building design must be calculated. (To activate after getting approved in principle permission (A I P)).

3.4.2 Responsibilities of HIC

City Planning and Land Administration Department

- Checking the land property and C/Map, D/Map
- Inspecting whether there is any objection concerning this land or not

Engineering Department (Building)

- Inspecting whether the proposed samples are fit or not with by law and building rules and regulations
- Checking room building ratio for ventilation and lighting of the building
- Checking slenderness ratio for the building inclination
- Alignment checking for a nearby building
- Analyzing whether there are any former case and objections or not, concerning with the proposed buildings

Engineering Department (Water Supply and Sanitation)

- Checking the amount of water usage in building depending on population and type of usage and the amount of water specified by the Fire Department for fire protection
- Analyzing how to obtain the required amount of water
- Analyzing the sewage system and wastewater treatment system

Pollution Control and Cleansing Department

- Inspection of garbage volume of the proposed building, disposal system of the garbage and how to dispose of the final garbage
- Inspection of the disposing system of garbage from the site during a construction period
- Inspection of the arrangement of how to control air pollution, water pollution, and land pollution

Committee for Quality Control of High Rise Building Construction Projects (CQHP)**Architecture**

The following items must be shown in the area datasheet

1. Site/Plot Area
2. Building Coverage Area
3. Gross Floor Area
4. Building Coverage Ratio
5. Floor Area Ratio
6. Car Parking Provision based on YCDC guideline
7. Green Area Percentage
8. Green Area Percentage
9. Road Building Ratio

Guidelines for Structure

General Requirements for the structure are as follows:

1. Every page of the structural drawing sheets shall be signed by PE (structure). Structural calculation sheets can be stamped by PE (Structure).
2. The design calculation sheets shall be properly bound using ring binders and the pages shall be numbered consecutively.
3. Where a computer program is used, the name, assumptions, and limitations of the program shall be explained first and the inputs and the outputs thereof shall be clearly mentioned as part of the design calculations.

4. The design calculations shall be accompanied by one copy of the soil investigation report, the computations of the soil bearing capacity and where applicable, the consideration of negative skin friction of piles. Mention clearly the method used in the calculation and the literature referred to for the interpretation.
5. ACI 318-99 (or later versions) is recommended for reference in the design of reinforced concrete members. Strength design method or working-stress design method can be used.
6. AISC Specifications is recommended for the design of steel members. LRFD (Load Resistance Factor Design) method or working- stress design method can be used but the code referred to shall not be earlier than 1989.

Basement Excavation

Submission Requirements for Earth Retaining or Stabilizing Structures for High Rise Buildings with Basement Construction (Deep excavation) is as follows:

If the excavation depth is more than 1.5 m, the following should be submitted:

1. Deep excavation analysis and design
2. Instrumentation and monitoring system
3. Calculation of ERSS design
4. Submission Document Check-List
5. Presentation.
6. Letter from YCDC Letter (to be attached)

Temporary Electrical Installation

Temporary Electrical Installation on Building Construction Sites

For the application of electric power equipment, the following shall be necessary for the submission

1. Address of site and site location plan
2. Maximum demand load (in kilowatts) needed during construction
3. Final demand load (in kilowatt) for the project when completed.
4. Date when supply is required.
5. Name, address and telephone number of the developer and if possible, the builder
6. Explain the nature of electric load to be used both for construction and permanent electric power.

Water Supply and Sanitation

General requirements at the site for water supply and sanitation are as follows:

1. Project Organization Chart
2. Water and Sanitation Drawings
3. Quality Control Facilities and Records

4. Work Schedule
5. Safety Provisions
6. Site Sanitation and Basic Health Care
7. Fire Protection (During Construction Period)

Mechanical Ventilation

For basement level car park:

1. The mechanical ventilation system shall be designed in such a way that the quantity of supply air shall not exceed that of the exhaust air.
2. All mechanical ventilation systems shall not be operated with only a single section (supply or exhaust sections).
3. In the event of a breakdown, the capacity of each section in operation should remain more than or equal to half the total required air for the story.
4. All mechanical ventilation system sections may operate through a common duct.
5. The exhaust and supply parts fans of each section shall be electrically interlocked such that failure of any section of the exhaust part shall automatically shut-down the corresponding section of the supply part.
6. The exhaust and supply parts fans shall be provided with a secondary power supply such that they can continue to run automatically in the event of a failure of normal electrical supply.
7. For the first basement level;
 - (a) Where the natural ventilation opening provided is not less than 15% of the car park area served, a reduced mechanical ventilation system in the form of fume extractions described in Above Ground Level Car Park may be provided.
 - (b) Where natural ventilation opening equivalent to not less than 2% of the mechanically ventilated area is provided the supply part may be omitted.

3.5 Application of International Guidelines

Based on the Myanmar Environmental Guidelines and International Best Practices, the ultimate Scoping Report for YCP was developed and got approval from ECD. Specifically, the Environmental Impact Assessment for this project will follow not only the national regulations such as the Environmental Conservation Law, Environmental Conservation Rules and relevant regulations of the Government of the Republic of the Union of Myanmar but also International Guidelines such as WHO standards, IFC Environmental Health and Safety Guidelines for environmental and social considerations.

3.5.1 IFC Environmental, Health and Safety (EHS) Guidelines (2007)

The World Bank Group Environmental, Health, and Safety Guidelines (EHS Guidelines) are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The EHS Guidelines contain the performance levels and measures that are normally acceptable to IFC and that are generally considered to be achievable in new facilities at reasonable costs by existing technology. The General EHS Guideline contains information on crosscutting Environmental, Health, and Safety issues potentially applicable to all industry sectors. It should be used together with the relevant industry sector guideline(s). When the host country (Myanmar) regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent.

3.5.2 IFC Guidelines on Water and Sanitation, (2007)

The EHS Guidelines for Water and Sanitation include information relevant to the operation and maintenance of potable water treatment and distribution systems, and collection of sewage in centralized systems (such as piped sewer collection networks) or decentralized systems (such as septic tanks subsequently serviced by pump trucks) and treatment of collected sewage at centralized facilities.

3.5.3 IFC Guidelines on Waste Management Facilities (2007)

The EHS Guidelines for Waste Management cover facilities or projects dedicated to the management of municipal solid waste and industrial waste, including waste collection and transport; waste receipt, unloading, processing, and storage; landfill disposal; physicochemical and biological treatment; and incineration projects. Industry-specific waste management activities applicable, for example, to medical waste, municipal sewage, cement kilns, and others are covered in the relevant industry-sector EHS Guidelines, as is the minimization and reuse of waste at the source.

3.5.4 IFC Environmental, Health, and Safety Guidelines for Toll Roads, (2007)

The EHS Guidelines for Toll Roads include information relevant to the construction, operation, and maintenance of large, sealed road projects including associated bridges and overpasses. Issues associated with the construction and operation of maintenance facilities are addressed in the General EHS Guidelines. Issues associated with the sourcing of construction materials are presented

in the EHS Guidelines for Construction Materials Extraction, while those related to vehicle service areas are included in the EHS Guidelines for Retail Petroleum.

3.5.5 IFC Guidelines for Tourism and Hospitality Development (2007)

The EHS Guidelines for Tourism and Hospitality Development contain information relevant to tourism and hospitality facilities, including business and city hotels, resorts, eco-lodges, and other accommodation and catering facilities.

3.5.6 WHO Guidelines

3.5.6.1 WHO Guidelines for Drinking Water Quality (2011)

The WHO guideline on drinking water quality includes:

- Drinking-water safety, including minimum procedures and specific guideline values and how these are intended to be used;
- Approaches used in deriving the guidelines, including guideline values;
- Microbial hazards, which continue to be the primary concern in both developing and developed countries. Experience has shown the value of a systematic approach to securing microbial safety. It also builds on the preventive principles on ensuring the microbial safety of drinking water through a multiple-barrier approach, highlighting the importance of source water protection;
- Climate change, which results in changing the water temperature and rainfall patterns, severe and prolonged drought or increased flooding, and its implications for water quality and water scarcity, recognizing the importance of managing these impacts as part of water management strategies;
- Chemical contaminants in drinking water, including information on chemicals not considered previously, such as pesticides used for vector control in drinking water; revisions of existing chemical fact sheets, taking account of new scientific information; and, in some cases, reduced coverage in the Guidelines where new information suggests a lesser priority;
- Those key chemicals responsible for large-scale health effects through drinking water exposure, including arsenic, fluoride, lead, nitrate, selenium, and uranium, providing guidance on identifying local priorities and management;
- The important roles of many different stakeholders are essential in ensuring drinking-water safety. This edition furthers the discussion introduced in the third edition of the roles and responsibilities of key stakeholders in ensuring drinking-water safety;
- Guidance in situations other than traditional community supplies or managed utilities, such as rainwater harvesting and other non-piped supplies or dual piped systems.

3.5.6.2 WHO Protecting Groundwater for Health (2006)

Groundwater is the water contained beneath the surface in rocks and soil and is the water that accumulates underground in aquifers. Groundwater constitutes 97 percent of global freshwater and is an important source of drinking water in many regions of the world. In many parts of the world, groundwater sources are the single most important supply for the production of drinking water, particularly in areas with limited or polluted surface water

sources. For many communities, it may be the only economically viable option. This is in part because groundwater is typical of more stable quality and better microbial quality than surface waters. Groundwater often requires little or no treatment to be suitable for drinking whereas surface waters generally need to be treated, often extensively. There are many examples of groundwater being distributed without treatment. It is vital therefore that the quality of groundwater is protected if public health is not to be compromised.

3.6 Signatory of International Treaties and Conventions related to Environment by Myanmar

3.6.1 Kyoto Protocol (1997)

This protocol was developed in 1997 under the United Nations Framework Convention on Climate Change (UNFCCC). The goal of the Kyoto Protocol was to reduce worldwide greenhouse gas emissions such as carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, etc. The Kyoto Protocol set specific emissions reduction targets for each industrialized nation but excluded developing countries. According to the agreement in the protocol, the countries that ratified the protocol are allowed to use emissions trading to meet their obligations, if they maintained or increased their greenhouse gas emissions.

3.6.2 Convention on Climate Change (1992)

The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty negotiated at the Earth Summit in Rio de Janeiro from 3 to 14 June 1992, then entered into force on 21 March 1994. The UNFCCC objective is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The framework set no binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international treaties (called "protocols" or "Agreements") may be negotiated to set binding limits on greenhouse gases.

3.6.3 Asia Least-Cost Greenhouse Abatement for Asia (ALGAS)

This report is based on the study of Least-Cost Greenhouse Abatement for Asia (ALGAS), the largest technical assistance project ever undertaken by ADB. The report presents the country findings and conclusions, including the national inventories of greenhouse gas (GHG) sources and sinks, for action plans a portfolio 1990 and projections for 2020 least-cost abatement strategies, national GHG abatement action plans a portfolio of technical assistance and GHG abatement investment projects.

3.7 Health and Safety Standard

3.7.1 Overseas Construction Work Health and Safety Voluntary Standard (FUJITA, 2009)

The purpose of this standard is to secure the safety of the contractors work in the foreign countries (Myanmar) and to prevent the industrial accidents by providing voluntary standard of the International Business Division of Fujita Corporation, in addition to the applicable laws and regulations of the safety and health in a country concerned (Myanmar).

The standard brings all important issues in the applicable laws and regulations of the safety and health in Japan and the company voluntary standard basically provides in overseas construction by the maximum standard that should be executed.

This standard is applied to the building work and the civil work of the International Business Division. However, the safety and health regulations that are applicable in a country concerned (Myanmar) will supersede this standard, provided these applicable law and regulation are more severe than this standard.

The above mentioned Myanmar Environmental Policy, Laws, Rules and Regulations, as well as International Treaties and Regulations, will be abided by YCP during the construction, operation and decommissioning phases of the project.

In addition to that YCP will apply “Overseas Construction Work Health and Safety Voluntary Standard” from FUJITA during the construction period which is attached as **Appendix I**.

CHAPTER 4: PROJECT DESCRIPTION AND ALTERNATIVE SELECTION

4.1 Pre-Project Situation

Before the initiation of YCP, the application for the demolition of the previous Military Museum (an old building) on the Plot No. 11-A/15-16-17, Land Survey Block No. 68/45D, Dagon Township, corner of Shwedagon Pagoda Road and Pan Tra road was made by Yangon Technical and Trading Co. Ltd (YTTC) who has leased the land from Ministry of Defence on a BOT basis (see **Appendix II BOT lease**).

The demolishing permit of the existing building was granted on 18-3-2017 by YCDC Engineering Department based on the following conditions under Yangon Municipal Act, Chapter (11) in accordance with Building Construction Rule section (10/11/12) in line with the conditions stated below:

- ✓ Demolition was to be carried out under the supervision of the licensed engineer and done by healthy male workers.
- ✓ The upper story of the building has to be demolished firstly followed by lower stories.
- ✓ The demolished materials have to dump at their own land and not placed at municipal land nor at the backyard land.
- ✓ In order to prevent the danger of being harmful to the local people nearby, barriers have to be placed where necessary.
- ✓ Barriers have to be placed at their own land without encroaching the municipal land.
- ✓ During the demolition, process care has to be taken not to damage the buildings nearby. (see **Appendix III Demolition Permit**).

After the demolition had completed YCP project was commenced on the land parcel of 3.934 acres (out of 9.028 acres leased by YTTC from Ministry of Defence who is the owner of the land).

4.2 Presentation of the Project and Description of Alternatives

YCP project is a mixed development project consisting of a five-star hotel that can accommodate 252 hotel guest rooms, 140 units of long-term hotel suites and office buildings which will be built on the available land of 3.934 acres (see **Appendix IV Construction Permit**)

4.2.1 Investment Plan

The investment plan shall be a company limited by shares, with the name of Y Complex Co., Ltd which consists of Yangon Museum Development (YMD) and Yangon Technical Trading Co., Ltd. In which YMD will hold 80% of the shares and the rest 20% by YTTC. (See **Table 4.2**)

- a) Authorized Capital: USD 176,000,000
(MMK 176,000,000,000 based on exchange rate of USD 1=MMK 1,000)
- b) Type of Shares: Ordinary Shares
- c) Number of Shares: 176,000,000 ordinary shares, with a par value of USD 1 each

4.2.2 Particulars relating to the capital of the investment business:

Amount/percentage of local capital to be contributed: USD 35,200,000 (MMK 35,200,000,000 at an exchange rate of USD 1 = MMK 1,000). This is equal to 20% of Y capital.

Amount/percentage of foreign capital to be brought in: USD 140,800,000 (MMK 140,800,000,000 at an exchange rate of USD 1 = MMK 1,000). This is equivalent to 80 % of YCP capital.

Total Investment: USD 176,000,000 (MMK 176,000,000,000 at an exchange rate of USD 1 = MMK 1,000)

4.2.3 Annual or Period of Proposed Foreign Capital to be brought in

Foreign capital to be brought in:

Year	Amount (USD)
2017	30,000.000
2018	76,000.000
2019	98,160.000
2020	80,640.000
Total	284,800,000

4.2.4 Particulars about the Investment Business

Project Owner: Yoshio Saeki (Managing Director)

Investment location: Plot No.11A/15-16-17, Land Survey Block No. 68/45 D, Dagon Township, corner of Shwedagon Pagoda Road and Pantra Street.

The extent of land area for YCP: 3.934 acres (out of 9.028 acres leased)

Type of land: Government Land

Owner of Land: Ministry of Defense

Permission Granted by Ministry of Defense

Number of Years Leased: 50 yrs

Construction period: 28 (twenty eight) months

Table 4. 1 Y Complex Project Schedule

Year Process	2016	2017	2018	2019	2020	2021- 2030
Application to MIC						
MIC permit						
Stakeholder Meeting (1 st Time)						
Application for YCP (Scoping) Report						
Approval ECD for YCP (Scoping) Report						
EIA Investigation (Surrounding Environment)						
Public Consultation (2 nd time)						
EIA Report submit						
ECD review Meeting						
Traffic Survey						
EIA Report Revised Version - 01						
Construction Period (28 months)						
Operation Period (10 years)						
Decommissioning Period (3 months)						

The Myanmar Investment Commission, at its meeting (8/2017) held on 19th May 2017 had approved that investment in “Construction and Leasing of Hotel and Office Complex” under the name of Y Complex Company Limited submitted by Yangon Technical and Trading Company Limited.

Application to Myanmar Investment Commission (8th May 2017)

Myanmar Investment Commission Approval (30th May 2017)

(See details in Appendix XXII)

4.2.5 Supervision of the Project

YCP will enter into a project management agreement with Fujita Corporation and Tokyo Tatemono Asia Pte. Ltd., who will supervise, manages and facilitates the overall implementation and completion of the development. Project Management Organization and Organogram of YCP are shown in **Figure 4.2**.

The executives of YCP are as follows:

Table 4. 2 Joint Venture

No.	Name of Director from the each Shareholder	Nationality, Passport No./CSC No.	Title the Director holds in the Shareholder Company	Designation in YCP	Address	The shareholding ratio in YCP
Yangon Museum Development (YMD)						
1.	Yoshio Saeki	Japanese TK3455209	Businessman	Managing Director	209,Cosomo Niiza shiki,1-7-38 Owada,Niiza City, Saitama Pref, Japan	80%
2.	Kazuhiro Betsuno	Japanese TK2547746	Businessman	Director	Izumi-cho4367-13, Izumi-ku, Yohohama-city, Kanagawa, Japan	
Yangon Technical and Trading Company Limited (YTTC)						
3.	U Zaw Win Shein	Myanmar [12/La Tha Na (N) 019305]	Businessman	Director	Room (PHA), 12 Floor, Ye Ta Khon Tower, Pan Hlaing Housing, No. (531), Say Yoe Tan-Nyein Chan Ward, KyeeMyinDaing Township, Yangon	20%

The organization chart for Office Management consists of the following:

Under the management of the Y Complex Company Limited there will be office property management team who will look after the underlying four Departments:

- Tenant Learning Department
- Tenant Relationship Department
- Construction Department, and
- Building Maintenance Department.

Under the Maintenance Department, there will be an HSE section which will be headed by HSE Manager who will look after HSE matters relating to Construction Phase activities.

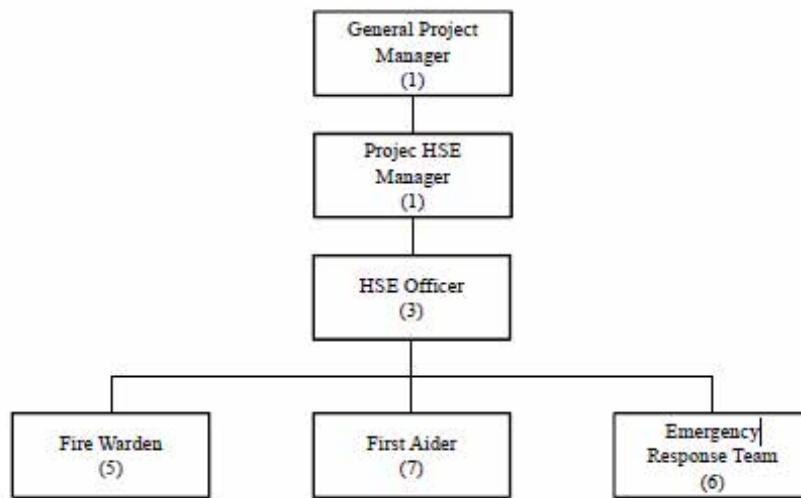


Figure 4. 1 Organization Structure for HSE

The organogram of YCP is stated below. Concerning with Environmental Matters during the operation phase there will be an Environmental Department under the Property Operation and Maintenance, Division that will consist of one Environmental Coordinator and two HSE Assistants who will look after environmental matters including regular reporting to ECD regarding half-yearly reports.

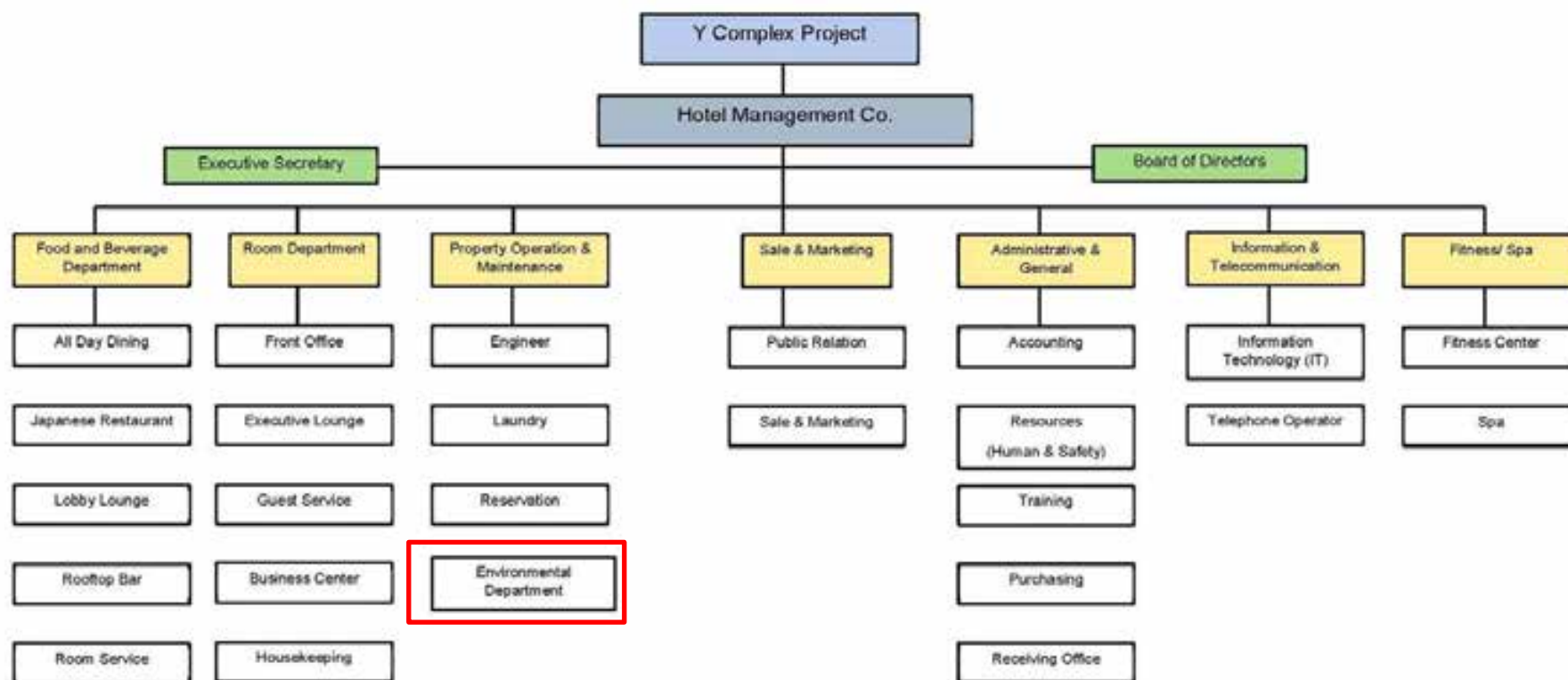


Figure 4. 2 Organogram of YCP

4.2.6 The Site and Development

The YCP will take place at Plot No. 11-A/15-16-17, Land Survey Block No. 68/45D, Dagon Township, corner of Shwedagon Pagoda Road and Pan Tra Street. The Project Site is located in a prime location right in the center between Myanmar's landmark, the Shwedagon Pagoda, and the commercial district in the Yangon metropolitan area.

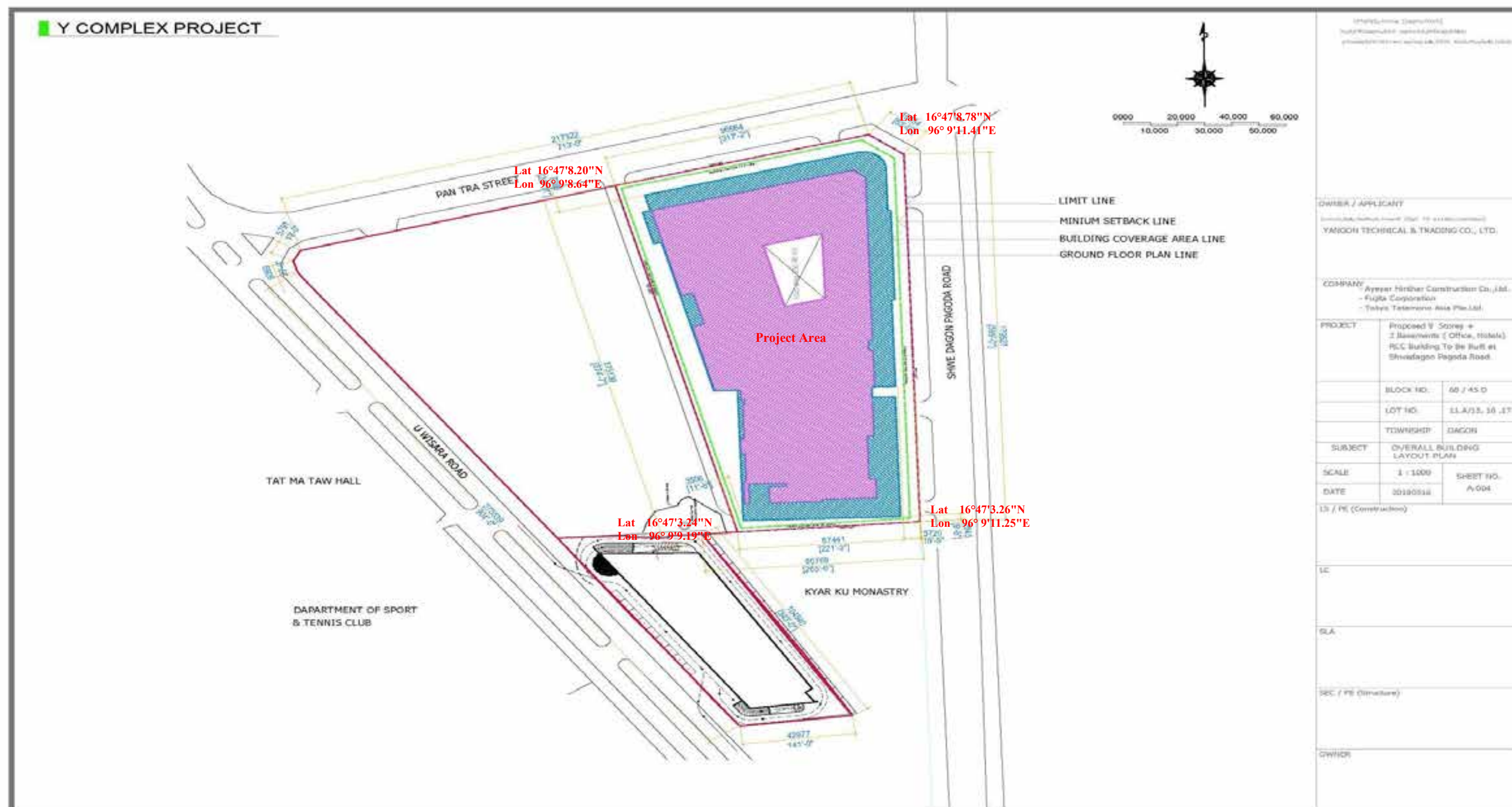


Figure 4. 3 Project Layout plan for Y Complex

4.2.7 The Prospects of the Development

YCP will serve both tourism and commerce by providing a five-star hotel and first-class office working facilities. YCP will contract with an internationally recognized prominent Japanese hotel operator to manage and operate the hotel. The hotel operator will provide international standard services, which, in synergy with its convenient location to the Shwedagon Pagoda, will attract foreign tourists into Myanmar. In addition, as foreign investors continue to invest in Myanmar, the demand for international standard office space will continue to rise.

4.2.8 Type and Number of Buildings

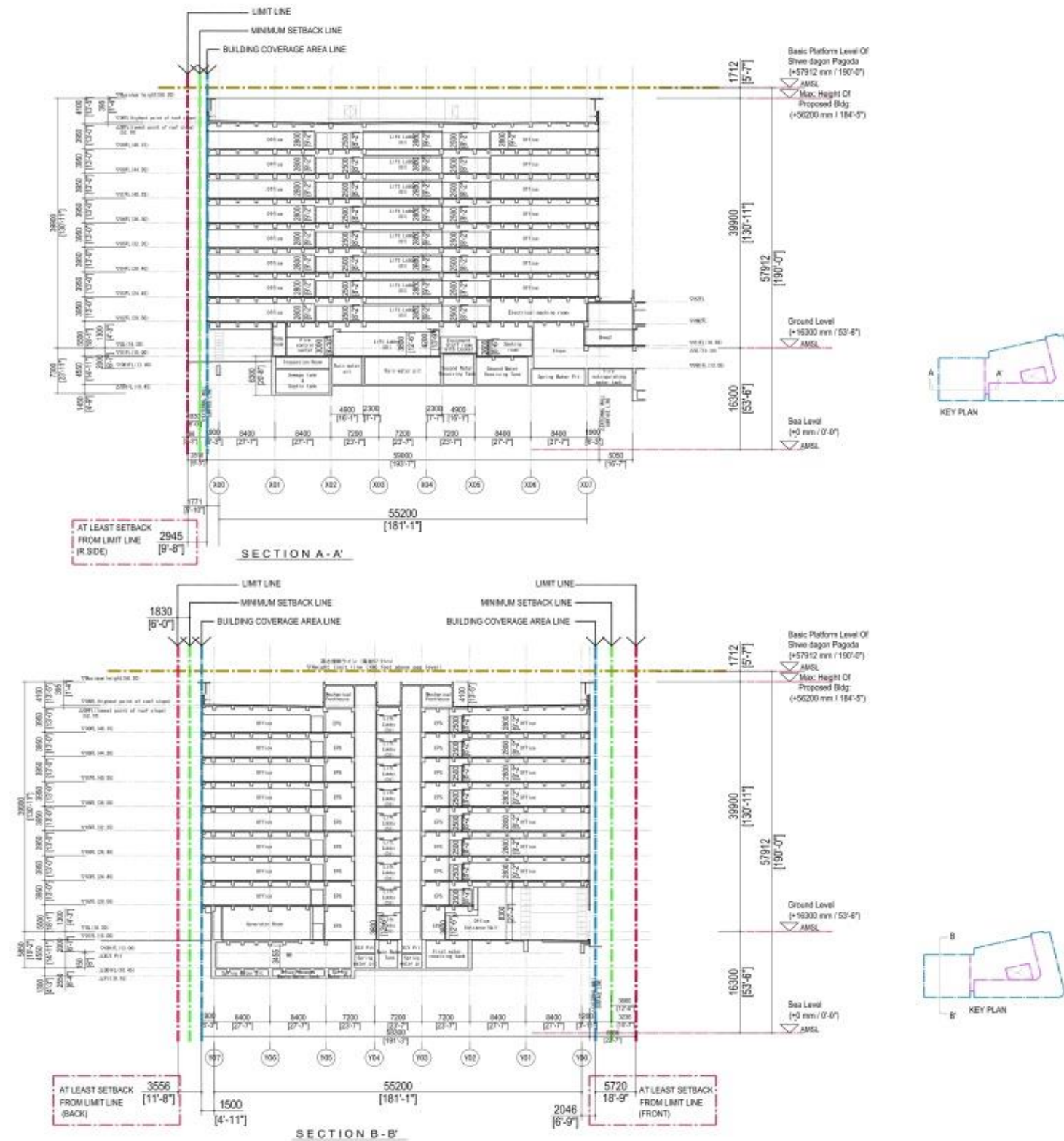
There will be two buildings to be constructed; one of the buildings will be the hotel tower, having a hotel reception, banquet halls, retail space, hotel guest rooms, and long-term hotel suites, while the other building will be the office building.

The hotel will have 392 hotel room with a total of 1084.03 m² of retail space and a total office floor space of 21,700.31 m².



Figure 4. 4 Hotel Complex (Basement 2 and 9 Stories Hotel)

Y COMPLEX PROJECT



အင်ဂျင်နီယာဌာန (အဆောက်အအုံ)
အထပ်မြင့်အဆောက်အအုံ ဆောက်လုပ်မှုအတွက်
ခံနိုင်ရည်ရှိသည့် အခြေခံအဆောက်အအုံ ဖြစ်ကြောင်းရရှိခဲ့သည်။

OWNER / APPLICANT
(ကုမ္ပဏီအမည်) နှင့် ဂျပန် အခြေစိုက်မှု
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
- Ayeyar Hinthar Construction Co.,Ltd.
- Fujita Corporation
- Tokyo Tatemono Asia Pte.Ltd.

PROJECT
Proposed 9 Storey +
2 Basements (Office, Hotels)
RCC Building To Be Built at
Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11.A/15, 16 ,17

TOWNSHIP DAGON

SUBJECT OFFICE SECTIONS

SCALE 1 : 500 SHEET NO.

DATE 20180516 A-19

LS / PE (Construction)

LC

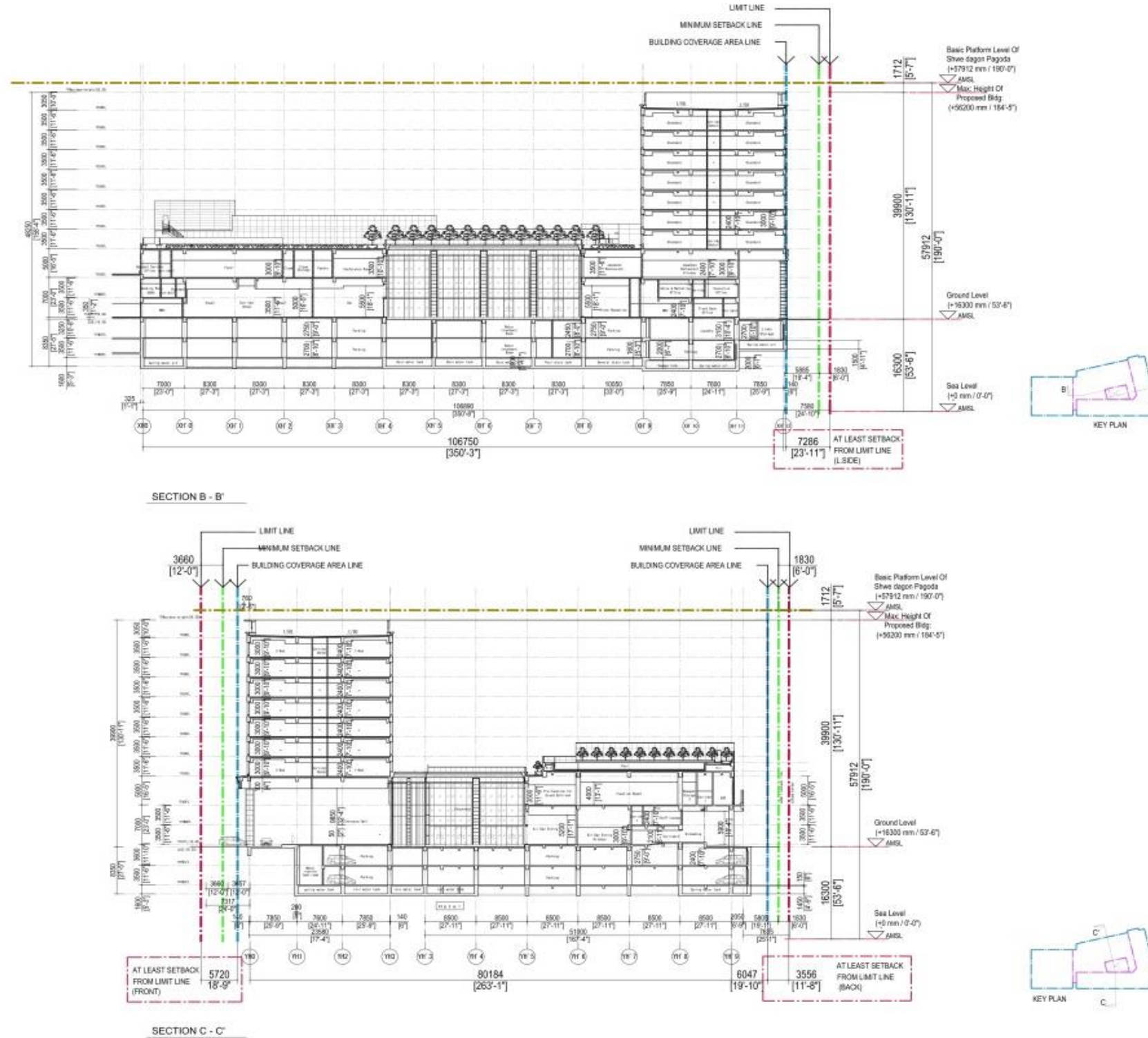
SLA

SEC / PE (Structure)

OWNER

Figure 4.5 Sections for Office Complex

Y COMPLEX PROJECT



အင်ဂျင်နီယာဌာန (အဆောက်အအုံ)
အထပ်မြင့်အဆောက်အအုံ ဆောက်လုပ်မှုအတွက်
ခံနိုင်ရည်ရှိသည့် အခြေခံအဆောက်အအုံ ဖြစ်ကြောင်းအတည်ပြု

OWNER / APPLICANT
(ကောလိပ်ရေးရာနှင့် အခြေခံအဆောက်အအုံ)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
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PROJECT
Proposed 9 Storey +
2 Basements (Office, Hotels)
RCC Building To Be Built at
Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11.A/15, 16, 17

TOWNSHIP DAGON

SUBJECT HOTEL SECTIONS

SCALE 1 : 500

DATE 20180516

LS / PE (Construction)

LC

SLA

SEC / PE (Structure)

OWNER

Figure 4. 6 Sections for Hotel Y Complex

4.2.9 Type of Services

The types of services to be provided by YCP are as follows:

- Hospitality service, including room service, laundry service, housekeeping, repair and maintenance of the hotel facilities
- Management of retail space, including repair and maintenance of the retail space
- Management of the office space, including repair and maintenance of common areas

The detailed list of rooms and facilities are presented in **Table 4.3.** for the office complex as well as hotel facilities by floors:

Table 4. 3 Y Complex Building: Floor Area, Height and Usage of Hotel Complex

FLOOR	AREA	HEIGHT	USAGE	NO. OF CARS	REMARKS
8thFloor	77597.71ft ² (7208.36 m ²)	11'-5.8"(3.5m)	Hotel Room, Office, Executive Lounge	-	
7th Floor	81116.03ft ² (7535.19 m ²)	11'-5.8"(3.5m)/Floor	Hotel Room, Office	-	
3rd-6th Floor	81116.03ft ² (7535.19 m ²)	11'-5.8"(3.5m)/Floor	Hotel Room, Office	-	
2 Floor	81204.62ft ² (7543.42 m ²)	11'-5.8"(3.5m)	Hotel Room, Office, Swimming Pool, Spa, Relaxation	-	
1 Floor	104339.28ft ² (9692.49 m ²)	18'-0.5"(5.5m)	Office, Hotel Managers, Hotel Office Area, Stores & Staff	-	
Ground Floor	93982.52ft ² (8730.41 m ²)	19'-8.2"(6m)	Lobby, All Day Dining, Kitchen	142 units	
BASEMENT1	90476.8ft ² (8404.75 m ²)	11'-5.8"(3.5m)	Water Receiving Tank Room Storage	219 units	

FLOOR	AREA	HEIGHT	USAGE	NO. OF CARS	REMARKS
BASEMENT T2	72008.9ft ² (6689.2 m ²)	11'- 5.8"(3.5m)	Car Parking	197 its	

4.2.10 Obligations for High Rise Building Construction in YCDC Area

According to YCDC regulations in the Yangon Municipal territory for the construction of commercial buildings in the Shwedagon Restricted Area, the height of the building must not be more than 62' to 78' in the Zone 1 and <190' in the Zone 2 area. According to YCP design, the project site is located in Zone 2 and the height of the office building and hotel is at the maximum height of 184"5'(56.2m) a.m.s.l and found to be well within the permissible limit according to YCDC regulations (**Figure 4.7**). Moreover, the distance between the Shwedagon Pagoda and the project site is 4,740' (1.44 km) apart. Demarcation of Zone 1 and Zone 2 of Restricted Zones of Shwedagon Pagoda (YCDC) is shown in **Figure 4.8**.

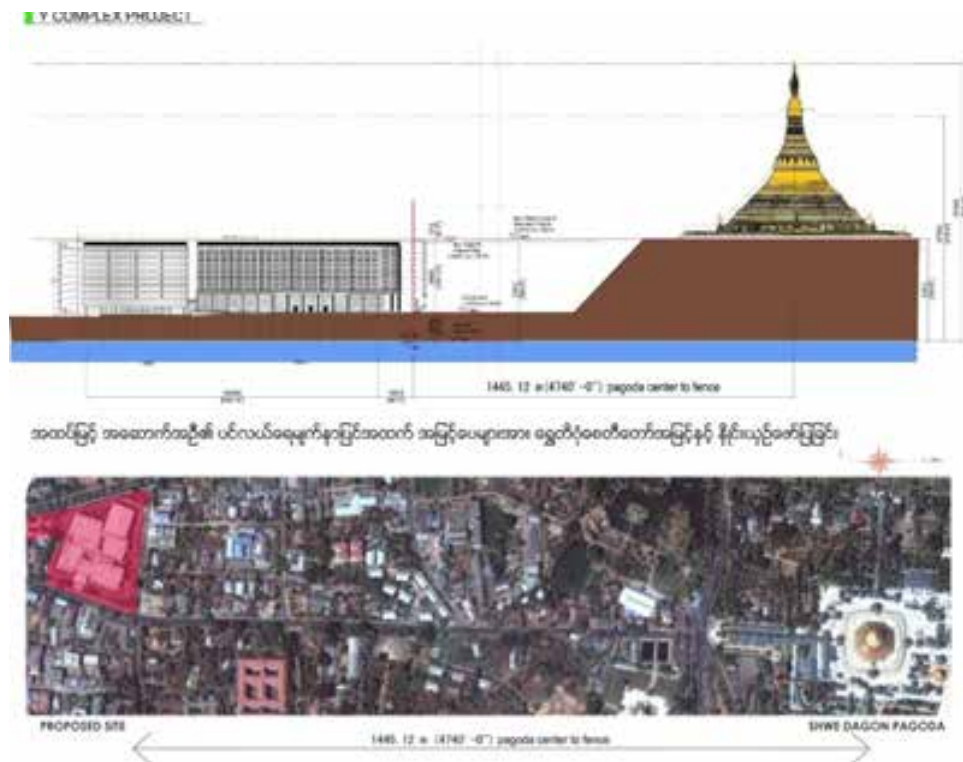


Figure 4. 7 YCP heights in comparison with the height of Shwedagon Pagoda

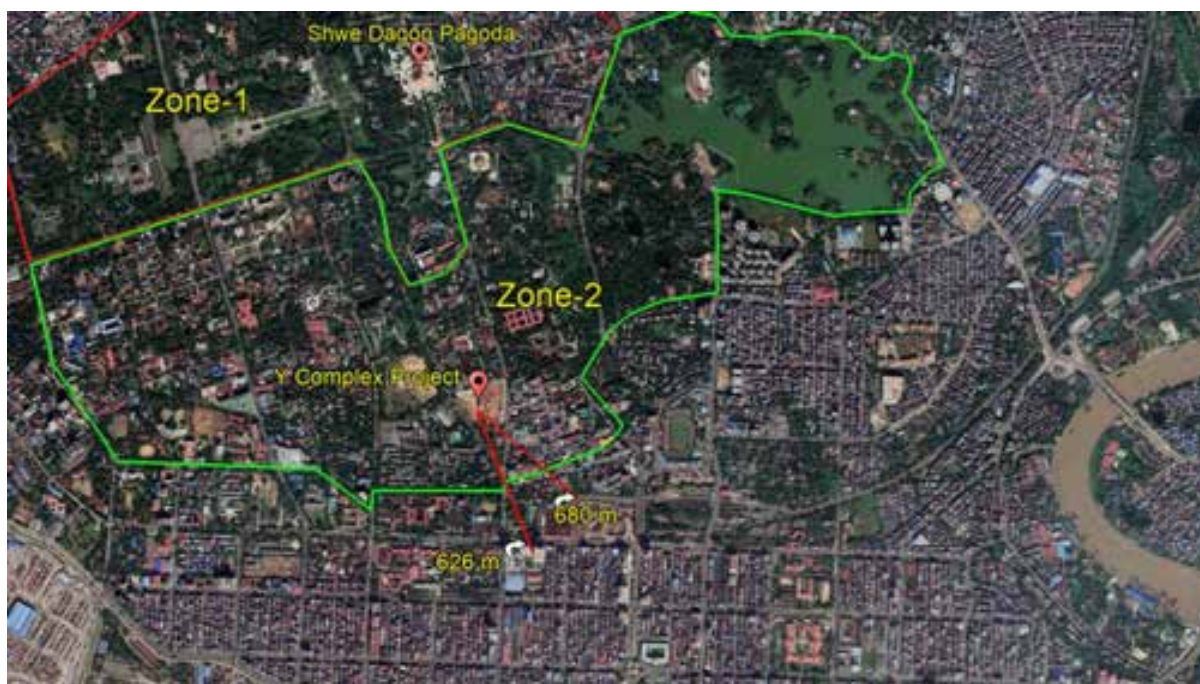


Figure 4. 8 Demarcation of Zone 1 and Zone 2 of Restricted Zones of Shwedagon Pagoda (YCDC)

4.3 Comparison and Selection of Alternatives

The proposed investment of YCP is the development of mixed-use property development and management of office and hotel complex to undertake services and property management.

The Master Plan of YCP is concerned with the development of office-complex and a five-star hotel on the land area of 3.934 acres (out of 9.028 acres leased from the Ministry of Defence).

Generally, project alternatives are based on location or site alternatives, activity alternatives, process or technology alternatives or “No Action” alternatives. The following alternatives have been identified and are discussed in detail below:

Alternative 1: No Action Alternative

The following positive impacts are anticipated by choosing this alternative:

- The existing Museum will be left as it is and will have no negative impacts on the environment due to air emissions, noise, vibration, water pollution or human presence and destruction of natural habitats.
- There will be no destruction of the land itself as well as almost no consumption of resources
- There will be no visitors to the Museum anymore (Museum was transferred to Nay Pyi Taw) that will not fulfill the objectives of having a Museum. In addition, due to the close down of the Museum, there will be ease of traffic congestion of the downtown Yangon.

In the meantime, the following negative impacts are anticipated:

- Space is a problem in downtown Yangon area. It is reckoned that horizontal expansion is almost non-existent as the land values are escalating at very high prices, in the downtown Yangon area and the realistic option is to have high-rise buildings. The new development of modernized hotel and office complex (two buildings with 9 floors + 2 basements) can accommodate more than 3,500 persons on daily basis.
- The job opportunities of about 510 during the construction phase and 270 staff during the operation phase will not materialize if the development program does not exist.

Alternative 2: The Development of Hotel and Office Complex (YCP)

The following positive impacts are anticipated for the development of phase 1 of the project:

The new development will bring in contemporary design and modern facilities in line with local culture in downtown Yangon.

The development project will engage with energy efficient and environmentally designed facilities with low impact on the environment.

For cooling purposes, Air Conditioning and Mechanical Ventilation (ACMV) will be installed with the use of Ozone Friendly Refrigerant R 410A which will minimize ozone depleting substances during the operating phase

For filtration of water, OJI filtration system will be used for purification of groundwater from tube wells.

For wastewater treatment, OJI Wastewater treatment system will be installed and the effluent water will be released towards an improved drain (existing Shwedagon Pagoda drain) as suggested by YCDC.

For conservation of water, 5 tube wells were drilled for extraction of groundwater according to the permit granted by Urban and Housing Development Department, MOC, and the application has been put up to YCDC for surface water supply.. Water consumption during the construction will be sufficient enough from 1 tube well and (remaining 4 wells as standby) will not disrupt the tube wells of the nearby residents as the borehole depth of the tube wells is at 330 feet in depth compared to around 200 feet depth of the residents.

Waste will be properly collected at dedicated waste bins, stored in 3 dedicated rooms and disposed of daily by contacting YCDC facilities on a daily basis.

From the traffic study made by KEG it was found out that for relieving traffic congestion along Shwedagon Pagoda Road, carpooling, ferry and another transportation system such as Airport Shuttle Bus has to be accommodated to reduce private car usage. The study concluded that with the implementation of the proposed improvements, the anticipated traffic generated from the proposed development can be efficiently accommodated within the study area.

This development will one-way or other contributing urban development infrastructure in a responsible manner by addressing urgent issues such as shortage of power and water supply in Yangon City by effective use of available resources.

The development will accommodate about 500 parking spaces to relieve the parking space problem currently facing in downtown Yangon.

The development will provide accommodations about 3500 persons at the heart of Yangon City with modern facilities.

Job opportunities will be created for about 510 persons/day during the construction period of 28 months.

During the operation period, there will be opportunities for 270 local staff to get jobs depending on their skills.

During the construction of the foundation bored piling method will be adopted which is less noise and vibration compared to driven pile method.

The noise/vibration studies made at 3 sensitive receptors (cultural monuments) revealed that the noise values at the receptors are well within the NEQEG guideline values for noise and Japanese guidelines for vibration and will not affect the hearing of nearby communities as well as damaging the nearby sensitive buildings as well as surrounding buildings within 200 m due to the construction operations of YCP.

The following negative impact may be possible:

There may be a risk of vehicular accidents during the entry and exit of vehicles carrying construction materials to the project site.

4.4 Description of the Selected Alternative

A comparison of the above-mentioned alternatives indicated that the preferred option is alternative 2, which will favor the positive impacts such as the provision of office and hotel space in the downtown Metropolitan area of Yangon City and create job opportunities for the locals during the construction and operation phases. The location of the project is well within the restricted area of Zone 2 of the Shwedagon Pagoda. The height limit for buildings is set at a maximum of 190' (58m) in Zone 2 and the YCP has a height limit of 184'5" (56.2m), which is well within the acceptable limit.

The following are the supportive facts for the preferred option:

There will be a landscaping plan on site at ground floor and the second floor (**see Appendix V & VI**)

The main building will be reinforced concrete structure with bored pile foundation, which is favorable to conventional pile driving system such as pile driving, due to its low noise, low vibration and flexibility of sizes to suit different loading condition and sub-soil condition. Such attributes are especially favored in urban areas like downtown Yangon where noise and (except vibration) limits are imposed by National Environmental Emission Guidelines.

The fire control and management system will be adopted and already discussed with the Fire Services Department

Dust emissions (PM10 and PM2.5) are generally pollutants produced especially in areas with strong vehicle traffic that may exceed the permissible limits. For YCP site, dust emissions to air will be controlled during the construction phase by spreading water with a water bowser twice a day, one in the morning and the other will be in the evening. When excavating the soil for the basement the soil produced will be stored under cover (tarpaulin) so as not to disperse to other places. Actual air study data revealed that air emission data is within the acceptable limit.

OJI Water Purification System will be adopted for purification of domestic water

OJI Wastewater Treatment System will be adopted for wastewater treatment including sewage

Solid waste will be properly collected, stored at dedicated storage area and disposed of after contacting YCDC on a daily basis so as to prevent from undesirable odor and stench in the YCP premises

Noise production during the construction and operational stage will be controlled by adopting the noise limits of daytime by 70 dBA, and nighttime by 70 dBA for the construction phase and also daytime 70 dBA, and nighttime 70dBA during the operation phase.(the area is treated as commercial area).

For effective ventilation Air Conditioner and Mechanical Ventilation (ACMV) will be adopted which will prevent odor from the kitchen of the hotel complex

Air-Conditioning systems will use Ozone Friendly Refrigerants such as R401A, instead of HCFC refrigerants such as R22 that are banned in Myanmar with effect from 30th June 2016.

Five tube wells were drilled for the water supply for the project and permits were already obtained from the Urban and Housing Development Department, Ministry of Construction. The depth of wells as suggested by UHDD is to drill up to the depth of 330 feet which is a deep enough and well below the level of community sources of tube wells and which will not conflict with the usage of water with nearby communities as the available water for 1 tube well is sufficient for the construction period. The water usage from tube well is meant for the construction phase only and the consumption per day is 15 liters/day for workers and 24 liters/day for staff which is well below the 120-200 liters/day/person according to IFC guidelines for luxury hotel on Tourism and Hospitality Development (IFC, 2007). According to the Yangon City Water Supply System (YCWSS) by 2025, the groundwater abstraction in Yangon City has to be gradually reduced and not utilized after 2025 so as to prevent from lowering of the groundwater table, saltwater intrusion, and land subsidence. For the operation phase, YCP has already applied the water supply from YCDC surface water sources (**see Appendix VII & VIII**). According to the feasibility studies carried out so far by YCDC, alternative sources have been sought, for instance, the potential supply from Kokkwa River (9, 984 MGD) and Toe River (23,424) is much higher than the withdrawal amount of 240 MGD from Kokkwa River and 180 MGD from Toe River respectively. Also for the proposed development projects of Yangon City Water supply System. Laguna in Reservoir (50 MGD) will be distributed starting from 2018.

For electricity the national grid will be used, supplemented by 3 standby diesel generators in case of a power outage. The application for the permission for the use of three numbers of 66/33kV (2500) Transformers was sent to Yangon Electricity Supply Board (YESB) on 11th September 2018 (see **Appendix IX**). Energy consumption could be optimized by using more energy-efficient lighting, better controls including building automation systems and energy monitoring systems. Energy saving techniques and energy saving technology and equipment will be used at YCP to reduce energy consumption.

The famous Shwedagon Pagoda is 5 minutes' drive from YCP

As the project is located in downtown Yangon with the presence of 3 Cultural Heritage Buildings, it will provide an opportunity for the tourists to visit cultural heritage attractions such as ancient Kyar Gu monastery, ancient St. Gabriel Church and ancient Pagoda such as Sein Yaun Chi Pagoda. Although these old monuments may be at risk during the construction phase, YCP had adopted the bore pile method of constructing the foundation the risk of damaging the ancient monuments is quite low. The vibration study from 28 May 2019 to 31 May 2019 at YCP indicated that the vibration values at 3 Heritage Monuments are well below the Japanese Vibration Standard and the operations carried out by YCP will not affect any damage to nearby buildings including 3 sensitive buildings.

The development will provide accommodations about 3,500 persons at the heart of Yangon City with modern facilities.

The general landscape will be enhanced with beautification of the scenery of the development in downtown Yangon.

This project will not aggravate the parking problem in downtown Yangon, as the project will provide about 500 parking spaces in the project area.

The proponent will comply with existing Environmental Policy, Law, Rules and regulations and as there are restrictions in Yangon City about development projects close to the Shwedagon Pagoda, YCDC regulations, specifically concerning with High-Rise Buildings and CHQP guidelines will be strictly adhered to.

Job opportunities will be created for about 232, 000 persons during the construction period of 28 months.

During the operation period, there will be opportunities for 270 local staff to get jobs depending on their skills.

It is worthy for the consideration of the location of the hotels and serviced apartments as business practices and attitudes of tourists/business people show that hospitality represents the primary factor in the development of urban tourism. It is felt that a typical tourist would like to be close enough to tourist attractions, so as to be able to reach them on foot. It is also mentioned that the importance of location and exterior of urban hotels is one of the factors of guests' decision on the selection and overall satisfaction in selecting a hotel.

As YCP is situated in downtown the location of YCP can be considered as a prime location for hotel business,

The building of Y Complex in place of the Old Military Museum with old-fashioned design will change the visual amenity and aesthetic value due to the construction of the new buildings with modern architectural design from Japan, This will become one of the outstanding landmarks in the downtown area of Yangon City, as positive visual impacts with changes in views resulting development. During the construction stage, the views seem to be a bit unpleasant arising from the enclosures such as safety fencing and main work of construction activities which temporarily block and disrupt the views of the residents. However, that can be considered for a short-period only and when the construction is completed, can provide contemporary and unique amenity which can help to attract guests and ensure that their arrival to YCP is a pleasant experience.

CHAPTER 5: DESCRIPTION OF THE SURROUNDING ENVIRONMENT

This chapter describes the environmental and socio-economic settings of the study area based on the latest available secondary information and primary information collected from field surveys by REM-UAE.

5.1 Introduction

In the EIA study, it is necessary to establish information on the environmental and socio-economic setting of an area, which could receive direct and indirect impacts as well as cumulative impacts during the project construction and operation phases. The information serves two purposes;

- Firstly, it is used in conjunction with the information on the project, for identification of potential impacts of the project and assessment of their significance, and
- Secondly, it serves as the benchmark for evaluating environmental and social management performance of the project construction and operation phases.

This study would be large enough to cope with most potential environmental and social impacts of the project during construction, operation and decommissioning phases.

5.2 Physical Characteristics

5.2.1 Climate

The climate of Yangon City is a tropical monsoon climate with 3 seasons:

- A dry season from February to April
- A rainy season from May to October
- A winter season from November to January

The average rainfall is between 2500 mm to 3000mm a year with a maximum temperature of 37⁰ C. and a minimum temperature of 11.3 ⁰C as follows:

Table 5. 1 Number of Rainy Days

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	0	0	0	5	20	26	28	24	19	8	0	0
2007	0	0	0	0	22	25	23	24	25	12	3	0
2008	1	1	1	6	19	23	25	24	17	15	1	0
2009	0	0	1	6	11	23	28	25	19	9	0	0
2010	0	0	0	0	10	20	22	25	19	20	1	3
2011	3	0	6	1	17	20	24	25	22	11	0	0
2012	0	0	0	1	11	19	26	29	17	12	8	1
2013	1	0	0	0	12	27	28	27	22	12	2	1
2014	0	0	0	0	10	26	27	22	17	12	5	1
2015	0	0	2	3	9	22	25	23	16	16	3	0

Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY

Table 5. 2 Rainfall Data (mm)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	18	15	17	169	346	413	780	634	366	147	Trace	0
2007	0	0	0	Trace	837	559	700	446	774	260	16	0
2008	5	7	25	169	656	431	541	474	448	301	6	0
2009	0	0	5	46	457	561	914	485	508	125	0	0
2010	Trace	0	0	0	308	529	367	467	402	367	7	33
2011	48	0	127	5	412	561	574	615	538	178	0	0
2012	0	0	0	8	167	450	717	864	379	69	115	2
2013	6	0	0	0	125	556	630	464	612	371	13	3
2014	0	0	0	0	295	701	818	575	197	224	300	26
2015	0	0	9	40	185	580	692	408	329	355	69	0
"Trace" The amount of rainfall which cannot be measured"1mm=0.04 inch"												
Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY												

Table 5. 3 Monthly Mean Wind Speed (mph) AT (9:30) hrs M.S.T

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	1.6	1.4	1.6	2	2.3	1.9	1.7	1.8	2.1	1.8	2.3	2.2
2007	1.7	1.9	1.8	2.1	2.6	2.1	2.1	2.3	1.8	1.9	1.9	1.8
2008	1.7	1.4	1.5	1.5	4.8	2.1	2.1	1.9	1.7	1.5	2.1	1.8
2009	1.9	1.5	2	2	1.7	1.8	2	1.6	1.7	1.7	1.9	1.8
2010	1.9	2	1.7	2	2.3	2.2	1.8	2.1	2	2.4	2.4	2.2
2011	2	2.1	2.5	1.7	2.1	2.4	1.9	2	2.1	2.1	1.7	2.6
2012	2.1	1.8	1.5	1.9	1.5	1.9	1.5	1.6	1.6	1.9	2.5	2.8
2013	2.6	2.8	2.6	2.6	2.8	2.5	2.4	2.3	1.7	2.3	2.8	2.1
2014	2.2	1.7	1.9	1.6	1.9	1.6	2	2	1.6	2	1.9	2
2015	2.2	1.8	2.M	2.2	1.7	1.7	2.4	1.7	2.1	3.1	2.7	2.4
Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY												

Table 5. 4 Monthly Mean Wind Speed (mph) AT (18:30)hrs M.S.T

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	0.9	1.1	1.8	2.2	1.6	1.7	1.9	2.2	1.3	1.2	1.4	1.3
2007	0.9	1.2	1.7	3	2.2	2.3	2	1.7	1.5	1.2	1.4	1.2
2008	1.2	1.2	1.7	1.7	2.1	2.4	2.6	1.9	1.7	1.5	1.6	1.6
2009	1.6	1.8	2.2	2.3	1.8	2.2	2.2	1.5	1.9	1.6	1.5	1.7
2010	1.4	1.7	2	2.2	2.4	1.8	1.8	1.5	1.7	1.9	1.7	1.6
2011	1.6	1.6	2.4	1.9	1.9	2.4	2	2	2.1	1.7	1.4	1.5
2012	1.5	1.6	1.6	2.5	2.3	1.9	1.6	1.8	1.7	1.6	1.5	1.6
2013	1.7	1.4	2.1	2.9	3.1	1.9	2	2.1	2.2	1.9	1.5	1.6
2014	1.5	1.8	2.1	2.2	2	1.9	2	1.7	1.7	1.3	1.2	1.2
2015	1.4	1.5	2.4	2.4	2.3	2	2	1.7	2.2	1.8	1.8	1.6
Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY												

Table 5. 5 Monthly Mean Relative Humidity(%) at (9:30)hrs M.S.T

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	84	75	77	75	84	91	95	93	92	84	78	75
2007	74	67	70	69	89	91	92	91	94	87	81	78
2008	78	68	71	78	87	89	91	93	92	85	76	72
2009	70	74	76	71	82	89	93	90	88	84	70	69
2010	70	64	73	67	70	83	85	88	83	80	68	66
2011	66	63	71	69	82	87	88	88	88	82	70	70
2012	63	70	70	66	77	86	88	89	84	80	78	75
2013	71	70	68	67	78	89	89	90	89	81	75	74
2014	71	70	66	71	75	87	91	89	83	76	77	66
2015	65	66	64	65	73	84	88	89	87	84	76	72
Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY												

Table 5. 6 Monthly Mean Relative Humidity(%) at (18:30)hrs M.S.T

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	76	64	61	66	85	91	96	93	91	86	74	70
2007	70	62	58	59	89	91	92	93	94	88	80	72
2008	70	62	58	70	88	90	93	93	92	87	76	70
2009	62	61	62	67	81	92	94	90	91	86	75	70
2010	63	56	58	54	71	87	87	88	90	88	78	75
2011	70	57	67	64	84	89	89	93	93	89	74	63
2012	59	56	52	57	76	85	91	93	87	84	86	78
2013	68	56	54	57	78	90	92	90	92	86	82	73
2014	66	55	49	59	74	91	93	91	88	85	82	70
2015	65	51	52	57	75	91	92	96	92	88	78	70
Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY												

Table 5. 7 Monthly Mean Maximum Temperature (°C)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	32.8	35.9	37.6	36.6	32.5	31.4	30.2	29.9	30.7	34	35.8	34.1
2007	34.3	35.6	37.3	38.8	31.7	31.3	30	30.2	29.6	31.8	33.6	33.4
2008	33.9	34.6	37.2	36.4	31.6	31.1	30.4	30.1	30.9	32.5	33.3	32.5
2009	32.6	35.4	36.6	36	33.8	30.8	29.9	31.2	31.6	33	34.9	33.5
2010	34.4	35.8	37.2	39.2	37.2	33	32.5	31.1	32.1	32.7	34.6	33
2011	32.3	34.8	33.7	36.5	33	31.7	31.2	30.5	31.2	33	34.2	33.3
2012	33.5	36	36.9	37.9	34.8	31.7	31.1	30.2	32.1	33.9	33.8	33
2013	32.7	36.7	37.1	38.6	35.5	31.4	30.4	30.9	31.2	32.6	34.1	30.9
2014	32.3	34.4	37.4	38.1	35.9	32.1	31	31.1	31.9	33.6	33.4	33.8
2015	32.7	35	37.7	38.1	35.9	32.3	31.7	31.2	32.2	32.4	34	33.3
Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY												

Table 5. 8 Monthly Mean Minimum Temperature (°C)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	14.8	16.3	19.4	21	20.8	20.6	20.1	22.8	24.2	24.5	22.2	17.8
2007	17.4	18.9	21.1	25	24.5	24	23.2	23.1	22.5	22.2	20.7	16.5
2008	17	17.5	21.1	23.3	22.6	22.1	21.6	21.4	21.3	21.5	19.5	16.5
2009	11.3	12.3	17.2	21.9	23	21.7	21.8	22.1	22.1	22.1	18.6	12.8
2010	12.3	13	18.5	22.2	24.3	23.5	23	23.2	23.2	22.6	20	15.6
2011	18.2	19.6	21.6	24.4	24.7	24.7	24	23.7	23.6	23.5	21.4	19.7
2012	17.1	18.8	21.9	24.4	24.5	23.6	22.8	22.4	22.6	22.7	22.1	17.3
2013	15.8	19.2	20	21.9	22.4	22.1	24	24.2	23.9	23.7	22.9	17.6
2014	16.1	17.8	20	23.8	23.7	22.8	21.8	21.3	21	22.6	21.9	19.5
2015	18.9	18.8	21.8	23.9	24.9	24.5	24.4	24.3	24	23.5	22	19.4

Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY

Table 5. 9 Wind Speed And Wind Direction Hourly Data (HAZ SCANNER)

YEAR	MONTH	DAY	HOUR	WIND DIRECTION (degrees)	WIND SPEED (m/sec)	HOURLY PRECIPITATION
2016	9	23	1	67.5	4.8	-
2016	9	23	2	90	4.8	-
2016	9	23	2	90	4.8	-
2016	9	23	2	90	6.4	-
2016	9	23	2	45	4.8	-
2016	9	23	2	67.5	4.8	-
2016	9	23	2	67.5	4.8	-
2016	9	23	2	22.5	4.8	-
2016	9	23	2	90	4.8	-
2016	9	23	2	0	4.8	-
2016	9	23	2	22.5	3.2	-
2016	9	23	2	0	3.2	-
2016	9	23	2	0	3.2	-
2016	9	23	2	0	3.2	-
2016	9	23	2	22.5	3.2	-
2016	9	23	2	0	1.6	-
2016	9	23	2	337.5	1.6	-
2016	9	23	2	337.5	0	-
2016	9	23	2	67.5	0	-
2016	9	23	2	67.5	0	-
2016	9	24	2	135	0	-
2016	9	24	2	225	1.6	-
2016	9	24	2	90	1.6	-
2016	9	24	2	90	1.6	-
2016	9	24	2	112.5	1.6	-
2016	9	24	2	90	1.6	-
2016	9	24	2	135	1.6	-

YEAR	MONTH	DAY	HOUR	WIND DIRECTION (degrees)	WIND SPEED (m/sec)	HOURLY PRECIPITATION
2016	9	24	2	135	0	-
2016	9	24	2	135	1.6	-
2016	9	24	2	90	1.6	-
2016	9	24	2	45	0	-
2016	9	24	2	135	0	-
2016	9	24	2	45	0	-
2016	9	24	2	157.5	0	-
2016	9	24	2	22.5	0	-
2016	9	24	2	157.5	0	-
2016	9	24	2	22.5	1.6	-
Source: DEPARTMENT OF METEOROLOGY AND HYDROLOGY						

The wind rose was derived from meteorological data such as wind speed/wind direction using HAZ-SCANNER (EPAS) on site during air quality measured at 9-10-2018 and 10-10-2018 (Figure 5.1).

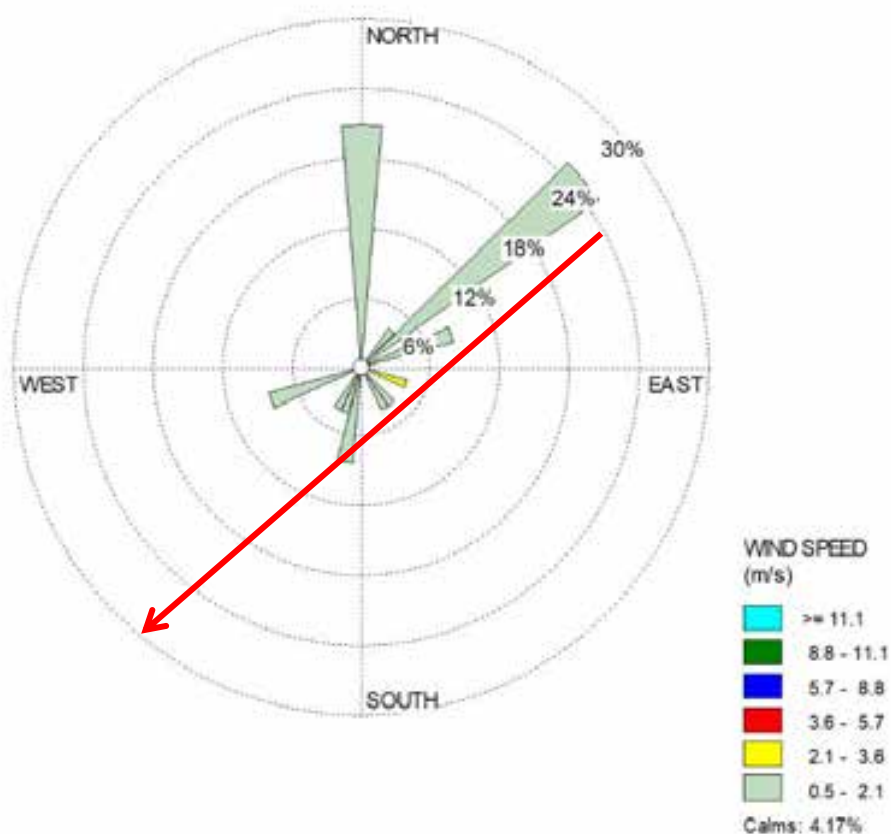


Figure 5. 1 Wind Rose showing wind direction and wind speed

Note: This is wind direction photo. Wind direction is north-east to south-west. Wind speed is 2.07 m/s. The length of each bar represents the frequency of occurrence of wind towards the

source (YCP) and north towards the receptors (sensitive buildings), the colors of the bar sections corresponding to wind speed categories.

5.2.2 Air Quality

Before the YCP is implemented, baseline air quality was measured on 9-10-2018 to 10-10-2018 during the commencement of EIA study in the project site to assess background levels of key pollutants and to differentiate between existing ambient air quality conditions and project-related impacts in future. During the air quality study, the following parameters were measured with Environmental Perimeter Air Station (EPAS) viz., Dust (PM₁₀ and PM_{2.5}), and gases, CO₂, CO, SO₂, NO₂.

Ambient dust quality such as PM₁₀ and PM_{2.5} were measured for 24 hours during the commencement of the EIA study. Construction activities may generate emission of fugitive dust PM₁₀, PM_{2.5} caused by a combination of on-site excavation and movement of earth materials, contact of construction machinery with bare soil, and exposure of bare soil and soil piles to the wind. A secondary source of emissions may include exhaust from diesel engines of earth moving equipment.

According to the Wind Rose diagram (see above) it is blowing towards YCP with a low speed of 0.5 to 2.1 m/sec and the dispersal of dust particles can be considered negligible. Besides YCP has plans to spray water with a water bowser to dampen the dust such that there will be no impact due to neighboring communities due to the construction activities of YCP.

Also, during the excavation for the basement, the excavated soil will be properly covered with tarpaulin to prevent the soil particles from dispersal.

The results of dust particles are presented in the following:

5.2.2.1. Existing Air Quality

Air quality sampling station was deployed in the YCP site from 9-10-2018 to 10-10-2018 ambient air quality data along with meteorological data of wind speed, wind direction, temperature and relative humidity. The data gathered from the sampling sites were compared with the applicable standards (such as NEQ (Emission) Guidelines (2015), WHO Guidelines and IFC Guidelines).

The objective of the assessment is to determine the existing baseline air quality status in the vicinity of the proposed project.



Figure 5. 2 Location of the air and noise monitoring sites

5.2.2.2. Methodology

Materials and Methods of Air Quality Sampling

Air Quality Sampling Instrument

The air quality sampling survey was conducted by using the HAZ-SCANNER (EPAS) Environmental Perimeter Air Station (**Figure 5.3**).

(a) Principles

The EPAS, manufactured by EDC/SKC (USA), is a light scattering photometer equipped with a filter sampling system. This dual capability allows for simultaneous real-time and filter measurement. Single-jet impactors were used for particulate size selection and the PM₁₀ and PM_{2.5} impactors were used for this air quality survey.

The highly sensitive EPAS provides real-time determinations and data recordings of airborne particle concentration in $\mu\text{g}/\text{m}^3$. It provides the minimum, maximum and time-weighted average (TWA) monitoring of gases as well.

This instrument is factory calibrated with the appropriate USEPA certified target gas and correlated with USEPA methods. (Ref: Code of Federal Regulation 40CFR part 53).

(i) Sampling Time

The survey sampled 24hr continuously at the site.

(ii) Ambient Air Parameters to be measured

Ambient air sampling survey is mainly focused on the USEPA Criteria for air pollutants, which can affect the human health and environment.

1) **Particulates:** PM_{10} , $PM_{2.5}$

2) **Gases:** NO_2 , SO_2 , CO , CO_2 ,

3) **Meteorology:** *Temperature, Relative Humidity*, which can have an influence on both local and regional air quality

Particulates (sensor: 90-degree Infrared Light Scattering) Calibration: Gravimetric reference NIST Traceable - SAE fine dust- ISO12103-1 Accuracy ($\pm 10\%$ to filter gravimetric SAE fine test dust which falls under the ACGIH/ ISO/CEN criteria. Detection limit – 1-20,000 $\mu\text{g}/\text{m}^3$. The results of $PM_{2.5}$ and PM_{10} are presented in the following tables:

Gases (sensor: electrochemical) Calibration: ppm equivalent change/year in lab air (24 month warranted)

NO_2 , Detection limit – (0-5000) ppb

SO_2 Detection limit – (0-5000) ppb

CO Detection limit – (0-100) ppb

CO_2 Detection limit – (0-5000) ppm

Meteorology (EPAS Meters)

Temperature Detection limit - (-4 to 140° F)/ (-20° - 60° C)

Relative Humidity Detection limit – (90-100%)

Wind Speed – (sensor: 3-cup anemometer) Detection limit - (0 – 125mph)

Wind Direction (sensor: continuous rotation on potentiometric wind direction vane)
Detection limit - (5 – 355deg)

Supply Voltage- between (10V-12V)

Air Quality (gas) sampled data at the sampling sites

Ambient Air Quality at YCP Site (24 hrs continuous)

(Lat -16°47'5.93"N Long 96° 9'9.12"E) Elev. 76 ft



Figure 5. 3 Air measurements at YCP Site

Table 5. 10 Particulate Matter (PM₁₀), YCP Ambient Air Quality (24 hrs continuous)

Date	Time	Parameter	Result (µg/m ³)	Guideline Value (µg/m ³)
9/10.Oct.2018	Start Time:10:45 End Time:10:45	PM ₁₀	11.54	50
Remark-NEQEG (2015)				

Table 5. 11 Particulate Matter (PM_{2.5}) YCP Ambient Air Quality (24 hrs continuous)

Date	Time	Parameter	Result (µg/m ³)	Guideline Value (µg/m ³)
9/10.Oct.2018	Start Time:10:45 End Time:10:45	PM _{2.5}	6.53	25
Remark-NEQEG (2015)				

Gases

On the project site, by using EPAS, ambient gaseous quality such as CO, CO₂, SO₂, NO₂ were assessed. The results on the measured gases are presented in the following tables:

During the operation period, potential air emissions generated from mixed development facilities include products of combustion (e.g. CO₂, NO_x, SO_x, and hydrocarbon) and particulates from fossil fuel-operated generators. The mixed development facilities may emit volatile organic compounds (VOC) from dry-cleaning, refrigeration, and air conditioning services.

Table 5. 12 Nitrogen Dioxide (NO₂), YCP Ambient Air Quality (24 hrs continuous)

Date	Time	Parameter	Result (µg/m ³)	Guideline Value (µg/m ³)
9/10.Oct.2018	Start Time: 10:45 End Time: 10:45	NO ₂	32.97	200
Remark-NEQEG (2015)				

Table 5. 13 Sulfur Dioxide (SO₂), YCP Ambient Air Quality (24 hrs continuous)

Date	Time	Parameter	Result (µg/m ³)	Guideline Value (µg/m ³)
9/10.Oct.2018	Start Time: 10:45 End Time: 10:45	SO ₂	1.00	20
Remark-NEQEG (2015)				

Table 5. 14 Carbon Monoxide (CO), YCP Ambient Air Quality (24 hrs continuous)

Date	Time	Parameter	Result (ppm)	Guideline Value (ppm)
9/10.Oct.2018	Start Time: 10:45 End Time: 10:45	CO	0.0015	9
Remark- NAAQS, 2015				

Table 5. 15 Carbon Dioxide (CO₂), YCP Ambient Air Quality (24 hrs continuous)

Date	Time	Parameter	Result (ppm)	Guideline Value (ppm)
9/10.Oct.2018	Start Time: 10:45 End Time:10:45	CO ₂	200.58	5000
Remark- ACGIH, 2003				

Table 5. 16 Results of Ambient Air Quality of YCP

Sr.	Parameters	Results	(Guideline Values)	Remarks
1.	PM ₁₀	11.54 µg/m ³	50 µg/m ³	NEQEG 2015
2.	PM _{2.5}	6.53 µg/m ³	25 µg/m ³	NEQEG 2015
3.	NO ₂	32.97 µg/m ³	200 µg/m ³	NEQEG 2015
4.	SO ₂	1.00 µg/m ³	20 µg/m ³	NEQEG 2015
5.	CO	0.0015 ppm	9 ppm	NAAQS, 2015
6.	CO ₂	200.58 ppm	5000 ppm	ACGIH, 2003

The results of ambient air quality of YCP indicated that particulate matter (PM₁₀ and PM_{2.5}) (dust) are within the permissible limits, due to the fact that the surrounding roads are paved with asphalt and also most probably due to the fact that measurements were taken just after the rainy season, where the humidity is quite low. NO₂ and SO₂ are well within the permissible limit due to traffic. CO emissions are also found to be quite low. The results of RH, Temperature and Voltage are presented in the following tables:

Table 5. 17 Relative Humidity of YCP Site (24 hrs. continuous)

Date	Time	Parameter (%)	Result (%)	Guideline Value
9/10.Oct.2018	Start Time: 10:45 End Time:10:45	RH (%)	24.75 (%)	NIL-
Remark				

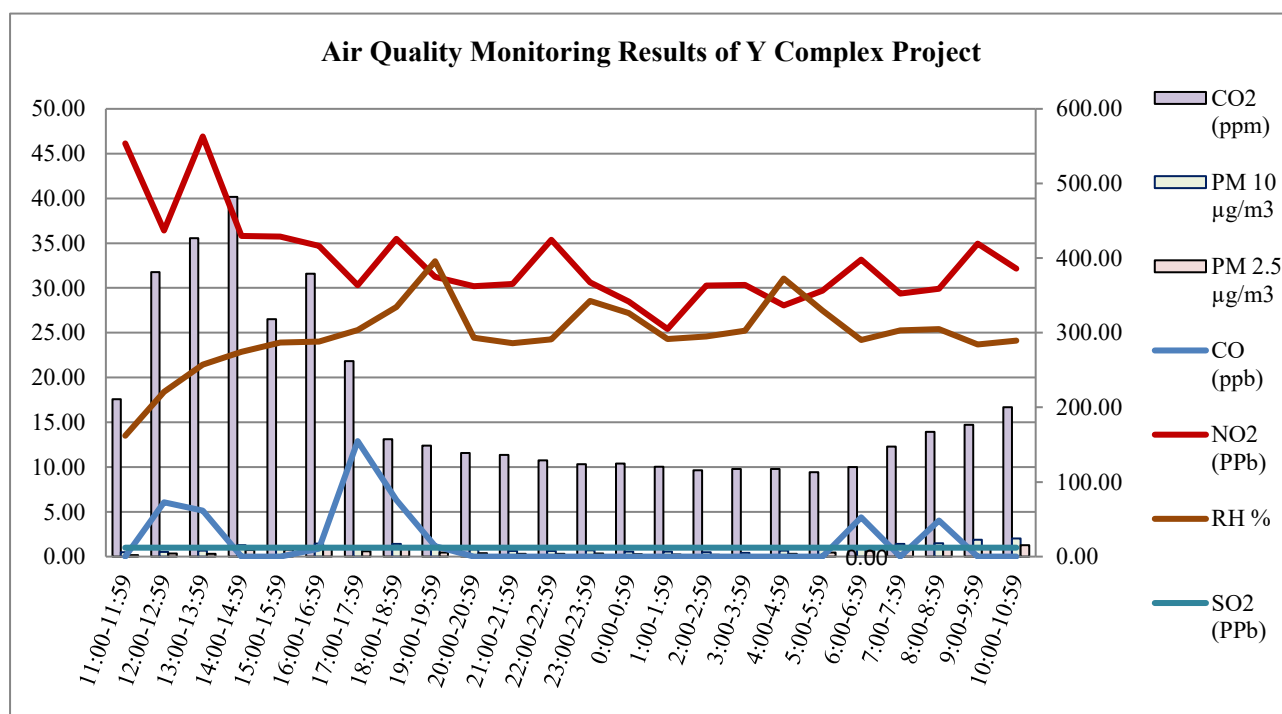


Figure 5. 4 Air Quality Monitoring Results of Y Complex Project

In addition, similar to construction phases, negative impacts on ambient air quality such as emissions of dust particles could be expected during the decommissioning or dismantling phase of the proposed project, after its lifespan.

5.2.3 Odor (Bad Smell and Stench)

Odor (Bad smell or Stench) is a kind of off-site nuisance or annoyance conditions complained by the public. It is necessary to control odors to ensure that are offensive or unacceptable to neighbors do not occur. Generally, odor levels are measured by hand-held hydrogen sulfide meters (Mostly this kind of nuisance from the YCP generates from the restaurants and also from the septic systems). Generally, odor levels should not exceed five or 10 odorant units at

the edge of populated areas in the vicinity of the project. Actually, in practice offensive odor can be judged by public reaction to the odor as low as two odorant units and as high as ten odorant units for less offensive odors. An odorant assessment criteria of five to ten odorant units is likely to represent the level below which offensive odors should not occur.

5.3 Noise and Vibration

Before the said project is implemented, the baseline noise level was measured during the EIA study at three locations (sensitive receptors) in the vicinity of the site, to assess background levels of noise and to differentiate between existing noise conditions and project-related noise impacts in future. The noise level dBA in the perimeter of the project area was measured for 24 hours by Digital Sound Level Meter. According to the data interpretation, mitigation measures will be considered, if the observed values are out of the range of the standards during the construction phase.

During construction activities, noise and vibration may cause by the operation of bored pile operations, earth moving and excavation equipment, concrete mixers, tower-cranes and the transportation of equipment, materials, and people. The noise and vibration conditions of the proposed YCP were also measured using noise and vibration meters.

In the operation phase, the areas and sources of noise emissions include mechanical rooms, kitchens and laundries, waste management areas (including compactors), parking areas, entertainment areas, and lobby area. Noise management is largely an issue relevant to indoor environmental quality.



Figure 5. 5 Photos of Noise Meters

5.3.1 Ambient Noise Quality

5.3.1.1 Introduction

Sound becomes noise only when it becomes unwanted and if it becomes more than that, it is referred to as "noise pollution". The problem has been viewed and analyzed from all the perspectives but the solution probably is not so easy to achieve since there is a lot of contradiction between legislation, guidance, and documents. Resulting in noise pollution has many reasons such as construction being close to human habitats, which prevent the noise from reducing before it reaches the human ear.

The purpose of this assessment is to reveal not only the existing baseline noise level but also to ascertain the noise quality being produced by the current project site.

5.3.1.2 Noise Levels

Ambient Noise Level at Receptors site (24 Hours continuous)

The following table shows the ambient noise level of YCP

Table 5. 18 Ambient Noise Level Measured at 3 Receptors (24 hours Continuous)

Location (Receptor)	Day Time Average Noise Level (dBA)	Night Time Average Noise Level (dBA)	NEQE Guideline (2015)
Kyar Gu Monastery	64.89	65.72	DT: 70dBA ^d NT: 70dBA ^d
St. Grabriel Chuch	64.95	62.97	-ditto-
Sein Yaung Chi Pagoda	66.31	61.82	-ditto-

Remarks: Day Time: 07:00 to 22:00 Night Time: 22:00 to 07:00

The ambient noise level at the selected site indicated that the ambient noise level at the cultural heritage sites (receptors are well within the acceptable levels of NEQE Guidelines (2015).

A 30 minute traffic noise was measured at random points along the Shwedagon Pagoda Road close to the roadside within the three sensitive cultural sites to find out the effect of traffic noise on the receptor value.

Sr.	Location	Noise Level (Traffic) dBA		Noise Level (Receptor) dBA		NEQE Guideline (2015)
		Day Time (Average)	Night Time (Average)	Day Time (Average)	Night Time (Average)	
1.	Kyar Gu Monastery	71.80	61.68	64.89	65.72	DT: 70dBA NT: 70dBA
2.	St. Grabriel Chuch	71.00	67.18	64.95	62.97	
3.	Sein Yaung Chi Pagoda	71.86	67.06	66.31	61.82	

In an outdoor environment like this study, it can be realized that sound level attenuates with distance. Such attenuation is called “distance loss” and is influenced by the noise configuration (point source or line source). In this case noise level at Receptor is generally lower than the noise level due to traffic which is a line source. Hence, it can be concluded that the noise levels due to construction activities at YCP could not affect the hearing for the nearby communities.

5.4 Vibration Measurement

For the relevance of the study, the impact caused by vibration due to the YCP activities together with the operation of vehicles in the surrounding of YCP during the existing condition is considered.

Any impact caused by vibration alone is not considered significant. Vibration caused by the vehicle movement related to the site activities will be a period of intensive activities. As Myanmar has no standards for the limits of motor vehicle vibration, the standard of motor vehicle vibration of Japan is adopted as shown in **Table 5. 19**.

Table 5. 19 Vibration Standard (Japan)

Time Area	Daytime	Nighttime	Applicable Areas
I	65 dB	60 dB	Areas where maintenance of quiet is particularly needed to preserve a good living environment and where quiet is needed for as they are used for residential purposes.
II	70 dB	65 dB	Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of local residents and areas mainly serving industrial purposes, which are in need of measures to prevent the living environment of local residents from deteriorating.

Note: Vibration level shall be measured at the boundary line of the road.

Conversion formulation for vibration: PVV and dB

{dB = 20 Log (PVV) + 71 dB} (for instance, PVV= 0.5 mm/s)

In order to find out the vibration impacts of construction activities on existing buildings, vibration studies were conducted from 28th May 2019 to 31st May 2019 at the 3 sensitive receptors within the 200 m radial distance according to the scoping process, using RION VM 55 Vibration Meter. The results are shown in **Table 5. 20**.

Table 5. 20 Vibrations due to Construction Activities of YCP

Location (Receptor)	X_Lveq (dB)		Y_Lveq (dB)		Z_Lveq (dB)	
	Day Time (7:00 to 22:00)	Nighttime (22:00 to 7:00)	Day Time (7:00 to 22:00)	Nighttime (22:00 to 7:00)	Day Time (7:00 to 22:00)	Nighttime (22:00 to 7:00)
Kyar Gu Monsasry	38.98	31.91	30.39	32.30	36.29	31.60
St. Grabiell Church	39.16	30.61	31.83	31.44	37.20	26.56
Sein Yaung Chi Pagoda	39.99	35.26	32.53	33.84	35.17	24.50
Japanese Standard	70.0	65.0	70.0	65.0	70.0	65.0

Source: Vibration Regulation in Japan, Ministry of Environment, Government of Japan, 1976.

Point -1: Kyar Gu Monastery Point-2: St. Gabriel Church Point-3: Sein Yaung Chi Pagoda

Vibration meter, measuring points in the project site is shown in



Figure 5. 6 RION VM55 Vibration Meter



Figure 5. 7 Locations of Noise and Vibrations Measurements at 3 receptors (Cultural Heritage Sites)

The results of measuring vibrations at the receptors of (3) sensitive Cultural Heritage buildings for continuous 24 hours indicated that vibrations data are well below the '*Threshold damage limits*' according to the vibration standards from Japan



Figure 5. 8 Measuring Noise/Vibration at Kyar Gu Monastery near construction yard of YCP in the foreground



Figure 5. 9 Measuring Noise/Vibration at St. Grabiell Church



Figure 5. 10 Measuring Noise/Vibration at Sein Yaung Chi Monastery with Tower Crane of YCP at the foreground

In terms of factors that influence levels of ground-borne vibration due to vehicles are generally stated as follows:

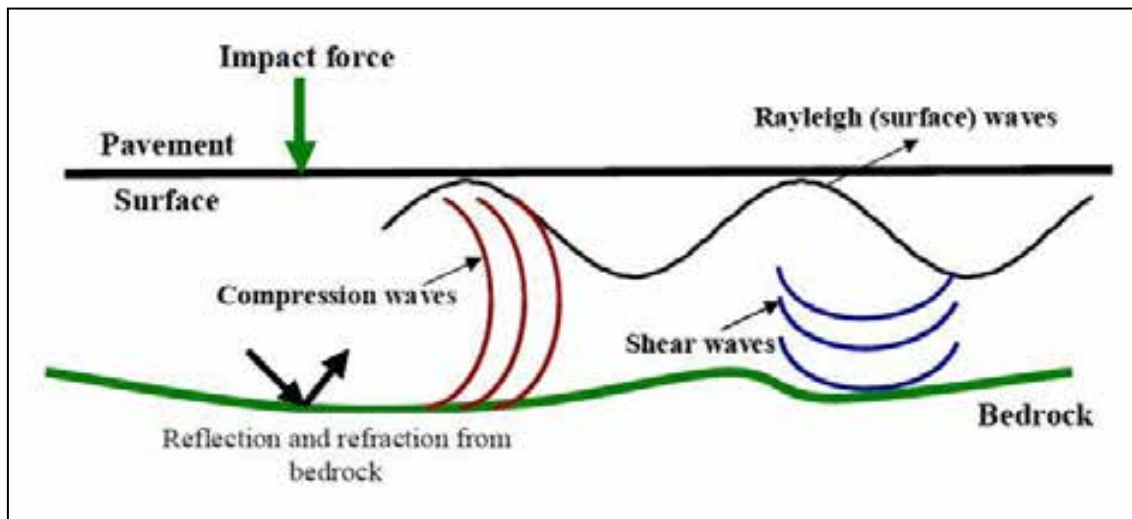


Figure 5. 11 Propagation of Ground-Borne Vibration

Vibration of Buildings

It is generally stated that the concerns of impacts due to vibrations on buildings are related to cosmetic cracking. Modern construction uses drywall with paint and plaster. For historical buildings such as SeinYaung Chi Pagoda, Kyargu Monastery and Saint Gabriel Church the interior walls could use wood support covered in thick plaster. The likelihood of cosmetic cracking in an older building is greater than in modern buildings. Masonry or concrete are strong materials and will only crack at very high vibrations, somewhat consistent with a blast or earthquake.

Historic Buildings

The risk of damage to the historic building from vibration will be higher than an ordinary building. Some European jurisdictions (Switzerland and Germany) establish vibrations limits for historic structures at 10 to 20% of the limits applicable to new construction.

According to the Vibration Regulation Law of the Ministry of the Environment, Government of Japan, it is stated that the standards for vibration emitted from specific Construction Works is stated below:



Figure 5. 12 Photo showing historical buildings in the vicinity of Y Complex

Table 5. 21 Standards for Vibration Emitted from Specified Construction Works (Japan)

Type of Restriction	Area Classified	Remark
Standard value	I & II	75dB
Work prohibited time	I	7 p.m. - 7 a.m.
	II	10 p.m. - 6 p.m.
Maximum Working duration	I	10 hours per day
	II	14 hours per day
Maximum consecutive working days	I & II	6 days
Work prohibited days	I & II	Sundays and holidays

Note: 1. 'Area I' stands for areas to which one of the following descriptions applies:

- 1) Areas where maintenance of quiet is particularly needed to preserve the residential environment.
- 2) Areas, which require maintenance of quiet since they are used for residential purposes.
- 3) Areas used for commercial and industrial as well as the residential purpose which are in need of measures to prevent vibration pollution since a considerable number of houses are located.
- 4) The neighborhood of schools, hospitals and the like.

'Area II' stands for areas where there is a need to preserve the living environment of inhabitants and other than Area I.

1. Vibration level shall be measured at the boundary line of the specified construction work site.

During the construction stage, it is expected that the vibration limits can be extended to 75dB due the construction activities according to the Japanese standard of vibration. Within 200 m radius of the project, the historic resources present are Sein Yaung Chi Pagoda, Kyar Gu Monastery and St. Gabriel Church. The Kyar Gu Monastery is the closest one, which is adjacent to the project site while the other two are about 50m apart from the project site as they are situated on the opposite side of Shwedagon Pagoda road.

Construction activities include arriving and departing of construction workers, movement of materials and equipment and removal of construction waste. Noise and Vibrations levels during the construction of the project would include the operation of the construction equipment and machineries such as tower cranes and concrete mixer trucks, trucks delivering materials and removing debris from the site. The severity of vibration impacts from these sources would depend on the noise/vibration characteristics of the equipment, activities involved and the distance to potentially sensitive receptors.

In order to find out the damage levels of buildings from vibrations, US Bureau of Mines (USBM) had studied to determine the damage thresholds in the 1970s and 1980s and reported the following **Table 5.22** and **Table 5.23**.

‘Threshold damage is defined as the opening of old cracks, the formation of new hairline cracks in drywall or plaster wall finishes, and dislodging of loose objects, typically appeared at approximately 2-3 in/sec (105.1dB) and was not observed below 1.0 in/sec (108.63dB)

Table 5. 22 Damage Threshold

Condition Observation	Typical Peak Particles Velocity (in/sec)	Typical Peak Particles Velocity (dB)
Threshold Damage (hairline cracking in plaster, the opening of old cracks, etc)	2-3 Never at <0.5	105.1 - 108.63 Never at <93.07
Minor Damage (hairline cracking in masonry, breaking of windows)	4-5 Never at < 1.0	111.13 - 113.07 Never at < 99.06
Major Structure Damage (cracking or shifting of foundations or	>5	>113.07

Table 5. 23 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft (in/sec)	Approximate Lv dB at 25 ft
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper range	0.734	105
	Typical	0.170	93

Equipment		PPV at 25 ft (in/sec)	Approximate Lv dB at 25 ft
Clam shovel drop (slurry wall)		0.202	94
Hydro-mill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

It can be observed from the above table that the pile driving process during construction is the most serious vibration impact compared to other construction activities. As YCP is planned to use the bored pile method for foundation laying purpose, the vibration will be much lower as experienced by those adopting the bored pile method for laying out the foundation for construction works.

Neighboring Building

According to the Toronto Building Council (2007), based on the results of technical research for monitoring vibration levels, it is suggested that the PPV limits of the nearest neighboring building be 25mm/sec or 98.95 dB regardless of the frequency. Hence, the PPV near certain historic buildings may need to be less than the values mentioned in the table below.

Table 5. 24 Frequency Baseline Limits

Frequency (Hz)	Vibration Peak Particle Velocity (mm/sec)	Vibration Peak Particle Velocity (dB)
< 4	8	89.06
4 to 10	15	94.52
>10	25	98.95

This is well supported by UK Transport and Road Research Laboratory (TRRL) studies for the effects of vibration on People and Buildings with PPV and dB equivalents in vertical direction as follows:

Table 5. 25 Description of Effects of Vibration on People and Buildings

PPV (mm/s)	dB	Human Reaction	Effect on Buildings
0 – 0.15	0-54	Imperceptible	Unlikely to cause damage of any type
0.15 – 0.3	54-60	Threshold perception of	Unlikely to cause damage of any type

PPV (mm/s)	dB	Human Reaction	Effect on Buildings
2.0	77	Vibrations perceptible	Recommended upper level to which ruins and ancient monuments should be subjected
2.5	78	Continuous exposure to vibrations begins to annoy	Virtually no risk of “architectural” damage to normal buildings
5	84	Vibrations annoying to people in buildings	The threshold for risk of “architectural” damage in houses with plastered walls and ceilings
10 - 15	91-94	Continuous vibrations unpleasant and unacceptable	Would cause “architectural” and possibly minor structural damage.

These figures will give some idea on how to monitor the Peak Particle Velocity (PPV) or Vibration level dB near historical buildings and should not exceed the values mentioned above and should be determined on a case by case basis for the YCP project.

Ground-borne vibration impacts were evaluated by identifying potential vibration sources, measuring the distances between the vibration sources (YCP Site) and surrounding (3) sensitive structures and comparing with a significance threshold limit of Japanese Vibration Standard as there is no Myanmar Standard for vibration.

Vibration measurements were made at (3) Cultural Heritage Sites (Kyar Gu Monastery, St. Gabriel Church and Sein Yaung Chi Pagoda) and the results (>40 dB day and night) indicated that the vibration measurements at the (3) sensitive receptors from ground-borne vibrations generated by construction activities (source) are well below the threshold limits of vibrations. due to the construction activities. (day 70 dB and night 65 dB)

Apart from that, it is mentioned in the Noise and Vibration due to Construction Activities at Los Angeles (City of Los Angeles, 2015) that for the potential of Building Damage, a significant impact would occur if the Project construction activities caused ground-borne vibration levels to exceed 0.50 inch/second PPV or (93.07 dB). ***As the vibration results at receptors are significantly below the threshold values (<40 dB) it can be concluded the construction activities of YCP would not have an impact on the sensitive Cultural Heritage Buildings as well as the surrounding Normal Buildings which are far apart.***

During the construction phase, the developer should appoint an engineer with experience in vibration monitoring. The engineer could determine the zone surrounding the construction site at which vibrations would reach 1.5 to 2.0 mm/sec or 74-77dB (approx. 75 dB) and undertake a pre-construction survey documenting the existing condition of structures with the zone of influence. **Once ‘the vibration level exceeds the threshold limit’ it is necessary to carry out appropriate mitigation measures such as ‘in-ground barriers’ and other**

mitigation measures such as ‘vehicle skirts, building noise barriers’ etc. Different Types of Vibration Barrier and in –ground Barrier is shown in **Figure 5.13** and **Figure 5.14**.

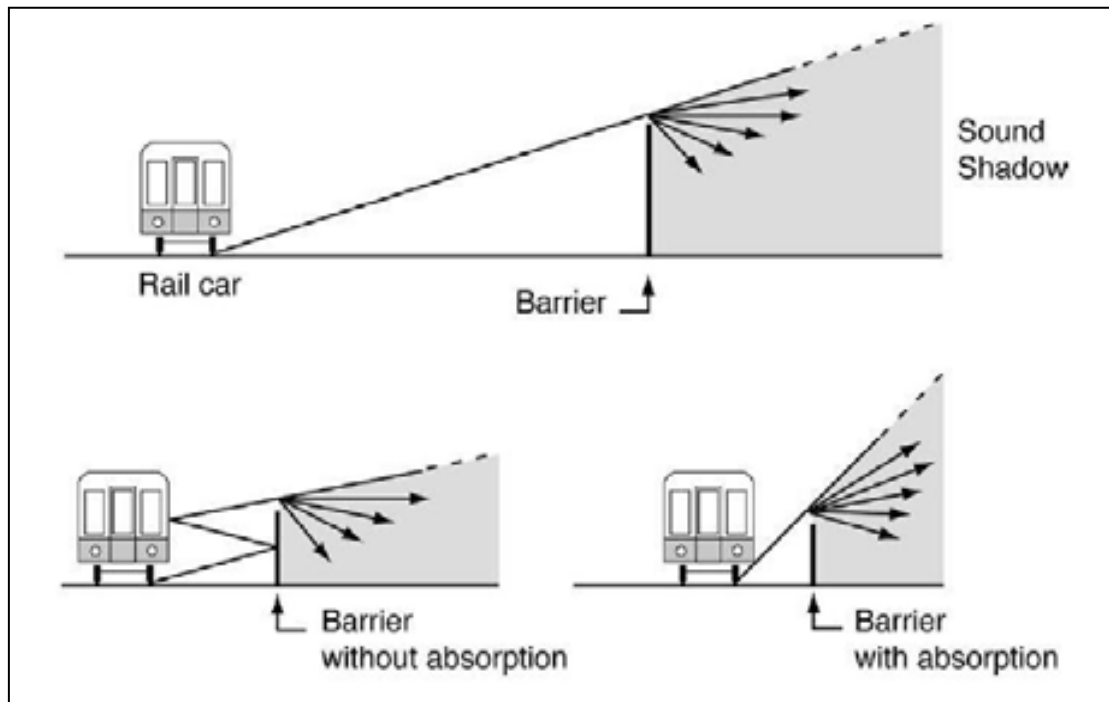


Figure 5. 13 Different Types of Vibration Barrier

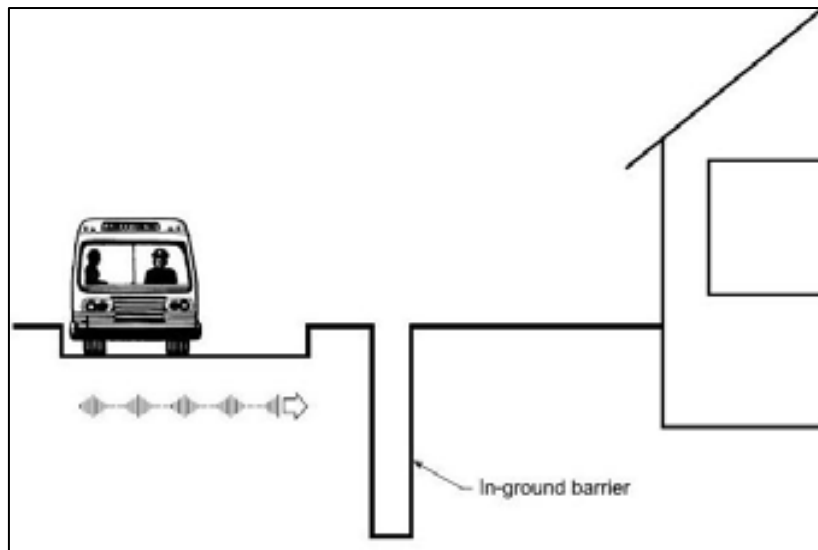


Figure 5. 14 In-ground Barrier

5.5 Biological /Living Organism

Biodiversity plays an important role in the day-to-day business of a hotel/office. Particularly, outside the premises such as plants and animals which makes a hotel’s public areas and gardens attractive for guests. The YCP has in its design to make a landscape planning at the ground floor area as well as green space on the 2nd floor of the office complex. The project site is situated in the heart of Yangon City Urban Area.

YCP intends to adopt a green design for the construction of a luxury hotel so as to help preserve the environment by saving energy, water, and resources. In addition, YCP will

provide a healthy and comfortable indoor environment to hotel occupants by providing “Green Spaces” on the first floor and ground floor of their luxury hotel. The reason behind this is that the design of hotels generally focuses on areas such as the lobby, the guest rooms, the bathrooms, food and beverages, spas and indoor decorations.

Currently, green hotels are defined as those that adopt policies that are safe, healthy and environmentally friendly, implement green management practices, advocate green consumption, and protect the environment and resources properly. Unlike other trades, the hotel business is treated as a kind of business that is sustainable about “fulfilling the guests’ current dreams without sacrificing future generation’s dreams and desires”. The objective is about achieving sustainability without making it about sacrifice” (Sheehan, 2007).

So far, hotel design features of YCP provide luxury environments to guests and enhance their satisfaction by adopting the green building practices that are implemented to achieve the goals of sustainability. Major benefits of the green spaces are that they can provide a pleasant and healthier indoor environment to building users.

As YCP is situated at the heart of Yangon City, biodiversity surveys will not be necessary.

5.6 Water Quality (Surface Water and Ground Water)

Before the said project is implemented, the baseline water quality of groundwater from 1 borehole was measured, in the vicinity of the site to assess background levels of key pollutants and to differentiate between existing water quality and project-related impacts in future. Groundwater quality such as pH, Color, Turbidity, Total Hardness, Carbonate (CaCO_3), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solid (TSS), Iron (Fe), Total Dissolved Solids (TDS), and Temperature were tested at ISO Tech Laboratory and SGS Laboratory. The observed values are compared with the WHO standards, YCDC, IFC and NEQG guidelines, etc. According to the results from the laboratory, it was found out that most of the parameters of the groundwater were found out to be well within the WHO Drinking Water Guidelines (Geneva-1993) except turbidity, iron, total suspended solids, and total dissolved solids were found to be higher than the standards (see Appendix II). YCP will install OJI water filtration system for the domestic water to get clean water produced from tube wells.



Figure 5. 15 Potable Water Treatment Plant

The result from the test indicates that the raw water quality is physically and chemically acceptable. The developer will supply the required water demand together with the water quality acceptable for drinking. All the necessary treatment required for producing potable water will be duly provided and space is reserved for water treatment plant if necessary.

In the phases of construction of buildings and decommissioning of the expired building, surface and groundwater may be contaminated by excavation or earthwork during monsoon season or rainy periods, and also from wastewater generated from workers and staff, leakage of oil and grease from vehicles and machines. Storage of construction materials, chemicals, and bituminous materials can percolate through the soil and can cause soil contamination and eventually groundwater pollution.

5.7 Drainage

The streams in the township where the project is situated are running from East to West and flow into the Hlaing River. The significant river is Hlaing River running across from the West of the Yangon City and it flows down from South to North.

5.7.1 Drainage/Floods

The drainage system of the existing drains and outlets consist of three main drains in the YCP: (1) along the Shwedagon Pagoda Road, (2) along the Uwisara Road and (3) underground drain. YCP will renovate the existing drainage network system so that the capacity of the drains is sufficient with the development. The wastewater from the project will be treated at their treatment plant and discharged into the existing drains. YCDC has

advised discharging both stormwater and wastewater to the drain along the Shwedagon Pagoda road only.

A new drain will be constructed by YCP from Pantra Road to Uwisara Road. The total proposed drain length is 374.81 m. The treated wastewater from the treatment plant will be discharged into the new drain. It is assumed that 70% of the stormwater from the upstream of the project area flows into Uwisara Road side drain and existing underground drain and 30% of stormwater runoffs into Shwedagon Pagoda Road side drain, thereby preventing the YCP area from flooding during the rainy season.

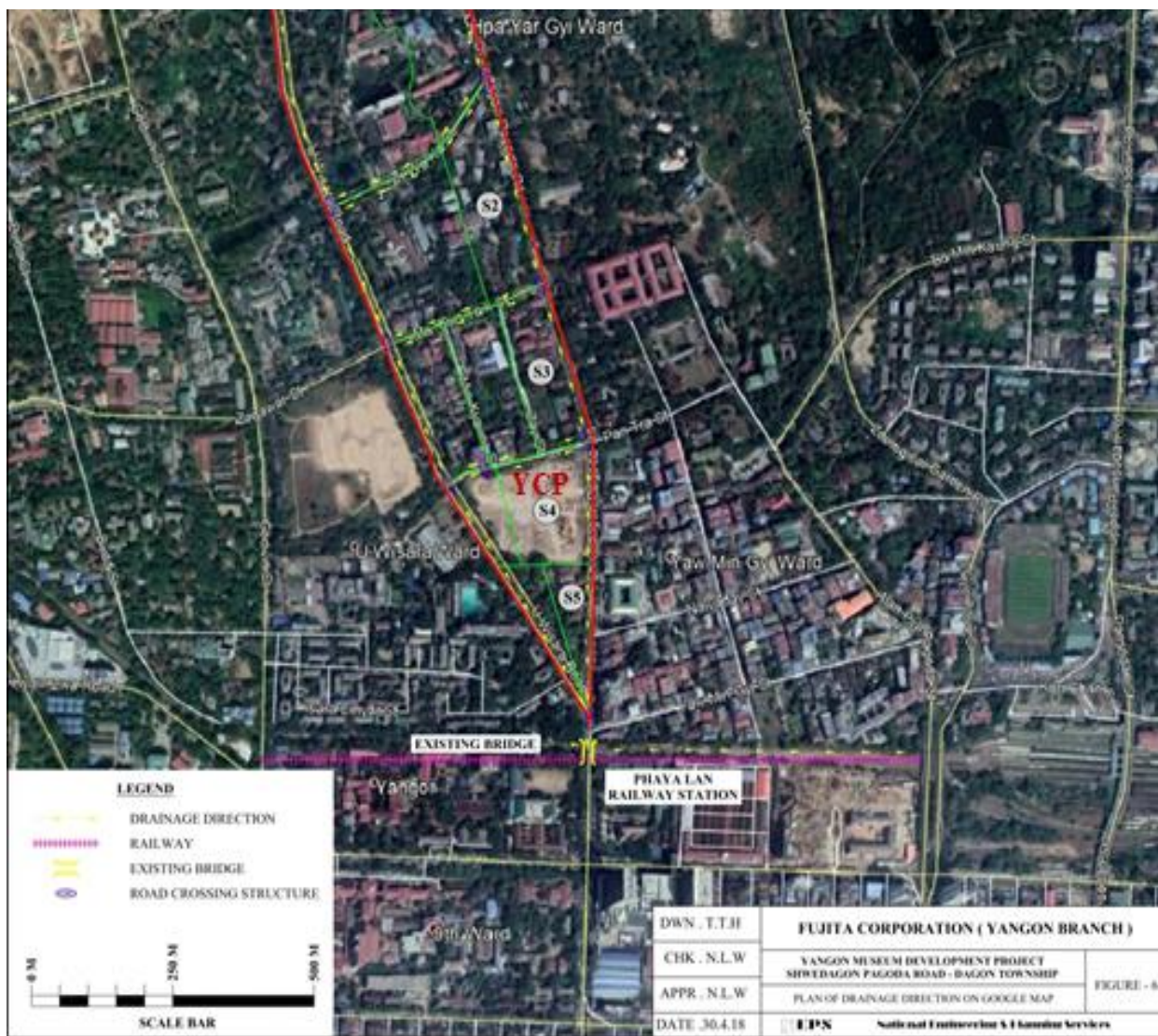


Figure 5. 16 YCP Drainage System with flow direction in Yellow Arrows

5.7.2 Sewage

Yangon City, the former capital city of the Republic of the Union of Myanmar, is the economic center of the country with a population of 5.21 million. In Yangon city, approximately 500,000 m³ (2011) of sewage (human waste, domestic wastewater and

industrial waste water) is generated per day. In Central Business District, hereinafter referred as to CBD, the area has quarter-millions of people and generates about 100,000 m³/day of sewage.

Sewerage system in Yangon City was firstly constructed in the downtown in the 1880s, which is located in the southern part of the city covering about 9 km² service area, and was expanded in

1929. A wastewater treatment plant was constructed in 2004 with a design capacity of 14,500 m³/day. Currently, the sewerage service area is limited to 6 townships out of 33 townships. In the remaining 27 townships, wastewater is treated by on-site systems (septic tank, etc.) and in such cases treatment efficiency is deemed to be below. Also, being located in the monsoon region, Yangon City has suffered due to flooding in the absence of appropriate wastewater collection networks.

For the treatment of human waste, human waste collection pipes installed in the British colonial era connect wastewater treatment plant constructed by their own budget in 2005. However, the collection area has not been expanded, issues such as water leakage due to old pipes, failures of pressure pumps are frequently identified and sewage influent volume to the wastewater treatment plant is currently 2,300 m³/day which is only 5% of the population of Yangon city. 80% of sewage is collected in septic tanks and 15% is discharged to stormwater drainage pipes without any treatment. As domestic wastewater and industrial wastewater are also discharged to stormwater drainage pipes, therefore, the water quality of rivers and lakes in the city has declined. Moreover, during the rainy season, overflow of flood water including human waste from stormwater drainages makes sanitary condition worsened. In addition, water supply system in CBD will be developed (water supply amount 86,000m³) in Greater Yangon Water Supply Improvement Project (Phase II) (yen-loan, L/A signed in 2017), accordingly sewage volume is also to be increased. The current situation of wastewater treatment not only brings forth deteriorated living conditions but also involves potential health risks.

Under the circumstances mentioned above, the development of sewerage systems in Yangon is urgently required for improvement of the level of services and living conditions.

In the past, JICA implemented a development plan titled “**PREPARATORY SURVEY FOR THE IMPROVEMENT OF WATER SUPPLY, SEWERAGE AND DRAINAGE SYSTEM IN YANGON CITY**” in March 2014. The study was conducted to prepare a sewerage system development plan targeting the year 2040. JICA study team will study and analyzed the background, objectives, and scope of the Project to check feasibility. Upon confirmation of the feasibility, JICA study team will study on appraisal items required for implementing the Project under the ODA loan project, such as objectives, scope, cost, implementation schedule, implementation method (procurement and construction), implementing organization, operation and maintenance organization, environmental and social considerations, etc.

5.8 Topography and Soil

Yangon Region is located at the eastern extremity of the Ayeyarwady Delta with the Andaman Sea on the south. It is the capital of the region. Shwedagon Pagoda is the famous pagoda in the Yangon Region. The Yangon River is about 40 km long (25miles), and flows from southern Myanmar as an outlet of the Ayeyarwady River into the Ayeyarwady delta. Yangon Region is formed with four districts, which are, east Yangon District, west Yangon District, north Yangon District and south Yangon District, and 45 townships.

The project is located in the Dagon Township at West Yangon District. It is a plain area by decreasing its gradient from east and northeast to west. The agriculture and horticulture are developed on the north plain because of plenty of water.

A total of 5 boreholes samples were obtained by soil boring with TOHO-D 1 drilling machine. These boring points were planned to investigate according to the client's requirements. Standard Penetration Tests were performed in all boreholes of designated locations in compliance with ASTM (American Society for Testing and Materials). The collected disturbed samples and undisturbed samples from the boreholes were analyzed at Fukken's Yangon Branch Laboratory. The collected soil samples from the boreholes were analyzed at Fukken's Yangon Branch Laboratory and the subsoil composition of the project site is presented in the table below:

Table 5. 26 Subsoil Composition

Borehole No.	Coordinate	Subsoil Composition	Groundwater Level	Termination Depth
BH(1)	E196472.000; N1857872.00	Clay-1, Clay-2, Clayey Sand, Silty Sand-1, Silty Sand-2, Silty Sand-3, Silty Sand-4	8.6m	59m
BH(2)	E196531.000; N1857874.000	Sandy Clay, Clay, Clayey Sand, Silty Sand-1, Silty Sand-2, Silty Sand-3, Silty Sand-4, Silty Sand-5	8.10m	62.00m
BH(3)	E 196525.000; N1857946.000	Clay-1, Clay-2, Clayey Sand-1, Clayey Sand-2, Silty Sand-1, Silty Sand-2, Silty Sand-3, Clay-3, Silty Sand-4, Silty Sand-5	9.50m	50.00m
BH(4)	E 196526.000; N1858032.000	Sandy Clay, Clay-1, Clayey Sand-1, Clayey Sand-2, Silty Sand-1, Silty Sand-2, Silty Sand-3, Clay-2, Silty Sand-4	10.30m	49m
BH(5)	E 196444.000; N1858016.000	Clay-1, Clay-2, Clayey Sand-1, Clayey Sand-2, Silty Sand-1, Silty Sand-2, Silty Sand-3, Clay-3, Silty Sand-4, Silty Sand-5	10.50m	53m

Source: Fukken Company Limited (July 2015)

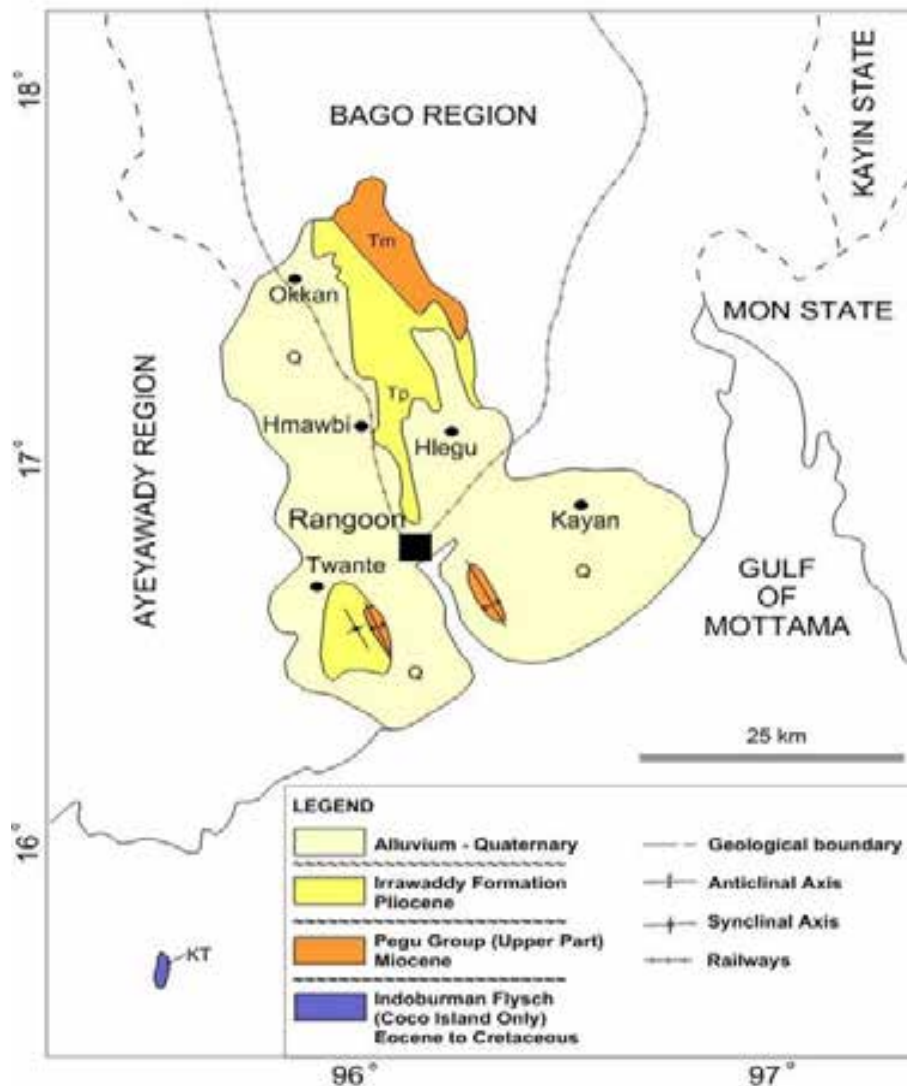
5.9 Regional Geology

Myanmar can be subdivided into three provinces (Maung Thein, 1993): namely, the Western Fold Belt (WFB) in the west, the Central Lowland (CL) in the middle, and the Eastern

Highland (EH) in the east. Tectonically, Yangon is situated in the southern part of the Central Lowland, which is one of three major tectonic provinces of Myanmar. The Central Lowland is the fertile alluvial, intermittently cropped out by the mountain range and hills running in a north-south direction and also enhanced. (See **Figure 5.17**)

Yangon Region is located at the eastern extremity of the Ayeyarwady Delta area with the Andaman Sea on the south-east. Yangon Region is bordered on the west by the Ayeyarwady Region, on the north and east by Bago Region and on the south by the Gulf of Mottama. High areas of the region are the southern end of the Bago Yoma near Phaunggyi, and its farther southward extensions of isolated low hills and ridges like those near Hlawga Lake, the Shwedagon Pagoda Hill in Yangon City itself, and the ridge or rolling hills southeast of Thanhlyin. Laterite for use as road material is now being quarried at Wanetchaung, between Hmawbi and Taikkyi, north of Yangon.

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Source: Outline Geology and Economic Mineral Occurrences of the Union of Myanmar, Dr. Win Swe)

Figure 5. 17 Regional Geology

Yangon Region is bordered on the west by the Ayeyarwady Region, on the north and east by Bago Region and on the south by the Gulf of Mottama. Noticeably high areas of the region are the southern end of the Bago Yoma near Phaunggyi, and its farther southward extensions of isolated low hills and ridges like those near Hlawga Lake, the Shwedagon Pagoda Hill in Yangon City itself, and the ridge or rolling hills southeast of Thanhlyin. Laterite for use as road material is now being quarried at Wanetchaung, between Hmawbi and Taikkyi, north of Yangon. By boring results of soil investigation, the project area has consisted of alluvial deposit of clay, clayey sand, and silty sand. According to the geological map of Win Swe (2012), the stratigraphic succession of the Yangon region is shown in **Table 5.27**.

Table 5. 27 Stratigraphic Succession of the Yangon Region

AGE	UNIT
QUATERNARY	Younger Alluvium Unconformity Older Alluvium Unconformity
UPPER MIOCENE-PLIOCENE	Irrawaddy Formation Unconformity
MIOCENE	Pegu Group (upper part only)

5.10 Earthquake Intensity of Yangon City

The project site is located in a zone of moderate seismicity zone (II) according to the seismic zone map of Myanmar 2005 (**Figure 5.18**).

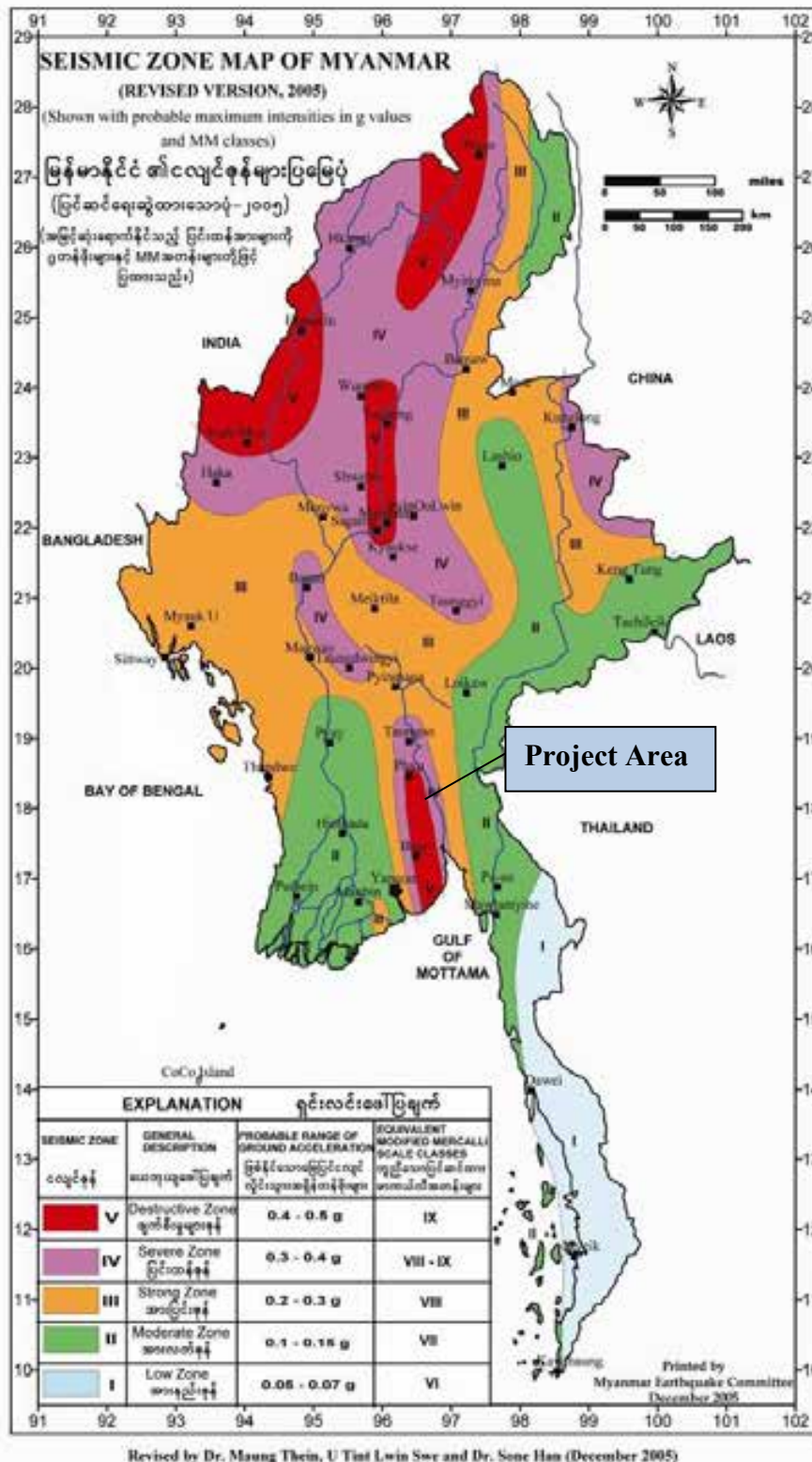


Figure 5. 18 Seismic Zone Map of Myanmar

Earthquake Events recorded in Yangon Region

According to **Table 5. 28**, from 2006 to 2014 earthquake events occurred in 2006, 2007, 2008, 2010, 2013 and 2014, except 2009, 2011 and 2012. However, the events were classified as slight as the scale of the magnitude ranges from 3.0 to 4.4.

Table 5. 28 Earthquake Events Recorded in Yangon Region														
No	Period						Epicenter		Magnitude Scale(M)					Class
	Date	Month	Year	Hours	Minute	Second	Latitude(N)	Longitude E	<4.0	<5.0	<6.0	<7.0	<8.0	
1	4	1	2006	11	9	54	17.12	95.98	3.9					Slight
2	23	6	2006	2	10	40	16.52	96.42	3.2					Slight
3	22	2	2007	3	20	31	17.33	95.95		4.4				Slight
4	26	4	2007	5	24	10	15.471	96.08		4.2				Slight
5	12	3	2008	0	46	32	16.54	95.99	3.0					Slight
6	2009(No earthquake events recorded in Yangon Region)													
7	29	4	2010	18	3	28	19.375	93.183			5.1			Moderate
8	2011(No earthquake events recorded in Yangon Region)													
9	2012(No earthquake events recorded in Yangon Region)													
10	20	1	2013	6	26	40	17.28	95.98	3.5					Slight
11	22	1	2013	8	35	14	16.29	96.45		4.1				Slight
12	30	1	2013	20	5	52	16.83	96.01	3.7					Slight
13	2	2	2013	13	5	15	16.33	96.37	3.4					Slight
14	4	8	2013	9	11	24	16.86	96.13		4				Slight
15	2	9	2014	8	57	18	16.45	96.47	3.4					Slight
16	2015 (No earthquake events recorded in Yangon Region)													

Table 5. 29 Seismic Zonation in Percentage: States and Regions of Myanmar

State or Region/Zone	I	II	III	IV	V
Bago Region		35	30	20	15
Chin State			55	22	23
Ayeyarwady Region		95	5		
Kayah State		98	1		
Kayin State	30	50	20		
Magway Region		15	50	35	
Mandalay Region			45	40	15
Mon State	20	70	10		
Rakhine State		15	85		
Sagaing Region			10	65	25
Shan State		40	40	20	
Tanintharyi Region	5	15			
Yangon Region		40	23	20	17

Source: Hazard Profile of Myanmar (2009)

Yangon City is situated in Earth Quake Zone II and is considered to be situated in earthquake-prone areas. Sagaing fault is the most active one and the past earthquakes recorded in Myanmar occurred along this fault.

Thus, earthquake resilient design features are needed to be incorporated into the design for any new infrastructure in Yangon City, particularly the high-rise buildings, like YCP, taking into consideration the seismic zones of a particular area.

5.11 Excavation and Backfilling

Buildings will be constructed; with a hotel tower, having the hotel reception, banquet halls, retail space, hotel guest rooms, long-term hotel suites and office buildings. Buildings will need car parking areas for the vehicles. In order to accommodate these, excavation works will be carried out for the two-level basement car parks as follows:

Table 5. 30 Basement Excavation, Backfilling and Disposal

Item	Description	Quantity	Unit
1	Excavation Work, including transportation	106272.3	m ³
2	Backfilling Work	20106.9	m ³
3	Disposal of Surplus Soil	86165.4	m ³
4	Dewatering for Excavation Work	Lump Sum	-
5	Temporary Access Slope for Machinery/Vehicles to Excavating area	Lump Sum	-
Total		-	-

5.12 Type of Foundation

5.12.1 Bored Piling

Bored pile is a type of reinforced concrete pile which is used to support high-rise building which has a heavy vertical load. Bored pile is a cast-in-place concrete pile where the bored piles have to be cast on the construction site. Normally, bored piling has to be carried on those tall buildings which require foundation which can bear a load of thousands of tons, most probably in unstable or difficult soil conditions like silty sandy soils in Fujita. Bored piling is cast by bored piling machine which has specially designed drilling tools, buckets, and grabs which is used to remove the soil and rock.

The advantage of using bored piles against driven pile is that there is no risk of ground heaving during bored pile construction. Moreover, it does not greatly affect the groundwater table and hence no induced settlement. Spoil can be inspected and compared with site investigation data.

In addition to that, bored piles can accommodate large structural capacity and construction with less noise and vibration. It can be installed to great depths, more than 100m. Also, it can overcome complicated geological stratum, e.g., multiple layers of rock and underground obstructions. The advantage of bored piling over pile driving is its drilling method little vibration and lower noise level (Wikipedia, Piling).

A comparative study of foundation works using Bored Pile, Socket-H Pile and Precast pre-stressed concrete pile is presented below:

Table 5. 31 Comparison of Foundation Types

Pile Types Operation	Bored Pile	Socket- H Pile	Precast Pre-stressed Concrete Pile
Loading bearing capacity	Higher	Lower	Lower
Number of piles required	Smaller	Greater	Greater
Noise level	Low	Low	High (By hydraulic hammer)
Vibration level	Low	Low	High (By hydraulic hammer)
Time of construction	Longer	Shorter	Shorter
Loading test	No	Yes	Yes
Overcome underground settlement	Yes	Yes	Pre-boring is needed

Pile Types Operation	Bored Pile	Socket- H Pile	Precast Pre-stressed Concrete Pile
Ground movement/ settlement	Not significant	May result in ground movement	May result in heave and ground movement
Depth limit	Can be > 100m	Approximate limit 80m-90m	Approximate limit 60m-70m
Damage to surrounding structure	No or little damage	May result in large damage	May result in large damage

It can be clearly depicted from the above tables that bored pile method of laying foundation has “Low Risk of Noise and Vibration Level” and with little ground movement/settlement leading to no or little damage to the surrounding structure, when compared to pile driving which may result in large damage due to heave and ground movement. The following are the advantages of bored piles:

- Large structural capacity
- Construction with less noise and vibration
- Can be installed to great depths, more than 100m
- Can overcome complicated geological stratum, e.g., multiple layers of rock, and underground obstructions

Due to the advantages of bored pile to other methods, for the foundation of YCP, Bored Piling Method is adopted.. A piling list of bored piles of 1,000 mm in diameter will be drilled for office (209 piles) as well as Hotel and Service Apartment (286 piles) according to the plan described below:

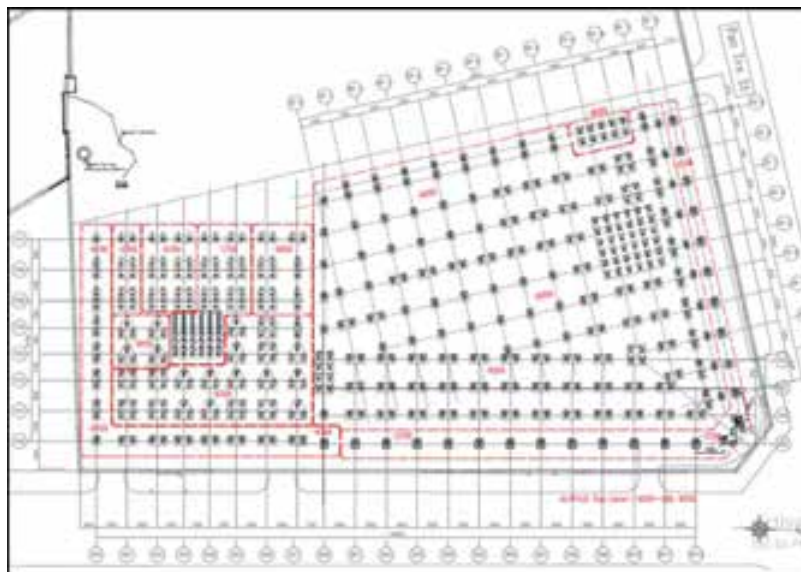


Figure 5. 19 Pilling Plan for YCP

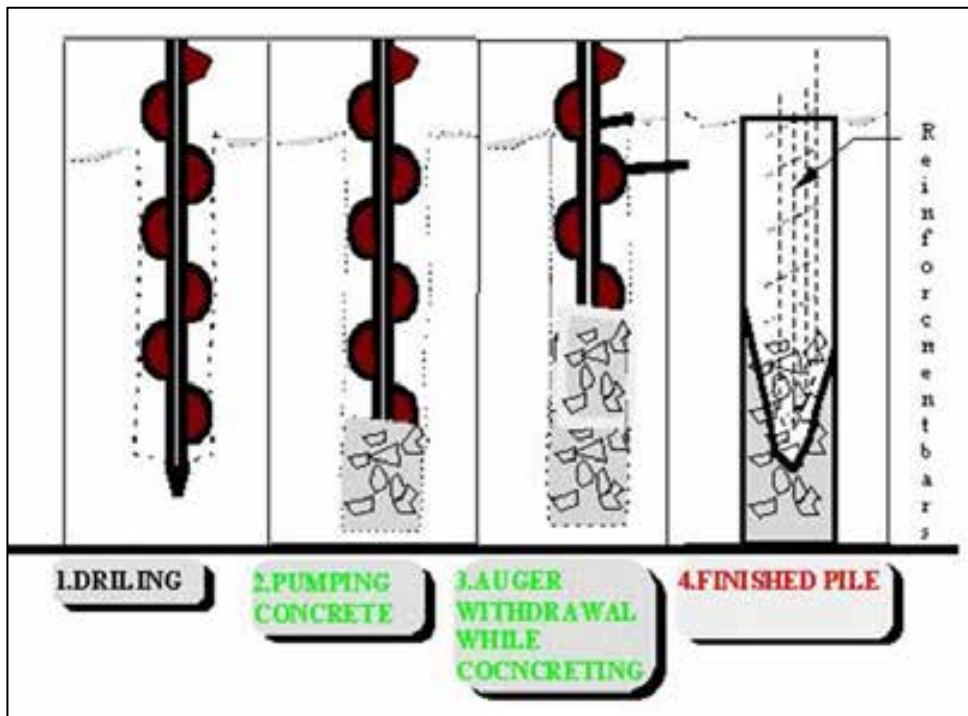


Figure 5. 20 Steps of Bored Piling



Figure 5. 21 Concreting Bored Pile



Figure 5. 22 Pile driving

5.12.2 Geological Observations by Borehole

According to the soil investigation, the uppermost layers is composed of brown color, low to medium plasticity, clay (filled soil) and sandy clay (filled soil) layer (2.5m in depth) in some boreholes. In addition, a trace of brick fragments is included in this layer. Moreover, all investigated boreholes were observed to be mottled gray and reddish brown color, low to medium plasticity, CLAY – I Layer (4.0m-5.0m) and fine-grained, mottled gray and reddish brown color, low plasticity, Clayey SAND layer (3.0m-9.0m). And then, yellowish brown color of Silty SAND-I layer (12.0m-15.0m) was observed in all boreholes. It contains fine to medium grained sand and water content is moist to wet. Moreover, in all investigated boreholes, it was found that the soil content of the project site consists of Yellowish brown color of Silty SAND-II layer (5.0m-8.0m) including moist, fine to medium grained sand and trace of fine gravels. Then, BH-03, BH-04, and BH-05 were well observed as a medium to high plasticity, gray color of CLAY-II layer under the Silty SAND-II (1.0-2.8m). Moreover, yellowish brown color, Silty SAND-III layer (5.0m-19.0m) was also well observed at all investigated boreholes. The water content is moist and the grained size of sand is fine to medium grained. Finally, the last sub-soil layer is well observed as yellowish brown color, Silty SAND-IV layer in all boreholes. The thickness of this layer cannot be estimated because of all boreholes are terminated in this layer. The grained size of sand is fine to medium grained. Moreover, fine gravels are including in this layer.

The project site area is located in the Defense Services Museum, which is situated at the corner of Shwedagon Pagoda Road and Pantra Street, Dagon Township, Yangon Region. Figure (1) expressed the location of the investigation point. of YCP that is planning to construct buildings at Corner of Shwedagon Pagoda Road and Pantra Street, Dagon Township, Yangon Region. Therefore, Fukken Co., Ltd had done soil investigation work to obtain soil distribution condition of stratum, soil properties and soil design parameter for the construction design process.

Five boring points were performed in the project area by Fukken Co., Ltd. The field investigation works were started from 5th June 2015 and completed all boreholes on 27th June 2015. Boring is carried out by TOHO-DI drilling machines as shown in **Figure 5.23**. The laboratory test was carried out after fieldwork and completed on 10th July 2015.



Figure 5. 23 Borehole Location Map

5.12.3 Scope of Works for Soil Investigation

In the scope of works of soil, the investigation is included three portions; field investigation work, laboratory testing and report preparation (**Figure 5.24**). The purpose of the study is to understand the distribution condition of stratum, to know the physical and mechanical properties of soil, to evaluate the appropriate soil design parameter for the construction design process and to point out the hazardous effects of ground respond during and after construction. Soil boring is carried out by TOHO-D 1 drilling machines. These boring points were planned to investigate the client's requirements. Water samples are sent to ISO-TECH laboratory for a chemical test.

Standard Penetration Tests were performed in all boreholes of designated locations in compliance with ASTM (American Society for Testing and Materials). The collected disturbed samples and undisturbed samples from the boreholes were analyzed at Fukken's Yangon Branch Laboratory. The collected soil samples from the boreholes were analyzed at Fukken's Yangon Branch Laboratory. The report prepared was submitted in accordance with the American ASTM Standard (American Society for Testing and Materials; D1586-99). Total Quantity of Boring Works is shown in **Table 5.32**.

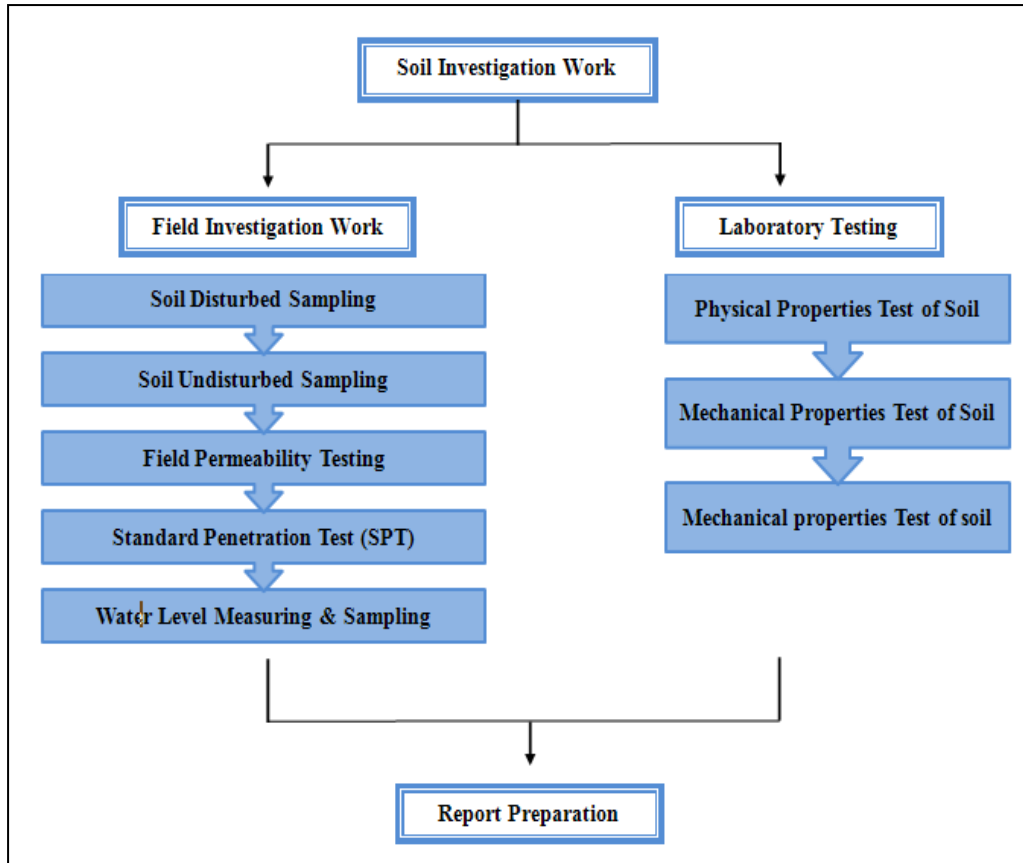


Figure 5. 24 Soil Investigation Work

Table 5. 32 Total Quantity of Boring Works

No.	BH No.	Soil Drilling(m)				Standard Penetration Test(Nos)	Undisturbed Sampling (Nos)	Field Permeability Test(Nos)	Water Sample (Nos)
		Ø127m m	Ø112m m	Ø90m m	Ø64mm				
1	BH-01	-	3.0	-	56.0	58	1	1	1
2	BH-02	-	3.0	-	59.0	60	2	-	1
3	BH-03	-	3.0	10.0	37.0	49	1	1	1
4	BH-04	-	3.0	10.0	36.0	49	-	-	1
5	BH-05	4	-	13.0	36.0	52	1	1	1
Total		4	12.0	33.0	224.0	268	5	3	5

The drilling machines are operated by setting on the stage with maintaining a horizontal level of drilling machine and vertical position of drilling direction while drilling on field investigation works. Boring and SPT testing in all the points are operated from the drilling stage maintaining the stability of the boring machine.

5.12.4 Undisturbed Sampling

Undisturbed soil samples, which are required for physical and mechanical properties tests such as unconfined compression test, and one-dimensional consolidation test was obtained

by techniques, which aim at preserving in situ structure and water contact of soil without any disturbance. In this project site, a total of five numbers of undisturbed samples were carried out in clayey soil layers by using Denison undisturbed samplers. A detailed list of undisturbed samples are described in **Table 5.33**.

Table 5. 33 List of undisturbed samples

Sr.	Borehole No.	Date	Sample No.	Depth (m)	Soil Type	Recovery	Type of Sampler
1	BH-01	15.6.15	D-1	4.00 ~4.38	Clay	47%	Denison sampler
2	BH-02	06.6.15	D-1	4.00 ~4.80	Clay	100%	Denison sampler
3		06.6.15	D-2	7.00 ~7.80	Clayey sand	100%	Denison sampler
4	BH-03	06.6.15	D-1	5.00 ~5.76	CLAY	95%	Denison sampler
5	BH-05	22.6.15	D-1	5.00 ~5.50	Clayey sand	62%	Denison sampler

5.12.5 Field Permeability Test

In the BH-01, BH-03 and BH-05 (8.5-11.5m) field permeability test was operated to evaluate the general coefficient of permeability of the ground. The permeability of the ground is somewhat useful in the operation of dewatering during foundation work. According to the field permeability results, the estimated testing depth is low permeability zone.

5.12.6 Standard Penetration Test (SPT)

According to the ASTM Standard (American Society for Testing and Materials; D 1586-99), the standard penetration test was done in this operation. The test was operated a spilt barrel sampler (50mm diameter) connected to the end of boring rods. The sampler is driven 450mm into the soil. The retained soil sample is extracted and stored in a plastic bag for further analysis.

5.12.7 Water Level Measuring and Sampling

During the boring work, the groundwater level was tested by using an automatic alarm water level indicator twice a day in the borehole before and completion of drilling works. In the project area, the groundwater level is between GL-8.1m in minimum and GL-10.5m in maximum and the groundwater table is between 8.0m and 10.5m from the ground level. But, the water table will rise during the rainy season. In the project area, the groundwater level was measured during 11th June, 205 to 27th June 2015 and the groundwater level result is shown in **Table 5.34**.

Table 5. 34 Groundwater level of investigation points through project area

No.	BH-No.	BH EL- (m)	Groundwater Level		Measured Date
			GL - (m)	EL - (m)	
1	BH-01	+10.12	-8.60	+1.52	22.06.2015
2	BH-02	+9.91	-8.10	+1.81	13.06.2015
3	BH-03	+10.81	-9.50	+1.31	11.06.2015
4	BH-04	+11.91	-10.30	+1.61	19.06.2015
5	BH-05	+11.88	-10.50	+1.38	27.06.2015

5.12.8 Laboratory Test

Five investigation boreholes, total (268) numbers of the disturbed samples and (5) numbers of undisturbed samples were collected in the project area by using Dennison sampler. Some selected numbers of disturbed samples and all undisturbed samples were tested the physical and mechanical properties of soil in the office laboratory in accordance with ASTM Standard. The entire tests were carried out in accordance with ASTM Standard. The physical properties tests include the following items.

(1) Natural Moisture Content Test (ASTM D2216-05)

(2) Specific Gravity Test (ASTM D854-06)

(3) Particle Size Analysis Test (ASTM D 422-63)

(i) Grain Size Distribution Test

(ii) Hydrometer Test

(4) Atterberg's Limits Test (ASTM D4318-05)

(i) Liquid Limit Test

(ii) Plastic Limit Test

The mechanical properties tests include the following items.

(i) Unconfined Compression Test (ASTM D2166-06)

(ii) One Dimensional Consolidation Test (ASTM D2435-04)

The total quantity of laboratory tests is described in **Table 5. 35**.

Table 5. 35 Total Quantities of Laboratory Tests

BH- No.	Physical Properties Test							Engineering Properties Test		Chemical Properties Test
	Natural Moisture Content Test	Specific Gravity Test	Particle Size Analysis Test		Atterberg's Limit Test		Unit Weight	Unconfined Compression Test	One Dimensional Consolidation Test	Water Quality Test
			Sieve Analy sis Test	Hydromet er Analysis Test	Liquid Limit Test	Plastic Limit Test				
BH-01	19	19	19	19	5	5	1	1	1	1
BH-02	19	19	19	19	7	7	2	1	1	-
BH-03	19	19	19	19	7	7	1	2	2	1
BH-04	21	21	21	21	8	8	-	-	-	-
BH-05	22	22	22	22	10	10	1	1	1	1
Total	100	100	100	100	37	37	5	5	5	3

5.12.9 Water Quality Test

Water sampling is carried out by using water delivery sampler, which is made of stainless steel (50mm in diameter and 1.0 m in length). Water samples from selected three boreholes (BH-01, BH-03 and BH-05) of the project area have been sent to ISO TECH laboratory. In the project area, water quality test results were compared with WHO Drinking Water Guidelines (Geneva-1993).

5.12.10 Liquefaction Analysis Results

In this project area, the liquefaction potential is low in accordance with the liquefaction analysis results. As the water table is not shallow, the relative density of sandy soil layer is medium dense. Summary of liquefaction analysis results is as shown in **Table 5.36**.

Table 5. 36 Liquefaction Analysis Results

Depth(m)	BH-01 D		BH-02		BH-03		BH-04		BH-05	
	Soil Name (as LabTest)	Possibility of liquefaction	Soil Name (as Lab Test)	Possibility of liquefaction	Soil Name (as Lab Test)	Possibility of liquefactio	Soil Name (as Lab Test)	Possibility of liquefaction	Soil Name (as LabTest)	Possibility of liquefaction
1.225	SC	Low	CL	Low	CL	Low	CL	Low	SM(or)SC	Low
2.225	SC	Low	CL	Low	CL	Low	CL	Low	SM(or)SC	Low
3.225	CL	Low	CH	Low	CL	Low	CL	Low	CL	Low
4.225	CL	Low	CH	Low	CL	Low	CL	Low	CL	Low
5.225	CH	Low	CH	Low	CH	Low	CH	Low	SC	Low
6.225	CH	Low	CH	Low	CH	Low	CH	Low	SC	Low
7.225	SC	Low	SC	Low	SC	Low	SC	Low	SC	Low
8.225	SC	Low	SC	Low	SC	Low	SC	Low	SC	Low
9.225	SC	Low	SC	Low	SC	Low	SM(or)SC	Low	SC	Low
10.225	SM(or)SC	Low	SM(or)SC	Low	SC-SM	Low	SM(or)SC	Low	SC-SM	Low
11.225	SM(or)SC	Low	SM(or)SC	Low	SC-SM	Low	SM(or)SC	Low	SM(or)SC	Low
12.225	SM(or)SC	Low	SM(or)SC	Low	SM(or)SP-SC	Low	SM(or)SC	Low	SM(or)SC	Low
13.225	SM(or)SC	Low	SM(or)SC	Low	SM(or)SP-SC	Low	SC	Low	SM(or)SC	Low
14.225	SM(or)SC	Low	SC-SM	Low	SC-SM	Low	SC	Low	SC-SM	Low
15.225	SM(or)SC	Low	SC-SM	Low	SC-SM	Low	SM(or)SC	Low	SC-SM	Low
16.225	SM(or)SC	Low	SM	Low	SM(or)SC	Low	SM(or)SC	Low	SM(or)SC	Low
17.225	SM(or)SC	Low	SM	Low	SM(or)SC	Low	SM(or)SC	Low	SM(or)SC	Low
18.225	SM(or)SC	Low	SM(or)SC	Low	SM(or)SC	Low	SM(or)SC	Low	SM(or)SC	Low
19.225	SM(or)SC	Low	SM(or)SC	Low	SM(or)SC	Low	SM(or)SC	Low	SM(or)SC	Low

5.13 Water Consumption

Water consumption is related to workers and professional staff during the construction phase. During the operation phase, most of the water is consumed for personal use by guests and facility requirements for housekeeping, laundry, cooking, swimming pools, spa facilities, and grounds maintenance.

5.13.1 Water Availability (Construction Stage)

Tube Wells

During the construction, stage water will be consumed from the 5 tube wells. The permits of the tube wells were granted on 25th May 2018 by Water Officer, Urban and Housing Development Department, Ministry of Construction (see **details in Appendix X**). According to the permit, one tube well of 8 inches (200mm), in diameter, approximately 330 feet in depth and can produce **39,000 gals/day/well**. In addition, one tube well will allow running a maximum of 10 hours/day and at one time 3 tube wells can be used, producing **117,000 gals/day**.

There are 5 tube wells dug in the premises of the YCP, with locations specified in the drawings as shown in **figure 5.25**. A total of 145,295 gals per day, can be stored at water storage tanks at the basement.

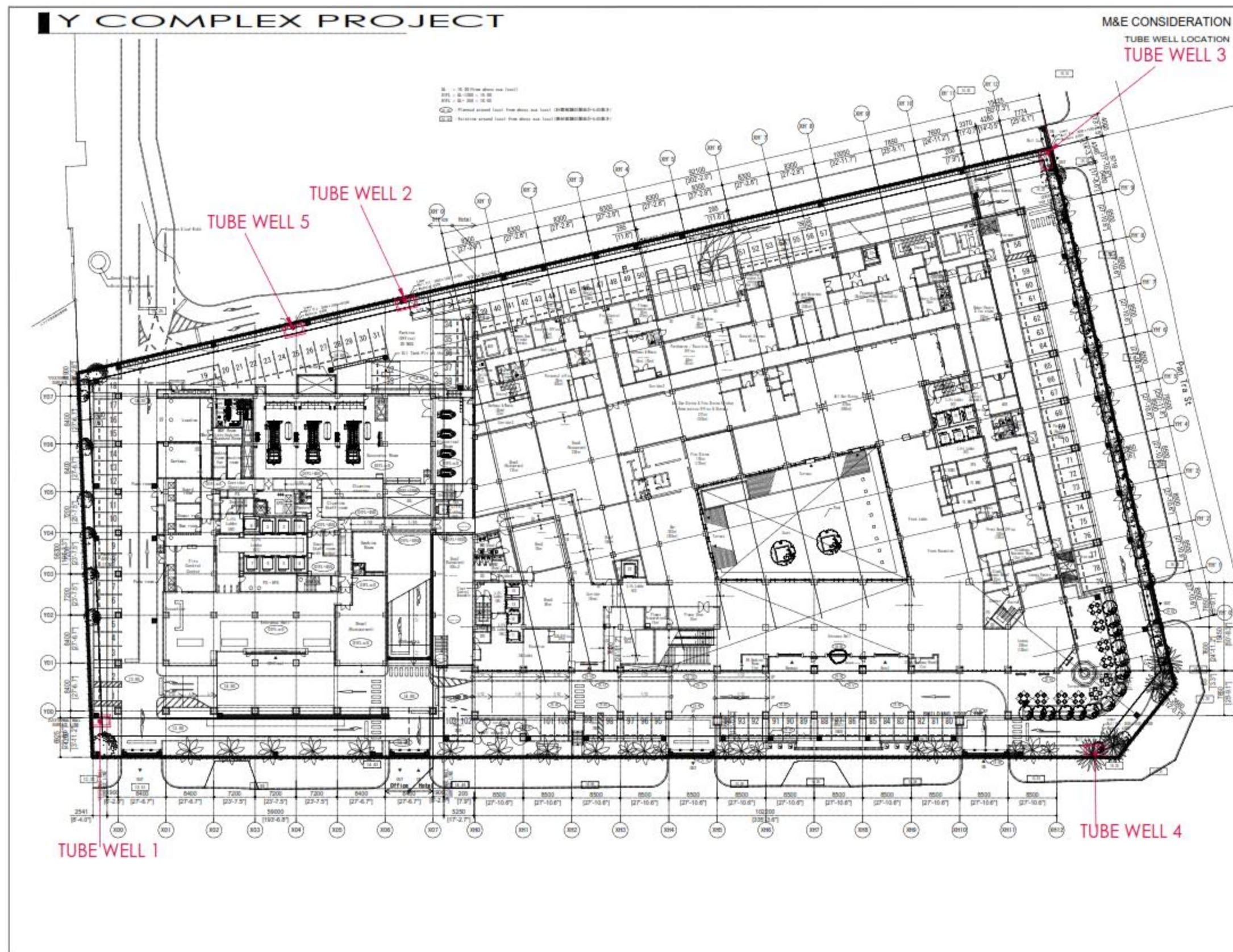


Figure 5. 25 Location of 5 tube wells of YCP

Water Quality Tests from the tube well currently in use and the results from the laboratory are stated below.(see Appendix XI)

Table 5. 37 Results of Water Quality of Tube Well

Sr.	Parameters	Unit	Result	Tube Well Depth	WHO Drinking Water Guidelines- (1993)
1	pH	-	6.4	295 ft	6.5 – 8.5
2	Color	TCU	10		15TCU
3	Turbidity	NTU	28		5NTU
4	Total Hardness	mg/l	54		500mg/l
5	Carbonate (CaCO ₃)	mg/l	Nil		-
6	Biological Oxygen Demand	mg/l	6		-
7	Chemical Oxygen Demand	mg/l	32		-
8	Total Suspended Solid (TSS)	mg/l	87		20mg/l
9	Iron (Fe)	mg/l	0.49		0.3mg/l
10	Total Dissolved Solid (TDS)	mg/l	125		50 mg/l
11	Temperature	°C	25		-

According to the results, turbidity, total suspended solids (TSS), iron (Fe) and total dissolved solids (TDS), exceed the WHO Drinking Water Guideline Values. Therefore, OJI Daily Use Water Treatment System will have to be used in order to solve these problems

Water Consumption Per/Capita/Day

The consumption of water for workers and staff during the construction period is as follows:

Sr,	Status	Number	Liters per day /person	Total (liters)	IFC Guideline Values l/cap/d	Remarks
1.	Workers	400	15	6000 (1,320 gal)	120-200	Within the guidelines
2.	Staff	110	24	2640 (581 gal)	120-200	Within the guidelines
Total		510	-	8, 640	-	-

Other Site Usage during the Construction Phase

Sr.	Particulars	Quantity gal/day	Remarks
1.	For car wash	400	
2.	For water spray	2,400	Twice a day
3.	Concrete curing time	4,800	
4.	Brick Work	800	
Total		8,400	

Hence, the total water consumption during the construction phase is (8640+8400 gal), which is **17,080** gallons/day.

Therefore the water consumption per day of **17,080 gals** during the construction stage is well within the production capacity of **39, 000 gals/day/well** and the remaining 3 tube wells as stand by and the last one can be treated as a reserve. Hence, the water consumption during the construction period will not have an impact on the nearby communities.

5.13.2 Operation Stage

Mixed development facilities including a 5-star hotel with full-service restaurant and on-site laundry facilities typically exhibit the highest water usage on a per room basis. It is estimated that total water usage in hotels may range from less than 200 l/day per person to over 1200 l/d per person (IFC, Guidelines for Tourism and Hospitality Development, 2007). Luxury hotels and hotels with full-service restaurants and on-site laundry facilities typically exhibit the highest usage on a per room basis. In a large hotel, a swimming pool can increase freshwater consumption by as much as 10 percent. This will be aggravated by the presence of SPA facilities (e.g. sauna and steam bath). The total water consumption of the YCP is estimated to be approximately 550m³ which covers such facilities such as offices, hotel rooms, swimming pool, SPA, and laundry.

Water sampling was carried out from the tube well currently in use and the results from the laboratory are stated below.

During the operation period the daily water requirement for the YCP can be calculated as follows:

Table 5. 38 Calculation of Daily Water Consumption during the Operation Phase

Sr.	Description	Number of Persons
(a)	Offices Floor Area: 23115.99 (sq.m) or (248583.5 sq.ft) Can accommodate 5 persons for 1000 sq.ft:	= 1,243 persons
(b)	Hotel Normal (2 bedrooms) one room for 261 nos. with 4 per room: 1 bedroom 2 bedroom 3 bedroom 131 rooms: 4 psosa/room	= 1,044 persons = 524 persons
(c)	Function Area Floor Area 7,098(sq.m) or (76,363 sq.ft) Can accommodate 3 persons for 1,000 sq.ft	= 228 persons
(d)	Total number of persons:	= 3,039 persons
(e)	Total Water Consumption at: (40 gallons/cap or 180 l/cap)	= 121, 560 gallons
(f)	For fire services:	= 30,000 gallons
Total Consumption:		= 151,560 gallons

5.13.3 Water Consumption for Luxury Serviced Hotels

The following table indicates the water consumption for Luxury Hotels (Water Consumption-Tropical Climate) for liter per person per day (IFC Guidelines for Tourism and Hospitality Development, 2007).

Table 5. 39 Water Consumption for Luxury Serviced Hotels (Liter per person per day)

Excellent	Satisfactory	High	Excessive
< 900 L	900-1000 L	1000-1400 L	> 1400 L

Source: IFC EHSg for tourism and hospitality development (2007)/Conservation International and IBLF (2005)

Rainwater Harvesting

For recharging water in the city, artificial groundwater recharge through rainwater can be an ideal solution for the potable water supply in the city (UN-HABITAT, 2013). Rainwater harvesting offers a better solution in areas where inadequate groundwater supply and surface water resources are either lacking or are insufficient like the situation of YCP where potable

water is to rely on tube wells. A rainwater harvesting system comprises components of various stages - transporting rainwater through pipes or drains, filtration, and storage in tanks for reuse or recharge. The artificial recharge through rainwater can be done by using any suitable structures like dug wells, bore wells, recharge trenches, and recharge pits. YCP will develop a recharge pit which is simple, economical and effective. Construction, operation, and maintenance are also not labor intensive. The recharge of groundwater would raise the water levels in the aquifer that are drying up as well as reduced soil erosion as the surface runoff is reduced and prevent from flowing into the drains.

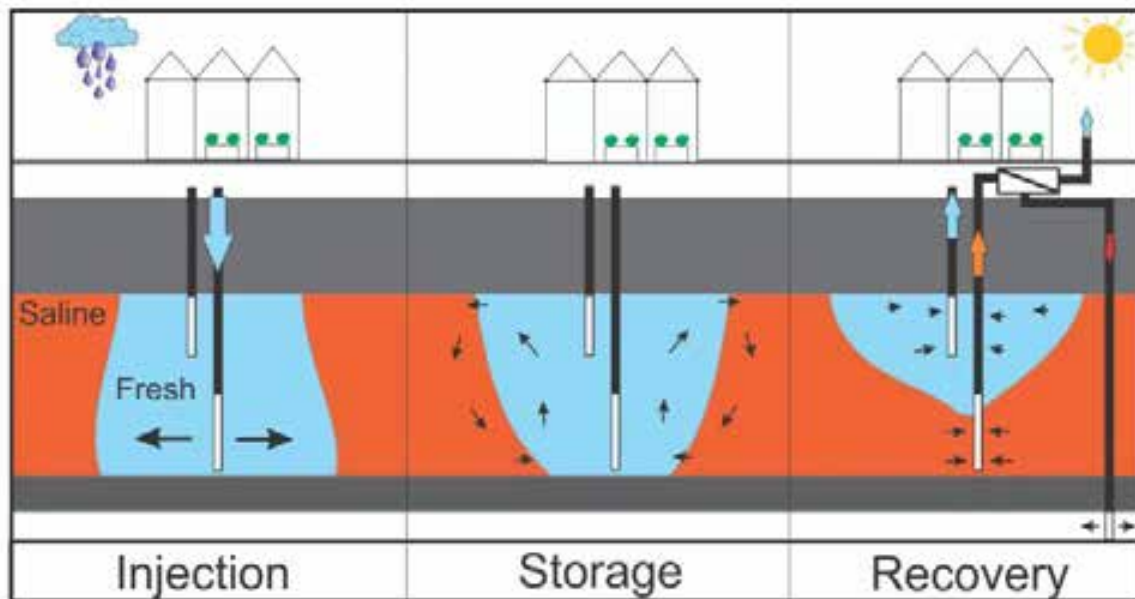


Figure 5. 26 Aquifer Storage and Recovery

As the construction period about 28 months, after the completion of the construction stage, water produced from (3) tube wells will need additional supply from YCDC. In order to cope up with the additional requirements for connecting YCDC surface water supply, YCP has contacted the Head of Department (Water and Sanitation) and put up the water requirement during operation stage, which will be around 151,560 gallons per day. (see **Appendix VIII**)

5.13.4 OJI Daily Use Water Treatment System

OJI Daily Use Water Treatment System will be installed at the YCP for purification of water produced from the five tube wells dug for domestic water use as shown in **Figure 5.**

27. Design Condition is as follows:

Item		Design Condition							
Planning amount (maximum value) :Q		38 m ³ /hr							
Water quality item	Unit: mg/L (except E-Coli and pH)	Tu	Color	TOC	Fe	Mn	Hardn -ess	E-Coli	pH
Raw Water Quality		< 10	<10	<5	<1.0	<0.1	200	Detected	6.5~ 7.2
Treated Water Quality		2	5	<3	<0.03	<0.01	100	ND	6.5~ 7.2

- The effluent standard is based on the WHO Standard and Japanese Standard.

5.13.5 System of Water Treatment

Demanganization Unit

- Manganese sand is used. Dissolved manganese are oxidized by this system.

UF Membrane Unit

Turbidity, oxidized manganese, E-coli and part of organic matter in raw water are removed physically by UF membrane.

Pore size of this membrane is 0.02 micrometer.

So treated water by UF membrane is clear and safe.

Iron Exchange Unit

Provided water for this system is UF treated water, and hardness is removed.

Quality of treated water is adjusted by mixing of Demineral water and UF treated water



Demagnetization Unit



UF membrane Unit



Iron Exchange

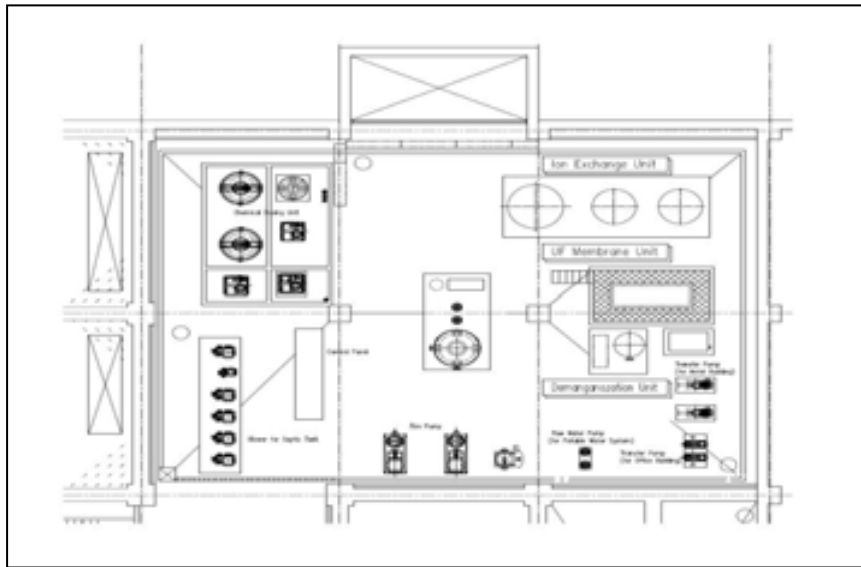


Figure 5. 28 Raw Water Treatment Plan Configurations

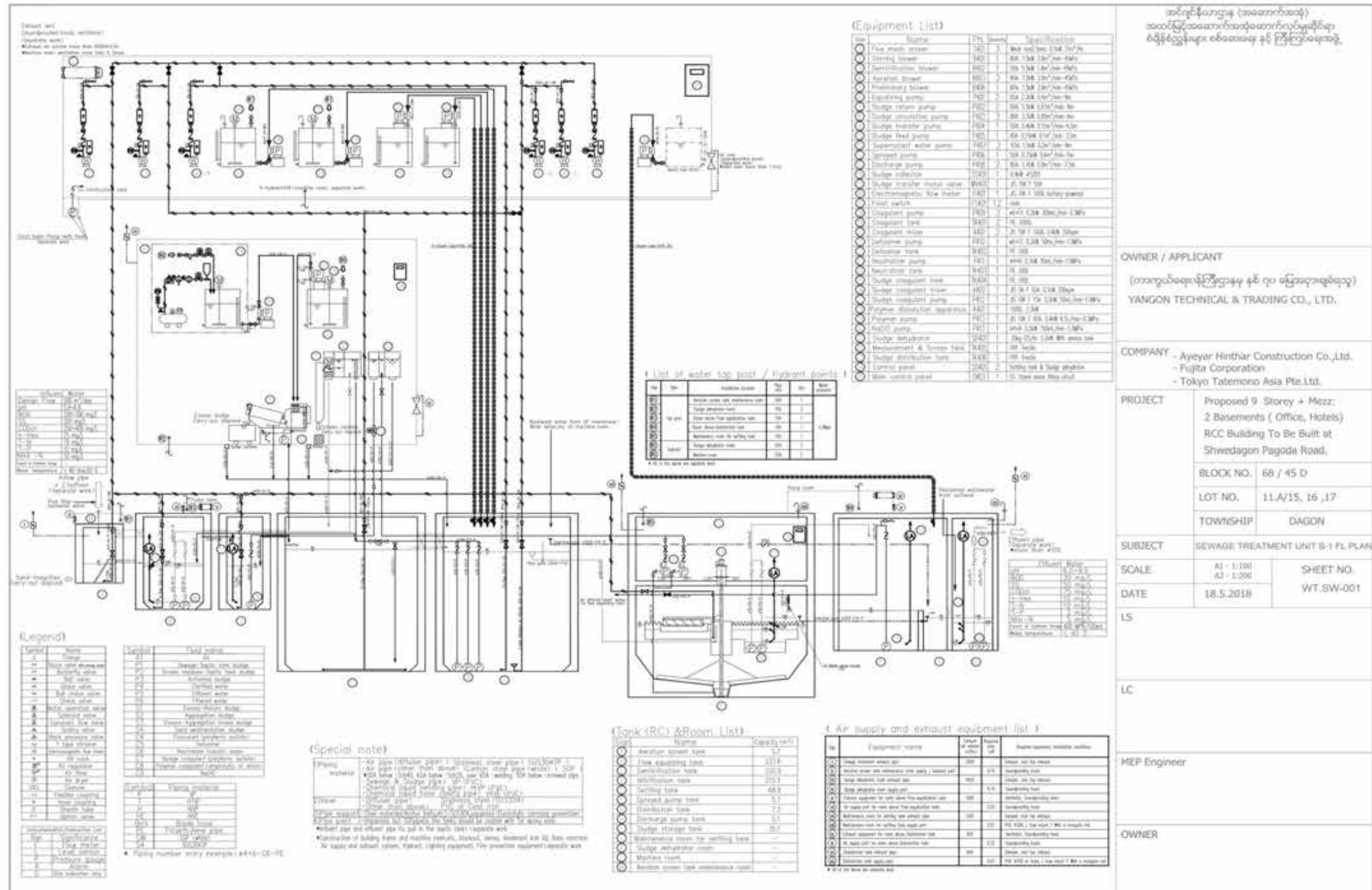


Figure 5. 29 OJI Wastewater Treatment System Layout Plan

5.13.6 Wastewater Treatment System

OJI Wastewater Treatment System will be installed at the YCP premises at floor level 1 to treat the effluent water produced from YCP during the operation stage. The following table is the specifications of the installed wastewater treated system. (See **Figure 5.30**).

- Treatment System: filtration circulation system
- Wastewater flow: 620m³/day
- Influent Quality: BOD 200-300 mg/L
- Discharged Water Quality: BOD 30mg/L

1. Sewage Water Treatment Plant

Beyond the Boundaries **OJI**

■ Processing Flow

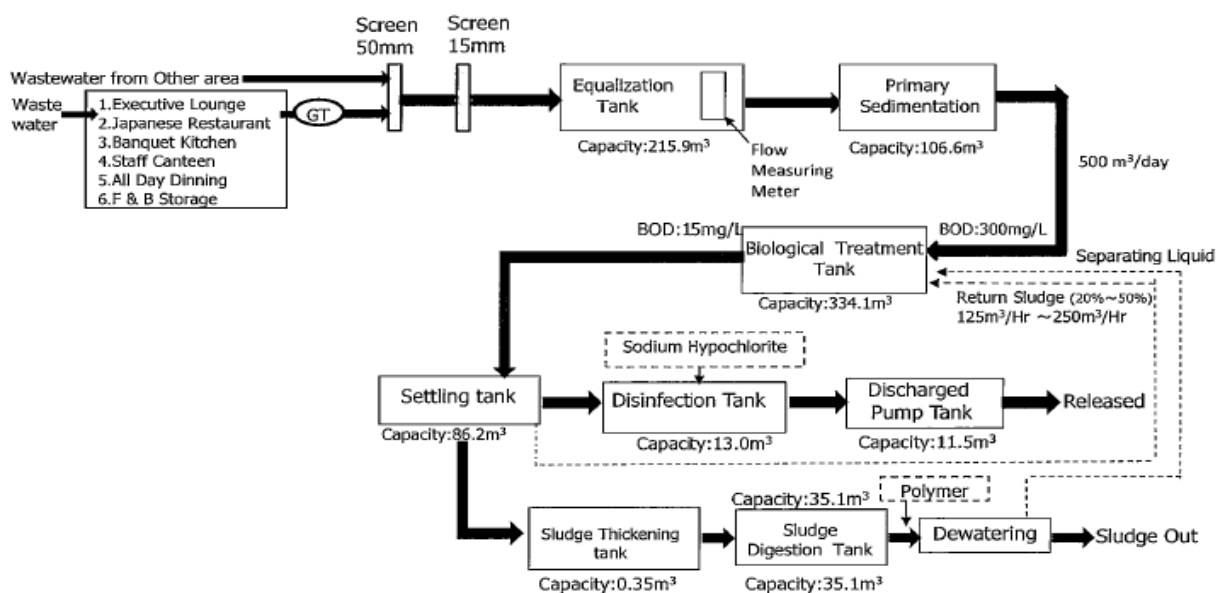


Figure 5. 30 OJI Wastewater Treatment System

1. Design Condition

Item		Design Condition									
Planning sewage amount (maximum value): Q		500 m ³ /day									
Water quality item	Unit: mg / L or less (except pH)	BOD	SS	COD _{Cr}	n-Hex	pH	Water Temperature	T-N	T-P	NH ₄ -N	Coliform
Influent quality (daily average)		200~300	200	250~400	25	5.8~8.8	<40 (Ave30)/°C	70	15	70	—
Effluent quality (daily average)		30	50	75	10	6.0~9.0	<40/°C	10	2	5	4000PN /100mL

※Effluent standard is based on the YCDC and ECD criteria

2. Method of Waste Water Treatment

Biological Treatment : The waste water is treated by bacteria and microbe

Sludge Disposal : The excess sludge from biological treatment is dehydrated by mechanical expression to reduce the volume. Dehydrated sludge is disposed according to low.



Figure 5.31 Lay Out Plan for Wastewater Treatment Plant

Method of Waste Water Treatment

Biological Treatment : The waste water is treated by bacteria and microbe

Sludge Disposal : The excess sludge from biological treatment is dehydrated by mechanical expression to reduce the volume.
Dehydrated sludge is disposed according to law.

Reference Picture



Nitrification



Settling

5.14 Electricity and Fuel Consumption

Most of the electricity will be obtained from the national grid and that will reduce the diesel consumption to some extent. The estimated electricity consumption from the National Grid is 57,600 kWh/day. If the electricity is obtained from the national grid, the estimated fuel consumption will be 310,000 liters (28 months); if not the total fuel consumption will be 1053,000 liters (28 months).

5.14.1 Electricity Consumption

Electricity

Electricity will be obtained from YESB and the electricity consumption will be assisted by 3 diesel generators as a backup in case of electricity shortage. There is now one transformer installed inside the compound which is ready for distributing electricity for the project.

The potential climate change implications that YCP may have an impact on the environment would be electricity consumption and energy consumption of hotel and office, which need a considerable amount of electricity.

It is estimated that YCP will need approximately 57,600 kWh per day as below. The main source of electricity is from the National Grid Line with three standby generators for emergency use.

5.14.2 Fuel consumption

It is expected that annual diesel fuel requirement for multipurpose use would be on the average 29,523 gallons/y for supplementing electricity from standby generators and 100,285 gallons for standalone generators as below.

Table 5. 40 Fuel Consumption

Fuel Type	Purpose	Annual Consumption (gallons)	Metric Tons CO₂ per Gallon	Total Emissions (Metric Tons CO₂ –e/y)	Total Emissions (ktCO₂–e/y)
Diesel	Standby	29,523	0.010	295	0.295
Diesel	Stand alone	100, 285	0.010	1002	1.002
Total		129,808	-	-	1.297

The average amount of CO₂ emissions from the use of standby generators are 0.295 ktCO₂e/y and 1.002 ktCo₂e/y with a total GHG emission of 1,297. According to EBRD GHG Assessment Methodology (EBRD, 2010), the initial screening is necessary to assess the likely scale of GHG emissions involved with the project activities. The following categories are indicated for GHG ktCO₂-e/y, reflecting the scale of emissions from the existing project:

- Negligible (no GHG assessment necessary)
- Low (<20 kt/y CO₂-equivalent per year
- Medium-Low (20 -100kt CO₂-e/y)
- Medium-High (100kt – 1 Mt CO₂-e/y)
- High (>1 Mt CO₂-e/y)

As the annual GHG emissions produced from the project is <20 kt CO₂-e/y it can be stated that the project is in the low category emission facilities.

5.15 Fire Extinguishing Facilities

Fire extinguishing facilities such as water hydrants, hose reels, and fire extinguishers will be installed at the YCP after consulting with the Fire Services Department. Also, fire alarms, smoke detectors, and water sprinklers will be installed for the prevention measures of fire outbreak. Mustering points will also be demarcated within the premises in case of fire. Fire drills will be done regularly for the staff as well as residents and visitors notifying the escape ways, posting the routes to proceed in case of fire.

The following is the Fire Extinguishing Facilities existing at Floor 1.

- Floor 1 Tank 1 3500 gallon
- Floor 1 Tank 2 52, 834 gallon
- Total: 266, 334 gallons
- Water receiving Tank: 259, 9945 gallons

Installations at Floor 1

- Wastewater Treatment Plant
- Oil Storage Tank
- Generator Room
- Electrical Room

Fire Extinguishing Facilities at Y Complex Project is as shown in **Figure 5.32**.

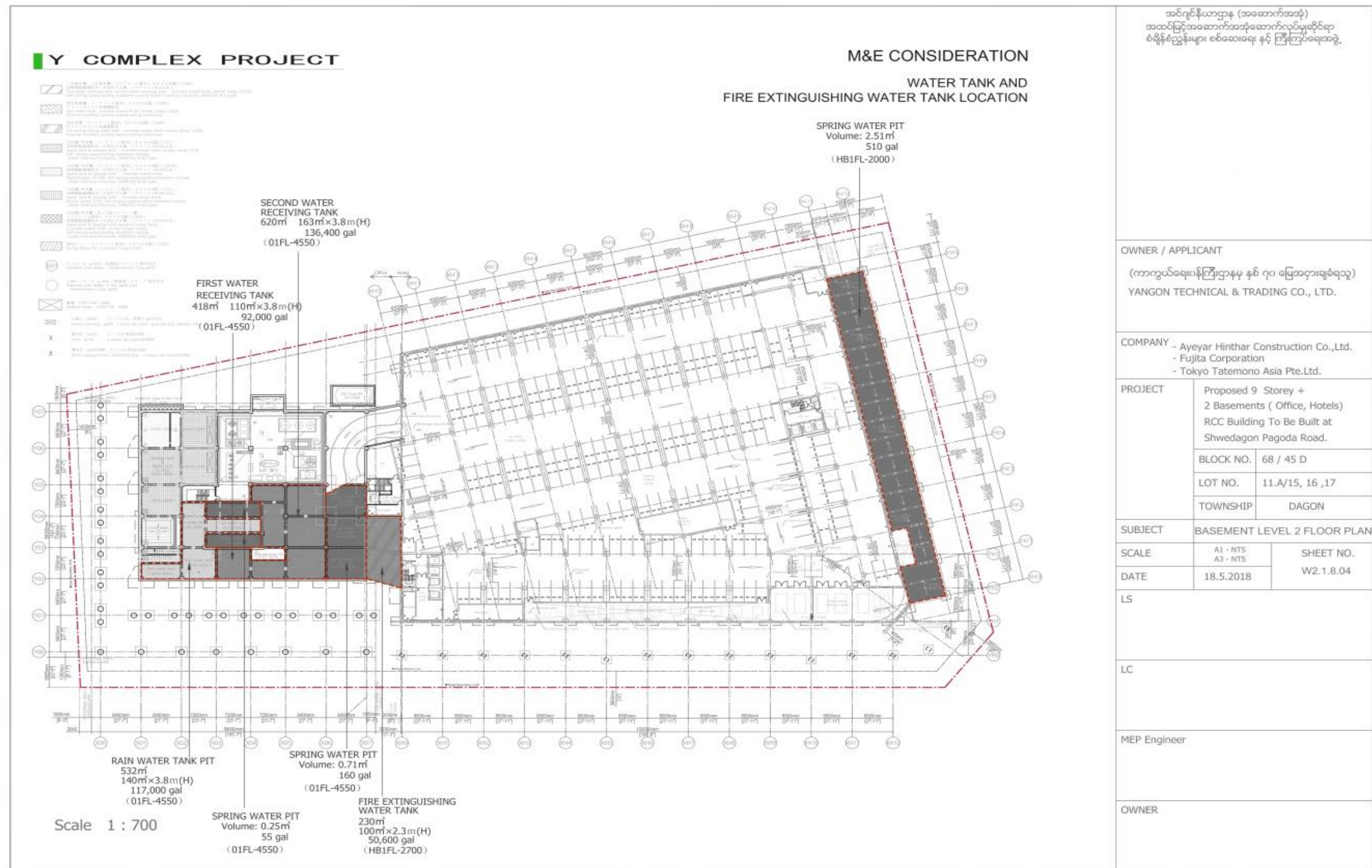


Figure 5. 32 Fire Extinguishing Facilities at Y Complex Project

5.16 Waste

The solid waste generated from the YCP will be in the form of food/kitchen waste, bottles or metal cans, used or dirty paper, wrapping, plastics, bags, and packaging, etc. Office waste from the project will be in the form of printed documents, magazines, newspapers, bottles, metal cans, household goods, etc. These non-hazardous wastes (NHZ) will be properly collected in rubbish bins and temporarily stored in Floor 1 area at 3 locations with the storage capacity of 41.38m², 33m² and 70m² respectively as shown in the drawings followed. The NHZ waste collected will be disposed of on a daily basis after contacting YCDC for final disposal. Currently, there are six final disposal sites (FDS) in Yangon City and dedicated site for YCP is Htein Bin site. Waste Disposal Sites in Yangon City (YCDC) are shown in **Table 5.41** and **Figure 5.33**.

On average, over 1690 tons of garbage is generated per day and around 0.396 kg per person. Facts about waste and final disposal sites are provided below.

Table 5. 41 Dumping Site Location

Final Dumping Sites (FDS)	Constructed Year	Total Area/ Used in Acre	Tons of Waste/ Day	Remark
1. Htein Bin	2002	150/ 70	847 tons per day	Open dumping
2. Htawe Chaung	2001	55.77/ 47.4	612 tons per day	Open dumping
3. Shwe PyiThar	2005	1	50 tons per day	Low landfill temporary site
4. Mingalardon	2003	0.91	25 tons per day	Low landfill temporary site
5. Dala	2003	1.3	10 tons per day	Low landfill temporary site
6. Seikkyi Khanungto	2003	0.25	5 tons per day	Low landfill temporary site

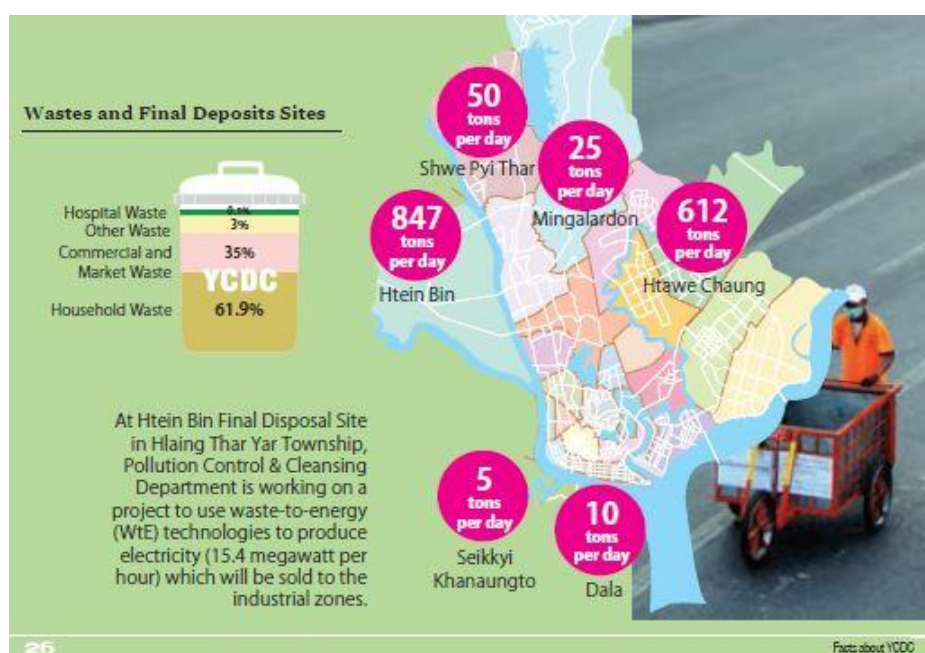


Figure 5. 33 Waste Disposal Sites in Yangon City (YCDC)

There are Hazardous wastes such as used oils, printer cartridges, solvents for dry cleaning, batteries, paints, antifouling agents and some packaging waste. YCDC had constructed 'Waste-to-Energy Plant' at Shwe Pyi Tha Township in 2017 to get rid of municipal waste with the assistance of JICA which is another alternative for non-hazardous waste disposal. Waste storage locations are shown as **Figure 5.34**, **Figure 5.35** and **Figure 5.36**.

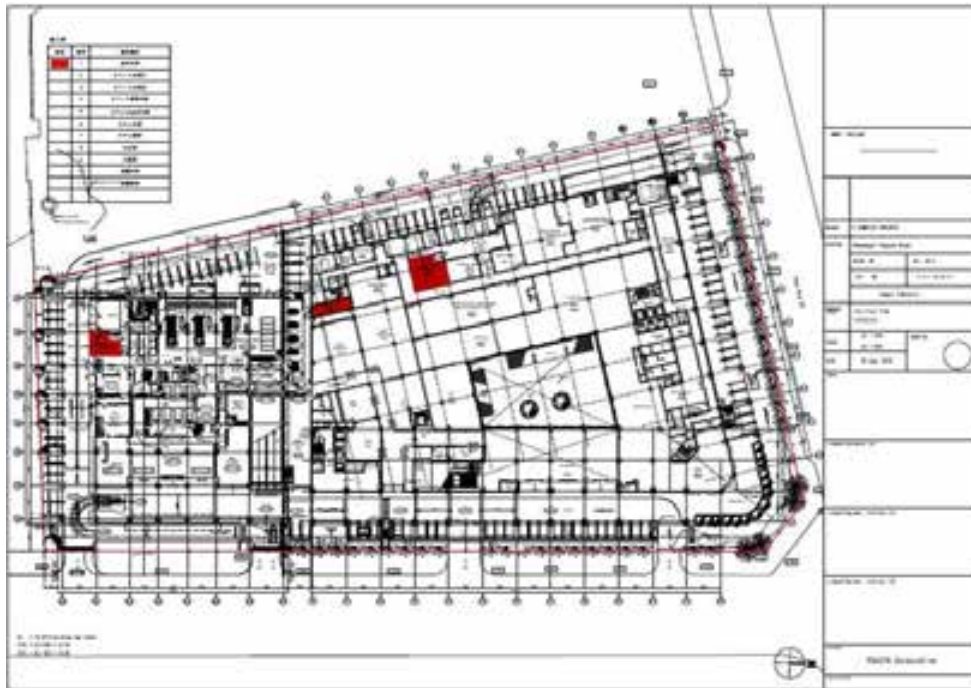
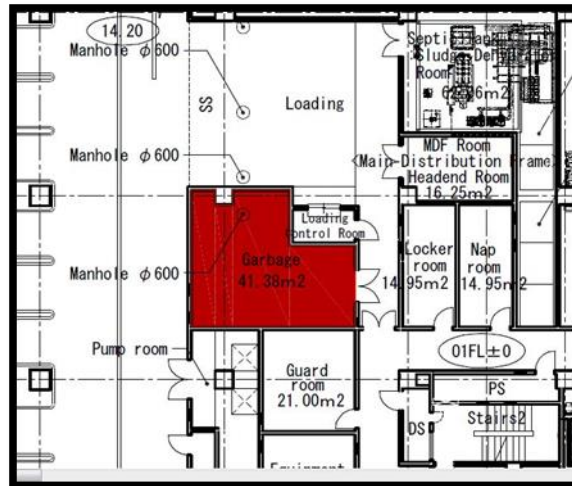


Figure 5. 34 Waste Storage Location



Figure 5. 35 YCDC Waste-to-Energy Plant

Waste Storage Area Floor 1 (3 locations) as below:



Waste Storage (1) 41.38 m²



Waste Storage Area (2) 33m²



Waste Storage Area (3) 70m²

Figure 5. 36 Water Storage Areas

5.17 Traffic Study

The aim of this assessment is to forecast future traffic generating from the proposed development of YCP and to assess the impacts on the surrounding area and to propose mitigation measures.

5.17.1 Methodology

KEG has evaluated the traffic operations for the study area intersections under existing and future conditions consistent with the Transportation Impact Assessment Guidelines issued by HCM 2010. The future planning horizon examines traffic operations under existing condition (2019 traffic count year), as well as 5-year planning after opening the project (construction period two years) 2026 No-build conditions, 2026 Build condition (with the proposed project), and 2026 build with Mitigation condition.

5.17.2 Existing Condition Assessment

5.17.2.1 Project Location

The proposed development project is located at Block No. (68/45D), Lot No. (11.A/15,16,17), Shwedagon Padoga Road, Dagon Township in Yangon. The subject site is situated on the west side of Shwedagon Pagoda Road, between Shwedagon Padoga Road and U Wisara Road, South of Pan Tra Street, Dagon Township in Yangon. And it is also situated approximately 1.12 km from the south direction of Arzarni Road/U Htaungbo Road/Mahar Wizaya Pagoda Road/Shwedagon Pagoda Road and 0.51 km from the north direction of KEG Traffic Impact Assessment Report 2 Shwedagon Pagoda Road/Bo Gyoke Road. The total site area is approximately 3.934 acres. The site location is shown in **Figure 5.37**.

5.17.2.2 Access to the Proposed Development of YCP

The proposed development project is located on the west side of Shwedagon Pagoda Road, between Shwedagon Padoga Road and U Wisara Road, South of Pan Tra Street, Dagon Township in Yangon. Shwedagon Padoga Road and Pan Tra Street can access/egress to/from the proposed development project. In addition, 21 feet wide of project road will connect between Shwedagon Padoga Road and U Wisara Road. Therefore, this project road can also be accessed/egressed to/from proposed development project by using Shwedagon Padoga Road and U Wisara Road.



Figure 5. 37 Proposed Project Location

5.17.3 Traffic Study Area

The traffic study area was selected to contain major roadways providing local and regional access to the project site. The following intersections were included in the study area and study areas were shown in **Figure 5.38**. Arzarni Road/U Htaungbo Road/Shwedagon Pagoda Road 2. Shwedagon Pagoda Road/Pan Tra Street 3. Shwedagon Pagoda Road/U Wisara Road 4. Shwedagon Pagoda Road/Bo Gyoke Road 5. U Wisara Road/Pan Tra Street 6. U Wisara Road/U Htaung Bo Road/ALone Road (U Wisara Roundabout)



Figure 5. 38 Number of Junctions Surveyed

A comprehensive field inventory of existing traffic conditions within the study area was conducted by trained persons of KEG group in February 2019. The field investigation consisted of an inventory of existing roadway geometric and operation characteristics.

5.17.4 Public Transport Access

The YBS (Yangon Bus Service) under YRTA (Yangon Road Transport Authority) provides the public bus transportation around Yangon City. The proposed project site is situated in KEG Traffic Impact Assessment Report 22 on the west side of Shwedagon Pagoda Road and on the south side of Pan Tra Street. It is also located at the corner of Shwedagon Pagoda

Road and Pan Tra Street. The public bus transportations are provided along Shwedagon Pagoda Road. At Arzarni, Shwedagon Phayar A Shae Phet Mote bus stop is situated approximately 1.57 km from the project site. In this bus stop, YBS 11 and 77 are operating from the Arzarni Road to Shwedagon Pagoda Road and vice versa. Along Shwedagon Pagoda Road, Taung Phet Mote Bus Stop is situated to the project site about 0.95 km away and YBS 8, 11, and 77 stop at this bus stop. Among them, YBS 11 and 77 are going from Shwedagon Pagoda Road to Anawrahta Road but the others are running from U Htaung Bo Road to Anawrahta Road. And then, outbound roads of YBS 8, and 11 are Latha Road and Bo Gyoke road but YBS 77 turns to Phoe Gyi Road and then it leaves to Bo Gyoke Road. There are also two bus stops along Shwedagon Pagoda Road, Sauk Lote Yae Bus Stop (0.55 km from the project site). It is the nearest bus stop among others. In this bus stop, YBS 4, 8, 11 and 77 are running and YBS 8 comes to Bo Gyoke Road from Anawrahta Road. Along Bo Gyoke Road, Sae Yone Gyi Bus Stop (0.93 km from the project site) and Bo Gyoe Zay Bus Stop (0.84 km from the project site) are situated. Bo Gyoke Road is one-way road and traffic flow is from west to east direction. At Sae Yone Gyi Bus Stop, YBS 8, 11,20,37,56,77,94,98 and Airport Shuttle Bus are operating. However, at Bo Gyoke Zay Bus Stop, YBS 4, 20, 37,56,94,98 and Airport Shuttle Bus are operating. Moreover, Phaya Lan Railway Station is situated approximately 0.59 km from the project site. There is no public transportation access at Pan Tra Street. The following figure shows the bus stop locations near the proposed project site.



Figure 5. 39 Bus Stop locations near the Project Site

5.17.5 Existing Road Network Traffic Condition

Data Collection to establish the existing traffic-volume conditions within the study area, by manual turning movement counts (TMCs) during the typical weekday (07:00–19:00) on Wednesday, February 27, 2019 and (07:00–19:00) on Saturday, February 23, 2019 at the intersections of Arzarni Road/U Htaung Bo Road/Shwedagon Pagoda Road (Shwedagon Intersection), Shwedagon Pagoda Road/Pan Tra Street, Shwedagon Pagoda Road/U Wisara Road, and Shwedagon Pagoda Road/Bo Gyoke Road, U Wisara Road/Pan Tra Street, and U Wisara Road/U Htaung Bo Road/ Alone Road (U Wisara Roundabout). Traffic is classified by four groups such as passenger car/taxi, Bus, Minibus and Light Vehicles with 15-minutes interval. Traffic volumes were also conducted by the video camera in Shwedagon Pagoda Road/Bo Gyoke Road.







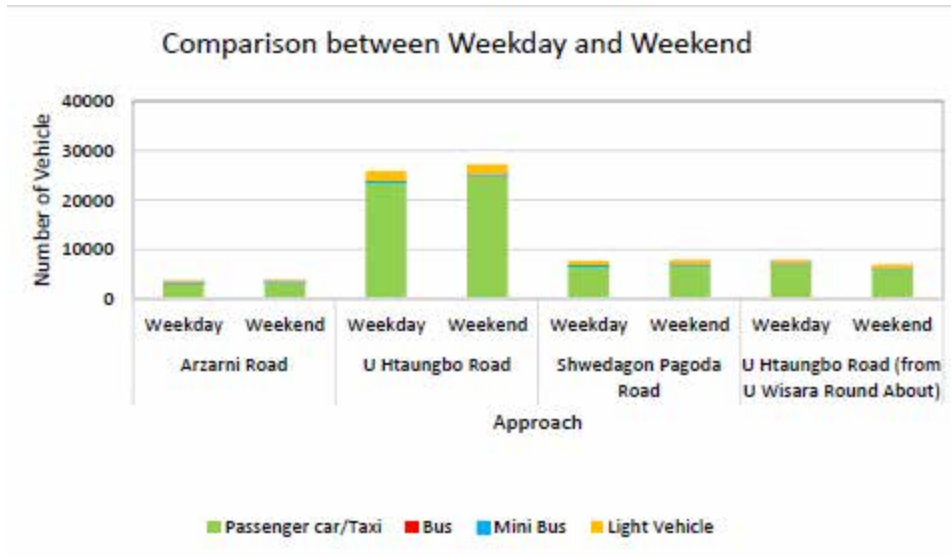
U Wisara Road_SB (from Dhammazedi Road)	U Htaung Bo Road
	
U Wisara Road_NB (from Shwedagon Pagoda Road)	Alone Road
	
Shwedagon Pagoda Road and Bo Gyoke Road	
	
U Wisara Road (from U Wisara Roundabout), U Wisara Road (from Shwedagon Pagoda Road) and Pan Tra Street	
	

Figure 5. 40 Survey crews conducting a field study

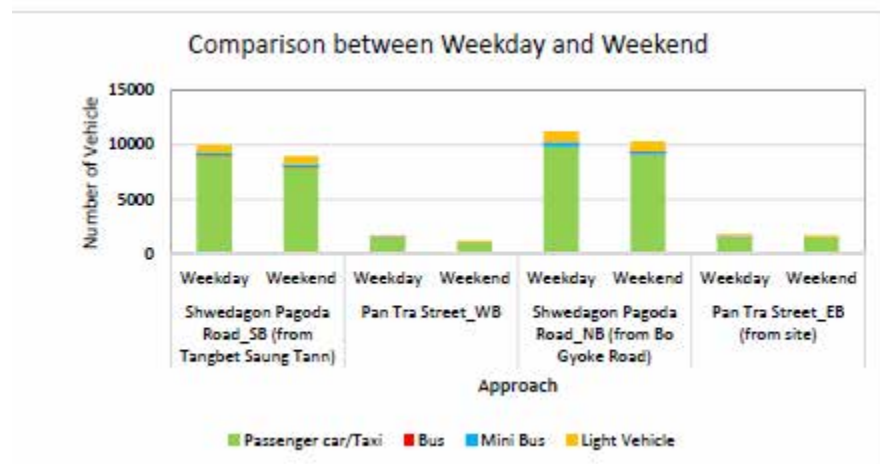
Table 5. 42 Existing Traffic Volumes (Base Year 2019)

Existing traffic volume at the 6 locations during weekday and weekend is presented in the table below:

No.	Name of Road	Weekday	Weekend	Hourly Period		No. of Vehicles		Remarks
				Morning	Evening	Morning	Evening	
1.	Arzani Road/ U Htaung Road/ Shwedagon Pagoda Road	✓		8:00 – 9:00	17:00 – 18:00	4,000	4,100	Evening Peak > Morning Peak
2.	Arzani Road/ U Htaung Road/ Shwedagon Pagoda Road		✓	12:00 – 13:00		4,000		Noon Peak
3.	Shwedagon Pagoda Road/ Pantra Road	✓		8:30 – 9:30	17:00 – 18:00	2,500	2,300	Morning Peak > Evening Peak
4.	Shwedagon Pagoda Road/ Pantra Road		✓	12:00 – 13:00		2,000		Noon Peak
5.	Shwedagon Pagoda Road/ U Wisara Road	✓		8:00 – 9:00	17:00 – 18:00	3,200	2,500	Morning Peak > Evening Peak
6.	Shwedagon Pagoda Road/ U Wisara Road		✓	12:15 – 13:15		2,500		Noon Peak
7.	Shwedagon Pagoda Road/ Bogyoke Road	✓		8:00 – 9:00	17:00 – 18:00	5,500	4,500	Morning Peak > Evening Peak
8.	Shwedagon Pagoda Road/ Bogyoke Road		✓	12:00 – 13:00		4,800		Noon Peak
9.	U Wisara Road/ Pantra Road	✓		8:00 – 9:00	17:15 – 18:15	1,210	1,205	Morning Peak > Evening Peak
10.	U Wisara Road/ Pantra Road		✓	12:00 – 13:00		9,050		Noon Peak
11.	U Wisara Road/ U Htaung Road/ Alone Road	✓		8:00 – 9:00	17:00 – 18:00	4,300	4,950	Evening Peak > Morning Peak
12.	U Wisara Road/ U Htaung Road/ Alone Road		✓	12:00 – 13:00		4,600		Noon Peak



The above figure shows a comparison of traffic volume between weekday and Saturday at Arzarni Road/U Htaung Bo Road/Shwedagon Pagoda Road. The result shows that weekday traffic volume is the same as weekend traffic volume at this intersection, except at U Htaung Bo Road (westbound). Saturday traffic volume at U Htaung Bo Road is greater than weekday volume. And also, there is a little difference between weekday traffic volume and weekend traffic volume at U Htaung Bo Road (eastbound). Shwedagon Pagoda Road/Pan Tra Street



The results show that weekday traffic volumes are higher than Saturday traffic volume along Shwedagon Pagoda Road and westbound of Pan Tra Street. But, traffic volume is nearly the same between weekday and Saturday at the eastbound of Pan Tra Street. Shwedagon Pagoda Road/U Wisara Road

Network Diagram of Peak Hours Traffic Volume for Base Year 2019

Figure 5.44 shows network diagram of traffic volumes for weekday morning peak, evening peak and Saturday mid-day peak hours for the base year 2019. This network diagram includes traffic volumes of Arzarni Road/U Htaungbo Road/Shwedagon Pagoda Road, Shwedagon Pagoda Road/Pan Tra Street, Shwedagon Pagoda Road/U Wisara Road, U Wisara Road/Pan Tra Street, Shwedagon Pagoda Road/Bo Gyoke Road and U Wisara Road/U Htaung Bo Road/ALone Road (U Wisara Roundabout).

Table 5. 43 Relationship between Level of Service and Average Control Delay for Un-signalized Intersections

Level of Service ($v/c < 1.0$)	Level of Service ($v/c \geq 1.0$)	Average Control Delay (seconds per vehicle)	Description
A	F	≤ 10.0	LOS A represents a condition with little or no control delay to minor street traffic
B	F	10.1 to 15.0	LOS B represents a condition with short control delays to minor street traffic
C	F	15.1 to 25.0	LOS C represents a condition with average control delays to minor street traffic
D	F	25.1 to 35.0	LOS C represents a condition with long control delays to minor street traffic
E	F	35.1 to 50.0	LOS E represents operating conditions at or near capacity level, with very long controls delays to minor street traffic.
F	F	> 50.0	LOS F represents a condition where minor street demand volume exceeds capacity of an approach lane, with excessive control delays resulting.

*Source: Highway Capacity Manual 2010, transportation Research Board, Washington D.C; 2010

Table 5. 44 Relationship between Level of Service and Average Control Delay for Signalized Intersections

Level of Service ($v/c < 1.0$)	Level of Service ($v/c \geq 1.0$)	Average Controls Delay (seconds per vehicle)	Description
A	F	≤ 10.0	LOS A describes operations with very low control delay; most vehicles do not stop at all.
B	F	10.1 to 20.0	LOS B describes operations with relatively low control delay. However, more vehicle stops than LOS A.
C	F	20.1 to 35.0	LOS C describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping
D	F	35.1 to 55.0	LOS D describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable, whereby motorists are not able to get through the signal on one cycle.
E	F	55.1 to 80.0	LOS E describes operations with high control delay values. Individual cycle failures are frequent occurrences.

The Level of Services by road sections during Weekday and Saturday are presented in the following table.

No.	Road	Levels of Services (LOS)					Week day			Saturday (Mid-day)	Remarks
		N	S	W	E	Inter- section	Morning	Afternoon	Evening		
1.	Arzarni Road, U Htaungbo Road, Shwedagon Pagoda Road	F	F	C	F	F	✓	-	✓	✓	2019
2.	Shwedagon Pagoda Road, Pan Tra Street	B	A	F	F	F	✓	-	✓	✓	2019
3.	Shwedagon Pagoda Road, U Wisara Road	E	B	-	-	C	✓	-	✓	✓	2019
4.	Shwedagon Pagoda Road, Bogyoke Road,	E	D		F	F	✓	-	✓	✓	2019
5.	U Wisara Road/Pantra	A	A	E	A	E	✓	-	✓	✓	2026
6.	U Wisara Road/U Htaung Bo Road/ALone Road	E	E	F	E	F	✓	-	-	✓	2019

5.17.6 Future Year Conditions

Traffic volumes in the study area were projected to the year 2026, which reflects a seven-year planning horizon (including two-year construction period), after permission of the proposed building. The traffic conditions for the year 2026, under No-Build conditions, were developed to document the operating conditions independent of the proposed project; including all existing traffic, new traffic resulting from growths, and traffic from specific development by others in the vicinity. Anticipated site-generated traffic volumes for the proposed development were calculated upon the No-Build traffic networks for the Build conditions with the proposed project.

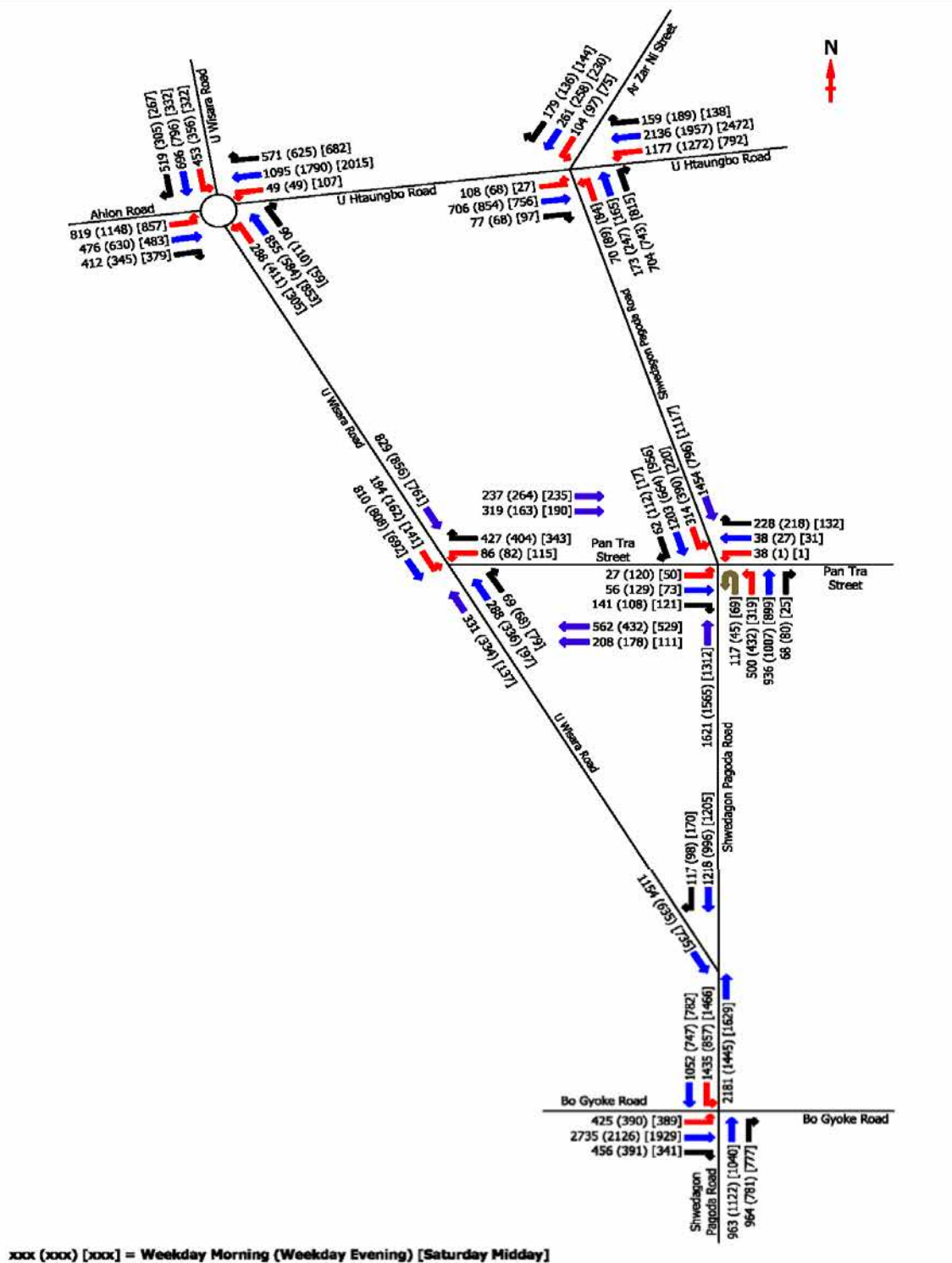


Figure 5. 43 Network Diagram of Weekday Morning, Evening Peak and Saturday Mid-Day Peak Hour Traffic Volume (2026-Build)

Table 5. 45 Trip Generation Summary by Land Use Code

Time period	Hotel (LUC 310)	General Office Building (LUC 710)	Total New Trips	Transit Trips	Total Primary Trips
<i>Weekday Daily</i>					
IN	1,639	1,136	2,775	833	1,942
OUT	1,638	1,136	2,774	832	1,942
<i>TOTAL</i>	3,277	2,272	5,549	1,665	3,884
<i>Weekday AM PH</i>					
IN	109	212	159	97	224
OUT	75	34	101	33	76
<i>TOTAL</i>	184	271	260	130	300
<i>Weekday PM PH</i>					
IN	120	41	121	48	113
OUT	115	214	192	99	230
<i>TOTAL</i>	235	268	313	147	343
<i>Saturday Daily</i>					
IN	1,605	258	1,121	559	1,304
OUT	1,605	258	1,118	559	1,304
<i>TOTAL</i>	3,210	516	2,239	1,118	2,608
<i>Sat. Midday PH</i>					
IN	154	67	125	66	155
OUT	121	57	108	53	125
<i>TOTAL</i>	282	124	233	119	280

Table 5. 46 Trip Generation Summary for YCP

Time Period	Total Trips	Total New Trips		Total Transit Trips		Total Primary Trips	
		In	Out	In	Out	In	Out
Weekday Daily	5,549	2,775	2,774	833	832	1942	1942
Weekday AM PH	430	321	109	97	33	224	76
Weekday PM PH	490	161	329	48	99	113	230
Saturday Daily	3,726	1,863	1,863	559	559	1304	1304
Sat. Midday PH	399	221	178	66	53	155	125

As shown in **Table 5.46** the proposed mixed-use development is anticipated to generate approximately 5,549 new vehicle trips (1,942 entering and 1,942 exiting) during the average weekday, with 430 new vehicle trips (224 entering and 76 exiting) during the weekday morning peak hour and 490 new vehicle trips (113 entering and 230 exiting) during the weekday evening peak hour. Approximately 3,726 new vehicle trips (1,304 enterings and 1,304 exiting) are anticipated during the average Saturday, with 399 new vehicle trips (155 entering and 125 exiting) during the Saturday midday peak hour.

The 2026 Build Condition traffic-volume networks consist of the 2026 No-Build traffic volumes with the addition of the site-generated traffic for the proposed redevelopment. **Figure 5.43** shows network diagram of traffic volumes for a weekday morning, evening peak and Saturday mid-day peak hours 2026 Build condition.

5.17.7 Proposed Improvements

5.17.7.1 Arzani Road / U Htaung Bo Road/Shwedagon Pagoda Road

Under 2026 Build condition with the construction of the Y Complex Project, improvements are recommended and proposed at this intersection as part of the off-site mitigation, which includes existing lane configurations were modified. Re-timing signal improvement is also recommended and coordinating the signal with the other proposed signals timings to accommodate the site-generated trips. With the mitigation, the U Htaung Bo Road (westbound) include an exclusive left-turn lane, a through lane and a shared through/right-turn lane.

5.17.7.2 Shwedagon Pagoda Road/Pan Tra Street

Under 2026 future year analysis for the construction of the proposed project, improvements are recommended and proposed at this intersection which includes changing in width and existing lane configurations will be modified in this intersection. With the mitigation, the Pan

Tra Street (westbound) include a shared left turn/through lane and an exclusive right-turn lane.

Installation of a signal to this intersection is also recommended and coordinating the signal with the other proposed signals timings to accommodate the site-generated trips and made it the master intersection for the coordination

5.17.7.3 Shwedagon Pagoda Road/Bo Gyoke Road

Under 2026 future year analysis, improvements are recommended and proposed at this intersection as part of the off site mitigation, which include the re-timing the existing signal timings to accommodate the site-generated trips and coordinating the signal with the other proposed signals timings of intersections along proposed development.

5.17.7.4 U Wisara Road/Pan Tra Street

As an improvement under 2026 Build with the construction of the Y Complex Project, additional lane was added and existing lane configurations were modified to accommodate the site-generated trips.

With the mitigation, Pan Tra Street (westbound) approach will consist of an exclusive left-turn lane and an exclusive right-turn lane. U Wisara Road (northbound) approach will consist of an exclusive right-turn lane and two through lanes.

5.17.7.5 Shwedagon Pagoda Road/U Wisara Road

As an improvement under 2026 future year analysis, additional lane was added and existing lane configurations were modified to accommodate the site generated trips. With the mitigation, Shwedagon Pagoda Road, southbound approach will consist of an exclusive right-turn lane and two through lanes.

5.17.7.6 U Wisara Road/U Htaung Bo Road/ Alone Road

Under 2026 Build with the construction of the YCP, improvements are recommended and proposed at this intersection as part of the off-site mitigation, which includes existing lane configurations were modified to accommodate the site generated trips.

YCP has examined the potential traffic impacts associated with the YCP, located at Block No. (68/45D), Lot No. (11.A/15,16,17), corner of Shwedagon Padoga Road and Pan Tra Street, and between Shwedagon Padoga Road and U Wisara Road, Dagon Township in Yangon. The Results are summarized as follows.

- The proposed Y Complex development Project is anticipated to generate approximately 5,549 new vehicle trips (1,942 entering and 1,942 exiting) during the average weekday, with 430 new vehicle trips (224 entering and 76 exiting) during the weekday morning peak hour and 490 new vehicle trips (113 entering and 230 exiting) during the weekday evening peak hour. Approximately 3,726 new vehicle trips (1,304 enterings and 1,304 exiting) are anticipated during the average Saturday, with 399 new vehicle trips (155 entering and 125 exiting) during the Saturday midday peak hour.
- As an ingress and egress for a proposed development project, Shwedagon Pagoda Road, Pan Tra Street, and U Wisara Road will be accessed from/to the site. A full access/full-egress, 21 feet wide of a new site driveway which connecting between

Shwedagon Pagoda Road and U Wisara Road will be provided on the southerly side of development buildings. In addition, a full-access/full-egress, 28 feet wide of another one new site driveway which connecting between Pan Tra Street and new site driveway will also be provided a westerly side of a development project. This site driveway can also be used as ingress for public and egress for site generated trips. Therefore, one ingress/egress, one ingress, and two egresses will be accessed/egress along Shwedagon Pagoda Road, two egresses along Pan Tra Street and a full ingress/egress along U Wisara Road from/to the site

- Carpooling, ferry and other transportation systems such as Airport Shuttle Bus are possible mitigation measures to reduce private car usage along the Shwedagon Pagoda Road.

In conclusion, with the implementation of the proposed improvements, the anticipated traffic generated by the proposed development could be efficiently accommodated within the study area corridor and intersections

5.17.8 Transportation Demand Management Measures

Transportation Demand Management (TDM) program has be provided in order to reduce single-occupancy vehicle trips to/from the site. To reduce the private car use ferry and carpooling has to be provided for staffs/workers for proposed project. Other public transportation facility such as bus stop should be provided along Shwedagon Pagoda Road, especially near Shwedagon Pagoda Road/Pan Tra Street. This may include enhanced options for public transportation travel and parking measure.

Additional signal, synchronization of traffic lights in the vicinity of YCP, warning lights/ flashing light signals and widening of the roads will one way or other restrict the risk of accidents during the operation stage.

5.18 Environmental Friendly Systems to be assembled during the Operation Phase

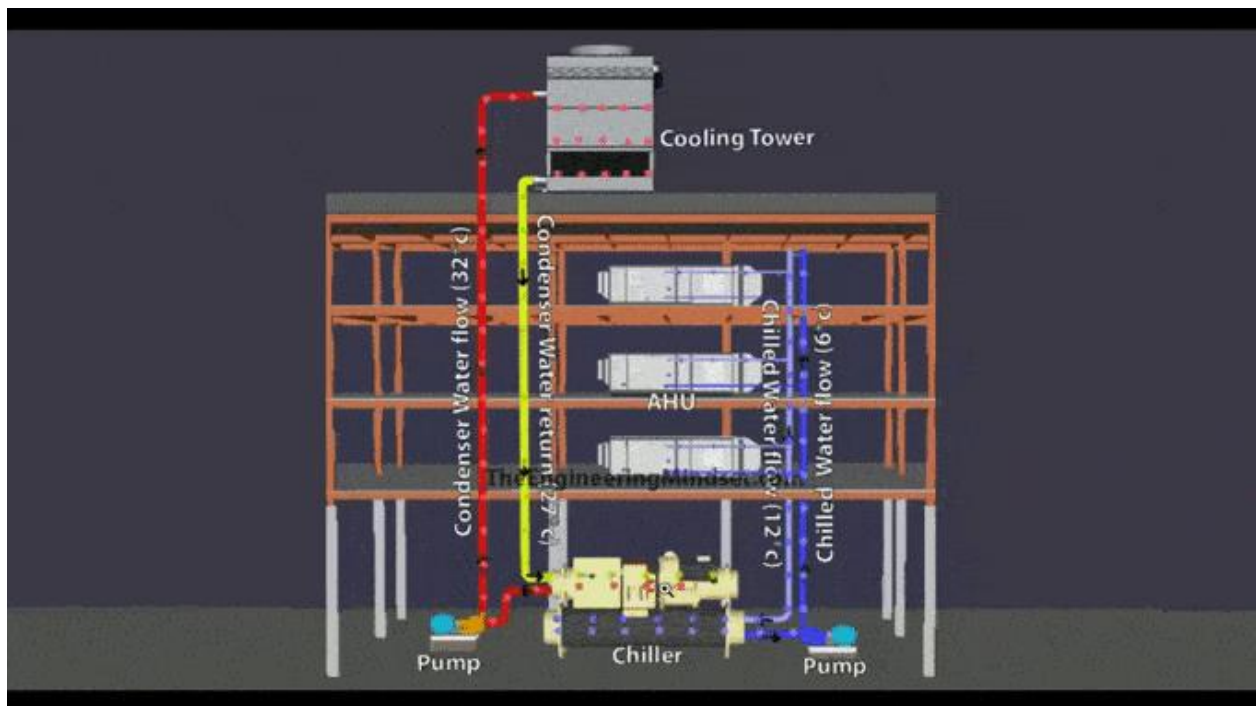
YCP will install environmental friendly and security systems such as HVAC, Heat Rejection System, and Ventilation System for underground car park, internal and external system, emergency lighting system and security system during the operation for the safety and convenience of the guests for emergency situations.

5.18.1 Heating, Ventilating and Air Conditioning System (HVAC System)

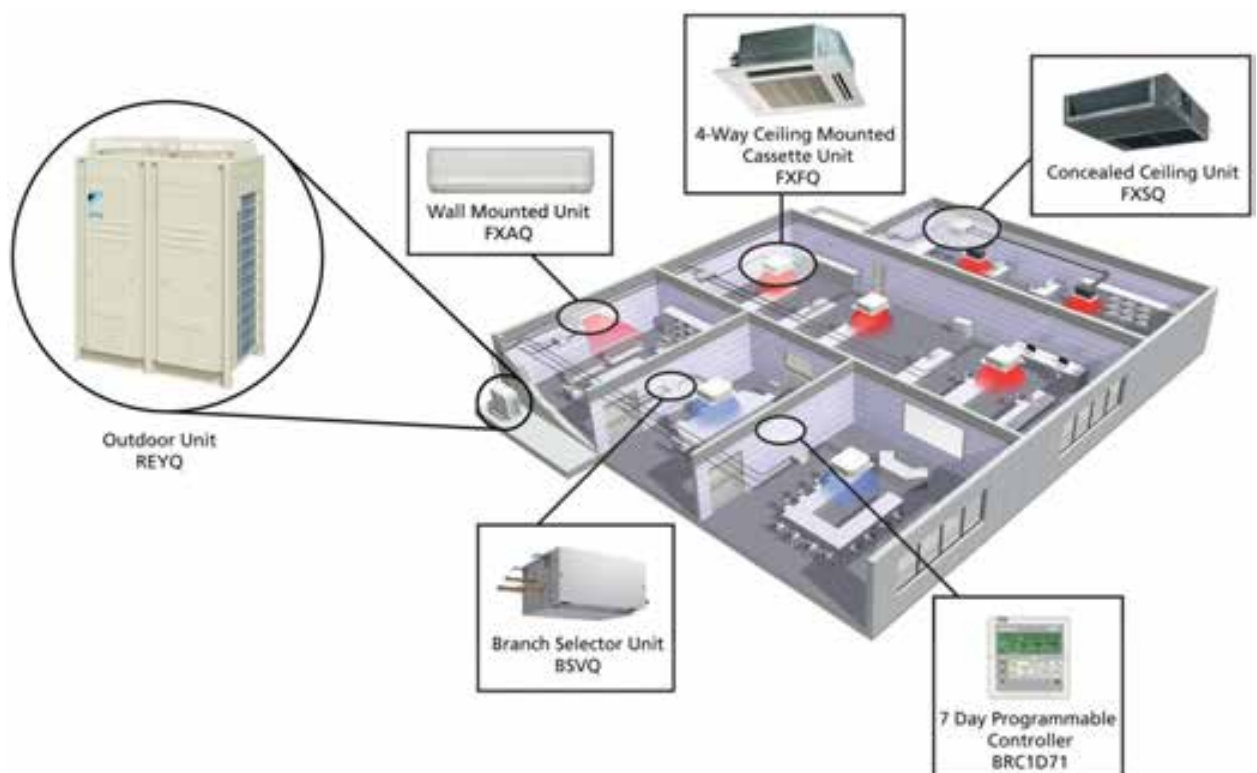
5.18.1.1 Chiller System for Hotel Building

In most process cooling applications, a pumping system circulates cool water or a water/glycol solution from the chiller to the process. This cool fluid removes heat from the process and the warm fluid returns to the chiller. The process water is the means by which heat transfers from the process to the chiller.

of condenser water (in an open cooling tower) this will allow the heat of the condenser water to transfer into the air and this air is then blown out into the atmosphere. The condenser water then collects and heads back to the chillers condenser ready to collect more heat.



5.18.2.2 Condenser with VRV System for Office Area



5.18.3 Ventilation System (Underground, Car park)

5.18.3.1 Jet Fan

Jet fans also known as impulse or induction fans, support the natural flow between the supply air and extract air zones. They provide motion in regions with low airspeeds, thus guaranteeing the daily ventilation requirement for all areas.



5.18.4 Axial Fan for Exhaust System

An axial fan is a type of fan that causes gas to flow through it in an axial direction, parallel to the shaft about which the blades rotate. The flow is axial at entry and exit. The fan is designed to produce a pressure difference, and hence force, to cause a flow through the fan. Factors which determine the performance of the fan include the number and shape of the blades. Fans have many applications including in wind tunnels and cooling towers. Design parameters include power, flow rate, pressure rise, and efficiency.



5.18.5 Mechanical Ventilation System

Mechanical Ventilation systems work by extracting stale air or supplying fresh air into rooms in a house or building. Systems such as mechanical ventilation heat recovery systems extract and supply.



5.18.6 Internal and External Lighting System

5.18.6.1 Aircraft warning lights

Aircraft warning lights are high-intensity lighting devices that are attached to tall structures and are used as collision avoidance measures. Such devices make structures more visible to passing aircraft and are usually used at night, although they may be used during the day as well. These lights need to be of sufficient brightness in order to be visible for miles around the structure.



5.18.7 Emergency Lighting System

Emergency lighting is a vital and effective life safety tool, providing reassurance and guidance to people at critical times when they need to escape quickly and safely from a building.



5.18.8 Security System

Surveillance Cameras are video Cameras used for the purpose of observing an area. They are often connected to a recording device, IP networks and/or watched by security guard and also the monitoring of the behavior, activities, or other changing information, usually of people for the purpose of influencing, managing, directing, or protecting them.



5.19 Social & Cultural Resources

5.19.1 Location of the Project Area

The project site is situated in Dagon Township, Western Yangon District, Yangon Region, and Myanmar. Dagon Township lies between North Latitude between $16^{\circ} 46' 51''$ and East Longitude $97^{\circ} 8' 59''$ (**Fig 5.44**). Detailed location of wards in the project area is shown in Map 2.2 and **Table 5.47**. Dagon Township is bordered on the North by Bahan and Sanchaung Townships, on the East by Mingalar Taung Nyunt Township, on the South by Pabetan, Latha and Lanmataw Townships and on the West by Alone Township. Dagon Township is one of the townships in West Yangon District. The area of Dagon Township is 4.5 square miles of Yangon Region. It is 0.99 miles long from north to south and 0.96 miles wide from east to west.



Figure 5. 44 Location of the Project Area

Table 5. 47 Location of the Project Area

Sr.	Name	Latitude	Longitude
1	Yawmingyi Ward	$16^{\circ} 46' 56.97''$	$96^{\circ} 9' 14.27''$
2	Phayargyi Ward	$16^{\circ} 47' 5.02''$	$96^{\circ} 9' 14.12''$
3	Uwizarya Ward	$16^{\circ} 46' 54.99''$	$96^{\circ} 9' 9.04''$



Figure 5. 45 Project Area showing Wards

5.20 Population & Communities

Dagon Township is composed of 5 wards, namely Yawmingyi, UWizara, East Pyay Road, West Pyay Road and Phayargyi. There are 4595 households having a total population 25392 in the township. Among the wards of Dagon Township, the highest number of population is found in East Pyay Road Ward (8,143 persons) and the lowest population is found in Phayargyi Ward (2,013 persons). Population density of Dagon Township is 12,961 persons per square miles. In Dagon Township, the major ethnic group in 5 wards is Bamar (92 percent). **(Table 5.48)** Most of them are Buddhist. An average household size is about 5.5 persons. The female population is slightly higher than male with the ratio 1.08.

Population of Dagon Township as below:

Table 5. 48 Land and Demographic Conditions of Dagon Township

Name of Township	Area*	Above Sea Level (Highest)*	Population*	Population growth rate*	Population density*	Population		
			2011	(2000-2011)	2011	2014**	2014***	2018****
	km ²	m	person	%/year	person/km ²	person	person	person
Dagon	11.65	17.1	24,492	-3.7	2,102	19,907	29,796	25392
Source:	Note *: SUDP (2013) "Yangon Township Data Sheet", Note **: Township Information of General Administration Department Office (March, 2014), Note ***: Provisional results of the 2014 Population and Housing Census of Myanmar (www.dop.gov. mm) Note ****: General Administrative Department, Dagon Township (2018)							

Table 5. 49 Total Population of Dagon Township

No	Ward	Total Population			House	No of Households
		Male	Female	Total		
1	Yawmingyi	3382	4240	7622	288	1550
2	UWizara	1485	1974	3459	67	732
3	East Pyay Road	4357	3786	8143	123	1396
4	West Pyay Road	1845	2310	4155	215	611
5	Phayargyi	1141	872	2013	135	306
Total		12210	13182	25392	828	4595

Source: General Administrative Department, Dagon Township (2018)

5.20.1 Population in Affected Wards

The Y complex Project site is located in Dagon Township, Yangon Region. There are five wards. The affected wards are Yawmingyi, Phayargyi and UWizara wards.

Among these wards, Yawmingyi ward is the biggest ward with 288 houses and 1550 households followed by Phayargyi Ward with 135 houses and 306 households. UWizara ward is the third biggest ward with 67 houses and 732 households. Potential social impact of the project is relatively high due to their wide social network.

There are 7,622 persons in Yawmingyi ward, 2,013 persons in Phayargyi Ward, and 3,459 persons in UWizara Ward. Among them, 120 respondents are selected as sample population depends on their houses for the study because there are many building stories and

households. Therefore, the sample population is about 24 percent of the total number houses in study area. (Table 5.50, Figure 5.46 and Figure 5.47 (a,b and c))

Table 5. 50 Population and Samples of the study area

No,	Ward	House	Male	Female	Total	No.of sample
1	Yawmingyi	288	3382	4240	7,622	60
2	Phayargyi	135	1141	872	2,013	40
3	UWizara	67	1485	1974	3,459	20
	Total	490	6,008	7,086	13,094	120

Source: General Administrative Department, Dagon Township (2018)

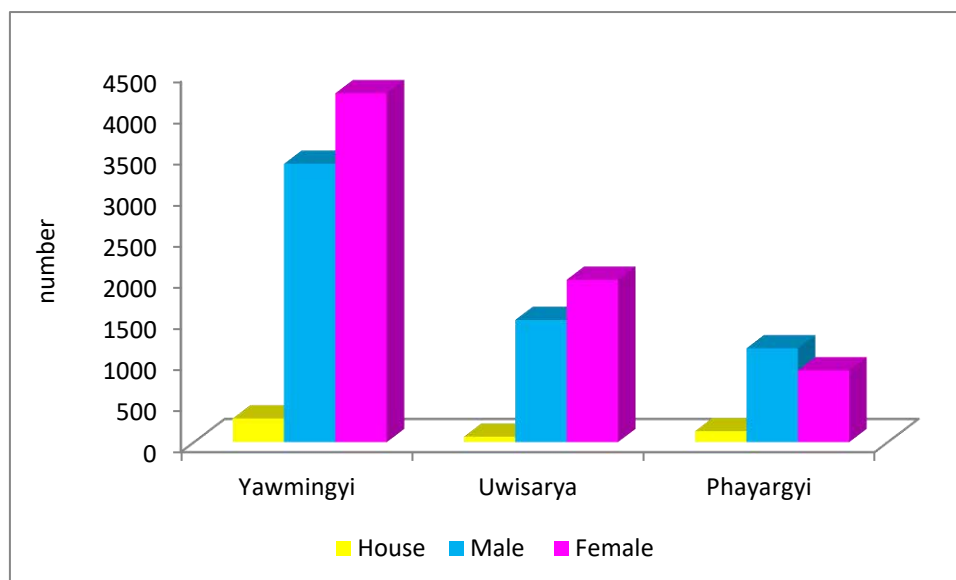


Figure 5. 46 Population and Samples of the study area (2018)



Figure 5. 47 (a) Study ward of Yawmingyi in Dagon Township



Figure 5. 47 (b) Study ward of Phayargyi in Dagon Township



Figure 5. 47 (c) Study Ward of UWizara in Dagon Township

5.20.2 Socio-economic Profile of the Affected Area

5.20.2.1 Gender, Age Composition and Family Size

Field surveys and semi- structured interviews were done in three sample groups within the project area. The respondents are 73 males (61 percent of total respondents) and remaining are 47 females (39 percent of the respondents). Most of the respondents belong Bamar ethnic group and 7 percent are Christians but 93 percent are Buddhists. The major ethnic group in all wards is Bamar people. Respondents on semi- structured interviews mainly represented age group between 20 years old and over 65 years old. Most of the respondents belong to age group above 35 -49 years and age group 20-34 years is also high. (Table 5.51 and Figure 5.48)

Table 5. 51 Age Composition of respondents (%)

Study ward	20-34 years	35-49	50-65	>65 years
Yawmingyi	4	33	33	30
Phayargyi	5	43	35	17
UWizara	35	55	10	0

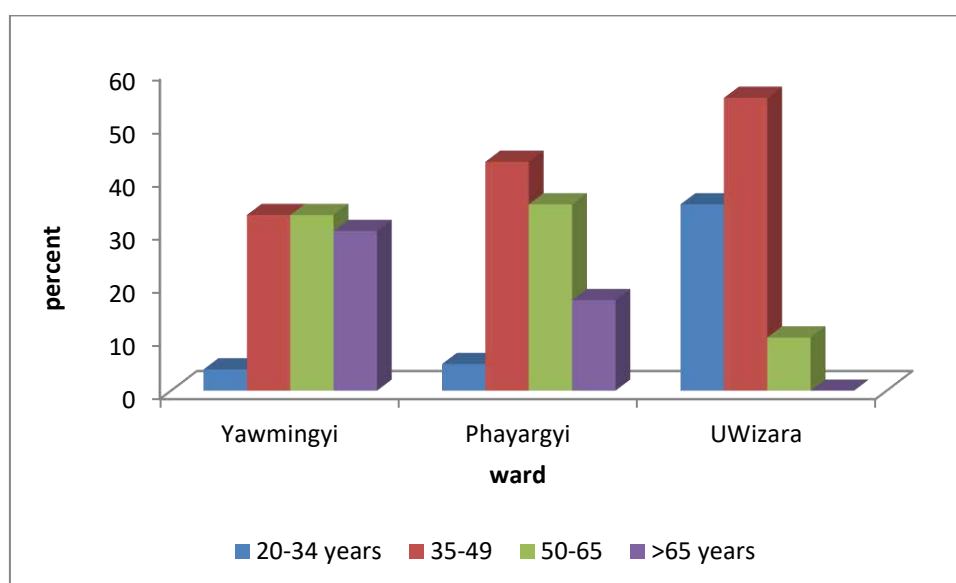


Figure 5. 48 Age Composition of respondents (%)

Family size of respondents can be grouped into three classes as;

1. Family with 1 to 3 persons,
2. Family with 4 to 6 persons, and
3. Family with more than 6 persons.

High number of respondents with big families 4 to 6 persons is found in all wards. Respondents with small families (more than 6 persons) are mainly found in Phayargyi ward. (Table 5.52 and Figure 5.49)

Table 5. 52 Family size of respondents (%)

Study ward	1 to 3 persons	4 to 6 persons	above 6 persons
Yawmingyi	37	47	16
Phayargyi	33	42	25
UWizara	45	50	5

(Source: Field Survey, April 2018)

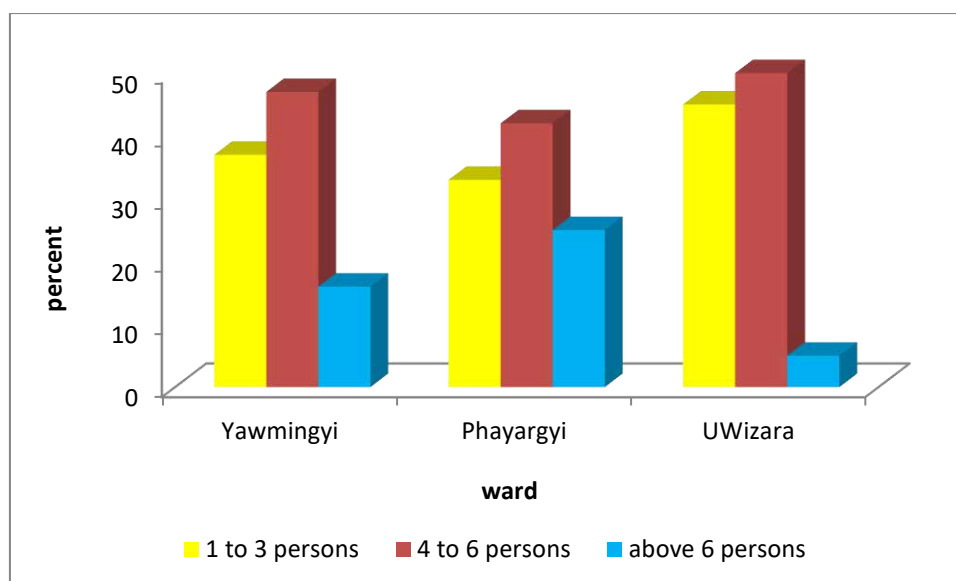


Figure 5. 49 Family sizes of respondents (%)

5.21 Religion, Races and Ethnic Minority

Yangon is the most ethnically diverse city in the country and the primary religions practiced in Yangon are Buddhism, Christianity, Hinduism, and Islam According to Townships data of Yangon City (2014), majority of people in Dagon Township are related to Buddhist as shown in **Table 5.53**. Different races that are living in townships related with the YCR Line are shown in **Table 5.54**. There is no ethnic minority living in the Dagon Township according to the Dagon Township Information of GAD office (2014).

Table 5. 53 Percentage of different Religions by townships

Township	Buddhist	Christian	Hindu	Islam	Other	Total
Dagon	23262	1059	278	612	-	25211

Source: Township Information of GAD Office (April, 2017)

Table 5. 54 Percentage of different races by township

Dagon Township			
Sr.	Race	Population	Percentage of Total Population
1	Kachin	120	0.47
2	Kayar	8	0.031
3	Kayin	822	3.260
4	Chin	255	1.011
5	Mon	102	0.404
6	Bamar	23399	92.21
7	Rakhine	308	1.22
8	Shan	333	1.32
9	Others	0	0
Total		25392	100

Source: Dagon Township Information of GAD Office (2018)

5.22 Cultural Resources

In 1996, the Yangon City Development Committee created a Yangon City Heritage list of old buildings and structures in the city that cannot be modified or torn down without approval. In 2010, the Ministry of Culture further announced 16 ancient pagodas and buildings in Yangon Region which are recognized as cultural heritage sites. The Shwedagon Pagoda is recognized as both inclusive as an Ancient Monument Zone and Protected and Preserved Zone and the other 15 are listed as Ancient Monument Zone. The list of the heritage buildings in Dagon Township is presented in the following **Table 5.55**.

Table 5. 55 Dagon Township Heritage List

Sr.	Dagon Township Heritage List
1.	BEHS 1 Dagon
2.	BEHS 2 Dagon
3.	Department of Public Health Laboratory
4.	Diplomatic Residence Compound
5.	Eindawya Pagoda
6.	India House
7.	Kyargu Monastery
8.	MahaWizaya Pagoda
9.	Methodist English Church
10.	Ministry of Foreign Affairs
11.	National Archives Department
12.	St. Gabriel's Church
13.	St. John's Catholic Church
14.	SeinYaungchi Pagoda
15.	Shwedagon Pagoda
16.	Yahanda Ordination Hall
17.	Zafar Shah Darga

Source General Administrative Department, Dagon Township (2018)

5.23 Tourism

Tourism business in Dagon Township is as follows;

(a) Hotel, Motel, Inn, Guesthouse

(1) Hotel

No	Name of hotel	Hotel		Rank	Total Rooms
		State Own	Private Own		
1	Park Royal	-	Private	Five Stars	325
2	Summit Park View	-	Private	Four Stars	173
3	Garven	-	Private	Four Stars	48
4	The Loft Hotel		Private	Four Stars	32
5	Tawwin	-	Private	Four Stars	32

No	Name of hotel	Hotel		Rank	Total Rooms
		State Own	Private Own		
	Garden				
6	Sunny Holiday	-	Private	Four Stars	63
7	Yangon International	-	Private	Three Stars	99
8	Alfa	-	Private	Three Stars	90
9	Helpin	-	Private	Two Stars	53
10	President	-	Private	Two Stars	45
11	Olympus	-	Private	Two Stars	74
Total					1,066

Source: General Administrative Department, Dagon Township (2018)

(2) Motel, Inn, Guesthouse

No	Number of Motel	Number of Inn	Number of Guesthouse
1	1	-	23
Summary of District	1	-	23

(b) Resort

No.	Township Name	Beach and Resort	Location
1.	Dagon	People Square People Park	Pyi Road East Quarter
2.	Dagon	Kandawmingalar Park	Phonegyi Quarter
3.	Dagon	Dagon Park	Yawmingyi Quarter
4.	Dagon	Zyiwaka Park	Phayargyi Quarter
5.	Dagon	Taw Hlan Yay Park	East Quarter, Pyay Road
6.	Dagon	U Oaktama Park	Phayargyi Quarter

5.24 Education

According to 2018 data, Dagon Township had three Basic Education High Schools, three Basic Education Middle Schools, four Basic Primary Schools, one pre-school, one library and one Monastery. The teachers and the students' ratios were 1:37 for High School level, 1:29 for Middle School level, and 1:19 for Primary School Level. The educational information in Dagon Township is as follows;

Table 5. 56 Basic Education Information of Dagon Township

Basic Education High School						
No.	Name of School	Location	Area (acre)	Number of Teachers	Number of Students	The ratio of Teaches and Students
1.	BEHS .1	(57)Alanpya Pagoda Road	3.03	151	6857	1/45
2.	BEHS. 2	(353)Myomakyaung Road	5.8	68	2018	1/30
3.	BEHS. 3	(14)Thantaman Road	3.012	28	362	1/13
Total		3	11.842	247	9237	1/37
Middle Schools						
1.	Middle School 1	(44)Pyi Road	1.504	75	2582	1/34
2.	Middle School 2	(14)Uwizara Road	2.225	13	203	1/16
3.	Middle School 3	(35)Aechive Road	1.04	13	148	1/11
Total		3	4.769	101	2933	1/29
Primary Schools						
No.	Name of School	Number of Teachers	Number of Students	Ratio of Teachers and Students		
1.	Primary School 1	6	107	1/18		
2.	Primary School 2	6	119	1/20		
3.	Primary School 10	10	269	1/27		
4.	Primary School 11	5	22	1/4		
Total		27	517	1/19		
Pre-School						
No	Township	Number of School	Number of Teachers		Number of Students	
			Male	Female	Male	Female
1	Dagon	2		4	30	37
Monastic School						
No.	Township	Name of School	Number of Teachers	Number of Students		
1	Dagon	Kyarku Monastery	5	60		
Library						
No	Administrative	Education	Information and Relation Department	Monastery	Other	Total
1	-	10	5	-	-	15

5.24.1 Education Level

A high percentage of Graduated level among the respondents is found in the study area. A high percentage of the high school level is found only in Phayargyi Ward. Respondents of middle schooling education level are found in the study area but very few percentages. In general, most of the respondents are in the basic education levels from middle school to high school. (Table 5.57 and Figure 5.50)

Table 5. 57 Education Level of Respondents (%)

Study ward	Middle school	High school	University Student	Graduated
Yawmingyi	23	37	3	37
Phayargyi	10	38	5	47
UWizara	20	20	20	40

(Source: Field Survey, April 2018)

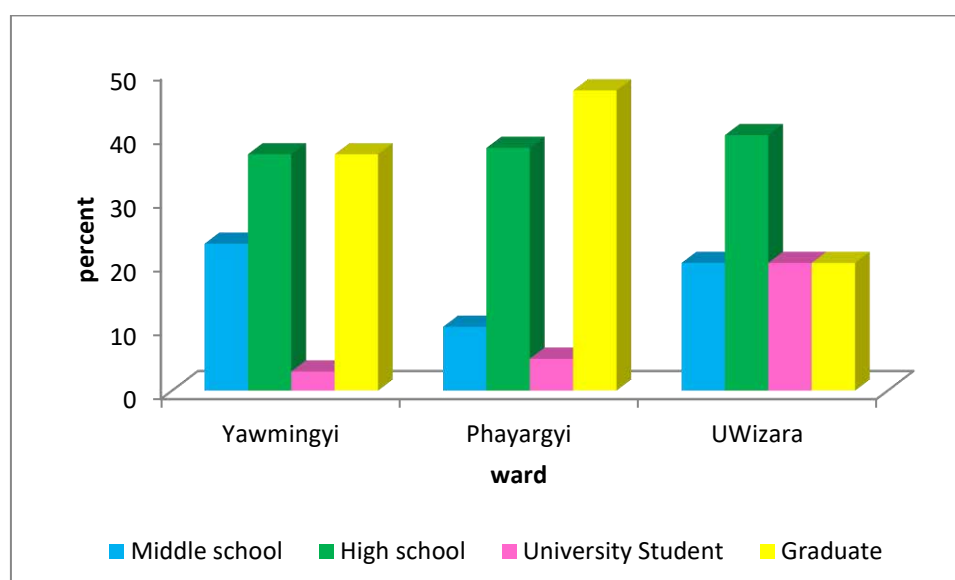


Figure 5. 50 Education Level of Respondents (%)

5.25 Employment

According to information from the General Administration Department Office, the occupational status of the targeted townships shows that 73.2% of the total population is employed and 41% unemployed in Dagon Township. The breakdowns for targeted townships are as below:

Table 5. 58 Employment Status of Dagon Township

Name of Township	Total Population	No. of workable person	No. of Employed Person	No. of Unemployed person	%of Employed person	% of Unemployed person
Dagon	25,392	13,189	12,524	665	49.3%	2.6%

Source: Dagon Township Information of General Administration Department Office (April, 2017)

The population according to their employment is as follows;

No	Township	Government Staff	Service	Agriculture	Veterinary	Machine	Odd Job	Others
No	Dagon	1000	1150	-	-	53	50	5684

Occupational Structure

According to the field survey data, type of occupation includes private business, seller, government staff, dependent, private business and monks. Most of the respondents are government staffs. Government staffs are mainly found in Phayargyi and UWizara wards. Business jobs are mostly found in Yawmingyi ward. (Table 5.59 and Figure 5.51)

Table 5. 59 Profile of Occupational Structure of Respondents (%)

Study ward	Dependent	Private business	Government staff	Seller	Retired	Monks
Yawmingyi	10	30	17	21	17	5
Phayargyi	13	10	50	7	15	5
UWizara	15	25	50	5	5	0

(Source: Field Survey, April 2018)

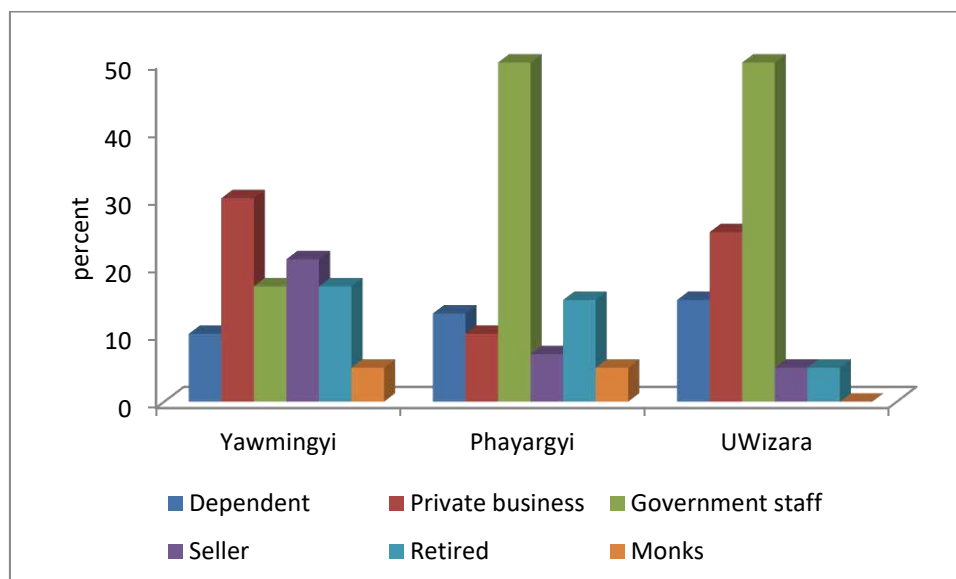


Figure 5. 51 Profile of Occupational Structure of Respondents (%)

5.25.1 Income Level and Source of Income

Average income level of people in the affected wards was measured by using primary data received from the field survey in April 2018. More than 350,000 kyats per month received of respondents are usually found in all wards. Most of the respondents spend less than 300,000 kyats for their family

monthly expenditure. The Main source of income for respondents is from the government and private business sectors.

5.25.2 Possession

All respondents own their houses. Types of the house found in the affected wards are brick building. Most of the respondents possess a car, mobile phone, television, DVD player, fridge, electronic good, generator, and washing machine. (Table 5.60 and Figure 5.52)

Table 5. 60 Possession of Respondents (%)

Study ward	Car	Electronic Goods	Mobile phone	Sewing	Television	DVD	Fridge	Generator	Washing machines
Yawmingyi	20	63	100	17	67	43	57	20	40
Phayargyi	15	60	100	28	65	60	63	20	44
UWizara	10	75	100	10	80	70	70	10	50

(Source: Field Survey, April 2018)

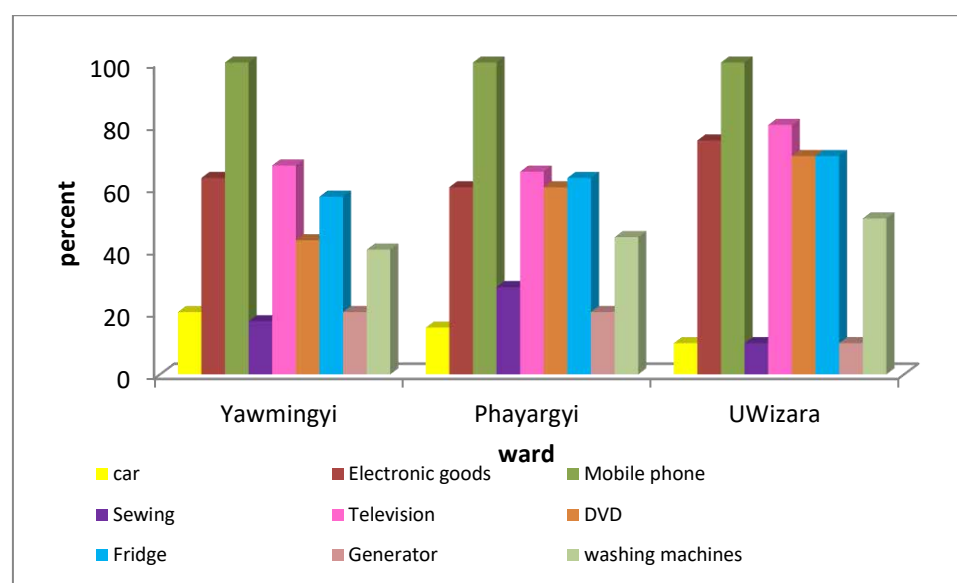


Figure 5. 52 Possessions of Respondents (%)

5.26 YCDC Land Use Zone

In the Master Plan for the future development of Yangon City (YCDC 2014) (Figure 5.53), YCDC intends to carry out medium (2025) and long-term (2040) land use plan. According to the proposed land use zoning plan, there are mainly 3 types of zones:

- Urbanization Promotion Area consists of General Urbanization Area Industrial/Logistic Zone and Special Urbanization Zone which contains two sub-categories, Secondary CBD/Sub Center Zone and Suburban Development Zone.

- Controlled Urban Redevelopment Area consists of CBD Zone, Heritage Protection Zone and Shwedagon Townscape Zone
- Urbanization Control Area consists of Conservation Zone, Green Zone and Urbanization Zone

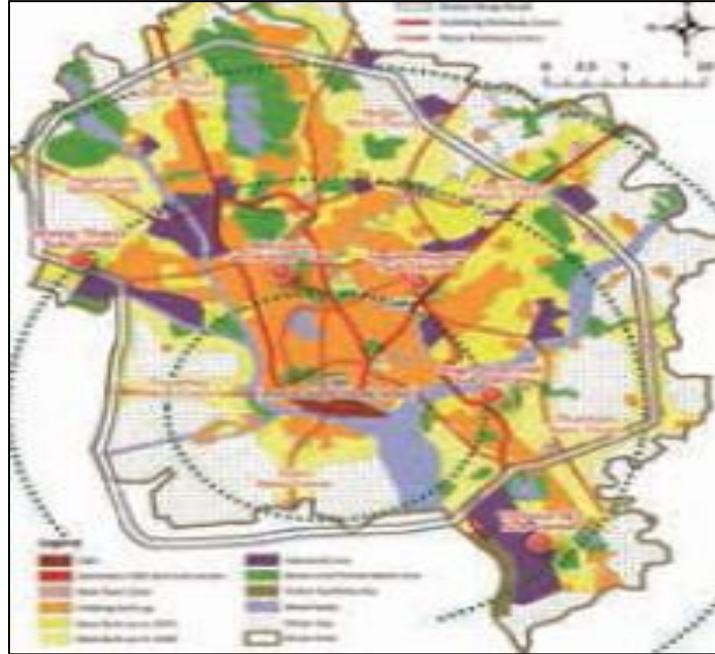


Figure 5. 53 YCDC Land Use Zone (YCDC, 2014)

5.27 Cultural Heritage Sites

According to the information provided from YCDC concerning cultural heritage sites, the following are those included in Dagon Township. Only cultural heritage sites, relevant to the EIA of this project will be considered within 200 m perimeter scope of the existing buildings; among which there are 3 Cultural Heritage Sites still existing. Photographs showing existing buildings within 200m radial distance from the perimeter of the Y Complex Project. (see **Figure 5.54**)



Figure 5. 54 200m radial distance from the perimeter of the Y Complex Project



Myanmar Timber Enterprise Office



St. Gabriel's Church (Heritage)



Asia Language & Business Academy



Prime Hill Business Square



KyarGu Monastery (Heritage Building)



Tatmadaw Hall



6 Storey Apartment (Pantra Street)



Sein Yaung Chi Pagoda (Heritage)



6 Storey Apartment (Pantra Street)



Township Medical Office



Olympic Hotel (U Wisara Road)



Myanmar Swimming Federation

Figure 5. 55 Photos of Cultural Heritage Sites and Existing Buildings

5.28 Resettlement /Relocation

There will be no resettlement necessary for the time being as the surrounding urban environment has been well established for quite a long time and stable, except, the relocation of transformers from the existing project site to new possible locations mentioned in the attached map. There are 4 possible locations to be selected and the best possible option will be selected based on the least impact on the environment and also for safety measures as shown in **Figure 5.56**.



Figure 5. 56 Possible Relocations Sites for Transformer

CHAPTER 6: IMPACT ASSESSMENT AND MITIGATION MEASURES

6.1 Setting the Study Limits

Ground-borne noise and vibration generated by man-made activities (i.e., rail and roadway traffic, operation of the mechanical equipment, typical construction equipment) diminish rapidly with distance from the vibration source according to Noise and Vibration, in the City of Los Angeles (2015). The Federal Transit Administration (FTA) uses a screening distance of **100 feet for highly vibration sensitive buildings** (e.g., hospitals with vibration-sensitive equipment) and **50 feet for residential uses**. Vibration-sensitive buildings generally include historic buildings, buildings in poor structural condition and uses that require precision instruments (i.e., hospital operating rooms or scientific research laboratories).

Construction Related Vibration Impacts can induce damage to the surrounding buildings due to construction activities, particularly during piling operations. Building damage can be cosmetic or structural depending on the nature of the construction operation (e.g., pile driving or bored pile operation). Moreover, the operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. Fragile buildings such as **historical structures** are generally more susceptible to damage from the ground vibration compared to normal buildings. Normal buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond **50 feet based on typical construction equipment vibration levels** (City of Los Angeles, 2015). This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receptor. In addition, not all buildings respond similarly to vibration generated by construction equipment. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures. It is also mentioned that typically ground-borne vibration generated by man-made activities attenuate rapidly with distance from the source of vibration. It is concluded that man-made vibration issues are therefore confined to short distances from the source (i.e., 50 feet or less).

Based on the screening distance of FTA, and the actual locations (locations the Area of Influence (AOI) of YCP is considered as **200 m (650 feet) from the outer edge of the perimeter of YCP project**. Accordingly, out of 15 buildings within the scope, (see **figure 6.1 and Table 6.1**) **12 normal buildings** are beyond the **screening limit of 50 feet** and only **3 sensitive buildings** are eligible for contesting noise and vibrations to find out whether these 3 sensitive buildings could be susceptible to excessive noise and vibration due to the project activities.



Figure 6. 1 The surrounding areas and distances from YCP

Table 6. 1 Buildings in the Surroundings of YCP within 200 m distance

No.	Receptors	Distance from Project Site	Potential Impacts
1.	Myanmar Timber Enterprise	East (108 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
2.	Sein Yaung Chi Pagoda (Heritage)	East (109 feet)	Sensitive Building ✓ Noise impact during construction ✓ Vibration impact during construction
3.	Myanma Economic Corporation	East (87 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
4.	St. Gabriel Church (Heritage Building)	East (96 feet)	Sensitive Building ✓ Noise impact during construction ✓ Vibration impact during construction
5.	Asian Language Business Academy	East (89 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
6.	Prime Hill Business Square	South East (142 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
7.	Kyar Gu Monastery (Heritage Building)	South (66 feet)	Sensitive Building ✓ Noise impact during construction ✓ Vibration impact during construction
8.	Olympic Hotel (U Wisara Road)	South West (443 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
9.	Myanmar Swimming Federation	South West (375 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
10.	Tatmadaw Hall	West (309 feet)	Normal Building Not a sensitive building and far from the source and at the

No.	Receptors	Distance from Project Site	Potential Impacts
			other side of the road
11.	6-Story Apartment (Pantra Street)	North (96 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
12.	6-Story Apartment (Pantra Street)	North (96 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
13.	Myanmar IO software company	North (108 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
14.	Township Medical Office	North (161 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road
15.	New Star Gems and Jewelry	North (135 feet)	Normal Building Not a sensitive building and far from the source and at the other side of the road

As mentioned earlier the noise and vibration levels at three sensitive receptors were assessed at Kyar Gu Monastery, St. Gabriel Church and Sein Yaung Chi Pagoda that are situated close to YCP compound. Assessments were made for vibration and noise at 3 sites for 24 hours continuous each site for 3 consecutive days. The 24-hour measurement results are presented below for a day and night basis. The results are compared with NEQE Guidelines for noise data and Japanese Standard for Vibration data. Results indicated that day and night data are well within the vibration Standards of Japan and for the noise level, day and night data are also within the NEQEG Guidelines.

When compared to vibration and noise levels, it was found out that though the noise levels are within the guideline values, it is a bit high due to the noise exposure of traffic noise along the Shwedagon Pagoda road and types of activities (using hand vibrators for construction) near the noise-sensitive receptor location.

Date: 28-29 May 2019

Kyar Gu Monastery (Receptor)

Noise Results

No.	Time (hours)	Observed Mean Value dB	Weight	Day/Night	Average dB	Noise Level (NEQG)
						Commercial dB
1	7:00:13-7:59:13	67.54	A	Day	64.89	70
2	8:00:13-8:59:13	70.69	A	Day		
3	9:00:13-9:59:13	67.07	A	Day		
4	10:00:13-10:59:13	70.13	A	Day		
5	11:00:13-11:59:13	63.20	A	Day		
6	12:00:13-12:59:13	60.11	A	Day		
7	13:00:13-13:59:13	61.65	A	Day		
8	14:00:13-14:59:13	62.99	A	Day		
9	15:00:13-15:59:13	63.83	A	Day		
10	16:00:13-16:59:13	67.29	A	Day		
11	17:00:13-17:59:13	69.00	A	Day		
12	18:00:13-18:59:13	61.75	A	Day		
13	19:00:13-19:59:13	64.20	A	Day		
14	20:00:13-20:59:13	63.51	A	Day		
15	21:00:13-21:59:13	60.38	A	Day		
16	22:00:13-22:59:13	60.81	A	Night	65.22	70
17	23:00:13-23:59:13	59.14	A	Night		
18	0:00:13-0:59:13	56.99	A	Night		
19	1:00:13-1:59:13	70.51	A	Night		
20	2:00:13-2:59:13	67.47	A	Night		
21	3:00:13-3:59:13	66.63	A	Night		
22	4:00:13-4:59:13	66.29	A	Night		
23	5:00:13-5:59:13	68.41	A	Night		
24	6:00:13-6:59:13	70.70	A	Night		

Location: X coordinate: 16° 47' 2.4729 N Y Coordinate: 96° 9' 11.46107

No.	Time (hours)	Observed Mean Value dBA	Weight	Day/Night	Average dBA	Noise Level (NEQG)
						Commercial dBA
1	7:00:13-7:59:13	67.15	A	Day	64.95	70
2	8:00:13-8:59:13	65.56	A	Day		
3	9:00:13-9:59:13	68.28	A	Day		
4	10:00:13-10:59:13	68.06	A	Day		
5	11:00:13-11:59:13	68.71	A	Day		
6	12:00:13-12:59:13	63.22	A	Day		
7	13:00:13-13:59:13	62.40	A	Day		
8	14:00:13-14:59:13	64.40	A	Day		
9	15:00:13-15:59:13	63.40	A	Day		
10	16:00:13-16:59:13	64.07	A	Day		
11	17:00:13-17:59:13	65.23	A	Day		
12	18:00:13-18:59:13	63.96	A	Day		
13	19:00:13-19:59:13	63.65	A	Day		
14	20:00:13-20:59:13	64.89	A	Day		
15	21:00:13-21:59:13	61.26	A	Day		
16	22:00:13-22:59:13	60.24	A	Night	62.97	70
17	23:00:13-23:59:13	60.92	A	Night		
18	0:00:13-0:59:13	59.69	A	Night		
19	1:00:13-1:59:13	60.27	A	Night		
20	2:00:13-2:59:13	60.11	A	Night		
21	3:00:13-3:59:13	63.77	A	Night		
22	4:00:13-4:59:13	65.74	A	Night		
23	5:00:13-5:59:13	68.30	A	Night		
24	6:00:13-6:59:13	67.66	A	Night		

Location: X coordinate: 16° 47' 3.72401 N Y Coordinate: 96° 9' 12.71437 E

Date: 30-31 May 2019

Sein Yaung Chi Pagoda (Receptor)

Noise Results

No.	Time (hours)	Observed Mean Value dB	Weight	Day/Night	Average dB	Noise Level (NEQG)
						Commercial dB
1	7:00:13-7:59:13	67.65	A	Day	66.31	70
2	8:00:13-8:59:13	66.00	A	Day		
3	9:00:13-9:59:13	66.73	A	Day		
4	10:00:13-10:59:13	67.42	A	Day		
5	11:00:13-11:59:13	67.69	A	Day		
6	12:00:13-12:59:13	65.10	A	Day		
7	13:00:13-13:59:13	67.74	A	Day		
8	14:00:13-14:59:13	66.13	A	Day		
9	15:00:13-15:59:13	67.08	A	Day		
10	16:00:13-16:59:13	67.70	A	Day		
11	17:00:13-17:59:13	66.16	A	Day		
12	18:00:13-18:59:13	67.91	A	Day		
13	19:00:13-19:59:13	65.40	A	Day		
14	20:00:13-20:59:13	63.73	A	Day		
15	21:00:13-21:59:13	62.16	A	Day		
16	22:00:13-22:59:13	59.54	A	Night	61.82	70
17	23:00:13-23:59:13	57.60	A	Night		
18	0:00:13-0:59:13	55.45	A	Night		
19	1:00:13-1:59:13	55.51	A	Night		
20	2:00:13-2:59:13	59.92	A	Night		
21	3:00:13-3:59:13	63.12	A	Night		
22	4:00:13-4:59:13	69.03	A	Night		
23	5:00:13-5:59:13	67.02	A	Night		
24	6:00:13-6:59:13	69.22	A	Night		

Location: X Coordinate: 16° 47' 6.9455 N Y Coordinate: 96° 9' 12.98412

Date: 28-29 May 2019

Kyar Gu Monastery (Receptor)

Vibration Results

Sr.	Time (hours)	XI dB	Y1 dB	Z1 dB	X-Average dB	Y-Average dB	Z-Average dB	Standard (Japan) dB
1	7:00:13-7:59:13	37.6	39	37.6	38.98	30.39	36.29	65-70
2	8:00:13-8:59:13	37.2	30.6	35.4				
3	9:00:13-9:59:13	36.1	30.4	34.6				
4	10:00:13-10:59:13	33	29.5	32.1				
5	11:00:13-11:59:13	40.7	30.3	36.2				
6	12:00:13-12:59:13	44.5	30.8	39.8				
7	13:00:13-13:59:13	37.6	30.4	33.5				
8	14:00:13-14:59:13	48.8	30.3	43.8				
9	15:00:13-15:59:13	48	29.7	42.9				
10	16:00:13-16:59:13	48.6	29.4	43.6				
11	17:00:13-17:59:13	43.4	29.4	38.5				
12	18:00:13-18:59:13	39.6	29.2	35.3				
13	19:00:13-19:59:13	34.5	29.4	32.8				
14	20:00:13-20:59:13	35.3	29.3	32.9				
15	21:00:13-21:59:13	29.4	29.3	30.9				
16	22:00:13-22:59:13	29.4	29.3	30.8				
17	23:00:13-23:59:13	29.5	29.9	32.4	31.96	32.30	31.60	60-65
18	0:00:13-0:59:13	29.2	29	30.6				
19	1:00:13-1:59:13	29.7	29.2	30.9				
20	2:00:13-2:59:13	31.7	32.3	31.9				
21	3:00:13-3:59:13	37.6	38.5	34.1				
22	4:00:13-4:59:13	32.2	32.6	30.1				
23	5:00:13-5:59:13	33.2	33.8	31.6				
24	6:00:13-6:59:13	32.6	33.1	31.2				

Location: X coordinate: 16° 47' 2.4729 N Y Coordinate: 96° 9' 11.46107

Date: 29-30 May 2019

St. Gabriel Church (Receptor)

Vibration Results

Sr.	Time (hours)	X2 dB	Y2 dB	Z2 dB	X-Average dB	Y-Average dB	Z-Average dB	Standard Japan dB
1	7:00:13-7:59:13	42.1	29.9	37.8	39.16	31.83	37.26	65-70
2	8:00:13-8:59:13	47.8	30.2	42.4				
3	9:00:13-9:59:13	45.9	29.8	41.1				
4	10:00:13-10:59:13	29.5	29.5	32.2				
5	11:00:13-11:59:13	48.4	29.5	43.1				
6	12:00:13-12:59:13	31.2	30.2	30.3				
7	13:00:13-13:59:13	42.9	30.6	38.3				
8	14:00:13-14:59:13	43.9	30.2	38.5				
9	15:00:13-15:59:13	48.1	30.3	43.1				
10	16:00:13-16:59:13	51.8	30.6	46.4				
11	17:00:13-17:59:13	29	30.1	30.8				
12	18:00:13-18:59:13	28.8	30.4	30				
13	19:00:13-19:59:13	48.8	55.2	53.7				
14	20:00:13-20:59:13	28.5	30.8	29.9				
15	21:00:13-21:59:13	28.6	29.8	31.8				
16	22:00:13-22:59:13	31.3	32.2	26.7				
17	23:00:13-23:59:13	30.5	32.2	26.2	30.61	31.44	26.56	60-65
18	0:00:13-0:59:13	33.3	32	25.1				
19	1:00:13-1:59:13	33.5	32.1	25.1				
20	2:00:13-2:59:13	32.3	31.9	26.2				
21	3:00:13-3:59:13	27.6	31.1	26.1				
22	4:00:13-4:59:13	27.7	31.6	25.9				
23	5:00:13-5:59:13	27.8	30.2	27.6				
24	6:00:13-6:59:13	32.2	30.4	30.3				

Location: X coordinate: 16° 47' 3.72401 N Y Coordinate: 96° 9' 12.71437 E

Date: 30-31 May 2019

Sein Yaung Chai Pagoda (Receptor)

Vibration Results

Sr.	Time (hours)	X3 dB	Y3 dB	Z3 dB	X-Average dB	Y-Average dB	Z-Average dB	Standard Japan dB
1	7:00:13-7:59:13	43.7	33.5	37.8	39.99	32.53	35.07	65-70
2	8:00:13-8:59:13	42.3	32.1	37.3				
3	9:00:13-9:59:13	38.4	32.8	34.2				
4	10:00:13-10:59:13	45.1	32.7	40.5				
5	11:00:13-11:59:13	45.8	33	40.9				
6	12:00:13-12:59:13	51.8	33.4	46.7				
7	13:00:13-13:59:13	38.9	29.1	34.6				
8	14:00:13-14:59:13	38.8	32.1	34.7				
9	15:00:13-15:59:13	42.5	32.2	37				
10	16:00:13-16:59:13	41.5	32.6	36.4				
11	17:00:13-17:59:13	39.1	31.9	35.9				
12	18:00:13-18:59:13	34.5	33.1	28.3				
13	19:00:13-19:59:13	34.5	33	30.2				
14	20:00:13-20:59:13	34.2	32.8	29.6				
15	21:00:13-21:59:13	34	32.9	29.2				
16	22:00:13-22:59:13	34.7	33.3	27.8				
17	23:00:13-23:59:13	34.9	33.5	28	35.26	33.84	24.50	60-65
18	0:00:13-0:59:13	35.1	33.8	24				
19	1:00:13-1:59:13	35.2	34.1	23.4				
20	2:00:13-2:59:13	35.2	34.1	22				
21	3:00:13-3:59:13	35.3	34.1	21.8				
22	4:00:13-4:59:13	35.2	33.9	21.9				
23	5:00:13-5:59:13	35.1	33.8	23.9				
24	6:00:13-6:59:13	36.1	33.4	31				

Location: X Coordinate: 16° 47' 6.9455 N Y Coordinate: 96° 9' 12.98412

6.2 Environmental Impact Screening

In this chapter, the potential impacts were identified by their relative significance in line with the requirements set out by IFC Guidelines and the Guidelines for Environmental Impact Assessment (IEMA, 2004). The impacts were grouped under aspects such as physical, biological, health and socio-impacts during the three phases of the project activities:

Development Phases

Potential impacts have been classified into the following project phases, i.e., Construction, Operation, and Decommissioning Phases (Pre-Construction phase of demolishing the existing building has been excluded as it is not included in the scope of the project):

- **Construction Phase:** Construction phase includes activities of construction works for 9 offices and 9 stories hotel including guest rooms, office rooms, kitchen, and laundry. green area, waste storage area and specifically during the construction operation, temporary accommodation for workers, canteen, and toilets, etc., as the construction period will be at least 2 years period.
- **Operation Phase:** The main services of the project are for the office space for office building while the hotel services are meant for providing services for guests, restaurants, and bar, meeting room, etc.
- **Decommissioning phase:** The final phase of the project will reach after 50-year service in line with the terms of the contract. At this phase, both the hotel and office complex will be demolished using the demolished equipment.

Potential impacts from the project were considered under the following categories:

- (1) **Direct impacts**- those directly due to the project itself
- (2) **Indirect and induced impacts** – those resulting from activities arising from the project, but not directly attributable to it; and
- (3) **Cumulative impacts** – impacts that in combination would exert significant additional influence

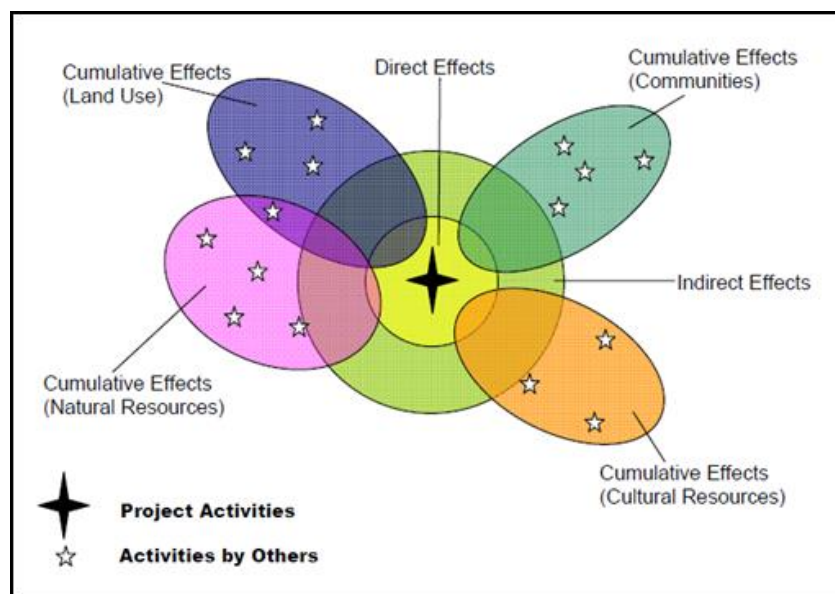


Figure 6. 2 Impact Categories

The significance of the impact has been taken into consideration the sensitivity of the receiving environment according to the relative importance of the existing environmental features on or near to the project area, or by the sensitivity of receptors, which would potentially be affected by the development.

6.3 Sensitivity of Receptors

Receptor: The resource (human/natural environment/economic/social) which is potentially going to receive and have to cope with an impact.

Sensitivity: The sensitivity of baseline conditions within each topic has been determined according to the relative importance of existing environmental features on or near to the route, or by the sensitivity of receptor, which would potentially be affected by the development. (See **Table 6.2**)

Criteria for the determination of sensitivity or of importance or value of receptors have been broadly established based on *approved guidance, legislation, statutory designation and /or professional judgment*.

Table 6. 2 Sensitivity Criteria

Sensitivity	Definition
Very high	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance.
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance.
Medium	The receptor has the moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance.
Low	The receptor is tolerant of change without detriment to its character, is of low environmental value, or local importance.
Negligible	The receptor is resistant to change and is of little environmental value.

6.4 Magnitude of Impacts

The magnitude of potential impacts on environmental baseline conditions has been defined by considering the scale or degree of change the proposed development will have on the existing baseline, the duration and reversibility of the impact and has taken into account relevant legislative or policy standards or guidelines. (See **Table 6.3**)

Table 6. 3 Magnitude of Impacts

Magnitude	Definition
High	Total loss or major alternation to key elements /features of the baseline conditions such that post-development character/composition of baseline condition will be fundamentally changed.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post-development character/composition of the baseline condition will be materially changed.
Low	The minor shift away from baseline conditions. Changes arising from the alteration will be detectable but not material in that the underlying character /composition of the baseline condition will be similar to the pre-development situation.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a “no change” situation

6.5 Development Phases

Potential impacts have been separated into two main types based on different phases of development: i.e. Construction effects or Operational Impacts

6.5.1 Construction Impacts

Construction impacts are temporary, short-term impacts that occur during the construction phase only. This will include impacts resulting from construction operations as well as impacts resulting from other temporary works.

6.5.2 Operational Impacts

Operational impacts are those long-term impacts that will occur as a resultant of the development (i.e., land take associated with permanent infrastructure) as well as impacts resulting from operation (i.e., noise, air quality, drainage issues and fragmentation of habitats)

6.5.2.1 Impact Types

In addition to the direct impacts of the development associated with construction works and operation of *the development*, other types of impact may arise. These are discussed below **Residual Impacts** are also indicated, (See **Table 6.4**)

Positive or Negative: Positive impacts merit just as much consideration as negative ones, as international, national and local policies increasingly press for projects to deliver positive outcomes.

Duration: The time for which the impact is expected to last prior to recovery or replacement of the resource or feature. The duration of activity may differ from the duration of the resulting impact caused by the activity.

Irreversibility: For the purposes of this guidance, an irreversible (permanent) impact is one from which recovery is not possible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A reversible (temporary) impact is one from which spontaneous recovery is possible or for which effective mitigation is both possible and an enforceable commitment has been made.

Cumulative Impacts: On specific resources or receptors are described, as impacts which in combination would exert significance additional in influence.

Table 6. 4 Impacts Types

Environmental Impacts	Magnitude of Impact	Receptors' sensitivity	Significance of Impacts	Impact type								Residual Impact
				Positive	Negative							
					Significant	Significant	Long Term	Short Term	Irreversible	Cumulative	Direct	
Construction Phase Impact												
Loss of land use option	Medium	Medium	Moderate		☑		☑	☑		☑		Minor
Loss of Terrestrial Habitats and Biodiversity	Low	Low	Negligible				☑			☑		Negligible
Excavation for Basement	High	High	Major		☑		☑	☑		☑		Minor
Piling For Foundation	Medium	Medium	Moderate		☑		☑	☑		☑		Minor
Soil erosion	Low	Medium	Minor				☑			☑		Minor
Ambient Air Quality	Medium	Medium	Moderate		☑		☑		☑	☑		Minor
Noise and Vibration	High	Medium	Moderate		☑		☑			☑		Minor
Traffic Load/Accident	Medium	Medium	Moderate		☑		☑		☑	☑		Minor
Water Consumption	Medium	Medium	Moderate		☑		☑		☑	☑		Minor
Energy Consumption	Medium	Medium	Moderate		☑		☑		☑	☑		Minor
Material Storage	Medium	Medium	Moderate		☑		☑			☑		Minor

Environmental Impacts	Magnitude of Impact	Receptors' sensitivity	Significance of Impacts	Impact type								Residual Impact
				Positive	Negative							
					Significant	Significant	Long Term	Short Term	Irreversible	Cumulative	Direct	
Construction /Domestic waste disposal	Medium	Medium	Moderate		☑		☑			☑		Minor
Drainage/Flood	Medium	Medium	Moderate				☑			☑		Moderate
Earthquake	Low	Medium	Minor				☑			☑		Minor
Fire	Low	Medium	Minor				☑			☑		Minor
Landscape (Scenery)	High	High	High	☑			☑			☑		High
Occupational Health and Safety)	Medium	Medium	Moderate		☑		☑			☑		Minor
Resettlement/Relocation	Low	Low	Negligible				☑				☑	Minor
Ethnic Minority	Low	Low	Negligible				☑				☑	Minor
Sewage Disposal	Medium	Low	Minor				☑			☑		Minor
Employment	High	Medium	Moderate	☑			☑			☑		Moderate
Infectious Disease such as HIV/AIDS	Medium	Medium	Moderate		☑		☑			☑		Moderate

Environmental Impacts	Magnitude of Impact	Receptors' sensitivity	Significance of Impacts	Impact type								Residual Impact
				Positive	Negative							
					Significant	Significant	Long Term	Short Term	Irreversible	Cumulative	Direct	
Operation Phase Impact												
Water Consumption	High	High	Major		☑	☑		☑	☑		☑	Moderate
Energy	High	High	Major		☑	☑		☑	☑		☑	Moderate
Drainage/Flood	Low	Medium	Minor				☑			☑		Minor
Earthquake	Low	Medium	Minor				☑			☑		Minor
Fire	Low	Medium	Minor				☑			☑		Minor
Odor/Stench	Low	Low	Minor				☑			☑		Minor
Land Subsidence	Medium	Medium	Moderate		☑	☑				☑		Moderate
Sewage Disposal	High	High	Major		☑	☑			☑	☑		Moderate
Solid Waste Disposal	High	High	Major		☑	☑			☑	☑		Moderate
Traffic Load/Accident	Medium	Medium	Moderate		☑	☑			☑	☑		Moderate
Occupational Health and Safety	Medium	Medium	Moderate		☑	☑				☑		Moderate

Environmental Impacts	Magnitude of Impact	Receptors' sensitivity	Significance of Impacts	Impact type								Residual Impact
				Positive	Negative							
					Significant	Significant	Long Term	Short Term	Irreversible	Cumulative	Direct	
Employment	High	High	Major	☑						☑		High
Decommissioning Phase Impact												
Air quality	Medium	Medium	Moderate				☑			☑		Minor
Noise and vibration	Medium	Medium	Minor				☑			☑		Minor
Traffic Load	Medium	Low	Minor				☑			☑		Minor
Demolition waste disposal	Medium	Medium	Moderate				☑			☑		Minor
Occupational Health and Safety	Medium	Medium	Moderate				☑			☑		Minor

6.6 Significance of Impacts

The approach to the assessment of significance has taken into account the sensitivity of the receiving environment and the magnitude of change. **Table 6.5** below provides an indication of how significance has been determined, although it should be noted that this is meant to be a general approach and has not been treated as a strict matrix.

Table 6.5 Impact Significance

Magnitude of Impact	Receptor Sensitivity and Importance				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

The significance of the potential impacts arising from the proposed development can, therefore, be reported using a four-point scale, as follows:

- Major Adverse
- Moderate Adverse
- Minor Adverse
- Negligible

Potential impacts predicted to be Minor or Negligible are considered to be ‘Not Significant’.

Potential impacts assessed as being Moderate or Major are considered to be ‘Significant’.

It should be noted that at this stage, the assessment takes into account mitigation and therefore “residual” impacts have been determined, which can be defined as any impact that would remain following the implementation of proposed mitigation measures.

6.7 Potential Impacts

6.7.1 Construction Phase Impacts

6.7.1.1 Loss of Land use Option

The construction of YCP will involve the excavation of the land for basement construction and also the erection of concrete structures at the project site. The construction of the new office and hotel will become a permanent structure with high structure assemblage within the permissible limit of YCDC, which is irreversible.

6.7.1.2 Loss of Terrestrial Habitats and Biodiversity

Construction of Hotel/Office Complex may one way or another impact biodiversity around the area where they are built. The level of impact will depend on where they are sited or how they are designed. The impacts of hotel/office complex on biodiversity could happen at each stage of its life cycle from planning through closure.

In the planning stage, the most important factors in determining the level of impact are the choice of the site and design. Even the most effectively operated hotel/office complex will have major impacts, if it is built in a biodiversity-sensitive area, like Protected Areas.

In the construction stage, the impact is determined by the size and location of the area cleared for development and other types of damage such as soil erosion or compaction caused by construction activities.

In the operation stage, a hotel's impact comes mainly from the energy, water, and other resources that are consumed in running the hotel, by the solid and liquid wastes they produce, the way the grounds are managed and by the direct impact by the guests.

In the case of YCP, the project site is situated in the Metropolitan area of Yangon City with no Protected Areas or Ecosystems close to the project site. Therefore, there will be any significant impact on biological and living organisms. Hence, there will be no mitigation measures necessary in terms of biological or living organisms.

6.7.1.3 Excavation for Basement

Construction of the YCP will expose the soil to some extent during the construction of 2 basements. The excavated soil will be reused for cut and fill operations and the rest will be disposed of in line with YCDC regulations.

6.7.1.4 Piling for Foundation

Bored Pile work may have a potential impact on the neighborhood due to noise disturbance. Bored Pile should be done during the daytime, so as not to disturb the residents living close by. It is presumed that the impact of bored pile activities compared to drop piling will have a low impact on those residents in the surrounding of the project site. According to the vibration measured at 2 points at source, it was found that the vibration results are well within the permissible level according to the Vibration Standards of Japan.

6.7.1.5 Soil erosion

During the construction of the basements, concreting and soil nailing process will be carried out which will more or less control the soil erosion problem. As the topography of the project site is flat, there is a low tendency for erosion and runoff from the site.

6.7.1.6 Ambient Air Quality

During the construction phase, it is anticipated that a certain amount of airborne particulates (dust) will be generated due to earth moving activities, during excavation and construction activities... Air measurements were carried out at YCP project area. The results of air measurement indicated that Particulate Matter (PM10 and PM2.5) are well within the guideline values of NEQEG. The results for gases are also well within the guidelines values of NEQEG and WHO standards.

6.7.1.7 Noise and Vibration

During the construction period, construction activities that will generate disturbing noise should be restricted to daytime working hours.

Local residents near the construction site should be given prior notice for intended noisy operations to be carried out during the construction period. Workers should be provided with noise defenders such as ear plugs. For those working in very noisy areas greater than 80 dB continuously for 8 hours or more should be equipped with ear muffs or arrange to work on shift basis. Noisy areas should be demarcated with signboards denoting "Noisy Areas-Wear Ear Defenders". If necessary, erect noise barriers for those construction operations close to the nearby residential areas.

6.7.1.8 Traffic Load/Accident

In order to prevent from traffic congestion, transportation frequency should be reduced as much as possible. Appropriate traffic warning signs should be posted for road users indicating a "Construction Site Ahead". Flagman should be assigned for assisting "Entry" to the site and "Exit" from the construction site.

6.7.1.9 Water Consumption

During the construction phase, water for the construction works will be obtained from one of the 5 tube wells drilled down to a depth of 150 feet within the YCP compound which is deeper than other tube wells of the neighborhood.

YCDC is supplying water to 33 townships in Yangon, including Dagon Township. YCDC has plans to distribute water to additional 6 townships for Greater Yangon Area in future. However, there is no water supply from YCDC in some wards in the premises of the Project Area and has to rely on tube wells. Water is not much used in this construction phase as the concreting process is not existing as ready-made concrete is brought in by cement trucks.

6.7.1.10 Energy

Electricity will be obtained from 3 diesel generators on site. These generators have to be properly maintained so as to refrain from noise and emissions. There is now one transformer installed inside the compound which is not yet functioning for the project.

6.7.1.11 Material Storage

Stockpiling of construction materials should be properly stored and fined grained materials should be stockpiled away from the drainage systems. It will be necessary to identify safe storage areas particularly for the storage of diesel and oily materials such as engine oil and grease. The quantity stored on site will be a few drums and can be handled properly with well fenced and under lock and key.

Flammable materials such as fuels should be stored in a safe place, provided with containment and safely locked up with no smoking signs posted at the entrance door.

6.7.1.12 Construction/Domestic Waste Disposal

Contact YCDC for proper disposal of construction waste, particularly for the excavated soil disposal. For disposal of domestic waste, collect the waste in appropriate receptacles and contact YCDC for final disposal on a daily basis to prevent odor and stench at the project site.

6.7.1.13 Drainage/Floods

There are three drainage systems available for YCP such as (1) along the Shwedagon Pagoda Road, (2) along the Uwisara Road and (3) underground drain. The wastewater from the project will be treated at their treatment plant and discharged into the existing drains. The existing drainage system is too old and needs refurbishment.

6.7.1.14 Earthquake

The Yangon City is in the vicinity of the southern section of the Sagaing Fault, which has not been active in the past 50 to 75 years indicating that the faults may be under accumulating stress increasing the potential for an earthquake to occur. Sagaing Fault has been the originator of a large proportion of destructive earthquakes in Myanmar. Yangon gets 2.0 g seismic acceleration in terms of gravity force. The Project area is also located in an earthquake zone and therefore the construction design needs to cater to this hazard with adequate planning on emergency response procedures.

6.7.1.15 Fire

Fire Services Department, Ministry of Home Affairs had checked the YCP building design and delivered the 16 instructions to be followed accordingly. When the construction was completed in line with the instructions, YCP has to apply for the Fire Certificate to the Fire Services Department in due course. During the construction phase Fire Extinguishers will be placed near standby generators, welding machines and machine working and fuel storage areas. Fuel storage areas will have secondary containment, well fenced with lock and key and posted with caution symbols, specifically “**No Smoking**” signboards.

6.7.1.16 Sewage Disposal

It is assumed that adequate toilet facilities will be provided for the workers during the construction phase and that will not impose an improper and unhealthy condition for the environment. YCDC can provide services of vacuum trucks for collection, disposal, and treatment of sewage at their sewage treatment plant.

6.7.1.17 Landscape (Scenery)

Before the completion of the construction phase, landscaping should be carried out by planting ornamental trees and plants. When selecting trees and plants, it should be given preference on native species and selection of exotics should be avoided.

6.7.1.18 Occupational Health and Safety

During the construction period of YCP, workers are exposed to accidental risk and injuries due to operation and maintenance activities such as accidental falls from heights, injuries from operating hand tools and construction equipment, slip, trip and falls and abrasions and cuts from sharp edges and collapse of scaffoldings among others. Workers will be provided with PPE, First Aid facilities, water bottles and enough sanitary facilities for male and female workers. Procedures will be in place for supervisors to put into effect Company HSE procedures to follow at workplace, especially where electrical work is to be carried out as electricity can kill or severely injure workers and cause damage to property from the effects of fires and explosions and must be made aware of the possible risks to all workers. These can be avoided by adopting Overseas Construction Work Health and Safety Voluntary Standard (FUJITA, 2009).

6.7.1.19 Resettlement and Relocation

Resettlement and relocation activities are not associated with YCP project as the scope of the project is within the land area owned by the government.

6.7.1.20 Scenery

During the construction stage, there will be a temporary loss of scenery and landscape, which will only for a short period.

6.7.1.21 Ethnic Minority

As mentioned earlier, there are no ethnic minorities living in Dagon Township, according to the information of the General Administration Department office (2014).

6.7.1.22 Odor/Stench

No impact is predetermined except odor/stench from the toilets of the construction workers. It will not pose up a problem, as YCP is planned to contact YCDC for the final disposal of the sewage at their treatment plant.

6.7.1.23 Employment

Employment opportunities will be created during the construction operations of the project. Employment during the construction stage is a positive impact;(400 workers + 110 staff) however, it will be a short-term period for about 3 years only.

6.7.1.24 Infectious Disease such as HIV/AIDS

This kind disease can be prevented for the workers by getting a fit health certificate from where they are residing. The in-house clinic is preferable to take care of day-to-day health problems on site and for serious cases, it is preferable to contact the nearest hospital close to YCP.

6.7.2 Operation Phase Impacts

6.7.2.1 Water Consumption

There is an adequate water storage facility for the consumption of water (from tube wells already granted permission from the Urban and Housing Development Department (UHDD). It is estimated that the water availability from these tube wells will be sufficient for the requirement of daily consumption for domestic use during the operation phase. At the same time, YCP has placed an application to YCDC for the distribution of surface water.(see Appendix VII)

According to IFC regulations, total usage of water in hotels range from a minimum of 200 l /day per person to a maximum of 1200 l/day per person. Care should be taken not to exceed the limit imposed by IFC regulations as luxury hotels and hotels with full-service restaurant and on-site laundry facilities typically exhibit the high water usage on a per room basis.

6.7.2.2 Energy

During the operation phase, it is expected that the three transformers will be installed and electricity will be obtained from the national grid. The most energy consumption facilities will be Air Conditioning and Mechanical Ventilation (ACMV) and refrigerators. For Air Conditioning and Mechanical Ventilation (ACMV) select chillers that are efficient over wide-ranging operating and load conditions will be selected. For Variable Refrigerant Flow (VRF) system, use ozone friendly refrigerant type such as R410 A will be used instead of HCFC (R22) which is banned starting from 30th June 2016 in Myanmar. There will still be generators as standby facilities in case of power disruption.

6.7.2.3 Drainage /Flood

During the operation phase, landscaping of the project site will be completed and the new drainage will be properly constructed during the construction phase as per YCDC suggestion such that no flooding could occur after the new drainage is completed.

6.7.2.4 Earthquake

Yangon City is close to Sagaing Fault and is susceptible to earthquake effects. However, the Sagaing Fault has not been active for the past 50-75 years. It is thus necessary to conduct drills for the staff of YCP during the operation phase so that if such kind of disaster occurs it can be handled properly.

6.7.2.5 Fire

Once the construction is completed, the authorities from the Fire Department will inspect the building according to 16 instructions imposed by the department and if successful will give a Fire Certificate. Apart from that sufficient numbers of fire extinguishers are placed at strategic location points. Moreover, 30,000 gallons of water are stored in the basement as firewater. Fire hydrants and hose-reel will be provided at locations advised by the Fire Department.

6.7.2.6 Land Subsidence

Land subsidence is most often caused by human activities, mainly from the removal of excess subsurface water. The probable cause is declining groundwater levels. As YCP has planned to use water from YCDC and supplement with groundwater from 2 tube wells during the initial phase, the consumption of water has to be properly controlled not to exceed the sustainable limit and not to constrain the usage of water from neighboring communities. Excessive pumping of such aquifer systems will result in permanent subsidence and related ground failures.

6.7.2.7 Sewage Treatment and Disposal

Sewage generated by the YCP will be collected at the dedicated location in the project site and will be properly handled with OJI Wastewater Treatment System and released the treated water to the normal drains, after meeting the requirements of the safe disposal standards of effluent water according to NEQE Guidelines, specifically BOD and COD. Grey water from kitchen and laundry include cleaning agents as well as oils and foul water that will be treated with OJI Wastewater Treatment System and released to the normal drains after treatment.

6.7.2.8 Solid Waste Disposal

Improper waste management at the YCP site would lead to unsanitary conditions including fly and vermin infestation as well as the odor that will pose unhealthy situations. The YCP has plans to install 3 dedicated waste storage locations on site for proper storage and will contact YCDC for final disposal on a daily basis, which will prevent odor and stench nuisance on the environment.

6.7.2.9 Traffic Load/Accident

Traffic load and parking space is a serious problem in Yangon City. An increase in vehicular traffic due to the YCP will provide adequate parking facilities in its premises in the 2 basements which can accommodate 395 vehicles in the Office Complex and 245 vehicles in the Hotel facilities. However, it is quite certain that the presence of the YCP may cause more congestion on the existing road traffic along Shwedagon Pagoda road and Pantra road, where entrance and exit gates will exist.

6.7.2.10 Occupational Health and Safety

Risks during the operation phase consist of injuries or injurious substances and equipment, Risk during the operation phase includes the following:

- Slippery floors during washing with soaps and detergents. Oil spills (fuel and Cooking Oils)
- Corrosive chemicals
- Working at Heights
- Moving Parts of Rotary Kitchen Utensils
- Vehicle and trucks
- Fire, electricity and electrical equipment such as Kettlers, Cookers both electric and Gas and other electronic and machinery

6.7.2.11 Odor/Stench

As YCP will install Air Condition and Mechanical System (ACMS) there will be no issues concerning odor/stench during the operation phase from the kitchen facilities. Proper operation of the Air Conditioning and Mechanical System (ACMS) will resolve the issues concerning odor/stench during the operation phase. Proper functioning and maintenance are essential for the smooth running of the ACMS.

6.7.2.12 Employment

The construction of YCP is to ease of the accommodation needs and supplement 5-Star Quality Hotel Facilities in the heart of Yangon City. This project will provide job opportunities for those having various levels of skills confined to hotel and office business... In addition to that, the influx of people may impact the privacy and safety of local communities.

Also, there are positive impacts such as an increase in job opportunities, access to better commercial and hotel facilities, better living space as well as extensive parking space and better landscape and aesthetic facilities.

6.7.2.13 Resettlement/ Relocation

There will be no need for resettlement/relocation in the operation phase of YCP as the project area is confined to government-owned land.

6.7.3 Decommissioning Phase Impacts

6.7.3.1 Air Quality

During the decommissioning phase, it is anticipated that a certain amount of airborne particulates (dust) will be generated due to demolition activities. The situation will get worse during the dry season. The occurrence of dust will be short-term, during the demolition activity only.

6.7.3.2 Noise and Vibration

The use of heavy equipment during the demolition of high-rise buildings for removing the existing building, trough earth moving and excavation equipment will generate noise, which will create a nuisance to the neighboring residents and communities. However, the impact will be short-term and is considered a non-significant threat to the nearby communities and residents. However, close monitoring will be necessary not to exceed the permissible limits of noise and vibration during this demolition activity.

6.7.3.3 Demolition Waste Disposal

Solid waste generated during the demolition phase will include, scrap wood and metals, hazardous solid waste contaminated soils encountered on site due to previous land use activities during the operation phase. Also, a small amount of machinery maintenance materials such as oily rags and used oil filters, and used oil as well as oil spill cleanup materials from oil and fuel spills. These kinds of wastes, if not properly disposed of, will cause negative impacts on the site and surrounding environment. These kinds of wastes are planned to be properly disposed of at YCDC waste disposal sites, which may cause short-term impacts only.

6.7.3.4 Occupational Health and Safety

The decommissioning phase will have several HSE risks from the civil works involved such as equipment, falling debris, moving parts of equipment such as mechanized saws and other cutting devices. Heat from gas cutters, friction from abrasive processes, fuel, electrical equipment, dusts from debris, fossil fuels.

6.8 Potential Mitigation Measures

6.8.1 Construction Phase (Mitigation)

6.8.1.1 Loss of Land use Option

The existing land use of the museum will change to Hotel and Office complex that will not need any mitigation measures.

6.8.1.2 Excavation for Basement

- Soil excavation has to be carried out, according to the plan and cut and fill should be done with great care.
- For the disposal of excavated material, it is preferable to contact YCDC for final disposal of excessive soil material after filling operations
- Monitor area of exposed soil during periods of high rainfall throughout the construction period of the project.

6.8.1.3 Piling for Foundation

- Bored Pile work has a low impact on the neighborhood due to noise and vibration disturbance, compared to pile driving operation.
- Bored Pile has to be done during the daytime, so as not to disturb the residents living close by at nighttime.

- It is presumed that the impact of bored pile activities will have a low impact on those residents within 200 m radius from the project site as the noise and vibration levels diminishes away from the source.

6.8.1.4 Ambient Air Quality

- In order to control the dispersion of dust, the exposed ground has to be kept wet particularly during the dry season
- During dry and windy conditions dust masks has to be provided for every worker on site
- Stockpiles of earth materials have to be covered with tarpaulin or kept wet during windy situations

6.8.1.5 Noise and Vibrations

- During the construction period, construction activities that will generate disturbing noise have to be restricted to daytime working hours
- Local residents near the construction site have to be given prior notice for intended noisy operations to be carried out during the construction period
- Workers have to be provided with noise defenders such as ear plugs
- For those working in very noisy areas greater than 80 dBA continuously for 8 hours or more have to be equipped with ear muffs or arrange to work on a shift basis
- Noisy areas have to be demarcated with signboards denoting “Noisy Areas-Wear Ear Defenders”
- If necessary, noise barriers will be erected for those construction operations close to the nearby residential areas

6.8.1.6 Traffic Load

- In order to prevent traffic congestion transportation frequency has to be reduced as much as possible
- Appropriate traffic warning signs have to be posted for road users indicating a “Construction Site Ahead”
- Security personnel has to be assigned for assisting “Entry” to the site and “Exit” from the construction site
- The speed limit has to be imposed at the construction site

According to the traffic study conducted by KEG, it was found out that the traffic load from 2019 to 2026 will be improved due to the modification in changing the widths of existing lane configurations and installation of a signal light and due to the synchronization of existing lights traffic , conditions will be withihn the manageable limit.

6.8.1.7 Water Consumption

- Water meter has to be installed to control water usage
- The tap has to be properly closed after use
- During the construction period, one tube well has to be used not more than 10 hours at a time and only two tube wells are allowed to use for the day
- YCDC regulations has to be followed at any time

6.8.1.8 Energy Consumption

- Energy efficient generators will be used
- Maintain the generators properly.
- The usage of electricity will be controlled.
- Electricity from National Grid will be used when available
- Transformers will be used to regulate the electricity distribution

6.8.1.9 Material Storage

- Stockpiling of construction materials has to be properly stored and fine-grained materials have to be stockpiled away from the drainage systems
- It will be necessary to identify safe storage areas particularly for the storage of diesel and oily materials such as engine oil and grease
- Flammable materials such as fuels must be stored in a safe place, provided with containment and safely locked up with no smoking signs posted at the entrance door.

6.8.1.10 Energy Consumption

For the reduction of energy use for the YCP the following methods have to be adopted:

- For Air Conditioning and Mechanical Ventilation (ACMV) chillers will select that are efficient over wide-ranging operating and load conditions
- For Variable Refrigerant Flow (VRF) system, an ozone-friendly refrigerant type will be used such as R401 A instead of R22 which is banned starting from 30th June 2016 in Myanmar
- During the operation stage, energy will be used from the National Grid and supplemented by 3 Generators at the project site. For the reduction of energy consumption associated with lightning the following measures have to be adopted:

- Use occupancy sensors will be used.
- High-efficiency light bulbs will be used (e.g., compact fluorescent light bulbs)
- Daylight to be controlled
- Energy management and control systems will be adopted

For reduction of energy consumption associated with cooking and refrigerant equipment the following will be adopted:

- Use of cooking range burners to be matched with facility needs
- Appropriate lids will be used.

- High-efficiency refrigerators will be selected
- Exhaust systems that automatically varies fan speeds will be used.

6.8.1.11 Construction and Domestic Waste Disposal

- YCDC will be contateed for proper disposal of construction waste, particularly for the excavated soil disposal. For disposal of domestic waste, waste will be collected in appropriate receptacles and contact YCDC for final disposal on a daily basis to prevent odor and stench at the project site.

6.8.1.12 Drainage/Flood

- YCP will renovate the existing drainage network system so that the capacity of the drains is sufficient with the development. YCDC has advised discharging both stormwater and wastewater to the drain along the Shwedagon Pagoda road only. A new drain will be constructed by YCP from Pantra Road to Uwisara Road.
- The total proposed drain length is 374.81 m. It is assumed that 70% of the stormwater from the upstream of the project area flows into Uwisara Road side drain and existing underground drain and 30% of stormwater runoffs into Shwedagon Pagoda Road side drain, thereby preventing the YCP area from flooding during the rainy season.

6.8.1.13 Landscape (Scenery)

- Before the completion of the construction phase, landscaping has to be carried out by planting ornamental trees and plants. When selecting trees and plants, it must be given preference on native species and selection of exotics and invasive species should be avoided.

6.8.1.14 Occupational Health and Safety

- During the construction period of the YCP, workers may expose to accidental risk and injuries due to operation and maintenance activities such as accidental falls from heights, injuries from operating hand tools and construction equipment, slip, trip and fall and abrasions and cuts from sharp edges and collapse of scaffoldings among others.
- These can be avoided by providing PPE, First Aid facilities, good sanitation and also provided with clean drinking water from OJI water treatment system. Warning signboards will be posted at designated places, particularly near chemical storage and fuel storage areas. In order to prevent electrocution, electrical boards and terminals will be provided with caution signboards. During pre-briefing meetings before the start of any work, the Safety Manager will explain about safety issues and hazards what to do and what not to do.
- Safe and adequate fire and emergency assembly points will be posted and will make sure they are well labeled

- Emergency drills have to be performed on a frequent basis to ensure continuous improvement of response and preparedness
- The above-mentioned safety concerns can be avoided by adopting Overseas Construction Work Health and Safety Voluntary Standard (FUJITA, 2009).

6.8.1.15 Employment

- Employment opportunities will be created during the construction operations of the project. Employment during the construction stage is a positive impact; however, it will be a short-term period for about 3 years only.

6.8.1.16 Infectious Disease such as HIV/AIDS

- This kind of disease can be prevented for the workers by getting a fit health certificate from where they are residing before being appointed..The in-house clinic is preferable to take care of day-to-day health problems on site and for serious cases, it is preferable to contact the nearest hospital close to YCP.

6.8.2 Operation Phase (Mitigation)

6.8.2.1 Water Consumption

- There are adequate water storage facilities for the consumption of water (4 tube wells + 1 monitoring well already received permission from the Urban and Housing Development Department (UHDD). It is estimated that the water availability from these tube wells will be sufficient for the requirement of daily consumption for domestic use. Moreover, it is expected that YCP will get water supply from YCDC during the operation phase and if so, will stop using the water from tube wells.
- According to IFC regulations, a total usage of water in hotels range from a minimum of 200 l /day per person to a maximum of 1200 l/day per person. Care has to be taken not to exceed the limit imposed by IFC regulations and YCP has to perform water audits from time to time so as not to exceed the norms set by IFC. Efficient water saving devices have to be used in the laundry and kitchen.
- For use of water for toilets water saving equipment such as ultra-low-flush toilets, spray nozzles, urinals, faucet aerators and low-flow shower head, infrared and ultrasonic sensor, water spigots, and pressure control valves have to be installed to reduce wastewater generation.

6.8.2.2 Land Subsidence

- When using water resources water efficiency is of prime importance and not to overuse it
- Total water usage in hotels must not exceed per person usage to over 1200 l/day per person

- Luxury hotels and hotels with full-service restaurant and on-site laundry facilities typically exhibit the highest water usage on per room basis. Water meters will be dixed for effective control of water usage.
- It is expected that YCP will use good practice in design and operation that can significantly reduce water consumption.
- Water from tube wells must not be pumped up excessively as the overuse of such aquifer systems will result in ground subsidence leading to ground failures

6.8.2.3 Sewage Treatment and Disposal

The most significant wastewater flow from the YCP is domestic sewage from toilet and grey water from bathing and laundry, housekeeping and kitchen. Wastewater produced from these facilities may include cleaning agents, detergents and disinfectants, etc. These can be controlled by adopting the following strategies:

- Consumption of cleaning chemicals will be controlled
- Cleaning chemicals will be substituted with biodegradable products
- Use of cleaning chemicals containing phosphates must be avoid or minimize
- OJI Wastewater Treatment System will be used for YCP
- Waste Water Treatment will be monitored and check the inflow and outflow values such that they are within the permissible limits.

6.8.2.4 Solid Waste Disposal

Waste generated by YCP facilities normally includes paper and cardboard items, glass and aluminum products, plastic items, organic waste, building materials, and furniture, and used oils and fats, etc. Hazardous waste may include batteries, solvents, paints antifouling agents printer cartridges and some packaging wastes.

The following principles of waste reduction measures have to be adopted for the YCP:

- Bulk quantities will be bought whenever possible
- Working with suppliers will be made to limit the use of and establish recycling for product packaging
- Provide Appropriate receptacles will be provided for waste collection
- Glass or durable plastic will be used instead of disposable plastic items
- YCDC will be constracted for daily collection of non-hazardous waste and dispose of at YCDC waste disposal facilities

6.8.2.5 Traffic Load

- There will be 4 gates at the Shwedagon Pagoda road and 2 gates at the Pantra road. The Shwedagon Pagoda road is 4-lane road while the Pantra road is an only 2-lane road.

- With the sufficient number of parking place inside the YCP, there will be no additional congestion due to the project along the two main roads during the operation stage.
- However, the cumulative impact of traffic load will occur during the operation stage due to vehicles entering and leaving YCP, particularly along the Shwedagon Pagoda road
- In order to manage this issue a full access/full-egress, 21 feet wide new site driveway which connects between Shwedagon Pagoda Road and U Wisara Road will be provided on the southerly side of YCP.
- In addition, a full-access/full-egress, 28 feet wide of another new site driveway which connects between Pan Tra Street and a new site driveway will also be provided at a westerly side of YCP.
- Moreover, Pick-up/Drop-off Facilities are provided in front of Office and Hotel for alighting and boarding passengers and internal ring-road with 6 entrance/exits at the perimeter of YCP will ease of the traffic load to some extent.
- In addition to that carpooling, ferry and other transportation systems such as AirPort Shuttle Bus and ferry to near by railway station for the workers are possible mitigation measures to reduce private car usage also.

6.8.2.6 Occupational Health and Safety

- Appropriate PPE will be provided for all personnel depending on their job types
- Readable signs will be placed for alerting people of hazardous situation such as slippery floors
- Servicing machines and equipment for maintenance works have to ensure efficiency.
- Fire fighting equipment has to be provided
- Emergency drills have to be performed on a frequent basis to ensure continuous improvement of response and preparedness
- Health and Hygiene facilities have to be checked regularly.
- If any medical assistant is needed, the nearest hospital will be consulted.

6.8.2.7 Employment

The development of YCP has the following benefits to society:

- It will provide accommodation requirements of 5-Star Quality and Modern Facilities at downtown Yangon with modern landscape and aesthetics
- Job opportunities will be created to cater to these hotel and office complex in future
- The job opportunities will be on a long-term basis
- Parking spaces provided at YCP will help solve the problem of car parking space problem in downtown Yangon
- It will provide a better urban landscape and aesthetic vision in the downtown Yangon

6.8.3 Decommissioning Phase (Mitigation)

6.8.3.1 Air Quality

- Daily monitoring will be made to ensure smooth traffic flow along the Shwedagon Pagoda road
- The number of trips for vehicles/trucks used for demolition works will be optimized on the road
- The consumption of fossil fuels will be controlled daily.
- Vehicle speed will be controlled in the premises of the project site
- Monitor Energy use during demolition period will be controlled.
- A maintenance program of the vehicles will be developed and follow up properly

6.8.3.2 Noise and Vibration

- Periodic noise measurement will be conducted to find out the location of noisy areas and put signage where necessary
- PPE will be provided, particularly hearing protection devices for those working in noisy areas
- Heavy machinery will be operated in line with YCDC regulations
- Material delivery will be ensured according to YCDC regulations
- Noise control devices will be used such as temporary noise barriers and deflectors for working in noisy areas

6.8.3.3 Occupational Health and Safety

- Fujita HSE voluntary plan will be adopted during the demolition process.
- Awareness raising and educating workers on risks from equipment and will ensure they receive adequate training on the use of the equipment
- Adequate PPE will be provided for the workers and monitoring regularly to ensure they are replaced on time
- The site will be needed to ensure that there is security around the site to control the movement of people
- Safe and secure storage of demolished material will be provided on the site
- Safe and adequate fire and emergency assembly points will be posted and will make sure they are well labelled

6.8.3.4 Demolition Waste

- Non-hazardous waste such as scrap wood and metals, concrete blocks, demolition materials and etc will be collected and YCDC will be contacted for final disposal
- Waste material that can be recyclable will be sorted out
- YCD will be contacted for the disposal of hazardous waste

6.8.4 Social Impact Assessment

Social impact assessment (SIA) is a proactive tool used to understand the potential impact, adverse or beneficial, that the proposed project could have on the affected communities and to recommend effective mitigation measures, to reduce those identified impacts to a lesser degree of significance.

According to the IAIA (International Association for Impact Assessment), SIA is generally defined as a process of analyzing, managing and monitoring the consequence of the project. More precisely, SIA includes the processes of analyzing, monitoring and managing the intended and unintended social consequences, both positive and negative of planned interventions (policies, programs, plans, projects) and any social change invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.

The evaluation and assessment involve the assessment of both qualitative and quantitative data with professional judgment and stakeholder consultation. In assessing the characteristics of the individual impact, the following factors are taken into consideration.

- Nature of impact (beneficial or adverse)
- Duration of impact (temporary and permanent)
- Likelihood
- Severity
- Significance of impact

Table 6. 6 Social Impact Significance

		Severity of Impact				
		Minor	Low	Medium	High	Very High
Likelihood of Impact	Very Unlikely	Negligible	Negligible	Negligible	Minor	Moderate
	Unlikely	Negligible	Negligible	Minor	Moderate	Moderate
	Likely	Negligible	Negligible	Minor	Moderate	Major

This following section represents the summary of Social Impacts of the project with the purpose of mitigation or enhancement to the potential adverse and beneficial impacts identified and evaluated in the assessment.

The objectives of the Social Impact Assessment are

- To describe the project's commitments in managing and mitigating social impacts raised from the existence of a project in a defined location and in enhancing identified benefits to communities and stakeholders

- To formulate the mechanism to mitigate and monitor these potential impacts
- To establish a system in which public participation is paramount in setting up strategies for the dealing of identified impacts and benefit throughout the life of the project
- To recommend the additional social control measures

Table 6. 7 Predicted Social Impacts and Significance

No.	Item	Nature	Duration	Likelihood	Severity	Significance
1.	Population and demographic change	Negative	Long	Likely	Medium	Minor
2.	Employment, Skill, and Business	Positive	Short	Likely	High	Moderate
3.	Local Economy	Positive	Long	Likely	Medium	Moderate
4.	Community Health, Safety and Environment	Negative	Long	Likely	Medium	Minor

6.8.4.1 Impact on Population and Demographic Change

The potential impact of migration to the project affected area by the development of YCP is likely to result mainly from the migration of personnel with the hope of getting a job and other social services that may result from the project. Thus, it is considered that the potential impact related to population demographic structure of local communities is minor.

6.8.4.2 Impact to Employment, Skills, and Business

The project will source its operative workforces mainly from the local area due to the reason of project's commitment to prioritizing the selection to local people and availability in adjacent areas for the basic level semi-skilled and non-skilled works. Since the construction phase is the period of the high demand for job openings with temporary employment, the numbers of employees will be dramatically high.

The prospect of an increased income and greater autonomy is likely to cause an increase in the aspirations of local communities both those involved with the project and, to a lesser

extent, those from other working individually. This is a direct positive effect with a moderate extent and long-term duration. As a consequence, it is considered as a beneficial impact resulted from the project.

The company is intending to conduct both awareness and critical training necessary for its employees, It is perceived that capacity building which is expected by both the company and the local community, is one of the beneficial effects as well. As this will be long-term income stability to the hired employees assuring the economic security to its family members. The project will definitely have significant beneficial impacts on the local communities. One of the effective implementations of the Social Impact assessment of the project is the development of capacity and local awareness building. Thus, it is considered that the potential impact related to population demographic structure of local communities is moderate.

6.8.4.3 Impact on Local Economy

There is some probability that the workforce will patronize local retail services, such as food outlets during lunchtime, which would be beneficial to the economy at the local scale. On the project side, it is certain that some materials required for the project use could be locally available and due to the easy accessibility, there might be greater consumption for the local market and increase business opportunity for local business.

In addition, the arrival of newcomers to project area could result in increased economic activity, greater exposure to markets and opportunities, larger customer bases for local businesses and positive diversity with the community. The following measures to enhance this beneficial effect are recommended:

- Investigate the possible procurement needs of the project that can be sourced locally
- Investigate the possible employment needs of the project that can be sourced locally

Thus, it could be considered that the potential impact related to the local economy is moderate.

6.8.4.4 Impact on Community Health, Safety, and Environmental Consideration

Due to the complexity of predicting the impacts supposed to come out from the project, the community health and safety concentrates first and foremost the avoiding methodology of risk hierarchy. The following key health and safety issues are identified for YCP and affected the area in the form of intersecting workers' health and the community's health.

- Accidents - anticipated to cause by the project's vehicle movement on a public road
- Exposure to environmental contaminants (i.e. dust emission, noise, water)
- Communicable diseases such as HIV, Tuberculosis, Hepatitis.
- Community concerns on the damage to existing environmental receptors

- Reduced sense of community safety and security due to the influx of the newcomers into the project affected area

Public Concerns on potential fire hazard from the project.

6.9 Social Impacts and Mitigation

In the survey, about 120 sample respondents who were selected from 3 wards such as Yawmingyi, Phayargyi, and UWizara within the project area were interviewed. To understand the existing situations, attitudes, and impacts from the project development, the interviews were undertaken with the help of the structured questionnaires. It covers the contents of basic information of interviewees, their socio-economic conditions, education, and current environmental problems, facilities and social problems, perceptions of the project and attitudes towards the project, regarding the impact caused by the project development.

6.10 Health Impact Assessment

Health impact assessment is a combination of procedures, methods, and tools by which a policy, program, or a project could be judged to review its potential effects on the health of a population and the distribution of those effects within the population.

6.10.1 Legal Framework

The HIA team carried out law review processes and some of the relevant laws and their relevancy could be summarized as follows:

Public Health Law (1972): The law is concerned with the protection of people's health, controlling the quality and cleanliness of food, drugs, environmental sanitation and epidemic diseases.

Prevention and Control of Communicable Diseases Law (2011): The law described the functions and responsibilities of citizens and health personnel in relation to the prevention and control of communicable diseases. It also describes measures to be taken in relation to environmental sanitation, reporting, and control of outbreaks of epidemics.

National Food Law (1997): The law enacted to enable the public to consume food of genuine quality, free from danger to prevent public from consuming food that may cause danger or are injurious to health, to supervise production of controlled food systematically and to control and regulate the production, import, export, storage, distribution and sale of food systematically.

6.10.2 Scope of the study

The HIA study, focusing on the project area and its vicinity, includes the three wards:

- (a) Scoping: In the scoping process, specific information such as gender, age group, education and occupation information are collected.
- (c) Household Survey: To obtain the basic health profile survey of the study area was conducted, with structured questionnaires.
- (d) Impact Identification and Assessment: Anticipated impacts of the project relating to its environment are assessed from baseline health conditions, usage of domestic and drinking water and comments, suggestions of the local community from public meetings and mobile clinic work.
- (e) Mitigation Recommendation: Mitigation recommendations are based on impacts ratings and rankings with the aim to enhance predicted positive health impacts and minimize negative ones.

6.10.3 Health Impact Assessment Methodology

This HIA followed the standard steps of scoping, developing a baseline health profile, assessing impacts, developing recommendations and reports writing. Prioritizing health effect category is used to assess the health impact of the project on its environment.

6.10.3.1 Baseline Condition

Baseline health conditions are the fundamental component of the overall health impact assessment (HIA) process. The baseline health summary provides a point of reference for the health status of a community prior to the development of the proposed project and also describes an overall health profile for an area. Moreover, the health profile can inform decision-makers about health vulnerabilities in a region as well as positive health traits present in the population.

6.10.3.2 Source of Information

Baseline health studies were conducted through a survey of 120 households. According to this, the most common complaint was diabetes, hypertension, fever, muscle pain and malaria and Respiratory Tract Infection (RTI). For the utilization purpose especially for cooking, most of them used water from a tube well.

6.10.3.3 Health Status of Project Area

To collect the baseline information on the health of the people in and around the Y Complex project site, the present survey was conducted by using a questionnaire on 120 representative households. Health condition is determined on the basis of population, level of education, water and sanitation systems, health knowledge and its application, health facility and utilization, usage of tobacco smoking, alcohol, betel, and medical history, etc.

There are 120 respondents, 24 percentages of houses in the survey, and the survey focused to measure on baseline data of health conditions of the project to the surrounding residential

area. Primary data are collected and later, assessed by qualitative and quantitative measurements.

Table 6. 8 Sample Household of the Study Area (2018)

No.	Ward	House	Male	Female	Total	No .of sample
1	Yawmingyi	288	3382	4240	7,622	60
2	UWizara	67	1485	1974	3,459	20
3	Phayargyi	135	1141	872	2,013	40
Total		490	6,008	7,086	13,094	120

6.10.3.4 Health soIn and Around Y Complex Project

To collect the baseline information on the health of the people in and around the Y Complex Project site, the present survey was conducted by questionnaires on 120 representative households. Health condition is determined based on population, level of education, livelihood and income, water and sanitation systems, health knowledge and its application, health facility and utilization, usage of alcohol, tobacco, and medical history etc.

Majority of the people in the area in and around the project site are government staff in U Wizara and Phayargyi wards. Monthly regular income of them is in the range of Kyats 300,000 to 350,000. Income is dependent on Health, as poor people cannot take proper consultation or treatment if they have a sickness. According to figure 1, there are families with less than Kyats 10,000 as daily income. If they have an ailment, there could be difficult to take proper treatment. (**Figure 6.4**)

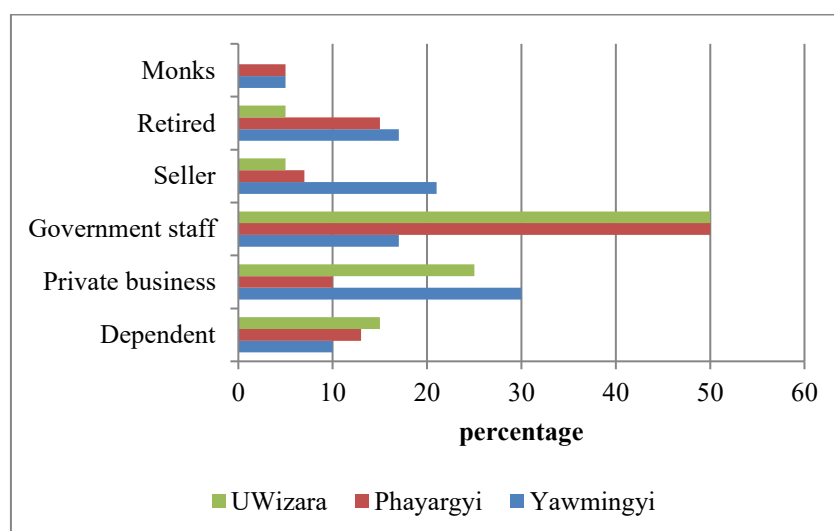


Figure 6. 4 Type of Occupation of the Potentially Affected People

The Level of education of the residents is an important factor for community health. If they have low education, they cannot know how to be healthy. In this community, 16% represented middle school education but 42% are high schools. There (35%) are graduates. So, from the educational point of view, people in the potentially affected area have sufficient education for community health and family health management. (**Figure 6.5**)

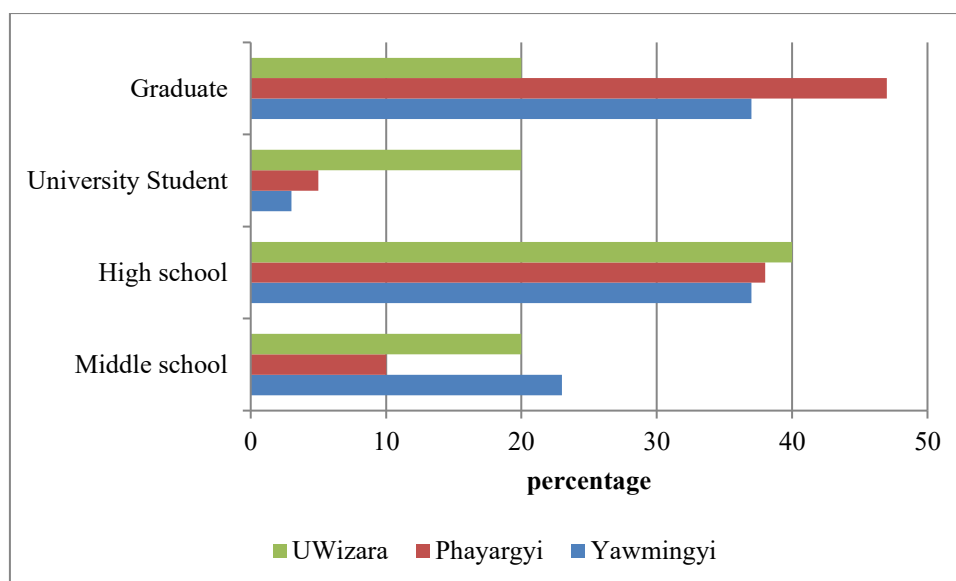


Figure 6. 5 Level of Education in Y Complex Project

The present survey approved that at least 7% of the people drink alcohol regularly and 50% take tobacco. Usage of alcohol causes hypertension and reduce control of high blood pressure, so susceptible to get a stroke. In this area, many people have hypertension. Usage of tobacco smoking causes coronary artery disease, hypertension, stroke, CA lips, tongue, esophagus, stomach, bladder, etc. (**Figure 6.6**)

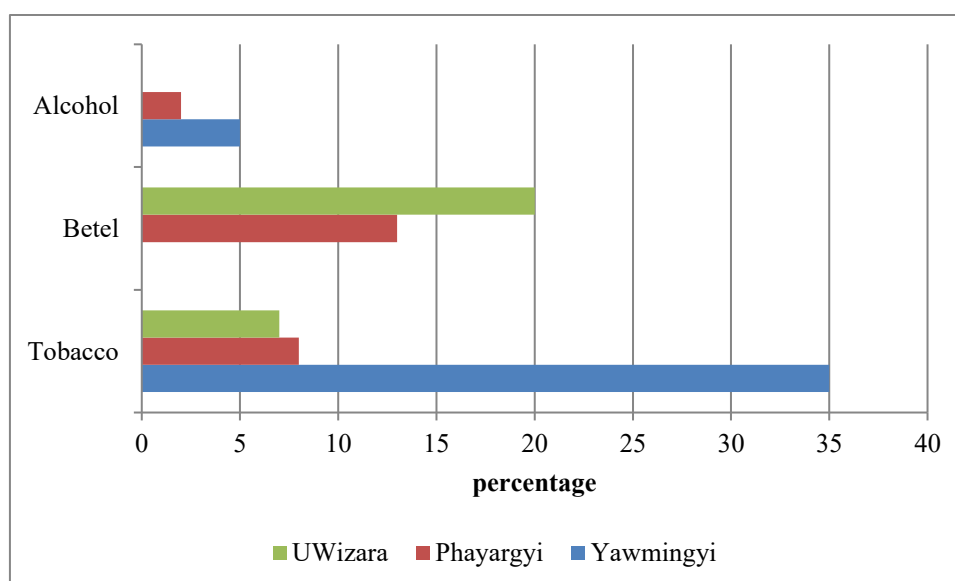


Figure 6. 6 Usage of Alcohol, Betel, and Tobacco in the PAP's of Y Complex Project

In this area, the most common disease other than the common cold is hypertension, which is most probably due to smoking and alcohol drinking. In this area, most people could suffer common cold and 34% of the health problem is hypertension. (**Figure 6.7**)

The respondents indicated knowledge and education of the PAP's to be positive but food and other factors to be considerable. Environmental sanitation seems to be moderate to high. The

drinking water system is moderate as they have substantial knowledge of the quality of drinking water.

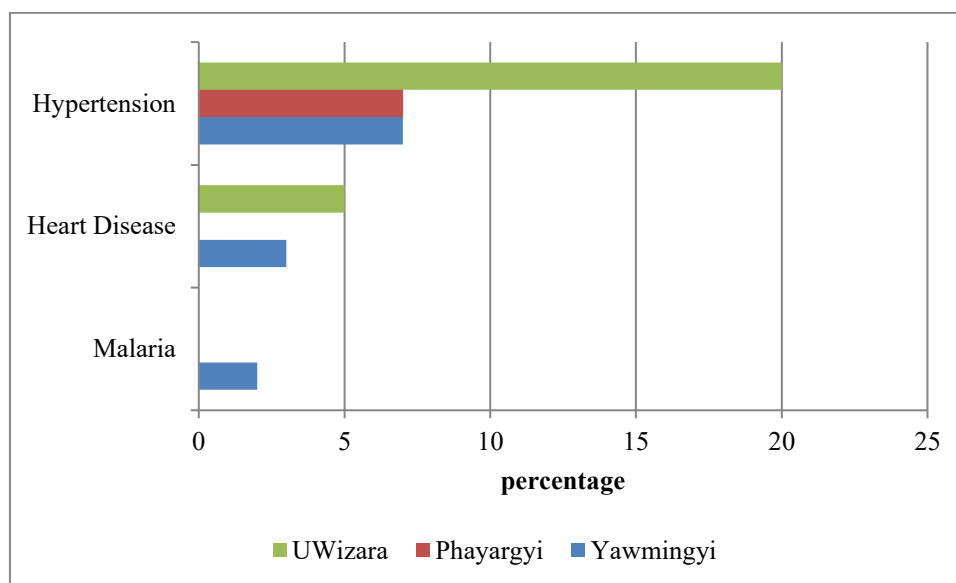


Figure 6. 7 Frequency of types of health problems and treatment seeking behavior

Domestic water sources are tube well water from Dagon Garden, YCDC compound areas and all of the respondents drink purified water. Most of the houses have safe toilets.

The survey team asked the respondents that do their household have any diseases six months ago. In this area have Malaria, AVI, Lung disease, piles, Flu, DHF, Stomach ache, Asthma, Liver, and Diabetes. Some of the respondents answered they had diseases six months ago. In this area, most people could suffer health problem is such as Hypertension and Diarrhea. Most of the respondents went to the private hospital, General hospital and private clinic for treatment.

6.10.4 Health Impact Assessment and Mitigation

Health Effect Categories (HECs)

The World Health Organization (WHO)' view of health is the extent to which an individual or group is able:

- To satisfy needs
- To realize aspirations
- To change or cope with their environment

Health is a resource for everyday life, not the objective for a living: it is a positive concept mina emphasizing social and personal resources as well as physical capabilities. The HECs are a standard set of effects categories that have been developed and published by WHO.

For the HIA process, data were collected based on existing family structure and health services utilization, the source of water supply and uses, fuel uses, environmental sanitation, maternal and child health. Public concerns related to Power Plant project were collected through household data survey and open discussion in public meetings. In terms of health

impact categorization based on the facts obtained from the survey and study, the following determinants of health are described as recommended by the World Health Organization.

- (a) Social determinants of health (SDH)
- (b) Air and cleanliness
- (c) Communicable diseases
- (d) Food, nutrition and sustenance activity
- (e) Exposure to potentially hazardous materials
- (f) Accidents and injuries
- (g) Health services infrastructure and capacity

Table 6. 9 Significance of Potential Impacts

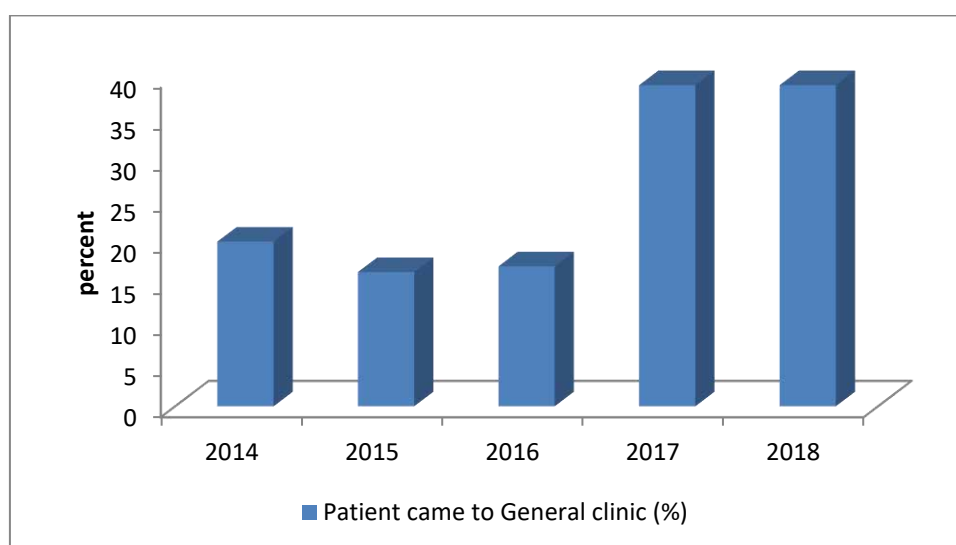
Health Effect Category	Affected Persons	Potential Impact
Social determinants of health	Resident, local workers, migrant workers, and their families	Negative/Medium
Air and Cleanliness	Residents	Negative/Medium
Communicable diseases	Local people, migrant workers	Negative/Low
Food, Nutrition and Subsistence activity	Residents	Negative/Low
Exposure to Potentially Hazardous Materials	Local residents	Negative/Low
Accidents And Injuries	Road user/ Local residents	Negative/Low
Health services, infrastructure, and capacity	Improvement in socio-economic program, greater access to health care, emergency management plan	Positive/Medium

Thus, it is considered that the impact related to Community Health, Safety, and Environmental Consideration is generally low and manageable.

Baseline data of Health Status in Dagon Township

Primary healthcare and higher level transfer plan

Sr.	Works	2014	2015	2016	2017	2018
1	Patient came to General clinic (%)	20	16.3	17	39	39
2	Average consultation frequency per patient	2	3	3	3	3.3
3	Healthcare during field trip (%)	24	51.4	37	71.3	72.1
4	Average frequency of field observation	38	83.4	51	105	92
5	Person transferred to higher level	0.5	0.24	0.3	0.3	0.2



Family Healthcare service

Sr.	Works	Works done				
		2014	2015	2016	2017	2018
1	Comprehensive work for pregnancy health care	20	16.3	17	39	73.7
2	Pregnancy healthcare four times and above	17	70	61	100%	97.8%
3	Fertility rate with specialist	100	100	100	100%	100%
4	Average frequency giving services to mother	3	5.3	3	6	5.7

School Healthcare Services

There are 10 Basic Education School and one monastic school. School healthcare services are also recommended for monastic school.

Works	2015	2016	2017	2018
Inspected school (%)	100	100	100	100
Inspected Students (%)	97.2	96.3	100	95
School with 1:50	100	100	100	100
Fly-proof latrines (%)	100	100	100	100
School with clean water (%)	100	100	100	100

Works	2015	2016	2017	2018
School supporting nutrition (%)	100	100	100	100
School which upgrade their healthcare service	100	100	100	100

According to the Health Department of Dagon Township, Nutrition Support serves for mother pregnant women. There are 21 patients suffering from dengue in 2018. Preventive medical care covered only 67.4 percent. To support the medical staffs are essential. The number of patients has increased due to the five supply of medicine in health Department since 2015. Comprehensive percentage for pregnancy healthcare is 73.7%. Fertility rate with specialist is (100%). To upgrade the ability of basic healthcare staffs is essential.

6.10.5 Health Profile

Table 6. 10 Hospitals

No.	Name of Hospital	State Own/ Private Own	No. of Bed
1.	No. (2) Defense Services General Hospital	State-owned	500
2.	Children's Hospital	State owned	550

Table 6. 11 Clinic

No.	Name of Clinics	State Owned/ Private Owned	Curable Diseases
1.	Tukhataledi	Private	General
2.	Mibamyittar	Private	General
3.	MyintMyatKyaw	Private	Dental
4.	Htinpawthu	Private	Dental
5.	H&H Dental Clinic	Private	Dental
6.	Shwedagon Pagoda Free Clinic	Private	General
7.	May Clinic	Private	General
8.	Yangon International Clinic	Private	General
9.	Lin Clinic	Private	General

Table 6. 12 Rural Health Clinic

No	Township	No of rural health clinic
1	Dagon	Nil

Table 6. 13 Electricity Usage

No.	Needed Amount(Kilowatt)	Getting Amount(Kilowatt)	Using Amount(Kilowatt)
1	35,455	35,455	35,455

Transmission Lines- Nil

No.	Township	No of Transmission lines
1	Dagon	Nil

Table 6. 14 Communication

No.	Township	Post		Number of Phones				Person with accessible internet	Person using internet
				Auto Phones	IP Star	Cord Less	Mobile		
1	Dagon	1	1	1692			10133	500	350
Summary of District		1	1	1692			10133	500	350

Table 6. 15 Communicable Diseases

No.	Township	HIV/AIDS	Malaria	TV
1	Dagon	Nil	Nil	Nil

6.11 Political and Social Organization

The information of the Social Organization is as follows;

(1) INGOs

No	Township	INGOs	Office Location	Operation
1	Dagon	UNCHIR IND Project	Pyayanauk quarter	Social
2	Dagon	ADRA Natural Disaster Safety	Phayargyi quarter	Social
3	Dagon	Worldview Myanmar Limited	Yawmingyi quarter	Social
4	Dagon	WWF Myanmar	Phayargyi quarter	Social
5	Dagon	Clinton HealthAccess Initiative	Phayargyi quarter	Social
6	Dagon	Christian Aid	East Pyay quarter	Social
7	Dagon	Diakonia	East Pyay quarter	Social

(2) NGOs

No	Township	Woman Association	Mother and Child Association	Retired Soldier Association	Red Cross Association	Fire Association
1	Dagon	13519	16851	245	30	102

(3) Organizations

No	Township	Name of Organization	Operation
1	Dagon	Saitphyu Township Organization	Social
2	Dagon	Forest resources and Environmental Conservation and Development	Social
3	Dagon	Phalan Township Organization	Social
4	Dagon	Mogaung Township Organization	Social
5	Dagon	Kitayar Organization	Social
6	Dagon	Paung Organization	Social
7	Dagon	Myitkyina Township	Social
8	Dagon	Banmaw Township	Social
9	Dagon	Shwegyin Township	Social
10	Dagon	Mawlamyine Township	Social
11	Dagon	Pakkoku Township	Social
12	Dagon	MonLiterature and Culture Association	Social
13	Dagon	Myanmar Flower	Social
14	Dagon	Myanmar Woman Business	Social
15	Dagon	Chindwin Organization	Social
16	Dagon	Myoma School Organization	Social
17	Dagon	Education Development Organization	Social
18	Dagon	Children Development Organization	Social

6.11.1 Results of Social Survey

Attitudes on the Project

Most of respondents showed postive attitude on the project. All respondents prefer the project. About 25 % of respondents from Phayargyi Ward dislike the project. However, it is to be considered that certain number of respondents from affected wards have postive attitude on the project. (Table 6.16 and Figure 6.8) Most of the respondents of degree of attitude are in **normal** condition. (Table 6.17 and Figure 6.9)

Table 6. 16 Attitude of Respondents on the Project (%)

Study ward	Prefer	Not Prefer
Yawmingyi	83	17
Phayargyi	75	25
UWizara	90	10

(Source: Field Survey, April 2018)

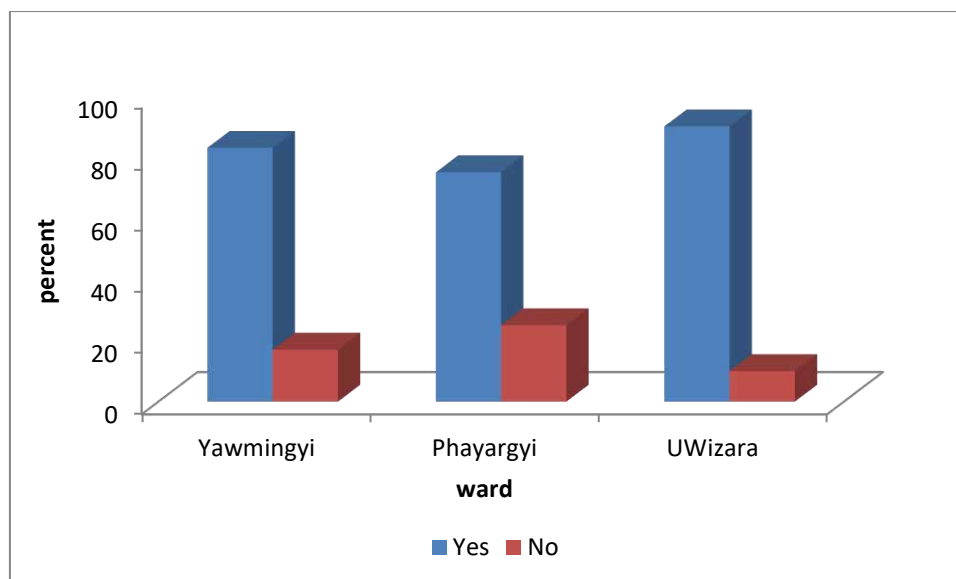


Figure 6. 8 Attitude of Respondents on the Project (%)

Table 6. 17 Degree of Attitude of Respondents on the Project (%)

Study Ward	No	Less	Normal	Very	Most
Yawmingyi	3	10	67	20	0
Phayargyi	5	13	77	5	0
UWizara	0	10	90	0	0

(Source: Field Survey, April 2018)

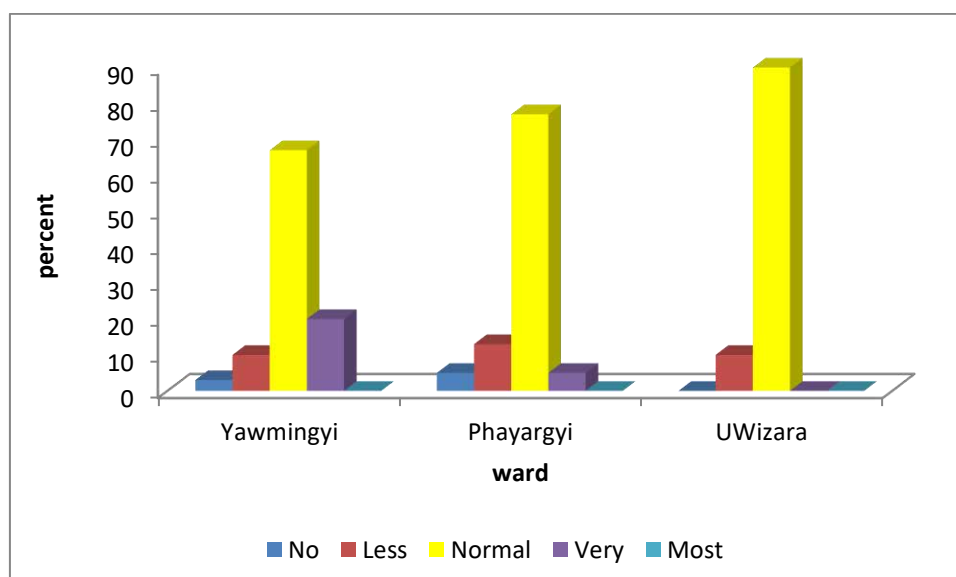


Figure 6. 9 Degree of Attitude of Respondents on the Project (%)

Most of the respondents prefer and some respondents not prefer on the project is as shown in the table below.

Study area	Why don't you like it?	Why do you like it?
Yawmingyi	-They worry about the ground water -Traffic jam -It is too near to shwedagon pagoda height, difference in level (8 and 9 level), -Destroying historical building -Traffic, crowded	-Job opportunities -Development plan
Phayargyi	-Noise impact in the construction phase -Air pollution in the construction phase	-Job opportunities -Development plan
UWizara	-Noise impact in the construction phase -Air pollution in the construction phase	-Job opportunities -Development plan

6.11.2 Opinion towards the mitigation measures of the Project

According to the survey results, most of the respondents believed that the project will not have prominent negative, social and health impacts on their livelihood and surrounding region. However, high percentage of respondents from all wards considered that there would be environmental impact of the project on their areas. (Table 6.18 and Figure 6.10)

Table 6. 18 Opinion towards the impact of the project

Study ward	Environmental impact		Social impact		Healt impact	
	Yes	No	Yes	No	Yes	No
Yawmingyi	23	77	16	84	16	84
Phayargyi	22	78	22	78	22	78
UWizara	20	80	10	90	10	90

(Source: Field Survey, April 2018)

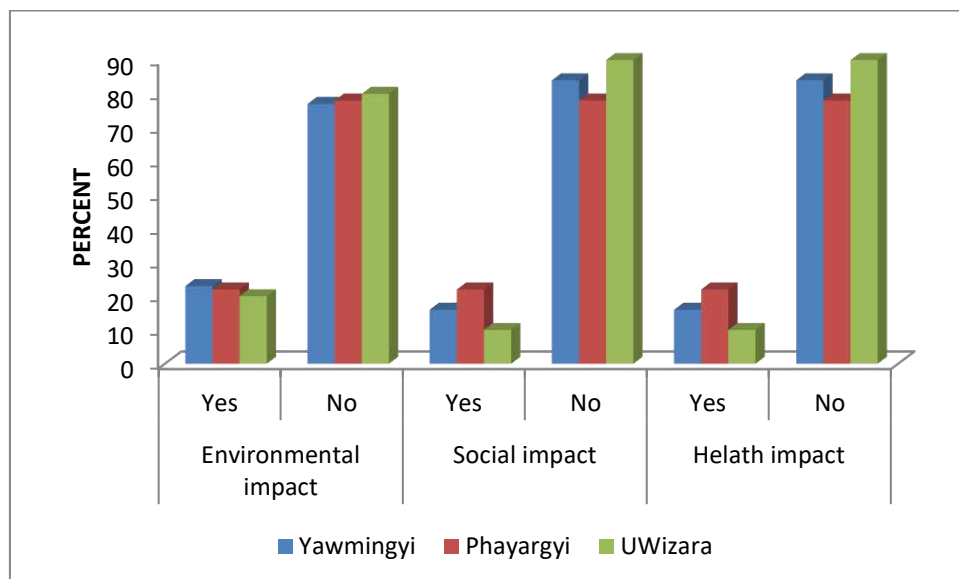


Figure 6. 10 Opinion for the impact of the project

6.11.3 Opinion and Suggestion of Participants and Respondents

Table 6. 19 Worry of Respondents in Study Wards

Yawmingyi Ward	<ul style="list-style-type: none"> - Air pollution and Noise pollution - Dust pollution - Vibration - More Traffic jam in the surrounding areas - Most of the people depend on tube well water (ground water) in Yawmingyi Ward. If these projects use ground water, they are not enough of water. Please take care it and mitigate the water supply problems.
Phayargyi Ward	<ul style="list-style-type: none"> - Air pollution - Dust pollution - Noise pollution. Please don't work in night time. - Health impact - Water supply problems - More Traffic jam in the surrounding areas - Vibration
UWizara	<ul style="list-style-type: none"> - damage of electricity and water - They need more information from the project owner

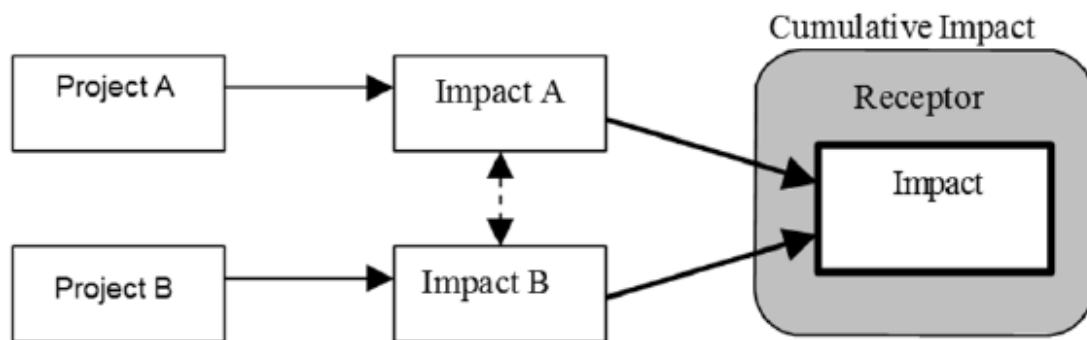
Opinions from the respondents and project proponents has to do it.

Sr.	Study Ward	Needs for your region's development.
1	Yawmingyi	Needs for jobs opportunities and good transportation because we worry about more traffic jam
		I agree if the project does not have an impact on us.
		If the project digs tube-well higher depth, I worry for water scarcity for YCDC delivery.
		Traffic, Don't fell down the trees, Water, Electricity, Crime and thief, Illegal shops near the projects,
		Solve for water scarcity
		It is better to open like a museum and park. Should not open night club and gambling.
		Should clearly explain to the public for project description
		Occupational safety and not to impact on the surrounding
2	Phayargyi	support for health
		Good water supply and one ambulance for us
		The drainage system, Street pole. I would like to suggest to have 75% advantages for local people.
		If there is no impact on surrounding, it is okay
		Good transportation
3	UWizara	I want to clear information about these project
		Worried of damage electricity and water

CHAPTER 7: CUMULATIVE IMPACT ASSESSMENT

In reference to the scope for an impact assessment, IFC's Performance Standards specify that:

'Risks and impacts will be analyzed in the context of the project's area of influence. This area of influence encompasses the area potentially impacted by cumulative impacts from further planned development of the project, any existing project or condition, and other project related developments that are realistically defined at the time the Social and Environmental Assessment is undertaken, and areas potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location' (IFC, 2006).



Impacts directly and indirectly associated with YCP are discussed in the preceding chapter. This section deals with the cumulative effects of the project and other associated impacts in relation to development are described. During the impact assessment, evaluation of potential cumulative impacts plays an integral part.

Cumulative impacts can be defined as successive and combined impacts of the one or more projects upon the society, economy and the environment. Such impacts may occur due to the accumulation and interaction of other developments, being developed within the same area or over a similar time frame of operation to the project being assessed. Development activities such as YCP may impact environmental values as a result of overlap locations, scheduling overlap or utilization of the same infrastructure, services, and resources. The majority of the cumulative impacts associated with YCP and other/proposed projects in the vicinity of the project. Impacts related to air quality particularly dust generation, groundwater, surface water, noise/vibration, and traffic condition are assessed in the vicinity of the project site.

7.1 Methodology

The cumulative assessment has been performed based on the following steps:

- Projects that are either proposed or recently approved but not yet operational and located are identified within the vicinity of YCP site
- The spatial boundary of 200 m will be used for the cumulative impacts. Where existing projects are located away from each other cumulative impacts are likely to be less significant.

- The temporal boundary (time-frame) to be used for the initiation of the project is defined. Where the operation schedule for projects is not overlapping, the potential cumulative impacts are likely to be less significant.
- The significance of the cumulative impacts upon the environment is identified on the basis of the significance criteria defined.

7.1.1 Assessment Matrix

The assessment matrix that has been used for the cumulative impact assessment of the project is presented in **Table 7.1**.

Table 7. 1 Cumulative Impact Assessment Matrix

Aspect	Relevant Factors		
	low	Medium	High
Probability of cumulative impact	1	2	3
Duration of cumulative impact	1	2	3
Magnitude/Intensity of cumulative impact	1	2	3
Sensitivity of receiving environment, significance of environmental and social values	1	2	3

The relevance factors have been used to determine impacts in the table on the basis of professional judgment, past experience with similar development projects. Impacts significance criteria used for the cumulative impact assessments are detailed in **Table 7.2**.

Table 7. 2 Cumulative Impact Significance Criteria

Impact Significance	Sum of Relevance Factors	Consequence
Low	4-6	Negative impacts may occur but can be managed if the proponent implements standard environmental management practices. Special approval conditions are unlikely to be necessary. Monitoring to be part of a general project monitoring program.
Medium	7-9	Mitigation measures are likely to be necessary and specific management practices to be applied. Specific approvals conditions are likely. Target monitoring program required.
High	10-12	Alternative actions should be considered and/or mitigation measures applied to demonstrate improvement. May require collaboration with other proponents/parties to monitor and manage impacts. Specific approval conditions required. Target monitoring program necessary.

7.2 Environmental Values

7.2.1 Air Quality

The assessment of air quality impacts presented in this EIA report indicates that air quality objectives could be met due to the cumulative impacts surrounding the proposed YCP. The existing construction project, such as ‘Yoma Central Project’ which is under construction at the junction of Sule Pagoda Road and Bogyoke Road, is about 500 m far from YCP. As there are existing buildings in between the two locations it could not have a cumulative impact on air quality due to the construction activities of YCP. Moreover, significant impacts are not likely due to the fact that each individual project has in-house standard dust control measures during the construction and operation phases.



Figure 7. 1 Yoma Central Project under construction

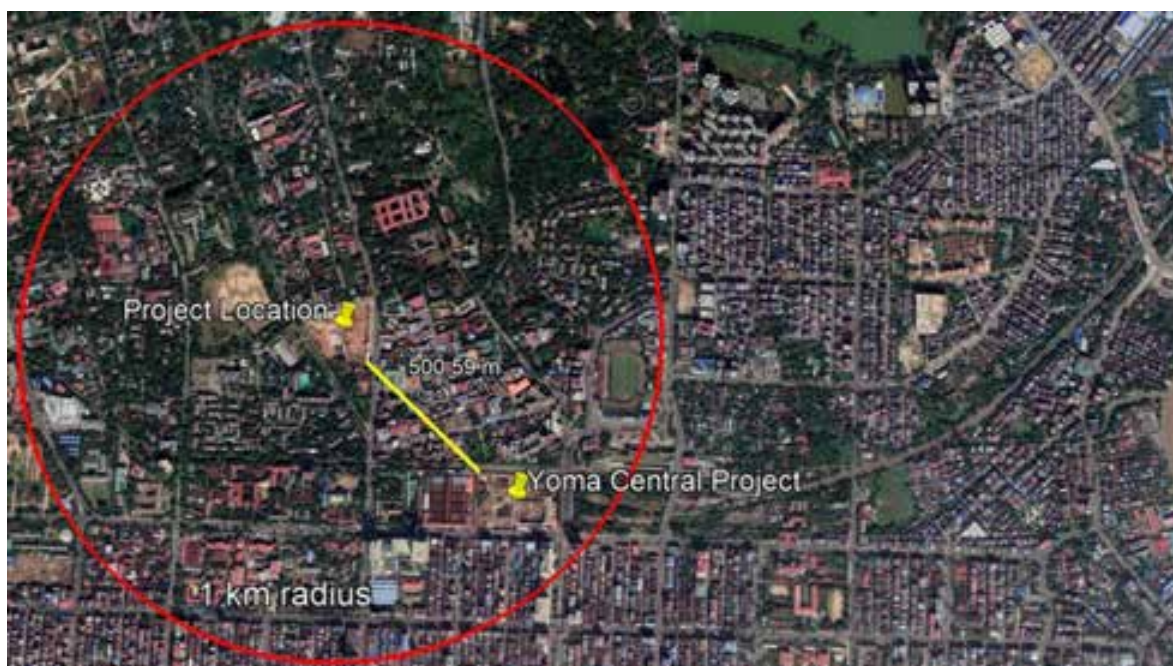


Figure 7.2 Location of YCP and Yoma Central Project

7.2.2 Green House Gas Emissions

The potential climate change impacts of YCP may be due to fuel consumption for supplementing electricity from National Grid which will be 29,523 gallons of diesel for standby generators and 100, 285 gallons of diesel for standalone generators. It is estimated that YCP will need 57,600 kWh of electricity per day which will be the supply from the National Grid line.

The standby generators at YCP will produce CO₂ emissions at the rate of 0.295 ktCO₂-e /year for supplementing national electricity grid and 1.002 ktCO₂-e/yr for the stand-alone generators. According to EBRD GHG assessment Methodology (EBRD, 2010), the emissions produced from the project is less than 20 ktCO₂-e/y. The total GHG emissions that will be produced from standby generators are well within the acceptable limit. Hence, YCP contribution to cumulative greenhouse emissions is considered to be of low significance.

7.2.3 Traffic and Transport

During the construction phase, there will be traffic load for vehicles from YCP for transportation of construction materials, equipment as well as concrete mixing trucks for RC foundation work and beams. According to YCDC regulations, these heavy-duty trucks are not allowed to enter Shwedagon Pagoda road by daytime and allowed by night time only. Pantra road is too narrow to use for the heavy-duty trucks. It is advisable to use the Shwedagon Pagoda road as the additional traffic from YCP will have cumulative effects on the already saturated road condition.

The following figure 7.3 shows capacity analysis for each lane of Shwedagon Pagoda Road/Bo Gyoke Road during the weekday morning peak, evening peak and Saturday mid-day peak periods under the base year 2019

In terms of cumulative impact due to YCP and Yoma Central project, the road intersections of Shwedagon Pagoda Road and Bogyokey Road will undergo cumulative impact due to the traffic load. Level of service (LOS) is measured average control delay. The situation of the level of service of the said intersection is supposed to be LOS F for Bogyokey Road and Shwedagon Pagoda Road in 2019.

LOS for signalized intersections is calculated using the operational analysis methodology of the HCM 2010. This method assesses the effects of signal type, timing, phasing, progression; vehicle mix; and geometrics on delay.

Table 7. 3 Relationship between Level of Service and Average Control Delay for Signalized Insections

Level of Service (v/c < 1.0)	Level of Service v/c > 1.0	Average Control Delay (seconds per delay)	Description
A	F	≤10.0	LOS A describes operations with very low control delay; most vehicles do not stop at all.
B	F	10.1 to 20.0	LOS B describes operations with relatively low control delay. However, more vehicle stops than LOS A.
C	F	20.1 to 35.0	LOS C describes operations with higher control delays, Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although may still pass through the intersectin without stopping
D	F	35.1 to 55.0	LOS D describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable, whereby notorists are not able to get through the signal on one cycle.
E	F	55.1 to 80.0	LOS E describes operations with high control delay values. Individual cycle failures are frequent occurrences.
F	F	>80.0	LOS F describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay level.

*Source: Highway Capacity Manual 2010, Transportation Research Board, Washington D.C; 2010

Traffic Load during the construction phase (2019) was found to be LOS F at all three intersections of the road intersection at Bogyokey Road and Shwedagon Road. At this intersection, the western aspect of intersection is directed towards the west as the Bogyokey Road is One-Way Traffic Road. It can be assumed that the traffic load is heavy with high delay level.

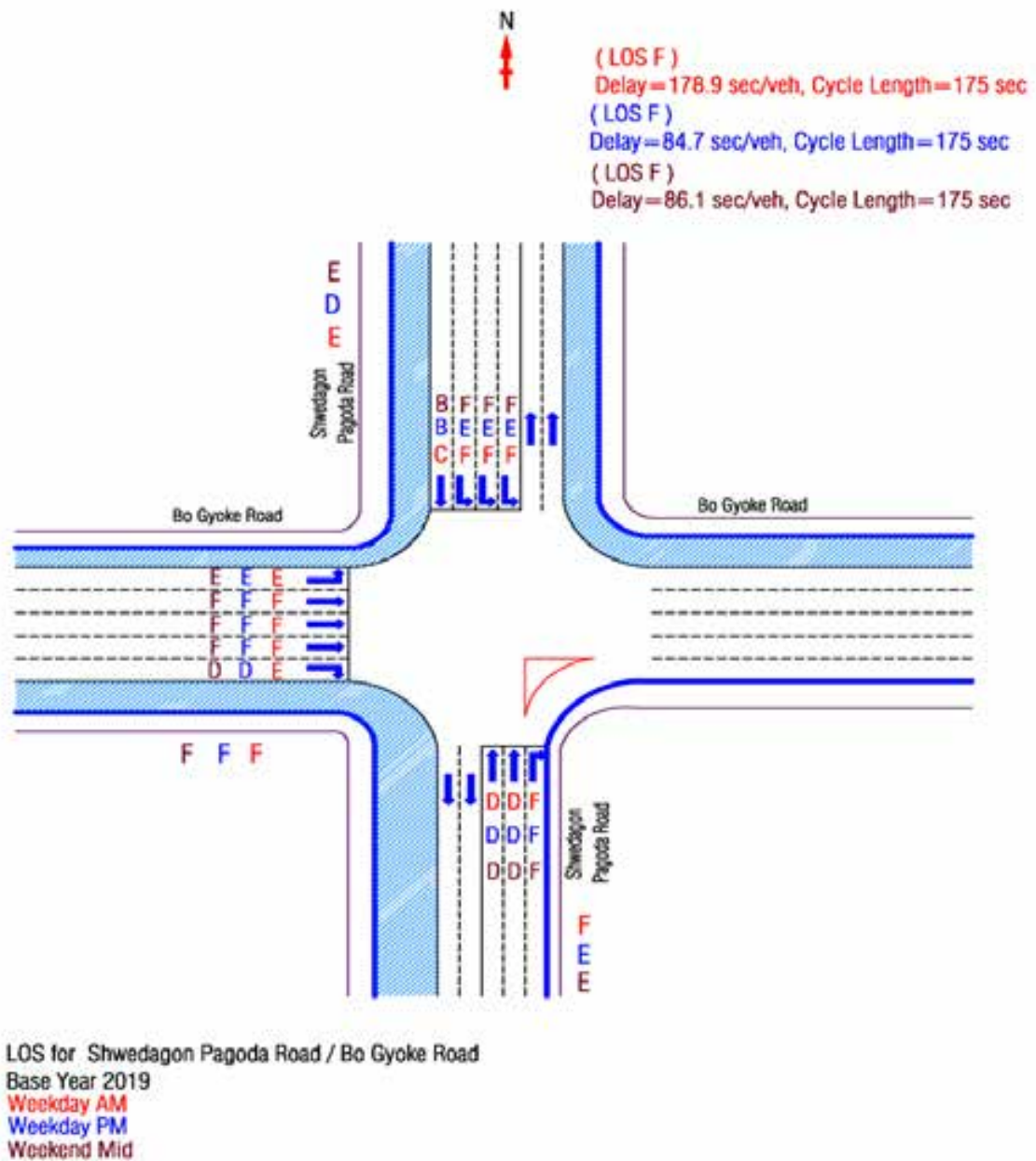
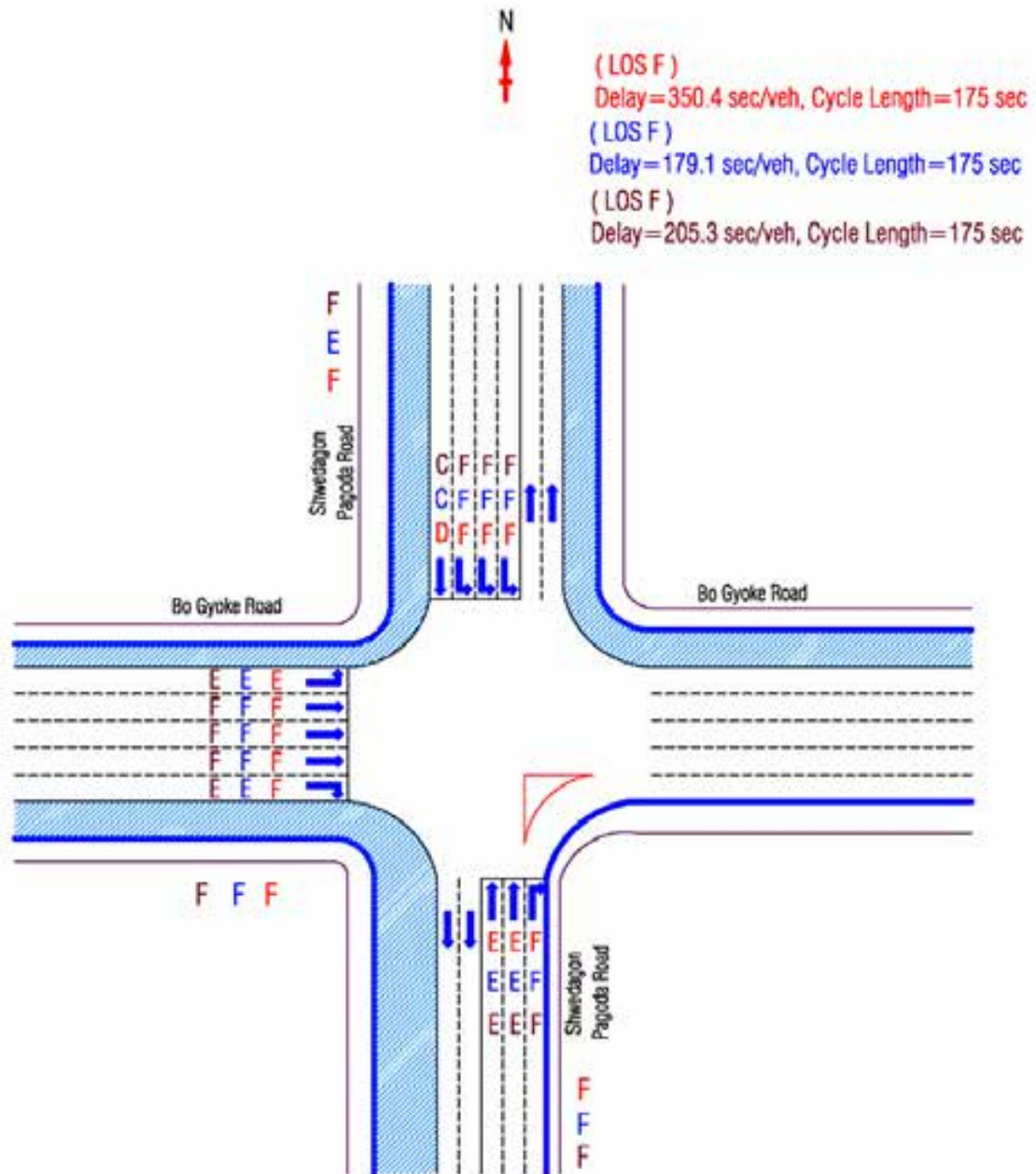


Figure 7.3 LOS for Shwedagon Pagoda Road / Bo Gyoke Road (Base Year 2019)



LOS for Shwedagon Pagoda Road / Bo Gyoke Road
 2026 Build
 Weekday AM
 Weekday PM
 Weekend Mid

Figure 7. 5 LOS for Shwedagon Pagoda Road / Bo Gyoke Street (2026 Build)

LOS for Shwedagon Pagoda Road / Bo Gyoke Road

Period/Condition	LOS North			LOS South			LOS East			LOS West		
2019	E	D	E	F	E	E	F	F	F	X	X	X
2026 (No Build)	F	E	F	F	F	F	F	F	F	X	X	X
2026 (Build)	F	E	F	F	F	F	F	F	F	X	X	X

Remark: Bo Gyoke Street is a one-way street.

The above table indicated that there is less congestion of traffic in 2019 compared to 2026 where the situation of Build and No Build are the comparatively the same.

The following measures will be necessary for the improvement of Traffic Congestion due to YCP:

Arzani /U Htaung Bo Road/Shwedagon Road

- The existing lane will be configured
- Signal improvement will be re-timed

With the mitigation, the U Htaung Bo Road (westbound) include an exclusive left-turn lane, a through lane and a shared through/right-turn lane.

Shwedagon Pagoda Road/Pan Tra Street (2026)

- The width and existing lane configurations will be changed. with the mitigation of the Pantra Street (westbound)

Shwedagon Pagoda Road/Pan Tra Street (2026)

- The width and existing lane configurations will be changed
- With the mitigation, the Pan Tra Street (westbound) include a shared left turn/through lane and an exclusive right-turn lane.

U Wisara Road/Pan Tra Street (2026)

- The signal to this intersection will be installed.

U Wisara Road/U Htaung Bo Road/ Alone Road (2026)

- Configurations of the existing lane

21 feet wide new site driveway which connects between Shwedagon Pagoda Road and U Wisara Road will be provided on the southerly side of YCP. 28 feet wide of another new site driveway which connects between Pan Tra Street and a new site driveway will also be provided at a westerly side of YCP.

During the decommissioning stage the traffic load situation will be more or less similar to the construction phase and when compared to the operation phase will be less congested.

Carpooling, ferry and other transportation systems such as Airport Shuttle Bus are possible mitigation measures to reduce private car usage also.

7.2.4 Noise and Vibration

Based on ambient noise levels at 3 locations at the receptor (sensitive receptors) within 200 m radial distance, it was found out that the ambient noise levels are within the acceptable limit of NEQE Guidelines (2015) values for the most sensitive point of the receptor during the construction stage.

Vibration studies were conducted at 3 locations of cultural heritage sites as receptors. All vibration levels are well within the permissible limit of the Japanese standard of vibration.

As already stated, there are three historical buildings such as Sein Yaung Chi Pagoda, Kyargu Monastery and Saint Gabriel Church, situated within the 200 m radial distance of YCP site. There is a risk of damage to these old buildings during the construction phase with chances of cosmetic cracking compared to normal buildings.

As the nearest construction activity within the 200 m radial scope of YCP is non-existing, it is unlikely that there will be any cumulative impact on the Yoma Central Project which is 500 m away from YCP, that will contribute cumulatively to adverse noise and vibration impacts during the construction stage.

7.2.5 Water Consumption

YCDC is supplying water to 33 townships in Yangon, including Dagon Township. YCDC has plans to distribute water to additional 6 townships for Greater Yangon Area in future. However, there is no water supply from YCDC in some wards in the premises of the Project Area and has to rely on tube wells. Water is not much used in this construction phase as the concreting process, which consumes a lot of water is non-existing, as ready-made concrete is brought in by cement-trucks.

YCP is located in YCDC Zone 2 area and has already applied permission for the use of surface water from the current water supply system of Yangon City, as mentioned in **Table 7.4**.

Table 7. 4 Current Water Supply System of Yangon City

Water Sources	Daily Capacity	Water Source	Start-up Year
Hlawga Reservoir	14 MGD	Surface water	1904
Gyobyu Reservoir	27 MGD	Surface water	1940
Phugyi Reservoir	54 MGD	Surface water	1992
Ngamoeyeik WTP (Phase 1)	45 MGD	Surface water	2005
Ngamoeyeik WTP (Phase 2)	45 MGD	Surface water	2014
Yangon Pauk	1 MGD	Ground water	2000
South Dagon	2 MGD	Ground Water	2009
Thaephyu	1 MGD	Ground Water	2009
YCDC tube wells	16 MGD	Ground water	-
Total	205 MGD	90% Surface Water + 10% Ground Water	

The water supply of YCDC is controlled by the Water and Sanitation Engineering Department and provides at least 90 MGD of potable water for its 5.14 million citizens. The portable water resources are the four main reservoirs namely, Hlawga, Gyophyu, Phugyi, and Ngamoyeik, plus over 200 tube wells scattered around Yangon City (YCDC, 2014). Its aim is to achieve a positive circular system that maintains the water supply to the city's inhabitants for the long term.



Figure 7. 6 Water Reservoirs of YCDC

The daily water consumption of YCP is estimated to be 151, 560 gals/day which covers such facilities as offices, hotel rooms, swimming pool, SPA, and laundry. It is quite certain that the daily consumption of freshwater from YCDC will meet the acceptable threshold limit once YCDC can supply additional portable water from Kokogwa and Lagunaing .reservoirs of YCDC in the near future.

7.2.6 Ground Water

During the construction phase, water for the construction works will be obtained from one of the 5 tube wells drilled down to a depth of 330 feet within the YCP compound with the permission of the Urban and Housing Development Department (UHDD). The tube wells from YCP are deeper than other tube wells of the neighborhood.1 well will produce 39,000 gals/day and the daily consumption. Total production from the five tube wells will be 188,888 gallons/day that will be about 10% of the daily water requirement of YCP. The remaining 90% will be from YCDC fresh water supply, which will have a cumulative impact on the YCDC water supply system.

7.2.7 Waste

There will be a cumulative impact on waste disposal facilities due to YCP, as it is situated within YCDC jurisdiction and will share the facilities of YCDC for the disposal of waste materials during the construction, operation and decommissioning phases (See **Figure 7.7**). For the hazardous waste disposal, YCDC will take care and the quantity will be quite low compared to non-hazardous waste.



Figure 7. 7 YCDC Wastes and Final Disposal Sites (Htein Bin site for YCP)

7.3 Project's Contribution to Potential Cumulative Impacts

The cumulative assessment defined the spatial and temporal boundary for assessment and review impact significance based on “Cumulative Impact Assessment Matrix“ and “Cumulative Impact Significance Criteria” and considering the impacts from other projects in the vicinity of YCP. (See Table 7.5)

The following provides a summary of the findings.

Cumulative Impacts having “Low Significance”, which includes,

- Air Quality
- GHG Emissions
- Noise/ Vibration, and
- Waste

Cumulative Impacts having a “Medium Significance” includes:

- Surface Water, and
- Ground Water
- Traffic/Transport

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The following provides a summary of the findings.

Cumulative Impacts having “Low Significance”, which includes,

- Air Quality
- GHG Emissions
- Noise/ Vibration, and
- Waste

Cumulative Impacts having a “Medium Significance” includes:

- Surface Water, and
- Ground Water
- Traffic/Transport

Table 7. 5 Cumulative Assessment (YCP)

Aspect Environmental Value	Air Quality	GHG Emission s	Traffic/T ransport	Noise/Vib ration	Surface Water	Ground Water	Waste
Probability of Impact	1	1	2	2	1	1	2
Duration of Impact	2	3	2	1	3	3	2
Magnitude/Intensity of Impact	1	1	2	2	1	1	1
Sensitivity of receiving impact	1	1	1	1	3	3	1

Aspect Environmental Value	Air Quality	GHG Emission	Traffic/T ransport	Noise/Vib ration	Surface Water	Ground Water	Waste
Total	5	6	7	6	8	8	6
Impact Significance	Low	Low	Medium	Low	Medium	Medium	Low

The above table indicates that among the cumulative impacts, air quality, GHG emissions, noise and vibration, and waste have low impact significance while surface water, groundwater and traffic/transport have medium impact significance. However, if the Implementation of the proposed YCP is in line with the mitigation measures described in the preceding chapters, the overall impact of YCP could be manageable.

CHAPTER 8: ENVIRONMENTAL MANAGEMENT PLAN

This chapter describes the activities to be taken for the implementation of the proposed mitigation measures described in the impact analysis process. It proposes the institutional responsibilities for the implementation of the management actions, the implementation indicators, the timeframe for monitoring and follow up and also the estimated costs for the effective implementation. The environmental management plan of YCP is organized with the following sections:

1. Environmental Management Plan
2. Environmental Monitoring Plan
3. Occupational Health and Safety Plan
4. Emergency Response Plan
5. Oil Spill Contingency Plan
6. Energy Saving Plan
7. Earthquake Management Plan
8. Fire Management Plan
- 9.. Waste Management Plan
10. Green Space/Landscape Plan
11. Transportation Management Plan
12. Socio-economic Management Plan
13. Corporate Social Responsibility Plan

8.1 Objectives of the Environmental Management Plan

The objectives of the Environmental Management Plan are:

1. As a reference and commitment for the proponent to implement the EMP for three phases of the project life cycle, construction, operation and decommissioning phases of the project
2. It will fulfill the need of the Environmental Conservation Department of the Ministry of Natural Resources and Environmental Conservation (MONREC)
3. Serve as a guiding document for the monitoring of environmental and social activities of the project
4. Provide a detailed framework to mitigate negative impacts on the environment and management actions to be adopted for the proper implementation of the project

8.2 Organization of the Environmental Department

In the organization of the Y Complex Project, there is an environmental department under the property operation and maintenance whose term and condition is to manage the

environmental concerns with the hotel management. Also, for hotel management, there is HSE section under the building maintenance department. (See fig 4.1 and 4.2)

In order to effectively implement the EMP, it will be necessary to define the responsibility of various stakeholders. The environmental management activities have to comply with existing environmental policy, laws, rules, procedures and emission standards of the Republic of the Union of Myanmar. The following entities are responsible for the implementation of the EMP:

- YCP Company Ltd.
- Environmental Conservation Department
- Third-party Environmental Consultant Firm

8.2.1 YCP Company Ltd.

The proponent is responsible for ensuring that the performances of the project activities are in accordance with the Environmental Management Plan developed and in an environmentally sound manner. The following Health, Safety and Environmental team will be responsible for the implementation of the Environmental Management Plan:

The team consists of the following personnel:

- HSE Coordinator will be acting as in-charge of HSE team.
- There will be 2 HSE assistants under the supervision of HSE Coordinator

According to the Environmental Impact Assessment Procedure (2015), clause 103, it is stated that:

‘The Project Proponent shall fully implement the EMP, all Project commitments and conditions, and is liable to ensure that all contractors and sub-contractors of the Project comply fully with all applicable Laws, the Rules, this procedure, the EMP, Project commitments and conditions when providing services to the Project’.

8.2.2 HSE Department

HSE General Project Manager/ Project HSE Manager are responsible and accountable for ensuring the following:

- Observe HSE regulations, wears all required safety equipment, encourages safe working practices, corrects obvious hazards immediately or reports them to the General Manager.
- Development of HSE culture among all workers, during construction, operation and decommissioning phases.
- Regular site visit and reporting during construction, operation, and decommissioning works to check whether the objectives of EMP are being followed.
- Manage safety and health in construction, operation and decommissioning operations.

- Keep full records of environmental management activities and present to annual independent third-party environmental audit.
- Assess the risk of performing various steps of processes such as construction, operation and decommissioning with appropriate safety measures;
- Undertake regular safety and health inspections and audits on site.
- Ensure equipment to be regularly checked and properly maintained;
- Provide necessary information and instructions, as well as providing and arranging training to the workers and supervising them to follow safety rules and safe working procedures strictly.
- Organised training for Occupational Health and Safety Management Plan – Risk Assessment, Hazardous Analysis/ Identification, Fire Fighting Training, Scaffolding Training, Safety Orientation Training, Work at Height Safety and Lifting Operation Trainings, Construction Safety Courses.

8.2.3 HSE Officer

The HSE Officer is responsible for assisting the HSE General Project Manager/ Project HSE Manager during the implementation of the HSE plan; He will supervise Fire Warden, First Aider and Emergency Response Team day to day problems at the work site and be vigilant for any kind of incidents. He is also responsible for the following activities:

- Development and training according to the HSE plan.
- Liaise with local authorities where required, to ensure safety and health issues are resolved in a timely manner, to the benefit of the project.
- Review relevant subcontractor workplace health and safety documents, including procedures, work methods statements, etc.
- Resolve disputes which may impact the health and safety of project personnel and equipment on site.

8.2.4 Environmental Conservation Department

EIA review consists of two stages:

Administrative Review: To assess how well the proponent has complied with the EIA procedure for the report.

Technical Review: To assess whether the technical information is appropriate, sufficient and adequate for a decision on project approval.

The Environmental Management Responsibilities of ECD is to:

- conduct periodic site visits for projects with adverse environmental impacts
- conduct supervision missions for detailed review for projects with significant adverse environmental impacts
- review the periodic environmental monitoring reports submitted to ensure that adverse impacts are mitigated as planned and as agreed.

EIA report review committee will lead by EIA Review Coordinator from ECD and the review committee members will comprise of technical and professional experts and are responsible for evaluating the information in the EIA report on the following:

- Project description, activities, and alternatives
- Environmental setting of the project
- Impacts of the project
- Significance of the impacts
- Cumulative Impacts
- Significance of residual impacts
- EMP is reasonable to manage and monitor residual effects
- Issues raised by the public and proposed solutions to those issues are identified. and
- Use of accepted scientific principles and practices during data gathering and interpreting

8.2.5 Third-party Environmental Consultant Firm

The Third-Party Consultant Firm is to ensure that the EMP developed up-to-date. If needed periodic audits shall be performed in order to find out whether the expected outcomes are achieved as envisaged in the plan by comparing with the operating standards.

.Thus, it is necessary to conduct independent Environmental Audit at various stages of the project to find out whether the mitigation measures prescribed in the management are attained and if not what kind of corrective actions to be suggested.

The scope of the Environmental Audit should cover the following topics:

- Verify compliance with the stated mitigation/performance targets
- Comply with the relevant environmental legislation
- Ensure that workers are exposed to minimize risks for Occupational Safety and Health
- Advise improvements concerning with Health, Safety and Environment matters
- Liaise closely with all stakeholders concerning the effectiveness of Grievance Redress Mechanisms, particularly during the construction stage and
- The results of the audits are to be disclosed to the public.

Environmental Management Plan is shown in **Table 8.1**.

8.2.6 Contractors' Commitments

The contractors working for YCP will abide by the following Terms and Conditions of Licensed Contractors for Construction Works

1. Duties

- (a) Construction of building in accordance with the confirmed plan.
- (b) Arrangement for grant of building construction permit

- (c) For grant of Building Completion Certificate after completion of the building
- (d) Undertaking for repairing and compensation to the damage caused to the street, drainage, buildings and neighboring due to building construction.
- (e) To abide by the prescribed conditions under rules and regulations.

2. Exercising Power

- (a) Liable to submit for construction of all types of building including departmental buildings.
- (b) Liable to arrange for grant of Building Completion Certificate and use of completed buildings.
- (c) Liable to submit for grant of alteration of the plan.

3. Conditions

- (a) The licensed contractor shall abide by the construction of building for himself or another landlord as follows;
 - (1) Prescribed papers and plans shall be submitted completely and agreement made between landlord and the contractor shall also be attached with/ Besides, and undertaking stating the number of buildings under construction and location shall be attached with.
 - (2) Undertake for all construction works from start till end.
 - (3) To arrange for hiring of Licensed Supervision Engineer and Licensed Engineers and Work Site Engineers.
 - (4) All payable taxes for construction shall be paid. If necessary, the penalty for advance construction shall be paid.
 - (5) Underground check, information, and documents for clarification demand further should be submitted in time.
 - (6) If there old building on the construction site to apply for demolitions in advance or attached with building application.
- (b) In continuation of building work after the grant of a permit, to abide by the following conditions.
 - (1) To arrange for construction in accordance with confirmed plans and building standardization clearly.
 - (2) In the construction of a building, to exactly abide by the directions of inspection Engineer assigned by licensed building engineers or Licensed Engineer (or) Architectural Engineer (or) Engineering Department (Building).

- (3) If needed to construct deferring with a confirmed plan, it shall carry out with the prior permission of the Engineering Department (Building).
- (4) If demanded by Engineering Department (Building), to arrange surveying equipment ready for the sinking of earth, an abbreviation of earth or disformation of earth.
- (5) In laying the foundation for building permitted to erect full area, to arrange a complete program not to cause damage to the whole or any part of the building.
- (6) If there any damage caused to a building or its part or environment adjacent to the construction site, to undertake to make compensation to the said damages.
- (7) If desirous to make the height of platform or repair adjacent to the frontage of the building under construction or desirous to use drainage or B.D.S at the front and rare side of the building, it shall be done with the prior permission of the Engineering Department (Road & Bridge).
- (8) If desirous to make repairing of water pipeline, sewerage tanks or sanitation line owned by Yangon City Development Committee, it shall be done with the prior permission of the Engineering Department (Water and Sanitation) to erect sufficient sewerage tank systemically for use of residents who will be residing at the constructed building.
- (9) The following papers and index books shall be kept ready for inspection in the work site any time.
 - (aa) Building Construction Permit (Copy)
 - (bb) Schedule of implementation of building work
 - (cc) Monthly progress report
 - (dd) Inspection record of a licensed building engineer, a licensed engineer, and regional inspection engineers.
 - (ee) Work Site record.
 - (ff) Inspection record for concrete slab
 - (gg) Maintenance record of a portion of the building caused damage
 - (hh) Inspection record of land capacity.
 - (ii) Testing record of piling work
 - (jj) Testing record of cement, iron and raw.
 - (kk) Testing record of a concrete cubic block.
 - (ll) Testing record of reinforced concrete and steel.

- (mm) Testing record of reinforced steel.
- (10) In connection with the quality of construction materials, the arrangement shall be made to enable to make necessary testing by the technician at the prescribed work site or laboratory.
- (11) Advance precaution arrangement shall be made not to occur accident or dangerous to the construction site. If there any injury due to an accident, the licensed contractor shall only be responsible.
- (12) If unable or desirous to continue the construction of any building under construction, or if the landlord desirous no longer to continue the work with the original contractor, the landlord or the contractor shall inform to Engineering Department (Building) one month in advance. When the said constriction of the building work is transferred to the landlord or any other contractor, it shall carry out the building engineering work with the prior permission of the Engineering Department (Building).
- (13) If there any dispute arises with the landlord during the construction period, it shall be submitted in writing to the Engineering Department (Building) in advance.
- (14) If desirous to terminate or change of any licensed building engineer during the construction period, it should ask for confirmation sumitting to Engineering Department (Building) in writing within one week.
- (15) On completion of the building, it shall be submitted with complete and prescribed documents for grant of Building Completion Certificate within (14) days. In connection with the said arrangement, it shall undertake to make payment of prescribed tax and penalty in a lump sum. All documents shall be attached in applying for Building Completion Certificate after completion of the building.
- (16) To keep full-time work-site engineer and the licensed engineer shall undertake for supervision.
- (17) A licensed engineer and work-site engineer shall make a sign in the Log Book for daily implementation situation.
- (18) If restarted the work after suspension due to any reason, Engineering Department (Building) shall be informed in advance.

4. General

- (a) The licensed building contractor shall return the license if desirous no longer to continue the building works. As the contractor license period is for (1) financial year only, the license renewal shall be made within (60) days on payment of the prescribed annual fee. In failure, two times of annual fee shall be paid a penalty. In failure to make regular payment of annual fee, and desirous to re-continue the building construction work, two times of total annual fee for the breached period shall be paid.
 - (b) To submit an exact and correct list of buildings under construction once in six months.
 - (c) Do not make mortgage, lease, or transfer in any way of a contractor license. If found mortgaged, leased or transferred in any way, contractor license and work insurance money shall be confiscated by Yangon City Development Committee.
 - (d) If the contractor license holder is desirous not to carry out as the contractor, it is not allowed to make re-application within the said financial year though he is allowed to withdraw insurance money.
5. To exactly abide by the above-mentioned duties, exercising power and conditions and also existing law, regulation, and order, notification, directive, decision and rules and regulations prescribed from time to time. In failure, action will be taken as to the bond made under Yangon Municipal Act Schedule (1), Chapter (6) and Contract Regulations (5).

Table 8. 1 Environmental Management Plan

Environmental Management Action Plan

Issue	Location	Mitigation Measures	Residual Impact	Time Frame	Supervised/ Approved by
Construction Phase: In this phase, the activities is concerned with laying out foundation works , concrete works, for example, earth moving, operation of bored piles, construction of hotel and office building, construction of temporary site office, temporary accommodation for construction workers, guard post, generator house, tower cranes, transportation of equipment, construction materials and people.					
Excavation for Basement	YCP Site	<ul style="list-style-type: none"> • Soil excavation will be carried out according to the plan and cut and fill must be done with great care. • YCDC will be contacted for final disposal of excess excavation material • Area of exposed soil will be monitored during periods of high rainfall (rainy season). 	Minor	Construction period	Construction company supervisor/ HSE Coordinator YCP
Air Quality	YCP Site	<ul style="list-style-type: none"> • The daily inspection will be done to ensure spraying water along the traffic routes inside the YCP site using water bowser for spraying water to suppress dust generated from the site due to vehicles carrying construction materials. • During the exist from the construction site, vehicle wheels have to be cleaned to get rid of dust. • Daily monitoring will be done to ensure smooth traffic flow along the Shwedagon Pagoda road • The number of trips will be optimized by heavy-duty vehicles on the road by proper planning • The consumption of fossil fuels will be controlled daily. (diesel, petrol) • Vehicle speed will be controlled in the premises of the 	Minor	Construction period	Construction company supervisor/ HSE Coordinator YCP

Issue	Location	Mitigation Measures	Residual Impact	Time Frame	Supervised/ Approved by
Construction Phase: In this phase, the activities is concerned with laying out foundation works , concrete works, for example, earth moving, operation of bored piles, construction of hotel and office building, construction of temporary site office, temporary accommodation for construction workers, guard post, generator house, tower cranes, transportation of equipment, construction materials and people.					
		project site <ul style="list-style-type: none"> • A maintenance program of vehicles will be developed and followed up properly 			
Noise	YCP Site	<ul style="list-style-type: none"> • Periodic noise measurement will be conducted to find out the location of noisy areas and put signage where necessary • Operating heavy machinery will be avoided according to YCDC regulations • Material delivery will be ensured according to YCDC regulations 	Minor	Construction period	Construction company supervisor/ HSE Coordinator YCP
Vibration during piling operation	YCP Site	<ul style="list-style-type: none"> • When measured vibrations exceed the permissible limit (75dB. Vibration Law, Government of Japan), during construction operations, vibration mitigation measures will be applied at the most sensitive point of reception, such as buildings of cultural heritage value close to the construction site. • Bored pile will be used instead of driven pile which has low noise and vibration. 	Moderate	Construction period	Construction company supervisor/ HSE Coordinator YCP
Traffic Load	YCP Site and surrounding	<ul style="list-style-type: none"> • Transportation frequency will be controlled so as to reduce traffic congestion • Flagman will be assigned for assisting “Entry” to the construction site and “Exit” from the construction site 	Minor	Construction period	Construction company supervisor/ HSE

Issue	Location	Mitigation Measures	Residual Impact	Time Frame	Supervised/ Approved by
Construction Phase: In this phase, the activities is concerned with laying out foundation works , concrete works, for example, earth moving, operation of bored piles, construction of hotel and office building, construction of temporary site office, temporary accommodation for construction workers, guard post, generator house, tower cranes, transportation of equipment, construction materials and people.					
					Coordinator YCP
Material Storage	YCP Site	<ul style="list-style-type: none"> • A stockpile of construction material will be stored and kept fine-grained materials properly away from the drainage systems • Safe storage areas will be identified for diesel and engine oil/grease • Flammable materials such as fuels will be placed in a safe place with containment and "No Smoking Sign" posted at the entrance 	Minor	Construction period	Construction company supervisor/ HSE Coordinator YCP
Waste Disposal (Construction and Domestic Waste)	YCP Site	<ul style="list-style-type: none"> • YCDC will be contacted for proper disposal of construction waste such as excavated soil. • Domestic waste will be collected in appropriate receptacles and stored at designated sites at YCP. • YCDC will be contacted for final disposal of garbage on a daily basis so as to prevent from odor and stench at the project site. • YCDC will be contacted for hazardous waste disposal 	Minor	Construction period	Construction company supervisor/ HSE Coordinator YCP
Sewage Disposal	YCP Site	<ul style="list-style-type: none"> • Septic Tank System is in place at the site. The septic system must not be overloaded. YCDC will be 	Minor	Construction period	Construction company

Issue	Location	Mitigation Measures	Residual Impact	Time Frame	Supervised/ Approved by
Construction Phase: In this phase, the activities is concerned with laying out foundation works , concrete works, for example, earth moving, operation of bored piles, construction of hotel and office building, construction of temporary site office, temporary accommodation for construction workers, guard post, generator house, tower cranes, transportation of equipment, construction materials and people.					
		contacted for disposal of sludge for final disposal at their sewage treated facilities.			supervisor/ HSE Coordinator YCP
Landscape (Scenery)	YCP Site	<ul style="list-style-type: none"> Landscaping will be carried out before the completion of the construction phase 	Minor	Construction period	Construction company supervisor/ HSE Coordinator YCP
Occupational Health and Safety	YCP Site	<ul style="list-style-type: none"> Workers must not be exposed to accidental risks and injuries due to accidental falls from heights, injuries from operating hand tools and construction equipment, slip, trip and falls and abrasions and cuts from sharp edges and collapse of scaffolding among others Overseas Construction Work Health and Safety Voluntary Standard will be adopted. (FUJITA, 2009) 	Minor	Construction period	Construction company supervisor/ HSE Coordinator YCP
Infectious disease such as HIV/Aids	YCP Site	<ul style="list-style-type: none"> Health fit certificate from the Township Medical Office or authorized Private Health Care Centre of the Client will have to be submitted The nearest hospital will be contacted for serious cases 	Minor	Construction period	Construction company supervisor/ HSE Coordinator YCP
Employment	YCP Site	<ul style="list-style-type: none"> Employment opportunities will be created during the 	Positive	Construction	YCP

Issue	Location	Mitigation Measures	Residual Impact	Time Frame	Supervised/ Approved by
Construction Phase: In this phase, the activities is concerned with laying out foundation works , concrete works, for example, earth moving, operation of bored piles, construction of hotel and office building, construction of temporary site office, temporary accommodation for construction workers, guard post, generator house, tower cranes, transportation of equipment, construction materials and people.					
		construction operation <ul style="list-style-type: none"> • Short-term employment opportunities will be created during the construction period. 		period	Management

Issue	Location	Management Action	Residual Impact	Time Frame	Supervised/ Approved by
Operation Phase: In this phase, the activities that will have an impact on the environment is concerned with resource consumption, emission to air, wastewater, hazardous materials management, waste, and noise.					
Water Consumption	YCP Site	Water Conservation <ul style="list-style-type: none"> • Water use will be controlled for activities such as housekeeping, laundry, facilities pool, cooking and grounds maintenance • The total water usage will be restricted in hotels in line with the permit of YCDC • Usage of underground water will be controlled from tube wells • The use of total water in offices will be restricted in line with the permit of YCDC 	Moderate	Operation Period	YCP Management /HSE Coordinator
Energy Consumption	YCP Site	Energy Conservation <ul style="list-style-type: none"> • Occupancy sensors will be used • High-energy light bulbs will be used (e.g., compact fluorescent light bulbs) 	Moderate	Operation Period	YCP Management /HSE Coordinator

Issue	Location	Management Action	Residual Impact	Time Frame	Supervised/ Approved by
Operation Phase: In this phase, the activities that will have an impact on the environment is concerned with resource consumption, emission to air, wastewater, hazardous materials management, waste, and noise.					
		<ul style="list-style-type: none"> High-efficiency refrigerators will be used Exhaust system with variable fan speeds will be used			
Land Subsidence	YCP Site	<ul style="list-style-type: none"> Use of water will be controlled by installing water meters Regular measurement and recording of principle flows will be done within YCP not to overuse the water resources 	Minor	Operation Period	YCP Management /HSE Coordinator
Wastewater Treatment	YCP Site	<ul style="list-style-type: none"> Sewage generated will be collected at the dedicated site. Wastewater will be treated properly using OJI Wastewater Treatment System. If not properly treated, there will be some problem causing foul odor and stench which is not desirable. 	Moderate	Operation Period	YCP Management /HSE Coordinator
Solid Waste Disposal	YCP Site	<ul style="list-style-type: none"> Non-hazardous waste will be collected at 3 dedicated storage locations on site (144.38 m²) and disposed of daily by contacting YCDC for final disposal such that the site is free from foul odor and stench. Non-hazardous waste will be managed properly on site such that unsanitary conditions including fly and vermin infestation as well as odor and stench that will pose unhealthy situations could not happen Hazardous waste will be collected in dedicated receptacles and when enough collected; it will be disposed of properly at YCDC hazardous waste disposal site 	Minor	Operation Period	YCP Management /HSE Coordinator

Issue	Location	Management Action	Residual Impact	Time Frame	Supervised/ Approved by
Operation Phase: In this phase, the activities that will have an impact on the environment is concerned with resource consumption, emission to air, wastewater, hazardous materials management, waste, and noise.					
Traffic Load	YCP Site and Surrounding Areas	<ul style="list-style-type: none"> Adequate parking space will be considered for the vehicles visiting the hotel and also vehicles from the office tower. Traffic movement will be controlled to reduce traffic congestion at Shwedagon Pagoda road which is already congested with normal traffic Carpooling, ferry and other transportation systems such as Airport Shuttle Bus are measures to reduce private car usage along the Shwedagon Pagoda Road. In the long run, roads will be widened such as Shwedagon pagoda and U Wisara road and on the southerly side of YCP and another road which comments between Pantra Street and new site driveway at a westerly side of YCP. Traffic warning signs will be posted for road users indicating “Reduce Speed” at road intersections of YCP The ring road will be constructed inside YCP compound heading for U Wisara road to release traffic congestion 	Moderate	Operation Period	YCP Management /HSE Coordinator
Socio-economic Conditions	YCP Site	<ul style="list-style-type: none"> YCP will provide accommodation requirements of 5-star quality and modern facilities at downtown Yangon with modern landscape and aesthetics Job opportunities will be created to cater to these hotel 	Positive	Operation Period	YCP Management /HSE Coordinator

Issue	Location	Management Action	Residual Impact	Time Frame	Supervised/ Approved by
Operation Phase: In this phase, the activities that will have an impact on the environment is concerned with resource consumption, emission to air, wastewater, hazardous materials management, waste, and noise.					
		and office complex in future <ul style="list-style-type: none"> • Job opportunities will be created for a long-term basis • Parking space provided at YCP will help solve the problem of parking space problem in downtown Yangon which will provide a better urban landscape and aesthetics vision in the downtown Yangon 			

Issue	Location	Management Action	Residual Impact	Time Frame	Supervised/ Approved by
Decommissioning Phase: In this phase, the activities that will have an impact on the environment is concerned with, air quality, noise and vibration, and demolition waste.					
Air Quality	YCP Site	<ul style="list-style-type: none"> • Daily monitoring will be done to ensure smooth traffic flow along the Shwedagon Pagoda road • The number of trips will be optimized for vehicles/trucks which are used for demolition works on the road • The consumption of fossil fuels (diesel, petrol) will be controlled daily • Vehicle speed will be controlled in the premises of the project site 	Minor	Decommissioning Phase	Demolition Company Supervisor

		<ul style="list-style-type: none"> • Energy use will be monitored during the demolition period • A maintenance program of vehicles will be developed and follow up properly 			
Noise and Vibration	YCP Site	<ul style="list-style-type: none"> • Periodic noise measurement will be conducted to find out the location of noisy areas and put signage where necessary • PPE will be provided particularly hearing protection devices for those working in noisy areas • Operating heavy machinery will be avoided according to YCDC regulations • Materials removed will be ensured according to YCDC regulations 	Minor	Decommissioning Phase	Demolition Company Supervisor
Demolition Waste	YCP Site	<ul style="list-style-type: none"> • Non-hazardous waste such as scrap wood and metals, concrete blocks, demolition materials, etc., will be collected and YCDC will be contacted for final disposal • The waste material that can be recyclable will be identified • YCDC will be contacted for hazardous waste disposal firm for final disposal of hazardous waste. 	Minor	Decommissioning Phase	Demolition Company Supervisor

Budget Allocation for Management Plan is shown in **Table 8.2**.

Table 8. 2 Budget Allocation for Implementation of Management Plan

Sr.	Activity	Responsible Person	Time Frame	Expected Cost (USD/annum) (Tentative)	Remark
Construction Phase					
1.	Appointment of HSE Coordinator/HSE Assistant (2)	YCP	3 years	18,000	
2.	Excavation for Basement (final disposal of excess materials to YCDC)	YCP	3 years	2,560	Contact YCDC
3.	Traffic Signs	YCP	Once every 3 years	2,500	
4.	Construction of secondary containment for the storage of diesel and engine oil with no smoking sign attached	YCP	Once every 3 years	2,500	
5.	Waste Disposal (construction wastes)	YCP	3 years	2,500	
6.	Sewage Disposal	YCP	Every year	1,000	
7.	Landscaping	YCP	Once	10,000	
8.	Occupational Health & Safety (On Job Training)	YCP	Once a year for 3 years	2,000	
	Total			41,060	
Operation Phase					
1.	Appointment of HSE Coordinator/ HSE Assistant (2)	YCP	30 years	18,000	
2.	Control of Resource Consumption	YCP	Appropriate Time	1,500	Contact YCDC
3.	Waste Collection (Purchase of dedicated receptacles for Hazardous – Non-Hazardous Wastes)	YCP	Appropriate Time	5,000	
4.	Waste Disposal Charges (Hazardous - Non-Hazardous)	YCP	Appropriate Time	1,000	Contact YCDC
5.	Traffic Load (Traffic Warning Signs)	YCP	Appropriate Time	5,000	
6.	Occupational Health & Safety (On Job Training)	YCP	Appropriate Time	2,000	
	Total			32,500	
Decommissioning Phase					
1.	Demolition Waste	YCP	Once	5,000	Within 3 months
	Total			5,000	

8.3 Environmental Monitoring Plan

Monitoring of the environmental and social impacts in the receiving environment is important in evaluating the effectiveness of the mitigation plan, so as to comply with the existing regulatory measures. During the construction and operation phase, monitoring will be undertaken to ensure the proposed mitigation measures for negative impacts as well as enhancement measures for positive impacts are properly implemented.

The monitoring parameters are selected based on impacts identified in the construction, operation and decommissioning phases of the YCP. The parameters determined will reflect the effectiveness of the mitigation measures and general environmental performance of the project. Monitoring of the parameters will be carried out at the various stages of the project as follows:

Construction Phase: To monitor pollution levels that exist during the construction activities

Operation Phase: To determine the impacts that might arise from the operation of hotel and office complex activities

Decommissioning Phase: Decommissioning is assumed to have the same impact as the construction phase and may entail parameters similar to those at the construction phase.

8.3.1. Environmental Monitoring Reports

The Project Proponent shall submit monitoring reports to the Ministry not less frequently than every six (6) months, as provided in a schedule in the EMP, or periodically as prescribed by the Ministry.

Monitoring Parameters of EMP is shown in **Table 8.3**.

Table 8. 3 Monitoring Parameters

Item	Environmental Concerns	Parameters	Frequency	Location	Responsible Party	Remarks
Construction Phase						
Environmental Impacts						
1.	Ambient air quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃	Once/yr	One point at YCP	HSE YCP/Third Party	
2.	Noise Level /Vibration	Noise Level dBA	Once/yr	Major noise sources at construction site	Ditto	
3.	Water Quality	pH, , BOD5, COD, , Oil and Grease, Total Suspended Solid and Total Coliform Bacteria Total nitrogen, Total Phosphorous	Once/yr	Water quality from the tube wells	Ditto	
4.	Domestic Waste Disposal,	Waste segregation and collection system	Daily	Disposal of domestic waste	YCP/YCDC	
5.	Septic tank and sewage system	Waste transfer notes	Monthly	Sludge from the septic tank	YCP/YCDC	
Socio-economic/Occupational Impacts						
6.	Employment Opportunities	Percentage of local construction workers	Appropriate Time	Project Site: Site inspection	HSE YCP	
7.	Population influx	Number of people	Yearly	The project site, Local Census	Ditto	
Operation Phase						
Environmental Impacts						
1.	Air quality	PM ₁₀ , PM _{2.5} , NO ₂ , SO ₂ , VOC, O ₃	Yearly	One location at Y Complex	YCP/Third Party	
2.	Water Quality	pH, , BOD5, COD, , Oil and Grease, Total Suspended Solid and Total Coliform Bacteria Total nitrogen, Total Phosphorous	Yearly	Water from 5 tube wells	Ditto	
3..	Domestic Waste Disposal	Waste segregation and collection system	Daily	Disposal of domestic waste	YCP	Disposal at YCDC site
4.	Effluent Water	pH, BOD5, COD,	Yearly	Effluent	YCP	Disposal

Item	Environmental Concerns	Parameters	Frequency	Location	Responsible Party	Remarks
		Oil and Grease, Total Coliform, Bacteria, Total Nitrogen, Total Phosphorous, TSS		water from YCP		at YCDC wastewater treatment site
Socio-economic/Occupational Impacts						
5.	Employment Opportunities	Percentage of local employees	Yearly	Project Site: Site inspection	YCP	
6.	Safety and Health Risk	Number and type of safety equipment provided. Health and sanitation facilities in YCP. Signage PPE, Fire evacuation, emergency plan, Personnel hygiene standards, health care services, and facility	Yearly	Project site: number of safety facilities provided	YCP	
7.	Accidents	Safety training for workers, accident reports	Half-yearly	Project site; No lost time accidents	YCP	
Decommissioning Phase						
Environmental Impact						
1.	Air quality	PM ₁₀ , PM _{2.5} , NO ₂ , SO ₂ ,	Once	One point each at YCP site	YCP	
2.	Noise level/Vibration	Noise level dBA	Once	At the premises of YCP Site	YCP	
3.	Domestic Waste Disposal,	Waste transfer notes		Disposal of domestic waste	YCP	
4.	Effluent water	pH, BOD ₅ , COD, Oil and Grease, Total Coliform, Bacteria, Total Nitrogen, Total Phosphorous, TSS	Yearly	Effluent water from YCP	YCP	Disposal at YCDC site

8.4 Occupational Health and Safety Plan (OHS Plan)

Purpose:

To provide a maximum safe and sound working environment for the workers on site

Scope:

This Occupational Health and Safety Plan is intended to implement during the construction, operation and decommissioning phases of YCP.

This plan will include the following aspects:

- Health Care Services for Employees
- Personal Protective Equipment
- Safe working inside YCP site

i) Health Care Services for Employees

- Perform pre-medical checkup for employees at the time of employment
- Provide appropriate first aid facilities at YCP
- Organize first aid training for all employees.
- Appoint medical officer to take care of any kind of sickness at worksite and treatment of employees
- Physical injuries may occur during the construction and maintenance activities such as slips, trips, and falls, impact with moving machinery such as construction vehicles, bored pile operation, etc.

ii) Personal Protective Equipment

- Excavators, dumpers, dozers and other automated equipment that requires an operator has to be equipped with air-conditioned, dustproof and sound-proof cabs, if possible.
- Use of personal breathing protection (e.g. respirators should be provided).
- Workers may be exposed to excessive noise levels during the construction phase. Noisy areas should be identified at the project site and posted with signage to give the warning to wear appropriate PPE (ear plugs, ear muffs).

iii) Safe Working inside the YCP Site





One of the safety hazards related to construction activities is an accidental hazard. This can be placed in a safe condition by adopting the following measures for prevention of accidental hazards:

Preventive and protective measures have to be introduced for YCP for safe working inside the project site:

- Eliminate hazards by removing the activity from the work process. (e.g., substituting with less hazardous chemicals)
- Controlling the hazard at the source through the use of engineering controls.(e.g. ,exhaust ventilation, acoustic insulating)

- Minimizing the hazard through designing of the safe working environment (e.g., job rotation, training provided for safe working procedures, limiting work exposures or work duration)
- Provision of appropriated personnel protective equipment (training on proper use and maintenance of PPE) as follows:

Table 8. 4 Types of Personal Protective Equipment

Required Personal Protective Equipment	Functions of PPE	Part of the Body to be protected	Features and characteristics of PPE
Operation Phase			
Dust respirator, Safety Glasses, earplugs, gloves, reflective clothing, and safety footwear	Protection from fine particles, bright light, nuisance, allergic, visibility of employees, falling objects and etc.	Head, Nose, mouth, Eye, Ear, Hand, Body and Foot	
Dust Goggles	Protection from dust, fine particles, smoke, and vapors	Nose and mouth	
Dust Mask			
Latex Glove	Protective allergic from hazardous materials and other related materials	Hand	

8.5 Emergency Response Plan

Purpose:

To assist the Emergency Response Plan for construction and operation phases of YCP.

Scope:

To overcome the unforeseen event that has a potential to cause environmental damage such as earthquake, landslide, soil erosion, water pollution, oil spillage or accidents such as disruptor shutdown of operations and physical equipment damage or environment.

In order to effectively manage, such incidents the following process should be considered.

- Planning and preparing an emergency
- Organizing a response to the emergency
- Recovery from an emergency

The following steps will be necessary for developing an emergency plan:

- Establish an Emergency Response Management Team. There should be a competent leader for developing a response plan.
- Identify hazards, probability and assess potential impacts for YCP activities
- List an inventory of emergencies occurred:
- Existing facilities
- The area adjacent to the facility
- The community close by

In addition, the following need to be considered for YCP

- Fire
- Earthquakes

The following factors also are considered;

- Extreme weather such as heavy rain,
- Road accidents

Develop training programs and assign the team leader to be responsible for managing the emergency training program. The training plan should include the following:

Training may include the use of fire extinguishers, evacuation drills, disaster exercises, first aid, and CPR.

Training matrix has to be prepared to meet the following requirements:

- Who will do the training
- Who is to be trained
- What training is required for all employees
- What training is required for specialist employees
- What training is required for contractors and their employees
- What orientation is required for visitors
- Training for the nearby communities
- How to evaluate training and re-training interval
- The method of storing and location of training records

Effective communications are essential for reporting emergencies to first response teams, employees, neighborhood and the community. An Emergency Response Plan has to be prepared for effective communication especially during the crisis.

In order to alert the people about the crisis an alarm system or other forms of communications have to be used to reliably alert residents, visitors and workers to an emergency. There should be a dedicated muster point and all employees should know that they should assemble at the muster point when the alarm is sounded.

8.6 Fire Management Plan

Purpose:

To keep informed about the fire and to keep in the ready state for the residents and visitors

Scope:

To be vigilant in case of fire and how to use fire extinguishers to put out the fire in the early stages

Extinguishing a fire at the source is effective that can limit damages. Apartment and Hotel at YCP have to keep fire extinguishers at easy access and in the ready state for residents and visitors. They have to be informed how to use them effectively, in case of fires in the early stages which can be extinguished at once.

Fire Services Department, Ministry of Home Affairs had checked the YCP building design and delivered the 16 instructions to be followed during the construction phase. When the construction was completed in line with the instructions, YCP has to apply for the Fire Certificate to the Fire Services Department which they will provide a fire certificate after inspection. During the construction phase Fire Extinguishers are placed near standby generators, welding machines and machine working and fuel storage areas. As the quantity of fuel storage is meant for standby generators is low and the area is well fenced the risk of fire is very low. In order to prevent spills, concrete flooring is made with containment. At the entrance no-smoking sign and warning signs are posted.

Fire extinguishers

Fire extinguishers are very effective life-saving tools if they are used properly. Fire extinguishers come in different varieties. It is important to choose the right kind of extinguishers for putting out different types of fire. The following symbols should be checked on the labels of the fire extinguisher. (See **Figure 8.1**)



Figure 8. 1 Components of a fire extinguisher

The following are the type of fires that may occur at YCP in case of accidental fire:

Table 8. 5 Types of Fires

A	B	C	D	E
Fire that is burning from wood, rubbish, paper, and other ordinary fuels.	Fire that involves flammable liquids, such as petrol, gasoline, and paints.	Fire that involves electrical equipment, transformers, and electrical appliances.	Fire that is burning from combustible metals such as magnesium and titanium.	Fire stemming from animal/vegetable fats, etc.

The following chart indicates the extinguisher types and how to choose the extinguishers for different types of fire.








Extinguisher		Type of fire					
Color	Type	Solids (wood, paper, cloth, etc.)	Flammable Liquids	Flammable Gases	Electrical Equipment	Cooking Oil & Fats	Special Notes
	Water	Yes	No	No	No	No	Dangerous if used on liquid fires or live electricity.
	Foam	Yes	Yes	No	No	Yes	Not practical for home use.
	Dry Powder	Yes	Yes	Yes	Yes	No	Safe use up to 1000 voltages.
	Carbon Dioxide (CO ₂)	No	Yes	No	Yes	Yes	Safe on high and low voltages.
	Halon	Halon extinguishers are not recommended due to their toxic nature and cause damage to the environment. Existing halon extinguishers will no longer be re-filled and should be replaced with a suitable alternative.					

Figure 8. 2 Types of Extinguisher

How to Use a fire extinguisher properly

Remember the acronym PASS.

	<p>P – Pull the pin- the pin releases a locking mechanism and will allow you to discharge the extinguisher.</p>
	<p>A - Aim at the base-not the flames. This is important- in order to put out the fire, you must extinguish the fuel.</p>
	<p>S – Squeeze the trigger – this will release the extinguishing agent in the extinguisher. If the handle is released, the discharge will stop.</p>


	<p>S – Sweep from side to side – using a sweeping motion, move the fire extinguisher back and forth until the fire is completely out. Operate the extinguisher from a safe distance, several feet away, and then move towards the fire once it starts to diminish. Be sure to read the instructions on your fire extinguisher different fire extinguishers recommend operating them from different distances.</p>
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Table 8. 6 Safety Tips on Fire

Do's to prevent a fire	Don,ts to prevent a fire
<ul style="list-style-type: none"> • Keep fire extinguishers in the project site. • Keep a separate water tank for fire extinguishing. . 	<ul style="list-style-type: none"> • Do not let children play with fire. • Do not use lamps, candles, etc. near bamboo sheet/ wooden partitions or mosquito nets. • Do not pile hay or corn stems near houses. • Do not use petrol for lighting or start a fire. • Do not store fuel and fuel oil near the fireplace. • Do not use lighter or candlelight near fuel oil. .

8.7 Oil Spill Management Plan

Purpose:

To contain and clean up the spills if it occurs in a safe and effective manner

Scope:

To attend the spills immediately so as not to threaten the public

Any oil spills regardless of size must be contained and cleaned up in a safe and effective manner. Spills that can threaten public health or the environment will need to be attended immediately. In order to determine the proper response procedures, type of discharges can be classified into 'incidental' and 'non-incidental' depending on the following characteristics:

Table 8. 7 Oil Spill Response Criteria

Incidental discharges	Non-Incidental discharges
The discharge is small (e.g., less than 20 gallons)	The discharge is large enough to spread beyond the immediate area.
The discharge can be easily contained	The discharge cannot be contained
The discharge is unlikely to reach a navigable waterway, storm sewer or sanitary drain	The discharge may reach a navigable waterway, storm sewer, or sanitary drain
Cleanup procedures do not pose a health or safety hazard	The discharge requires special equipment or training to clean up
Proper response equipment is available for a safe clean up	The discharge poses a hazard to human health or the environment

8.7.1 Steps for Oil Spill Response

If the responder comes across a potential oil release, follow the following steps:

- **Incidental Spills**

1. **Secure the site**, for protecting the health and safety of personnel responding to the release and the community close by.
2. **Control and contain the spill** using nearby absorbent booms, socks or soil.
3. **Notify the HSE Coordinator**
4. **Clean up the spill**- record the quantity of spill
5. **Complete the Spill Incident Report** –to provide accurate information and organize training sessions to prevent future spills.

- **Non-Incidental Spills**

1. **Secure the site**, for protecting the health and safety of personnel responding to the release and the community close by.
2. **Contact the HSE Coordinator** and decide if the site personnel can control and contain the spill effectively.
3. **Contact the nearest Fire Department** for major spills to help assist with the control and containment of the release.
4. **Control and contain the spill** using absorbent booms, socks, and soil until the fire department arrives. Focus on storm sewers and nearby waterways.
5. **Clean up the spill**-Oil and lubricant reclaimed after the spill will be recorded on the Oil Spill Disposal Record.
6. **Complete the Spill Incident Report**- to provide accurate information efficiently to the spill response authorities.

8.8 Earthquake Management Plan

Purpose:

To promote safety, minimize impact and assist the speedy recovery in case of an earthquake

Scope:

As the project location is in the earthquake zone it will be necessary to cater the hazard if it happens

The Yangon City is in the vicinity of the southern section of the Sagaing Fault, which has not been active in the past 50 to 75 years indicating that the faults may be under accumulating stress increasing the potential for an earthquake to occur. Sagaing Fault has been the originator of a large proportion of destructive earthquakes in Myanmar. Yangon gets 2.0 g seismic acceleration in term of gravity force. The Project area is also located in an earthquake

zone and therefore the construction design needs to cater for this hazard with adequate planning on emergency response procedures.

As mentioned earlier, Yangon City is situated in Earth Quake Zone II and is considered to be situated in earthquake-prone areas. According to the earthquake incidents, from 2006 to 2014 earthquake events occurred in Yangon, in 2006, 2007, 2008, 2010, 2013 and 2014, except 2009, 2011 and 2012. However, the events were classified as slight as the scale of the magnitude ranges from 3.0 to 4.4.

Business owners, employees, residents, and guests at YCP must be aware that once the earthquake event has occurred, not only the physical and emotional impact on earthquake could have on their lives, but also of the economic impact of lost productivity in their workplace if it is serious.

The following emergency response program has offered to encourage and support the development and implementation of the programs and procedures with appropriate training and preparation needed to survive a damaging earthquake.

The intention of the following emergency response program is to promote safety, minimize impact and assist the speedy recovery. Planning has to be aimed at ensuring that employees, facilities and business activities including the residents, visitors and staff are well prepared to meet emergency conditions.

8.8.1. Dangers associated with Earthquakes

- Most casualties result from falling objects and debris or collapsing structures.
- Injuries are commonly caused by partial building collapse such as falling masonry, collapsing walls, falling ceiling plaster, etc.
- Falling glass from broken windows
- Falling cabinets, furniture, office machines and appliances
- Fires, broken gas lines, broken mains, etc.
- Fallen power lines

8.8.2. Earthquake Safety Guidelines

- Remain calm: sound usually precedes earthquake motion by a small split second.
- If you stay calm, you will better able to assess your situation.
- The rolling and roaring may terrify you, but unless something falls on you, the sensations probably don't hurt you.
- Try talking yourself through the violent motion phase. This will release stress and others may take courage and follow your reasoned restraint.
- Think through the consequences of any action you plan to have.

If you are Indoors: Stay there. If you are in danger:

- Get under a sturdy table, desk or bed.

- Brace yourself in an inside corner away from the windows.
- Move to the inner wall or corridor.
- In an apartment building, the safest place is by the reinforced core of the building, which is located by the elevated wall.
- Watch for falling objects-plaster, bricks, light fixtures, pots, and pans, etc.
- Stay away from windows, sliding glass doors, mirrors.
- Stay away from tall shelves, cabinets and other furniture which might slide or topple over.
- Grab anything handy (blanket, pillow, etc.,) to shield your head and face from falling debris and splinting glass.
- Do Not Rush Outside. Stay on the same floor that you are on. Stairways may be broken and exits jammed with people.
- Do not use elevators as the power for elevators may go out and leave you trapped.
- If for safety reasons, you must leave the building, choose your exits as carefully as possible.

If You Are Outside: stay there. Move away from the building, garage, walls, power poles and lamp posts. Electric power lines are a serious hazard- stay away from fallen lines. If possible proceed cautiously to an open area.

If You Are In A Moving Car: stop. Stop as quickly as safety permits in the best available space. Stay in your car. Do not stop where building can topple down on top of you. It is a fairly safe shelter from which to assess your situation.

Avoid Fallen Power Lines: The possibility of encountering fallen live wires is great during and after the earthquake. If you are on foot, make a wide path around the wires. If you are in the car and live wires have fallen across the car, remain where you are. Your car is usually well insulated and will protect from electric shock. Never assume that downed power lines are dead.

After an Earthquake

Within the first several minutes:

- Remain calm. Don't panic. Try to calm and reassure others. Stop and take time to think. Wait until all motion has stopped. Do not run downstairs or outdoors. Be prepared from additional shockwaves.
- Do not use lighters, cigarettes or turn on electrical switches. Flashlights are one of the best light sources after a damaging earthquake. Proceed with extreme caution.
- Protect hands and feet from broken glass or debris. Keep head and face protected (hard hat, blanket, table cloth, etc.)
- Make a quick check for injuries or trapped people. Provide emergency first-aid if needed. Do not try to move seriously injured persons unless they are in immediate danger from further injury.

- Turn off all appliances and office machines. Extinguish all open flames. Check power lines and cords. If a problem exists in electrical lines or gas lines the mains should be shut off.
- It may be necessary to draw a moderate amount of cold water in bathtubs and sinks and other containers, in case of service should be disrupted.

During the Next Several Hours

- Do not operate electrical switches, appliances or open-flame equipment if gas leaks are suspected. Sparks or flames can ignite gas from broken lines causing an explosion.
- Tend further to injured or trapped persons. Try to get help if necessary. If a person is trapped and you can free him without injury to yourself, remove debris piece-by-piece starting with the top of the pile.
- Be prepared for aftershocks - they are weaker than the main shock but can cause additional damage and psychological trauma. Watch out for other possible dangers, which may follow an earthquake, such as fire, flood, landslide or TSUNAMI (tidal wave).
- Turn on a battery radio to receive disaster instructions. Use telephones only to report extreme emergency situations.
- Inspect your work area carefully for structural damage. Carefully open exit doors - they sometimes jam. The initial quake may damage the structure and an aftershock could knock down weakened walls. Use extreme caution when moving around in damaged areas - they may collapse without warning. Check to see that sewage lines are intact before flushing toilets.
- Try not to get back home until the government authorities say it is safe, which will be when the worst fires are under control and the streets have been cleared. This may happen quickly or it may take longer (perhaps 72 hours or more). You have to advise your family that in the event of a major earthquake you may be retained at work. When possible notify your family about your well-being.
- Don't go outside sightseeing. Keep the streets clear for the passage of emergency vehicles. Your presence might hamper rescue and other emergency operation.

8.9 Energy Saving Plan

Purpose:

The reduce the extensive energy consumption which may lead to Climate Change

Scope:

The extensive energy consumption is detrimental to the environment as it contributes to the greenhouse gas emissions that cause climate change

The energy source of YCP is through the national grid supplemented by standby diesel generators. Generally, the energy consumed in hotel industry like YCP is for its operation and customer satisfaction. The extensive energy consumption is detrimental to the environment as it contributes to the greenhouse gas emissions that cause climate change. Hence, it is essential to reduce the use of energy in YCP without compromising guests comfort. The quality of human life relies on clean and safe energy. To assure a continuous flow of energy and operate the business at minimal cost, YCP needs to encourage conserving electricity by practicing green technologies. Green technologies include the use of energy efficiency and renewable energy to alleviate YCP impact on the environment. Energy efficiency means using less energy for YCP operation without compromising standard guest service. Energy efficiency saves energy costs, decreases GHG emissions and enhances the corporate reputation for reduced footprint on the environment. Primarily, it is an alternative to achieve sustainable energy at a low cost for hotel operation and preserve the quality of the environment.

8.9.1 Energy Management in YCP

The power utilization can be lowered by adopting strategies such as change of organizational practice with low or no cost. Implementation of energy efficient technologies will require capital investment and encouraging guest to consume low power in all their activities by supporting the efforts in minimizing GHG emissions. The energy efficiency is able to elevate the level of service of the YCP by lowering its energy consumption and cost of operation.

8.9.2 Reducing Energy Consumption in YCP

The electricity is considerably consumed by lighting, space conditioning (heating and cooling), housekeeping, and kitchen in YCP operating system. Lighting creates a comfortable, safe, relaxing and enjoyable environment for both staffs working on premises and guests stay in hotel rooms. A number of general best practices and measures can be applied for reducing energy consumption. These practices do not require a large investment, yet bring a noticeable improvement in energy management.

- Save energy by turning off lights in unoccupied areas
- Common areas must be vigilant around the clock when lighting is unnecessary or natural light is enough to turn lights off.
- Lighting controllers such as timers and photocells used in public areas should be well maintained and properly set for efficacy.
- The housekeeping in guest rooms and hotel premises may be carried out during day hours to make use of natural light.
- The housekeepers are advised to open curtains and blinds to allow natural light into the guest room while servicing
- Once a room is made up, curtains and blinds must be closed and make sure all lights turned off.
- Clean lamps and lighting fixtures regularly to ensure optimum efficiency.
- Reduce the number of lamps in areas where over lighting is apparent and
- Install task lighting where it is needed.
- The exterior and swimming pool area lighting must be turned off when not needed for safety and security reason.

Different kinds of heating, ventilation and air conditioning systems are used in YCP for guest comforts. If the occupancy level of the hotel is known these systems can be used efficiently to lower the energy consumption.

- The equipment such as ventilation, space cooling, and heating must be shut off when not required especially during off-hours or while facilities are closed.
- The timer switches and thermostats can be set to meet the minimum heating, ventilation and cooling loads.
- To keep energy consumption at a reasonable level, the kitchen staff should turn off the cooking appliances when not needed.
- The oven, grills, broilers, fryers and other equipment can be pre-heated before cooking according to manufacturer's instructions..
- To conserve energy in kitchen refrigeration it is necessary to keep the doors of cold stores shut all times.
- A refrigerator door must seal completely to keep kitchen air out. Placing food in refrigerator shelves as per manufacturer's instruction reduce energy consumption.
- The shelves should not be overfilled to allow air circulation throughout. Storing hot food in the refrigerator and freezer is not recommended as it increases energy consumption.

8.9.3 Installation of Energy Efficient Equipment

Lightning System

The hotels consume a lot of energy towards their lighting needs. Lighting is one of the best opportunities for reducing energy cost in YCP facilities. Lighting technologies help minimize the consumption of energy in large extent in hotel premises. The lighting improvement can be made possible through efficient lighting fixtures and improved lighting controls.

- The efficient lighting is obtained by installing energy saving lamps and ballasts with efficient fixtures.
- The most efficient fluorescent lamps with electronic ballasts are ideal for the hotel bathroom, corridor, front office, housekeeping, and kitchen lighting. The high-frequency electronic ballasts are 20 percent more efficient than electromagnetic ballasts.
- The inefficient standard incandescent light bulbs can be replaced with energy efficient compact fluorescent lamps (CFLs). The CFL uses up to 75 percent less electricity and lasts up to 10 times longer than the incandescent bulb.

8.10 Heating, Ventilating and Air Conditioning System (HVAC System)

The Heating, Ventilation and Air Conditioning (HVAC) system is a major energy user in YCP. The HVAC uses 70% of a hotel's total energy consumption.

- Use Chiller System for energy efficiency improvement in the Hotel Building
- For Office Building use Variable Refrigerant Volume (VRV) system.

- Use new chillers that are more efficient than traditional chillers as they have improved controls to optimize the chiller efficiency thereby saving operating costs.

Office Equipment

- Use flat screen monitors and laptops that are provided with energy saving equipment compared to CRT monitors and Desktop computers.
- Use copiers, fax machines, printers and scanners with energy efficient star labels attached to them.
- The energy star equipment perform tasks with less energy; enter sleep mode or power-down mode automatically when not in use;
- Reduce the paper cost of the copier and printer by enabling double-sided copying and printing.

8.10.1 Renewable Energy Technologies

YCP will during the construction phase use diesel generators and has already applied the energy from the National Grid which consists mostly of energy supply from hydropower which is renewable energy. The renewable energy sources can reduce the energy costs and also the GHG emissions of the hotel due to the following activities:

- Domestic Hot Water System (DHWS) used in hotels pumps cool water into the heater and then it passes to the insulated storage tank and provides both space heating, cooling and domestic hot water for the hotel.
- If possible solar heating should be used for the said purpose.

8.10.2 Staff and Guest involvement for Energy Saving Process

An in-service training program has to be offered for staff to conserve energy as follows:

- Train the technical and operational personnel in the areas of energy efficiency improvements in hotel operations and renewable energy technologies.
- Encourage staff to realize their responsibilities to save energy and reduce their impact on the environment.
- Involve guests in the hotel's energy efficiency plan.
- Let the guests know that they care for the environment and invite guests to participate in their effort to minimize their environmental footprint.
- Motivated guests to reduce energy use through display signage on energy.
- Give an opportunity by participating guests in improving the environmental friendliness of their stay

Due to the use of obsolete equipment and poor management and operation systems in practice, the hoteliers are facing huge energy bills. Managing energy efficiently will significantly lower the energy cost over time. The hotels can save up to 10-15 percent of the energy they consume through efficient operation and maintenance, building renovation and installation of energy efficient equipment. It is necessary to train the staff to improve their performance and raise awareness of the benefits of renewable energy technologies. It is also apparent that hotels require financial and practical support to install and use energy efficient equipment and renewable energy technologies.

The hotel industry relies on energy for its business operation and customer satisfaction. A large amount of energy consumed by the hotels has a negative impact on the environment and

human health. To help protect the environment from natural disasters YCP will adopt simple means to conserve energy and make use of renewable energy from the natural grid. The YCP can make use of the renewable energies for air-conditioning, space heating, and water heating. The renewable energy reduces the reliance on fossil fuel, lowers energy bills, minimizes the GHG emissions and provides clean sustainable energy. This alternative energy used in the hotel industry can also improve the reputation of the hotel in society and boost up the nation's economy. By protecting the environment, YCP can help promote that natural resources are sustained for the future generation.

8.11 Water Management Plan

Purpose:

Proper water management of the YCP so as not to constrain water use in the neighborhood

Scope:

Hotels are major water consumers because people tend to use more water when they stay at hotels than they do at home. It is estimated that water consumption in accommodation establishments at the international level to be 1.3 km³ per year.

Broadly defined, water quantity refers to the amount of clean water available for use while water quality refers to the safety and accessibility of water for human consumption. There are several reasons why the tourism industry should engage in effective water management practices. Growing tourist flows require a proactive approach to water issues through water management.

Hotel guests tend to have a “pleasure approach” to shower or bath, using more water than they normally would at home. Normally, five-star hotels are the biggest water consumers because they typically have big swimming pools, cafes and bars, irrigated landscapes, kitchens, and en suite bathrooms. The implication of this is that water management is the responsibility of hotels of all sizes. It is a primary concern for hoteliers like YCP to recognize the awareness and engagement about water issues.

Hotel water consumption is determined by various factors including “the facilities provided, their age, number, efficiency and configuration, the multiplicity of water-using appliances and the practices and behavior of both guests and staff”.

The shortcomings for water management in the hospitality industry depend on factors such as:

- Lack of provision of water meters for measuring water use
- Lack of motivation hoteliers to get involved in water management
- Lack of vigilant for leaks in and around the hotel
- Lack of Immediate fixing of the equipment to reduce water loss
- Lack of vigilant of cleaners about leakages in guest rooms and common areas
- Using running tap water to defrost food
- Lack of wash dishes or laundry only on full machine loads
- Lack of control temperature and water flow of dishwashers and washing machines

- Lack of requesting guests to be careful with water
- Lack of channeling gray water produced from laundry room, kitchen, sinks and showers into purified gray water using adequate facilities for watering gardens or outdoor cleaning and flush water for toilets.
- Lack of collecting rainwater in order to lower the impact on local water sources as water can be collected and stored for usage during dry seasons when pipe water supply could become low
- Lack of conducting in-house training for its employees to nurture awareness as well as environmental friendly attitudes and culture within YCP
- Lack of indirectly educating customers through their policies, operational standards to inform customers of their environmentally friendly management philosophy

The above framework provides shortcomings about how YCP can address the challenges of implementing water management. It allows also finding innovative ways forward according to their knowledge level and technological capabilities.

8.11.1 Action Plan for Usage of Water

- Water audit to be carried out at YCP so as to find out where the major water costs are and to find out the key areas of water consumption
- Compare the actual consumption figures are to be compared with hotel industry benchmarks
- Records of monthly occupancy figures to keep for the calculation of the water use per guest per night
- Water audit results use to establish realistic goals of water use for YCP
- All employees are to be communicated about the management commitment and explain the objectives and goals clearly. Show them the current consumption data and the cost.
- Encourage workforce to encourage participating and to put forward their ideas and proposals on how to reduce water consumption
- Water savings to be implemented through changes in routine works
- Leaks from cisterns, taps, and pipes to be checked regularly and also to check plugs in basins are fit properly
- Implement A program has to be implemented by guests whether they can opt not to have towels and linens changed every day
- Sensors have to be installed for low-flow and other saving fittings in kitchens, guest bathrooms, and public washrooms
- Use Opportunities has to be used to divert and capture rainwater for use in the hotel grounds
- Monitoring and targeting system has to be established to monitor results continuously, and report on progress and take corrective action as necessary
- Training to be provided so as to have the staff understand how to make prudent use of water and how to maintain equipment for optimum energy efficiency

8.12 Waste Management Plan

Purpose

An essential part of a Waste Management Plan is to identify, classify, store and dispose of hazardous, non-hazardous and other wastes generated on site and to initially limit the amount of generated waste within the property.

Scope

The scope of the waste management plan covers all activities at YCP and its integration with all employees, staffs, customers, business partners, owners, guests, and other workers.

8.12.1 Management of Waste

The YCP has to follow the Waste Management Principles in line with the Environmental Assessment Procedures (2015) and any existing laws and regulations issued in the Union of Myanmar such as limiting the types of waste, categories, amounts of waste (liquid, solid, emissions) generated, methods and system of collection, storage, handling, transport, treatment, disposal and recycling or final disposal of wastes. In line with ECD procedure YCP is responsible for the generation of wastes, storage, and management of these wastes.

The Waste Management Plan will attempt to minimize waste production by applying the principles of **Reducing** the use of materials, **Reusing** materials whenever possible, **Recycling** materials and **Recovering** value from used materials **Figure 8.3**.

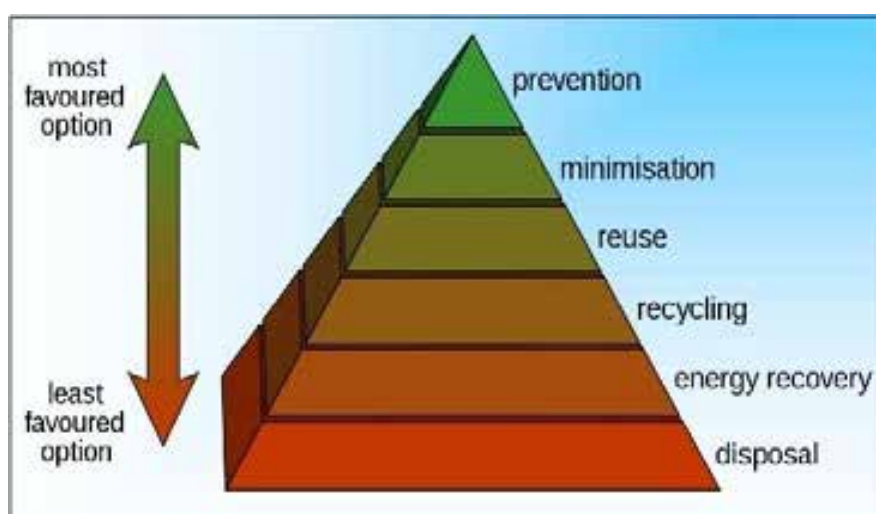


Figure 8. 3 Typical Waste Management Hierarchy

Prevention: Waste prevention at source. Departments must plan activities to avoid the generation of waste.

Minimization: Reduce the amount of waste produced.

Reuse: Reuse materials where ever possible.

Recycle: Transfer waste to approved recycling plants to minimize environmental impact.

Energy recovery: not feasible to be carried out as hotel waste does not have a high calorific value.

Disposal: Sending of waste to landfill is a *last resort*. Hazardous waste will be disposed of and treated by authorized disposal contractors and facilities.

During the construction period, the wastes from the construction site are classified into three categories: construction waste, domestic wastes, and wastewater such as septic tank sludge. Construction wastes during construction phases such as woods, drywall, masonry, metals, plastics, the cardboard will be collected by YCDC and the calculations of the construction wastes are as follows.

The project is considered as a large metro and assumption of waste is totally 4 tons (~ 4000 kilograms) in a month. The following table has shown the types of material and each content.

Materials	Percentage of Contents	kg (kilograms)
Wood	46 %	~ 1840
Dry Wall	21 %	~ 840
Masonry	14 %	~ 560
Metal	1 %	~ 40
Plastic	4 %	~ 160
Cardboard	9 %	~ 360
Other	5 %	~ 200
Total	100 %	~ 4000

Table 8. 8 The percentage content of materials

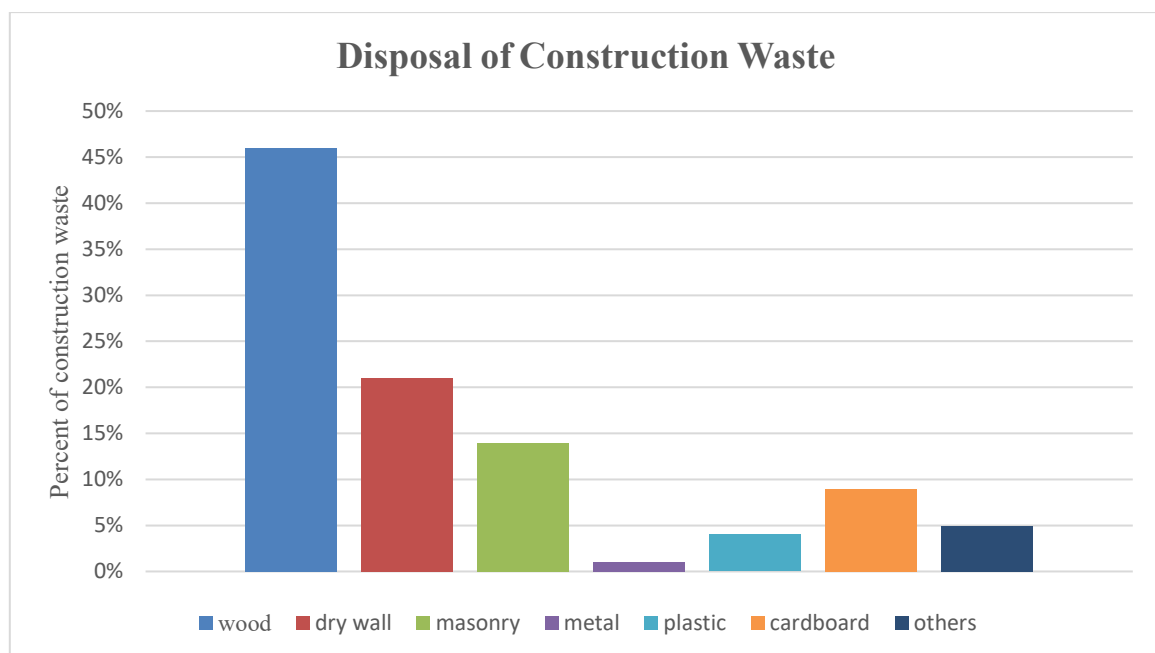


Figure 8. 4 Disposal of Construction Waste at Y Complex

In domestic wastes, there are generally plastics, papers, food, and cans. The domestic wastes are collected by YCDC twice a week and solid wastes from the construction site and from indoor rooms such as meeting rooms, office rooms, and toilets are stored in small plastic bins (4'×11/2'×3') (in figure 8.5) totally four bins with a plastic bag in each. And this is a temporary location for waste storage in the project site.



Figure 8. 5 Waste receptacles for different categories of waste

For the domestic wastes, the standard municipal solid waste generation is 0.53 kg/capita/day. And for Y Complex Project, the total workers in a day is 400 persons and total staff 110 persons. So, the total number of workers and staffs is 550 persons and the municipal solid waste generation is 291.5 kg/day.

For sewage and wastewater, the total YCP water usage for YCP site; for workers, 6,000 liters/day (1,319.82 gallons), for staff, 2640 liters/day (580.72 gallons) and for the site including car wash, water spray, concrete curing time and brickwork, 40,005.59 liters/day (8800 gallons). So, the total water consumption for Y Complex project in a day is 10700.54 gallons (48,645.59 liters). The total amount of sewage and wastewater from the site (worker + staff) is 8,640 liters/day.

8.12.2 Identification of Wastes Types/Categories

Based on the activities that are undertaken within Y Complex Project during the operation phase, waste has been categorized into the following:

Non-hazardous waste: includes paper, wood, office, rubbish, cardboard, scrap metal, and glass.

Hazardous waste: includes human waste, oils, varnishes, pesticide, insecticide, fertilizer, lubricants cans, chemical cans, and paint cans.

The composition of the organic waste and inorganic waste are sorted into 11 categories as in table 8.9.

Table 8. 9 Categories of waste composition and content

No.	Categories	Description	% of Content	Quantity (kg)
1.	Paper	Print paper, newspaper, magazine	3.02	6.86
2.	Cardboard	Paperboard, containerboard, cardstock	0.64	1.45
3.	Garden waste	Leaf, grass, flower	27.7	62.88
4.	Kitchen and food waste	Leftover food, vegetable scraps	33.97	77.11
5.	Tissues	Tissue and toilet paper	6.91	15.69
6.	Metal	Iron, aluminum, copper lead, etc.	0.24	0.55
7.	Plastic	All plastics which do not contain toxic substances	8.32	18.89
8.	Glass	All glasses which do not contain toxic substances	0.95	2.16
9.	Ceramic	Minerals, light bulbs	3.24	7.36
10.	Chemicals	Soap, cosmetic residues	0.06	0.14
11.	Combustible	Electronic devices, batteries	14.95	33.94
Total of Content			100%	227

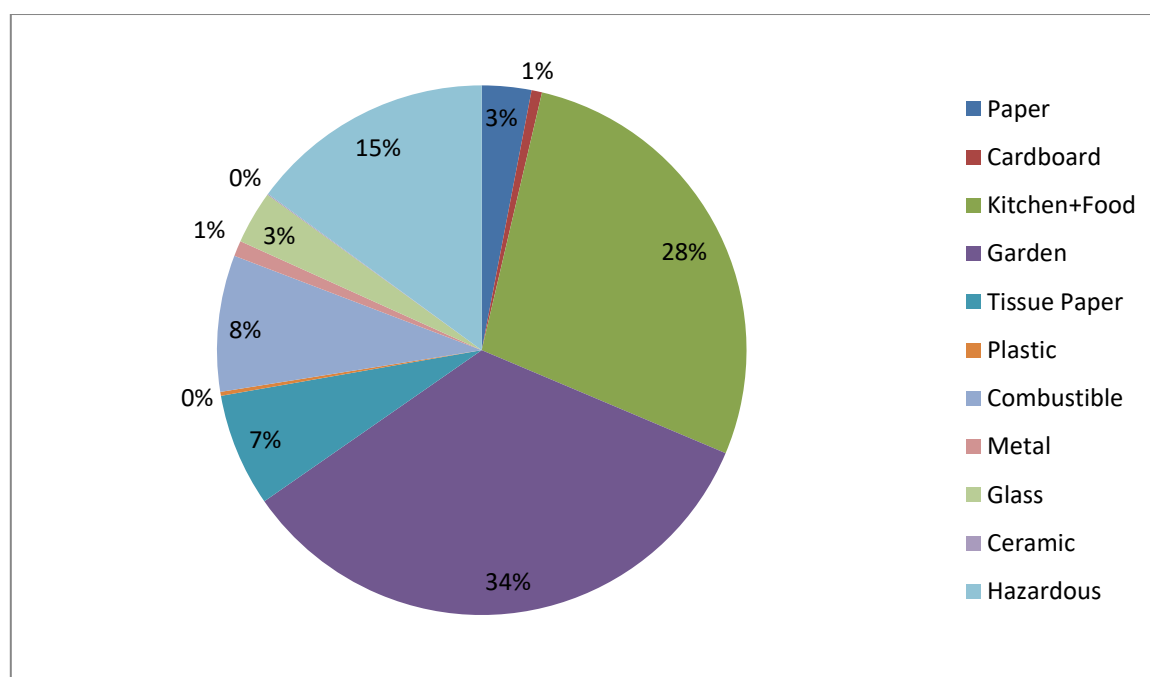


Figure 8. 6 Solid waste composition of Y Complex Project

8.12.3 Waste Collection and Storage

In the classification of wastes, kitchen waste, garden waste, and paper are the components of organic waste and the rest of waste is organic waste. In general, most of the waste categories

are sorted into the correct trash with the efficiency range. Thus, training separation skills for the hoteliers is practiced. Firstly, the daily waste from each room is collected and wrapped in a small plastic bag and directly dumped in garbage bins which are placed at outside of the building.

8.12.4 Waste Mitigation Measures

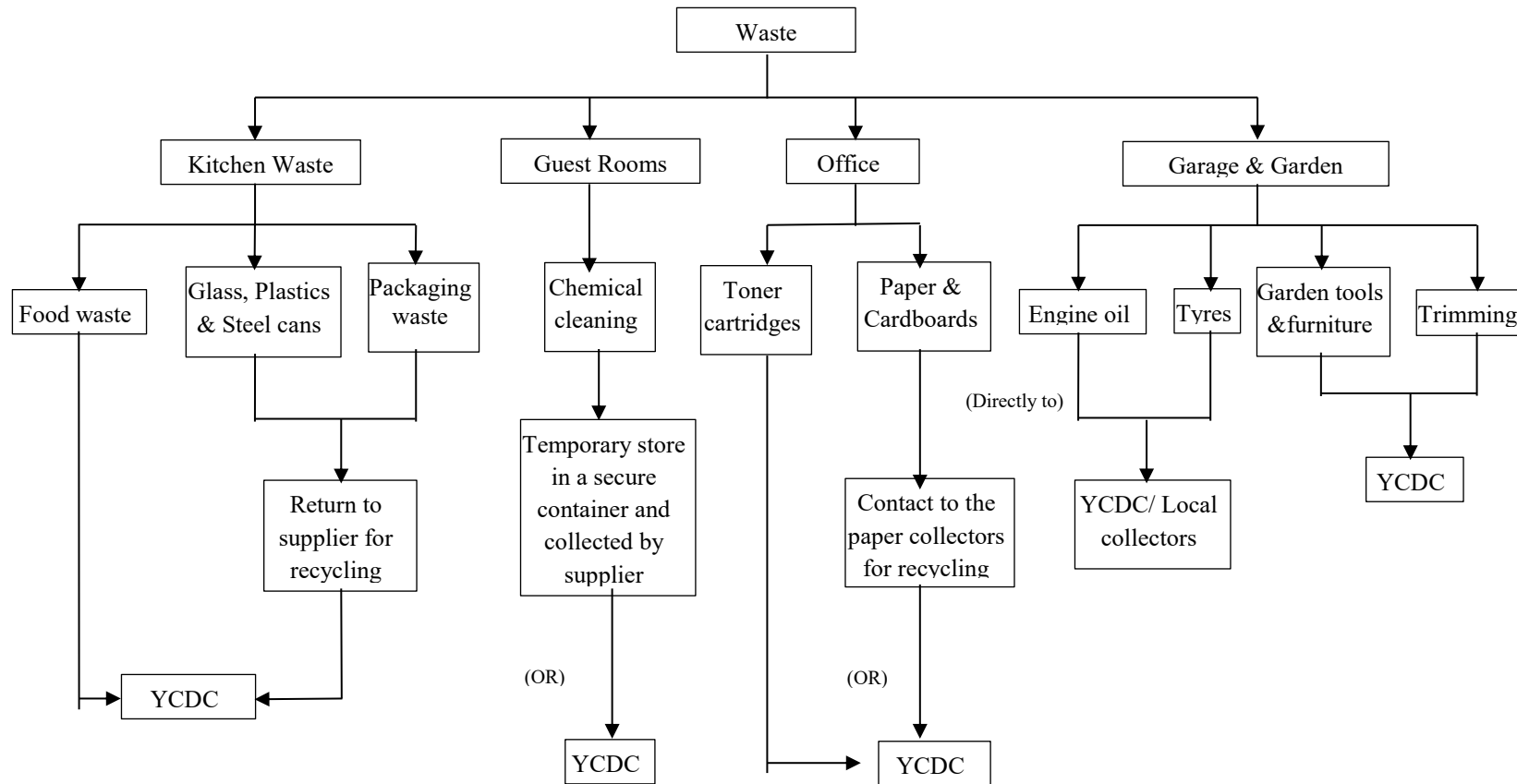
The following control measures will be employed within YCP to reduce the environmental impacts from waste generation, handling, storage, and disposal:

- Open burning of waste or the dumping of waste at an undesignated area within the property is prohibited.
- Separate labeled waste receptacles will be provided for, plastic, cardboard/paper, tins, glass.
- The dilution of hazardous waste is prohibited.
- The mixing of hazardous and non-hazardous waste is prohibited.
- All hazardous waste will be provided with secondary containment and suitably banded to meet legal requirements, where necessary.
- A program for regular collection and removal of skips and bins will be implemented
- All litter will be controlled within YCP by means of good housekeeping.
- Where possible, performance measurement and targets for reduction reuse and recycling will be developed and implemented.
- Any wastes that cannot be reused and recycled will be transported and disposed of in accordance with YCDC requirements.
- Volumes and types of waste will be monitored to establish whether additional opportunities for improvements in waste management (avoid, reduce, reuse, recycle) can be adopted, where practicable.
- All colleagues will be trained on the Waste Management Plan, through shift briefs, etc.

8.12.5 Landfill Disposal

If the above hierarchy of control cannot be satisfied, especially for hazardous waste, it will be sent to DOWA, an Approved Private Landfill. The burning, burying, and unauthorized dumping of waste is prohibited.

Waste Management System



8.12.6 Instruction and Training

All YCP staffs and employees will be introduced to the waste management system during YCP Departmental inception program; communication will also be through tool-box talks explaining the importance of appropriate segregation, handling, recycling, and reuse and return methods to be used by all parties.

8.12.7 Record Keeping

Documentation will be retained to demonstrate legal disposal of all types of waste. Written documentation such as receipts, invoices, and waste transfer notes with the following information is required:

- A copy of the waste management contractors trade license and approval.
- For each load of waste collected; the date, type of waste (for example, waste oil, sewage, mixed general waste), the quantity of waste in that load, the signature of an authorized representative of the contractor.
- The documentation listed above will be subject to internal and external audits.

8.13 Green Space / Landscape Plan

Purpose:

To adopt a green design for the construction of a luxury hotel so as to help preserve the environment by saving energy, water and

Scope:

To provide a healthy and comfortable indoor environment to hotel occupants by providing “Green Spaces” on the second floor and ground floor of their luxury hotel.

The design of hotels generally focuses on areas known to be strongly focused on factors such as the lobby, the guest rooms, the bathrooms, food and beverages, spas and indoor decorations.

Currently, green hotels are defined as those that adopt policies that are safe, healthy and environmentally friendly, implement green management practices, advocate green consumption, and protect the environment and resources properly. Unlike other trades, the hotel business is treated as a kind of business that is sustainable about “fulfilling the guests’ current dreams without sacrificing future generation’s dreams and desires”. The objective is about achieving sustainability without making it about sacrifice” (Sheehan, 2007).

So far, hotel design features provide luxury environments to guests and enhance their satisfaction by adopting green building practices that are implemented to achieve the goals of sustainability. Major benefits of the green spaces are that they can provide a pleasant and healthier indoor environment to building users.

A green building relies upon a fully integrated “whole building” approach that covers the entire phase of building cycle including design, construction, operation, and demolition. For example, YCP can help mitigate buildings that incorporate green building practices including environmental problems associated with existing buildings and provide healthier indoor environments to building users such as mini gardens,

The practices of ‘Green Building’ for YCP are associated with the following potential benefits:

Categories	Major Practices	Specific Benefits
Sustainable Site	<ul style="list-style-type: none"> • Sustainable site planning and landscaping • Stormwater management • Public Transportation 	<ul style="list-style-type: none"> • Reduced Environmental Impacts • The efficiency of site use
Energy Efficiency	<ul style="list-style-type: none"> • The high-efficiency HVAC system • Daylighting and high-efficiency lighting 	<ul style="list-style-type: none"> • Energy saving • Reduction in GHG • Lower operating costs
Water efficiency	<ul style="list-style-type: none"> • Water saving fixtures and technologies 	<ul style="list-style-type: none"> • Reduction in water consumption
Material and Resources	<ul style="list-style-type: none"> • Green suppliers and materials • Construction waste management • Recycle materials 	<ul style="list-style-type: none"> • Resource saving • Reduce environmental impacts
Indoor environmental quality	<ul style="list-style-type: none"> • Day Lightning and high-efficiency lighting • Adequate air filtration • Low VOC materials 	<ul style="list-style-type: none"> • Healthy indoor space • Provide optimal indoor environment
Building Operation and Maintenance	<ul style="list-style-type: none"> • Green cleaning suppliers • Waste reduction and recycling • Energy and water conservation • Green grounds keeping • Guest education and communication program 	<ul style="list-style-type: none"> • Reduced environmental impacts • Existence of Green Building

YCP will design an urban landscape with trees and plants to be in conformity with the neighborhood landscape. As it is situated in a downtown area it has not much space to grow large trees. YCP intends to grow flowering plants and small trees inside their enclosure at the ground floor and some beautiful flowering plants/orchids/hanging plants etc., on the second floor. As space is limited YCP will make use of irregularly placed plants for a more natural appearance. As a preference, medium-sized trees with colorful appearance will be selected. Grassed areas will be formed in the middle part as lawns. Plants and landscape structures provide similar visual importance and help create balance in landscape design. When selecting plants due care should be taken to select trees/plants that require low water consumption. Watering should be done at night using underground sprinklers to save water.



Figure 8. 7 Landscape plan for Y Complex Project

8.14 Transportation Management Plan

Purpose:

To assess the situation of Traffic due to the presence of YCP

Scope:

To determine the condition of the existing condition (2019) as well as 5 years planning afterward in (2026)

Kyaing Engineering Group (KEG) has evaluated the traffic operations for YCP at the study area intersections under existing and future conditions consistent with the Transportation Impact Assessment Guidelines issued by HCM 2010. The future planning horizon examines traffic operations under existing condition (2019 traffic count year), as well as 5-year planning after opening the project (construction period two years) 2026 No-build conditions, 2026 Build condition (with the proposed project), and 2026 build with Mitigation condition.

8.14.1 Project Site

YCP is located on the west side of Shwedagon Pagoda Road, between Shwedagon Padoga Road and U Wisara Road, South of Pan Tra Street, Dagon Township in Yangon. Shwedagon Padoga Road and Pan Tra Street can access/egress to/from the YCP. In addition, 21 feet wide of project road will connect between Shwedagon Padoga Road and U Wisara Road. Therefore, this project road can also be accessed/egressed to/from proposed development project by using Shwedagon Padoga Road and U Wisara Road.

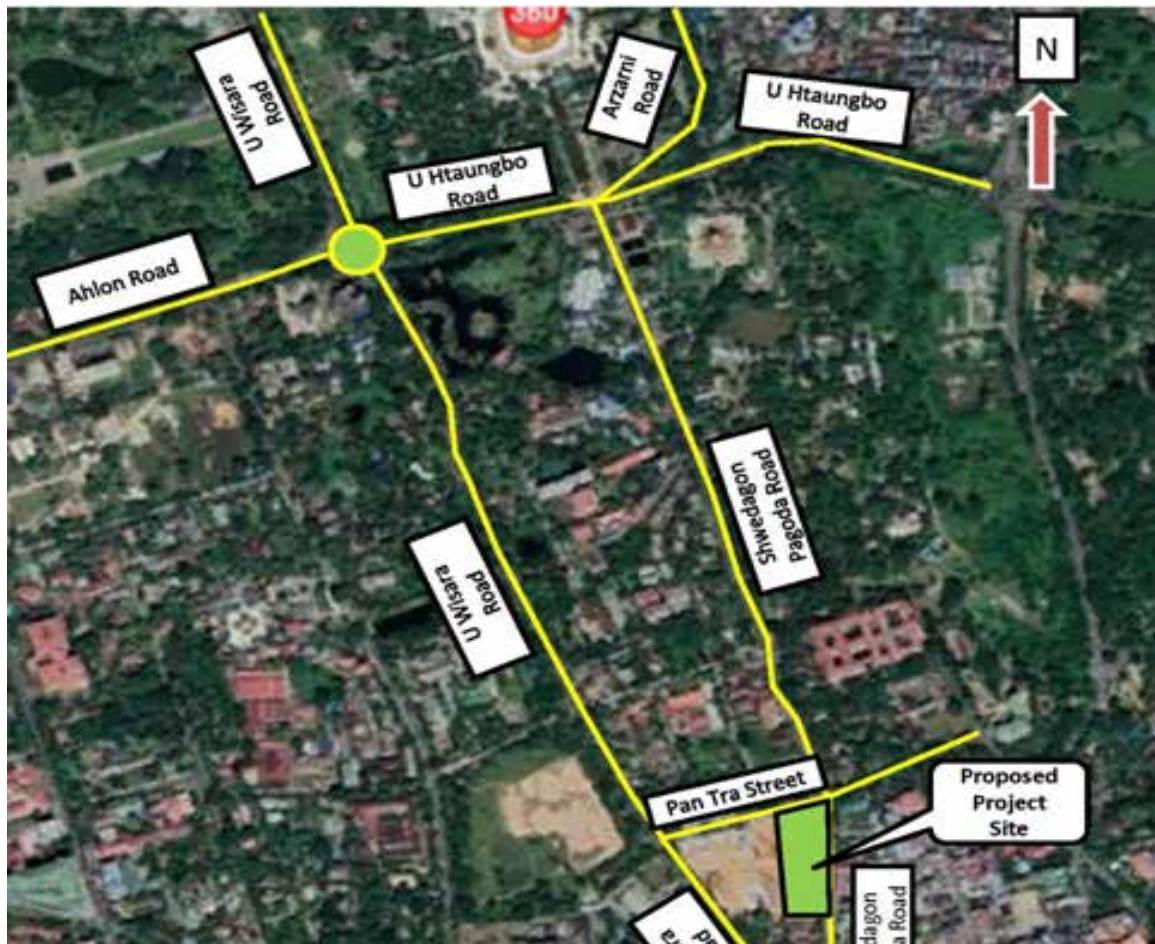


Figure 8. 8 Project Location

8.14.2 Traffic Study Area

The traffic study area was selected to contain major roadways providing local and regional access to the project site. The following intersections were included in the study area and study areas were shown in Figure 8.9. Arzarni Road/U Htaungbo Road/Shwedagon Pagoda Road 2. Shwedagon Pagoda Road/Pan Tra Street 3. Shwedagon Pagoda Road/U Wisara Road 4. Shwedagon Pagoda Road/Bo Gyoke Road 5. U Wisara Road/Pan Tra Street 6. U Wisara Road/U Htaung Bo Road/ALone Road (U Wisara Roundabout



Figure 8. 9 Study Intersections

8.14.2.1 Existing Road Network Traffic Condition

Data Collection to establish the existing traffic-volume conditions within the study area, by manual turning movement counts (TMCs) during the typical weekday (07:00–19:00) on Wednesday, February 27, 2019 and (07:00–19:00) on Saturday, February 23, 2019 at the intersections of Arzarni Road/U Htaung Bo Road/Shwedagon Pagoda Road (Shwedagon Intersection), Shwedagon Pagoda Road/Pan Tra Street, Shwedagon Pagoda Road/U Wisara Road, and Shwedagon Pagoda Road/Bo Gyoke Road, U Wisara Road/Pan Tra Street, and U Wisara Road/U Htaung Bo Road/ Alone Road (U Wisara Roundabout). Traffic is classified by four groups such as passenger car/taxi, Bus, Minibus and Light Vehicles with 15-minutes

interval. Traffic volumes were also conducted by the video camera in Shwedagon Pagoda Road/Bo Gyoke Road.

8.14.2.2 Network Diagram of Peak Hours Traffic Volume for Base Year 2019

Figure 8.10 shows network diagram of traffic volumes for weekday morning peak, evening peak and Saturday mid-day peak hours for the base year 2019. This network diagram includes traffic volumes of Arzarni Road/U Htaungbo Road/Shwedagon Pagoda Road, Shwedagon Pagoda Road/Pan Tra Street, Shwedagon Pagoda Road/U Wisara Road, U Wisara Road/Pan Tra Street, Shwedagon Pagoda Road/Bo Gyoke Road and U Wisara Road/U Htaung Bo Road/ALone Road (U Wisara Roundabout).

8.14.2.3 Future Year Conditions (2026)

Traffic volumes in the study area were projected to the year 2026, which reflects a seven-year planning horizon (including two-year construction period), after permission of the proposed building. The traffic conditions for the year 2026, under No-Build conditions, were developed to document the operating conditions independent of the proposed project; including all existing traffic, new traffic resulting from growths, and traffic from specific development by others in the vicinity. Anticipated site-generated traffic volumes for the proposed development were calculated upon the No-Build traffic networks for the Build conditions with the proposed project.

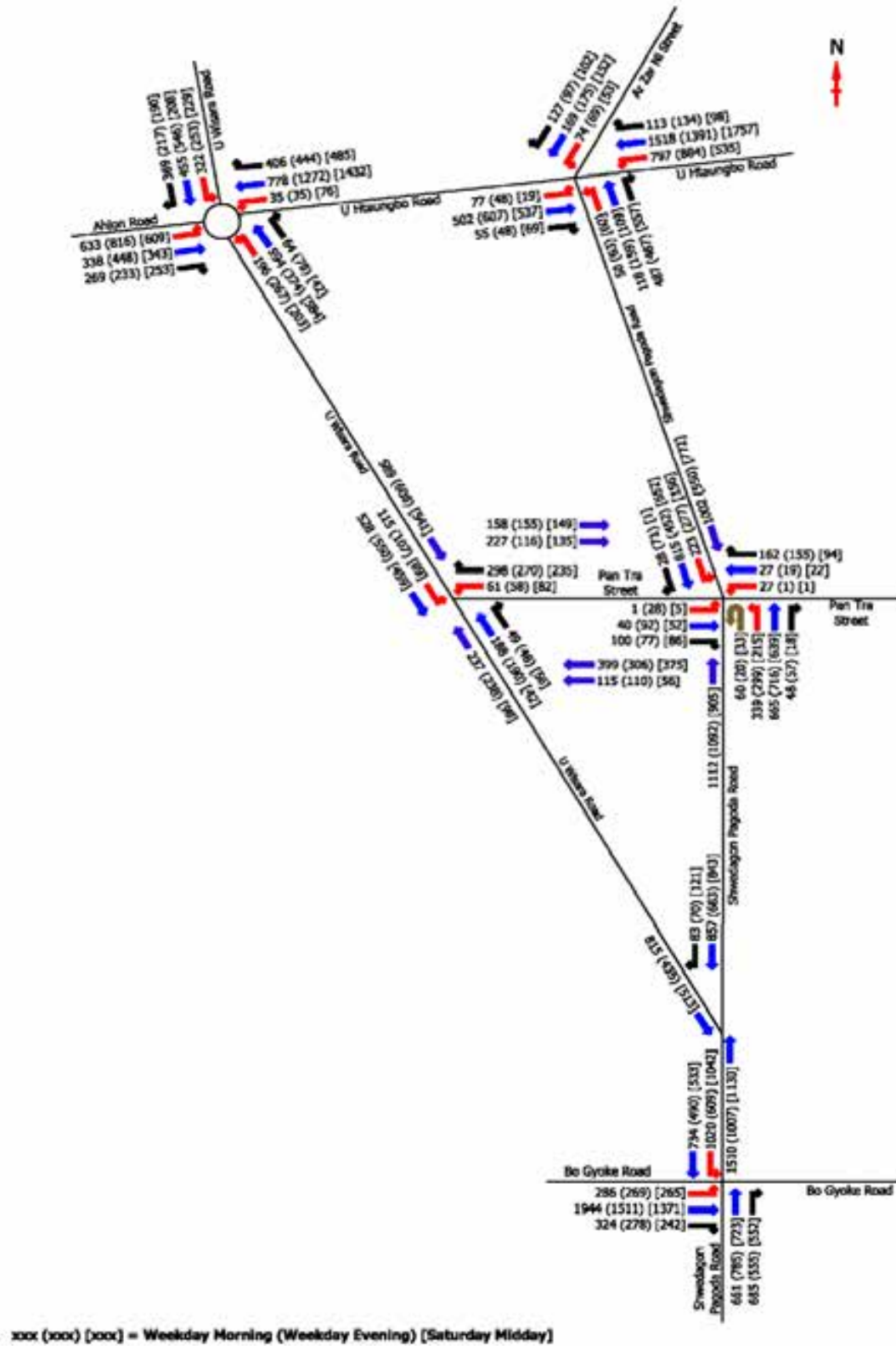


Figure 8. 10 Network Diagram of Weekday Morning Evening Peak and Saturday Mid-day Peak Hour Traffic volume (Base Year 2019)

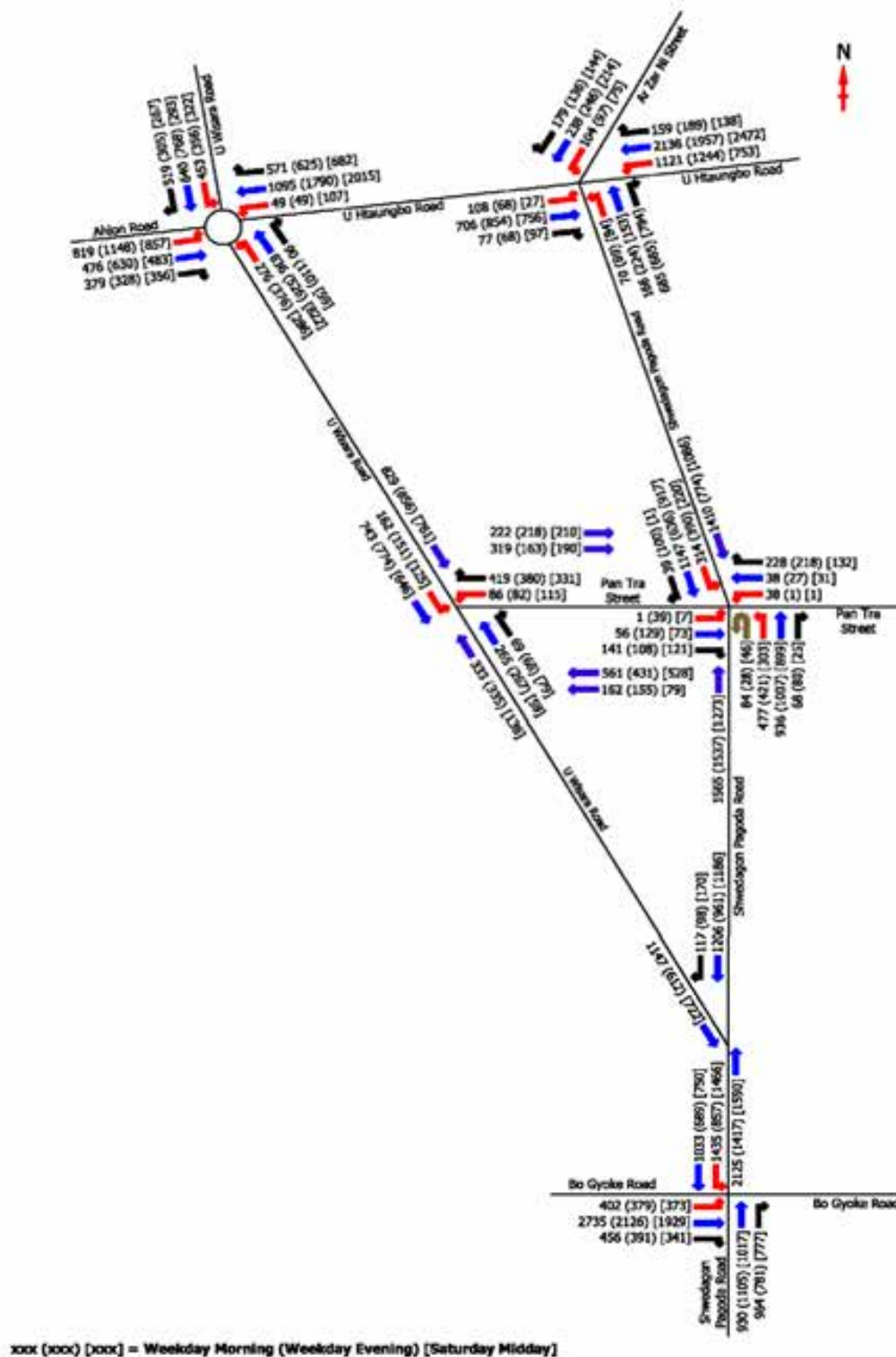


Figure 8. 11 Network Diagram of Weekday Morning, Evening Peak and Saturday Mid-Day Peak Hour Traffic Volume (2026 No-Build)

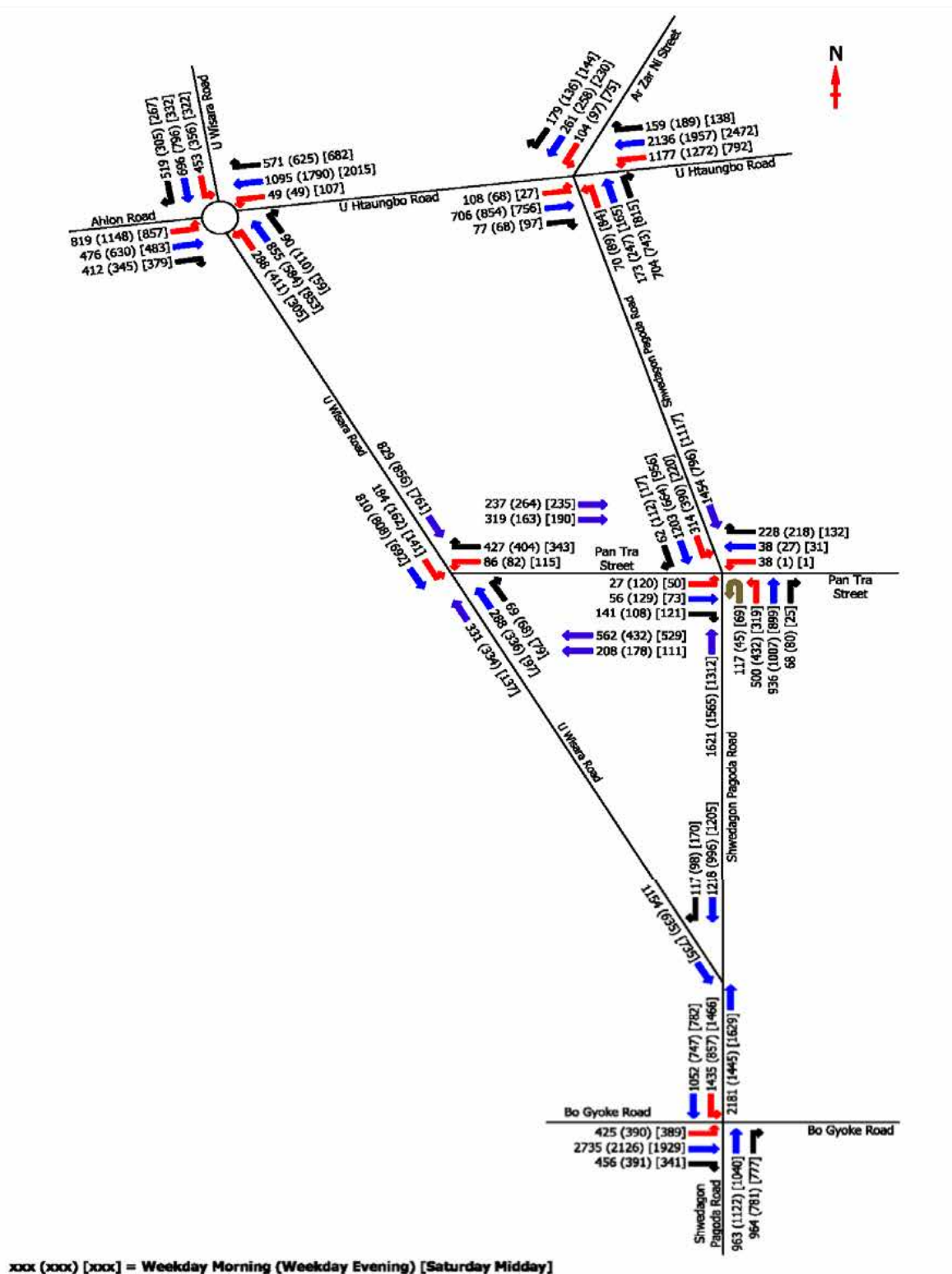


Figure 8. 12 Network Diagram of Weekday Morning, Evening Peak and Saturday Mid-Day Peak Hour Traffic Volume (2026-Build)

8.14.2.4 Survey Results

Table 8. 10 Trip Generation Summary for YCP

Time Period	Total Trips	Total New Trips		Total Transit Trips		Total Primary Trips	
		In	Out	In	Out	In	Out
Weekday Daily	5,549	2,775	2,774	833	832	1942	1942
Weekday AM PH	430	321	109	97	33	224	76
Weekday PM PH	490	161	329	48	99	113	230
Saturday Daily	3,726	1,863	1,863	559	559	1304	1304
Sat. Midday PH	399	221	178	66	53	155	125

As shown in Table 8.11 in YCP is anticipated to generate approximately 5,549 new vehicle trips (1,942 entering and 1,942 exiting) during the average weekday, with 430 new vehicle trips (224 entering and 76 exiting) during the weekday morning peak hour and 490 new vehicle trips (113 entering and 230 exiting) during the weekday evening peak hour. Approximately 3,726 new vehicle trips (1,304 enterings and 1,304 exiting) are anticipated during the average Saturday, with 399 new vehicle trips (155 entering and 125 exiting) during the Saturday midday peak hour

The 2026 Build Condition traffic-volume networks consist of the 2026 No-Build traffic volumes with the addition of the site-generated traffic for the proposed redevelopment. Figure 8.12 shows network diagram of traffic volumes for a weekday morning, evening peak and Saturday mid-day peak hours 2026 Build condition.

8.14.3 Action Plan for Improvement

Arzani /U Htaung Bo Road/Shwedagon Road

- Configuration of the existing lane
- Re-timing signal improvement

With the mitigation, the U Htaung Bo Road (westbound) include an exclusive left-turn lane, a through lane and a shared through/right-turn lane.

Shwedagon Pagoda Road/Pan Tra Street (2026)

- Changing in width and existing lane configurations
- With the mitigation, the Pan Tra Street (westbound) include a shared left turn/through lane and an exclusive right-turn lane.

U Wisara Road/Pan Tra Street (2026)

- installation of signal to this intersection

U Wisara Road/U Htaung Bo Road/ Alone Road (2026)

- Configurations of the existing lane

As an ingress and egress for YCP, Shwedagon Pagoda Road, Pan Tra Street, and U Wisara Road will be accessed/egress from/to the site.

A full access/full-egress, 21 feet wide new site driveway which connects between Shwedagon Pagoda Road and U Wisara Road will be provided on the southerly side of YCP.

In addition, a full-access/full-egress, 28 feet wide of another new site driveway which connects between Pan Tra Street and a new site driveway will also be provided at a westerly side of YCP. This site driveway can also be used as ingress for public and egress for site generated trips.

Therefore, one ingress/egress, one ingress, and two egresses will be accessed/egress along Shwedagon Pagoda Road, two egresses along Pan Tra Street and a full ingress/egress along U Wisara Road from/to the site

Carpooling, ferry and other transportation systems such as Airport Shuttle Bus are possible mitigation measures to reduce private car usage also.

8.15 Community Health and Safety Plan

Due to the complexity of prediction of the community health and safety issues concentrates first the avoiding methodology of the risk hierarchy:

The following key health and safety issues are identified in the project and affected area in the form of intersecting community's health.

- Accidents - anticipated to cause by project's vehicle movement on the public road
- Exposure to environmental contaminants (i.e. dust emission, noise, water)
- Communicable diseases such as HIV, Tuberculosis, Hepatitis
- Community concerns on the damage to existing environmental receptors
- Reduced sense of community safety and security due to the influx of the newcomers into the project affected area
- Public Concerns on potential fire hazard from the project

The recommended mitigation and management measures are also listed to reduce the anticipated risks associated with project activities. The following mitigation and control measures are adopted to minimize such risks related to projects:

- Provide medical assistance wherever possible to local communities
- An emergency management plan shall be maintained and implemented with co-operation from local health services and monitored through consultation by local residents
- Regular engagement of health and social infrastructure of stakeholders to acquire demands and responses (Corporate Social Responsibility)
- Annual medical surveillance to project employees to monitor the trend and pattern of communicable disease within the project premises

- Initiate community health education as part of the socio-economic management of the project for workers and communities health and integrate them into a safety orientation program.
- Coordinate with local/government medical officers on identification, reporting and monitoring of any potential outbreak of communicable diseases in camps or residential areas.
- Preparation of annual environmental monitoring reports and make available to the public
- Preparation of annual safety report and make available to the public Ensure that project will have a minor or insignificant impact on the environment and make known to the public
- Developing environmental awareness campaigns among employees and local residents in the area of project influence.
- Enhance safety culture at work to reduce the risk of accidents and injuries associated with construction and operation work activities

8.16 Corporate Social Responsibility Plan

YCP has made an investment for the real estate development in Myanmar that will serve both tourism and commerce by providing a five-star hotel and first-class working facilities for offices in downtown Yangon. During the submission of the project proposal to MIC the proponent has made a commitment that tentatively 2% of the net profit will be allocated for Corporate Social Responsibility (CSR) Program starting from the commencement of the operation stage. The objective of this plan is to ensure social well-being of the employees and their family and also for the betterment of the regional development.

Expecting part of the profit of the project to share the social benefit of the community, the developer would manage to fulfill the following request of the local residents during stakeholder meetings.

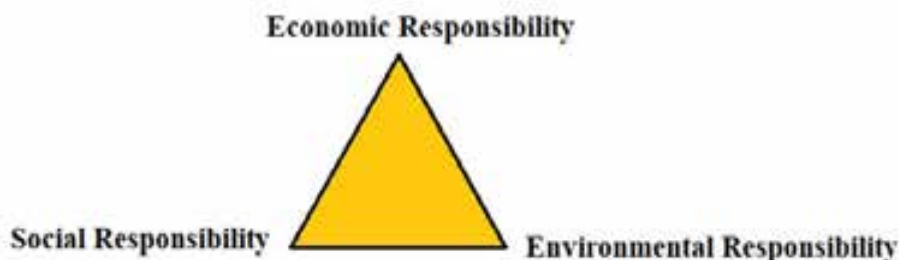


Figure 8. 13 Three Aspects of Responsibility

The proponent would make a commitment for CSR to accomplish the following tasks:

Table 8. 11 CSR Program

Sr.	CSR Program	%
1.	Activities related to religious affairs	20
2.	Activities related to the health of employees and their family	20
3.	Activities related to communication development in the region	30
4.	Activities related to education matters for the children of employees	15
5.	Activities in relation to regional development	15
	Total	100

CHAPTER 9: PUBLIC CONSULTATION AND DISCLOSURE

9.1 Methodology and Approach

This chapter describes the stakeholder's engagement activities undertaken during the development of the EIA. This includes key issues raised by the stakeholders and how each of these issues has been addressed in the EIA. According to the EIA procedure (clause 40), the Stakeholder's Meeting/Public Disclosure Meeting has to be performed during the preparation of the EIA report. Information about the YCP has to be disclosed to the public at the Stakeholder's Meeting, so as to understand the status of the project. After the ESIA report has been prepared, a public disclosure meeting has to be organized so as to know the public opinions/ comments on the project.

Public Consultation and Disclosure Meeting

The Operation Procedure for holding stakeholders and public disclosure meetings is in line with clause 63 of the EIA Procedure.

During the development of EIA reports, the Project Proponent has to undertake the following consultation process according to EIA Procedure (2015):

- Timely disclosure of all information about the proposed project and its likely adverse impacts
- Arrange consultation meetings for Stakeholders at National, Regional, State, Nay Pyi Taw, Township, and Local levels, depending on the category of the project (IEE/EIA)
- Consultations with the concerned government agencies

Stakeholders have to include the following:

- Institutions (Regional or Local Government Authorities, etc.)
- Organization (INGOs, NGOs, CBOs, CSOs, etc.)
- Individuals (Group with special interests, academic, community, business community, media, etc.)
- Project Affected Persons (PAPs) and
- Interested persons (politicians and religious leaders, etc.,)

Activities of Stakeholders ' Meeting are mentioned below:

The following presentation topics have to be made, but not limited to:

- Overview of the Public Consultation
- Outline of the Project Description
- Operation Process of the Project
- Sensitive Environment and Social Receptors
- Environment and Social Impact Assessment

- Methodology for Impact Analysis
- Mitigation and Monitoring Measures

For stakeholder's consultation, careful identification or representatives of local communities is essential for the consultation process. One important concern during stakeholder's consultations is to make sure that the representative's sample lists include gender, male and female.

Another concern is the report back to stakeholders, particularly after the consultation has taken place. What stakeholder are expecting to know is which of their suggestions have been taken on board, which risk of impact mitigation measures will be put in place to address their concerns and how project impacts are being monitored. The reporting has to be made in the form of Executive Summary in the local language and the full EIA has to be made available at the Proponent's office or Proponent's website.

9.2 Summary of Consultation and Activities Undertaken

The Project team is committed to undertaking a process that delivers an inclusive and continuous dialogue with the project stakeholders. This includes;

- Providing relevant information to stakeholders in a timely manner;
- Facilitating two-way discussions to cover stakeholder issues and priorities as well as concerns and needs of the Projects;
- Ensuring engagement is in a language and format that is understandable and accessible to local stakeholders, including vulnerable groups, and is culturally appropriate;
- Feeding stakeholder issues, concerns and priorities into Project decision making processes, and demonstrating how decisions may have changed as a result; and
- Providing a mechanism for grievances to be raised and resolved.

9.2.1 Stakeholder Identification

The first step in establishing a dialogue is identifying the Project stakeholders. Stakeholders are persons or groups who are directly or indirectly affected by a project, and those who may have interests in and or the abilities to influence a project's outcomes (either positively or negatively).

A stakeholder mapping exercise was undertaken to identify the Project stakeholders as well as issues likely to be of concern to the stakeholders. A key part of this process was identifying individuals and groups who may find it difficult to participate as well as those who may be differentially or disproportionately affected by the Project Stakeholders because of their marginalized or vulnerable status.

The mapping exercises included the following steps:

Step 1: Development of a draft list of stakeholders. The initial list was developed based on a desktop review of maps detailing the Project site and surrounding land uses/activities, data gathered during early site visits, and the scoping reporting that was prepared for the Project: and

Step 2: An internal workshop to confirm and prioritize the draft list of the stakeholders and identify likely issues of concern. This included key issues such as impacts associated with air and noise emissions. Stakeholders were prioritized based on their level of interest in the Project and power or ability to influence the project. The workshop was conducted with key members of the SIA Project team. By identifying the Project stakeholders early, the SIA team was able to tailor the engagement approach to meet the needs and expectations of the stakeholders e.g. address the issue of the most concern to stakeholders during meetings.

A range of stakeholders was identified that may be impacted by the project or have an interest in air or the ability to influence the outcome of the project.

9.3 Results of Consultations

Stakeholders were encouraged to ask questions and raise concerns throughout the engagement process. For those stakeholders not comfortable for speaking up or who identified concerns after the stakeholder meeting, alternative methods for raising issues were provided with the assistance of a questionnaire. Following the meetings in April 2018, questionnaires were distributed to attendees. The purpose was to elicit feedback, specifically on the predicted impacts, proposed management measures, and preferences regarding future engagement. A copy of the questionnaire and the results are contained and local contact. The details of a focal point of the contact were provided to stakeholders. To the extent possible, concerns raised with the focal point of the contact were addressed during the August 2018 stakeholder engagement meeting.

9.3.1. Stakeholder Consultation

Field surveys and observations were conducted during the period from 9th to 30th April 2018. Survey team met township authorities, parliamentarians, local people and media from the Dagon Township.

9.3.2. Explanation on the Project by REM Team leader

The team leader explained the objectives of the project, detailed information on the project, plan map of the project, production system, and protection system, and the role of Environmental Impact Assessment. The team Leader requested to answer the questionnaire on the requirements of regional development and suggestions from Parliamentarians, Head of Wards and local people. The Parliamentarians, Heads of Wards, Medias, and local people gave their suggestions and requested to fulfill various needs as mentioned below:

9.3.3. Stakeholder's Meeting for Scoping Stage (Y Complex Project)

Date: 8.4.2018 (Sunday)

Time: 1:30 PM – 3:00 PM

Venue: Pan Pacific Hotel, Yangon

Table 9.1 Attendee Lists of Scoping Stage

Government Staff	20
Local stakeholder	29
NGOs/ INGOs/ Company Staff	19
Media	21
E Guard	1
Member of Parliament	5
Total	85

Agenda	<ul style="list-style-type: none">- Opening- Introduction and detailed explanation of the Y-Complex project and SIA process by Fujita, Tokyo Tatemono, Join (Japan Semi-government) and Myanmar YTT). Presented by U Win Naing Tun, Director, REM-UAE.- Question and Answer Session
	<p>Q – By U Kyaw Zay Ya (Parliamentarian, Yangon Region)</p> <ul style="list-style-type: none">- Is the project going to be 8 storied or 9? We heard that this project was passed in 2013 and it has been nearly 5 years. Is there any particular reason for the long delay? What would happen if the level would reduce from nine to eight? And finally, thank you for coming to my country. <p>Ans- By U Win Myint (Myanmar Architecture Council)</p> <ul style="list-style-type: none">- In principle, the council asked to revise if they need to change something to be able to get 9 storied building they wanted. It was 9 levels since they first apply. <p>Ans: By Mr. Shoichi Inoue, Fujita</p> <ul style="list-style-type: none">- We applied last year (2017). We will start as soon as we get permission. If the level reduces from nine to eight levels, although the cost will be reduced we will have to discuss with the other partners. We will continue after the water festival.

	<p>Q – By 7days Journal (Thiha, Senior Journalist)</p> <ul style="list-style-type: none"> - We understand project can be started only after the completion of EIA, now we just heard it will start after the water festival, how is it possible within a short time? Who will get or benefit the 5817.958 million? Is it the Army or the State? <p>Ans: Mr. Shoichi Inoue, Fujita and Win Naing Tun (REM-UAE)</p> <ul style="list-style-type: none"> - There are some activities that can be done with the prior permission but nothing can be done without EIA. Therefore, the dates we are talking about are mainly the client's wishful dates. - The project will not start after the water festival, we are just talking about the permit. EIA had been completed by E Guard. This meeting is for SIA. We will strictly follow YCDC and ECD rules and regulations. What we mean is we will start fencing activities. <p>Q – By 7days Journal (Thiha, Senior Journalist)</p> <ul style="list-style-type: none"> - The project is supposed to finish in 2020? Then when will the project start? <p>Ans: By Mr. Shoichi Inoue, Fujita</p> <ul style="list-style-type: none"> - We will start the project only when the permission comes back from ECD. <p>Q- By Dr. Aung Khin, Yaw Min Gyi Ward, Dagon Township</p> <ul style="list-style-type: none"> - We heard that there will be parking lots for more than 650 cars. I would like you to consider carefully for the traffic since the traffic could get worse with this project. - The groundwater might be a minor concern but we can only use 4 of the 7 wells at the moment in Yaw Min Gyi Street. Since groundwater is the main source for this area, I would like you to consider this fact too. <p>Ans: By U Win Naing Tun (REM-UAE)</p> <ul style="list-style-type: none"> - We have already completed the traffic survey and have plans. <p>Ans: By Mr. Shoichi Inoue, Fujita</p> <ul style="list-style-type: none"> - We have already applied water for the whole project to YCDC. In 2020, there will be a new water system and we will be included in that program. <p>Q. By U Aung Kyaw Nyunt, U Wi Zar Ya Ward</p> <ul style="list-style-type: none"> - Can you please explain about Zone 1 and Zone 2 for general
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	<p>knowledge?</p> <p>Ans: U Win Myint (Myanmar Architecture Council)</p> <ul style="list-style-type: none"> - Red zone: Allowed for a building height of 62feet-78feet - Yellow zone: Allowed for a maximum height of 190 feet - YCP is classified as Yellow Zone. <p>Q. By Dr. Khin Sandar Tun, Pan Tra Street</p> <ul style="list-style-type: none"> - We understand that there will be day shift and night shift. If drilling happens during the night, the vibration can be a pain. - But we do understand backhoe can only enter at night. <p>Ans: By Mr. Nima Yagi, Tokyo Tatemono</p> <ul style="list-style-type: none"> - At the moment, only the clearance project is going on and the Fujita project has not started yet. - We will discuss with the working group about what you mention. <p>Ans: By Mr. Shoichi Inoue, Fujita</p> <ul style="list-style-type: none"> - Noise Vibration will only happen when we do concreting. - It will only happen during daytime. <p>Q. By Zaw Win Let (Pan Tra Street)</p> <ul style="list-style-type: none"> - While you do clearing if the vibrations happen more than 15 times, what can you do? - The contact person should be available and there should be a contact person designated. - Who will be responsible for any incidents with the project? <p>Ans: By Mr. Shoichi Inoue, Fujita</p> <ul style="list-style-type: none"> - We will distribute the contact numbers when we start the project. - We will take responsibility for any incidents which happen because of the project's operations. <p>Q. By Dr. Myo Myint, Pantra Street, Dagon Township</p> <ul style="list-style-type: none"> - Is there any new technology to be used? - About water, if the ground is deeper than 70 feet we call it deep water well. There are also rules and regulations for groundwater usages. - Noise pollution should be considered too especially for the aged. - I am also concern about traffic. <p>Ans: By Mr. Shoichi Inoue, Fujita</p> <ul style="list-style-type: none"> - The structure system will be done by Myanmar engineers.
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	<ul style="list-style-type: none"> - Erosions and landing sliding prevision will use Japan technology. - We will use around 300 feet groundwater. - We have done soil testing too. - We will follow YCDC laws and regulations for working during days and night. - You can always talk about any concerns with us. <p>Q. By Kya Kuu Monastery Sayadaw (monk)</p> <ul style="list-style-type: none"> - We are living very closely with the project. - They did come for suggestions and comment. - We have given a recommendation. Recommendation and suggestion are different. - I would like to give a suggestion. Since the project is huge, there will be big workforces. - The saying goes like this: Religious knowledge along with world possession: - Bala natti : Strength - Dana tatti : Wealth - Thura tatti : Courage - Manna tatti: Discuss, Negotiate and consult - These are the norm for success - Wish you success <p>Ans: U Win Naing Tun (REM-UAE)</p> <ul style="list-style-type: none"> - Thank you all for your participation.
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9.3.4. Public Consultation Meeting for EIA Stage (Y Complex Project)

Date: 31-8-2018 (Friday)
Time: 2:00 PM – 4:00 PM
Venue: Yuzana Garden Hotel, No. (44) Signal Pagoda Road,
Mingalar Taung Nyunt Township

Table 9. 2 Attendee Lists of ESIA Stage

Government Staff	19
Local stakeholder	22
NGOs/ INGOs/ Company Staff	36
Media	4
E Guard	1
Member of Parliament	8
Total	90

Meeting Agenda

Item 1:	Opening Announcement of 2 nd Stakeholder Meeting by Master of Ceremony
Item 2:	U Win Naing Tun, Director from REM-UAE Laboratory and Consultant Co., Ltd. Presented and explained the finding of Social Impact Assessment to attendees.
Item 3:	Questions and comments by attendees and answer by Y Complex, E-Guard and REM-UAE
Item 4:	Closing of meeting

The stakeholder consultation meeting was held according to agenda and schedules. First of all, the master of ceremony announced the meeting as per item 1. According to item 2, U Win Naing Tun, Director of REM-UAE presented by PowerPoint presentation and explained meeting objective and finding through Social Impact Assessment study. According to item 3 of the agenda, attendees made questions and comments. Y Complex Company, E Guard Environmental Services CO., Ltd and REM-UAE Laboratory, and Consultant Co., Ltd responded accordingly.

Question 1. U Kyauk Doe (Yaw Min Gyi Quarter)	I am from Yaw Min Gyi quarter and I didn't join the first meeting. The east side of Shwedagon Pagoda Road could not be extracting underground water and rely on Gyo Byu water supply. We cannot expect Gyo Byu water all the time since 1994-95 Gyo Byu water supply has been supporting intermittently. We complain a file to Regional Parliament and nothing response to us. There are 9 tube wells in the Dagon Park for Yaw Min Gyi quarter. There also a hand dug well in Kyar Ku monastery and it can be used for the whole year even pump up by Kubota.
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	<p>There are many water-booths behind Prime Hill Business Square used a huge amount of water during the water festival (April) and we know that never dry out. This particular project will use underground water and you said that water levels will differ between Y Complex Project and residents used currently. But, we want to know how to take responsibility for 10 years, 20 years? You have to take responsibility. Water shortage occurred in Panbedan and Latha Townships including Junction City. Latha State High School has to dig an emergency tube well last April. As far as we know, there is no business totally rely on tube well. We are facing water problem whenever electricity was out. Kyar Ku monastery supplied water to our quarter during Nargis period. You should not say water may not dry out, it used to dry out. 9 tube wells in the Dagon park operate by the roaster. There are about 1500-1600 households. If you are planned to use underground water, we want to know how you will be taking responsibility for the next 10- or 15-years period.</p>
<p>Question 2. U Win Kyaw (Yaw Min Gyi quarter)</p>	<p>I was born in 1959 and live in this quarter since then. First of all, I would like to make a correction in the area of Dagon township which is 4.5 square miles. I would like to suggest data should be accurate. I would like to understand why the public's health status will be improving through infrastructure development. Will this project build a Hospital or Public Health Service facility? I observed that there is no public health service facility and only offices. To be followed by U Kyauk Doe, before Gyo Phyu water come up to our house without a motor since 1995-96 after completion of our building which is 6 story. Now Gyo Phyu water supply support according to schedule. Normally, we dug up tube well about 200 feet. We observed that Y Complex Project will be extracting about the depth of 400 feet. We are worried about water because the water flows from high to low. We will monitor this summer and if there is a water scarcity in this summer, we want to know what kind of responsibility would be taken and what is the alternative replacement.</p> <p>Fifteen days ago, some quarters including our quarter experienced electricity cut from 3:00 am to about 4:00 pm in the evening. We heard that one of the EPC staff sent to the hospital for electrical shock. There was a rumor that one of the boilers operated by Y Complex Project and transformer was broken. Is this true? How to take responsibility after construction in order to manage the electricity shortage.</p>
<p>Question 3. U Ye Htut (Pha Yar Gyi quarter)</p>	<p>Water and electricity supply is very important. Our Pha Ya Gyi quarter got water from Cantonment park. There are five quarters in Dagon township namely; Yaw Min Gyi, U Wisara, Pyay East, Pyay West, and Pha Ya Gyi. There are many important places in terms of social and religious some are Eain Daw Yar Pagoda, Christian Churches, Monasteries and Sein Yaung Chi Pagoda in front of Y Complex project. In my opinion, you should establish a community center or information office to receive complaints and meeting whenever we face difficulties.</p>

<p>Question 4.</p> <p>Senior of Community (U Wisara quarter)</p>	<p>We would like to know how to collect the baseline data?</p> <p>I would like to know as a senior in the community. But, I don't know how to collect data. And we don't know whether data are accurate and reliable according to the report. We also want to know Y Complex project's water treatment and drainage system. Because we used to experience with channel flooding. That is why we want to know the drainage system.</p>
<p>Answer 1.</p> <p>Daw Khin Ohnmar Htwe</p> <p>(Socio-economic Consultant)</p>	<p>Thank you for the correction on the area of Dagon township, this correct area is 4.5 square miles. We will update on the final report. Secondly, it is difficult to manage to collect socio-economic data. There are many high-rise building in YawMinGyi quarter. We have no chance to enter an interview for some building because all the entrances are a lockdown for security reason. As you may know, we have to make an interview at teashops and other places. It took about 10 days for Yaw Min Gyi quarter alone. It is the difference between urban and rural for social impact assessment. Most of the people are busy, not willing to respond and sometimes lock up. These happened in Pha Ya Gyi quarter also but the quarter administrator is very supportive and comes along with the survey team. In the end, we also requested to National Health Laboratory (NHL) for an interview, especially NHL's staff families. We also requested U Wisara quarter administrator for an interview. We have no chance to meet with quarter seniors. We always inform quarter administrators for every interview. It is very hard to work in order to get 24% of samples sizes. One of the objectives of the today meeting is not to miss anyone who wants to input for the SIA process. We would like to apologize due to the inconvenience caused during the survey.</p>
<p>Answer 1.</p> <p>Y Complex Company</p>	<p>First of all, we thank for your presence at 2nd stakeholder meeting. Firstly, we would like to explain about groundwater. Water supply for Y Complex Project is vitally important. We apply for water supply to YCDC as soon as we have started in 2015. YCDC has been facing water supply issues since then and up to now. That is why we will be using underground water following YCDC's instruction. YCDC can fulfill fully water supply from Kokkogwa water supply to Yangon city using Japan ODA Loan in 2025. We will use the water supply from Kokkogwa in 2025 when it is functional. We have already discussed with Chief Minister of Yangon Region for that particular matter. We learned that tube wells from Dagon park dig up about 60-70 feet from ground level. Our project's basement has two layers about 30 feet. We will not dig up within 30 feet. There are different layers of underground such as water layer, impervious layer, mud layer, water layer, mud layer and so on. Water layers are formed separately and assumed no direct contact with other layers according</p>

	<p>to the report. Actually, we cannot see the underground water through our own eyes. We would like to propose an idea whether during construction or operation stages if we were facing with the water issue, we would better solve by collective manner.</p> <p>We have to submit construction permission for this project and now we got a permit. We have to apply permanent electricity usage permission to YESC. YESC will instruct us where we have to get electricity. We cannot take whatever we like from current public electricity grid.</p> <p>There is no direct relation with health, but people can take a walk and assess to coffee shop inside the project. There will become a place for recreation after completion of the project.</p> <p>Our project has two layers at the basement and there is a pit between the basement and ground level. The Pit will store wastewater and we will use the cascade wastewater treatment system. Finally, we will discharge treated water with permitted BOD and COD levels to YCDC's drainage. The drainage channels require bigger than existing channel according to YCDC's instruction. We will design and construct following dimension requirements.</p>
<p>Question 5. Dr. Maung Maung Khin (Yaw Min Gyi quarter)</p>	<p>We also worried about underground water. We knew that we applied Gyo Phyu water since 2015 and now 2feet pipe reaching to Mingaladon township. Will Yaw Min Gyi quarter receive that Gyo Phyu water? How Y Complex Project will take responsibility whenever electricity and water problems for long. We thank for the drainage system and for using modem treatment technology.</p>
<p>Question 6. U Win Kyaw (Yaw Min Gyi quarter)</p>	<p>We observed that Y Complex Project will use 100% water supply from Kokkogwa water supply. Can our Yaw Min Gyi quarter have the chance to use from that source? We want to know when Kokkogwa project will be finished. The salt water intrusion will be a problem if extremely extract water from a tube well. It will damage the ecosystem. We can notice the high content of sodium chloride. Firstly, we are worried about drinking water and secondly ecosystem. And then, you explained that the water layer exists separately, so we want to know whether dry or wet. The nature of water has weight, pressure, if the mud layer has wet, it will be existing as a filter. I am not an engineer, just based on common sense. Our quarter has an issue because we are old and cannot carry too heavy water bucket up to 6 stories. Who will pay for fuel for pump up water to top? These are our concerns. Thank you.</p>
<p>Answer 2. Y Complex Company</p>	<p>We are encouraged by Yangon city's infrastructure which will support water around 2025 as per YCDC. We are Japanese even though we are not representing Japan, Myanmar and Japan are trying</p>

	<p>to get water in 2025 through G to G approach. If we can get Gyo Phyu water in 2025, we can remove using the pipe from Shwedagon Pagoda Road. Currently, we are applying for underground water license. If something happened during and after construction by Y Complex project, we will solve out the problem together. The water penetrates into the mud layer, but not too much compared to the sand layer less than 100 times pass the water.</p> <p>We inquired for Kokkogwa Project and we observed that that project is intended for western Yangon and so the western area of Yangon will receive water from Kokkogwa project.</p>
<p>Answer 2:</p> <p>U Tin Aung Moe</p> <p>(E-Guard)</p>	<p>Y Complex Project gives due consideration on groundwater and wastewater. From the environmental side, we have considered with Y Complex 100M³ or 60000 gallons capacity tank to build. The tank will be collecting water from rain harvesting. Impervious soil or seal surface (concrete) has problem and overflow to the side by the road, structure, etc. Finally, water will flow down into Yangon River. That problem is not only YCP problem but also Yangon City's problem. So, all the personals from administrative sectors of Yangon have to try to find a way to solve that problem. We also considered a water treated system can treat sewage 100M³. The treated water with BOD, COD 200 to 300 mg/m will discharge to drainage. The rest sludge will be discharge eventually according to YCDC's instruction. These are explanations from the Environmental point, Freshwater and wastewater.</p> <p>The 2nd Stakeholder meeting was finished successfully around 4:00 pm.</p>

9.4 Grievance Mechanism

9.4.1 Overview

Grievances are complaints or comments received by Yangon Complex Project (YCP) or and/or its subcontractors from stakeholders. Implementing a Grievance Mechanism for projects is stipulated under the IFC's PS1, IPIECA's guidelines and Yangon Complex Project's Stakeholder Practice Engagement Guide.

Grievance Mechanisms has to be proportionally scaled to the project and potential impacts and should consider local cultures and contexts. The mechanism is a living process- this means that it should be appropriately staffed, monitored and take necessary action, and be adjusted and improved over the life of the project where necessary.

According to the preliminary feedback system, stakeholders were able to phone, email or postal mail to YCP Country Manager in Yangon. A Grievance Mechanism is required for the project's construction and operations phases, and this is presented in **Figure 9. 1**.

Disclosure of the Grievance Mechanism to stakeholders is required, and this is to be undertaken in a manner appropriate to the scale of the project, potential impacts, the local context, and cultures.

Recommended disclosure channels include:

- Community Liaison Officer to attend the pre-operation meetings with government officials
- Provide posters and fact sheets at community places
- Make local FM radio announcements (prior to and during the survey)
- Display documents via YCP website prior to and during the survey.

9.4.2 Key Elements

a) Receive

It is recommended that YCP engage a Myanmar national Community Liaison Officer (CLO) to manage the grievance mechanism for the project. Grievances can be lodged to the CLO by stakeholders via a number of channels including:

- Telephone to YCP Office in Yangon.
- Email to YCP CLO in Yangon.
- Written correspondence by postal mail to YCP Office in Yangon.
- Through community leaders / traditional authorities e.g. Township Administrator.
- Direct contact with the CLO during meetings prior to and during the survey.

b) Assess and Assign

The CLO will register the grievance on YCP Grievance Register and make an initial assessment of the complaint and assign a Complaint Owner. For straightforward complaints, the Complaint Owner may be the CLO. For complex issues, the Complaints Owner may be other personnel/Departments within YCP. E.g. Senior Management, Grievance Committee, Third Party Mediation, etc.

c) Acknowledge

Grievances will be acknowledged by YCP via written response to the complainant within 48 hours of receiving the complaint. The acknowledgment will be via email or letter- whichever mode is most appropriate to the communication requirements of the stakeholders. All communications (written and verbal) should be conducted in a language which is understood completely by the Complainant e.g. Myanmar Language.

d) Investigate

The Complaint Owner investigates the complaint and proposes options to resolve the issue, in consultation with other personnel as required. The identity of the complainant should only be disclosed to the extent necessary internally and should not be shared with any third parties.

Solutions may be determined by:

- The proponent proposes a solution.
- Community and proponent agree on a solution.

- The third party defines solutions, or
- Traditional or customary defined solutions.

The grievance will be resolved within five (5) working days, however complex complaints may take longer to resolve. For complex complaints, the CLO will notify the stakeholder of the delay and the expected timeframe for resolution.

Provision should be made for instances where there are an individual or group claims of loss of assets, etc.

The process should be recorded in the YCP Grievance Register. The database should capture:

- Record number.
- Stakeholder name and contact details.
- Date received.
- Responsible personnel within YCP
- Nature of grievance (details).
- Response and any associated documentation.
- Date of close-out

e) Respond

The Complaint Owner and the CLO will agree on a response. The response should communicate the findings of the investigation, set out the proposed corrective actions, define timeframes, responsible parties, monitoring requirements and seek feedback from the Complainant.

The Complaint Owner and CLO determine the next steps based on feedback from the Complainant. If the Complainant accepts the resolution, YCP will proceed to implement (step 6a). If the Complainant does not accept the resolution, the complaint will be escalated to the Country Manager, Myanmar (step 6b) for review and development of a final resolution. The Complainant's response will be documented in the Grievance Register.

f) Resolve

If the complainant accepts the response, the agreed actions are then implemented. The Complaint Owner is responsible for assigning action parties, actions and timeframes to implement the resolution. The Complaint Owner informs the CLO once the resolution has been implemented.

g) Review

Yangon Complex Project will seek to reach a resolution with the complainant that is satisfactory to both sides. If YCP and the Complainant are unable to agree on a solution, the Complaint may be escalated to the Country Manager Myanmar for review and final decision.

h) Closed-out

A Complaint is closed out when no further action can be or needs to be taken. The closure status of the complaint and any other final information is recorded in the Grievance Register.

Monitoring, Reporting, and Improvement

The Grievance Mechanism is a living process, which should be reviewed, updated and improved as the project progresses. YCP will develop KPIs, gather data and report on performance, which will enable the organization to analyze trends in complaints received and identify any underlying systemic issues. A grievance report is completed once a month during the operations period and submitted to the Country Manager Myanmar.

9.5 Public Disclosure at the draft EIA stage

As per EIA Procedure Myanmar (2015), paragraph (65), within a period of 15 days, after the submission of the draft EIA report to ECD, the report has to be disclosed in YCP website and E Guard Environmental Services and REM-UAE websites. At the same time, hard copies of the draft EIA report has been displayed and distributed for the purpose of public disclosure at GAD office at Dagon Township. The Project proponent has to disclose the executive summary of the ESIA report in Myanmar language to the society through websites and public meeting places such as community halls, etc.)

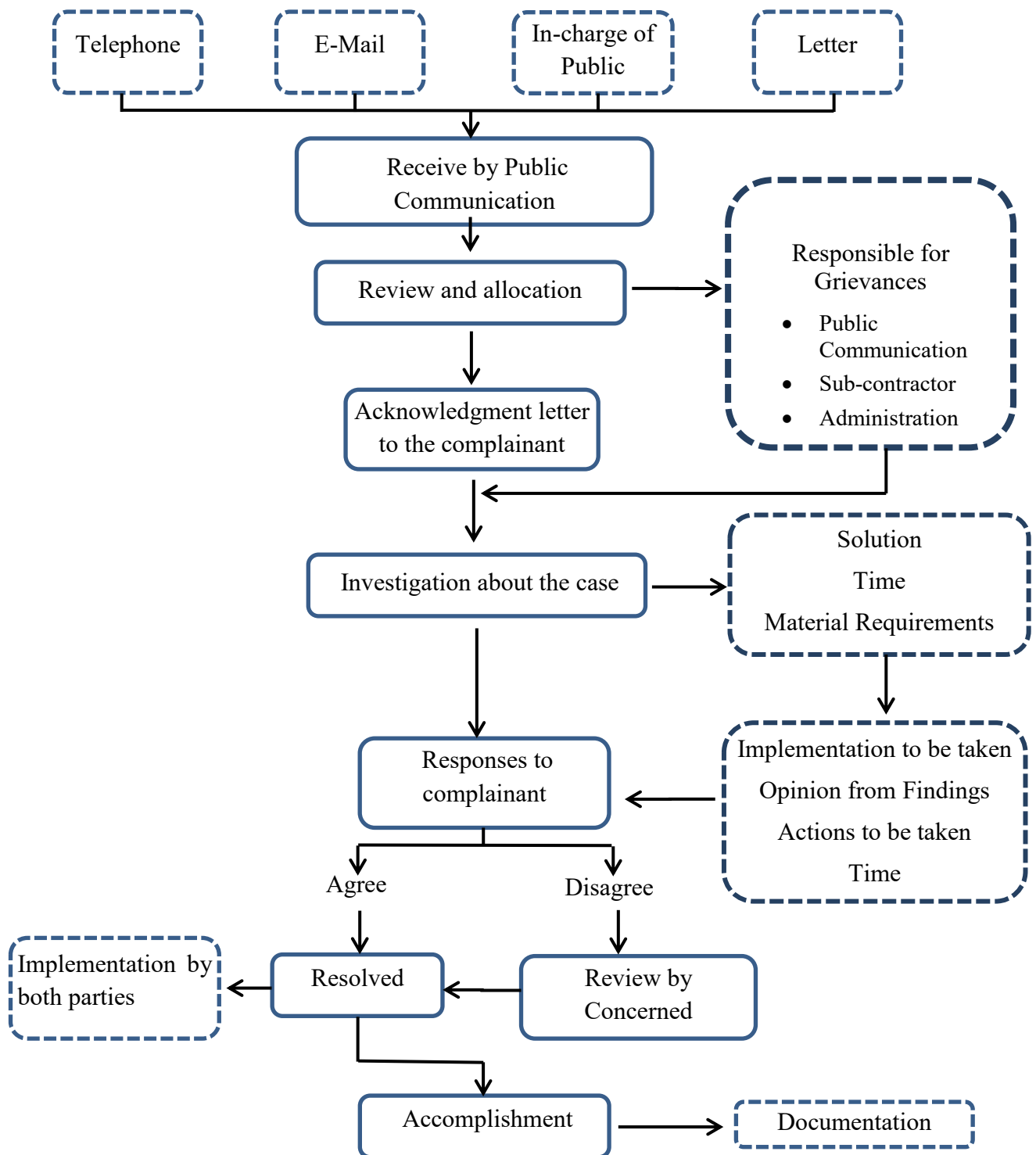


Figure 9. 1 Procedure for Grievance Mechanism

CHAPTER 10: CONCLUSION AND RECOMMENDATIONS

10.1 Conclusion

The potential significant negative environmental impacts on YCP, during the construction phase, are as follows:

- Excavation for basement
- Bored Piling for foundation
- Ambient air quality
- Noise and Vibration
- Traffic Load
- Material storage
- Waste disposal, and
- Sewage Disposal

The positive impacts during the construction phase are:

- Employment opportunities, and
- Improved landscape and scenery

During the operation phase, most of the negative impacts are few compared to construction impacts. The negative impacts on the environment are concerned with the following:

- Water Consumption
- Electricity Consumption
- Sewage disposal
- Waste Management
- Traffic load, and
- Land subsidence

EMP identified the mitigations, monitoring and institutional measures to be taken during construction, operation and decommissioning phases in order to avoid or control adverse environmental and social impacts needed to implement these measures.

Most of the negative impacts during the construction can be overcome by following the design requirements and also the 'Overseas Construction Work Health and Safety Voluntary Standard (FUJITA, 2009).

During the operation stage, most of the negative impacts can be reduced by following the mitigation measures already mentioned in the previous sections. The impacts are mostly concerned with resource consumption, sewage disposal, waste disposal, traffic load, and land subsidence. The positive impact during the operation stage is the employment opportunities for the majority for the locals (652 persons) as well as some foreign experts (20 persons) which is long-term in nature.

Most of the negative impacts during the operation phase can be mitigated by the sustainable use of resources such as water consumption and energy consumption. The water consumption is properly calculated, on per capita basis as well as consumption of diesel for emergency

cases. Most of the electricity will be obtained from the national grid and that will reduce the diesel consumption to some extent.

10.2 Cumulative Impact Assessment

The cumulative assessment defined the spatial and temporal boundary for assessment and review impact significance based on “Cumulative Impact Assessment Matrix“ and “Cumulative Impact Significance Criteria” and considering the impacts from other projects in the vicinity of YCP.

The following provides a summary of the findings.

Cumulative Impacts having “Low Significance”, which includes,

- Air Quality
- GHG Emissions
- Noise/ Vibration, and
- Waste

Cumulative Impacts having a “Medium Significance” includes:

- Surface Water, and
- Ground Water
- Traffic/Transport

Implementation of the proposed YCP in line with the mitigation measures described in the preceding chapters indicated that the Cumulative Impact of YCP can be managed.

10.2.1 GHG Emissions

The potential climate change impacts of YCP may be due to electricity consumption and fuel consumption due to multipurpose use for supplementing electricity from National Grid, which will be 29,523 gallons and 100,285 gallons of diesel oil respectively (without National Grid electricity) for standby and standalone generators.

It is estimated that YCP will need 57,600 kWh per day which will be the supply from National Grid. The GHG emissions generated from diesel consumption of standby generators according to EBRD methodology for assessment is categorized as low, which indicates that YCP contribution to cumulative greenhouse gas emissions is considered to be well below the allowable limit.

10.2.2 Traffic Load

Traffic volume studies were conducted to determine the number, movements, and classification of the road using vehicles at intersections of Shwedagon Pagoda road, Pantra road, Arzani road, U Htaungbo road, U Wisara road, and Bo Gyoke road. The objective of conducting this survey is to find out the influence of vehicles on vehicular traffic flow, whether it is a free flow or congested.

The assessment indicated that the following improvements will be necessary under 2026 Build condition:

- For *Arzani Road/U Htaungbo Road/Shwedagon Pagoda road*, existing lane configurations need to be modified. Re-timing signal improvement are also recommended.
- For *Shwedagon Pagoda road/ Pantra street*, changing in width and existing lane configuration will be modified.
- For *Shwedagon Pagoda road/U Wiara road*, existing lane configuration will be modified to accommodate the site generated trips
- For *Shwedagon Pagoda road/Bogyoke road*, the retiming of the existing signal timing to accommodate the site-generated trips and coordinating the signal with the other proposed signal timings
- For *U Wisara road/Pantra street*, additional lane will be added and the existing lane configuration will be modified to accommodate the site-generated trips
- For *U Wisara/ U Htaung Bo road/ Alone road*, existing lane configurations will be modified to accommodate the site-generated trips.

In conclusion, with the implementation of the proposed improvements, the anticipated traffic by the proposed developments can be efficiently accommodated with YCP corridor and intersections.

10.2.3 Water Consumption

YCP is located in YCDC Zone 2 area and will apply permission for the use of surface water from the current water supply system of YCDC. The water supply of YCDC is controlled by YCDC Water and Sanitation Engineering Department and provides at least 90 MGD of potable water for its 5.14 million citizens. The daily water consumption of YCP is estimated to be approximately 550 m³ (0.15 MGD) which covers such facilities as offices, hotel rooms, swimming pool, spa, and laundry, etc.

In order to have alternative sources of water supply, YCP had dug five tube wells in the project site. YCP has got the permit from the Department of Urban and Housing Development under the Ministry of Construction for the five tube wells.

10.2.4 Waste Disposal

Waste from YCP is in the form of Non-hazardous (NHZ) and Hazardous Wastes (HZ). NHZ will be properly collected and temporarily stored at dedicated locations at YCP and disposed of on a daily basis after contacting YCDC for final disposal.

YCDC is constructing Waste-to-Energy facilities in Shwe Pyi Thar Township, which was completed in 2017 and once the plant becomes operational, NHZ could be sent to that plant for the final disposal.

10.3 Environmental Management and Monitoring Plan

Environmental Management and Monitoring Plan (EMMP) has been developed for managing the YCP and monitor implementation of the project impacts during construction, operation and decommissioning phase and operation phase of the project.

10.3.1 Monitoring Parameters

The monitoring parameters are selected, based on impacts identified in the construction, operation and decommissioning phases of the YCP. The parameters determined will reflect the effectiveness of the mitigation measures and general environmental performance of the project. Monitoring of the parameters has been determined, at the various stages of the project as follows:

Construction Phase: To monitor pollution levels that exist during the construction activities

Operation Phase: To determine the impacts that might arise from the operation of hotel and office complex activities

Decommissioning Phase: Decommissioning is assumed to have the same impact as the construction phase and may entail parameters similar to those at the construction phase.

The detailed monitoring parameters have been mentioned exclusively in the monitoring plan of EMP and also the budget for the monitoring program.

10.4 Recommendations

During the construction phase, the noise and vibration has to be properly controlled, as there are three historical buildings within the 200 m radial distance of the project site. Noise and Vibration limits have to be monitored closely, and when exceeded the limits, proper mitigations measures mentioned has to be adopted so as not to disturb the buildings with serious impacts. When vibration limits reach the threshold limit (75 dB), it is necessary to carry out appropriate mitigation measures such as in-ground barriers and other mitigation measures such as building vehicle skirts and noise barriers.

Office and Hotel business consumes a lot of natural resources such as water consumption, energy consumption, and generate wastewater and waste. Water consumption is related to personal use by guests and facility requirements for housekeeping, laundry, cooking, swimming pool spa facilities and grounds maintenance. Water efficiency can be promoted by sustainable siting, design, and construction. When water is drawn from natural resources such as tube wells, a water sustainability study (based on current and future water withdrawal, without impairing the needs from the community) should be conducted to demonstrate the amount of water needed is sustainable and does not affect the local communities.

The main source of freshwater is groundwater from tube wells. It is generally assumed that the rate of groundwater extraction is higher than the recharge rate, which may cause many environmental problems such as land subsidence, resulting from the reduction of yield in the aquifer system. Water consumption has to be under proper control, and not to overuse. Water

meters have to be installed and regular check and control on the use of water sources, particularly, the water from tube wells, as the excessive use from such facilities have a high risk for land subsidence.

For energy consumption, the Hotel/Office consumes large amounts of energy in the form of heat and power. Building siting, design, construction, and operation patterns all heavily influence energy use. Energy consumption can be reduced by the cautious use of energy in association with heating, ventilation, and air conditioning facilities. In addition to that, the reduction of energy consumption associated with lightning, such as:

- Use of occupancy sensors
- Use of high-efficiency light bulbs
- Daylight controls
- Adoption of energy management for the effective use of energy sources
- Reduction of energy consumption associated with cooking and refrigeration equipment, etc.

For sewage/wastewater treatment, YCP will use OJI Wastewater Treatment facilities for proper disposal of cleaning agents, including liquid bleach and detergents that can cause eutrophication of watercourses, if not properly controlled and for effluents from the kitchen, which may contain oils and grease. The wastewater outlet from the OJI Wastewater Treatment Facility has to be monitored regularly to find out whether the release of effluent wastewater meets the BOD limits set according to the National Environmental (Emission) Guidelines,

Waste generated by YCP includes inorganic and organic wastes and to some extent hazardous wastes like batteries, solvents, waste printer cartridges, paints, and some packaging wastes, etc. For the proper disposal of waste, a Waste Management Plan is developed and proper disposal of the waste should be carried by contacting YCDC for effective disposal. For hazardous waste disposal, YCP has to contact YCDC has facilities in place to handle hazardous waste in an effective manner.

For the situation of traffic load due to the presence of YCP, ingress and egress for YCP to Shwedagon Pagoda Road, Pan Tra Street, and U Wisara Road will be accessed/egress from/to the site. A full access/full-egress, 21 feet wide new site driveway which connects between Shwedagon Pagoda Road and U Wisara Road will be provided on the southerly side of YCP.

In addition, a full-access/full-egress, 28 feet wide of another new site driveway which connects between Pan Tra Street and a new site driveway will also be provided at a westerly side of YCP. This site driveway can also be used as ingress for public and egress for site generated trips.

Therefore, one ingress/egress, one ingress, and two egresses will be accessed/egress along Shwedagon Pagoda Road, two egresses along Pan Tra Street and a full ingress/egress along U Wisara Road from/to the site Drive ways will be provided infront of the YCP building and northly side of YCP.

Carpooling, ferry and other transportation systems such as Airport Shuttle Bus are possible mitigation measures to reduce private car usage along Shwedagon Pagoda road. In addition to that, Phayar Lan train station is located near YCP; therefore shuttle bus will be provided from/to Phayar Lan train station to/from YCP as a feeder service to reduce private car usage.

Environmental Management Plan and Environmental Monitoring Plan have to be implemented by the proponent by appointing HSE team consisting of HSE Coordinator and two assistants. They are responsible to prepare the periodic (semi-annual) Environmental Monitoring Reports and submitted to ECD and disclosed such reports to Project Affected Persons (PAPs) upon request. If unanticipated environmental and or social risks and impacts arise during construction and implementation or operation of, the proponent has to propose the corrective action plan

This EIA report has identified environmental and social issues, which need to be investigated. In order to keep the impacts in an acceptable manner, mitigation measures have to be carried out in line with applicable guidelines, regulations and Good International Industry Practice (GIIP).

The findings of the EIA indicated that, while there are some environmental impacts during construction and operation phases, YCP is not likely to have significant long-term residual impacts to the surrounding environment, if all mitigation measures are properly implemented.

During the construction phase the proponent has to be well aware of the potential impacts on the environment and in order to overcome this, the proponent will design YCP, taken into consideration the environmental management concerns. Also, YCP will adopt Overseas Construction Work Health and Safety Voluntary Standard of FUJITA, which is a renowned construction company in Japan, integrating best practices in environmental design and construction. During the operation phase, Tokyo Tatemo Asia Pte. Ltd., will supervise, manage and facilitate the overall implementation and completion of the development.

In conclusion, YCP is expected to complement the process of urban renewal in the Yangon City business development. It will contribute towards the growth and development of Yangon City as well as the advancement of the living standard within the city.

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APPENDICIES

Appendix I Health and Safety Voluntary Standard

Appendix 16



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Overseas Construction Work Health and Safety Voluntary Standard

Fujita Corporation
International Business Division


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Attached table -1, 2, 3

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CHAPTER 1. GENERAL RULES

1. Purpose

The purpose of this standard is to secure the safety of the construction work in the foreign countries and to prevent the industrial accidents by providing voluntary standard of the International Business Division of Fujita Corporation, in addition to the applicable laws and regulations of the safety and health in a country concerned.

This standard brings all important issues in the applicable laws and regulations of the safety and health in Japan and the company voluntary standard, and this standard basically provides in oversea construction by the minimum standard that should be executed.

2. Coverage

1. This standard is applied to the building work and the civil work of the International Business Division.
2. However, the safety and health regulations, that are applicable in a country concerned, will supercede this standard, provided these applicable law and regulations are more severe than this standard.

CHAPTER 2. GENERAL MANAGEMENT OF WORK

The purpose of this chapter is:

- to observe applicable laws and regulations of the safety and health in the country concerned,
- to maintain a safety management system with rules and regulations in the construction site,
- to provide the management matter for the dangerous and harmful works,
- to provide the necessary guidance to manage the entire safety of the construction site, and
- to secure safety in the construction site.

1. Confirmation and maintenance of the safety and health management

- (1) The "Safety management system report" including the following contents, shall be submitted from the trade construction company in order to control and manage the safety of the construction site. However, it will depend on the mutually agreed procedure with regard to the below documents (a,b) to be submitted.
 - a. Construction and safety management system of the prime subcontractors and the secondary subcontractors
 - b. List of workers
(name, work trade date of employment, years of experience, date of birth, age, name of the national origin or native place, blood type and list of the qualification)
 - c. Copies of the qualification certificate that are required to perform the construction by the law and others in the country concerned.

(2) The construction machines listed below shall be brought at site with the maintained condition by the trade company who is liable for its maintenance and the personnel who is in charge of this work shall confirm of this procedure.

a. Movable crane and construction machines listed in Table-1

b. Power tools listed in Table-2

(3) The trade construction company shall be directed and complied with the working limitation of the following persons to work in the construction site:

a. The limitation by the age

The minimum working age is a compulsory education completion age in the country concerned.

The highest working age is basically below 60 years old, however, there are exceptions when the project manager permits the request from the trade company.

b. The limitation by the body condition

The person, who is having the following body conditions, are not allowed to work.

- Person who contracts an epidemic disease or a catching disease
- Person who might be harmed for mental disorder
- Person who has diseases such as the heart, kidney, lung, and whose condition might become worse seriously working in the construction site
- Person who has epilepsy disease, alcoholic and stimulant intoxication
- Person who is under the influence of alcohol
- Person that there is encumbrance in hearing such as people who do not catch usual conversation easily
- Person who has blurred vision

2. Maintaining the rule and regulations of the site

(1) A work pants (short pants are not acceptable.), a work wear (short-sleeved one is acceptable. Sleeveless one is not acceptable.), and a pair of shoes shall be worn correctly.

(2) Inside the construction site, all of the worker should wear a helmet with the jaw tightened

(3) The protective tools necessary for work should be used:

a. Safety belt when specified as an over-height working

b. Eye shield for a welding worker and concrete breaking worker.

c. Dustproof mask for an arc welding worker etc.

(4) The safety training certificate for the new person shall be stucked on the helmet when completed.

(5) Maintain the working environment of the construction site, office, restroom and workshop in order.(arrangement)

(6) Specify the smoking area and set up the place with the sign of where to put the cigarette butt and the fire extinguisher.

(7) Keep restroom clean.

(8) h Try to maintain the rule and regulations of the construction site through all occasions of education and guidance by conducting events like safety training, safety rally and morning assembly etc.

3. Prevention of dangers in the hazardous and noxious works

- (1) Prior to the commencement of the item (2) below, hold a conference to understand each other the construction method that is to be prepared and approved by Construction Division Manager.
- (2) The following respective operation items should be carried out by the operation chief who should be selected and supervise directly during the work. The operation chief shall be educated by a special education for safety.
 - a. Excavating the natural ground over 2m or more in height
 - b. Installation or removing struts or waling of shoring.
 - c. Assembling, dismantling or altering work of a suspended scaffold, an overhanging scaffold or scaffolds over 5m in height.
 - d. Assembling, dismantling or altering the building framework or tower which are composed of metal members and over 5m in height
 - e. Excavating such as pistil roads (mountain tunnels and shield tunneling, etc.)
- (3) Engage an operator who was educated by the special safety training for the following respective operation items.
 - a. Driving construction vehicles or transporting equipment with over one (1) ton in weight.
 - b. Operating a movable crane with a lifting capacity of 1 ton or more.
 - c. Work involving in the slinging of a crane, mobile crane or derrick with a lifting capacity of more than 1 ton.
 - d. Welding, cutting or heating works by using a flammable gas and oxygen Work involving in the welding or cutting works by arc welding machine.
- (4) The content of a special safety education provided for items (2) and (3) above is to be as follows:

Educational subject	Educational content	Educational time
Knowledge concerning safety	-Point of safety work -Disaster case	More than one hour

(interim measures)

Until an education textbook is completed, the special construction company can nominate a person who has the capability, knowledge concerning safety and the experience

CHAPTER 3 PREVENTION IN OF DANGERS DUE TO FALLING

The regulations of this chapter are to prevent falling from the edge of work floor, the floor or wall opening of building, vertical opening (it is "Opening etc." in this chapter), scaffolding and temporary walkway

1. Installation of the working floor, etc.

Provide a working floor by assembling on the scaffolding when working on it that is over 2 meter or more height (excluding the edge of the working floor and the openings) However the protective measures such as to install safety net and a safety belt use shall be taken when it is extremely difficult to provide the said working floors.

2. Use of safety belt etc

Install a protective net and have the workers to use safety belt, when the following works which are over 2m in height will be executed.

WORK	USING SAFETY BELT	SETTING PROTECTIVE NET
① Assembling or demolition of the scaffolding	○	
② Work on the internal and external scaffolding	○	
③ Erection of steel frame	○	○
④ Work on the roof	○	○
⑤ Work on the shoring (wailings, struts)	○	
⑥ Work at edge of the working floor and around the opening	○	
⑦ Work on the installation or removal of enclosures, handrails and covers, etc at an opening	○	
⑧ Work on the vehicle for work at height, movable scaffolding	○	
⑨ Work on the slope	○	
⑩ Instructed work on preceding installation of safety rope	○	

3. Facilities for fixing safety belt etc

When carrying out the work at a place having a height of 2m or more, have the workers to use safety belts and provide facilities etc. to fix safety belts securely. Location and usage of the facilities should be made known to the workers.

4. Temporary walkway

Temporary walkway (bridge, staircase) to be per the following provisions.

- (1) The floor width shall be more than 40cm and the clearance between floor boards to be less than 3cm.
- (2) The floor material shall not have a remarkable fault on strength that results a deform and corrode.
- (3) The handrail shall be the following.
 - a. Strong structure
 - b. Material shall be no damage and corrosion that results the decrease of the strength. Height above floor shall be over 90cm with the middle rail. Provide a base board as necessary.
- (4) The inclination shall be less than 30 degrees, however this is not applied for the staircase
- (5) Provide the step stops or other measures on the walkway that exceeds 15 degrees slope.

5. Prevention of dangers due to falling from the scaffolding

- (1) Distance between the external wall of the building and the temporary work floor shall be less than 30cm, If it is difficult to maintain the distance of 30cm or less, provide the horizontal safety net between the space at every two layers or less.
- (2) At least one temporary staircase should be installed at each side and the distance between stairs shall not exceed 30m

6. Hazardous prevention of falling from opening

Install either one of the following defense facilities in the opening. In case of a handrail is installed provide the middle rail and the baseboard (when it is necessary).

- (1) Handrail and enclosure that is over 90cm high above floor.
- (2) Cover which takes the sliding prevention measures.

* Item 1) Apply to the opening size of over 1500x1500, and 90cm height is necessary.

* Item 2) Apply for the less than 1500x1500 openings with the sliding prevention to be equipped

7. Prevention of dangers due to falling in the steel assembling work or etc.

- (1) A safety net installation in the steel erection work shall be immediately after installation of the lower beam. The safety net should be installed at every floor which floor height will exceed 4m, and every other floor which floor height will not exceed 4m.
- (2) Vertical passage equipment shall be installed if it is necessary to move along the column. When moving along column, a safety belt should be used along with the installation of a retractable lanyard or a fall arresting device. When a safety belt is used, provide the use method that the retractable lanyard should be set up with drawing ropes and the grips for the vertical safety rope should be distributed in order to be used by two or more workers.

8. Prevention of dangers due to falling from the movable ladder, the stepladder and the movable scaffolding

8-1. Movable ladder

- (1) It must be in a strong structure with over 30cm step width and its vertical intervals from 25cm to 35cm.
- (2) The gradient of the ladder shall be about 75 degrees, the top end of the ladder is away from the top step by over 60cm and a measure to prevent displacement of the ladder shall be taken. In order to prevent falling, it should be done that an assistant support a ladder until the upper part fixation is completed. If it is difficult to fix, make sure to be supported by an assistant during the work.
- (3) The retractable lanyard or vertical safety rope (fall arresting device) should be set up for working over 5m high. And make use of the safety belt.
- (4) Strict prohibit from going up and down with tools and equipments, etc in the hand.

8-2. Stepladder (for a single use)

- (1) It must be in a strong structure equipped with a non-slip metal fitting in order to keep the leg opening angle less than 75 degree and the non-slip caps at the legs.
- (2) The step shall have the sufficient width for the work and be equipped with the non-slip device.
- (3) Prohibit using the stepladder with the height of 2m or more (when it is opened). However, it shall be allowed only for the limited work, provided Project Manager approves to use over 2m height stepladder if it is necessary to use.
- (4) Use the stepladder on the even floor surface. Take safety measures such as planking when using the

stepladder in the place where the foot might subside in the natural ground or sands, etc.

- (5) Prohibit using for the following works:
 - a. Works to be done by standing on the top board.
 - b. Works that might receive impact, heavy labor and difficult posture.
 - c. Going up and down with tool or material in both hands.

8-3. Transfer platform (rolling tower)

- (1) To provide the going up and down equipment, the work floor and the handrail.
- (2) To provide handrails as follow:
 - a. It must be in a strong structure;
 - b. It must be made of materials without a remarkable damage or corrosion etc.;
 - c. It must be over 90 cm handrail heights with a middle rail (install the baseboard as necessary)
- (3) Prohibit to move the scaffolding while a worker staying on it.
- (4) Apply the wheel stopper while a worker is working.
- (5) Make sure that the relation between the height and the width of the movable scaffolding should be satisfied with the following requirements:
 - (a) In case of no stabilizer equipped

$$H \leq 7.7L - 5(m)$$

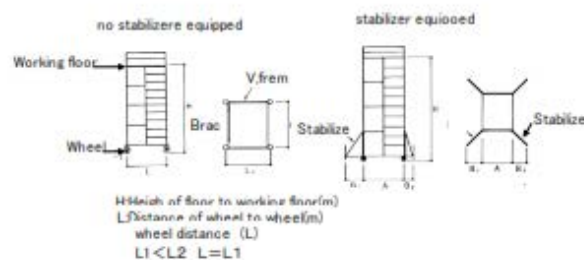
H (height) : Height from the bottom of the castor to the working floor (m)

L (width) : Width between the castors (most narrowest width) (m)

- (b) In case of the stabilizer equipped

The value shall be the following explication:

$$L = A + 0.5 \times (B_1 + B_2) (m)$$



*Assembly is done according to the above-mentioned standard after checking each of its members.
(Do not assemble it carelessly.)

CHAPTER 4 PREVENTION OF DANGERS DUE TO COLLAPSE OF NATURAL GROUND, ETC

The regulations of this chapter are to prevent dangers due to collapse of the natural ground, falling earth or stones caused by excavation. (It is necessary to get the instructions of a domestic technical department.)

1. Excavation of the natural ground

- (1) Investigate in advance the natural ground of the work place and its surrounding with regard to the following matters by boring or other suitable methods:
 - a. Landform, nature of the soil and condition of the strata.
 - b. Existence and condition of cracks, water content, spring water and freezing.
 - c. Existence and condition of underground-installed objects, etc.
 - d. Existence and condition of high temperature gas and vapor.
- (2) The excavation of a natural ground should be done according to the construction plan that is based on the above investigations (1) and the following respective items.
 - a. The time, method and procedure for the work.
 - b. The slope angle according to the digging sequence
 - c. The protective method to prevent the collapse of the natural ground or falling stones when carrying out the work under the digging side
 - d. The structure of shoring.
 - e. The drainage plan.
 - a. Method of checking and maintaining the excavation surface or the shoring.
- (3) The digging slope degree should be less than the value that is shown in the right column provided below according to the type of natural ground and the digging height.(decide the slope degree with a consideration of the conditions of work and weather

TYPE OF THE NATURAL GROUND	HEIGHT OF THE EXCAVATION	ANGLE OF REPOSE GRADIENT OF THE EXCAVATION
Natural ground composed of rock beds or hard clay	Less than 5 m	90°
	5 m or more	75°
Other natural ground (except the sand)	Less than 2 m	90°
	2 m or more but less than 5 m	75°
	5 m or more	60°

(Note) Hard clay: N value is more than 8.

- (4) Do not put excavated materials, construction materials or equipments near the shoulder of the slope. Keep a same distance with the excavated depth from the shoulder if it is necessary to put them on the shoulder.
- (5) When the excavation of the natural ground is started the notice sign that prohibit an entering underside the excavation area except the authorized person or a work watchman shall be placed.

2. Shoring

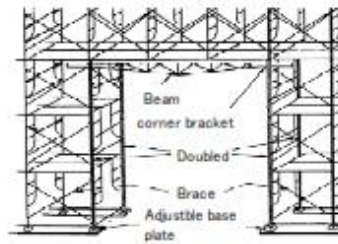
- (1) Install the shoring when a change in soil type and an abnormal water spring appear, and it is difficult to retain the safe gradient of slope.
- (2) The shoring shall be installed according to the assembling plan prepared in advance.

CHAPTER 5 PREVENTION OF DANGERS DUE TO COLLAPSE OF SCAFFOLDING AND/OR FORM PROPPING ETC.

The regulations of this chapter are to prevent the collapse of form propping and scaffolding.

1. Prevention of dangers due to collapse of scaffolding

- (1) Before commencement of the assembling of scaffolding, the drawings for scaffolding plan (floor plan elevation and detail drawing) shall be finalized with the work method and the work procedure. And the assembling work should be complied with these drawings and assembling plan.
- (2) The double-pole scaffolding shall be complied with the following provisions:
 - a. The interval between the vertical posts shall be less than 1.85m and at the cross side posts less than 1.5m.
 - b. The height of the 1st ledger shall be less than 2.0m above floor level, and the height above 1st ledger shall be less than 1.7m as standard.
 - c. The vertical posts shall be laid on the plank board and be fixed by metal sill plate by nails in order to prevent sink and slip. Even if it is on the concrete floor, the vertical posts should be laid on the plank board fixed on the concrete floor by nail, or to provide the horizontal tie pipes which bind all posts at the bottom.
 - d. The scaffolding deck board should be supported by 3 points per a board, and be sure to bind it to the putlog. (The interval of the putlog should be 1.8m.)
 - e. To avoid the joints of the vertical frame and the ledger being centralized on the same layer and span. They should be arranged alternately and be sure that they are connected with the joints.
 - f. To provide ties to wall with intervals of at least 5m vertically and at least 5.5m horizontally.
 - g. The handrail should be installed at the height of 90cm or more and the middle rail should be installed outside. The middle rail inside should be installed with interval of less than 45cm between the top rail and the middle rail, and between the middle rail and the work floor.
 - h. To install the 2 layers stopper at the edge of the scaffolding. (In the position of handrail and middle rail.)
 - i. To set a vertical net for the scaffolding.
- (3) The prefabricate scaffolding shall be complied with the following provisions:
 - a. The vertical post shall be laid on the board and be fixed by jack base by nails in order to prevent sink and slip. In case of the concrete floor, the vertical post shall be laid on the board fixed by nail, or to provide the horizontal tie pipes which bind the all posts at the bottom.
 - b. Steel ledgers should be used on the work floor and the installation on each level should be standardized. The brace should be installed on all levels in both sides.
 - c. To provide ties to wall with intervals of at least 9m vertically and at least 8m horizontally.
 - d. To install the 2 layers stopper to the edge of the scaffolding (In the position of handrail and middle rail.)
 - e. To set a vertical net for the scaffolding.
 - f. The opening of the beam frame should have less than 4 spans in width and less than
 - g. If the height in the upper part of the beam frame exceeds 25m, reinforce the vertical side posts by the double pipes.

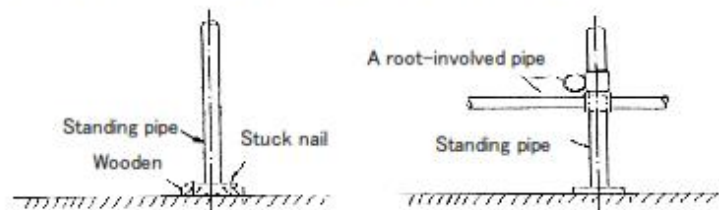


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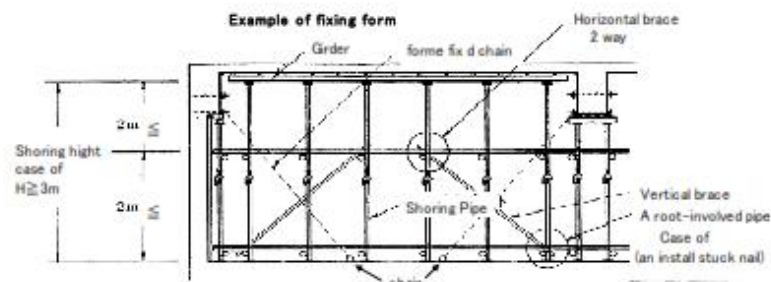
2. Prevention of dangers due to collapse of form propping etc

- (1) When assembling the concrete form shoring, prepare in advance an assembling drawing regarding to the following provisions. The assembling shall be followed with this plan. Propping base
 - a. Layout and member size of props girders, tie beams and diagonal bracings
 - c. Connection details and assembling procedure of the members
 - d. Sliding prevention method.
- (2) Prevent subsiding of the prop pipes by standing on the wood planks, concrete base and piles etc.
- (3) Comply with the following provisions for the supporting form by the shoring pipe method.
 - a. Nevertheless the post height and it is on the concrete floor, the vertical posts should be laid on the timber board or timber wood fixed on the concrete floor by nail, or to provide the horizontal tie pipes which bind all post pipes at the bottom.

Fig—Example of prevention of the post legs from subsiding and sliding.



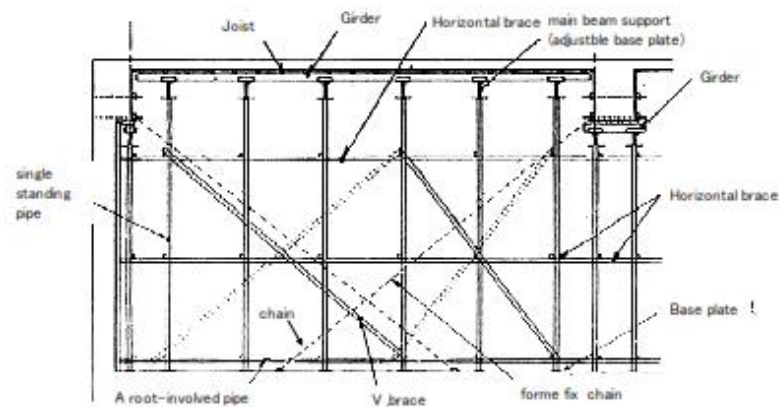
- b The support extensions shall be allowed by two extensions with the consideration that the main support pipe and the sub-extension pipe are as one independent support.
- c. When the supporting height exceeds 3.5m the horizontal collar pipes shall be installed at every 2m height or less in two directions.
- d. The horizontal collar pipes shall be installed near the extended place when the sub-extension support will be used.
- e. Use the exclusive metal devices such as bolts and clamps for the member connecting and the member intersecting.
- f. Fix the shoring posts to the sleeper by nailing and by fixing metal in order to prevent moving.
- g. The propping pipe must be stabilized against a horizontal force by bracing.
- h. In order to prevent buckling of the propping pipe ix the end of the middle pipes to the building structure, if its structure exists nearby. When the bracing will be used to prevent buckling, the brace pipes shall be allocated within 4 propping pipes(3 span) and be installed at each(XY) direction.



(4) Comply with the following provisions for the form supporting by the tubular pipes.

- a. Nevertheless the post height and it is on the concrete floor, the vertical posts should be laid on the timber board or timber wood fixed on the concrete floor by nail, or to provide the horizontal tie pipes which bind all posts at the bottom. The propping pipe shall not be joined as a rule, however, if it is necessary to join the steel pipes together, the joint must be a butt joint and the horizontal member must be installed around that joint. Moreover, the brace must be installed to wrap around the intersection of the prop pipe and the horizontal member.
- b. When the supporting height exceeds 3.5m, the horizontal collar pipes shall be installed at every 2m height or less in two directions.
- c. The propping pipe must be stabilized against a horizontal force by bracing.
- d. If putting a sleeper on the steel pipe, set up a jack for the sleeper and fix it with a nail.
- e. In order to prevent buckling of the propping pipe, fix the end of the middle pipes to the building structure, if its structure exists nearby. When the bracing will be used to prevent buckling of props, the brace pipes shall be allocated within 4 prop pipes (3 spans) and be installed at each (XY) direction.

Example of form work system



- (5) The concrete placing is planned not to offset the load on the form, and make sure the work would be executed according to the plan.

CHAPTER 6 PREVENTION OF DANGER WITH CONSTRUCTION MACHINES, ETC.

The regulations in this chapter is to prevent danger to the worker caused by vehicle type construction machine (which is defined as a machine that can move about itself when it is used for the works: leveling of land, transportation, loading, excavation, foundation, compacting and pouring concrete), movable crane, or by the sling work for the crane operation.

I. Prevention of danger with vehicle type construction machine

- (1) When performing the work using a vehicle type construction machine, establish in advance a work plan incorporated with the following provisions, and work shall be followed with this plan.
 - a. Method & sequence of the works
 - b. Type & specification of the vehicle type construction machine
 - c. Determination of the operation route of the vehicle type construction machine
 - d. Arrangement of the vehicle type construction machine
 - e. Arrangement of an operator and a signalman
 - f. Installation of a work signboard
- (2) When performing the work within the following places, the working area shall be enclosed with a safety fence, barriers, or roping in order to prohibit the entry by unauthorized person, or assign a signalman (watchman) who will direct the route of the vehicles and observe the work.
 - a. Shoulder of a road or a slope area
 - b. Soft ground area
 - c. Area where the construction equipment and vehicles are operating simultaneously.
 - d. Area where the worker is adjacent to the vehicle type construction machine
 - e. Work place where the vehicle road and passage are adjacent. .
 - f. Work place where third party might be endangered
- (3) Do not use the construction vehicles for the usages other than the main usage such as going up and down of the worker with lifting up the load with the power shovel and the clamshell. However, the lifting up work of the load with the power shovel might be allowed provided there is not the prohibition in applicable laws and regulations in a country, and it will use metal fittings such as hooks and shackles that correspond to the following provisions.
 - a. It has sufficient strength corresponding to the load.
 - b. It has a latch.
 - c. It is unlikely to cause coming off the working device. (A hook, etc fixed by

welding, must be welded with the enough melt and throat depth. The welding must be done all around the device.)

- (4) The operator should let down the bucket, stop the engine, put the brakes on and pull the key out before leaving the construction machine.
- (5) It should be checked the ground conditions, and, if necessary, the surface of ground shall be improved and a steel plate and wood planks shall be laid on in order to avoid overturn, when performing the work using a pile driver, a pile drawer or a boring machine

2. Prevention of dangers with the movable crane operation

- (1) When performing the work using a movable crane, the following provisions shall be determined in advance with the consideration of the working space, ground conditions, lifting weight, weather condition, type of the crane and capacity, in order to prevent the hazard on workers by falling the crane.
 - (a) Method of work with movable crane
 - (b) Method for prevention of movable crane from falling.
 - (c) The assignment of workers and the work direction for the movable crane operation.
- (2) When performing the work using a movable crane, the signal shall be determined and shall be done only by this person assigned.
- (3) The outriggers shall be extended fully up to limits during the operation, and crane shall be located on the sound ground with the plank board or squared log in order to avoid falling the crane
- (4) It should not be allowed the worker entering under the load that the crane is lifting. Also take measures off-limits so that the worker should not enter it in the operation radius of the movable crane.

3. Prevention of dangers by the sling work

- (1) Assign the responsible person in advance when the sling work will be performed by two or more workers. The work direction shall be done by this person only
- (2) Check the sling equipment before the commencement of work and replace it when it will be found abnormal.
- (3) The wire rope shall be used with its safety coefficient that is 6 or more.
- (4) The sling wire shall be by two-wire ropes within 60 degree of hanging angle
- (5) The assisting rope shall be used for the loading in, turning around the load, or loading to avoid the waiving.

Column —Safety load of wire rope(6X24 A type)

$$\text{Max load : Estimate (kgN)} = \frac{(\text{rope size m/m})^2}{2}$$

$$\text{Safety load : Estimate (t)} = \frac{\text{Quantities of rope} \times \text{Max load}}{\text{Safety coefficient } 6 \times \text{tension} \times 9.8}$$

(Re) Tension : Sling angle $60^\circ \approx 1.16$
 Rope size 10m/m hang load $\approx 1.44t$

CHAPTER 7 Prevention of danger by the electricity

The regulations in this chapter is to prevent the electric hazards of shock to workers caused by construction works (electrical work is excluded).

- (1) Make sure the country use voltage, and the measuring by the instrument shall be done before commencing the work.
- (2) Distribution Panel shall be complied with the followings
 - a. Distribution panel should be a box type with locked door which is made of steel or (non-combustible) synthetic resin materials that i durable and water resistant.
 - b. The earth leakage circuit breaker shall be equipped and must be confirmed its operation at the every working day. The earth-leakage circuit breaker should be equipped with less than 30mA of the electric current sensitivity rate and within 0.1 seconds reaction time.
 - c. The metal type distribution panel shall be equipped with the grounding earth case.
(If the voltage is less than 300V, electrical resistance shall be less than 100Ω.)
 - d. The switch must not be the type that the charging parts are not exposed.■
 - e. Install the branching circuit corresponding to the master switch and the load in the distribution panel
 - f. If the outlet will be it shall be used with a grounding pole equipped
 - g. The use voltage and location of the cable must be indicated.
 - h. It must be fixed firmly in a dry place and maintained clear around the place.
- (3) Movable electric cable (cab tire cable) shall be complied with the following
 - a. Must be a cab tire cable with more than 0.75cm² sizes.
 - b. Four(4)lines of cab tire cable for three-phase electric power and 3 lines for single-phase shall be used.
One line(green) of the cable lines must be used for earthing.
 - c. The cab tire cable must have the perfect insulated coating.
 - d. The cab tire cables shall be set through the corner side at the passage so as not to obstacle the passage way. In case of the installation at the place where crossing the passage and under the heavy material, the cables shall be protected by the cable protector or using steel pipes.

- c. Maintain enough insulation in connected part of the movement electric wire with a tape etc. with an excellent insulation performance. Use the connecting hardware of the waterproof type, the drip-proof type, and the outdoor type, etc. (connector) when using it at the wet place or possible wet place.
- (4) The arc welding machine shall be complied with the following .
 - a. The electrode-holder for the arc welding shall be an insulated type. Make sure not to use the damaged insulation holder. b. The automatic voltage reducing device shall be used for the arc welding works at the height of 2m or higher and likely to contact the high conductive steel frame.
 - b. Make sure to ground the outside cover of the welding machine.
 - c. Make sure to use a dustproof mask, welding mask, goggle, welding glove for welder.
- (5) The electrical machinery equipment shall be complied with the followings.
 - a. Make sure to ground the electrical machinery and apparatus. However, a double insulating structure does not require to be grounded.
 - b. The insulating cover or enclosure shall be installed in order to prevent electric shocks.
- (6) The power cutwork shall be complied with the followings (to be checked by the clamp meter, etc):
 - a. Prohibit the work with the live line
 - b. When executing the work while the power is cut, make sure to communicate with the person who will operate the power work and the switch board will be locked or arrange a watchman with a notification that prohibits the power in, in order to avoid the electric shock.

The construction machines to be confirmed its maintenance by the personnel in charge. The machines are brought at site and are liable for the maintenance by the trade construction company.

Attached Table—1. • Construction Machines etc

• Construction Machines etc. which require the special training

Type•Use		Kind of Machine	Notice	Special Training	Remarks
Vehicle-Type Construction Machine	Leveling• Transportation• Loading	①Bulldozer ②Motor grader ③Tractor shovel ④Scraper ⑤Scrape dozer	○	○	
	Excavation	①Power shovel ②Drag shovel ③Dragline ④Clam shell ⑤Trencher	○	○	
	Foundation	①Pile driver, pile drawer ②Earth Drill ③Reverse-circulation drill ④Boring machine ⑤Earth auger ⑥Paper drain machine	○	○	
	Compaction	①Roller	○	○	
	Concrete Work	①Concrete pump car	○	○	
	Dismantling	①Breaker	○	○	

	Others	①Movable elevation work platform	○	○	
Vehicle-type Loading & Transportation Machine		①Fork-lift ②Shovel loader, Fork loader ③Dump crawler	○	○	

Attached Table— 2. Electrical machines ~~tools~~ & equipments

① Arc welding	⑧ Circular saw	⑮ Grinder
② Generator	⑨ Carried Circular saw	⑯ Drill
③ Compressor	⑩ Washer	⑰ Impact wrench
④ Bender	⑪ Water pump	⑱ Others
⑤ Mortar mixer	⑫ Cutter	
⑥ Chain block	⑬ Winch, Hoist	
⑦ Vibrator	⑭ Belt conveyor	

*Reference - The organic solvent/special chemical material etc. that require checking

1. Paint	Anti-rust, Chromic acid chemical compound, polyvinyl chloride, Polyurethane
2. Adhesive	Phenolic resin, Synthetic rubber, polyvinyl acetate
3. Waterproofing	Asphalt, Sheet, Waterproofing membrane coating
4. Accelerator	Organic solvent in forming urethane foam

Appendix II B.O.T System Land Lease Agreement

**B.O.T System
Military-Owned Military Museum Land
(9.028 acres)**

Lease Agreement

Between

**Office of the Commander-in-Chief (Army)
Office of the Quartermaster General**

&

Yangon Technical & Trading Co., Ltd

Venue: Nay Pyi Daw
Date: 15th October 2013

**B.O.T Lease Agreement of Military-Owned Military Museum Land (9.028
acres), Shwedagon Paya Road, Dagon Township, Yangon Division**

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ku gr

This agreement (hereinafter referred to as the AGREEMENT) was made on 15th October 2013.

This AGREEMENT was made between

Colonel Aung Min Thein (Officer No. Army 17642), Vice Quarter Master General, Office of the Quartermaster General, Commander-in-Chief (Army), Naypyidaw (hereinafter referred to as the "LESSOR", the expression which shall, unless repugnant to the context of the meaning legally thereof, be deemed to include its successors, permitted assignees, and legal representatives)

and

U Ar Yu (N.R.C No. 14/Ha Tha Ta (Naing) 044244), representing the Director of Yangon Technical & Trading Co. Ltd., established in accordance with the governing laws and regulations, regarding companies, located at Room 1104, Level 11, Block 531, Lower Kyi Myint Taing Road, Kyi Myint Taing Township, Yangon Division (hereinafter referred to as the "LESSEE", the expression which shall, unless repugnant to the context of the meaning legally thereof, be deemed to include its successors, permitted assignees, and legal representatives).

WARRANTY AND REPRESENTATION

3. Whereas the LESSOR represents and warrants that it is the legal and beneficial owner of the land and the buildings on the land, which is the military-owned Military Museum land (9.028 acres). Whereas the LESSEE has strong financial capabilities to abide by the terms of this AGREEMENT, both the LESSOR and LESSEE hereby represent to have both the legal capacity and authority to sign this document as below.

LAND LOCATION AND TERM OF LEASE

4. The location of the leased land, term of lease, and use of land are as below:

- (a) **Land location:** The exact leased area is the area marked in red, as appeared in Annex 1 attached. It is located at military-owned Military Museum land (9.028 acres), Shwedagon Paya Road, Dagon Township, Yangon Division.
- (b) **Term of lease:** The lease is for an initial period of fifty (50) years renewable for ten (10) years at every renewal for maximum of two times.




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- (c) **Business conducted on land:** The LESSEE, using his own funding, is to build two (2) nine-(9)-story buildings and operation of a hotel, office, and shopping complex services.
- (d) **Investment amount:** _____

LEASE AND PAYMENT PLAN

5. The LESSEE shall make the following payments for lease of the above paragraph 4 leased land (9.028 acres) as below:

- (a) The lease shall be rent-free for the first two years, during which construction and renovation are going on. Subsequently, the rent fee will start to run from 15th October 2015.
- (b) The land use premium shall be calculated at the rate of US\$ _____ million per acre. The leased land premium shall thus be US\$ _____ million, which shall be paid in four parts: first 25% to be paid within the one (1) month from the date which this AGREEMENT was signed; second 25% to be paid within eight (8) months from the date which this AGREEMENT was signed; third 25% to be paid within sixteen (16) months from the date which this AGREEMENT was signed; and fourth 25% to be paid within twenty-four (24) months from the date which this AGREEMENT was signed.
- (c) Failure to make timely payments as per paragraph 5(b) above shall result in penalty of 0.05% of the payment due, for every day the payment was delayed.
- (d) The annual rent calculated at the rate of _____ must be made for a sum of three (3) years rent within the initial three (3) years of the lease. Subsequently, the remaining terms of the lease are to be calculated at the rate of _____ every year. The payment of annual rent depends on the changes in annual exchange rate, and as such payment could be made in Myanmar Kyat equivalent of the US dollar amount to be paid for the initial three years and the Myanmar Kyat equivalent of the US dollar amount to be paid for the remaining terms of the lease.
- (e) The payment of annual rent as per paragraph 5(d) above shall be made once a year in either US dollars or Myanmar Kyat.
- (f) The payment, whether in Myanmar currency or foreign currency shall be made to the Defence Account No. MD 010424. The original documents recording the payment made shall be submitted as well.
- (g) Within thirty (30) days starting from the date on which the rental is due, the LESSEE shall make payment to the account mentioned in paragraph 5(f).
- (h) Failure to make timely payments as per above paragraphs 5(d) shall result in penalty of 0.05% of the payment due, for every day the payment is delayed.
- (i) The rental fees shall be reviewed once every five (5) years. In the event of increase in rental fees, the increase shall not exceed five percent (5%) of the original rental fees.


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- (j) Where buildings are demolished, the LESSEE is to make payment for the depreciated value of the buildings that are demolished.

RIGHTS AND RESPONSIBILITIES OF THE LESSEE

6. The LESSEE hereby covenants as follow:

- (a) The LESSEE shall construct and renovate only as per the attached site plan and drawing. Any changes deviating from the original must be reported to and approved by the LESSOR before the changes could be effected.
- (b) Throughout the term of the lease, the LESSEE shall not sublet, divide and sell, assign, transfer, or dispose of the land in any other way, the whole or part of the land and the business operation.
- (c) The LESSEE shall take any necessary insurance, including fire insurance, in accordance with the Myanmar insurance laws and regulations, for any of the buildings to be constructed, throughout the term of the lease.
- (d) The LESSEE shall duly and promptly make payment for any tax or charges in relation to the running of the business, excluding land tax but including tax or charges from the Yangon City Development Committee.
- (e) The LESSEE shall account for and keep systematic records of any income in relation to the operation of the hotel, office, and shopping complex.
- (f) The LESSEE shall abide by all laws and regulations of Myanmar and shall avoid any activities that will contravene the laws and regulations of Myanmar.
- (g) In carrying out the agreed operations as per this AGREEMENT, the LESSEE may cooperate with any other company for technical knowledge or management or investment of the operations.

RESPONSIBILITIES OF THE LESSOR

7. The lessee hereby covenants as follow:

- (a) The LESSOR is to make payment for the land tax.
- (b) The LESSOR is to provide any necessary assistance required for the operation of the hotel, office, and shopping complex.
- (c) The LESSOR shall ensure that the LESSEE has the full peaceful use and enjoyment of the land throughout the term of lease.
- (d) The LESSOR shall ensure that any permits and licenses required by law for the operation of the business are obtained from any relevant ministry or department.
- (e) With regard to buildings to be constructed, the LESSOR shall consider and carry out on changing and reconstructing of the buildings when YCDC imposes restrictions on height limits of buildings.

TRANSFER OF TITLE OF LAND AND BUILDING




8. As per this AGREEMENT, upon expiry of the lease or termination of the lease, within three (3) months from expiry or termination, the LESSEE is to return the LESSOR the leased land, including its buildings, without any compensation payable to the LESSEE. In returning as such, the LESSEE is entitled to remove any movable items, not including fixtures, already installed to the buildings constructed by LESSEE for hotel, office and shopping complex on the land.

RENEWAL OF LEASE

9. The LESSEE shall inform by post the intention to renew the lease within three (3) months before the expiry of the initial lease. The lease shall be renewable for ten (10) years for a maximum of two (2) times upon the expiry of the initial lease of fifty (50) years, upon agreement between the LESSEE and the LESSOR, and the approval from Myanmar Investment Commission.

EFFECTIE DATE OF THIS AGREEMENT

10. This AGREEMENT comes into effect from the date which this AGREEMENT was signed by both parties.

DISPUTE RESOLUTION

11. Any dispute arising from this AGREEMENT must first be resolved through mutual consultations and amicable settlement between two parties. Failure to resolve dispute by such means, both parties agree to follow the decision of competence Court which has jurisdiction according to law.

TERMINATION OF THE LEASE

12. In the event of the following, the parties may terminate this AGREEMENT.

- (a) Breach or failure to perform material terms of the AGREEMENT by either party
- (b) Occurrence of a force majeure or unanticipated event for a period of more than six (6) months
- (c) Incapability to perform the objectives of the AGREEMENT as agreed at the time of signing
- (d) Mutual agreement to terminate between both parties
- (e) The intention to terminate operations of the business must be presented in writing to the Myanmar Investment Commission and must subsequently be approved by the Myanmar Investment Commission for the termination to take effect.




- (f) The LESSEE shall return, without any compensation, the leased land, including the buildings on the land and the fixtures on the buildings, within three (3) months from the termination of the lease, due to any of the reasons stated above.

RENEGOTIATION AND AMENDMENTS

13. In the event that the terms of this AGREEMENT require any modification due to changing circumstances that may contravene the existing terms of this AGREEMENT due to changing circumstances of the business operation, both parties are required to renegotiate and mutually arrive at amendments agreeable to both parties. The amendments shall only take into effect upon approval from Myanmar Investment Commission.

NATURAL RESOURCES

14. Any unexpected discovery of rare earths, gems, antique treasures, and any other natural resources in or under the leased land shall immediately be informed to the Government of the Republic of Union of Myanmar. Such rare earths, gems, antique treasures, and any other natural resources are the property of the Government of the Union of Myanmar and shall only be extracted by the LESSOR and the relevant authorities only upon the approval granted from the Government of the Union of Myanmar.

FORCE MAJEURE

15. Force majeure shall include any natural events, including floods, storms, fires, earthquakes, as well as any limiting laws issued by the government, civil unrest, outbreak of war, protest, or any other event which are unpreventable by any of the party taking due diligence and caution in prevention of the event. In the event that such force majeure event has occurred, and affected and damaged the operation of the leased land and the business on the leased land, the LESSEE shall not be entitled to compensation from the LESSOR. In such force majeure event, the LESSEE shall promptly inform the LESSOR by writing within fourteen (14) days from which the force majeure event has occurred. The LESSOR may allow exemption on the rental fees for the period during which the use and operation of business on the land was affected by the force majeure event.

EMPLOYMENT

16. Yangon Technical & Trading Co., Ltd. shall employ any staff necessary and shall make payment and allowance for salary, wages, transport costs, and any other allowances for the staff, in accordance with the laws and regulations of Myanmar. The LESSEE shall obtain prior approval from the Myanmar Investment Commission for employment of any foreigner and shall undertake that the foreign employee's family abide by the domestic laws and regulations of Myanmar, and will not interfere with any of internal affairs of Myanmar, throughout the stay of the foreign employee and his family members.

Handwritten signature and initials in blue ink.

EXEMPTION AND RELIEVES

17. The LESSOR shall ensure that the LESSEE enjoy any relief of tax, duties, or any other reliefs in accordance with Myanmar Citizen Investment Law, as permitted by the Myanmar Investment Commission.

ENVIRONEMNTAL CARE

18. The LESSEE shall ensure that any solid waste is disposed of properly, and waste water are drained away systematically, and that the buildings are well equipped with a proper plumbing and sanitation system. The LESSEE shall ensure that the leased land and its surrounding environment are maintained and taken care of without causing any environmental pollution, in accordance with the existing environmental laws and regulations of Myanmar.

CORRESPONDENCE

19. Any correspondence between the parties shall be communicated in either Burmese or English, via registered mail or airmail or courier service or teletext or email or fax, to the addresses provided below. Any party who changes the address as originally stated shall promptly inform the other party.

(a) LESSOR
Office of the Commander-in-Chief (Army)
Office of the Quartermaster General
Nay Pyi Daw
Contact No. (036-31138/ 036-31120)
Fax No. (03-31120)

(b) LESSEE
U Ar Yu (Managing Director)
Yangon Technical & Trading Co., Ltd
No. 1104, Level 11
Block 531, Lower Kyi Myint Taing Road
Kyi Myint Taing Township
Yangon Division

REPOSESSION OF THE LAND

20. Upon failure to perform or observe any of the terms in this AGREEMENT by the LESSEE, the LESSOR, after serving notice to the LESSEE by post, may enter and repossess the land and any of its buildings, for the duration as stated in the notice, for the purposes of rectifying such non-performance or non-observance by the LESSEE. Such entry or repossession


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shall not prejudice the rights of the LESSOR to demand for rental fees or damages from the LESSEE.

INSURANCE

21. The LESSEE shall procure any form of insurance necessary in accordance with provisions of Myanmar Insurance Law of the Union of Myanmar.

MISCELLANEOUS

22. The attached documents on map of the land, history of the land, blueprint of the hotel, office, and shopping complex, and any other supporting documents shall form part of this AGREEMENT.

SIGNING

23. Both parties have read and fully understand, and agree to the terms of this AGREEMENT and hereby sign below, in front of witnesses, on 15th October 2013.

FOR AND ON BEHALF OF

Signature	_____
Desination/Name	Colonel Aung Min Thein
Gazetted office No.	Army 17642
Rank	Vice Quartermaster General (1)
Address	Office of the Quartermaster General Ministry of Defence

FOR AND ON BEHALF OF

Signature	_____
Name	U Ar Yu
NRC No.	14/Ha Tha Ta (Naing) 044244
Rank	Managing Director
Address	No. 1104 Level 11 Block 531, Lower Kyi Myint Taing Road Yangon Division

IN THE PRESENCE OF

FOR AND ON BEHALF OF

Signature	_____
Desination/Name	Lieutenant Colonel Toe Tun Myint
Gazetted office No.	Army 24104
Rank	Assistant

FOR AND ON BEHALF OF

Signature	_____
Name	U Htin Lin Naing
NRC No.	12/Tha Ya Ka (Naing) 000530
Rank	Director
Address	No. 1104 Level 11


6/20/13

Appendix III Demolition Permit



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
ရန်ကုန်တိုင်းဒေသကြီးအစိုးရ
ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ
အင်ဂျင်နီယာဌာန(အဆောက်အအုံ)

စာအမှတ် : ၀၄ / ၀၈ / စည်ပင်-ယာ(အုံ
ရက်စွဲ : ၂၀၁၇ ခုနှစ် မတ် ၁၀ ရက်

သို့

ဦးအာယု (BOT စနစ်ဖြင့် အငှားချထားခြင်းခံရသူ Yangon Technical & Trading Co.,Ltd ၏ ခံရိုက်တာ)

မြေကွက်အမှတ်(၁၁အေ/၁၅၊ ၁၆၊ ၁၇၊ မြေတိုင်းရပ်ကွက်အမှတ်- ၆၈/၄၅-၅)၊ ယခင်စစ်သိမ်းခြင်းရက်

ရွတ်တံတားလမ်း၊ ဒဂုံမြို့နယ်

အကြောင်းအရာ။ အဆောက်အအုံဟောင်းအားဖျက်သိမ်းခွင့်ပြုခြင်း

၁။ ရန်ကုန်မြို့၊ ဒဂုံ မြို့နယ်၊ ရပ်ကွက်
မြေတိုင်းရပ်ကွက်(၆၈/၄၅-၅)၊ မြေကွက်အမှတ်(၁၁အေ/၁၅၊ ၁၆၊ ၁၇၊ ရွတ်တံတားလမ်း
အမှတ်(ယခင်စစ်သိမ်း)၊ ၇ ထပ်တိုက်/ပျဉ်ထောင်/နံကပ် အဆောက်အအုံဟောင်း (၀-လုံး)အား
ဖျက်သိမ်းခွင့်ပြုပါရန် ဝိုင်ရှင် ဦးအာယု (BOTစနစ်ဖြင့် မှ တင်ပြလျှောက်ထားလာပါသည်။
အငှားချထားခြင်းခံရသူ Yangon Technical & Trading Co.,Ltd၏ ခံရိုက်တာ)

၂။ ယင်းတင်ပြလျှောက်ထားချက်အပေါ် လက်ရှိအဆောက်အအုံဟောင်းအား ရန်ကုန်မြို့နယ်နယ်စပ်အကဲဥပဒေ
ဓမ္မ(၂)၊ အခန်း(၁၁)ပါ အဆောက်အအုံဆိုင်ရာနည်းဥပဒေ ပြဌာန်းချက်(၁၀/၁၁/၁၂)တို့တွင် ဖော်ပြထားသည့်
အောက်ပါစည်းကမ်းချက်များနှင့်အညီ တိတိကျကျလိုက်နာဆောင်ရွက် ဖျက်သိမ်းခွင့်ပြုပါကြောင်း အကြောင်းကြား
အပ်ပါသည်။

လိုက်နာရမည့်စည်းကမ်းချက်များ

- လိုင်စင်အင်ဂျင်နီယာကြီးကြပ်မှုဖြင့် ဖျက်သိမ်းရမည့်အပြင် ကျန်းမာသည့် အမျိုးသားလုပ်သားများကိုသာ
အသုံးပြုရမည်။
- အဆောက်အအုံအပေါ်မှ အစိတ်အပိုင်းများကို လုံးဝဖျက်သိမ်းပြီးမှသာ အဆောက်အအုံအောက်မှ အစိတ်
အပိုင်းများကို ဖျက်သိမ်းပေးရမည်။
- ဖျက်သိမ်းထားသည့် ပစ္စည်းများကို မိမိပိုင်မြေပေါ်တွင်သာ စုပုံထားရမည်ဖြစ်ပြီး အဆောက်အအုံထပ် အခင်းများ
ပေါ်နှင့် စည်ပင်မြေ၊ နောက်ဆေးလမ်းကြားမြေပေါ်တွင် စုပုံထားခြင်း(လုံးဝ) လုံးဝမပြုလုပ်ရ။
- ဖျက်သိမ်းသည့်အဆောက်အအုံမှ ထွက်ရှိလာသည့်ပစ္စည်းများကြောင့် ပတ်ဝန်းကျင်လုပ်သားပြည်သူများကို
အန္တရာယ်မဖြစ်ပေါ်စေရန်လိုအပ်ပါက အကာအရံများ ကာရံပိတ်ဆို့ထားရမည်။ ကာရံမှုများကို မိမိပိုင်မြေတွင်သာ
ကာရံထားရမည်ဖြစ်ပြီး စည်ပင်မြေပေါ်သို့ ကျူးကျော်ကာရံခြင်း (လုံးဝ) လုံးဝမပြုလုပ်ရ။
- မိမိအဆောက်အအုံ ဖျက်သိမ်းမှုကြောင့် အနီးအနားကပ်လျက်ရှိသည့် အဆောက်အအုံများအား မပျက်စီး
မထိခိုက်စေရ။

Appendix IV Construction Permit



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
ရန်ကုန်တိုင်းဒေသကြီးအစိုးရ
ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ
အင်ဂျင်နီယာဌာန (အဆောက်အအုံ)

15790

စာအမှတ်: ၇၉၄ / ၇၉၅ / စည်ပင်-ယာ(အုံ)
ရက်စွဲ: ၂၀၁၈ ခုနှစ်၊ ဇူလိုင်လ၊ ၂၀ ရက်

သို့

ကာကွယ်ရေးဝန်ကြီးဌာန BOT စနစ်ဖြင့် ငှားရမ်းခွင့်ရရှိသူ ဦးအာယု (Managing Director, Yangon Technical & Trading Co., Ltd)
မြေကွက်အမှတ်(၁၁၁အေ/၁၅၁၆၁၇)၊ ဓနုတိရံဘုရားလမ်းနှင့်ဦးစိစာရလမ်းကြား
ဘုရားကြီးရပ်ကွက်၊ ခင်ပြီနယ်

ORIGINAL

- အကြောင်းအရာ။ အဆောက်အအုံဆောက်လုပ်ခွင့်ပြုခြင်း။
- ရည်ညွှန်းချက်။ အဆောက်အအုံပုံစံများနှင့်အတူ ပူးတွဲတင်သွင်းသော ၂၂-၁-၂၀၁၈ ရက်စွဲပါလျှောက်လွှာ
- ၁။ ၎င်းလျှောက်လွှာနှင့်တင်သွင်းသော အဆိုပါဆောက်လုပ်ခွင့်အား မိမိပိုင်/မြေနယ်နိမိတ်အတွင်း၌သာ အောက်ဖော်ပြပါ အချက်အလက်များ၊ တဖက်ဖော်ပြပါညွှန်ကြားချက်များအတိုင်း သတ်ပြုလိုက်နာစေလျက် ဆောက်လုပ်ရန် ခွင့်ပြုပါသည်။ ကာကွယ်ရေးဝန်ကြီးဌာန BOT စနစ်ဖြင့် ငှားရမ်းခွင့်ရရှိသူ ဦးအာယု (Managing Director, Yangon Technical & Trading Co., Ltd)
- (က) ပိုင်ရှင်အမည်..... ၆၈/၄၅၆၆ ၁၁၁အေ/၁၅၁၆၁၇
- (ခ) မြေတိုင်းရပ်ကွက်အမှတ်..... မြေကွက်အမှတ်.....
- (ဂ) လိပ်စာ မြေကွက်အမှတ်(၁၁၁အေ/၁၅၁၆၁၇)၊ ဓနုတိရံဘုရားလမ်းနှင့်ဦးစိစာရလမ်းကြား၊ ဘုရားကြီးရပ်ကွက်၊ ခင်ပြီနယ်
- (ဃ) အဆောက်အအုံဆိုင်ရာအချက်အလက်များ
- | | |
|---|----------------------------------|
| (၁) အထပ်၊ အမျိုးအစား | Basement (၂) ထပ် + (၉) ထပ် တိုက် |
| (၂) အကျယ်အဝန်း | As Per Drawing |
| (၃) အမြင့် | As Per Drawing |
| (၄) သီးခြားဖော်ပြချက် | Hotel & Office (Y-Complex) |
| | |
| (၅) မြေကျန်များ | As Per Drawing |
| ရွှေ/နောက် | As Per Drawing |
| ဘေး(ဝဲ/ယာ) | As Per Drawing |
| (င) လိုင်စင်ရအင်ဂျင်နီယာ (LS) | ဒေါ်နိုင်သုတဌ (LS - ၁၁၈၄) |
| (စ) လိုင်စင်ရကန်ထရိုက်တာ (LC) | ဒေါ်စည်ဝင်းဦး (LC - ၉၁၂) |
| (ဆ) လိုင်စင်ရအဆောက်အအုံအင်ဂျင်နီယာ (SEC/AC) | ဦးစောလွင်စော် (SEC - ၂၆) |
- ၂။ ဤဌာန၏ခွင့်ပြုခြင်းပုံစံနှင့် တဖက်ဖော်ပြပါညွှန်ကြားချက်များအတိုင်း အတိအကျလိုက်နာ ဆောင်ရွက်ရန်ဖြစ်ပြီး လိုက်နာဆောင်ရွက်ခြင်းမရှိပါက ဌာန၏ လုပ်ထုံးလုပ်နည်းများနှင့်အညီ အရေးယူခြင်းခံရမည်။

၃။ ပူးတွဲပါများ

- (က) အတည်ပြုပုံစံ (၀) စုံ
- (ခ) အဆောက်အအုံလုပ်ငန်းစစ်ဆေးချက်မှတ်တမ်းစာအုပ် (၀) အုပ်

မိတ္တူကိုင်

ဥတိယဌာနမှူး (စစ်ဆေးရေးဌာနခွဲ)

အုပ်ချုပ်ရေးမှူး (.....) မြို့နယ်

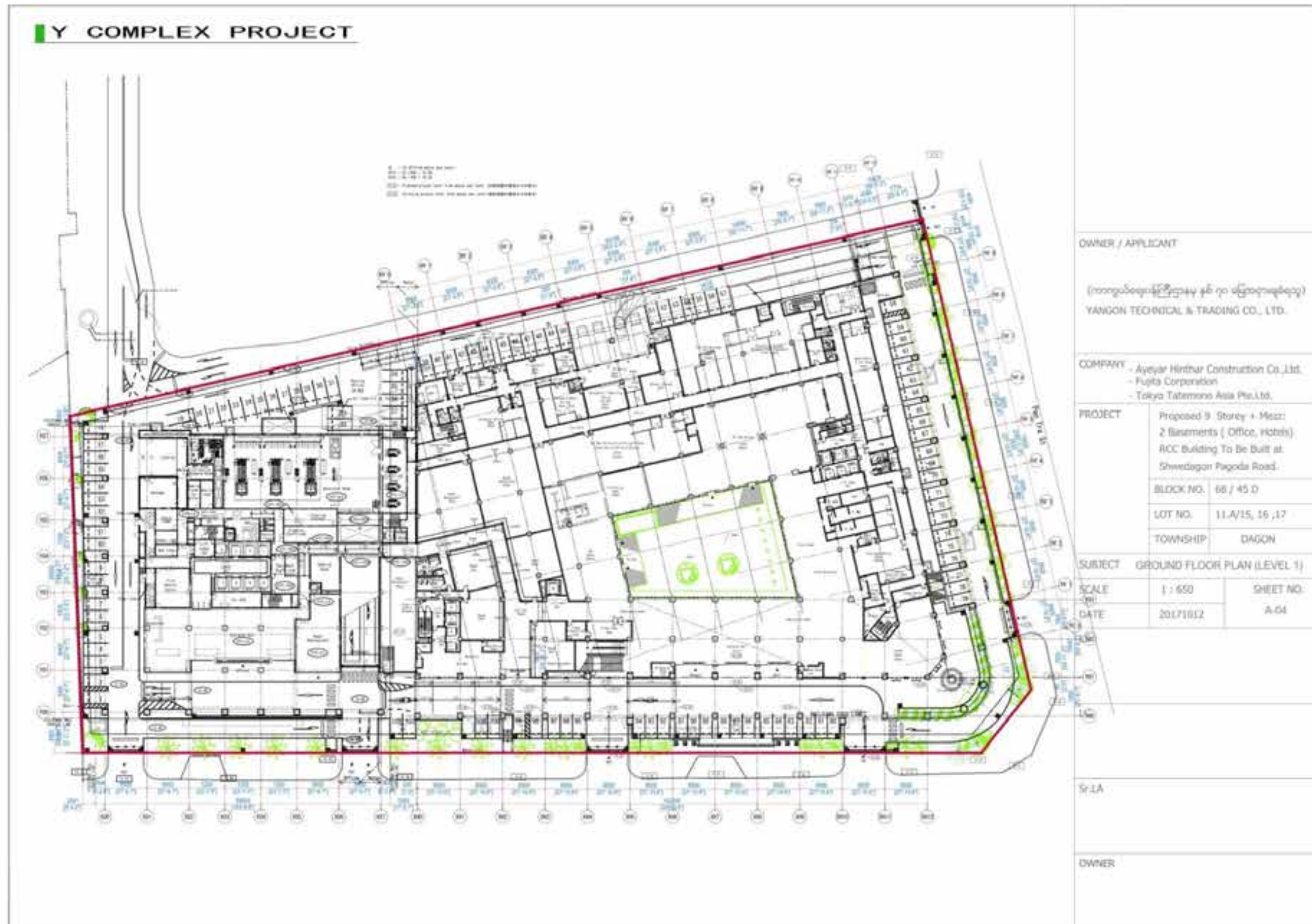
၇၉၄/၇၉၅

Appendix IV Construction Permit (Continued)

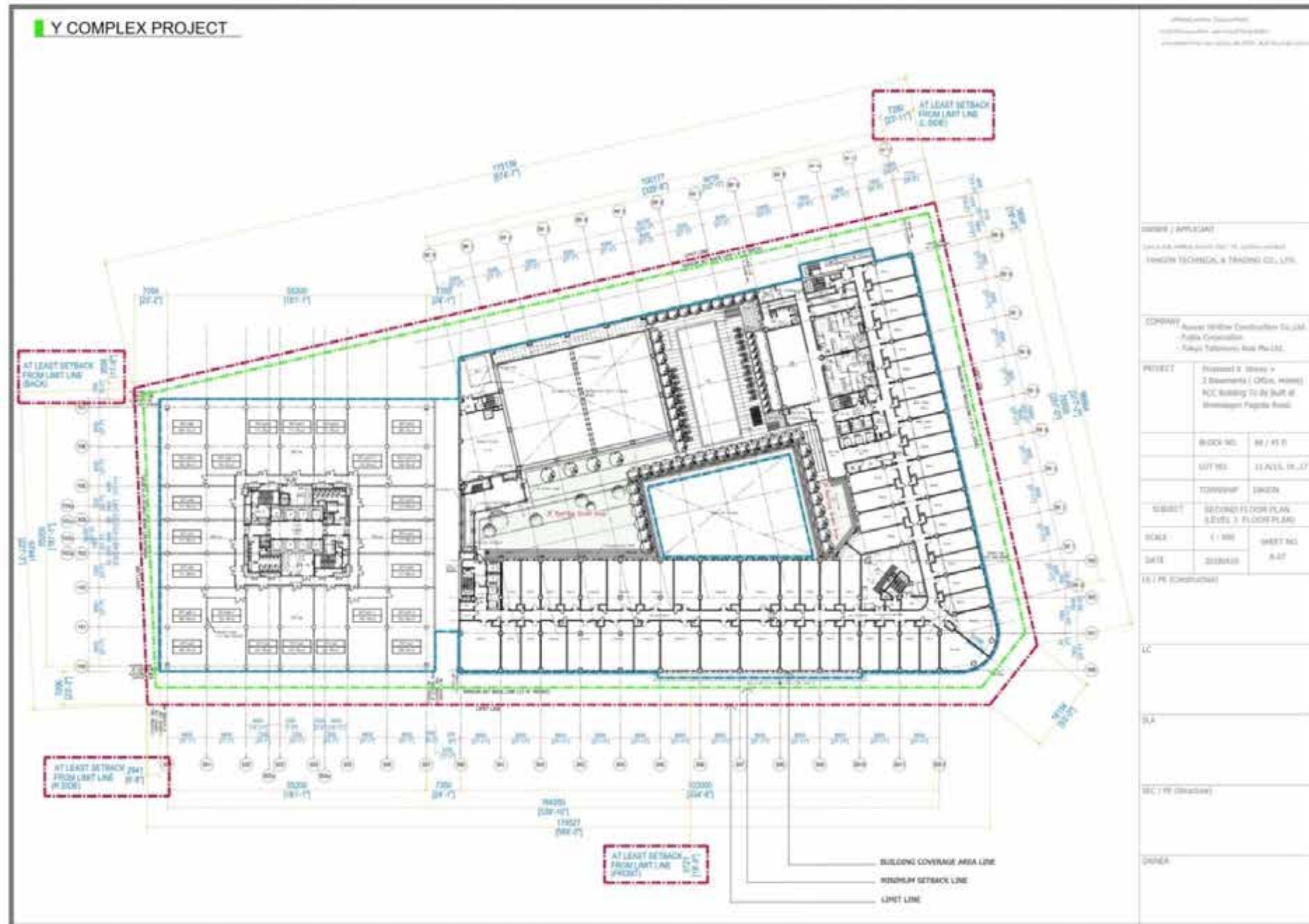
ညွှန်ကြားချက်များ

- (က) အဆောက်အအုံဆောက်လုပ်သည့်အခါ နောက်ဖေးလမ်းကြားတွင် မြေများစုပုံခြင်းမပြုရ။
- (ခ) အဆောက်အအုံ ဆောက်လုပ်နေစဉ်အတွင်း ဆောက်လုပ်ရေးလုပ်ငန်းသုံးပစ္စည်းများကို ယာယီခွင့်ပြုထားသည့် ဧရိယာအတွင်း၌သာ သတ်မှတ်ထားသည့်အတိုင်း စနစ်တကျထားရှိရမည်။ ခွင့်ပြုထားခြင်းမရှိပါက မိမိပိုင်ဧရိယာ အတွင်း၌သာ ထားရှိရမည်။
- (ဂ) အဆောက်အအုံဆောက်လုပ်ပြီးစီးလျှင် ပြီးစီးကြောင်းသက်သေခံလက်မှတ်လျှောက်ထားရမည်။
- (ဃ) ဤခွင့်ပြုလိုက်သောပုံစံကို အဆောက်အအုံဆောက်လုပ်နေသောနေရာရှိ တာဝန်ခံတစ်ဦးထံတွင် အမြဲရှိနေစေရမည်။
- (င) ဤခွင့်ပြုချက်သည် ခွင့်ပြုသည့်နေ့မှစ၍ တစ်နှစ်အတွက်သာဖြစ်သည်။ ခွင့်ပြုမိန့်သက်တမ်းအတွင်း ဆောက်လုပ်ပြီးစီး နိုင်ခြင်းမရှိပါက သက်တမ်းမကုန်ဆုံးမီ (၁၅) ရက် ကြိုတင်၍ သက်တမ်းတိုးခွင့်အား လျှောက်ထားရမည်ဖြစ်ပြီး သက်တမ်းတိုးခွင့်လျှောက်ထားခြင်းမရှိသော ခွင့်ပြုမိန့်အား သက်တမ်းကုန်သည့်နေ့တွင် အလိုအလျောက် ရုပ်ဆိုင်းပြီးဖြစ် သည်ဟု မှတ်ယူရမည်။
- (စ) အစိုက်စွန့်ပစ်မှုစနစ်နှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်ထိခိုက်သိမ်းဆီးမှုနှင့်သန့်ရှင်းရေးဌာန၏ ညွှန်ကြားချက်အတိုင်း လိုက်နာ ဆောင်ရွက်ရမည်။
- (ဆ) ဓနနှင့်သန့်ရှင်းမှုဆိုင်ရာကိစ္စရပ်များအား အင်ဂျင်နီယာဌာန (ဓနနှင့်သန့်ရှင်းမှု) ၏ ညွှန်ကြားချက်အတိုင်း လိုက်နာ ဆောင်ရွက်ရမည်။
- (ဇ) ဓနမြောင်းနှင့်ပတ်သက်၍ အင်ဂျင်နီယာဌာန (လမ်းနှင့်တံတား) ညွှန်ကြားချက်အတိုင်း လိုက်နာဆောင်ရွက်ရမည်။
- (ဈ) လုပ်ငန်းခွင်မှစွန့်ပစ်ပစ္စည်းများ၊ လုပ်ငန်းသုံးပစ္စည်းများ၊ သယ်ယူခြင်းနှင့် စွန့်ပစ်ခြင်းတို့ကြောင့် လမ်းများညစ်ပေ၍ လမ်းသားများပျက်စီးခြင်း၊ ဓနမြောင်းများပိတ်ဆို့ခြင်းမဖြစ်အောင် ဆောင်ရွက်ရမည်။
- (ည) လျှပ်စစ်အန္တရာယ်နှင့် အခြားသောလုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်းရေး ဂရုပြုဆောင်ရွက်ရန်။
- (ဋ) ပတ်ဝန်းကျင်နှင့်ဆက်စပ်လျက်ရှိသော အဆောက်အအုံများ၊ ပစ္စည်းများနှင့်လမ်းသွားလမ်းလာတို့ကို မထိခိုက်စေရန် အတွက် လုံလောက်သောအစီအမံဖြင့် လုံခြုံရေးပိုက်များ ကာရံထားရမည်။
- (ဌ) လုပ်ငန်းခွင်ရှိ အလုပ်သမားများ၊ ဘေးအန္တရာယ်မရှိစေရေးအတွက် လုပ်ငန်းခွင်သုံးလုံခြုံရေးဆိုင်ရာ ပစ္စည်းများဖြစ် သည့် ဓါးပတ်၊ လက်အိတ်၊ မိနပ်၊ ဦးထုပ်၊ မျက်မှန်စသည်တို့ကို ထားရှိ၍ အသုံးပြုရမည်။
- (ဍ) အန္တရာယ်ဖြစ်စေနိုင်သည့် လေ့ကျင့်ခွင့်များနှင့် လုပ်ငန်းခွင်ယာယီ လျှပ်စစ်ဆက်သွယ်သည့်နေရာများကို လမ်းညွှန်နှင့် သတိပေးဆိုင်းဘုတ်များ တပ်ဆင်ထားပြီး လုံလောက်သော အကာအရံများထားရှိရမည်။
- (ဎ) ထိခိုက်မှုများအတွက် အရေးပေါ်ကုသနိုင်ရေး ဆေးသေတ္တာထားရှိရမည်။
- (ဏ) သီးခြားညွှန်ကြားချက်များဖြစ်သော Transformer၊ မီးစက်ထားရှိရမည့်နေရာနှင့်ပတ်သက်၍ ရန်ကုန်မြို့တော် လျှပ်စစ်ဓာတ်အားပေးရေးအဖွဲ့ (YESB) ၏ ညွှန်ကြားချက်အား တိကျစွာလိုက်နာရန်နှင့် အရေးပေါ်မီးငြှိမ်းသတ်မှုစနစ် နှင့်ပတ်သက်၍ မီးသတ်ဦးစီးဌာန၏ ညွှန်ကြားချက်အား တိကျစွာလိုက်နာရမည်။
- (တ) အဆောက်အအုံဆောက်လုပ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ၊ နည်းဥပဒေများအား တိကျစွာလိုက်နာရမည်။
- (ထ) အဆောက်အအုံဆောက်လုပ်မှုဆိုင်ရာလုပ်ငန်းများကို (၀၃၈၀၀) နာမီမူ (၁၈၈၀၀) နာမီအတွင်းသာ ဆောင်ရွက်ရမည်။

Appendix V Green Spaces at Ground Floor Plan



Appendix VI Green Spaces at Second Floor Plan



Appendix VII Domestic Water Submission



သို့

ဌာနမှူး

အင်ဂျင်နီယာဌာန (ရေနှင့်သန့်ရှင်းမှု)

ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ

ရန်ကုန်မြို့။

စာအမှတ် ။ ၂၇၇ / ၅ / DM/2016

ရက်စွဲ ။ ၂၀၁၇ ခုနှစ်၊ ဧပြီလ(၂၈)ရက်

အကြောင်းအရာ ။ Yangon Technical & Trading Co., Ltd. မှဆောက်လုပ်မည့် Basement ၂ထပ် + ၉ထပ် အဆောက်အအုံအတွက်ရေသွယ်ခွင့်ပြုမိန့်လျှောက်ထားခြင်း။

၁။ Yangon Technical & Trading Co.,Ltdသည် ရန်ကုန်တိုင်းဒေသကြီး ၊ ဒဂုံမြို့နယ် ၊ မြေတိုင်းရပ်ကွက်အမှတ် - ၆၈/၄၅-ဒီ ၊ မြေကွက်အမှတ် - ၁၁ အေ/ ၁၅ ၊ ၁၆၊ ၁၇ တွင် ဆောက်လုပ်လျက်ရှိသောBasement ၂ထပ် + ၉ထပ် Y Complex အဆောက်အအုံ Project အား (10.1.2017) ရက်နေ့တွင် ရန်ကုန်တိုင်းဒေသကြီးအစိုးရအဖွဲ့မှ မူအား ခြံခွင့်ပြု ချက်ရရှိခဲ့ပြီး စတင် တည်ဆောက်တော့မည်ဖြစ်ပါသည်။ ထိုသို့တည်ဆောက်ရာ တွင် အဆောက်အအုံ တည်ဆောက် သည့်အချိန် (Construction Period) နှင့် တည်ဆောက်ပြီး လုပ်ငန်းစတင်လုပ်ဆောင်မည့် (Operation Time) အတွက် ဧရိယာအချက် ရှိလာပါသည်။ ဧရိယာအချက်မှာ နေ့စဉ် ဧရိယာ 112036 gals လိုအပ်မည် ဖြစ်ပါသည်။ ထို ဧရိယာအချက်ပမာဏအား Designers ၏ တွက်ချက်မှုနှင့်အညီ တင်ပြသွား မည်ဖြစ်ပါသည်။

၂။ သို့ဖြစ်ပါ၍ မိမိတို့၏ ဧရိယာအချက်အရ ရေသွယ်ယူခွင့် ခွင့်ပြုပေးနိုင်ပါရန် လေးစားစွာတင်ပြအပ်ပါသည်။ရေသွယ်ယူခွင့်ရရှိခဲ့ပါက ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ၏ လမ်းညွှန်ချက်များနှင့်အညီ ဆောက်လုပ်သွားမည် ဖြစ်ကြောင်း လေးစားစွာတင်ပြအပ်ပါသည်။

လေးစားစွာဖြင့်



ဦးအာယု
Managing Director

Yangon Technical & Trading Co.,Ltd.

မိတ္ထီလို

ရုံးလက်ခံ

Appendix VIII Water & Sanitation Department Approval



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
ရန်ကုန်တိုင်းဒေသကြီးအစိုးရ
ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ
အင်ဂျင်နီယာဌာန(ရေနှင့်သန့်ရှင်းမှု)

စာအမှတ်၊၄၆၆၆/၄၂၀၇/စည်ပင်-ယာ(ရ-သ)
ရက် စွဲ၊ ၂၀၁၇ ခုနှစ် ဇူလိုင်လ ၂၄ ရက်

သို့

ဌာနမှူး
အင်ဂျင်နီယာဌာန(အဆောက်အအုံ)

အကြောင်းအရာ။ မြေတိုင်းရပ်ကွက်အမှတ်(၆၈/၄၅-ဒီ) မြေကွက်အမှတ်(၁၁အေ/၁၅၊ ၁၆၊ ၁၇) ရွှေတိဂုံ
ဘုရားလမ်းနှင့် ဦးဝိစာရလမ်းကြား ဒဂုံမြို့နယ်၌ Basement(၂)+(၉)ထပ် Office+
Hotel ဆောက်လုပ်ရန် ရေနှင့်သန့်ရှင်းမှုဆိုင်ရာလိုအပ်ချက်များပေးပို့ခြင်း


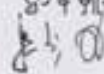
၁။ မြေတိုင်းရပ်ကွက်အမှတ်(၆၈/၄၅-ဒီ) မြေကွက်အမှတ်(၁၁အေ/၁၅၊ ၁၆၊ �၇) ရွှေတိဂုံဘုရားလမ်း
နှင့် ဦးဝိစာရလမ်းကြား ဒဂုံမြို့နယ်၌ Basement(၂)+(၉)ထပ် Office+ Hotel ဆောက်လုပ်ရန် Yangon
Technical & Trading Co.,Ltd. မှ ပထမအဆင့်ပြုတင်ပြလာပါသည်။

၂။ စီစစ်ချက်အရ အဆိုပါအဆောက်အအုံ၏ ရေနှင့်သန့်ရှင်းမှုဆိုင်ရာ လိုအပ်ချက်များမှာ အောက်ပါ
အတိုင်းဖြစ်ပါကြောင်း သိရှိဆောင်ရွက်နိုင်ပါရန် ညှိနှိုင်းပေးပို့အပ်ပါသည်။

- (က) ဓန့်မှန်းလူဦးရေ(၃၀၃၉)ဦးနှင့် တစ်နေ့ရေလိုအပ်ချက်မှာ (၁၂၁၅၆၀)ဂါလန် ဖြစ်ပါသည်။
- (ခ) စည်ပင်ရေလိုက်လိုင်းမှ လောလောဆယ်ရေလုံလောက်စွာပေးဝေနိုင်ခြင်း မရှိသေးပါ။
ရေအရင်းအမြစ်သစ်စီမံကိန်းများ ဆောင်ရွက်ပြီးမှသာ ရေပေးဝေနိုင်မည်ဖြစ်ပါသည်။
မိမိအစီအစဉ်ဖြင့်သာ ရေရရှိရေးဆောင်ရွက်ရမည်ဖြစ်ပါသည်။ အဝီစိတွင်းတူးဖော်ပြီး
သုံးစွဲမည်ဆိုပါက Pile Tip မှ အောက်ဖက်သို့ အနက်ပေအနည်းဆုံးပေ (၁၅၀)မှစတင်၍
ရေထုတ်နှုတ်သုံးစွဲရန်နှင့် ဆောက်လုပ်ရေးဝန်ကြီးဌာန မြို့ရွာနှင့်အိုးအိမ်ခွဲဖြူးမှုဦးစီးဌာန
သို့ ဆက်သွယ်ဆောင်ရွက်ရန်လိုအပ်ပါသည်။
- (ဂ) အဆောက်အအုံအားမြေကျန်တွင် 8"Ø Tube Well(၅)တွင်းမှ ရေရယူသုံးစွဲမည်ဖြစ်ပါ
သည်။ ဂါလန်(၁၀၉၀၀၀)ဆုံ Raw Water Tank ၊ ဂါလန်(၇၁၂၀၀)ဆုံ Treated Water
Tank နှင့် မီးငြိမ်းသတ်ရန် ဂါလန်(၃၀၀၀၀)ဆုံ Ground Tank တို့ကို Basement (1)
Floor တွင် လည်းကောင်း ထားရှိရန်စီစဉ်ထားသဖြင့် ရေလုံလောက်စွာသိုလှောင်ထားနိုင်
ကြောင်း စီစစ်တွေ့ရှိရပါသည်။ Basement (1)Floor ၌ 37.5 m³/hr သန့်စင်နိုင်သော
Water Treatment Plant အား တည်ဆောက်မည်ဖြစ်ပါသည်။

APPENDIX VIII Water & Sanitation Department Approval Continued

- (ဃ) Basement (1) Floor ၌ $500\text{m}^3/\text{day}$ သန့်စင်နိုင်သော Wastewater Treatment Plant (Conventional Activated Sludge System) အား အသုံးပြုမည်ဖြစ်သဖြင့် Capacity လုံလောက်မှုရှိကြောင်း တွေ့ရှိရပါသည်။ YCDC drain ရှိသည့်အထိ ကိုယ်ပိုင်ရေမြောင်း ဖောက်လုပ်ရန်နှင့် ထွက်ရှိလာသော စွန့်ပစ်အရည်ကြည်သည် ဌာနကသတ်မှတ်ထားသော စွန့်ပစ်ရေအရည်အသွေးရှိမှသာလျှင် YCDC drain ထဲသို့ စွန့်ပစ်နိုင်ပါသည်။
- (င) အင်ဂျင်နီယာဌာန (အဆောက်အအုံ) မှ အဆောက်အဦဆောက်လုပ်ခွင့်ပြုမိန့်ရရှိပါက ရေနံ သန့်ရှင်းမှုဆိုင်ရာခွင့်ပြုမိန့်များကို အင်ဂျင်နီယာဌာန (ရေနံသန့်ရှင်းမှု) သို့ လျှောက်ထား ရန်နှင့် ရေနံသန့်ရှင်းမှုဆိုင်ရာလုပ်ငန်းများ စတင်ဆောင်ရွက်ပါက အင်ဂျင်နီယာဌာန (ရေနံသန့်ရှင်းမှု) သို့ အကြောင်းကြားရန်လိုအပ်ပါသည်။


ဌာနမှူး


မိတ္တူကို

အတွင်းရေးမှူး၊ ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ
ကော်မတီဝင် (၄)၊ ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ

✓ Managing Director : Yangon Technical & Trading Co., Ltd.

မျှော်စာတွဲ

ရုံးလက်ခံ

Appendix IX Permanent Transformer Application Forms (Operation Period)

Y Complex Company Limited

Plot No.11 A/15,16,17 Survey Block No.68.45/D, The corner of Shwedagone Pagoda Road and Pantra Street, Dagon Township, Yangon, Myanmar.

သို့.

အမှုဆောင်အရာရှိချုပ်
ရန်ကုန်လျှပ်စစ်ဓာတ်အားပေးရေးကော်ပိုရေးရှင်း
လျှပ်စစ်စွမ်းအားဝန်ကြီးဌာန
ရန်ကုန်မြို့။

ရက်စွဲ၊ ၂၀၁၈ခုနှစ်၊ စက်တင်ဘာလ၊ (၁၁)ရက်

အကြောင်းအရာ၊ ။ ကိုယ်ပိုင် ထရန်စဖော်မာ 2500 KVA (3) လုံးတပ်ဆင် အသုံးပြုခွင့်ပေးပါရန် တင်ပြခြင်း။

အထက်အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ရန်ကုန်တိုင်းဒေသကြီးဒဂုံမြို့နယ်၊ မြေတိုင်း ရပ်ကွက် အမှတ်-68/45ဒီ၊ မြေကွက်အမှတ်-(11အ/15,16,17) တွင် ဆောက်လုပ်မည့် Basement (၂)+(၉ထပ်) ပါဝင်သော Office နှင့် Hotel အဆောက်အဦးတွင် လျှပ်စစ်ဓာတ်အားသုံးစွဲမှု လိုအပ်ချက်အရ 66/33kV (2500)KVA Transformer (3)လုံး တပ်ဆင်ရန် လိုအပ်ပါသောကြောင့် အသုံးပြုခွင့် ပေးနိုင်ပါရန် လေးစားစွာဖြင့် တင်ပြလျှောက်ထားအပ်ပါသည်။ သုံးစွဲမည့် ဝန်အားစာရင်းနှင့် လိုအပ်သည့် Drawing များအား ပူးတွဲပါ အတိုင်းတင်ပြအပ်ပါသည်။ မိမိတို့အနေဖြင့် တပ်ဆင်သုံးစွဲခွင့်ရရှိပါက ဌာနမှချမှတ် ထားသော စည်းမျဉ်းစည်းကမ်းများအတိုင်း လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း လေးစားစွာဖြင့် တင်ပြအပ်ပါသည်။

လေးစားစွာဖြင့်



ဇော်ဝင်းရှိန်

Director

Y Complex Company Limited

မိတ္တူကိုင်

- ရုံးလက်ခံ

Appendix X Permanent License for Tube wells



အမြဲတန်းလိုင်းစင်
(မြေအောက်ရေ၊ နည်းဥပဒေ (၁၈) ပါပုံစံ 'ဃ')

အမြဲတန်းလိုင်းစင်အမှတ် ၀၀၂/၂၀၁၈-၂၀၁၉
လိုင်းစင်ထုတ်ပေးသည့်နေ့စွဲ ၂၅.၅.၂၀၁၈

မြန်မာ့မြေအောက်ရေအက်ဥပဒေအရထုတ်ပေးသည့် အမြဲတန်းလိုင်းစင်အမှတ် ၀၀၂/၂၀၁၈ - ၂၀၁၉၊ နေ့စွဲ ၂၅.၅.၂၀၁၈၊ မြေတိုင်းရပ်ကွက်အမှတ် (၆၈/၄၅-ဒီ) ရပ်ကွက်၊ ဦးပိုင်အမှတ် (၁၁-အေ၊ ၁၅၊ ၁၆၊ ၁၇) တွင် (၈") လက်မ ဖဲ့ အဝီစိတွင်း(၂) တွင်းကို ၁၉၄၁ ခုနှစ်၊ မြေအောက်ရေဥပဒေ၊ နည်းဥပဒေ(၁၉)ပါ စည်းကမ်းချက်များနှင့်အညီ တူးဖော်တပ်ဆင်ထားသော (၈") လက်မအရွယ် အဝီစိတွင်း (၂)တွင်းအတွက် ဤရုံး၏ အမြဲတန်းလိုင်းစင်အမှတ် ၀၀၂/၂၀၁၈ -၂၀၁၉ ဖြင့် အမှတ် (၁၁-အေ၊ ၁၅၊ ၁၆၊ ၁၇)၊ ဦးစိစာရလမ်း၊ (၆၈/၄၅-ဒီ) ရပ်ကွက်၊ ဒဂုံ မြို့နယ်အတွင်းနေထိုင်သည့် ဦးအာယု၊ မန်းနေ့ရှင်းဒါရိုက်တာ၊ Yangon Technical & Trading Co.,Ltd (Y Complex Project) အား ဤအမြဲတန်းလိုင်းစင်ကို ထုတ်ပေးလိုက်သည်။

နေ့စွဲ၊ ၂၅.၅.၂၀၁၈
ရန်ကုန်မြို့


မြေအောက်ရေကြီးကြပ်မှုအရာရှိ
မြို့ပြနှင့်အိမ်ရာဖွံ့ဖြိုးရေးဦးစီးဌာန

PERMENENT LICENCE
FROM D (RULE - 18)

002	2018-2019
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Form of Permanent Licence granted under the Burma Underground Water Act:
Permanent Licence No001/2018-2019....

Dated the ... 25 th, May, 2018...

The Permenent Licence is granted to ...U Ar Yu, Managing Director, Myanmar Yangon Technical & Trading Co.,Ltd(Y Complex Project) residing at No (11-A, 15,16,17), Uwizarya Road, 68/45-D Ward, Dagon Township to authorize the sinking of 8"(Eight)... inches diameter tube well at Lot No ...(11-A, 15,16,17), Block No (68/45-D), Dagon Township and provisionally registered as No ...002/2018-2019...of the Water Officer, Burma subject to the conditions prescribed in the Undergruond Water Rules 1941 especially Rule 19.


Water Officer

Department of Urban & Housing Development

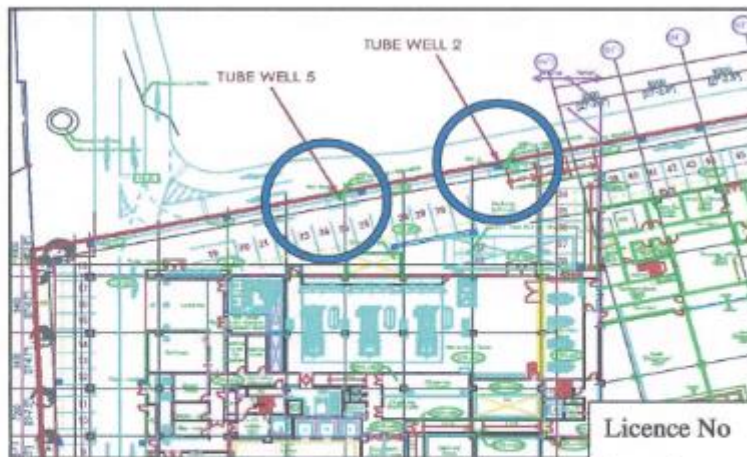


Licence No - 001/2018-2019

Issue Date - 9.5.2018

Tube Well No - (3) & (4)

[Signature] 25.5.18



Licence No - 002/2018-2019

Issue Date - 25.5.2018

Tube Well No - (2) & (5)

[Signature] 25.5.18



အမြဲတန်းလိုင်းစင်
(မြေအောက်ရေ၊ နည်းဥပဒေ (၁၈) ပါဝင် 'ဃ')

အမြဲတန်းလိုင်းစင်အမှတ်
လိုင်းစင်ထုတ်ပေးသည့်နေ့စွဲ

၀၀၁/၂၀၁၈-၂၀၁၉
၉.၅.၂၀၁၈

မြန်မာ့မြေအောက်ရေအက်ဥပဒေအရထုတ်ပေးသည့် အမြဲတန်းလိုင်းစင်အမှတ် ၀၀၁/ ၂၀၁၈ - ၂၀၁၉ နေ့စွဲ ၉.၅.၂၀၁၈၊ မြေတိုင်းရပ်ကွက်အမှတ် (၆၈/၄၅-ဒီ) ရပ်ကွက်၊ ဦးပိုင်အမှတ် (၁၁-အေ၊ ၁၅၊ ၁၆၊ ၁၇) တွင် (၈") လက်မ ၈ အဝါးတွင်း(၂) တွင်းကို ၁၉၄၁ ခုနှစ်၊ မြေအောက်ရေဥပဒေ၊ နည်းဥပဒေ(၁၉)ပါ စည်းကမ်းချက်များနှင့်အညီ တူးဖော်တပ်ဆင်ထားသော (၈") လက်မအရွယ် အဝါးတွင်း (၂)တွင်းအတွက် ဤရုံး၏ အမြဲတန်းလိုင်းစင်အမှတ် ၀၀၁/၂၀၁၈ -၂၀၁၉ ဖြင့် အမှတ် (၁၁-အေ၊ ၁၅၊ ၁၆၊ ၁၇)၊ ဦးဝိစာရလမ်း၊ (၆၈/၄၅-ဒီ) ရပ်ကွက်၊ ဒဂုံ မြို့နယ်အတွင်းနေထိုင်သည့် ဦးအာယု၊ မန်းနေးကျင်းဒါရိုက်တာ၊ Yangon Technical & Trading Co.,Ltd (Y Complex Project) အား ဤအမြဲတန်းလိုင်းစင်ကို ထုတ်ပေးလိုက်သည်။

နေ့စွဲ၊ ၉.၅.၂၀၁၈
ရန်ကုန်မြို့

မြေအောက်ရေကြီးကြပ်မှုအရာရှိ
မြို့ပြနှင့်အိမ်ရာဖွံ့ဖြိုးရေးဦးစီးဌာန

PERMENENT LICENCE
FROM D (RULE - 18)

001	2018-2019
-----	-----------

Form of Permenent Licence granted under the Burma Underground Water Act:
Permenent Licence No001/2018-2019...

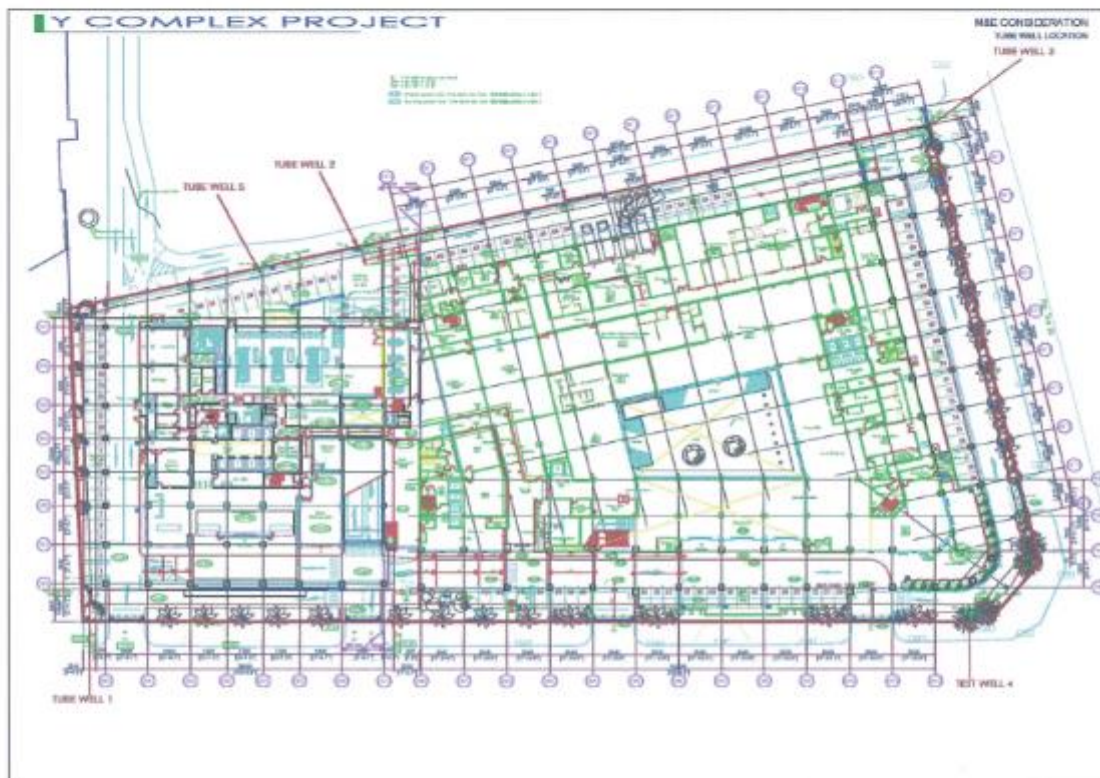
Dated the ...9th, May, 2018...

The Permenent Licence is granted to ...U Ar Yu, Managing Director, Myanmar Yangon Technical & Trading Co.,Ltd(Y Complex Project) residing at No (11-A, 15,16,17), Uwizarya Road, 68/45-D Ward, Dagon Township to authorize the sinking of 8"(Eight)... inches diameter tube well at Lot No ...(11-A, 15,16,17), Block No (68/45-D), Dagon Township and provisionally registered as No ...001/2018-2019...of the Water Officer, Burma subject to the conditions prescribed in the Undergruond Water Rules 1941 especially Rule 19.

Water Officer

Department of Urban & Housing Development

ဤအမြဲတန်းလိုင်စင်သည် Yangon Technical & Trading Co.,Ltd(Y Complex Project)
တွင်းအမှတ် (၃)နှင့် (၄)အတွက် ထုတ်ပေးခြင်းဖြစ်ပါသည်။



**COMMITTEE FOR QUALITY CONTROL OF HIGH-RISE BUILDING
CONSTRUCTION PROJECTS
GUIDELINE VIII
DESIGN CONCEPTS AND CALCULATIONS**

1. Water Supply

- 1-1 Water demand estimate should be based on the water requirement given in Table 1, Appendix. (R)
- 1-2 If ground water is used as a source of supply, at least two tube wells shall be drilled with each meeting the daily demand of the premises. (M)
- 1-3 The pumping hours for each tube well should not exceed 12 hours a day. (R)
- 1-4 The distance between a tube well and the building should not be less than 50 feet. (R)
- 1-5 A tube well and soil water treatment plant shall be at least 50 feet apart. (M)
- 1-6 The vertical distance between the tip of the deepest pile or the bottom of the shallow foundation and the top of the aquifer from which ground water will be tapped shall not be less than 150 feet. (M)
- 1-7 After compliance with para 1-4, 1-5 & 1-6 a final permit for the drilling of tube wells shall be duly obtained from the authority concerned.
- 1-8 If there is no space in the premises for drilling tube wells to comply with para 1.4 and 1.5 another source of water supply should be explored. (R)
- 1-9 When raw water is to be used for fire fighting a separate tank or compartment shall be constructed to store water for fire fighting. (M)
- 1-10 If treated water (e.g., YCDC water) is to be used for fire fighting a single tank may be used for storing water for both domestic and fire fighting purposes. (R)
- 1-11 Drinking water not meeting the recommended guideline given in Table 2, Appendix, shall be treated by a system deemed appropriate by the designer (M)
- 1-12 Clear water reservoir for domestic use should be divided into appropriate number of compartments to facilitate maintenance. (R)
- 1-13 When roof top water storage tank / tanks are used for distributing water, the tank / tanks should have a minimum capacity of not less than 35% of the daily requirement of the premises. (M)
- 1-14 Where several tanks are used to store water on roof level the minimum capacity of each tank should preferably be 1600 gallons. (R)
- 1-15 In case where the designer wishes to install a storage tank in each dwelling, the capacity shall not be greater than 400 gallons. The water stored in such tank shall be used only in case when the normal supply is interrupted. (M)
- 1-16 A minimum pressure of 0.5 bar and a maximum of 1.5 bar shall be available at every fixture outlet. (M)
- 1-17 A pressure reducing valve shall be installed if the pressure in the main riser / dropper or cold water supply line is greater than 5 bars. (M)
- 1-18 The system of using a pump and storage tank for each dwelling for individual water supply system is not allowed. (M)
- 1-19 The installation of water meter for each dwelling is recommended. (R)

- 1-20 All design calculations shall be provided with graphs, charts, tables and nomographs used in the design. Justification for assumptions shall be clearly stated. If computer software is used, both input and output data shall be submitted and limitations of the program are to be duly stated.(M)
- 1-21 With regard to installation of water pumps, tanks, cold and hot water pipes SINGAPORE STANDARD CP 48, 1989 (or any updated version) is recommended.(R)

အဝီစိတွင်းတူးဖော်သုံးစွဲသူများလိုက်နာရမည့်အချက်များ

- (၁) ရယူသုံးစွဲမည့် ရေအရင်းအမြစ် Tube Well မှ ရေသည် ရေထွက်နှုန်း စံသတ်မှတ်ချက်ပမာဏ အတိုင်းထွက်ရှိပြီး ရေ၏ အရည်အသွေးကောင်းမွန်၍ သတ်မှတ်စံချိန် စံညွှန်းများ နှင့်အညီ ကိုက်ညီမှုရှိရမည်။
- (၂) မြေအောက်ရေတူးဖော်ထုတ်ယူရန် Tube Well သည် အဆောက်အဦမှ အနည်းဆုံး ၅၀ ပေ ကွာရမည်။
- (၃) Tube Well သည် ရေဆိုးသန့်စင်ကန်၊ မိလ္လာကန်၊ အမှိုက်စွန့်ပစ်ကန်များနှင့် အနည်းဆုံး ၅၀ ပေ ကွာဝေးရမည်။
- (၄) အဆောက်အဦ၏ အနက်ဆုံးပိုင်ထိပ် (Tip of the Deepest Pile) (သို့မဟုတ်) အုတ်မြစ် အောက်ခြေ (Bottom of the Shallow Foundation) နှင့် မြေအောက်ရေထိပ် (Top of the Aquifer from which Ground Water)သည် အနည်းဆုံး ၁၅၀ ပေ ဝေးကွာစေရမည်။
- (၅) အဝီစိတွင်းမှရေကို Pumping Hours တစ်နေ့ ၁၂ နာရီထက် ကျော်လွန်၍ မထုတ်ယူသင့်ပေ။
- (၆) တူးဖော်ထုတ်ယူသုံးစွဲရန် ခွင့်ပြုထားပြီးသော Tube Well များကို (၁) ကြိမ်တွင် Pumping Hours တစ်လှည့်စီသာ ထုတ်ယူရမည်၊ တွင်း ၂ တွင်း ပြိုင်တူ စုပ်ယူ မောင်းနှင်ခြင်းမပြုရ။
- (၇) မြေအောက်ရေသည် သဘာဝအရင်းအမြစ်တစ်ခုဖြစ်သည့်အတွက် ရေရှည်တည်တံ့စေရန်၊ ပတ်ဝန်းကျင်ထိခိုက်ပျက်စီးမှုလျော့နည်းစေရန် နှင့် အလွန်အကျွံထုတ်ယူ သုံးစွဲခြင်း မရှိစေရန် စောင့်ကြည့်ကွပ်ကဲစနစ်ထားရှိရမည်။

Appendix XI Physio-Chemical Results of Water Quality



**ISO TECH
LABORATORY**

Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg. (Civil), Dip S & E (Water), Lecturer of VIT (Ratn), Consultant (V.C.D.C.), LWSE 001
Former Member (UPHREF, Water quality monitoring & Surveillance Myanmar)





WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/ Page 1 of 2

W1018 244

WATER QUALITY TEST RESULTS FORM

Client _____ Y - Complex Project _____
 Nature of Water _____ Ground Water _____
 Location _____ Shwedaagon Bagoda Road, Dagon Township _____
 Date and Time of collection _____ 10.10.2018 _____
 Date and Time of arrival at Laboratory _____ 10.10.2018 _____
 Date and Time of commencing examination _____ 11.10.2018 _____
 Date and Time of completing _____ 16.10.2018 _____

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

pH	6.4	6.5 - 8.5
Colour (True)	10 TCU	15 TCU
Turbidity	28 NTU	5 NTU
Conductivity	micro S/cm	
Total Hardness	54 mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness	mg/l as CaCO ₃	
Magnesium Hardness	mg/l as CaCO ₃	
Total Alkalinity	mg/l as CaCO ₃	
Phenolphthalein Alkalinity	mg/l as CaCO ₃	
Carbonate (CaCO ₃)	Nil	mg/l as CaCO ₃
Bicarbonate (HCO ₃)	mg/l as CaCO ₃	
Iron	0.49 mg/l	0.3 mg/l
Chloride (as Cl)	mg/l	250 mg/l
Sodium Chloride (as NaCl)	mg/l	
Sulphate (as SO ₄)	mg/l	500 mg/l
Total Solids	mg/l	1500 mg/l
Suspended Solids	mg/l	
Dissolved Solids	mg/l	1000 mg/l
Manganese	mg/l	0.05 mg/l
Phosphate	mg/l	
Phenolphthalein Acidity	mg/l	
Methyl Orange Acidity	mg/l	
Salinity	ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: _____
 Name: Zaw Hein Oo
 H.Sc (Chemistry)
 To Client

Approved by


Signature: _____
 Name: _____

(a division of WEG Co., Ltd) **ISO TECH Laboratory**

No.18, Lantit Road, Nantharone Quarter, Insein Township, Yangon, Myanmar.


Ph: 01-640956, 09-73225175, 09-73242162, Fax: 01-644506, E-mail: isotechlaboratory@gmail.com, Website: wsg-myanmar.com


Appendix XI Physio-Chemical Results of Water Quality (Continued)



**ISO
TECH
LABORATORY**

Laboratory Technical Consultant: U Saw Chitkyar Maung
B.Sc. Engg. (Civil), Dip. S.E. (Defn) Lecturer of YIT (Retd), Consultant (V.C.D.C.) WOE 001,
Former Member (UNICEF), Water quality monitoring & Surveillance Myanmar





WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/ Page 2 of 2

W1018 244

WATER QUALITY TEST RESULTS FORM

Client _____	Y - Complex Project
Nature of Water _____	Ground Water
Location _____	Shwedagon Bagoda Road, Dagon Township
Date and Time of collection _____	10.10.2018
Date and Time of arrival at Laboratory _____	10.10.2018
Date and Time of commencing examination _____	11.10.2018
Date and Time of completing _____	16.10.2018

Results of Water Analysis

Temperature (°C)	25.0	°C
Fluoride (F)		mg/l
Lead (as Pb)		mg/l
Arsenic (As)		mg/l
Nitrate (N NO ₃)		mg/l
Chlorine (Residual)		mg/l
Ammonia (NH ₃)		mg/l
Ammonium (NH ₄)		mg/l
Dissolved Oxygen (DO)		mg/l
Chemical Oxygen Demand (COD)	32	mg/l
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)	6	mg/l
Cyanide (CN)		mg/l
Zinc (Zn)		mg/l
Copper (Cu)		mg/l
Silica (Si)		mg/l

**WHO Drinking Water Guideline
(Geneva - 1993)**

1.5	mg/l
0.01	mg/l
0.01	mg/l
50	mg/l
0.07	mg/l
3	mg/l
2	mg/l

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: _____

Name: Zaw Hain On
B.Sc (Chemistry)
Sr. Chemist
ISO TECH Laboratory

Approved by

Signature: _____

Name: _____

(a division of WEG Co., Ltd.)
No. 18, Lantbit Road, Nantthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-73242162, Fax: 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

Appendix XI Physio-Chemical Results of Water Quality (Continued)



ANALYSIS REPORT

ORIGINAL

Job Ref: 2000267/18

Date: 12/10/2018

Page 1 of 1

Sample Described as : Ground Water
Client Name : Y- Complex Project
Sample Received Date : 10.10.2018
Sample Brought By : Client
Sample Marking : Point -1
Sample Location : Dagon
Analysed Date : 11.10.2018
Lab Code No. : 170/18

No.	Test Parameter	Method	LO Q	Result	Unit
1	Total Dissolved Solid	Standard methods for the examination of water & waste water APHA, AWWA & WEF, 22nd ed, 2012; 2540-C. Dried at 180 °C	50	125	mg/L
2	Total Suspended Solid	Standard methods for the examination of water & waste water APHA, AWWA & WEF, 22nd ed, 2012; 2540-D. Dried at 103-105 °C	20	87	mg/L

***** End of Report *****

SGS (Myanmar) Limited
(Signature)
(Nu Nu Yi)
Manager

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SGS (Myanmar) Limited

Analysis Services, 28/32, Be Chon Street, 6th Mile, Hsing Township, Yangon, Myanmar
t +95(1) 654 795, 654 796, 654 864, 654 955 e sgs.myanmar@sgs.com

Member of SGS Group (SGS SA)



INVOICE

ORIGINAL

Invoice Number : 10009397
Date : 12-OCT-18
Page : 1 / 1

Customer Number 3310028 / 1602061
Currency MMK
Payment Term Net Due in 30 Days
Due Date 11-NOV-18

SGS Order No. 2000267

E GUARD ENVIRONMENTAL SERVICES CO., LTD
NO-11, AIR PORT AVENUE STREET,
INSEIN TOWNSHIP
11011 Yangon

Item	Description	Quantity	UoM	Unit Price	Net Amount	Tax Code	Amount
239	Analysis Sampling for -- Total Dissolved Solid	1	Ea	13,000.00	13,000.00	5%	13,650.00
239	Analysis Sampling for --Total Suspended Solid	1	Ea	13,000.00	13,000.00	5%	13,650.00
Actual Execution End-Date		13-OCT-2018					
Product Description		Ground water					
Product Quantity		1.000					
Product Unit of Measure		Sample					
					5%	26,000.00	1,300.00
					Net Amount	MMK	26,000.00
					Sum of Tax	MMK	1,300.00
					Total Amount	MMK	27,300.00

Words: Twenty-Seven Thousand Three Hundred MMK

Contact Name: Htoo, Mr. Naing Lin
E-mail: nainglin.htoo@sgs.com

Please use the following Bank Account for payment :

Bank Name: Yoma Bank
Branch Name: Main Branch
Account Number: 600110262500069
SWIFT: YOMAMMMY
Currency: MMK

Please use this reference with your payment :
1009397 12-OCT-18 3310028 / 1602061

If you make a payment by cheque, kindly issue to "SGS (Myanmar) Limited"

F510101 SGS (Myanmar) Ltd

No.79 (D) Bo Chain Street, Hlaing Township 11051 Yangon Myanmar
tel. +95 1 654 864, 654 865 www.sgs.com

SGS Tax Reg. TIN - 174545545

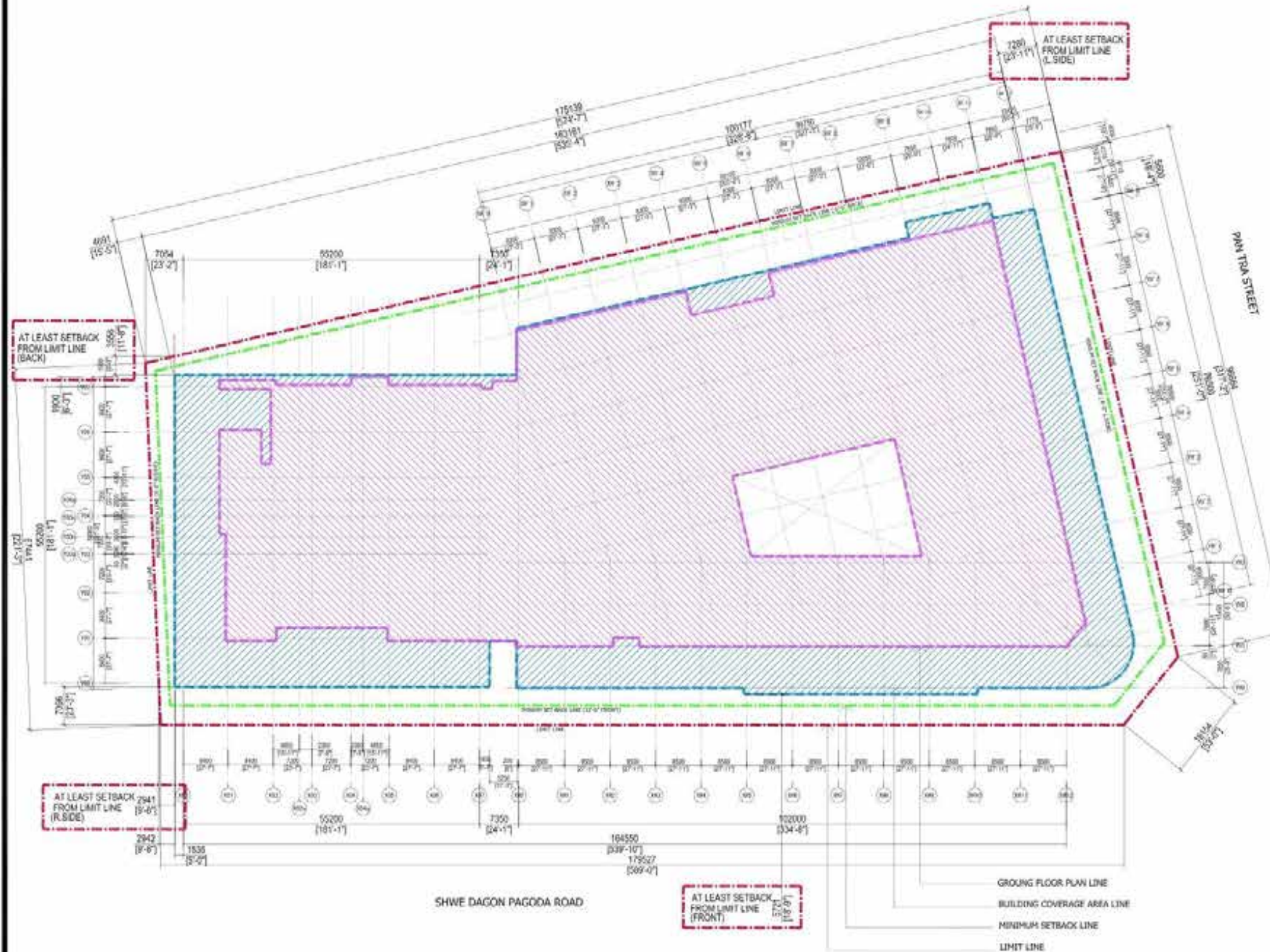
Member of the SGS Group

All orders are accepted and all reports and certificates issued subject to the General Conditions for Inspection and Testing Services (available from www.sgs.com).

Appendix XII OFFICE AND Y COMPLEX PROJECT FLOOR PLAN

1. Set Back Analysis (Y Complex)
2. Basement-1 Floor Plan (Y Complex Project)
3. Basement-2 Floor Plan (Y Complex Project)
4. Ground Floor Plan (Y Complex Project)
5. Mezzanine Floor Plan (Y Complex Project)
6. 1st Floor Plan (Y Complex Project)
7. 2nd Floor Plan (Y Complex Project)
8. 3rd Floor (Y Complex Project)
9. 4th Floor (Y Complex Project)
10. 5th to 6th Floor Plan(Y Complex Project)
11. 7th Floor (Y Complex Project)
12. 8th Floor Plan (Y Complex Project)
13. Roof Floor Plan (Y Complex Project)
14. Parking Provision of Ground Floor Plan (Y Complex Project)
15. Parking Provision of Basement 1st Floor Plan (Y Complex Project)
16. Parking Provision of Basement 2nd Floor Plan (Y Complex Project)

Y COMPLEX PROJECT



အင်ဂျင်နီယာချုပ် (အဆောက်အအုံ)
 အထူးပြင်ဆင်မှု/အသစ်တည်ဆောက်မှု
 ခံနိုင်ရည်ရှိသော/အဆောက်အအုံ (အင်ဂျင်နီယာ)

OWNER / APPLICANT
 (အဆောက်အအုံ/အသစ်တည်ဆောက်မှု)
 YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
 - Ayeeyar Hinthar Construction Co., Ltd.
 - Fujita Corporation
 - Tokyo Tatemono Asia Pte. Ltd.

PROJECT
 Proposed 9 Storey +
 2 Basements (Office, Hotels)
 RCC Building To be built at
 Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11, A/15, 16, 17

TOWNSHIP DAGON

SUBJECT BUILDING LAYOUT PLAN

SCALE 1 : 500 SHEET NO.

DATE 20180516 A-005

LS / PE (Construction)

LC

SLA

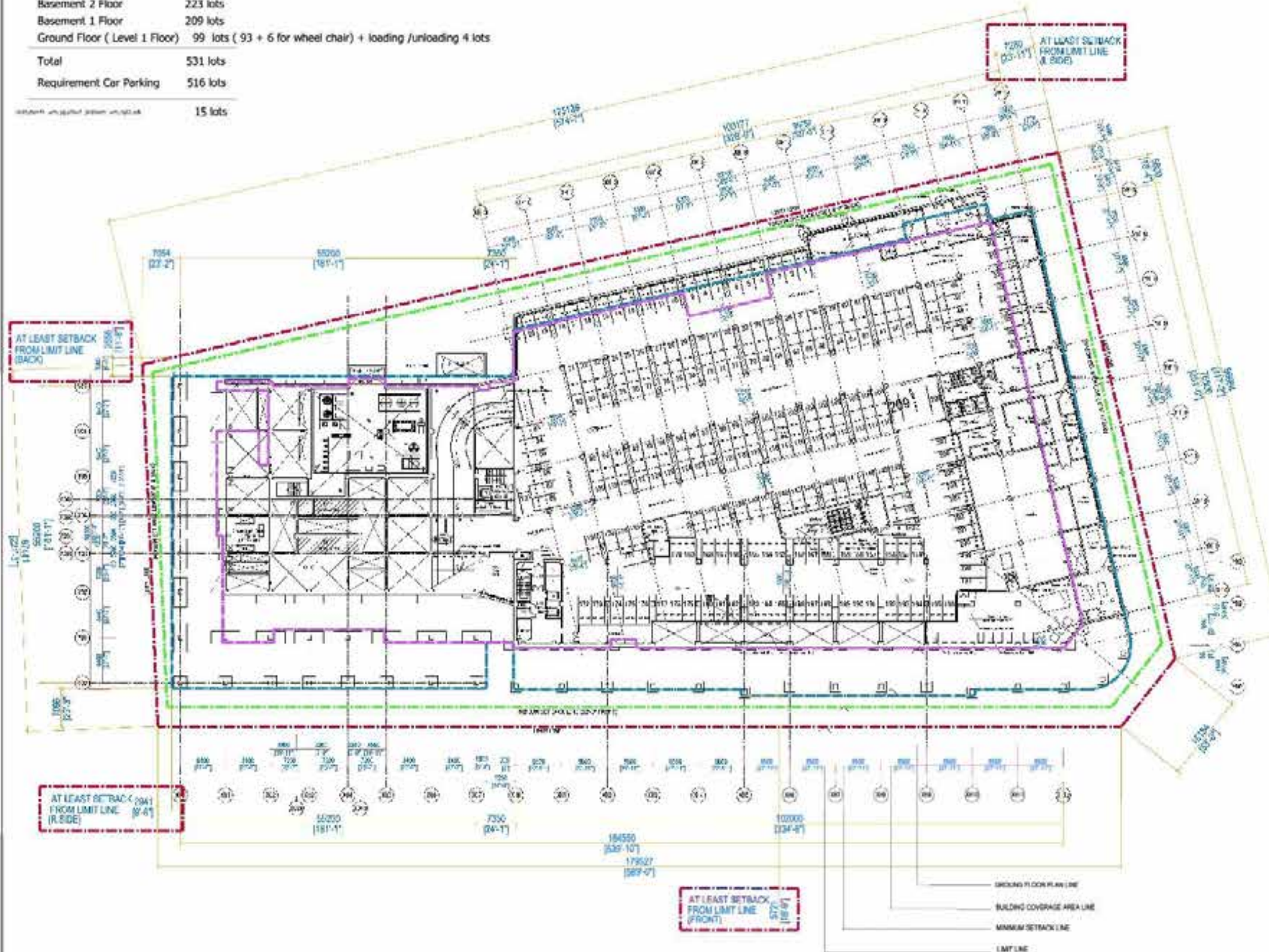
SEC / PE (Structure)

OWNER

Y COMPLEX PROJECT

Car Parking

Basement 2 Floor	223 lots
Basement 1 Floor	209 lots
Ground Floor (Level 1 Floor)	99 lots (93 + 6 for wheel chair) + loading /unloading 4 lots
Total	531 lots
Requirement Car Parking	516 lots
	15 lots



အကျဉ်းချုပ် (အကျဉ်းချုပ်)
အကျဉ်းချုပ် (အကျဉ်းချုပ်) အကျဉ်းချုပ် (အကျဉ်းချုပ်)
အကျဉ်းချုပ် (အကျဉ်းချုပ်) အကျဉ်းချုပ် (အကျဉ်းချုပ်)

OWNER / APPLICANT

(ကုမ္ပဏီအမျိုးမျိုး) နှင့် (ကုမ္ပဏီအမျိုးမျိုး)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY

- Myanmar Myanmar Construction Co., Ltd.
- Fuyi Corporation
- Tokyo Tabemono Asia Pte.Ltd.

PROJECT

Proposed 9-Storey +
2 Basements (Office, shops)
B/C Building To be built at
Shwethagun Pagoda Road

BLOCK NO. 68 / 45 D

LOT NO. 11A/15, 16, 17

TOWNSHIP DAGON

SUBJECT BASEMENT LEVEL 1
FLOOR PLAN

SCALE 1 : 500 SHEET NO.

DATE 20180525 A 03

LS / PE (Construction)

LC

SEA

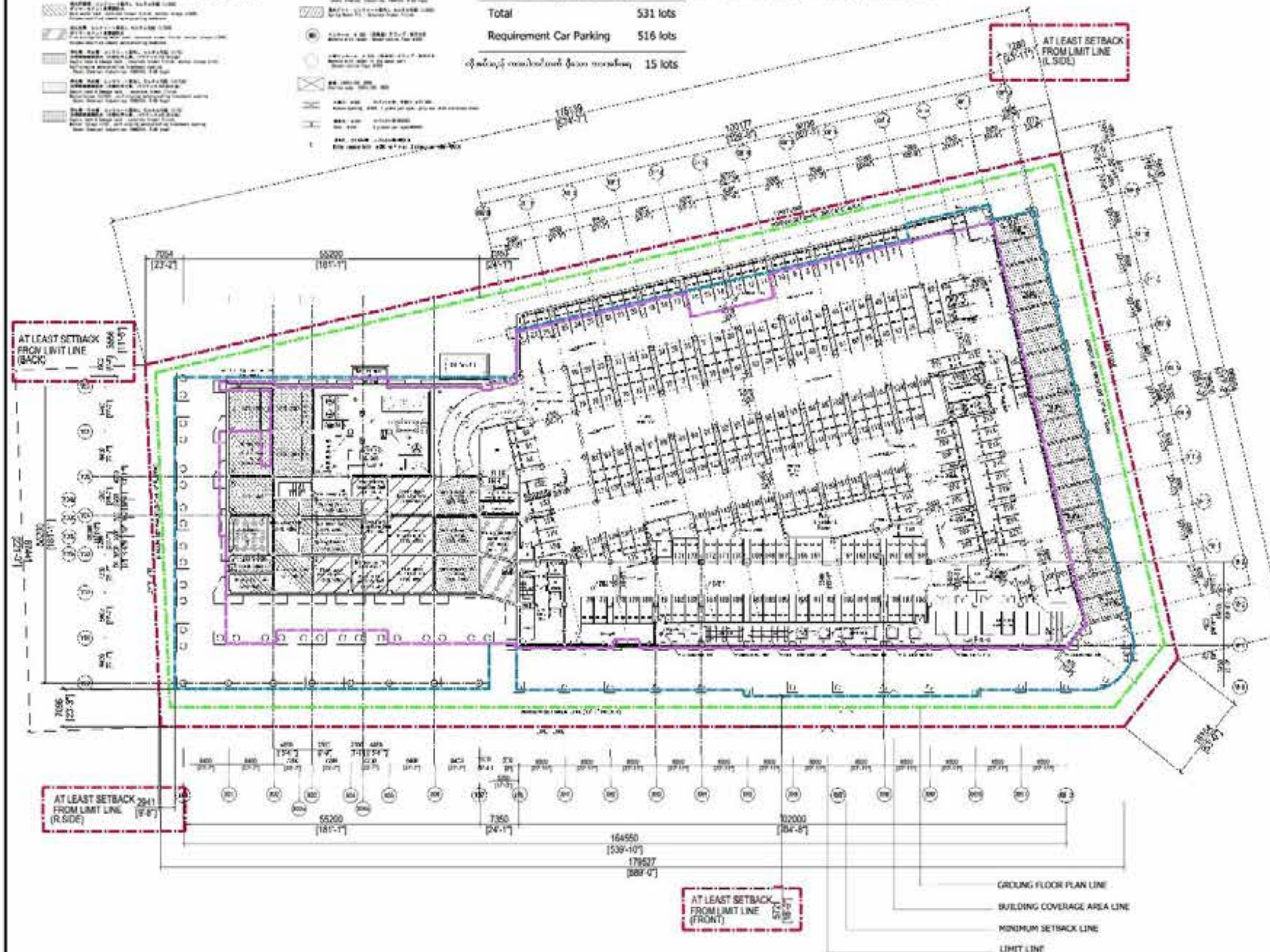
S/C / P/C (Structure)

OWNER

[illegible]

<u>Car Parking</u>	
Basement 2 Floor	223 lots
Basement 1 Floor	209 lots
Ground Floor (Level 1 Floor)	99 lots (93 + 6 for wheel chair) + loading /unloading 4 lots
Total	531 lots
Requirement Car Parking	516 lots
Additional carloadment for car stacking	15 lots

နိမိတ်တို့ကို အသုံးပြုသည့် အခါ ၁၅ လက်မ



အင်္ဂလိပ်နိုင်ငံသား (အမေရိကန်သား)
အထက်မြို့အမေရိကန်သား အောက်မြို့အင်္ဂလိပ်သား
အင်္ဂလိပ်နိုင်ငံသား ဝက်သားအရပ် ဤမြို့ကြီးအရပ်

(ကုမ္ပဏီအမည်ကြီးသည့်) နှစ် ၇၁ ခြောက်သွင်သည့်)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY	- Ayeyar Hinthar Construction Co., Ltd.
	- Fujita Corporation
	- Tokyo Tatemono Asia Pte. Ltd.

PROJECT	Proposed 9 Storey + 2 Basements (Office, Hotels) REC Building To Be Built at Shwedagon Pagoda Road.
---------	---

LOT NO.	11, A/15, 16, 17
---------	------------------

SUBJECT	BASEMENT LEVEL 2 FLOOR PLAN
---------	--------------------------------

DATE	20180512	A-UG
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US / PE (Construction)

UC

SLA

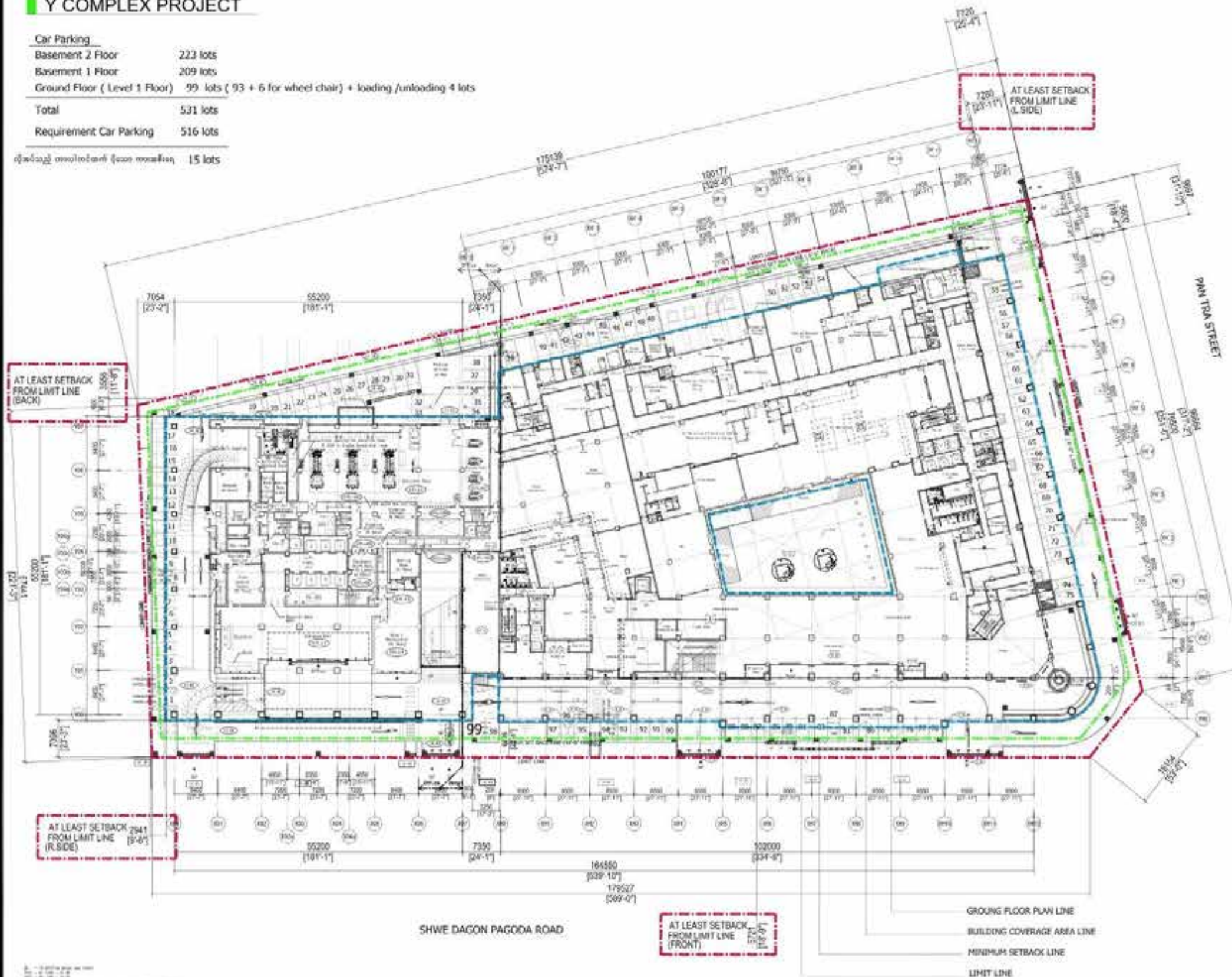
SEC / VE (Structure)

OWNER

Y COMPLEX PROJECT

Car Parking	
Basement 2 Floor	223 lots
Basement 1 Floor	209 lots
Ground Floor (Level 1 Floor)	99 lots (93 + 6 for wheel chair) + loading /unloading 4 lots
Total	531 lots
Requirement Car Parking	516 lots

ရိပ်အုပ်သည့် အကျယ်အဝန်း ချိတ်ထားမှု 15 lots



အင်ဂျင်နီယာချုပ် (အဆောက်အအုံ)
အထက်ဖွဲ့၊ အောက်ဖွဲ့၊ အောက်ဖွဲ့မှန်၊ အောက်ဖွဲ့မှန်
နည်းဥပဒေ၊ အောက်ဖွဲ့မှန်၊ အောက်ဖွဲ့မှန်

OWNER / APPLICANT
(အောက်ဖွဲ့မှန်၊ အောက်ဖွဲ့မှန်၊ အောက်ဖွဲ့မှန်)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
- Ayeeyar Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tatemono Asia Pte. Ltd.

PROJECT
Proposed 9 Storey +
2 Basements (Office, Hotels)
RCC Building To Be built at
Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11, A/15, 16, 17

TOWNSHIP DAGON

SUBJECT
GROUND FLOOR PLAN
(LEVEL 1 FLOOR PLAN)

SCALE 1 : 500 SHEET NO. A-04

DATE 20180516

LS / PE (Construction)

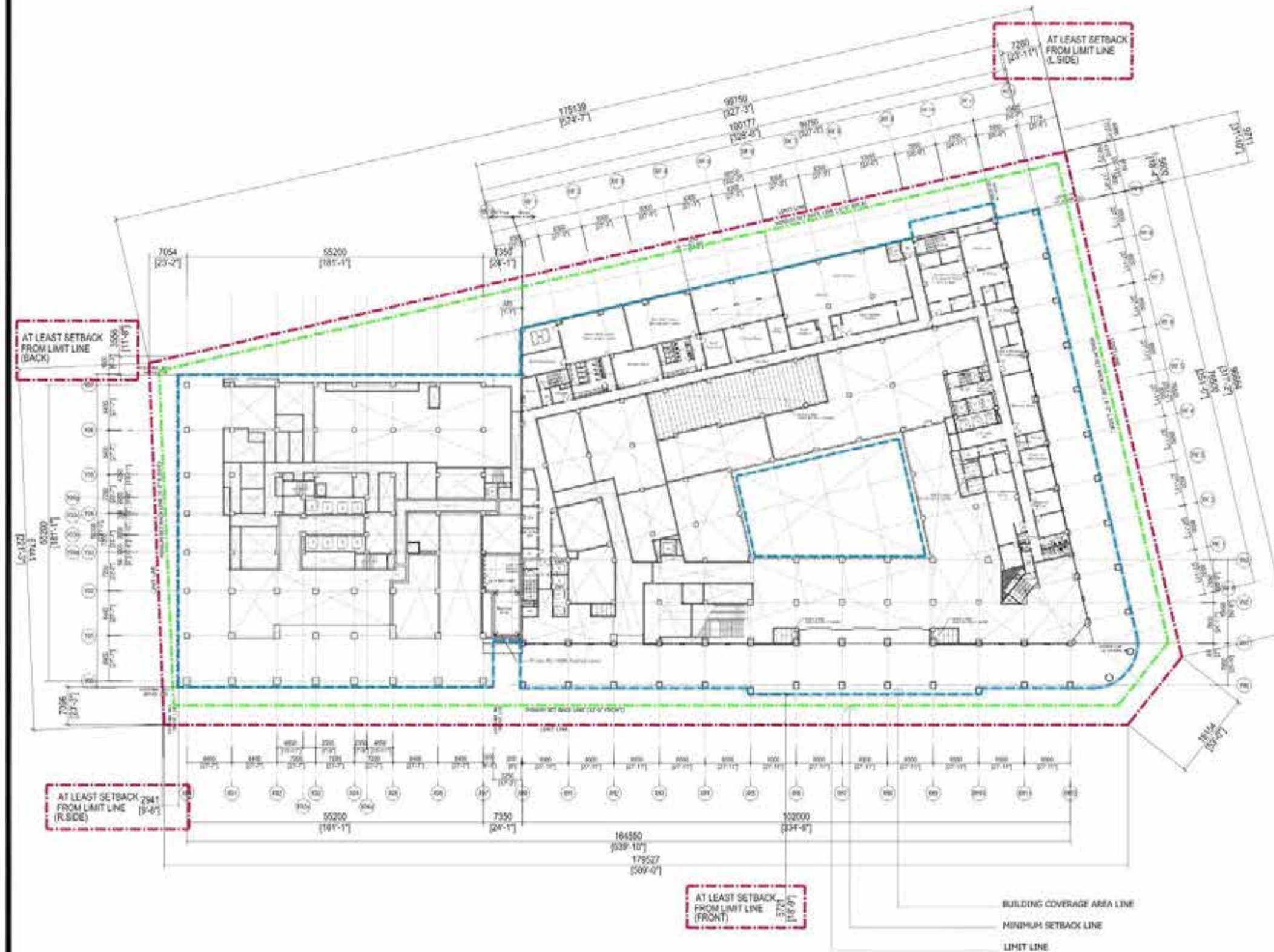
LC

SLA

SEC / PE (Structure)

OWNER

Y COMPLEX PROJECT



အပ်ရှင်နီယာဂရုဒ (အဆောက်အအုံ)
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အပ်ရှင်နီယာဂရုဒ (အဆောက်အအုံ)

OWNER / APPLICANT
(အပ်ရှင်နီယာဂရုဒ အပ်ရှင်နီယာဂရုဒ အပ်ရှင်နီယာဂရုဒ အပ်ရှင်နီယာဂရုဒ)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
- Ayeeyar Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tatemono Asia Pte. Ltd.

PROJECT
Proposed 9 Storey +
2 Basements (Office, Hotels)
RCC Building To be built at
Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11, A/15, 16, 17

TOWNSHIP DAGON

SUBJECT MEZZANINE FLOOR PLAN

SCALE 1 : 500 SHEET NO.

DATE 20180516 A-05

LS / PE (Construction)

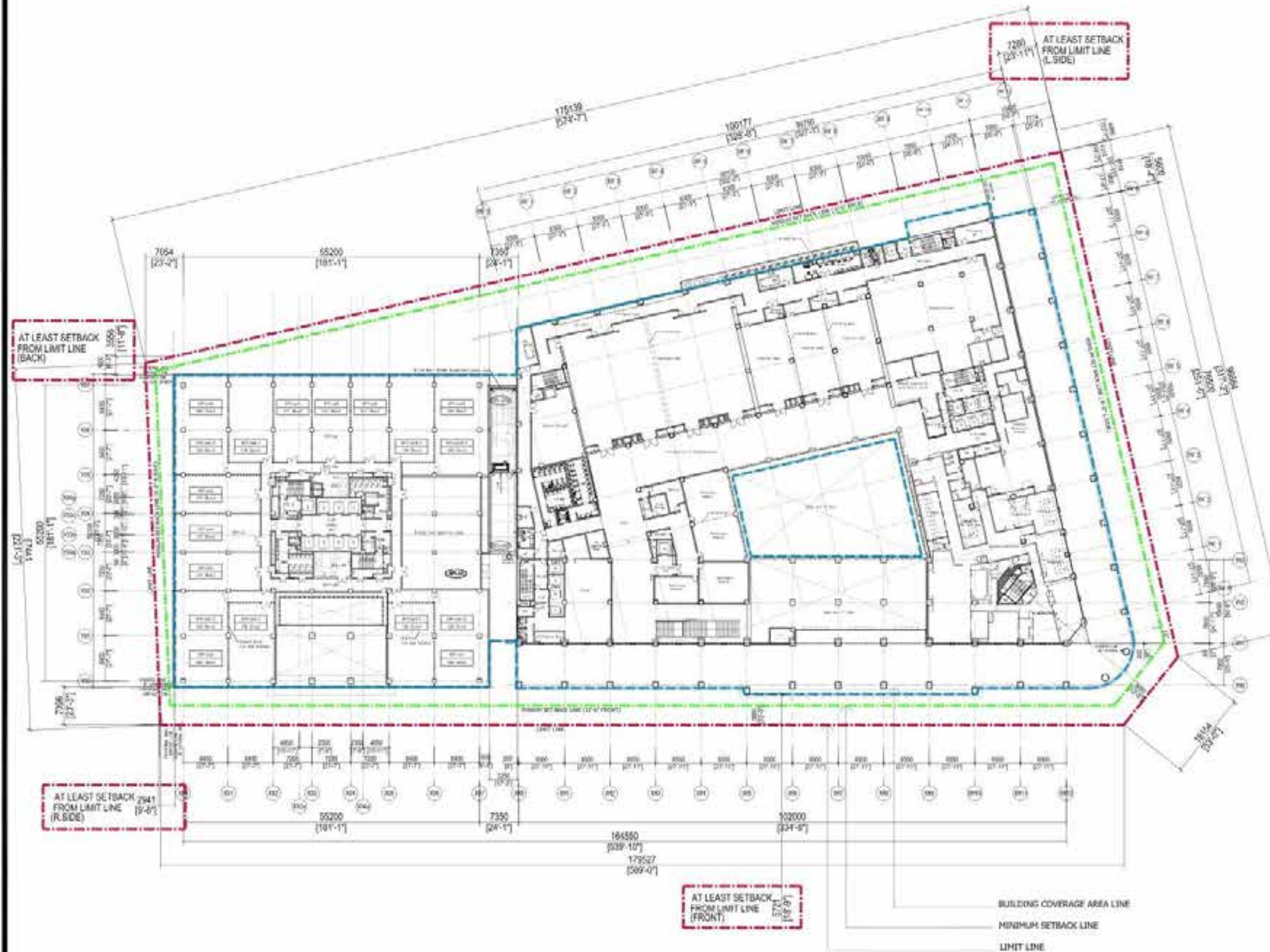
LC

S.A.

SEC / PE (Structure)

OWNER

Y COMPLEX PROJECT



အပ်ရှင်နယ် (အဆောက်အအုံ)
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OWNER / APPLICANT
(အဆောက်အအုံအဆောက်အအုံ အဆောက်အအုံ အဆောက်အအုံ)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
- Ayeeyar Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tatemono Asia Pte. Ltd.

PROJECT
Proposed 9 Storey +
2 Basements (Office, Hotels)
RCC Building To be built at
Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11, A/15, 16, 17

TOWNSHIP DAGON

SUBJECT FIRST FLOOR PLAN
(LEVEL 2 FLOOR PLAN)

SCALE 1 : 500 SHEET NO. A-06

DATE 20180516

LS / PE (Construction)

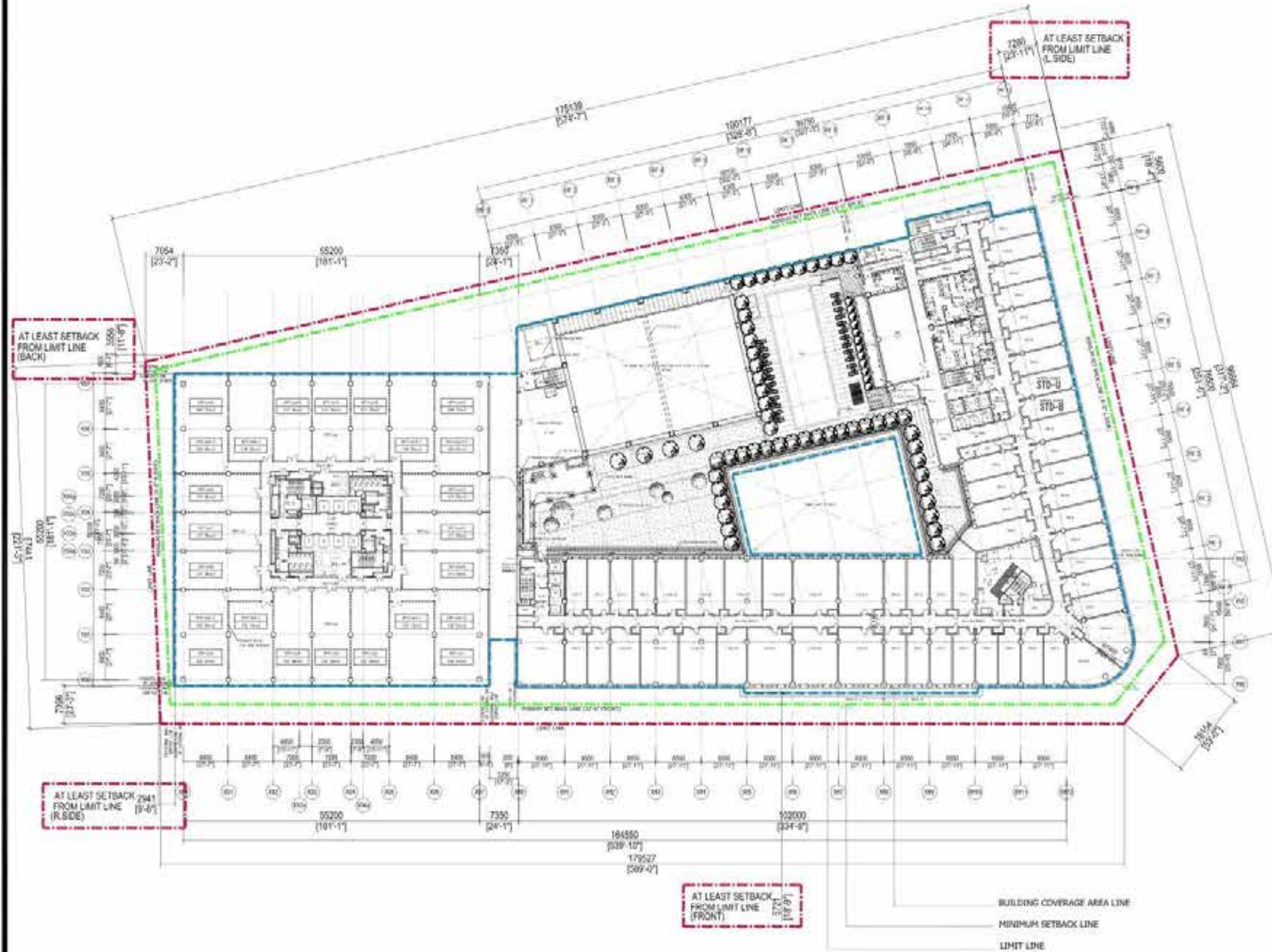
LC

SLA

SEC / PE (Structure)

OWNER

Y COMPLEX PROJECT



အင်္ဂလိပ်နိယာဝဉ်း (အမေရိကန်အဖွဲ့)
အထပ်ဖြင့် အမေရိကန်အဖွဲ့ အထောက်အပံ့မှုပိုင်ဆိုင်ရာ
ဝန်ထုပ်ပံ့မှု၊ ဖျာထုတ်ကုန်များနှင့် ငြိမ်းချမ်းရေးအဖွဲ့

OWNER / APPLICANT
(တပ်တွယ်ချုပ်ကြီးရုံးမှ စစ် ၇၀ မြေပုံအမှတ်ရင်း)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY

- Ayyer Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tamemura Asia Pte Ltd.

PROJECT	Proposed 9 Storey + 2 Basements (Office, Hotels) RCC Building To be built at Shwedagon Pagoda Road.
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BLOCK NO.	68 / 45 D
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LOT NO.	11.A/15, 16, 17
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TOWNSHIP	DACON
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SUBJECT	SECOND FLOOR PLAN (LEVEL 3 FLOOR PLAN)
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SCALE	1 : 500	SHEET NO.
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DATE	20180516	A-07
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LS / PE (Construction)

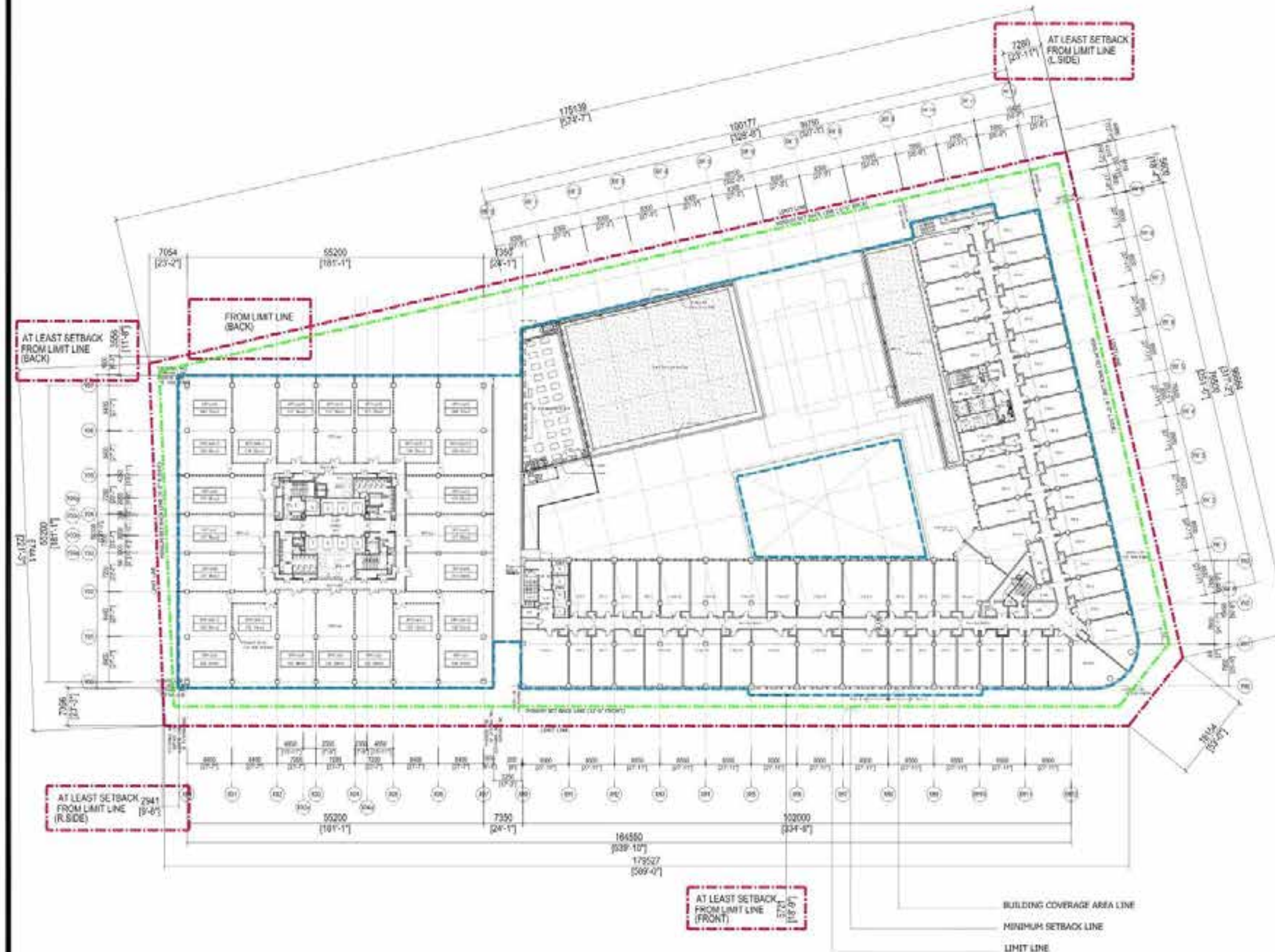
LC

9A

SEC / PE (Structure):

OWNER.

Y COMPLEX PROJECT



အပ်ရှင်နယ် (အပ်ရှင်နယ်)
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OWNER / APPLICANT
(အပ်ရှင်နယ်) အပ်ရှင်နယ် (အပ်ရှင်နယ်)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
- Ayeeyar Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tatemono Asia Pte. Ltd.

PROJECT
Proposed 9 Storey +
2 Basements (Office, Hotels)
RCC Building To be built at
Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11, A/15, 16, 17

TOWNSHIP DAGON

SUBJECT THIRD FLOOR PLAN
(LEVEL 4 FLOOR PLAN)

SCALE 1 : 500 SHEET NO.

DATE 20180516 A-08

LS / PE (Construction)

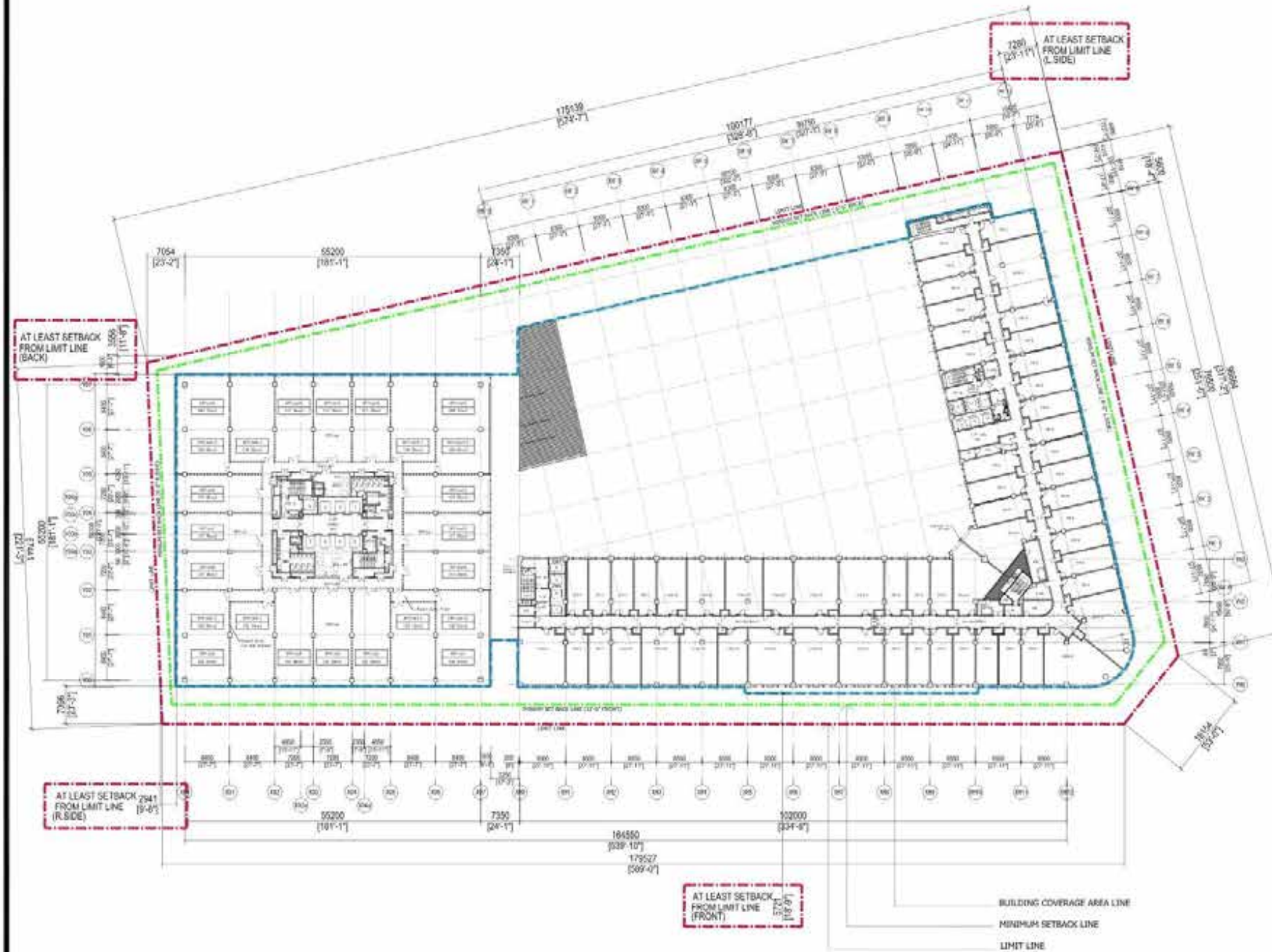
LC

S.A.

SEC / PE (Structure)

OWNER

Y COMPLEX PROJECT



အင်္ဂလိပ်နိယာမများ (အမေရိကန်အဖွဲ့)
မေလင်ဂြိုဟ် အမေရိကန်အဖွဲ့ မေလင်ဂြိုဟ်လုပ်ငန်းအဖွဲ့
နီလိုင်းနီလိုင်း၊ မေလင်ဂြိုဟ်လုပ်ငန်းအဖွဲ့၊ ငြိမ်းချမ်းရေးအဖွဲ့၊

OWNER / APPLICANT
(တပ်တွယ်ချုပ်ကြီးရုံးမှ စစ် ၇၀ မြေပုံအမှတ်ရသူ)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY

- Ayyer Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tamemura Asia Pte Ltd.

PROJECT	Proposed 9 Storey + 2 Basements (Office, Hotels) RCC Building To be built at Shwedagon Pagoda Road.
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BLOCK NO.	68 / 45 D
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LOT NO.	11.A/15, 16, 17
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TOWNSHIP	DACON
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SUBJECT	FOURTH FLOOR PLAN (LEVEL 5 FLOOR PLAN)
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SCALE	1 : 500	SHEET NO.
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DATE	20180516	A-09
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LS / PE (Construction)

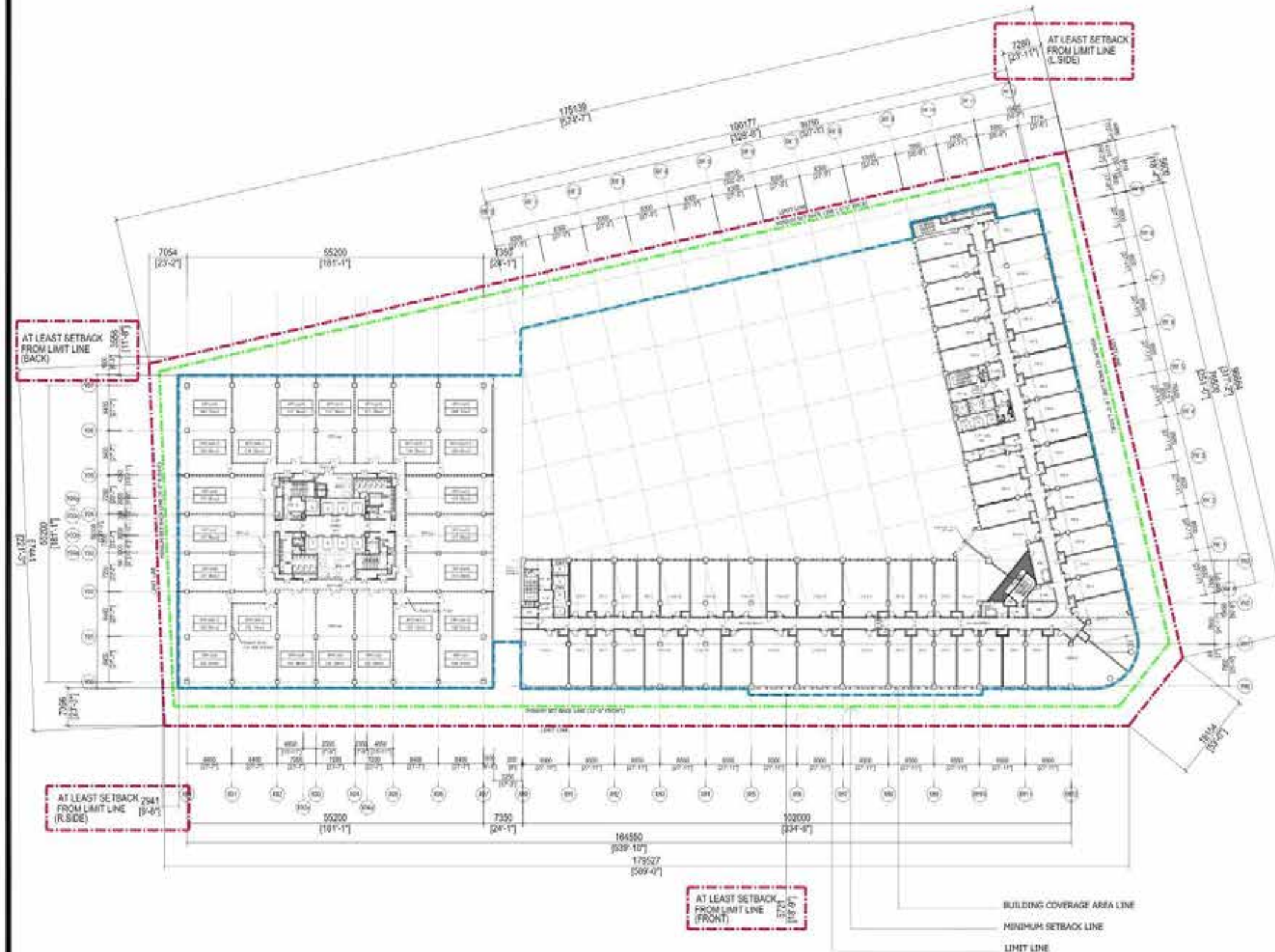
LC

9A

SEC / PE (Structure)

OWNER.

Y COMPLEX PROJECT



အင်ဂျင်နီယာချုပ် (အဆောက်အအုံ)
 အောင်မြင် အဆောက်အအုံ၊ အဆောက်အအုံ၊ အဆောက်အအုံ
 ခန့်မှန်းချက်၊ အဆောက်အအုံ၊ အဆောက်အအုံ

OWNER / APPLICANT
 (အဆောက်အအုံ၊ အဆောက်အအုံ၊ အဆောက်အအုံ)
 YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
 - Ayeeyar Hinthar Construction Co., Ltd.
 - Fujita Corporation
 - Tokyo Tatemono Asia Pte. Ltd.

PROJECT
 Proposed 9 Storey +
 2 Basements (Office, Hotels)
 RCC Building To Be built at
 Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11, A/15, 16, 17

TOWNSHIP DAGON

SUBJECT FIFTH & SIXTH FLOOR PLAN
 (LEVEL 5 & 7 FLOOR PLAN)

SCALE 1 : 500 SHEET NO.

DATE 20180516 A-10

LS / PE (Construction)

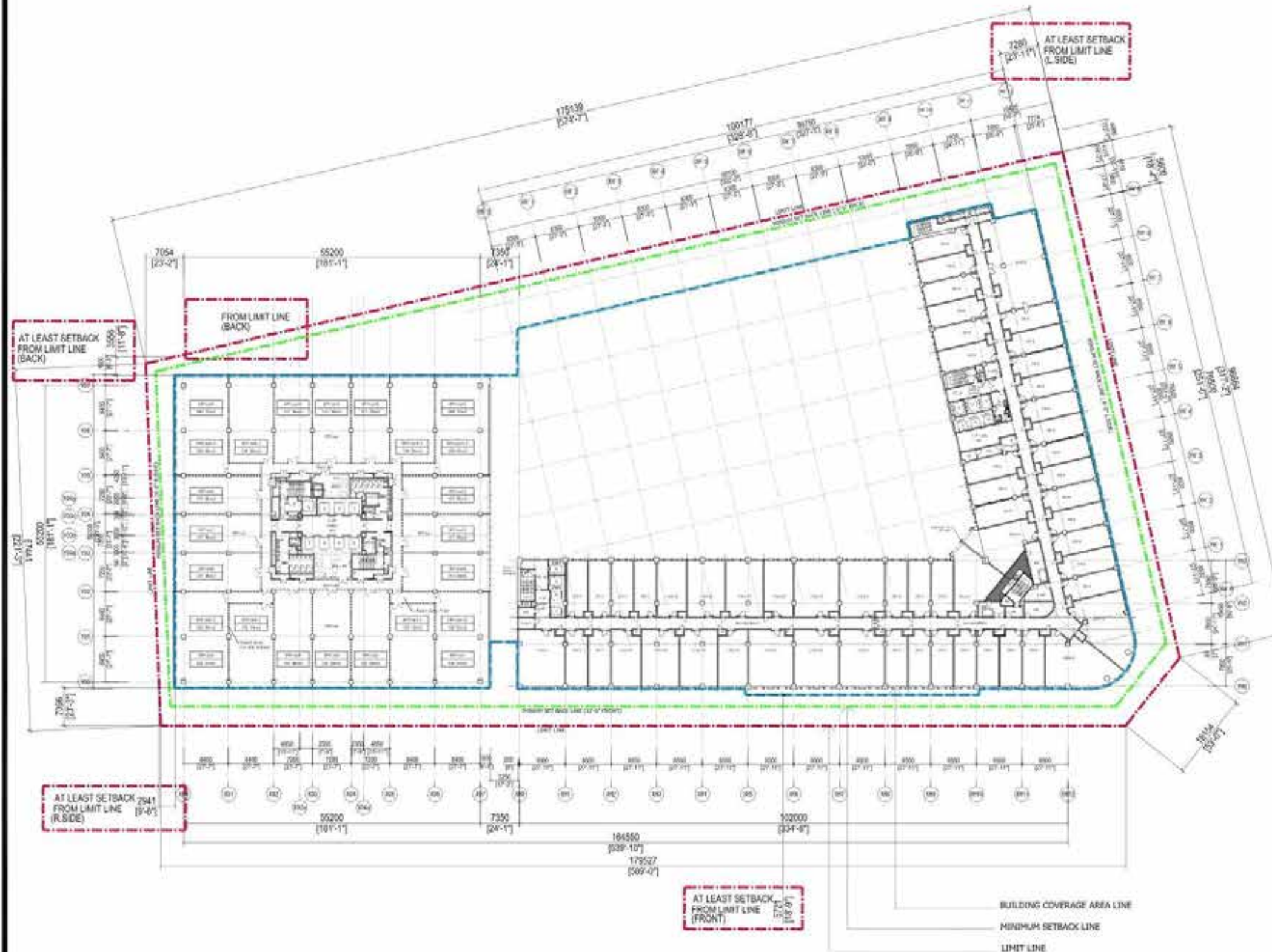
LC

S.A.

SEC / PE (Structure)

OWNER

Y COMPLEX PROJECT



အပ်ရှင်နီယာဂရုဒ (အဆောက်အအုံ)
အဆောက်အအုံ အဆောက်အအုံ အဆောက်အအုံ
အပ်ရှင်နီယာဂရုဒ (အဆောက်အအုံ)

OWNER / APPLICANT
(အပ်ရှင်နီယာဂရုဒ နှင့် အပ်ရှင်နီယာဂရုဒ)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
- Ayeeyar Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tatemono Asia Pte. Ltd.

PROJECT
Proposed 9 Storey +
2 Basements (Office, Hotels)
RCC Building To be built at
Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11, A/15, 16, 17

TOWNSHIP DAGON

SUBJECT SEVENTH FLOOR PLAN
(LEVEL 8 FLOOR PLAN)

SCALE 1 : 500 SHEET NO.

DATE 20180516 A-11

LS / PE (Construction)

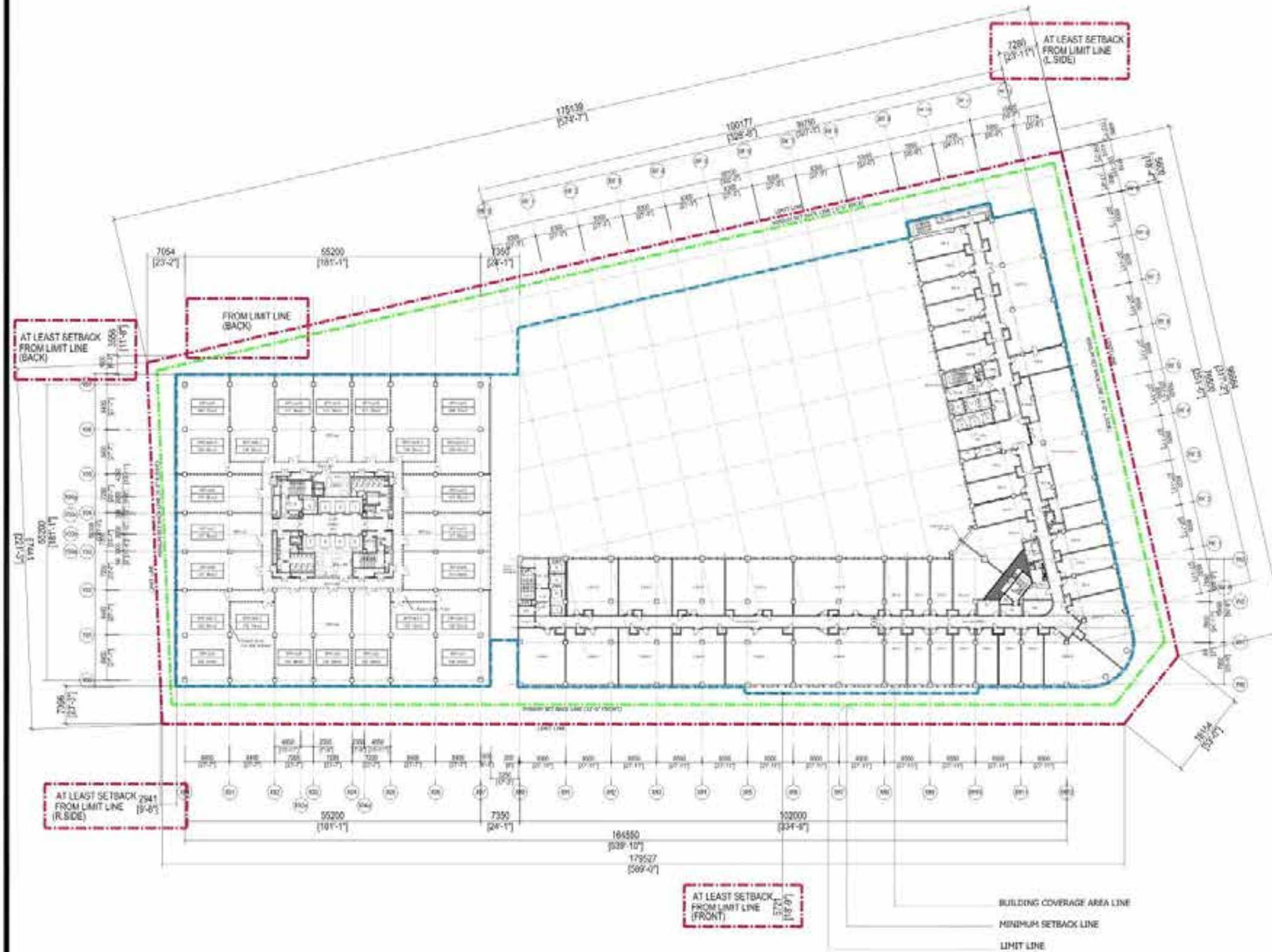
LC

SLA

SEC / PE (Structure)

OWNER

■ Y COMPLEX PROJECT



အင်ဂျင်နီယာချုပ် (အထောက်အပံ့)
အထပ်ဖြင့် အထောက်အပံ့၊ အထောက်အပံ့အကူအညီ
ခံနိုင်ရည်ရှိ၊ အထောက်အပံ့အကူအညီ၊ ငြိမ်ငြိမ်အေးအေး

OWNER / APPLICANT
(တက္ကသိုလ်တက္ကသိုလ်တက္ကသိုလ်)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY

- Ayyer Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tatemunko Asia Pte. Ltd.

PROJECT	Proposed 9 Storey + 2 Basements (Office, Hotels) RCC Building To be built at Shwedagon Pagoda Road.
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BLOCK NO.	68 / 45 D
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LOT NO.	11.A/15, 16, 17
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TOWNSHIP	DACON
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SUBJECT	EIGHTH FLOOR PLAN (LEVEL 9 FLOOR PLAN)
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SCALE	1 : 500	SHEET NO.
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DATE	20180516	A-12
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LS / PE (Construction)

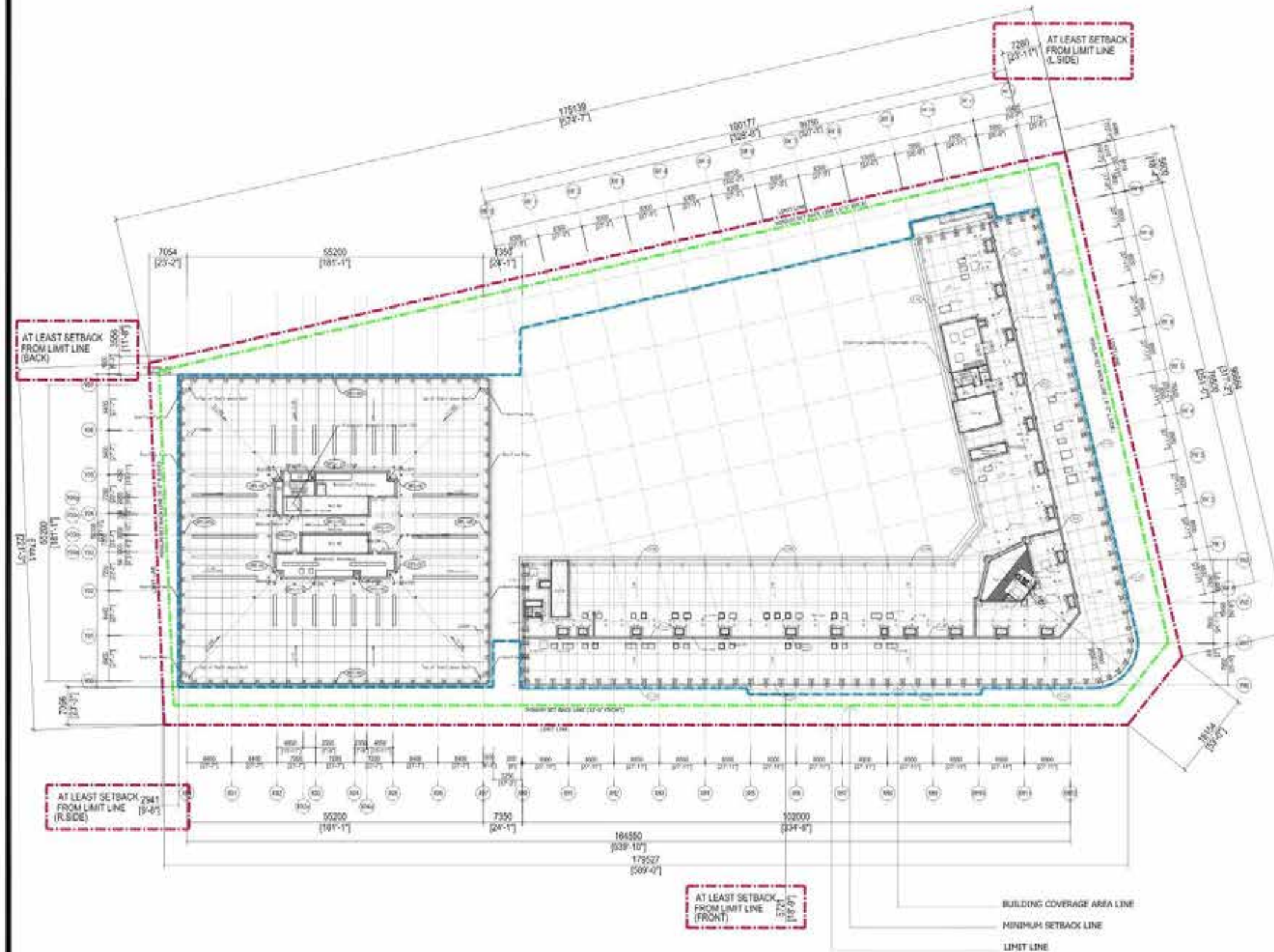
LC

9A

SEC / PE (Structure)

OWNER.

Y COMPLEX PROJECT



အပ်ရှင်နီယာဂရုဒ (အဆောက်အအုံ)
အဆောက်အအုံ အဆောက်အအုံ အဆောက်အအုံ အဆောက်အအုံ
အပ်ရှင်နီယာဂရုဒ (အဆောက်အအုံ)

OWNER / APPLICANT
(အပ်ရှင်နီယာဂရုဒ အပ်ရှင်နီယာဂရုဒ အပ်ရှင်နီယာဂရုဒ အပ်ရှင်နီယာဂရုဒ)
YANGON TECHNICAL & TRADING CO., LTD.

COMPANY
- Ayeeyar Hinthar Construction Co., Ltd.
- Fujita Corporation
- Tokyo Tatemono Asia Pte. Ltd.

PROJECT
Proposed 9 Storey +
2 Basements (Office, Hotels)
RCC Building To be built at
Shwedagon Pagoda Road.

BLOCK NO. 68 / 45 D

LOT NO. 11, A/15, 16, 17

TOWNSHIP DAGON

SUBJECT ROOF FLOOR PLAN
(ROOF LEVEL PLAN)

SCALE 1 : 500 SHEET NO.

DATE 20180516 A-13

LS / PE (Construction)

LC

SLA

SEC / PE (Structure)

OWNER

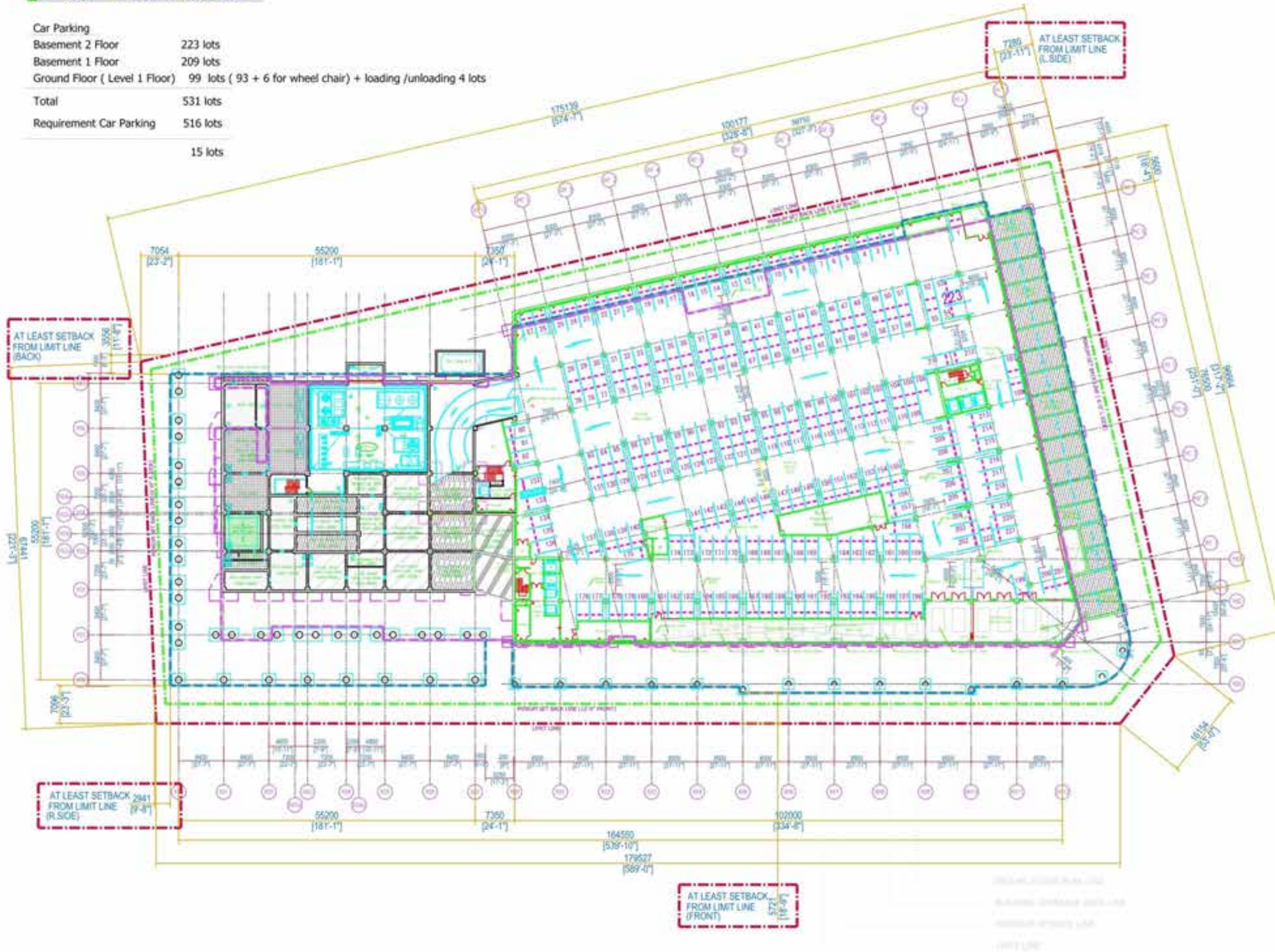
Y COMPLEX PROJECT

Car Parking	
Basement 2 Floor	223 lots
Basement 1 Floor	209 lots
Ground Floor (Level 1 Floor)	99 lots (93 + 6 for wheel chair) + loading /unloading 4 lots
Total	531 lots
Requirement Car Parking	516 lots
	15 lots



Y COMPLEX PROJECT

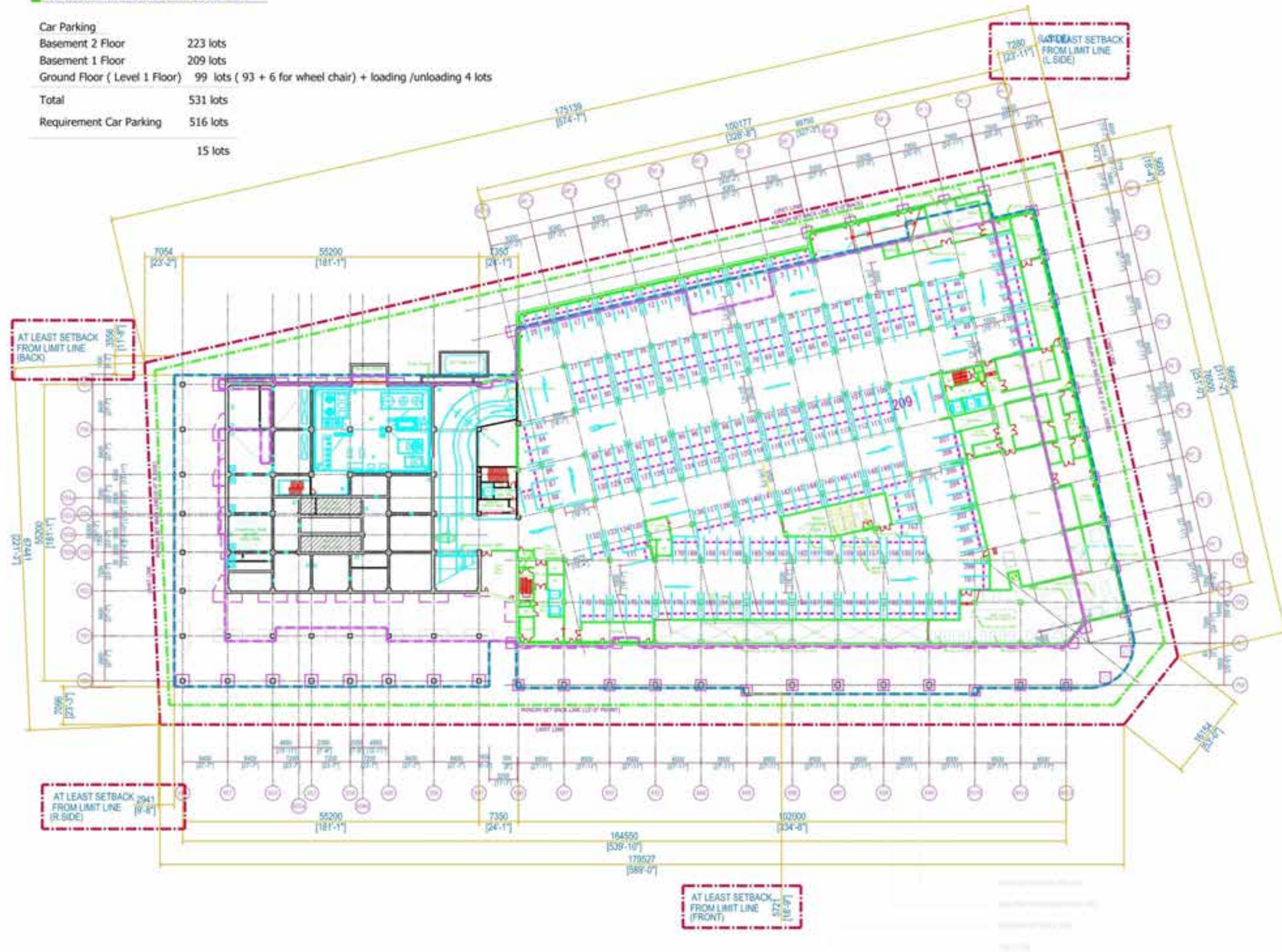
Car Parking	
Basement 2 Floor	223 lots
Basement 1 Floor	209 lots
Ground Floor (Level 1 Floor)	99 lots (93 + 6 for wheel chair) + loading /unloading 4 lots
Total	531 lots
Requirement Car Parking	516 lots
	15 lots



Y COMPLEX PROJECT

Car Parking

Basement 2 Floor	223 lots
Basement 1 Floor	209 lots
Ground Floor (Level 1 Floor)	99 lots (93 + 6 for wheel chair) + loading /unloading 4 lots
Total	531 lots
Requirement Car Parking	516 lots
	15 lots



COMPLEX PROJECT

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ

၂၀၁၅/၁၆/ ခုနှစ်သုံးပြည့်မှလေးကူး
ပေးသည့် မှန်ကန်ကြောင်း သက်သေခံသည့်
မိတ္တူပြပုံ

အမည်ပေါက် ကာကွယ်ရေး ဖန်တီးဌာန

မြေတိုင်းရင်ကွက်အမှတ် ၆၈ /၇၅၆

လူနေရင်ကွက်အမှတ် -

မြေကွက်အမှတ် ၁၁ A /၁၅၁၆၁၇

မြေအမျိုးအစား အစိုးရဗဟို

ဝရိယာ ဇေယျာ ဇာ

မြို့နယ် ဒီဂျ

စကေး ၁"=၂၀၀'-၀"

အနုပညာအသုံးအဆောင်ရန်
လျှောက်ထားသည့်အကြောင်းအရာ

Signature
အမှုကြီး
အမှုကြီးရုံး

Signature
အမှုကြီးရုံး
အမှုကြီးရုံး

Signature
၂၄/၁၁
အမှုကြီးရုံး
အမှုကြီးရုံး

၂၀၁၅/၁၆/ ခုနှစ်သုံးပြည့်မှလေးကူး
ပေးသည့် မှန်ကန်ကြောင်း သက်သေခံသည့်
မိတ္တူပြပုံ

အမည်ပေါက် ကာကွယ်ရေး ဖန်တီးဌာန

မြေတိုင်းရင်ကွက်အမှတ် ၆၈ /၇၅၆

လူနေရင်ကွက်အမှတ် -

မြေကွက်အမှတ် ၁၁ A /၁၅၁၆၁၇

မြေအမျိုးအစား အစိုးရဗဟို

ဝရိယာ ဇေယျာ ဇာ

မြို့နယ် ဒီဂျ

စကေး ၁"=၂၀၀'-၀"

အနုပညာအသုံးအဆောင်ရန်
လျှောက်ထားသည့်အကြောင်းအရာ

Signature
အမှုကြီး
အမှုကြီးရုံး

Signature
အမှုကြီးရုံး
အမှုကြီးရုံး

Signature
၂၄/၁၁
အမှုကြီးရုံး
အမှုကြီးရုံး

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ

ရည်ညွှန်းချက်

— အစိုးရ မြေ

<p>၂၀၁၅/၁၆ ခုနှစ်သုံးမြေပုံ</p> <p>အရ တိုင်းတာပေးသည့်မြေတိုင်း</p> <p>နယ်သတ်မြေပုံ</p>	<p>အမည်ပေါက်ကာကွယ်ရေးရုံးကြီး၅၁</p> <p>မြေတိုင်းရပ်ကွက်အမှတ် ၆၈ / ၅၅.၆</p> <p>မြေအမျိုးအစား ၁၁.၈/၁၅.၁၆.၁၇</p> <p>မြေအမျိုးအစား အစိုးရမြေ</p> <p>ဧရိယာ ၉.၀၂၈ ဧက</p> <p>မြို့နယ် ရန်</p> <p>စကေး ၁:၂၀၀ - ၁"</p>
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ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ

ရည်ညွှန်းချက်

— အစိုးရ မြေ

<p>၂၀၁၅/၁၆ ခုနှစ်သုံးမြေပုံ</p> <p>အရ တိုင်းတာပေးသည့်မြေတိုင်း</p> <p>နယ်သတ်မြေပုံ</p>	<p>အမည်ပေါက်ကာကွယ်ရေးရုံးကြီး၅၁</p> <p>မြေတိုင်းရပ်ကွက်အမှတ် ၆၈ / ၅၅.၆</p> <p>မြေအမျိုးအစား ၁၁.၈/၁၅.၁၆.၁၇</p> <p>မြေအမျိုးအစား အစိုးရမြေ</p> <p>ဧရိယာ ၉.၀၂၈ ဧက</p> <p>မြို့နယ် ရန်</p> <p>စကေး ၁:၂၀၀ - ၁"</p>
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Appendix XV Agreement Letters From Surrounding Buildings

Agreement from Township Administrative Department

Dagon Township


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မြို့နယ်အုပ်ချုပ်ရေးမှူးရုံး
မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန
ဒဂုံမြို့နယ်

“ထောက် မံ ဈာန်”


ရန်ကုန်အနောက်တိုင်းဒေသကြီး၊ ဒဂုံမြို့နယ်၊ ထောက်မံဦးစီးရုံး၊ ဦးစီးရုံးလမ်း၊
အမှတ်(၆၈)(၄၅/၆)တွင် *စာပေသံတက္ကသိုလ်မီတာကံမှ ပြောရန်နှင့် ကာကွယ်ရေးဝန်ကြီး
ဌာနအမည်ပြု၍ (၁)ကပ် အထပ်ပြု၍အဆောက်အဦဆောက်လုပ်ခြင်းနှင့်ပတ်သက်၍ လုပ်ထုံး
လုပ်နည်းနှင့်အညီဆောင်ရွက်ပြီး အားပတ်ဝန်းကျင်မှ ကန့်ကွက်ရန်မရှိပဲကား ဤမြို့နယ်
အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန အနေဖြင့် ကန့်ကွက်ရန်မရှိကြောင်း ထောက်မံအပ်ပါသည်။


မြို့နယ်အုပ်ချုပ်ရေးမှူး


စာအမှတ်၊ ၃ / ၂၄ - - ၉ / ဦး ၆
ရက်စွဲ၊ ၂၀၁၆ - ဇန်နဝါရီလ ၁၆ (၂၃) ရက်
မိတ္တူ
-ထောက်မံ
-ဈာန်

Appendix XVI Agreement Letters From Surrounding Buildings

Myanma Timber Enterprise



မြန်မာ့သစ်လုပ်ငန်း



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့် သစ်တောရေးရာဝန်ကြီးဌာန

မြန်မာ့ သစ် လုပ်ငန်း

စာအမှတ်၊ ၆၆၆ / ဇီ (၂၀၁၆) / အစရ(မြေ)

ရက်စွဲ ၂၀၁၆ ခုနှစ်၊ မတ်လ ၂၁ ရက်

သို့

✓ Director

Yangon Technical & Trading Co., Ltd.


အကြောင်းအရာ ။ အဆောက်အဦ ဆောက်လုပ်ခြင်းအား ကန့်ကွက်ရန် မရှိပါကြောင်း ပြန်ကြားခြင်း

ရည်ညွှန်းချက် ။ Yangon Technical & Trading Co., Ltd. ၏ ၂၅-၂-၂၀၀၆ ရက်စွဲပါ စာအမှတ် - 179/5/BD/2016

၁။ Yangon Technical & Trading Co., Ltd. သည် ရန်ကုန်တိုင်းဒေသကြီး၊ ဒဂုံမြို့နယ် မြေတိုင်းရပ်ကွက် အမှတ် ၆၈/၄၅-ဒီ၊ မြေ ကွက်အမှတ်- ၁၁ အေ / ၁၅၊ ၁၆ ၊ ၁၇ တို့ရှိမြေဧရိယာ (၉.၀၂၈) ဧက ကျယ်ဝန်းသော ယခင်တပ်မတော်စစ်သမိုင်းပြတိုက် အဆောက်အဦအား နှစ်(၇၀) BOT ဖြင့် Offices, Hotel နှင့် Shopping Mall များ ပါဝင်သည့် စီမံကိန်းတည်ဆောက်ရေးလုပ်ငန်းများ ဆောင်ရွက်နိုင်ရေးအတွက် ဘေးပတ်ဝန်းကျင် ထောက်ခံချက် ခွင့်ပြုပေးနိုင်ပါရန် ရည်ညွှန်းစာဖြင့် တင်ပြခဲ့ပါသည်။

၂။ ဒဂုံမြို့နယ် ၊ ရွှေတိဂုံဘုရားလမ်း မြေတိုင်းရပ်ကွက် အမှတ်၂၆(A) ၃၂(A) ရှိ မြေဧရိယာ (၂.၅၂၉) ဧက တွင် မြန်မာ့သစ်လုပ်ငန်း(ရုံးခွဲ) ရုံးများသည် ယခုတင်ပြသည့် အဆောက်အဦဆောက်လုပ်မည့် နေရာဖြစ်သော ယခင်တပ်မတော်စစ်သမိုင်းပြတိုက်နှင့်ရွှေတိဂုံဘုရားလမ်းတစ်ဖက်စီတွင် ရှိပါသည်။

၃။ သို့ဖြစ်ပါ၍ ဘေးပတ်ဝန်းကျင်တွင်ရှိသော မြန်မာ့သစ်လုပ်ငန်း အနေဖြင့် Yangon Technical & Trading Co., Ltd မှ ယခင်တပ်မတော်စစ်သမိုင်းပြတိုက် အဆောက်အဦအား နှစ်(၇၀) BOT ဖြင့် Offices, Hotel နှင့် Shopping Mall များ ပါဝင်သည့်စီမံကိန်းတည်ဆောက်ရေးလုပ်ငန်းနှင့်ပတ်သက်၍အဆောက်အဦဆောက်လုပ်ခြင်းအားကန့်ကွက်ရန်မရှိပါကြောင်းပြန်ကြားအပ်ပါသည်။



ဦးဆောင်ညွှန်ကြားရေးမှူး(ကိုယ်စား)

(မောင်ငွေ ၊ အထွေထွေမန်နေဂျာ-စီမံကိန်း)

Appendix XVII Agreement Letters

Ministry of Defense

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
တပ်မတော်မောင်းနှင်မှုကြီးကြပ်ရေး
ဓါတ်ဆောင်မှူးရုံး

စာအမှတ်: ၉၀၁/မတ-၀၁/ဆောက် ၅ တ
ရက် ၁၉ ၂၀၁၅ ခုနှစ်၊ နိုဝင်ဘာလ ၁၄ ရက်

သို့

ရန်ကုန်တိုင်းခရိုင်ဌာနချုပ်

အကြောင်းအရာ: အထပ်မြင့် အဆောက်အဦးဆောက်လုပ်ခွင့်ထပ်ပြတာခြင်းတို့နှင့်
ဆိုင်ညွှန်းချက်: ရန်ကုန်တိုင်းခရိုင်ဌာနချုပ်အိတ်-၁၁-၂၀၁၅ရက်ရှိပါစာအမှတ် ၀၄/၅/ဆောက် ၅(တ)

တပ်မတော်ဓါတ်ဆောင်မှူးရုံးကြိုက်နေရာတွင် Yangon Technical and Trading Co., Ltd မှအထပ်မြင့်
အဆောက်အဦးဆောက်လုပ်နိုင်ရေးအတွက် တောင်းဆိုထားပြီး ကျွန်ုပ်တို့ သဘောတူညီချက် ထောက်ခံခြင်းနှင့်ပတ်သက်၍
သဘောတူညီမှုပြုကြောင်း အကြောင်းကြားအပ်ပါသည်။


ဓါတ်ဆောင်မှူး (ညွှန်ကြားမှု)

Union-2 Supply/VDL General 196

Appendix XVIII Agreement Letters

Milling and Marketing

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့်သစ်တောရေးရာဝန်ကြီးဌာန
မြန်မာ့သစ်လုပ်ငန်း
ပြည်တွင်းရောင်းဝယ်ရေးနှင့်သစ်စက်ဌာန

စာအမှတ်။ ၁၃၂၁ /ပတရ-အဝရ (ထွေ)
ရက်စွဲ။ ၂၀၁၆ခုနှစ်၊ ဖေဖော်ဝါရီလ ၂၉ ရက်

သို့
ခါရိုက်တာ
Yangon Technical & Trading Co; Ltd

အကြောင်းအရာ။ အဆောက်အဦ ဆောက်လုပ်ခြင်းအား ကန့်ကွက်ရန်မရှိကြောင်း ပြန်ကြားခြင်း

ရည်ညွှန်းချက်။ ခါရိုက်တာ Yangon Technical & Trading Co; Ltd ၏ ၂၅-၂-၂၀၁၆
ရက်စွဲပါ စာအမှတ်- 168 / 5/ BD /2016

အကြောင်းအရာပါ ကိစ္စနှင့်ပတ်သက်၍ Yangon Technical & Trading Co; Ltd ၏
ရန်ကုန်တိုင်းဒေသကြီး၊ သင်္ဃန်းကျွန်းမြို့နယ်၊ မြေတိုင်းရပ်ကွက်အမှတ်-၆၈/၄၅၆၊ မြေကွက်အမှတ်-၁၁အေ/ ၁၅၊
၁၆ ၊ ၁၇ တို့ရှိ မြေဧရိယာ(၉.၀၂၈)ဧက ကျယ်ဝန်းသော ယခင်တပ်မတော်စစ်သမိုင်းပြတိုက်
အဆောက်အဦအား နှစ်(၇၀) BOT ခန့်ဖြင့် Offices, Hotel နှင့် Shopping Mall များ ပါဝင်သည့်
စီမံကိန်း လုပ်ဆောင်ရန်အတွက် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့်သစ်တောရေးရာဝန်ကြီးဌာန
မြန်မာ့သစ်လုပ်ငန်း၊ ပြည်တွင်းရောင်းဝယ်ရေးနှင့်သစ်စက်ဌာန အနေဖြင့် ကန့်ကွက်ရန်မရှိကြောင်း
ပြန်ကြားပါသည်။


 အထွေထွေမန်နေဂျာ(ပြည်တွင်းရောင်း) (စွန့်အပ်ခိုး) ၂၀၁၆


မိတ္တူ-

- ဦးဆောင်ညွှန်ကြားရေးမှူးရုံး
- အဓိကစာတွဲ
- မျှောစာတွဲ
- ရုံးလက်ခံ

09/2016/29/1740

Appendix XIX Agreement Letters

Road Department, Yangon Region



ရန်ကုန်တိုင်းဒေသကြီး၊ လမ်း ဦး စီး ဌာန
 ညွှန်ကြားရေးမှူးရုံး
 အမှတ် (၃၉)၊ န ၀ ဒေးလမ်း၊ ရန်ကုန်မြို့
 စာအမှတ်၊ အခမ/ရတက/အဆောက်အအုံ/၃၃၁၁
 ရက်စွဲ ၊ ၂၀၁၆ ခုနှစ် မတ်လ (၄) ရက်

အကြောင်းအရာ၊ အဆောက်အအုံဆောက်လုပ်ခြင်းအား ပတ်ဝန်းကျင်ရှိ ဌာနမှ ကန့်ကွက်ရန်မရှိကြောင်း ထောက်ခံပေးပါရန် တပ်မြဲလျှောက်ထားခြင်းကို

ရည်ညွှန်းချက် ၊ Yangon Technical & Trading Co., Ltd ၏ (၂၃.၂.၂၀၁၆) ရက်စွဲပါ စာအမှတ် 167/5/BD/2016

အထက်အကြောင်းအရာပါကိစ္စ နှင့် ပတ်သက်၍ Yangon Technical & Trading Co., Ltd မှ ရန်ကုန်တိုင်းဒေသကြီး၊ ဧကန်မြို့နယ်၊ မြေတိုင်းရပ်ကွက်အမှတ်(၆၈/၄၅-၁)၊ မြေကွက်အမှတ် ၀ အေ/၁၅ ၁၆၊ ၁၇ တို့ရှိ မြေဧရိယာ(၉,၀၂၈)ဧက ကျယ်ဝန်းသော ယခင်တပ်မတော် စစ်သမိုင်း ပြတိုက်အဆောက်အအုံနေရာ၌ အဆောက်အအုံဆောက်လုပ်ခြင်းလုပ်ငန်းဆောင်ရွက်ရာတွင်၊ ရွှေတိဂုံ စေတီတော်မြတ်ကြီး ပတ်ဝန်းကျင်ဧရိယာဖြစ်သောကြောင့် ခွင့်ပြုသတ်မှတ်ချက် အမြင့်ထက်မကော့သော အဆောက်အအုံမြင်ပါက ကန့်ကွက်ရန်မရှိပါကြောင်း ပြန်ကြားအပ်ပါသည်။

Yangon Technical & Trading Co., Ltd

မြတ်ကိုကို
 ညွှန်ကြားရေးမှူး(မြို့ပြ)

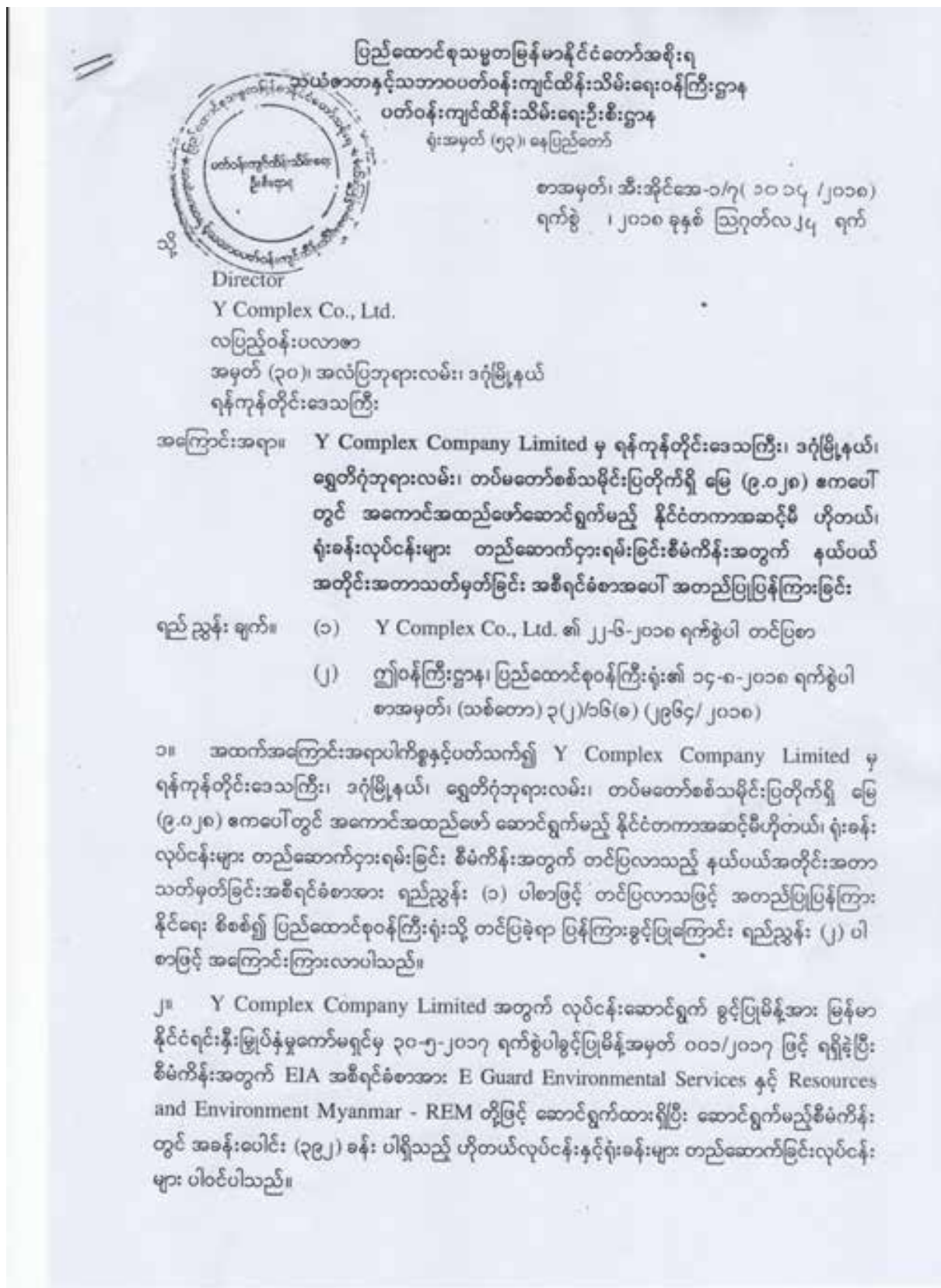
မိတ္တူကို-

ရန်ကုန်တိုင်းဒေသကြီးအစိုးရအဖွဲ့မှူး
 ဝန်ကြီး၊ သစ်တောနှင့်စွမ်းအင်ဝန်ကြီးဌာန၊ ရန်ကုန်တိုင်းဒေသကြီးအစိုးရအဖွဲ့
 ဌာနမှူး၊ အင်ဂျင်နီယာဌာန(အဆောက်အအုံ)၊ ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ
 လက်ထောက်ညွှန်ကြားရေးမှူး၊ ရန်ကုန်အနောက်ပိုင်းခရိုင်
 မူးလက်ခံ

Surrounding Neighbors

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Appendix XXI Scoping Report Approved Letters



Appendix XXI Scoping Report Approved Letters (Continued)

၃။ တင်ပြလာသည့် နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာတွင် အကျဉ်းချုပ် အစီရင်ခံစာ၊ စီမံကိန်းနောက်ခံအကြောင်းအရာ၊ စီမံကိန်းဆိုင်ရာ ဥပဒေများနှင့်စံချိန်စံညွှန်းများ၊ စီမံကိန်းအကြောင်းအရာများ၊ ရန်ကုန်မြို့၏ မိုးရွာသွန်းမှုနှင့်ပတ်သက်သည့်အချက်အလက်များ (Secondary data) ၊ စီမံကိန်းတွင် ဆောင်ရွက်မည့် ရေဆိုးစွန့်ပစ်စနစ်နှင့် စွန့်ပစ်ပစ္စည်းစွန့်ပစ်မည့် နေရာပြပုံ၊ စီမံကိန်းဖြစ်ပေါ်နိုင်သော ထိခိုက်နိုင်မှုများနှင့် ထိခိုက်မှုလျော့နည်းစေရေး အစီအမံများကို ဖော်ပြ၍ အစီရင်ခံစာအား ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် (၅၀) နှင့်အညီ ရေးသားပြုစုထားပါသည်။

၄။ သို့ဖြစ်ပါ၍ Y Complex Company Limited မှအကောင်အထည်ဖော်ဆောင်ရွက်မည့် နိုင်ငံတကာအဆင့်မီ ဟိုတယ်၊ ရုံးခန်းလုပ်ငန်းများ တည်ဆောက်ပေးရမ်းခြင်း စီမံကိန်းအတွက် တင်ပြလာသည့် နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာသည် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့်ကိုက်ညီမှု ရှိသဖြင့် အတည်ပြုပါကြောင်းနှင့် EIA အစီရင်ခံစာပြုစုရေးသားရာတွင် အောက်ဖော်ပြပါအချက်များကို အလေးထားလိုက်နာဆောင်ရွက်ရန် လိုအပ်ကြောင်း အကြောင်းကြားပါသည်-

- (က) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် (၆၂) ပါဖော်ပြချက် နှင့်အညီ စီမံကိန်းအဆိုပြုသူမှ လိုက်နာရမည့်အချက်များကို လက်မှတ်ရေးထိုးထား သည့် အတည်ပြုဝန်ခံချက်နှင့်အတူ EIA အစီရင်ခံစာတွင် ထည့်သွင်းဖော်ပြရန်၊
- (ခ) စီမံကိန်းအဆိုပြုသူသည် လုပ်ထုံးလုပ်နည်း အပိုဒ် (၆၅) ပါဖော်ပြချက်နှင့်အညီ စီမံကိန်း ၏ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို ထုတ်ဖော်ကြေညာရန်၊
- (ဂ) EIA အစီရင်ခံစာအား နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာနှင့် Terms of Reference (TOR) ပါဖော်ပြချက်များကို အခြေခံ၍ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ် ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် (၆၃) ပါသတ်မှတ်ချက်များနှင့်အညီ ရေးသား ပြုစု၍ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြ အတည်ပြု ချက်ရယူရန်။


 (လှမောင်သိန်း)
 ညွှန်ကြားရေးမှူးချုပ်

မိတ္တူကို

ပြည်ထောင်စုဝန်ကြီးရုံး၊ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊
 ညွှန်ကြားရေးမှူးရုံး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ရန်ကုန်တိုင်းဒေသကြီး၊
 ရုံးလက်ခံ၊ မျှောစာတွဲ၊ အမှုတွဲချုပ်

Appendix XXII MIC Permit and Decision



THE REPUBLIC OF THE UNION OF MYANMAR
MYANMAR INVESTMENT COMMISSION

Appendix XII MIC Permit and Decision (Continued)



THE REPUBLIC OF THE UNION OF MYANMAR
Myanmar Investment Commission
PERMIT



Permit No. 001 /2017

Date 30th May 2017

This Permit is issued by the Myanmar Investment Commission according to the section 25, Sub-section (c) of the Myanmar Investment Law:-

- (1) Name of Investor MR. YOSHIO SAEKI
- (2) Citizenship JAPANESE
- (3) Residence Address 209, COSOMO, NIIZASHIKI, 1-7-38 OWADA NIIZA CITY, SAITAMA PREF, JAPAN
- (4) Name and Address of Principle Organization YANGON MUSEUM DEVELOPMENT PTE. LTD., 3 SHENTON WAY, # 25-01 A, SINGAPORE 068805
- (5) Place of Incorporation REPUBLIC OF SINGAPORE
- (6) Type of Business CONSTRUCTION AND LEASING OF HOTEL OFFICE AND SHOPPING COMPLEX
- (7) Place(s) at which investment is permitted PLOT NO.11 A/15,16,17, SURVEY BLOCK NO. 68/45 D, THE CORNER OF SHWEDAGON PAGODA ROAD AND PANTRA STREET, DAGON TOWNSHIP, YANGON REGION, LAND AREA 3.955 ACRE
- (8) Amount of Foreign Capital US\$ 284.80 MILLION
- (9) Period for Foreign Capital to be Brought in WITHIN THREE YEARS FROM THE DATE OF ISSUANCE OF MIC PERMIT
- (10) Total amount of capital (Kyat) EQUIVALENT IN KYAT OF US\$ 320.00 MILLION (INCLUDING US\$ 284.80 MILLION)
- (11) Construction Period 28 MONTHS
- (12) Validity of investment permit 47 YEARS
- (13) Form of investment JOINT VENTURE
- (14) Name of Company incorporated in Myanmar Y COMPLEX COMPANY LIMITED

[Signature]
30.5.17

Chairman
Myanmar Investment Commission

Appendix XII MIC Permit and Decision (Continued)

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်
ခွင့်ပြုမိန့်



ခွင့်ပြုမိန့်အမှတ် ၀၀၁/၂၀၁၇

၂၀၁၇ ခုနှစ်၊ မေ လ ၁၇ ရက်

မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်သည် မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုဥပဒေ ဥပဒေပုဒ်မ ၂၅ ပုဒ်မခွဲ(ဂ) အရ ဤခွင့်ပြုမိန့်ကို ထုတ်ပေးလိုက်သည် -

- (က) ရင်းနှီးမြှုပ်နှံသူ/ တမကထပြုသူအမည် MR. YOSHIO SAEKI
- (ခ) နိုင်ငံသား JAPANESE
- (ဂ) နေရပ်လိပ်စာ 209, COSOMO NIIZASHIKI, 1-7-38 OWADA NIIZA CITY, SAITAMA PREF. JAPAN
- (ဃ) ပင်မအဖွဲ့အစည်းအမည်နှင့်လိပ်စာ YANGON MUSEUM DEVELOPMENT PTE LTD. 3 SHENTON WAY, # 25-01 A, SINGAPORE 068805
- (င) ဖွဲ့စည်းရာအရပ် REPUBLIC OF SINGAPORE
- (စ) ရင်းနှီးမြှုပ်နှံသည့်လုပ်ငန်းအမျိုးအစား နိုင်ငံတကာအဆင့်မီ HOTEL, OFFICE AND SHOPPING COMPLEX တည်ဆောက်ခြင်းနှင့် ငှားရမ်းခြင်းလုပ်ငန်း
- (ဆ) ရင်းနှီးမြှုပ်နှံသည့်အရပ်ဒေသ(များ) မြေကွက်အမှတ် ၁၁ A /၁၅၊ ၁၆၊ ၁၇၊ မြေတိုင်းရပ်ကွက်အမှတ် ၆၈/၄၅ ဒီ၊ ရွှေတိဂုံဘုရားလမ်း နှင့် ပန်ထျာလမ်းထောင့်၊ ဒဂုံမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးရှိ မြေ ဧရိယာ ၃.၉၅၅ ဧက
- (ဇ) နိုင်ငံခြားမတည်ငွေရင်း ပမာဏ အမေရိကန်ဒေါ်လာ ၂၈၄.၈၀ သန်း
- (ဈ) နိုင်ငံခြားမတည်ငွေရင်းယူဆောင်လာရမည့်ကာလ ခွင့်ပြုမိန့်ရရှိပြီးနေ့မှ ၃ နှစ် အတွင်း
- (ည) စုစုပေါင်း မတည်ငွေရင်းပမာဏ(ကျပ်) အမေရိကန်ဒေါ်လာ ၃၂၀.၀၀ သန်းနှင့် ညီမျှသော မြန်မာကျပ်ငွေ (အမေရိကန်ဒေါ်လာ ၂၈၄.၈၀ သန်း အပါအဝင်)
- (ဋ) တည်ဆောက်မှုကာလ ၂၈ လ
- (ဌ) ရင်းနှီးမြှုပ်နှံမှုခွင့်ပြုသည့်သက်တမ်း ၄၇ နှစ်
- (ဍ) ရင်းနှီးမြှုပ်နှံမှုပုံစံ ဖက်စပ် နိုင်ငံခြား ရင်းနှီးမြှုပ်နှံမှု
- (ဎ) မြန်မာနိုင်ငံတွင်ဖွဲ့စည်းမည့်ကုမ္ပဏီအမည် Y COMPLEX COMPANY LIMITED


၂၀.၁၀.၁၇
ဥက္ကဋ္ဌ
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်

Appendix XII MIC Permit and Decision (Continued)



Confidential

THE REPUBLIC OF THE UNION OF MYANMAR
MYANMAR INVESTMENT COMMISSION
No.1, Thitsar Road, Yankin Township, Yangon

Tel: 01-658128
Fax: 01-658141

Our ref : MIC-4/P-1/2017(၂၃၀. A)
Date : ၈th May 2017

Subject: Decision of the Myanmar Investment Commission on the proposal for " Construction and Leasing of Hotel, Office and Shopping Complex" under the name of " Y Complex Company Limited"

Reference: Y Complex Company Limited Letter dated on 8th May 2017

1. The Myanmar Investment Commission, at its meeting (8/2017) held on 19th May, 2017 had approved that investment in "Construction and Leasing of Hotel, Office and Shopping Complex" under the name of Y Complex Company Limited submitted by Yangon Technical and Trading Company Limited (20 %) from the Republic of the Union of Myanmar and Yangon Museum Development Pte. Ltd. (80 %) from the Republic of Singapore as a Joint Venture investment in accordance with the Myanmar Investment Law and Rules.
2. The terms and conditions of the Permit are stated in the following paragraphs:
 - (a) The term of the Permit shall be initial 47 (forty seven) years commencing from the date of the issuance of Permit by Myanmar Investment Commission and extendable for 10 (ten) years in two times with the approval of Myanmar Investment Commission.
 - (b) Y Complex Company Limited , who has obtained these permit for enjoyment of benefits relating to right to use land under Chapter XII and exemptions and reliefs under section 75,77 and 78 of the Chapter XVIII of Myanmar Investment Law may submit the application form.
 - (c) Y Complex Company Limited shall use its best efforts for timely realization of work stated in the permit application.
 - (d) Y Complex Company Limited shall obey and respect the responsibilities of investors under section 65 of Myanmar Investment Law and Chapter XX of Myanmar Investment Rules.


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Appendix XII MIC Permit and Decision (Continued)

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- (e) Y Complex Company Limited shall carry out environmental impact assessments and social impact assessments according to the type of investment activities in accordance with the relevant laws, rules, regulations and procedures.
 - (f) Y Complex Company Limited shall submit to the Commission of any sublease, mortgage, transfer of share or transfer of business to any person during the permitted investment period in accordance section 72 of Myanmar Investment Law and Rule 191 of Myanmar Investment Rules.
 - (g) If Y Complex Company Limited who has been enjoyed the permit or the tax incentive shall submit an annual report in the prescribed form to the Commission within 3 months of the end of the financial year in accordance with Rule 196 of Myanmar Investment Rules and shall publish these summary of report on its website or the Commission's website.
 - (h) Y Complex Company Limited must, during the operation period under the permit of the Commission, submit its operating report quarterly in the prescribed form in accordance with Rule 197 of Myanmar Investment Rules.
3. Y Complex Company Limited shall submit all approvals, licences, permits and similar authorizations relevant to the initial implementation of the investment and the Sublease Agreement, (5) copies shall have to be forwarded to the Commission.


(Kyaw Win)
Chairman

Y Complex Company Limited

c/o Quartermaster General Office

- cc:
- 1. Office of the Union Government of the Republic of the Union of Myanmar
 - 2. Ministry of Defence
 - 3. Ministry of Home Affairs
 - 4. Ministry of Natural Resources and Environmental Conservation
 - 5. Ministry of Electricity and Energy
 - 6. Ministry of Labour, Immigration and Population

Confidential

Appendix XII MIC Permit and Decision (Continued)

Confidential

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7. Ministry of Construction
8. Ministry of Commerce
9. Ministry of Planning and Finance
10. Ministry of Hotels and Tourism
11. Central Bank of Myanmar
12. Office of the Yangon Region Government
13. Director General, Department of Environmental Conservation
14. Director General, Directorate of Labour
15. Director General, Immigration Department
16. Director General, Department of Urban and Housing Development
17. Director General, Directorate of Trade
18. Director General, Internal Revenue Department
19. Director General, Customs Department
20. Director General, Directorate of Investment and Company Administration
21. Director General, National Archives Department
22. Director General, Hotel and Tourism
23. Yangon City Development Committee (YCDC)

Confidential

Appendix XXIII Third Party Selection



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန ပြည်ထောင်စုဝန်ကြီးရုံး

စာအမှတ် (သစ်တော)၃(၂)/၁၆(ခ) (၂၂၃၇/၂၀၁၈)
ရက်စွဲ ၂၀၁၈ ခုနှစ် ၂ ဇွန်လ ၂၇ ရက်

အကြောင်းအရာ။ Y Complex Company Limited ၏ တတိယအဖွဲ့အစည်းရွေးချယ်ခြင်း
နှင့်စီမံကိန်းအဆိုပြုပုံစံများ တင်ပြခြင်းကိစ္စ

ရည်ညွှန်းချက်။ Y Complex Company Limited ၏ ၁၅-၅-၂၀၁၈ ရက်စွဲပါစာ

Y Complex Company Limited မှ နိုင်ငံတကာအဆင့်မီ Hotel and Office Complex တည်ဆောက်ခြင်းနှင့် ငှားရမ်းခြင်းလုပ်ငန်းအတွက် တတိယအဖွဲ့အစည်းများဖြစ်ကြသော E Guard Service Company Limited အား ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (Environmental Impact Assessment-EIA) အစီရင်ခံစာ ရေးဆွဲရန်အတွက် လည်းကောင်း၊ Resource and Environment Myanmar Limited အား လူမှုရေးအရထိခိုက်မှုဆန်းစစ်ခြင်း (Social Impact Assessment- SIA) အစီရင်ခံစာရေးဆွဲရန်အတွက်လည်းကောင်း ရွေးချယ်ခန့်အပ်ထားကြောင်းတင်ပြလာမှုကိစ္စနှင့်ပတ်သက်၍သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနအနေဖြင့် ၎င်းတို့အား တာဝန်ပေးအပ်ထားမှုအပေါ် ကန့်ကွက်ရန်မရှိပါကြောင်း သဘောထားမှတ်ချက်ပြန်ကြားအပ်ပါသည်။

ပြည်ထောင်စုဝန်ကြီး(ကိုယ်စား)
(ဝင်းဇော် ၊ ဒုတိယအမြဲတမ်းအတွင်းဝန်)

Y Complex Company Limited

အမှတ်(၃၇) ၊ လပြည့်ဝန်းပလာဇာ၊ အလံပြဘုရားလမ်း၊

အမှတ်-၆၁၂၊ ၆ လွှာ ၊ ဒဂုံမြို့နယ်၊ ရန်ကုန်မြို့။

မိတ္ထူကို

ညွှန်ကြားရေးမှူးချုပ်

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

Appendix XXIV Presentation Materials for Stakeholder Meeting (Scoping Stage)

Y Complex Company Project
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ
သက်ဆိုင်သူများအား ရှင်းလင်းတင်ပြခြင်းနှင့်
အကြံဉာဏ်ရယူခြင်း ပထမအကြိမ် အစည်းအဝေး

ဧပြီလ ၈ ရက်၊ ၂၀၁၈
Pan Pacific Hotel, Yangon,

Y Complex Company Ltd.
47 Hill Street, #03-02A, SCCI
Building, 179365, Singapore

ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်း (EIA) လိုအပ်ချက်

- ❖ ၂၀၁၂ ခုနှစ် မတ်လ (၃၀) ရက်နေ့တွင် ပြဌာန်းသော မြန်မာ့ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဥပဒေ လိုအပ်ချက်အရ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆောင်ရွက်ရခြင်းဖြစ်ပါသည်။
- ❖ သဘာဝသယံဇာတနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန လက်အောက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ ပတ်ဝန်းကျင်ထိခိုက်မှုအစီရင်ခံစာကို တင်ပြရန် ဖြစ်ပါသည်။
- ❖ ပတ်ဝန်းကျင်ထိခိုက်မှုအစီရင်ခံစာကို သဘာဝသယံဇာတနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန လက်အောက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနတွင် မှတ်ပုံတင်ထားသော သို့မဟုတ် အသိအမှတ်ပြုသော တတိယအဖွဲ့အစည်းမှ ဆောင်ရွက် ပြုစုတင်သွင်းရပါသည်။
- ❖ ယခု စီမံကိန်းတွင် မှတ်ပုံတင်ထားသော E Guard Environmental Services မှ အီးအိုင်အေကို လေ့လာပြီး REM-UAE Laboratory and Consultant Co., Ltd. မှ လူမှုစီးပွား စစ်တမ်းကောက်ယူခြင်း နှင့် လူထုနှင့် တွေ့ဆုံအကြံဉာဏ်ရယူခြင်း အစည်းအဝေးများကို ဆောင်ရွက်ခြင်းဖြစ်ပါသည်။

SIA အကြံပေးကုမ္ပဏီ၏ အကြောင်းအရာ

မြန်မာနိုင်ငံမှ အီးအိုင်အေလုပ်ငန်းတွင် အတွေ့အကြုံများစွာရှိသော Resource & Environment Myanmar Co., Ltd.(REM) နှင့် ထိုင်းနိုင်ငံမှ အကြီးဆုံး ဓါတ်ခွဲခန်း နှင့် အကြံပေးကုမ္ပဏီ United Analyst Engineering Co., Ltd. (UAE) တို့ပူးပေါင်းဖက်စပ် တည်ထောင်ထားသော REM-UAE ကုမ္ပဏီမှ လူမှုစီးပွားစစ်တမ်း နှင့် အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်း ကို ဆောင်ရွက်ပါသည်။

Area of Expertise Provided (ရရှိသည့် အကြံပေးမှုများ)

1. Facilitation of meeting
2. Strategy and tool
3. Social Economy
4. Waste Management
5. Cultural Heritage
6. HSE & O&M
7. Social Management Plan
8. Stakeholder Engagement Plan and Public Consultation

REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
OFFICE FOR ENVIRONMENTAL IMPACT ASSESSMENT REGISTRATION
ပတ်ဝန်းကျင်ထိခိုက်မှုအစီရင်ခံစာမှတ်ပုံတင်မှုအဖွဲ့ဝန်ရုံး

Ref: 0332 Date: 17.03.2018

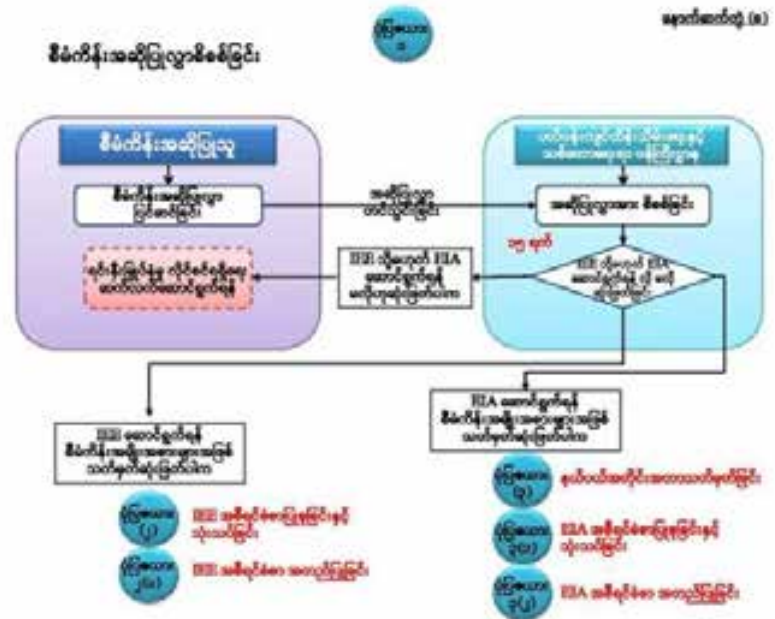
The Ministry of Natural Resources and Environmental Conservation, hereby issues the certificate to the organization under Environmental Impact Assessment Provision, Regulation No. 414/2017.

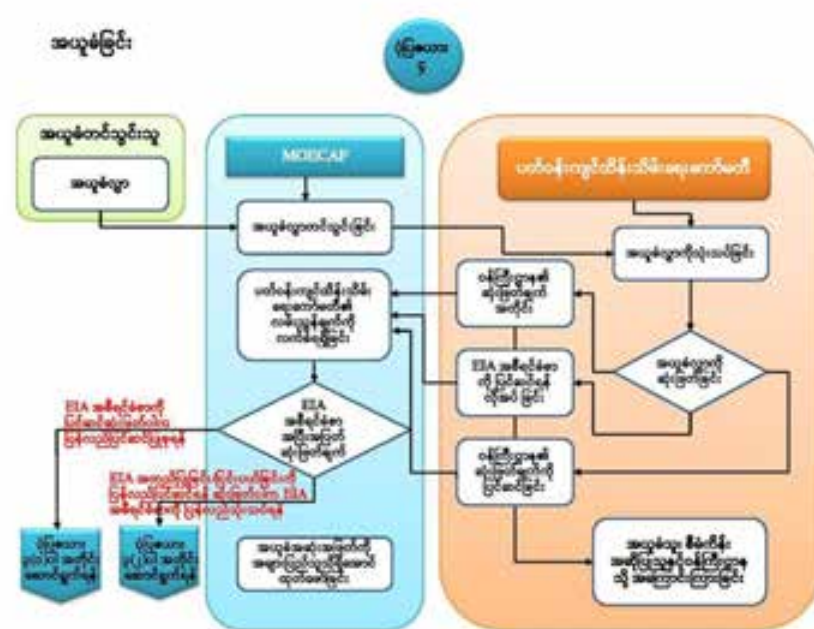
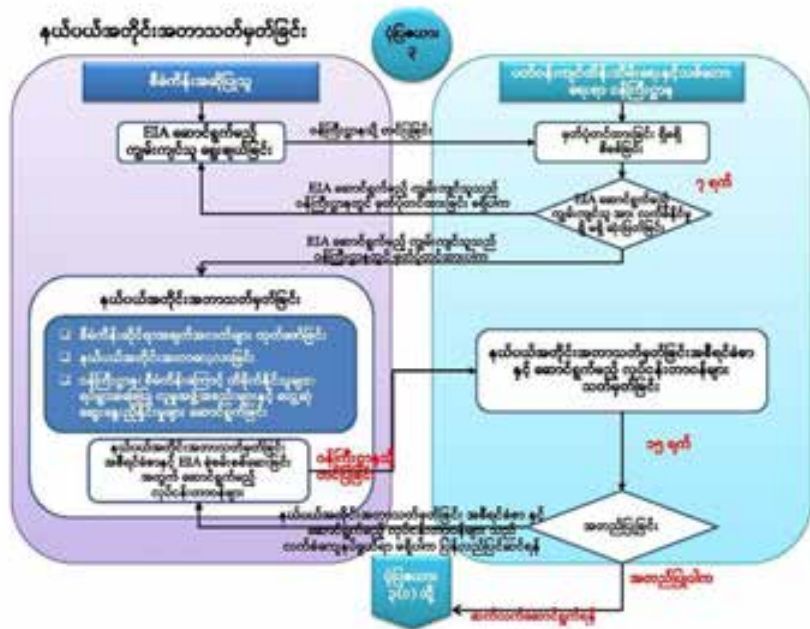
(တစ်နှစ်ပတ်ချိန်မှစ၍ အစီရင်ခံစာတင်ပြရန်နှင့် ပြန်လည်စစ်ဆေးရန် နည်းလမ်း အသစ်များကို အသုံးပြုရန်အတွက် အသိအမှတ်ပြုခြင်းခံယူရန် အကျိုးရှိစေရန် ရည်ရွယ်ချက်ဖြင့်)

(a) Name of Organization (အဖွဲ့အစည်းအမည်)	Resource & Environment Myanmar Co., Ltd.
(b) Name of the representative in the organization (အဖွဲ့အစည်းအတွင်းရှိ ကျား/မအမည်)	U Win-Hsing Hsu
(c) Capacity of the representative in the organization (အဖွဲ့အစည်းအတွင်းရှိ ကျား/မအမည်)	Manager
(d) Identity Card Number Issued for the representative person in the organization (အဖွဲ့အစည်းအတွင်းရှိ ကျား/မအမည်)	1430-04-0000000
(e) Address of organization (အဖွဲ့အစည်းအရပ်အရပ်)	No. 752 Building 8, Park Place Compound Hengyang Road, Satal Township Mawlaikyun Township, 44 The Inn Yangon
(f) Date of Issuance (ထုတ်ပြန်ရက်စွဲ)	17 March 2018

Director General
Environmental Conservation Department
Ministry of Natural Resources and Environmental Conservation

ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်း (EIA)လုပ်ငန်းစဉ်များ







ဂျပန် - ဖြန့်ဖြူးမှု ပူးတွဲ
အကောင်အထည်ဖော်တည်ဆောက်မည့်
Hotel, Office Tower နှင့် Shopping Mall စီမံကိန်းလုပ်ငန်းများအား
အစီရင်ခံစာပြုခြင်း



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Shin-Kei Chiyoda
2020

- တည်နေရာနှင့် သမိုင်းကြောင်း
- တင်ဒါခေါ်ယူခြင်းနှင့် မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်မှ
ခွင့်ပြုမိန့်ရရှိခြင်း
- နိုင်ငံတော်မှ ရရှိမည့်အကျိုးအမြတ်များ
- နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှုအစီအစဉ်နှင့်
စီမံကိန်းဆိုင်ရာအချက်အလက်များ

တင်ဒါခေါ်ယူခြင်း နှင့်
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်မှ
ခွင့်ပြုချက်ရယူခြင်း

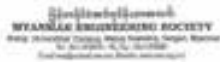
[illegible]

အထပ်မြင့်အထောက်အပံ့ တည်ဆောက်လေ့ရှိမိကိန်းများ ကြီးကြပ်စစ်ဆေးရေးပညာရှင်အဖွဲ့၏ ထောက်ခံချက်

[illegible]

ဟိုတယ်နှင့် ခရီးသွားလာရေးလုပ်ငန်းဝန်ကြီးဌာန၏ ထောက်ခံချက်

မြန်မာနိုင်ငံတော်ကွင်းနီးယာအသင်း၏ ၁၀၀၀က်ခံချောက်



sample mean = 100, $s = 10$, $n = 100$
 $z = \frac{\text{sample mean} - \text{population mean}}{s/\sqrt{n}} = \frac{100 - 100}{10/\sqrt{100}} = 0$

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2. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

10

2008

Appendix 1 – **Marketing research design** (National and Trading Standards) – **Journal 1** – **Appendix 1**

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သဘာဝဝတ်ဝန်းကျင် နှင့် သစ်တောဓမ္မရာဝဏ်ကြီးဌာန မှ ထောက်ခံချက်



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2019年12月15日
 2019年12月15日

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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

Հայ Եկեղեցու ղեկավարները համաձայնեցին ընդունել Երևանի Եկեղեցու ղեկավարների և Երևանի Եկեղեցու ղեկավարների համաձայնագրի մեջ ներկայացված փոփոխությունները:

—The following persons were elected officers and members of the various committees:

၁၀။ ရှေးဟောင်းအမွေအနှစ်များကို ထိန်းသိမ်းစောင့်ရှောက်ရန် အရေးကြီးသော အချက်များကို ဖော်ပြပါ။

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.
 2. *Journal of the American Medical Association*, 1997; 277: 1006-1010.

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1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

သက်ဆိုင်ရာဝန်ကြီးဌာနများ၏ ထောက်ခံချက်များ

(၁၀) ပါးစပ်ကပ်ရန်အတွက် အောက်ပါအတိုင်း ပြုလုပ်ရမည်။

(b) Գլխավորումը կատարվում է համապատասխանաբար հետևյալ կերպ՝

၁၃၇. ဘိုးတော်မင်းဘွဲ့ရသော အုပ်ချုပ်ရေးမှူး နန်းတော်စိုးမင်း
အလုပ်အကိုင်အရာတွင် အထူးအလုပ်အကိုင်အရာတွင် နန်းတော်စိုး
မင်း နန်းတော်စိုးမင်းမင်း နန်းတော်စိုးမင်းမင်းမင်း (Ming) မှ
နန်းတော်စိုးမင်းမင်း နန်းတော်စိုးမင်းမင်းမင်း (Ming) မှ
အုပ်ချုပ်ရေးမှူး အုပ်ချုပ်ရေးမှူး အုပ်ချုပ်ရေးမှူး အုပ်ချုပ်ရေးမှူး
မှ အုပ်ချုပ်ရေးမှူး အုပ်ချုပ်ရေးမှူး အုပ်ချုပ်ရေးမှူး အုပ်ချုပ်ရေးမှူး

Հանրային կրթության նախարարություն
ՀՀ Կրթության և գիտության նախարարություն
ՀՀ Կրթության և գիտության նախարարություն

Հիշեցնելով ժամանակակից Երևանի Բնակավայրի
կառավարման և զարգացման հարցերը:

- [illegible]

[illegible]

အိမ် - အိမ်ထောင်ရေးနှင့် အိမ်ခြံမြေရေးရာအဖွဲ့အစည်းများ
- အိမ်ထောင်ရေးနှင့် အိမ်ခြံမြေရေးရာအဖွဲ့အစည်းများ

M.I.C 8.48%



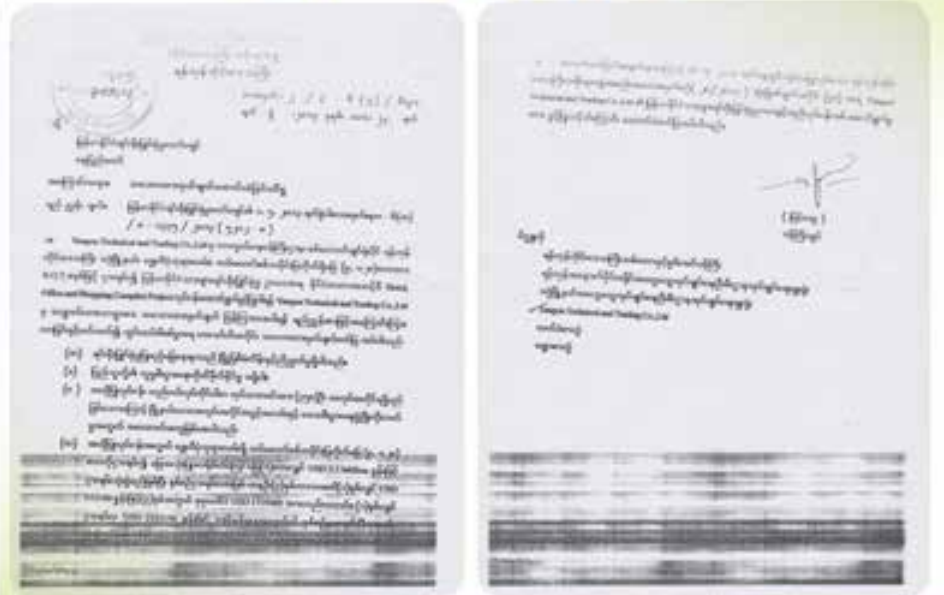
ਇਹਨਾਂ ਆਰਜ਼ਾਂ 'ਤੇ ਆਧਾਰ: 2014-15 ਵਿੱਚ ਪਾਠਕਰਮ - 3 ਵਾਂ

შედეგები დასაშვანია, თუმცა საჭიროა დამატებითი კვლევები, რათა უზრუნველყოს, რომ ეს მეთოდი ყოველთვის ეფექტურია.

- [illegible]

በጥንታዊ የጥንቃቄ ምረቃ

ရန်ကုန်တိုင်းဒေသကြီး အစိုးရ၏ ခွင့်ပြုမိန့်.



စာချုပ်ချုပ်ဆိုခြင်း

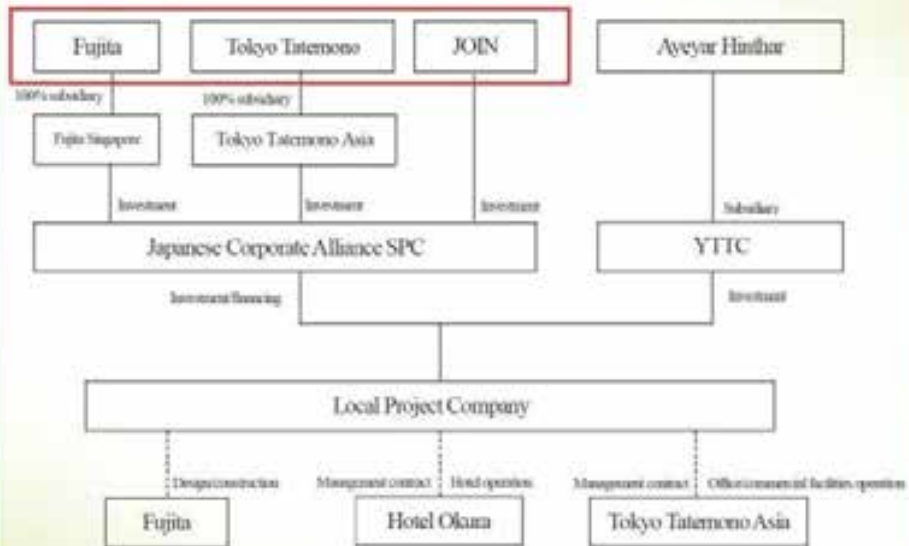
စာချုပ်ချုပ်ဆိုသည့်နေ့	-	၁၅.၁၀.၂၀၁၃
ငှားရမ်းသည့်ပုံစံ	-	B.O.T စနစ်ဖြင့် ငှားရမ်းခြင်း။
ငှားရမ်းသည့်ကာလ	-	၅၀ နှစ် + ၁၀ နှစ် + ၁၀ နှစ် = ၇၀နှစ်
MIC ပှ ခွင့်ပြုမိန့်ရသည့်နေ့	-	၂၀၁၃ ခုနှစ်၊ စက်တင်ဘာလ (၅) ရက်

နိုင်ငံတော်မှရရှိမည့် အကျိုးအမြတ်များ

နိုင်ငံတော်မှရရှိမည့် အကျိုးအမြတ်စုစုပေါင်း	အမေရိကန်ဒေါ်လာ - ၁၆၉.၂၂ သန်း မြန်မာကျပ်ငွေ - ၅၈၁၇.၉၅၈ သန်း
ရရှိနိုင်မည့် အလုပ်အကိုင် အခွင့်အလမ်းများ	တည်ဆောက်ရေးကာလတွင် (၈၀၀) ကျော် လုပ်ငန်းစတင်လည်ပတ်သည့် ကာလတွင် (၅၂၇) ကျော်

**နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု
အစီအစဉ်**

ဂျပန်မိတ်ဖက်အဖွဲ့အစည်းများနှင့် ပူးပေါင်းဆောင်ရွက်မည့် ပုံစံ



စီမံကိန်းထုတ်ဖန်ခြင်း
ဦးစီးဌာန

- ဆေးမရိက္ခာမရှိဘဲ (၃၂၀)သန်း
- ၂၂၀ နှစ်

ဂျပန်မိတ်ဖက်အဖွဲ့အစည်းများ၏ ကုမ္ပဏီအကြောင်းအရာ



○ Fujita Corporation



○ Tokyo Tatemono



○ Hotel Okura



○ JOIN





**YANGON
TECHNICAL
TRADING**

Yangon Technical & Trading Co.,Ltd
Overview

Established	-	2009 (Reg: 1547)
Managing Director	-	U R Yuth
Activities	-	Trading Property Management
Employees	-	(450)

Fujita Corporation: Overview
Fujita Corporation

Established	December, 1910
President CEO	Yoji Okumura
Activities	<ul style="list-style-type: none"> ➢ General contracting services for construction and civil work projects ➢ Planning and management of urban development and commercial property development ➢ Research and consultations for environmental improvement ➢ Soil rehabilitation and removal of soil contamination ➢ Maintenance and management of building and equipment ➢ Manufacturing and sales of construction materials ➢ Real estate appraisals etc.
Employees	3,031 (as of 01 April, 2017)
Sales Revenue	USD 3.5 billion (as of 31 March, 2017)
Total Assets	USD 2.7 million (as of 31 March, 2017)

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International Activities

Fujita Corporation



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Achievements (constructions and civil works)

Fujita Corporation



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Achievements (planning and development)

Fujita Corporation



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Fujita in Myanmar (Thilawa SEZ)

Fujita Corporation



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"TOKYO TATEMONO" CORPORATE PROFILE

Corporate Philosophy

TRUST, beyond the era.

Established	October 1, 1896
President CEO	Hitoshi Nomura
Activities	<ul style="list-style-type: none"> ❖ Development and Operation of Urban Commercial Properties (Office Buildings and Retail Properties) ❖ Development and Sales of Condominiums ❖ Development of Resort Properties ❖ Property Management ❖ Real Estate Securitization and Syndication ❖ Brokerage ❖ Appraisal and Consulting etc....
Employees	3,403 (as of 31 December, 2015)
Revenues	USD2.3 billion (as of 31 December 2016)
Total Assets	USD12 billion (as of 31 December 2016)



-Founder-
Zenjiro Yasuda
(1838-1921)



-President-
Hitoshi Nomura

COMMERCIAL PROPERTIES DEVELOP & OPERATE

AROUND TOKYO STATION — OUR HOME GROUND

Own & operate **over 150 Office Properties** in Japan (Mainly in Tokyo)



OTHER MAJOR CITIES ALL OVER JAPAN



SERIES OF "BRILLIA"



Targeting 2,000 units per year



NEW BUSINESS — RESIDENCES FOR THE ELDERLY —

Developing “Rental Residences for the Elderly” based on the social change

RENTAL APARTMENTS SERIES

Apartments



Plus
+

RENTAL RESIDENCES FOR THE ELDERLY

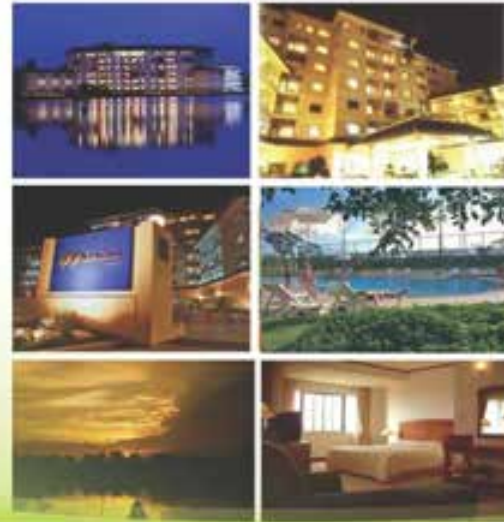


INTERNATIONAL ACTIVITIES IN ASIA

MYANMAR



YANGON — MARINA RESIDENCE —
IN 1999

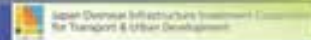


— PRIME HILL BUSSINESS SQUARE —
FROM 2013



Support the conversion of MOC's ex-building to modern office building and manage its office as a consultant

“JOIN” CORPORATE PROFILE



Building Your City from the country with experts that build safe cities

Company name	Japan Overseas Infrastructure Investment Corporation for Transport & Urban Development (JOIN)
Established	October 20, 2014
President CEO	Takuma Hatano
Policy	<p>Political significance</p> <p>to utilize Japanese technology, experience and knowledge in infrastructure to support Japanese companies to participate in overseas markets to contribute economic growth of host countries through the project to secure environmental accountability</p> <p>Private initiative</p> <p>For private partners to have commitment and capabilities of completing the project</p> <p>Sustainability</p> <p>to assure reasonable profit in the long-run through proper risk management</p>
Capital	25 billion yen (as of March 2017) Japanese Government: 19 billion yen & Japanese Companies: 6 billion yen
Basis Laws	Act on the Japan Overseas Infrastructure Investment Corporation for Transport & Urban Development

THE REASON WHY WAS “JOIN” ESTABLISHED

<Japanese Government Priority Policy>

To capture the needs of the vast infrastructure demand in the world through promoting and spreading Japanese technology and know-how of infrastructure

Target Infrastructure-related Orders

10 Trillion yen (2010) □ 30 Trillion yen (2020)

(source: “Japan Revitalization Strategy” by Ministerial Council for Overseas Infrastructure Development)



<Our Belief>

Japan's contribution to infrastructure projects in overseas countries will lead to mutual economic growth

“JOIN”s ROLE

JOIN plays a role to 1) invest in projects jointly with private companies, 2) negotiate at the government-level, and/or 3) provide Hands-on support



ACHIEVEMENT



JOIN support

- Management and Operation of Thi Vai International Port's Terminal Business in Vietnam as its First Project
- The Texas High-Speed Railway Project
- Urban Passenger Railway Transportation Project in Brazil
- The Urban Development Project -Landmark Project- in Central Yangon
- The Mixed-use Urban Development Project in the suburb of Jakarta
- The Cold Storage Warehouse Project in Indonesia
- The Urban Development Project - Jakarta Garden City - in Indonesia
- The Urban Development Project-Southeast Capital Project- in SouthEast Jakarta

HOTEL OKURA: OVERVIEW

Representing the essence of elegance and refined Japanese hospitality

Established	December 11, 1958
First hotel opened	May 20, 1962
President	Toshihiro Ogata
Activities	<ul style="list-style-type: none"> ➤ Owning hotel properties and owning and managing hotel companies ➤ Owning and managing hotel-related companies ➤ Consulting business on hotel development and operation
Number of operating hotels	72 properties (47 in Japan and 25 Overseas, as of July 1, 2017)
Hotel brands	<ul style="list-style-type: none"> ➤ Okura Hotels & Resorts ➤ Nikko Hotels International ➤ Hotel JAL City

OPERATION



Hotel Okura Tokyo, Tokyo



Hotel Okura Amsterdam, Netherlands



Hotel Okura Manila, Manila



Hotel Okura Tokyo, Tokyo



The Okura Prestige Bangkok, Thailand | 7

စီမံကိန်းဆိုင်ရာ အချက်အလက်များ

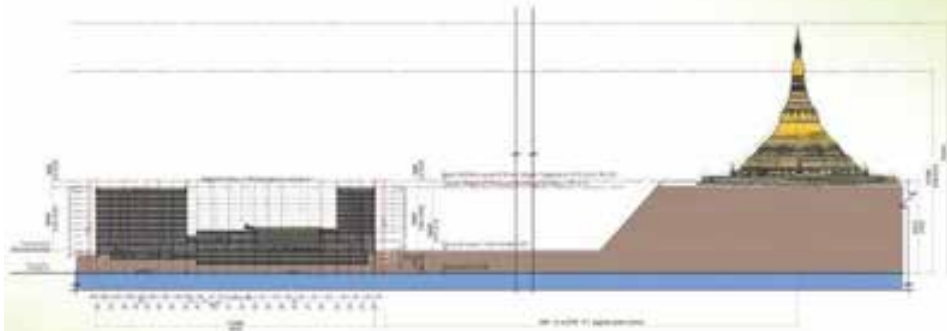
- | | | |
|------------------------|---|---------------------------|
| အဆောက်အဦ အမျိုးအစား | - | ဟိုတယ်၊ ရုံးခန်း |
| အထပ်အမြင့် | - | (၉) ထပ်၊ ၁၃၀ ပေ ၁၀.၉ လက်မ |
| အဆောက်အဦကြမ်းခင်းဧရိယာ | - | ၁၅၁ ငှာ ၉၇၄ စတုရန်းမီတာ |
| ကားပါကင် အရေအတွက် | - | ၆၅၀ စီး |

ရွှေတိဂုံစေတီတော် ကန့်သတ်ဧရိယာ

Around **Shwe Dagon Pagoda**



ရွာတံခွေတံတော် ကန်သစ်အမြင့်ပေ



ကန်သစ် အမြင့်ပေ
အထောက်အပံ့ အမြင့်ပေ
ရတနာတော်အစီအမံအမြင့်ပေ

- ၁၃၀ ပေ
- ၁၃၀ ပေ ၁၀.၉ လက်မ
- ၄၆ ပေ ၃.၃ လက်မ
- ၁၇၇ ပေ ၀.၁ လက်မ

ဘေးပတ်ဝန်းကျင်ရှိ အထပ်မြင့် အဆောက်အအုံများ

SURROUNDING ROADS AND
NEAREST HIGH-RISE BUILDINGS



ရွှေတိဂုံဓေတီတော် ပြင်ကွင်းလမ်းကြောင်းများ

Shwe Dagon Pagoda



ဆောက်လုပ်မည့်အဆောက်အအုံများ



ဆောက်လုပ်မည့်အဆောက်အဦပုံများ



ဆောက်လုပ်မည့်အဆောက်အဦပုံများ



ဆောက်လုပ်မည့်အဆောက်အအုံပုံများ



Joint Venture အတွက် M.I.C ဖုဒင့်ပြုမိန့်

နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု ဥပဒေသော် (၂၀၁၇) အရ ပထမဦးဆုံးခွင့်ပြုခွင့်ရရှိသော စီမံကိန်းခြေမ်းပါးသည်၊
ခွင့်ပြုသည့်ရက်စွဲ ၊ ၊ ၂၀၁၇ ခုနှစ်၊ မေလ(၃၀)ရက်

ပြည်ထောင်စုအတွက်စီမံကိန်းခြေမ်းပါး
ပြည်ထောင်စုအတွက်စီမံကိန်းခြေမ်းပါး

၁။ အခြေခံအချက်အလက်

၂။ အခြေခံအချက်အလက်

၃။ အခြေခံအချက်အလက်

၄။ အခြေခံအချက်အလက်

၅။ အခြေခံအချက်အလက်

၆။ အခြေခံအချက်အလက်

၇။ အခြေခံအချက်အလက်

၈။ အခြေခံအချက်အလက်

၉။ အခြေခံအချက်အလက်

၁၀။ အခြေခံအချက်အလက်

၁၁။ အခြေခံအချက်အလက်

၁၂။ အခြေခံအချက်အလက်

၁၃။ အခြေခံအချက်အလက်

၁၄။ အခြေခံအချက်အလက်

၁၅။ အခြေခံအချက်အလက်

၁၆။ အခြေခံအချက်အလက်

၁၇။ အခြေခံအချက်အလက်

၁၈။ အခြေခံအချက်အလက်

၁၉။ အခြေခံအချက်အလက်

၂၀။ အခြေခံအချက်အလက်

၁။ အခြေခံအချက်အလက်

၂။ အခြေခံအချက်အလက်

၃။ အခြေခံအချက်အလက်

၄။ အခြေခံအချက်အလက်

၅။ အခြေခံအချက်အလက်

၆။ အခြေခံအချက်အလက်

၇။ အခြေခံအချက်အလက်

၈။ အခြေခံအချက်အလက်

၉။ အခြေခံအချက်အလက်

၁၀။ အခြေခံအချက်အလက်

၁၁။ အခြေခံအချက်အလက်

၁၂။ အခြေခံအချက်အလက်

၁၃။ အခြေခံအချက်အလက်

၁၄။ အခြေခံအချက်အလက်

၁၅။ အခြေခံအချက်အလက်

၁၆။ အခြေခံအချက်အလက်

၁၇။ အခြေခံအချက်အလက်

၁၈။ အခြေခံအချက်အလက်

၁၉။ အခြေခံအချက်အလက်

၂၀။ အခြေခံအချက်အလက်

ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ၏ မူဘောင်ဖြင့်ခွင့်ပြုချက်



မြန်မာနိုင်ငံတော်အတွင်းရှိ
အမျိုးသမီးများအား
အကျိုးပြုစေရန်အတွက်
အမျိုးသမီးများအား
အကျိုးပြုစေရန်အတွက်

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Tungar Rubberwood & Trading (U.S.A.)
Siam Corporation
©1994

[illegible][illegible]

7. 2012. gada 20. oktobra pasākuma "Kopā par Latvijas nākotni" rezultāti.

Figure 2

[illegible]

ပြည်ထောင်စုအတွင်းရှိ အခြားနိုင်ငံများနှင့်
အခြားနိုင်ငံများအား ဖြစ်ပေါ်စေသည့်
အန္တရာယ်များကို ဖြစ်ပေါ်စေသည့် အန္တရာယ်များကို
အန္တရာယ်များကို ဖြစ်ပေါ်စေသည့် အန္တရာယ်များကို

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⁴ <http://www.fishbase.org>, Tiger Gulch 4, Spring 1998.

we find that $\mathcal{M}_1 \cong \mathcal{M}_2$ if and only if $\mathcal{M}_1 \cong \mathcal{M}_2$ and $\mathcal{M}_1 \cong \mathcal{M}_2$.

1. The first step in the process of identifying a problem is to define the problem. This involves identifying the symptoms of the problem and determining the scope of the problem.

Figure 1

[illegible]

ပြည်ထောင်စုအတွင်းရှိ အချို့သော
အဖွဲ့အစည်းများသည် အချို့သော
အချက်အလက်များကြောင့် အချို့သော
အချက်အလက်များကြောင့် အချို့သော

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[illegible]

Appendix

[illegible]

ရန်ကုန်တိုင်းဒေသကြီးအစိုးရမှူးရုံး၊
၄/၈-၁(၁၇)/စည်ပင်(အစည်းအဝေး)
ရက်စွဲ ။ ။ ၁၈.၁၂.၁၇



[illegible][illegible][illegible]

၁။ အထွေထွေအချက်အလက်
 ၂။ အကျဉ်းချုပ်အချက်အလက်
 ၃။ အကျဉ်းချုပ်အချက်အလက်
 ၄။ အကျဉ်းချုပ်အချက်အလက်
 ၅။ အကျဉ်းချုပ်အချက်အလက်
 ၆။ အကျဉ်းချုပ်အချက်အလက်
 ၇။ အကျဉ်းချုပ်အချက်အလက်
 ၈။ အကျဉ်းချုပ်အချက်အလက်
 ၉။ အကျဉ်းချုပ်အချက်အလက်
 ၁၀။ အကျဉ်းချုပ်အချက်အလက်

ဘေးပတ်ဝန်းကျင်ရှိ ကျားကျကျောင်းတိုက်မှ သဘောထားမှတ်ချက်

CSR လုပ်ငန်းစတင်ချိန်မှ အခြေအနေ

စတင်လုပ်ငန်းကိုင်ရှိ ကျေးဇူးတော်ကျောင်းတိုက်ရှိ သံဃာများအား ဆွမ်းသောက်တင်ခြင်း နှင့် ဝတ္ထုငွေများလှူဒါန်းခြင်း။

CSR လုပ်ငန်းဆောင်ရွက်မှု အခြေအနေ



ရန်ကုန်တိုင်းဒေသကြီး အစိုးရထံသို့ ယာဉ်ထိန်းလုပ်ငန်းများဆောင်ရွက်နိုင်ရေးအတွက်
Suzuki မော်တော်ယာဉ် (၁၀) စီးလှူဒါန်းခြင်း။

CSR လုပ်ငန်းဆောင်ရွက်မှု အခြေအနေ



အမျိုးသားစီမံကိန်းရေးဆွဲရေး (ရန်ကုန်တိုင်းဒေသကြီး) ပါဝင်သင်ယူကော် နှင့် ဆွေးနာဆန်းစစ်ရေးလုပ်ငန်းတွင်
ကျွန် သိန်း(၃၀၀) ပါဝင်လှူဒါန်းခြင်း။ (၂၀၁၇ ခုနှစ်)

CSR လုပ်ငန်းဆက်လက်ဆောင်ရွက်မည့် အစီအစဉ်များ

- ❑ CSR လုပ်ငန်းများ ဆောင်ရွက်မည့် အစီအစဉ်မှာ နှစ်စဉ်အခြားလိုအပ်လျှက်ရှိသော ပညာရေး၊ ကျန်းမာရေး၊ လူမှုရေးလုပ်ငန်းများ ဆောင်ရွက်ပေးမည်ဖြစ်ပါသည်။
- ❑ သဘာဝဘေးအန္တရာယ်များ ကျရောက်လာပါကလည်း လိုအပ်သောနေရာများအထိ လိုက်လံလှူဒါန်းမည်ဖြစ်ပါသည်။

တည်ဆောက်ဆဲကာလ ဖြစ်နိုင်ဖွယ်ရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာ ဆိုးကျိုးသက်ရောက်မှုများ

- အောက်ခြေမြေတုန်ခြင်း
- ဇောင်အရွင်းအတွက် ပိုင်ရှင်ကြီးခြင်း
- လေထုအရည်အသွေးထိခိုက်ခြင်း
- ဆူညံသံနှင့် တုန်ခါမှု
- ယာဉ်ကြောပိတ်ဆို့မှု
- ပစ္စည်းများသိုလှောင်မှု
- စွန့်ပစ်ပစ္စည်းများ
- ရေပူများစွန့်ထုတ်ခြင်း

တည်ဆောက်ဆဲကာလ
သက်ရောက်မှုများကို
ဒီဇိုင်းလိုအပ်ချက်များ လိုက်နာခြင်းဖြင့်
Fujita ခန့်မှန်းပင်လယ်ရပ်ခြား
ဆောက်လုပ်ရေးလုပ်ငန်း လုပ်ငန်းခွင်
ကျန်းမာရေးနှင့် အလုပ်ခွင်ဘေးကင်းရေး
စံနှုန်းများကို လိုက်နာခြင်းဖြင့်
လျော့ပါးစေနိုင်ပါသည်။

တည်ဆောက်ဆဲကာလ ဖြစ်နိုင်ဖွယ်ရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာ
ကောင်းကျိုးသက်ရောက်မှုများ

အလုပ်အကိုင် အခွင့်အလမ်းများ

ကောင်းမွန်တိုးတက်သော မြေယာ၊ မြို့ပြရှုခင်း

လုပ်ငန်းလည်ပတ်ချိန် ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှုများ

- ❑ တည်ဆောက်စဉ်ကာလနှင့် နှိုင်းယှဉ်လျှင် ပိုမိုနည်းပါးမည်။ ဖြစ်နိုင်ဖွယ်ရှိသော
သက်ရောက်မှုများကို အောက်ပါအတိုင်းဖော်ထုတ်ထားသည်။
- ❑ အရင်းအမြစ်များသုံးစွဲခြင်း
- ❑ ရေပုပ်၊ မိလ္လာများ စွန့်ပစ်ခြင်း
- ❑ ရေဆိုးများစွန့်ပစ်မှု
- ❑ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု
- ❑ ယာဉ်ကြောကြပ်တောက်မှု
- ❑ ခြေပြင်နိမ့်ကျမှု

လုပ်ငန်းလည်ပတ်စဉ် စုပေါင်းအကျိုးသက်ရောက်မှု

စုပေါင်းအကျိုးသက်ရောက်မှုများ အနေဖြင့် အလွန်နည်းပါးသော်လည်း အောက်ပါအချက်များကို ထည့်သွင်းစဉ်းစားရန်ဖြစ်ပါသည်။

- လေထုအရည်အသွေး
- ဖန်လုံအိမ်အာနိသင် မိတ်ငွေ့များ ထုတ်လွှတ်မှု
- ယာဉ်သွားယာဉ်လာ၊ ပို့ဆောင်ရေး
- ဆူညံသံ၊ တုန်ခါမှု
- စွန့်ပစ်ပစ္စည်းများ
- စီးဆင်းရေ နှင့်
- မြေအောက်ရေ

ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်

ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ်တွင် ပါဝင်သော ကဏ္ဍများ

1. ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ်
2. ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြပ်စစ်ဆေးမှုအစီအစဉ်
3. လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံမှု
4. အရေးပေါ်အခြေအနေ တုံ့ပြန်မှုအစီအစဉ်
5. ဆီယိုမိတ်မှု အရေးပေါ်အစီအစဉ်
6. လူမှုရေးဆိုင်ရာတာဝန်ယူမှု အစီအစဉ်

စောင့်ကြပ်စစ်ဆေးမှု

စာညှိဆောက်ဆဲကာလ

- ဆောက်လုပ်ရေးလုပ်ငန်းများကြောင့် ဖြစ်ပေါ်သောညစ်ညမ်းမှုအဆင့်များကို စောင့်ကြည့် စစ်ဆေးရန်

လုပ်ငန်းလည်ပတ်သောအဆင့်

- ဟိုတယ်နှင့် မျိုးချေးမှုအစီအစဉ် လုပ်ငန်းလည်ပတ်လုပ်ဆောင်မှုများမှ ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှုများကို သတ်မှတ်ဆုံးဖြတ်ရန်

လုပ်ငန်းပိတ်သိမ်းသော အဆင့်

- လုပ်ငန်းပိတ်သိမ်းသောအဆင့်သည် လုပ်ငန်းစာညှိဆောက်ဆဲကာလနှင့် အလားတူ သက်ရောက်မှုများ နှင့် စီမံခန့်ခွဲမှုလုပ်ငန်းများဖြစ်ပါသည်။

သက်ဆိုင်သူများနှင့်ဆွေးနွေးခြင်း နှင့် လူထုအားအသိပေးခြင်း

- ပတ်ဝန်းကျင်ဆိုင်ရာထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းအရ အီးဆိုင်အေ လေ့လာစဉ်အတွင်း သက်ဆိုင်သူများနှင့် အစည်းအဝေးကို အနည်းဆုံး (၂)ကြိမ် ပြုလုပ်ရန် ဖြစ်သည်။

စီမံကိန်းနှင့်ပတ်သက်၍ ဆက်သွယ်ရန်

Email - ycomplexeia11@gmail.com

Ph - +959 425842121

အကြံပြုစာများကို ၁-၅-၂၀၁၈ ထိ ပေးပို့နိုင်ပါသည်။

အကြံပြုခြင်း၊ သိလိုသည်များကို မေးမြန်း ဖြေကြားခြင်း

မေးခွန်းများ မေးမြန်းခြင်း

အကြံပြုဆွေးနွေးခြင်း

ဖြေကြားခြင်း

ကျေးဇူးတင်ပါသည်။

Y Complex Company Project
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ
လေ့လာတွေ့ရှိချက်များအား
သက်ဆိုင်သူများအား ရှင်းလင်းတင်ပြခြင်းနှင့်
အကြံဉာဏ်ရယူခြင်း ဒုတိယအကြိမ် အစည်းအဝေး

ဩဂုတ်လ ရက်၊ ၂၀၁၈
Hotel, Yangon,

ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်း (EIA) လိုအပ်ချက်

- ❖ ၂၀၁၂ခုနှစ် မတ်လ (၃၀) ရက်နေ့တွင် ပြဌာန်းသော မြန်မာ့ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဥပဒေ လိုအပ်ချက်အရ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆောင်ရွက်ရခြင်းဖြစ်ပါသည်။
- ❖ သဘာဝသယံဇာတနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန လက်အောက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ ပတ်ဝန်းကျင်ထိခိုက်မှုအစီရင်ခံစာကို တင်ပြရန် ဖြစ်ပါသည်။
- ❖ ပတ်ဝန်းကျင်ထိခိုက်မှုအစီရင်ခံစာကို သဘာဝသယံဇာတနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန လက်အောက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနတွင် မှတ်ပုံတင်ထားသော သို့မဟုတ် အသိအမှတ်ပြုသော တတိယအဖွဲ့အစည်းမှ ဆောင်ရွက် ပြုစုတင်သွင်းရပါသည်။
- ❖ ယခု စီမံကိန်းတွင် မှတ်ပုံတင်ထားသော E Guard Environmental Services မှ အီးဂျိုင်အေကို လေ့လာပြီး၊ REM-UAE Laboratory and Consultant Co., Ltd. မှ လူမှုစီးပွား စစ်တမ်းကောက်ယူခြင်း နှင့် လူထုနှင့် တွေ့ဆုံအကြံဉာဏ်ရယူခြင်း အစည်းအဝေးများကို ဆောင်ရွက်ခြင်းဖြစ်ပါသည်။

SIA အကြံပေးကုမ္ပဏီ၏ အကြောင်းအရာ

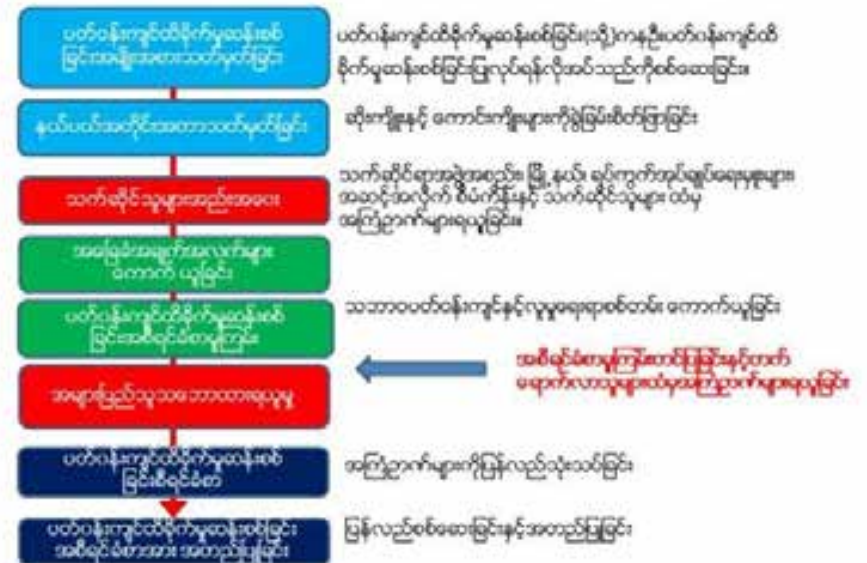
မြန်မာနိုင်ငံမှ အီးအိုင်အေလုပ်ငန်းတွင် အတွေ့အကြုံများစွာရှိသော Resource & Environment Myanmar Co., Ltd.(REM) နှင့် ဝိုင်းနိုင်ငံမှ အင်္ဂလိပ်စာ၊ မြေပုံရေးဆွဲရေး နှင့် အကြံပေးကုမ္ပဏီ United Analyst Engineering Co., Ltd. (UAE) ဝိဇ္ဇာပေါင်းစပ်စပ် တည်ထောင်ထားသော REM-UAE ကုမ္ပဏီမှ လူမှုစီးပွားစစ်တမ်း နှင့် အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်း ကို စတင်ရွက်ပါသည်။

Areas of Expertise Provided (ပေးသော အကျိုးအမြတ်များ)

1. Evaluation of existing
2. Mapping and Soil
3. Socio-Economic
4. Waste Management
5. Cultural Heritage
6. GIS & RS
7. Social Management Plan
8. Stakeholder Engagement Plan and Public Consultation

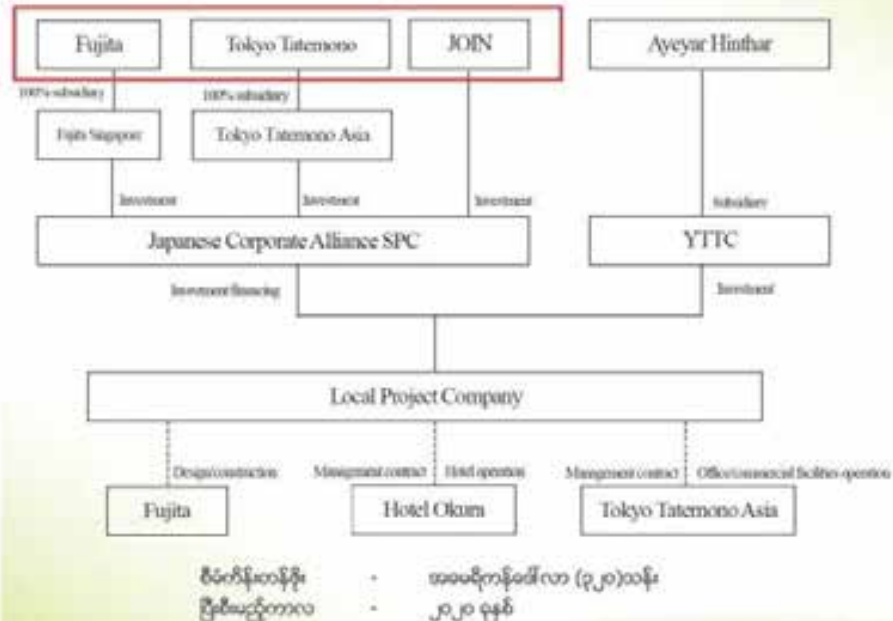


ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်း (EIA)လုပ်ငန်းစဉ်များ



Project Proponent

ဂျပန်မိတ်ဖက်အဖွဲ့အစည်းများနှင့် ပူးပေါင်းဆောင်ရွက်မည့် ပုံစံ



Social Impact Assessment Team

No	Name	Gender	Duty	Responsibility
1	Mr. Win Naing Tun	F	Principal Consultant	Social Impact
2	Ms. Khin Ohnmar Htwe	M	Principal Consultant	Social Impact
3	Ms. Phyu Phyu Shein	F	Principal Consultant	Social Impact
4	Ms. Nan Thazin Oo	F	Senior Consultant	Social Impact
5	Mr. Aung Thu Phyo	M	Consultant	Social Impact
6	Dr. Ye Naing	M	Consultant	Health Impact
7	Dr. Hein Htet Soe	M	Consultant	Health Impact

D. City Development Sector

1. The Development Committees Law, 1993
2. The Mandalay City Development Law, 1992
3. The City of Yangon Development Law, 1990 (Amended in 1995 and again in 1996)
4. The Underground Water Act, 1930
5. The Water Power Act, 1927
6. The City of Yangon Municipal Act, 1922 (The Law Amending the City of Yangon Municipal Act, 1991)
7. The Yangon Water-works Act, 1885

D. Finance & Revenue Sector

1. The Myanmar Insurance Law, 1993

E. Health Sector

1. The National Food Law, 1997
2. The Traditional Drug Law, 1996
3. The Prevention and Control of Communicable Diseases Law, 1995
4. The National Drug Law, 1992
5. The Union of Myanmar Public Health Law, 1972

H. Hotels and Tourism Sector

1. The Myanmar Hotel and Tourism Law, 1993

Please add Construction Law

Existing Socio-economic Environment

- North Latitude 16° 46' 51" and East Longitude 97° 8' 59".
- on the North by Bahan and Sanchaung Townships, on the East by Mingalar Taung Nyunt Township, on the South by Pabetan, Latha and Lanmataw Townships and on the West by Alone Township.
- area of 1.959 square miles
- composed of 5 wards.



Total Population of Dagon Township (2018)

No	Ward	House	Household	Male	Female	Total
1	Yewmingyi	288	1550	3382	4240	7622
2	UWizara	67	732	1485	1974	3459
3	East Pyay Road	123	1396	4357	3786	8143
4	West Pyay Road	215	611	1845	2310	4155
5	Phayargyi	135	306	1141	872	2013
	Total	828	4595	12210	13182	25392

Hotels in Dagon Township

Sl.	Name of Hotel	Rank	Total rooms
1	Park Royal	Five Stars	325
2	Summit Park View	Four Stars	173
3	Yangon International	Three Stars	99
4	Helipin	Two Stars	53
5	President	Two Stars	45
6	Olympus	Two Stars	74
7	Alfa	Three Stars	90
8	Garven	Four Stars	48
9	The Loft Hotel	Four Stars	37
10	Tawwin Garden	Four Stars	32
11	Sunny Holiday	Four Stars	63
	Total		1066

Cultural Resources

- Yangon City Development Committee created a Yangon City Heritage list of old buildings and structure in the city that cannot be modified or torn down without approval.
- In 2010, the Ministry of Culture announced 16 ancient pagodas and buildings.
- The Shwedagon Pagoda is recognized as both inclusive as an Ancient Monument Zone and Protected and Preserved Zone and other 15 are listed as Ancient Monument Zone.

Sl.	List
1	BESH 1 Dagon
2	BESH 2 Dagon
3	Department of Public Health Laboratory
4	Diplomatic Residence Compound
5	Endaungya Pagoda
6	India House
7	Kyargu Monastery
8	Maha Winaya Pagoda
9	Methodist English Church
10	Ministry of Foreign Affairs
11	National Archives Department
12	St. Gabriel's Church
13	St. John's Catholic Church
14	Sohn Yaung Ni Pagoda
15	Shwedagon Pagoda
16	Yakunda Paddanaikar Hall

Socio-economic Profile of Respondents in the Project Area

Location of the Project Area

Sr.	Name	Latitude	Longitude
1	Yawmingyi Ward	16° 46' 56.97"	96° 9' 14.27"
2	Phayargyi Ward	16° 47' 5.02"	96° 9' 14.12"
3	Uwizarya Ward	16° 46' 54.99"	96° 9' 9.04"



Population and Samples of the study area (2018)

The sample population is about 24 percent of the total number houses in study area.

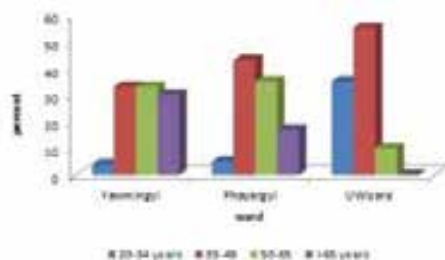
No.	Ward	House	Male	Female	Total	No.of sample
1	Yawmingyi	288	3382	4240	7,622	60
2	Phayargyi	135	1141	872	2,013	40
3	UWizara	67	1485	1974	3,459	20
	Total	490	6,008	7,086	13,094	120



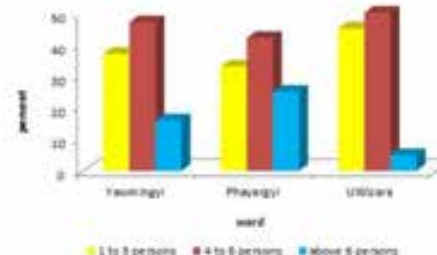
Socio-economic Profile of the Affected Area

Gender, Age Composition and Family Size

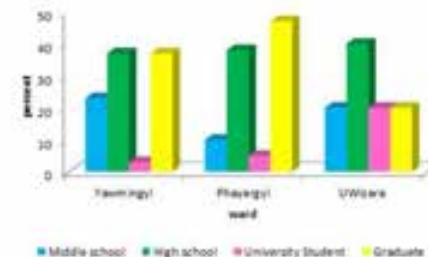
- Field surveys and semi- structured interviews were done in three sample groups within the project area.
- The respondents are 73 males (61 percent of total respondents) and remaining are 47 females (39 percent of the respondents).
- Most of the respondents belong Bamar ethnic group and 7 percents are Christians but 93 percents are Buddhists.
- The major ethnic group in all wards is Bamar people.
- Respondents on semi- structured interviews mainly represented age group between 20 years old and over 65 years old.
- Most of the respondents belong to age group above 35 -49 years and age group 20-34 years is also high.



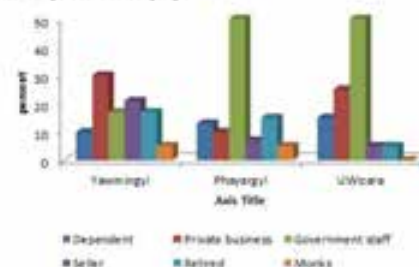
Family sizes of respondents (%)



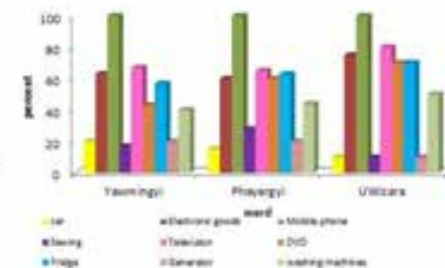
Education Level



Profile of Occupational Structure of Respondents (%)



Possession of Respondents (%)



Income Level, Expenditure and Source of Income

- More than 350,000 kyats per month received of respondents are usually found in all wards.
- Most of the respondents spend less than 300,000 kyats for their family monthly expenditure.
- Main source of income for respondents are from government and private business sectors.

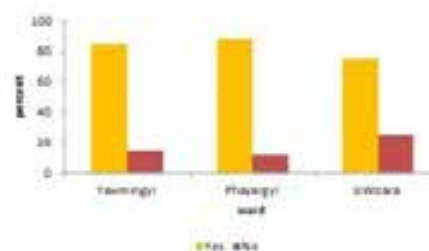
Health Impact Assessment

Significance of Potential Impacts

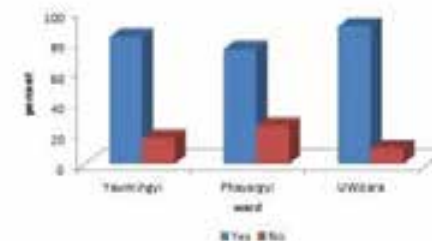
Health Effect Category	Potential Impact	Distribution
Social determinants of health	Negative/ Medium	Resident, Local workers, Migrant workers and their families
Air and Cleanliness	Negative/ Medium	Residents
Communicable diseases	Negative/ Low	Local people, Migrant workers
Food, Nutrition and Subsistence activity	Negative/ Low	Residents
Exposure to Potentially Hazardous Materials	Negative/ Medium	Local Residents
Accidents And Injuries	Negative/ Low	Road user/ Local residents
Health services and infrastructure and capacity	Positive/ Medium	Improvement in socio economic program, greater access to health care, emergency management plan

Environmental and Social Impacts and Mitigation

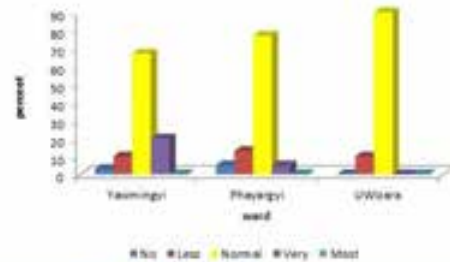
Project Information



Attitudes on the Project



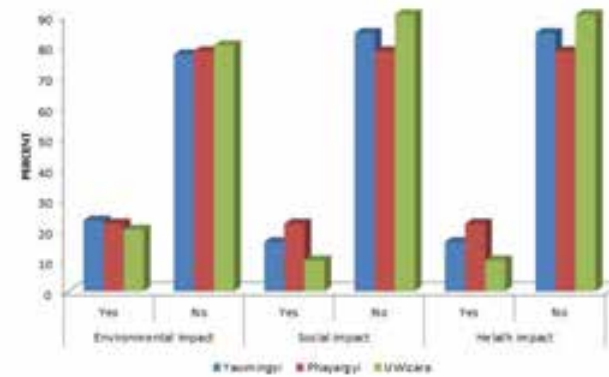
Degree of Attitude of Respondents on the Project (%)



Study area	Why don't you like it?	Why do you like it?
Yawmingyi	<ul style="list-style-type: none"> - They worry about the ground water - Traffic jam - It is too near to shwedagon pagoda height, difference in level (8 and 9 level), - Destroying historical building - Traffic, crowded 	<ul style="list-style-type: none"> - job opportunities - Development plan
Phayargyi	<ul style="list-style-type: none"> - Noise impact in the construction phase - Air pollution in the construction phase 	<ul style="list-style-type: none"> - job opportunities - Development plan
UWizara	<ul style="list-style-type: none"> - Noise impact in the construction phase - Air pollution in the construction phase 	<ul style="list-style-type: none"> - job opportunities - Development plan

Opinion towards the mitigation measures of the Project

Study ward	Environmental impact		Social impact		Health impact	
	Yes	No	Yes	No	Yes	No
Yawmingyi	23	77	16	84	16	84
Phayargyi	22	78	22	78	22	78
UWizara	20	80	10	90	10	90



Worry of respondents in study wards

Yawmingyi Ward	<ul style="list-style-type: none"> - Air pollution and Noise pollution - Dust pollution - Vibration - More Traffic jam in the surrounding areas - Most of the people depend on tube well water (ground water) in Yawmingyi Ward. If these projects use ground water, they are not enough of water. Please take care it and mitigate the water supply problems.
Phayargyi Ward	<ul style="list-style-type: none"> - Air pollution - Dust pollution - Noise pollution. Please don't work in night time. - Health impact - Water supply problems - More Traffic jam in the surrounding areas - Vibration
Uwizara Ward	<ul style="list-style-type: none"> - damage of electricity and water - They need more information from the project owner

Opinion and Requirements for Regional Development from Respondents

Sr.	Study Ward	Needs for your region's development.
1	Yawmingyi	Needs for jobs opportunities and good transportation because we worry about more traffic jam
		I agree if the project does not have impact on us.
		if the project digs tube-well higher depth, I worry for water scarcity for YCDC delivery.
		Traffic, Don't fell down the trees, Water, Electricity, Crime and thief, illegal shops near the projects,
		Solve for water scarcity
		It is better to open like museum and park. Should not open night club and gambling.
		Should clearly explain to public for project description
2	Phayargyi	Occupational safety and not to impact on surrounding
		support for health
		Good water supply and one ambulance for us
		Drainage system, Street pole. I would like to suggest to have 75% advantages for local people.
		If there are no impact on surrounding, it is okay
3	UWizara	Good transportation
		I want to clearly information about these project
		Worried of damage electricity and water

Public Involvement and Information Disclosure

Stakeholders shall include the following:

- Institutions (Regional or Local Government Authorities, etc)
- Organization (INGOs, NGOs, CBOs, CSOs etc)
- Individuals (Group with special interests, academic, community, business community, media, etc)
- Project Affected Persons (PAPs) and
- Interested persons (politicians and religious leaders, etc.)

Meeting Program for Stakeholder Consultation (I)

Date: 8.4.2018 (Sunday)

Time: 1:30 – 3:00 PM

Venue: Pan Pacific Hotel, Yangon



Corporate Social Responsibility (CSR)



- Y Complex Project has made an investment for the real estate development in Myanmar that will serve both tourism and commerce by providing a five-star hotel and first-class working for offices in downtown Yangon.
- YCP has not yet put up the proposal to MIC and planned to submit in February 2017. During the submission of the project proposal to MIC the proponent has to make a commitment that tentatively 2% of the net profit will be allocated for Corporate Social Responsibility (CSR) Program starting from the commencement of the operation stage.

Sr	CSR	%
1	Activities related to religious affairs	20
2	Activities related to health of employees and their family	20
3	Activities related to communication development in the region	30
4	Activities related to education matters for the children of employees	15
5	Activities in relation to regional development	15
	Total	100



Social Impact Management Plan

In assessing the characteristics of the individual impact, following factors are taken into consideration.

- Nature of impact (beneficial or adverse)
- Duration of impact (temporary and permanent)
- Livelihood
- Severity

SOCIAL IMPACT SIGNIFICANCE MATRIX

		Severity of Impact				
		Minor	Low	Medium	High	Very High
Livelihood of Impact	Very Unlikely	Negligible	Negligible	Negligible	Minor	Minor-Moderate
	Unlikely	Negligible	Negligible	Minor	Minor-Moderate	Moderate-Major
	Likely	Negligible	Negligible	Minor	Moderate	Major

PREDICTED SOCIAL IMPACTS AND SIGNIFICANCE

No.	Item	Nature	Duration	Likelihood	Severity	Significance
1	Population and demographic change	Negative	Long	Likely	Medium	Minor
2	Access and movement	Negative	Short	Unlikely	Low	Negligible
3	Employment, Skill and Business	Positive	Short	Likely	High	Moderate
4	Land Use and Property	Negative	No	Likely	Low	Negligible
5	Community Value and Life Style and Social Cohesion	Negative	Long	Likely	High	Moderate
6	Local Economy	Positive	Long	Certain	Medium	Moderate
7	Community Health, safety and environment	Negative	Long	Likely	Minor	Medium

Community Health, Safety and Environmental Consideration

- Accidents - anticipated to cause by project's vehicle movement on public road
- Exposure to environment contaminants (i.e. dust emission, noise, water)
- Communicable diseases such as HIV, Tuberculosis, Hepatitis.
- Community concerns on the damage to existing environmental receptors
- Reduced sense of community safety and security due to influx of the new comers into the project affected area
- Public Concerns on potential fire hazard from the project
- Recommended mitigation and management measures are also listed to reduce the anticipated risks associated with project activities.

Following mitigation and control measures are adopted to minimize such risks related to projects

- Provide medical assistance wherever possible to local communities
- An emergency management plan shall be maintained and implemented with co-operation from local health services and monitored through consultation by local residents
- Regular engagement of health and social infrastructure stakeholders to acquire demands and responses (corporate social responsibility)

- Annual medical surveillance to project employees to monitor the trend and pattern of communicable disease within the project premise
- Initiate community health education as part of socio-economic management of the project for workers and communities health and integrate them into safety orientation program.
- Coordinate with local /government medical officers on identification, reporting and monitoring of any potential outbreak of communicable diseases in camps or residential areas.
- Preparation of annual environmental monitoring reports and available to the public in the form of summary
- Preparation of annual safety report and available to the public in the form of summary
- Ensure that project will have minor or insignificant impact on environment and known to public
- Developing environmental awareness campaigns among employees and local residents in the area of project influence.
- Enhance safety culture at work to reduce risk of accidents and injuries associated with construction and operation work activities

Appendix XXVI Fire Approval for Y Complex Project



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
ပြည်ထောင်စုရုံးကြီးဌာန
မီးသတ်ဦးစီးဌာန

စာအမှတ်၊ ၂၁၀ / ၁၀၀ / ၅၂ / ဦး ၁
ရက် ၉၊ ၂၀၁၈ ခုနှစ်၊ ဇန်နဝါရီလ ၂ ရက်

Y-Complex Project

မြေကွက်အမှတ် (၁၁-အေ/၁၅၁၆၁၇)၊ မြေတိုင်းအမှတ် (၆၈/၄၅-၃)

ရွှေတိဂုံဘုရားလမ်းနှင့် ပန်ထွာလမ်းထောင့်၊ ဒဂုံမြို့နယ်

အကြောင်းအရာ၊ အဆောက်အအုံမီးဘေးလုံခြုံရေး (Fire Safety) အတွက် စစ်ဆေးခြင်း

၁။ အထက်အကြောင်းအရာပါ ကိစ္စနှင့်စပ်လျဉ်း၍ အထပ်မြင့်အဆောက်အအုံမဆောက်လုပ်မီ မီးဘေးလုံခြုံရေးအတွက် Y-Complex Project ဒဂုံမြို့နယ်မှ တင်ပြလာသော အဆောက်အအုံပုံစံအား မီးသတ်ဦးစီးဌာနမှ စစ်ဆေးပြီးဖြစ်ပါသည်။ မီးဘေးလုံခြုံရေးအတွက် လိုက်နာဆောင်ရွက်ရန် ညွှန်ကြားချက် (၁၆)ချက်ကို ဤစာနှင့်အတူပူးတွဲပေးပို့ပါသည်။

၂။ လျှောက်ထားသူတက်မှ ညွှန်ကြားချက်အတိုင်းပြည့်စုံစွာ လိုက်နာဆောင်ရွက်သွားမည်ဆိုပါက အောက်ဖော်ပြပါ အဆောက်အအုံမဆောက်လုပ်ခြင်းအတွက် ဤဌာနအနေဖြင့် ကန့်ကွက်ရန်မရှိကြောင်းအကြောင်းကြားပါသည်။

(က)	လျှောက်ထားသူအမည်	Y-Complex Project
(ခ)	အဆောက်အအုံမဆောက်မည့်နေရာ	မြေကွက်အမှတ်(၁၁-အေ/၁၅၁၆၁၇) မြေတိုင်းအမှတ်(၆၈/၄၅-၃)၊ ရွှေတိဂုံဘုရားလမ်းနှင့် ပန်ထွာလမ်းထောင့်၊ ဒဂုံမြို့နယ်
(ဂ)	အဆောက်အအုံအမျိုးအစား	RCC (၉) ထပ် + Mezzanine + Basement (၂)ထပ် + Lift ဝါ (Hotel + Office)

၃။ ဤအဆောက်အအုံအတွက် ပူးတွဲပါမီးဘေးလုံခြုံရေးညွှန်ကြားချက်အတိုင်းဆောင်ရွက်ပြီးစီးချိန်တွင် မီးဘေးလုံခြုံရေးစစ်ဆေးထောက်ခံချက်လက်မှတ် (Fire Safety Certificate) ထုတ်ပေးရန် မီးသတ်ဦးစီးဌာနသို့ လျှောက်ထားရမည်။

၄။ ထိုသို့လျှောက်ထားလာသည့်အခါ မီးသတ်ဦးစီးဌာနမှ ဆောက်လုပ်ပြီးအဆောက်အအုံအား လုပ်ထုံးလုပ်နည်းနှင့်အညီထပ်မံစစ်ဆေးပြီးပူးတွဲပါ မီးဘေးလုံခြုံရေးဆိုင်ရာညွှန်ကြားချက်(၁၆)ချက်အား ပြည့်စုံစွာလိုက်နာဆောင်ရွက်လျှင် မီးဘေးလုံခြုံရေးစစ်ဆေးထောက်ခံချက် (Fire Safety Certificate) အားထုတ်ပေးသွားမည် ဖြစ်ပါသည်။

၅။ မီးဘေးလုံခြုံရေးညွှန်ကြားချက်များအား လိုက်နာဆောင်ရွက်ရန် ပျက်ကွက်မှုတစ်စုံတစ်ရာ စစ်ဆေးတွေ့ရှိလျှင် မီးဘေးလုံခြုံရေးစစ်ဆေးထောက်ခံချက် (Fire Safety Certificate) ထုတ်ပေးခြင်းမပြုပါ။ ထို့အပြင် မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ ဥပဒေအရအရေးယူခြင်းမရှိမည် ဖြစ်ပါသည်။

အထပ်မြင့် အဆောက်အအုံစစ်ဆေးရေးဆိုင်ရာ
ဆောင်ရွက်ပေးအကူအညီလုပ်ငန်း
[၅၉၀၆၂၈၁] (၈.၁.၁၈) ကို
အထိရောက်စွာ ဆောင်ရွက် လက်ခံရရှိပါသည်။

ညွှန်ကြားရေးမှူးချုပ် (ကိုယ်စား)
(ကျော်သူရ၊ ညွှန်ကြားရေးမှူး)

မိတ္တူကို

ဌာနမှူး၊ အင်ဂျင်နီယာဌာန (အဆောက်အအုံ)၊ ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ၊
 တိုင်းဒေသကြီးမီးသတ်ဦးစီးမှူး၊ ရန်ကုန်တိုင်းဒေသကြီး၊
 အနောက်ပိုင်းခရိုင်မီးသတ်ဦးစီးမှူး၊ စမ်းချောင်းမြို့နယ်၊
 မြို့နယ်မီးသတ်စခန်း၊ စမ်းချောင်းမြို့နယ်၊
 မျှောစာတွဲ/လက်ခံစာတွဲ။

၃၄

၀၄

ရန်ကုန်တိုင်းဒေသကြီး၊ ဒဂုံမြို့နယ်၊ ရွှေတိဂုံဘုရားလမ်းနှင့် ပန်ထွာလမ်းထောင့်၊ မြေတိုင်းအမှတ်(၆၈/၄၅ဒီ)၊
မြေကွက်အမှတ်(၁၁-အေ/၁၅၊ ၁၆၊ ၁၇) တွင် ဆောက်လုပ်သည့် RCC (၉) ထပ် + Mezzanine +
Basement (၂) ထပ် + Lift ဝါ Hotel + Office အဆောက်အဦဆောက်လုပ်ခြင်းလုပ်ငန်းများအတွက်
မီးသတ်ဦးစီးဌာန၏ မီးဘေးလုံခြုံမှုနှင့် အရေးပေါ် လွတ်မြောက်မှုဆိုင်ရာသဘောထားများ
အရေးပေါ်လွတ်မြောက်မှုဆိုင်ရာလုပ်ငန်းများ (Means of Egress)

၁။ အဆောက်အဦ အပြင်ဘက်ပတ်လမ်း (Access Way) သည် မီးသတ်ကားများဝင်နိုင် သည့် (၁၈)ပေ
ကျယ်သည့်လမ်းဖြစ်ရန်၊ ၎င်းလမ်းတစ်လျှောက်နှင့် အဆောက်အဦအကြား မြေကွန်အနည်းဆုံး(၆)ပေရှိရန်၊
၎င်းလမ်းတစ်လျှောက် အမြင့်(၁၅)ပေ အတွင်းမည်သည့် အတားအဆီးမျှမရှိရန်နှင့် မီးသတ်ကားများ
ဝင်နိုင်သည့် လမ်းအရှည်သည်(၁၅၀)ပေကျော်ပါက မီးသတ်ကားများ ပြန်ကွေ့ နိုင်ရန် လုံလောက်စွာ
ကျယ်သောနေရာရှိရမည်။ မီးသတ်ကားများရပ်သည့်နေရာ လမ်းခံနိုင်ရည်သည် တန်(၄၀) ခံနိုင်ရမည်။

၂။ အဆောက်အဦ၏ ထွက်ပေါက်လှေကား(Exit Stairs)များအား အတည်ပြုထားသော
Drawing တွင်တင်ပြထားသည့်အတိုင်း ဆောက်လုပ်ရန်။

၃။ အဆောက်အဦရှိလှေကားများတွင် လှေကားထစ်တစ်ထစ်၏ အမြင့်(Riser)နှင့် လှေကားထစ်တိုင်း
၏ အကျယ်(Tread)သည် အတည်ပြုထားသော Drawingတွင် တင်ပြထားသည့်အတိုင်းဆောက်လုပ် ရန်။

၄။ လှေကားခွင်များအတွင်း လေဝင်/လေထွက်ကောင်းမွန်စေရန် သဘာဝလေဝင်/လေထွက်စနစ်
အသုံးပြုပါက လှေကားခွင်ကြမ်းခင်းဧရိယာ၏ အနည်းဆုံး(၁၅%)အား လေဝင်လေထွက်ပေါက်
ပြုလုပ်ထားရှိရန် (သို့မဟုတ်) Mechanical Ventilation System တပ်ဆင်ရန်။

၅။ လှေကားခွင်သို့ဝင်ရောက်သည့် တံခါးများအား အနည်းဆုံး(၃^၁/_၂) ပေအကျယ်၊ (၆^၁/_၂)ပေ အမြင့်ရှိရန်၊
အလိုအလျောက်ပိတ်စေသောကိရိယာ Self Closing Device တပ်ဆင်ထားရန် နှင့် မီးလောင်မှုဒဏ်
(၁)နာရီခံနိုင်သောတံခါး(Min: 1hr Fire Rated Door)တပ်ဆင်ရန်။

၆။ အတည်ပြုထားသော Drawing တွင်တင်ပြထားသည့်အတိုင်း လှေကားခွင် အဝင်/အထွက်နေရာတွင်
မီးစိုးတားအခန်း (Smoke Stop Lobby)ဧရိယာ 3m² ထားရှိရန်နှင့် မီးသတ်သမားသုံး မီးငြိမ်းသတ်ရေး
ပြင်ဆင်မှုအခန်း(Fire Fighting Lobby)ဧရိယာ 9m² ထားရှိရန်။

၇။ အရေးပေါ်အခြေအနေဖြစ်ပွားပါက အဆောက်အဦတွင် တပ်ဆင်ထားသော ဓါတ်လှေခါးများ
အနက် အတည်ပြုထားသော Drawing တွင် တင်ပြထားသည့်အတိုင်း မီးသတ်သမားသုံးဓါတ်လှေကား
Fireman Lift အဖြစ် အသုံးပြုနိုင်ရေး စီမံဆောင်ရွက် ထားရန်။

၈။ မီးသတ်သမားသုံးဓါတ်လှေခါး (Fireman Lift)အတွက် လျှပ်စစ်မီးပြတ်တောက်ချိန်တွင် ဆက်လက်
အသုံးပြုနိုင်မည့် Emergency Back Up Power System တပ်ဆင်ထားရှိရန်။

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၉။ လျှပ်စစ်မီးဖြတ်တောက်ချိန်တွင် ဓါတ်လျှောက်များသည် နီးစပ်ရာအထပ်သို့ရောက်ရှိပြီး အလိုအလျောက် တံခါးဖွင့်ကိရိယာ (Emergency Rescue Devices-ERD) တပ်ဆင်ထားရှိရန်။

၁၀။ ဓါတ်လျှောက် ဘေးကင်းလုံခြုံမှုအတွက် စက်မှုကြီးကြပ်ရေးနှင့် လျှပ်စစ်စစ်ဆေးရေးဦးစီးဌာနမှ စစ်ဆေးထောက်ခံချက်လက်မှတ် ရရှိပြီးဖြစ်ရမည်။

၁၁။ အရေးပေါ်လွတ်မြောက်မှုဆိုင်ရာလုပ်ငန်းများ (Means of Egress) အတွက် အောက်ပါစနစ်များ တပ်ဆင်ထားရှိရမည်-

- (က) အရေးပေါ်အသံနှင့်အမြင်ဆိုင်ရာအချက်ပေးစနစ် (Audio / Visual Advisory System)။ အဆောက်အဦတစ်ခုလုံးတွင် တပ်ဆင်ရမည်။
- (ခ) ထွက်ပေါက်နှင့်လွတ်မြောက်ပေါက်လမ်းညွှန် သင်္ကေတဆိုင်းဘုတ်များ (Exit & Indication Sign)။ အဆောက်အဦရှိ မီးဘေးလွတ်မြောက်ရာ လမ်းကြောင်းများ၊ ထွက်ပေါက်များ အနီးနှင့် လူသွားစင်္ကြံများ တစ်လျှောက်တွင် တပ်ဆင်ရမည်။
- (ဂ) အရေးပေါ်သုံးမီးထွန်းစနစ် (Emergency Lighting System with UPS back up)။ အထူးသဖြင့် လူသွားစင်္ကြံများနှင့် အရေးပေါ်လျှောက်ခွင်များအတွင်း တပ်ဆင်ရမည်။
- (ဃ) အရေးပေါ်သုံးလျှပ်စစ်ဓါတ်အားပေးစနစ်(Emergency Generator)။ အဆောက်အဦတွင် တပ်ဆင်ထားရှိသော မီးဘေးလုံခြုံရေးစနစ်များအားလုံးနှင့် ချိတ်ဆက်ထားရှိရမည်။

မီးဘေးလုံခြုံရေးဆိုင်ရာလုပ်ငန်းများ(Fire Safety)

၁၂။ မီးဘေးလုံခြုံရေးဆိုင်ရာလုပ်ငန်းများ (Fire Safety) အတွက် အောက်ပါစနစ်များ တပ်ဆင်ထားရှိရမည်-

- (က) မီးလှန့်အချက်ပေးစနစ်များ(Fire Alarm System)။ အဆောက်အဦ၏အထပ်တိုင်းတွင် အတည်ပြုထားသော Drawing တွင် တင်ပြထားသည့်အတိုင်း တပ်ဆင်ထားရှိရမည်။
- (ခ) လက်ဖြင့်ကိုင်တွယ်အသုံးပြုနိုင်သော အပေါ့စားမီးသတ်ပစ္စည်းကိရိယာများ(Portable Hand - Operated Approved Appliances) ။ အဆောက်အဦ အထပ်တိုင်းတွင် အတည်ပြုထားသော Drawing တွင်တင်ပြထားသည့်အတိုင်း တပ်ဆင်ထားရှိရမည်။
- (ဂ) မီးသတ်ရေပက်ပိုက်ခွေ(Fire Hose Reel)။ အတည်ပြုထားသော Drawing တွင် တင်ပြထားသည့်အတိုင်း အဆောက်အဦ အထပ်တိုင်းရှိ ထွက်ပေါက်များအနီးတွင် တပ်ဆင်ထားရှိရမည်။ Hose Reel(၁)ခုစီ၏ ရေစီးနှုန်း(0.4L/s) ရှိရမည်ဖြစ်ပြီး အနည်းဆုံး ရေဖိအား 2.5 bar ရရှိအောင် စီစဉ်ထားရှိရမည်။

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- (ဃ) အမြင့်တင်မီးသတ်ရေပိုက်စနစ်(Riser)။ အဆောက်အဦတစ်ခုလုံးတွင် ရေအမြဲရှိသော အမြင့်တင်ရေပိုက်စနစ် (Wet Riser)အား အတည်ပြုထားသော Drawing တွင် ဖော်ပြထားသည့်အတိုင်း တပ်ဆင်ရမည်ဖြစ်ပြီး ယင်း Riser ကို ရေဖိအား 3.5 ~ 5.5 bar ထွက်ရှိအောင် စီစဉ်ထားရှိရန်။
- (င) မီးထောက်လှမ်းရေးစနစ်များ(Fire Detection System)။ အဆောက်အဦ၏ အထပ်တိုင်းတွင် အသုံးပြုသောလုပ်ငန်း သဘောသဘာဝပေါ်တွင်မူတည်၍ မီးခိုးထောက်လှမ်းမှုကိရိယာများ (Smoke Detectors)အား Drawingတွင် တင်ပြထားသည့်အတိုင်း တပ်ဆင်ထားရှိရမည်။
- (စ) မီးသတ်ပိုက်စနစ်များ ။ မီးငြိမ်းသတ်ရေးစနစ်အားလုံးအတွက် တပ်ဆင်သွယ်တန်း အသုံးပြုသောပိုက်များကို Gray Cast Iron (သို့) Black Steel ပိုက်များ အသုံးပြုရန်ဖြစ်ပြီး ပိုက်ဆက်ကို Instantaneous Coupling (British Standard) များတပ်ဆင်ဆောင်ရွက်ပေးရန်။
- (ဆ) အလိုအလျောက်ရေဖြန်းစနစ်(Automatic Sprinkler System)။ အတည်ပြုထားသော Drawingတွင် တင်ပြထားသည့်အတိုင်း တပ်ဆင်ထားရှိရမည်။
- (ဇ) မီးဘေးလုံခြုံရေးထိန်းသိမ်းကွပ်ကဲသည့်အခန်း (Fire Control Center)(သို့) (Fire Alarm Control Panel) ။ အဆောက်အဦတွင် တပ်ဆင်ထားသော အရေးပေါ်လွှတ်မြှောက်မှုဆိုင်ရာစနစ်များ နှင့် မီးဘေးလုံခြုံရေးဆိုင်ရာစနစ်များ စုစည်းထိန်းသိမ်းကွပ်ကဲရန်အခန်း (သို့မဟုတ်) Panel Board အား အတည်ပြုထားသော Drawing ၌ တင်ပြထားသည့် သတ်မှတ်နေရာတွင် တပ်ဆင်ထားရှိရမည်။
- (ဈ) လေဝင်/လေထွက် ထိန်းသိမ်းကွပ်ကဲမှုစနစ် (Ventilation Control System)။ အဆောက်အဦ၏ မြေအောက်ထပ်(Basement)များ၊ အဆောက်အဦ၏ အတွင်းပိုင်းလျှောက်လမ်း (Internal Corridor) များ၊ မီးခိုးတားအခန်း (Smoke Stop Lobby) နှင့် မီးသတ်သမားသုံး မီးငြိမ်းသတ်ရေး ပြင်ဆင်မှုအခန်း(Fire Fighting Lobby) များတွင်လေဝင်လေထွက် ကောင်းမွန်စွာရရှိစေရန် အတည်ပြုထားသော Drawing တွင် တင်ပြထားသည့်အတိုင်း ဆောင်ရွက်ပေးရမည်။
- (ည) မြေတွင်းရေပိုက်ခေါင်း (Hydrant)။ အဆောက်အဦ၏ ပြင်ပချဉ်းကပ်လမ်းဘေးတွင် မြေတွင်းရေပိုက်ခေါင်းများ ထားရှိရမည်။ မြေတွင်းရေပိုက်ခေါင်း (Hydrant) တစ်ခုနှင့် တစ်ခုကြား မီတာ (၁၀၀) ထက် ပိုမဝေးရပါ။ ၎င်းမြေတွင်းရေပိုက်ခေါင်း (Hydrant) အား Diesel Driving Auto System ဖြင့် အနည်းဆုံးရေဖိအား (3.5 to 5.5)bar ထွက်ရှိအောင် စီစဉ်ထားရမည်။

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- (၄) မီးငြိမ်းသတ်ရန်ရေရရှိရေး (Water Supply for Fire Fighting)။ အနည်းဆုံး လိုအပ်ချက်ဖြစ်သည့် မီးငြိမ်းသတ်နိုင်သော ရေပမာဏဂါလန်ကို အတည်ပြုထားသော Drawing တွင် တင်ပြထားသည့်အတိုင်း သိုလှောင်စီမံထားရှိရန်။

အထွေထွေ

- ၁၃။ အရေးပေါ်လွှတ်မြှောက်မှုဆိုင်ရာလုပ်ငန်းများနှင့် မီးဘေးလုံခြုံရေးဆိုင်ရာ လုပ်ငန်းများအတွက် Drawing အား ရေးဆွဲထားရှိပြီး တပ်ဆင်ရမည့်စနစ်များ၊ တပ်ဆင်ရမည့်နေရာ သတ်မှတ်ချက်များနှင့် စံချိန်စံညွှန်းများကို မီးသတ်ဦးစီးဌာန၏ အတည်ပြုချက်ရယူရမည်။
- ၁၄။ အထပ်မြင့်အဆောက်အအုံများ မီးဘေးလုံခြုံရေးအတွက် စစ်ဆေးအကြံပြုခြင်းဆိုင်ရာ ဝန်ဆောင်မှုများကို အဆောက်အအုံ၏ အထပ်အားလုံးရှိ ဧရိယာစတုရန်းမီတာပေါင်းအတွက် တစ်စတုရန်းမီတာလျှင် (၁၀၀၀/-)ကျပ်နှုန်းပေးဆောင်ရန်။
- ၁၅။ တည်ဆောက်ဆဲကာလ လုပ်ငန်းခွင်အတွင်း မီးဘေးလုံခြုံရေးအစီအမံများ ဆောင်ရွက်ထားရှိရန် နှင့် မီးသတ်ဦးစီးဌာနမှ အခါအားလျော်စွာ စစ်ဆေးအကြံပြုချက်များကို လိုက်နာဆောင်ရွက်ရန်။
- ၁၆။ မီးသတ်ဦးစီးဌာနသို့ တင်ပြထားသည့် Hotel + Office အဆောက်အအုံအဖြစ်သာ အသုံးပြုရန်နှင့် အတည် ပြုထားသည့် Drawingအတိုင်း လိုက်နာဆောင်ရွက်ပါရန်၊ အခြားအဆောက်အအုံအဖြစ် ပြောင်းလဲ အသုံးပြုလိုပါက မီးသတ်ဦးစီးဌာနသို့ ပြန်လည်တင်ပြ၍ ခွင့်ပြုချက်တောင်းခံသွားရန်။

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