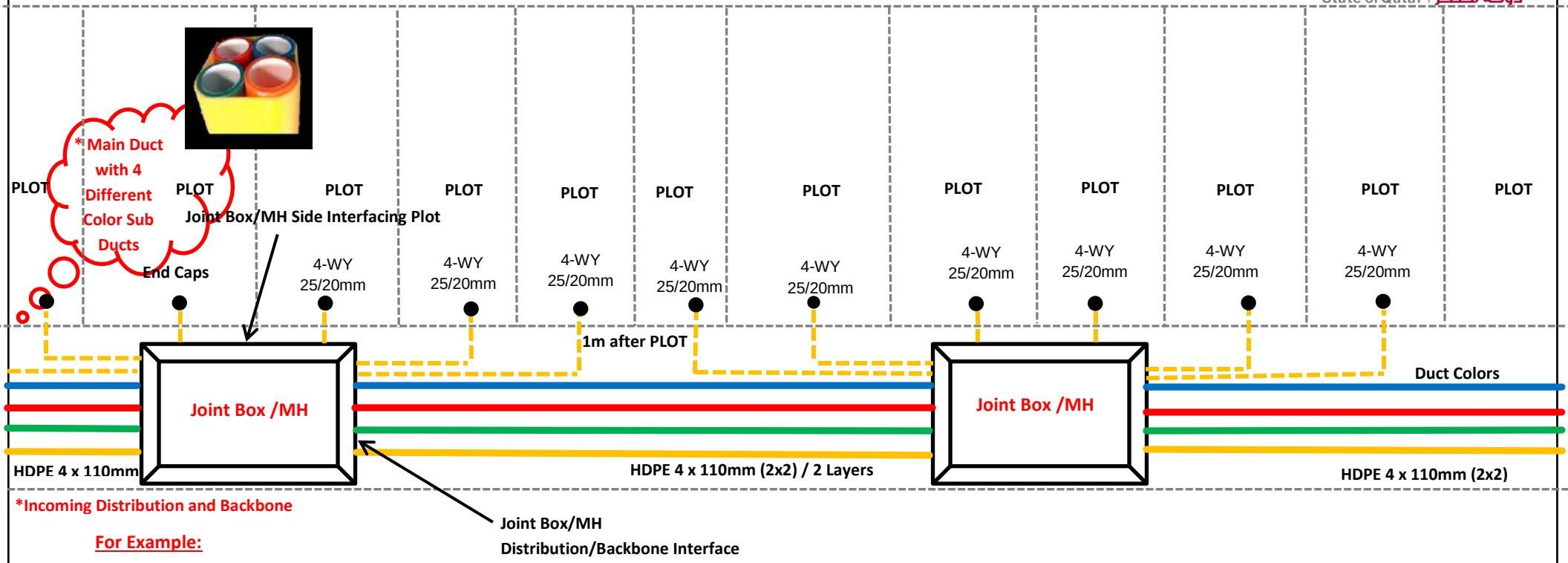
Communications Regulatory Authority State of Qatar
هيئة تنظيم الاتصالات دولة قطر

CRA Updated Telecom Infrastructure Model-Addendum Version-1.1

September 2018

Prepared by Technical Affairs Department

CRA Updated Telecom Infrastructure Model – Addendum Version 1.1



Road Width (meter)	Distance to be maintained between Joint Boxes (Min- Max)	Network Deployment	Total Number of ducts	Road Crossing Requirements	Chamber	Customer Lead-In Duct Distribution
10,12,16 & 20	**100 - 150**	Network can be one side (if there is no space for Telecom Corridor on both sides of the road*)	**2 or 4x110mm (1x2) or (2x2)** (Blue & Red) or (Blue,Red,Green & Orange)	**2 or 4 x 110mm** to be provided for every **390m** (If the network is on both sides)	**JRC4/ JRC12**	**1** main duct (Yellow) with built in 4-WY 25/20mm different color sub ducts (Blue,Red,Green & Orange) for each plot
24 & 32	**150 – 200**	Both Side	**2 or 4x110mm (1x2) or (2x2) (Blue & Red) or (Blue,Red,Green & Orange)**	**2 or 4 x 110mm** to be provided for every **800m**	**JRC12/ JRC14**	" "
40 and above	**200 - 250**	Both Side	**6 x 110mm (3x2) 2X(Blue, Red)+Green & Orange**	**6x 110mm** to be provided for every **800m.**	**JRC14E**	" "
*Subject to CRA approval						

Notes for the Design:

1. **High Density Polyethylene (HDPE)** with **110/100 mm** diameter shall be used in the trenches as main connections.
2. **HDPE** duct with **built in** - 4-way 25/20mm - shall be used for the last mile plot connection. 
3. Colors **Blue, Red, Green & Orange** recommended for Backbone/Distribution Network and for premises drop network same color.

4. Duct bank system shall have 750mm minimum depth from paved level at carriage way or road crossings and minimum distance of 600mm in footway areas.
5. Duct bank shall be separated from electrical duct with a minimum distance of 500mm. This shall be strictly applied on high voltage cable exceeding 650 Volts.
6. Separation for duct banks laid in parallel to other utilities shall be 200mm minimum and must be developed in close coordination with the respective utility disciplines.
7. Separation for duct banks crossing other utilities shall be 150mm minimum and must be developed in close coordination with the respective utility disciplines.

8) Joint Box (JRC12/14 chamber) shall be provided at every change in direction of Duct route. Suitable Manhole **MR4 -MRT9** shall be utilized for Exchanges, Point of Presence (POP), and other location wherever manhole is required.

9) If the Network Deployment on one side of the road, the chamber distribution should be replicated on the other side of the road with minimum number of 2 **or 4x110mm** HDPE duct crossing at each chamber connecting the other side of the road, depends on the number of ducts to be laid on the trench /corridor.

10) **Endcaps** for the Ducts to be provided. 

11) Lead In duct should be extended **1M** minimum after the plot/premises boundary.

12) Utility Marker symbol to be used as "**CRA TEL"** inside the plot/premises boundary for the CRA network.

13) **Guidelines for Component Usage:**

	Single Villa	Complex of Villas	Buildings (G+5) Or up to 3000 m_2	Bldg floors (G+6) to (G+10) or Bldg of 100 tenants or Bldg area Up to 7000 m2	Bldg floors (G+10) and more Or over 100 tenants or Bldg area more than 7000 m2	Shopping malls	Group of shops & sheds
Entry Pipes/ Duct	HDPE 4-WY 25/20mm pipes/duct towards the villa & single x HDPE 4-WY 25/20mm pipes/ducts to be extended outside the plotline towards Network	1x110mm HDPE pipes/ducts to be extended one meter outside the plot line towards Network. Internal Distribution within plot to be in accordance with advise	2x110mm HDPE pipes/ducts towards the building and 4 x 110mm pipes/ducts towards the Network	2x110mm HDPE pipes/ducts towards the building and 4 x 110mm pipes/ducts towards the Network A diversity entry route may also be provisioned	2x110mm HDPE pipes/ducts towards the building and 4 x110mm pipes/ducts towards the Network A diversity entry route may also be provisioned	2x110mm HDPE pipes/ducts towards the building and 1 x 110mm pipes/ducts towards the Network A diversity entry route may also be provisioned	1x110mm HDPE pipes/ducts to be extended one meter outside the plot line towards Network.

14) **Small –Office Home-Office (SOHO) and Residential Services Internal Cabling Guidelines** Specifications are applicable for the developers and building owners.

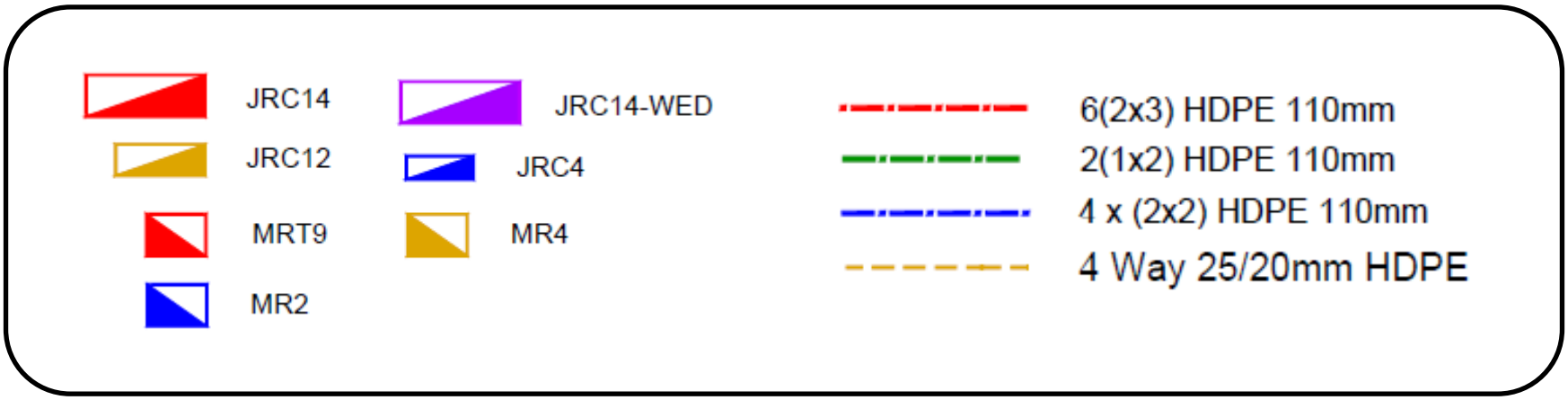
15) In case Joint Box/MH located interfacing **2 plots/premises**, those plots can be served directly from the interfacing side and additional 4 leads in ducts (2x2) from the distribution interfaces to serve additional **4 plots/premises** and distance not to be extended **120m**.

16) **JRC4 & JRC2** can be used in the following conditions:

i) Where number of plots to be connected below four at the end of closed street.

ii) Small lane/sikkahs and streets where it's not viable /feasible to place JRC12.

17) **Following symbols to be used in design drawings :**



Type of the **Duct /JRC/MH** should be specified in the design drawings as shown below.

Ex:

18) HDPE Specifications (Dimensions, SDR & PN ratings):

	Type	Nominal OD (mm)	Nominal ID (mm)	Wall Thickness(mm) Min-Max	PE 100	
					SDR	PN Ratting
CRA Specifications for HDPE Material	Main Duct (Backbone Network Duct)	110	100	5.30 to 6.00	17	10
	Customer Lead-In Duct with Built-In 4 Way	25	20	2.30 to 2.70		
	Customer Lead- In	50	44	3.00 to 3.40		

19) Warning Tape:

Warning tape should be designated by the name “Telecom Infrastructure – Communication Regulatory Authority” OR “Telecom Infrastructure – CRA”

20) Design General Comments:

a. Maximum distance between the joint boxes shall not exceed **250 meters.**
b. Minimum of JRC12 shall be used to accommodate fiber optic closure.
c. Types of Joint box (**JRC4 or JRC12)** to be used in small streets, roads, lanes, and sikkahs depends on usage and density of the area.

Plan View / Sectional View Design Notes: -

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. ALL DUCT CONFIGURATION/FORMATION ON JUNCTION BOX **(JRC12)** SHOULD BE LAYED AS 1X2 OR 2X2 HDPE 110MM LAYER OF DUCTS.
3. ALL DUCT CONFIGURATION/FORMATION ON JUNCTION BOX **(JRC14)** SHOULD BE LAYED AS 2X2 OR 3X2 HDPE 110MM LAYER OF DUCTS.
4. ALL DUCT CONFIGURATION/FORMATION ON MANHOLE (MR4) SHOULD BE LAYED AS 3X2 HDPE 110 MM LAYERS OF DUCTS.
5. MANHOLE TYPE (MR4) SHOULD BE USED AT LARGER INTERSECTION LOCATIONS WHERE THE DUCT ROUTES ARE ENTERING THE STRCUTURE FROM 3 DIFFERENT DIRECTIONS.
6. JRC/ SHOULD BE LOCATED IN THE MIDDLE OF THE BOUNDARY WALL BETWEEN TWO PLOTS.
7. JRC/MH SHOULD NOT BE LOCATED IN THE DRIVE WAY OR INFRONT OF THE PLOT GATE.
8. THE COMMUNICATIONS UTILITY MARKER SHALL BE INSTALLED 4500MM TO THE LEFT FROM PLOT'S CENTER LINE.

21) JRC12 Notes (These notes applies in Telecom Corridor for 10 to 20 m Road width) :-

1. ALL DIMENTIONS ARE IN MILLIMETES UNLESS OTHERWISE STATED.
2. THE NUMBER AND TYPE OF DUCTS USED TO BE AS PROPOSED BY THE CRA.
3. REINFORCEMENT REPOSITIONED SLIGHTLY TO CLEAR DUCTS WHEN NECESSARY.
4. ALL EXTERNAL CONCRETE SURFACES TO BE PAINTED WITH TWO COATS OF BITUMINOUS WATER PROOFING PAINT.
5. ALL WORKS TO BE CARRIED OUT AS PER QCS STANDARDS & SPECIFICATIONS.
6. ALL DUCT ENDS MUST BE IN LINE.
7. ALL DUCT ENTRIES TO THE JB/ MH TO BE PERPENDICULAR TO THE WALL. THE DUCTS TO BE CUT FLUSH WITH THE INNER WALL AND EDGES TO BE ROUNDED OFF.
8. THE COMMUNICATIONS UTILITY MARKER SHALL BE INSTALLED 4500MM TO THE LEFT FROM PLOT'S CENTER LINE.

22) **JRC12 (These notes applies in Telecom Corridor for 24m to 32m Road width):-**

1. ALL DIMENTIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. THE NUMBER AND TYPE OF DUCTS USED TO BE AS PROPOSED BY THE CRA.
3. REINFORCEMENT REPOSITIONED SLIGHTLY TO CLEAR DUCTS WHEN NECESSARY.
4. ALL EXTERNAL CONCRETE SURFACES TO BE PAINTED WITH TWO COATS OF BITUMINPOUS WATER PROOFING PAINT.
5. ALL WORKS TO BE CARRIED OUT AS PER QCS STANDARDS & SPECIFICATIONS.
6. ALL DUCT ENDS MUST BE IN LINE.
7. ALL DUCT ENTRIES TO THE JB/ MH TO BE PERPENDICULAR TO THE WALL. THE DUCTS TO BE CUT FLUSH WITH THE INNER WALL AND EDGES TO BE ROUNDED OFF.
8. THE COMMUNICATIONS UTILITY MARKER SHALL BE INSTALLED 4500MM TO THE LEFT FROM PLOT'S CENTER LINE.

23) **JRC14 Notes (These notes applies in 40 M and above corridor width) :-**

1. ALL DIMENTIONS ARE IN MILLIMETES UNLESS OTHERWISE STATED.
2. THE NUMBER AND TYPE OF DUCTS USED TO BE AS PROPOSED BY THE CRA.
3. REINFORCEMENT REPOSITIONED SLIGHTLY TO CLEAR DUCTS WHEN NECESSARY.
4. ALL EXTERNAL CONCRETE SURFACES TO BE PAINTED WITH TWO COATS OF BITUMINPOUS WATER PROOFING PAINT.
5. ALL WORKS TO BE CARRIED OUT AS PER QCS STANDARDS & SPECIFICATIONS.
6. ALL DUCT ENDS MUST BE IN LINE.
7. ALL DUCT ENTRIES TO THE JB/ MH TO BE PERPENDICULAR TO THE WALL. THE DUCTS TO BE CUT FLUSH WITH THE INNER WALL AND EDGES TO BE ROUNDED OFF.
8. TO ACCOMMODATE 6xD54 IN JRC14 AN ADDITIONAL 200MM DPETH IS REQUIRED.
9. THE COMMUNICATIONS UTILITY MARKER SHALL BE INSTALLED 4500MM TO THE LEFT FROM PLOT'S CENTER LINE.

Design Requirements at Intersection/Change of Direction

CRA Design Solution #1:

1. **Design requirements where there is irregular curvature of the road at the intersection point or change of direction on the duct route are:**

1.1. According to QCS Specifications, Section 21, Part 07, Clause 7.3.2(1)(y) "Install no more than equivalent of two 90-degree bends between boxes". If this figure is exceeded, then JRC/MH needs to be installed as centrally as possible in order to bring the bend sum of the angles into compliance (refer to diagram #3)

1.2. Place 1 x MR4 or JRC14 WED (min 3m away from the edge of the road boundary/ intersection on the primary/backbone duct route (40m corridor and above).

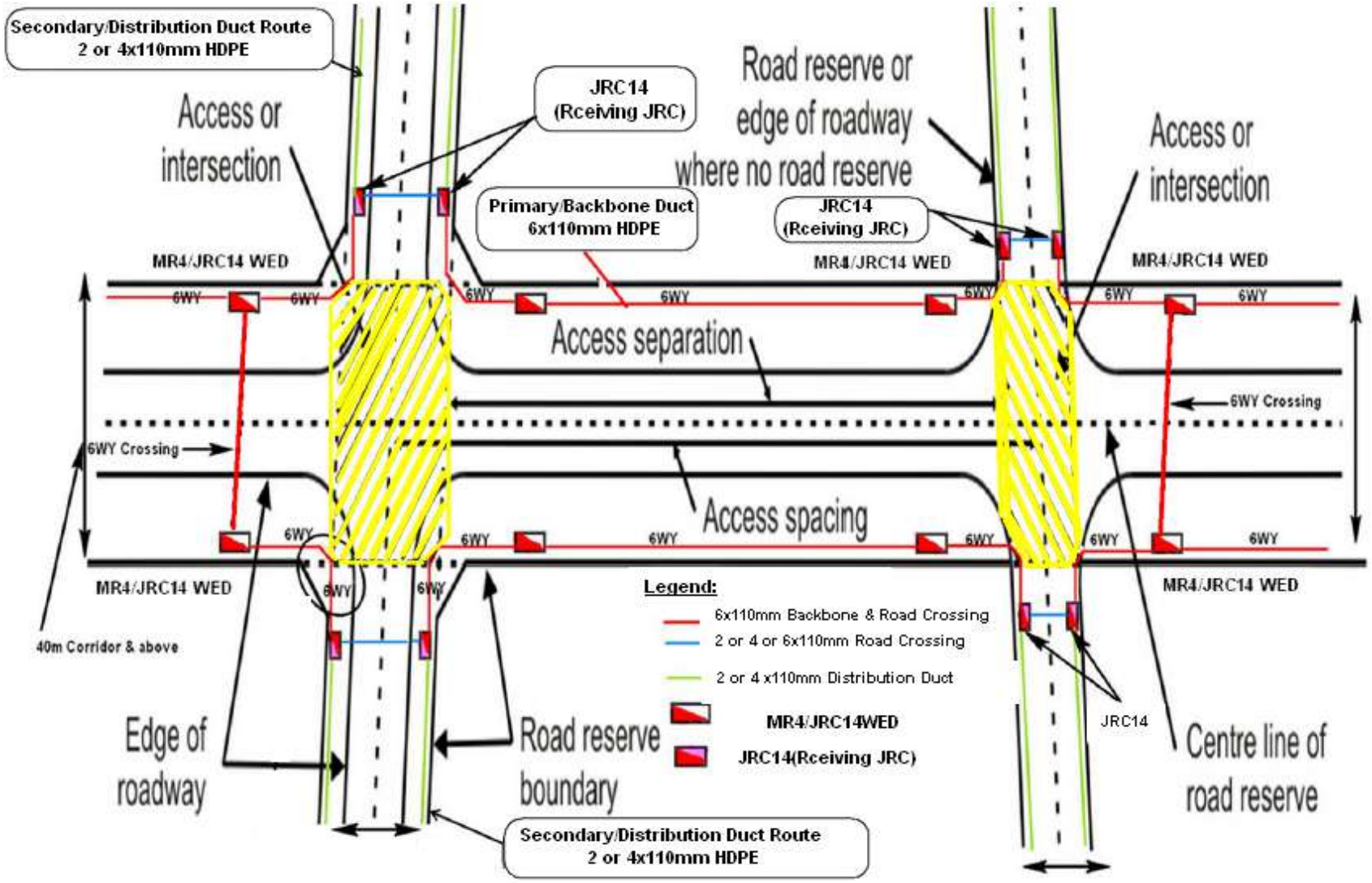
1.3. Place 1xJRC 12 min 3m away from the edge of the road boundary/ intersection of the secondary/distribution duct route (32m corridor and below) and between two manhole duct length to be maintained 50 max

1.4. Reduce number of ducts along the primary/backbone duct route and road crossing to HDPE 6x 110mm.

1.5. Reduce number of ducts on the secondary/distribution duct route and road crossing to either HDPE 2 or 4x110mm (depends on different factors such as corridor width, area type (residential, commercial, etc...)

1.6. JRC12 to be used for plot connection (max 6xplots, and max 4xplot from one side) and the duct length to be maintained to 120m max.

1.7. JRC14 or JRC14 WED to be used for plot connection (max 8xplots, max 4xplots one side) and Lead-in duct length to be maintained to 120m max.



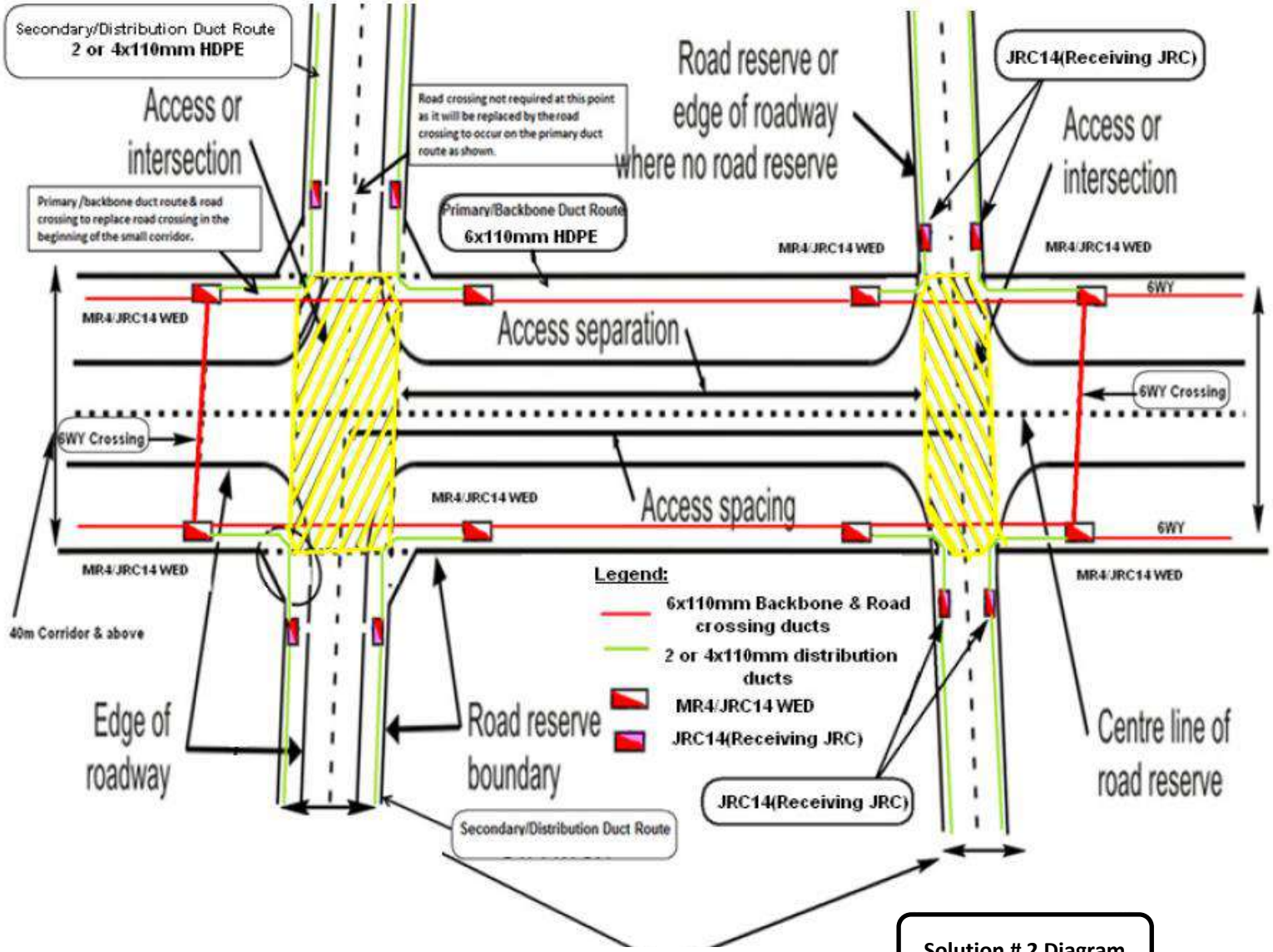
32m Corridor and below

Solution # 1 Diagram

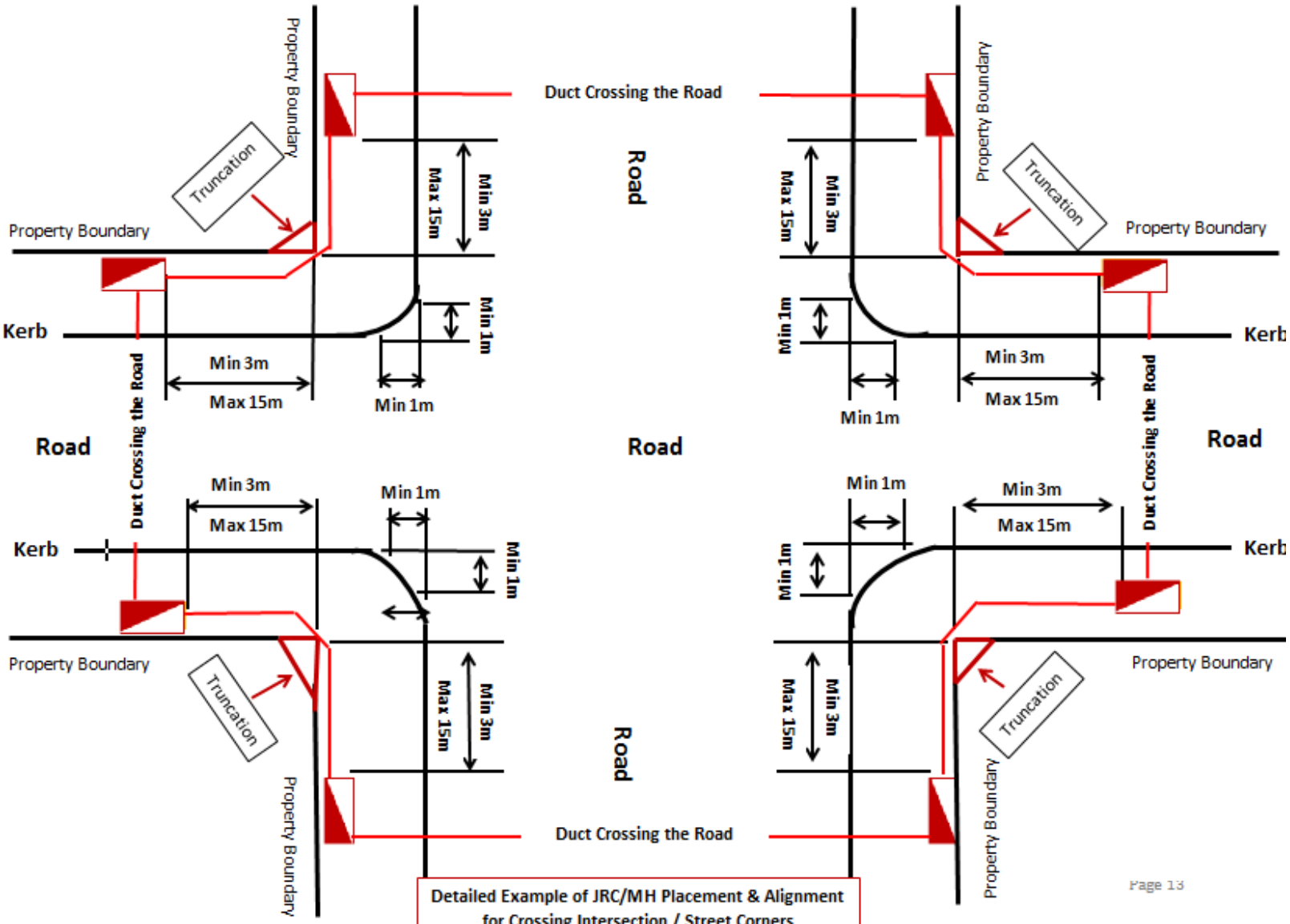
Note: This Diagram is only for Illustration purpose; please refer to the design notes if there is any conflict in the symbology or color.

CRA Design Solution #2:

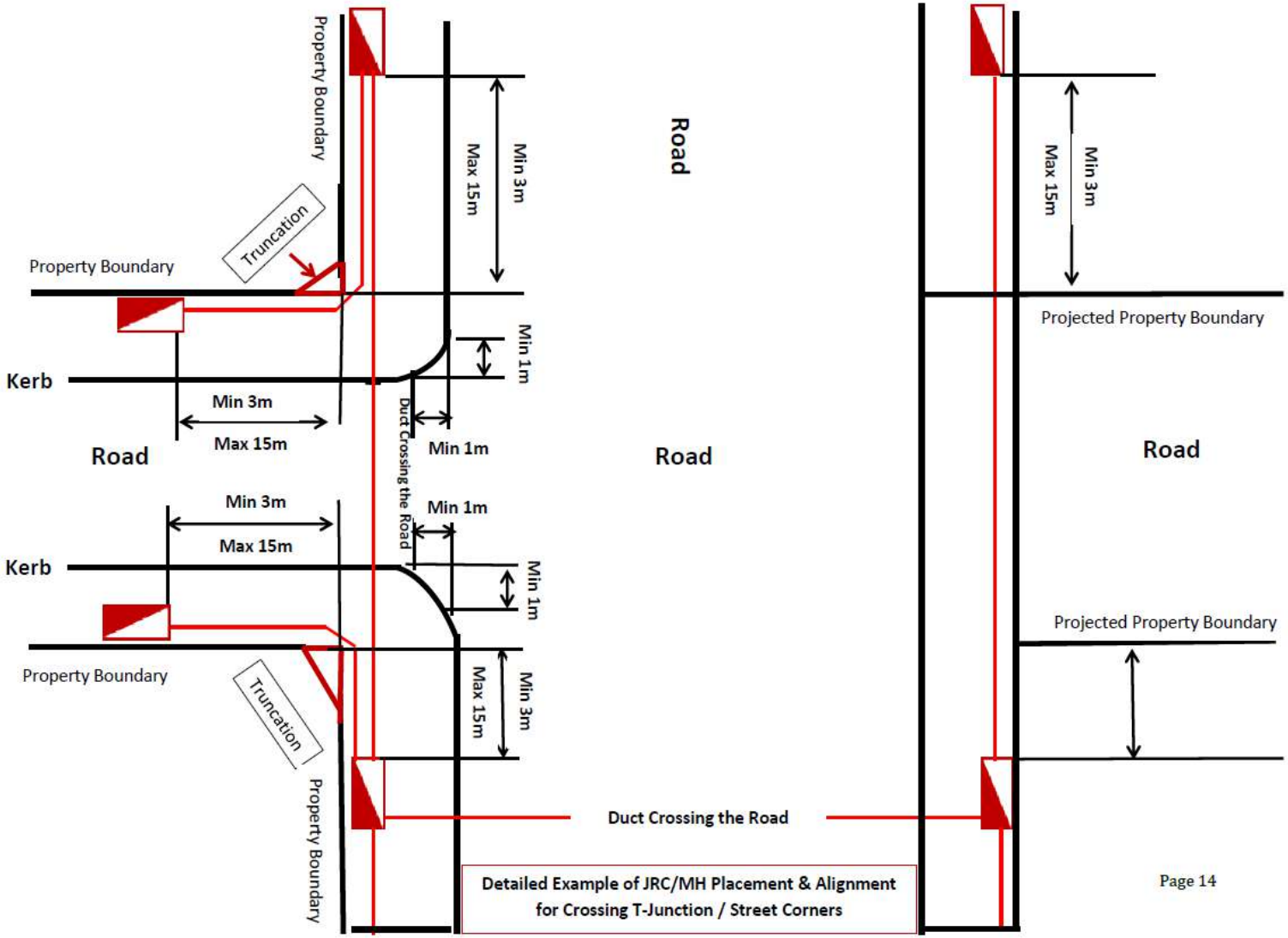
1. Design requirements where there is irregular curvature of the road at the intersection point or change of direction on the duct route are:
   1.1. Maximum sum of 180 degree bends (refer to diagram # 3) is allowed between JRC's /MH's (MR4/JRC14 WED). If this figure is exceeded, then JRC/MH needs to be installed as centrally as possible in order to bring the bend sum of the angles into compliance.
   1.2. Road crossing in the beginning of the small corridor (8m – 24/32m) which intersect with the bigger corridor (32/40 m & above) is not required as it will be replaced by 6x 110mm HDPE duct road crossing to occur on the same path of the backbone duct route at the intersection as shown on the diagram.
   1.3. Place 1xMH (MR4/JRC14 WED) min at 3m min on each corner or edge of the road boundary/ intersection of the primary/backbone duct route (40m corridor and above).
   1.4. Place 1xJRC 12 min 3m away from the edge of the road boundary/ intersection of the secondary/distribution duct route (24/32m corridor and below) and between two manhole duct length to be maintained 50 max.
   1.5. Reduce number of ducts along the primary/backbone duct route and road crossing to 6x 110mm HDPE.
   1.6. Reduce number of ducts on the secondary/distribution duct route and road crossing to either 2 or 4x 110mm HDPE (depends on different factors such as corridor width, area type (residential, commercial, etc...)
   1.7. JRC12 to be used for plot connection (max 6xplots, Max 4xplot from one side) and the Lead-in duct length to be maintained to 120m max.
   1.8. Exit from the MH/JRC14 WED located on the primary/backbone duct route with min 2x110mm HDPE ducts to run the distribution ducts through the JRC12 located on the beginning of the small intersecting corridor as shown below on solution # 2 diagram.
   1.9. JRC14 or JRC14 WED to be used for plot connection (max 8xplots, max 4xplots one side) and Lead-in duct length to be maintained to 120m max.



Note: This Diagram is only for Illustration purpose; please refer to the design notes if there is any conflict in the symbology or color.



Detailed Example of JRC/MH Placement & Alignment for Crossing Intersection / Street Corners



Detailed Example of JRC/MH Placement & Alignment for Crossing T-Junction / Street Corners

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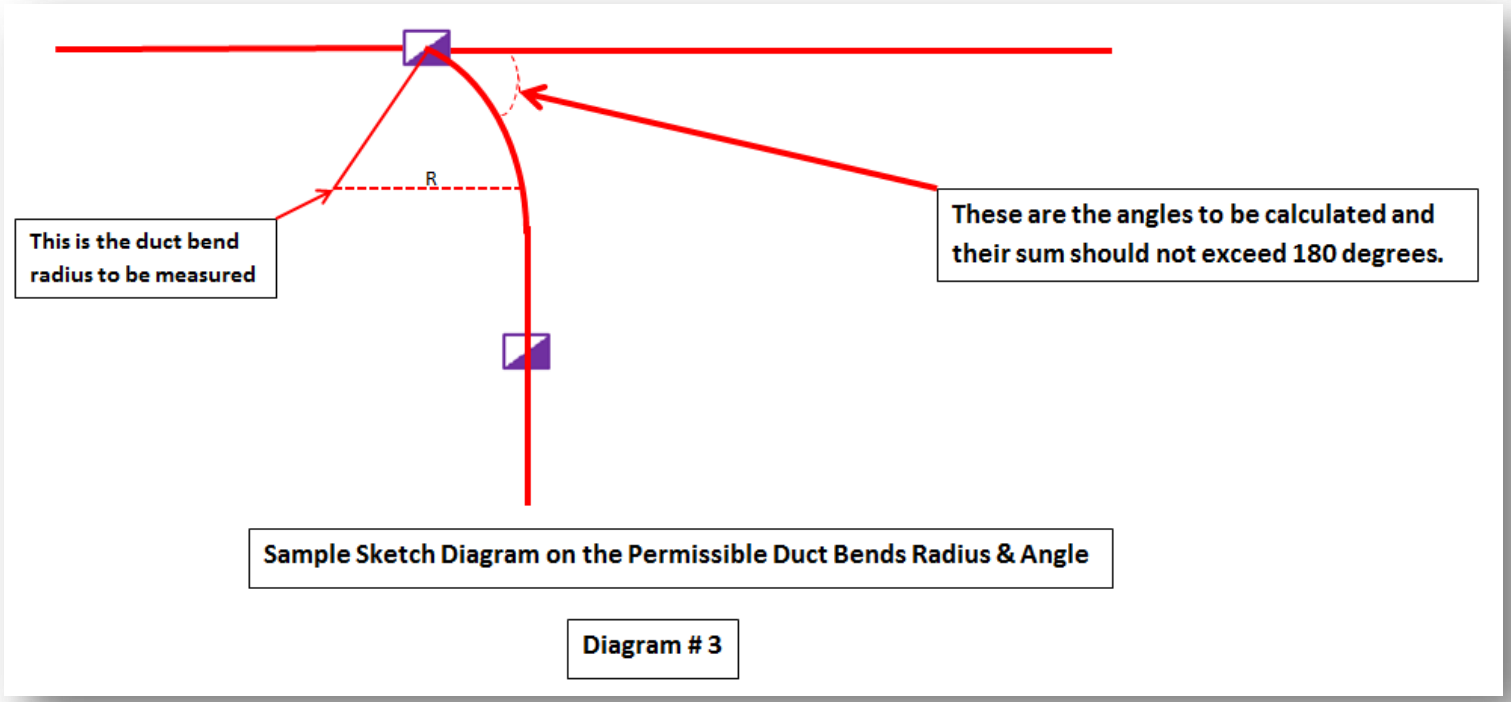
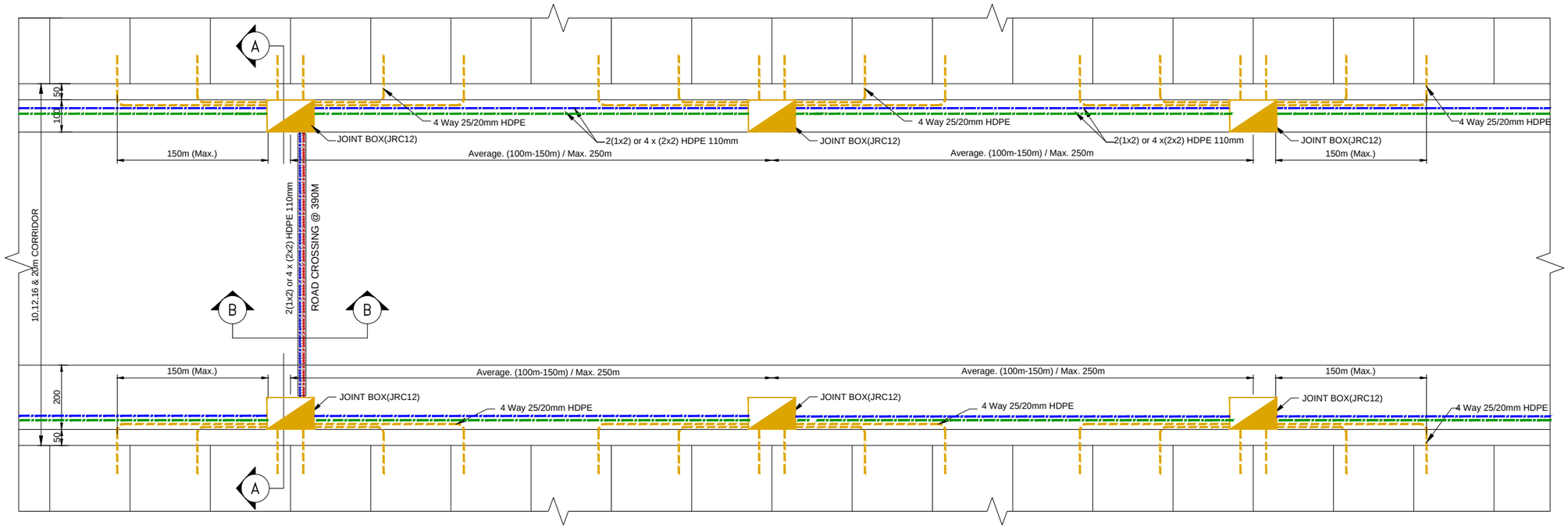


Sample Sketch Diagram on the Permissible Duct Bends Radius & Angle

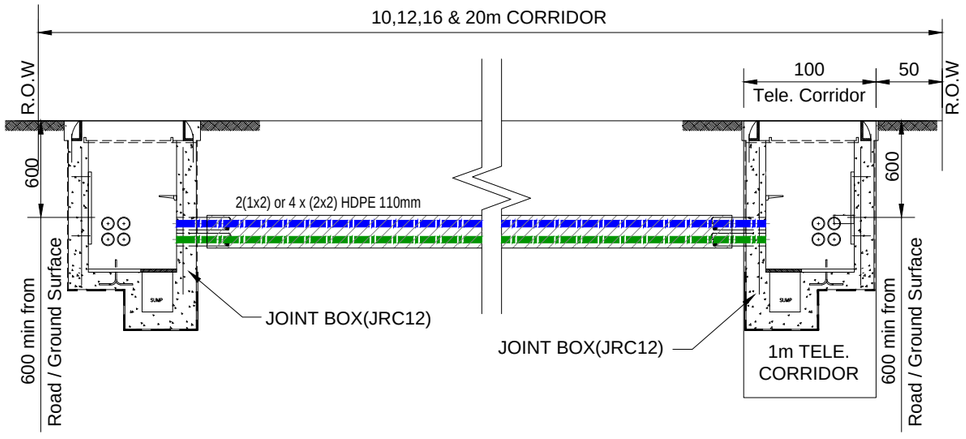
Diagram # 3

Note: According to QCS Specifications, Section 21, Part 07, Clause 7.3.2(1)(y) "Install no more than equivalent of two 90-degree bends between boxes". If this figure is exceeded, then JRC/MH needs to be installed as centrally as possible in order to bring the bend sum of the angles into compliance.



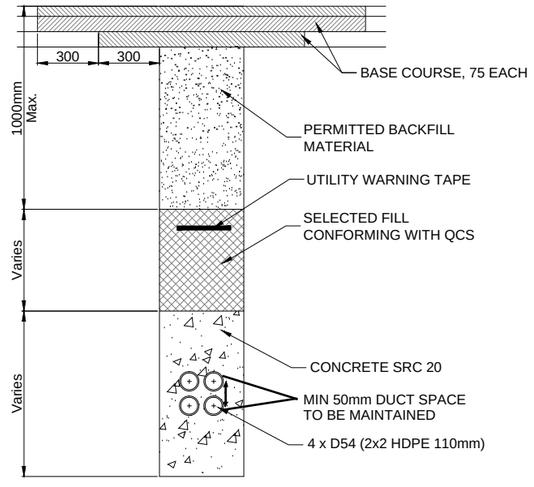
PLAN - 10,12,16 & 20m (NETWROK DEPLOYMENT ON BOTH SIDES)

(SCALE: N.T.S)



SECTION A-A (10,12,16 & 20m CORRIDOR)

(SCALE: N.T.S)



SECTION B-B (ROAD CROSSING)

(SCALE: N.T.S)

JRC/MH Notes For 10,12,16 & 20 m corridor

1. All dimensions are in millimeters unless otherwise stated.
2. The number and type of ducts used to be as proposed by the MICT CRA.
3. Reinforcement repositioned slightly to clear ducts when necessary.
4. All external concrete surfaces to be painted with two coats of bituminous water proofing paint.
5. All works to be carried out as per qcs standards & specifications.
6. All duct ends must be in line.
7. All duct entries to the jb/ mh to be perpendicular to the wall. the ducts to be cut flush with the inner wall and edges to be rounded off.

NOTES:

1. High Density Polyethylene (HDPE) with 110m diameter shall be used in the trenches.
2. HDPE sub ducting with 4 way 25/20mm diameter shall be used for each plot.
3. Colors Blue, Red, Green & Orange recommended for Backbone/Distribution Network and for premises drop network same color for the inner sub ducts with the main outside Yellow color HDPE as main duct (Refer to Picture # 1).
4. Duct bank system shall have 750mm minimum depth from paved level at carriage way or road crossings and minimum distance of 600mm in footway areas.
5. Duct bank shall be separated from electrical duct with a minimum distance of 500mm. This shall be strictly applied on high voltage cable exceeding 650 Volts.
6. Minimum Duct Separation for duct banks laid in parallel to other utilities shall be 200mm minimum and must be developed in close coordination with the respective utility disciplines.
7. Minimum Duct Separation for duct banks laid in parallel to other utilities shall be 150mm minimum and must be developed in close coordination with the respective utility disciplines.
8) Joint Box (JRC14 chamber Type) shall be provided at every change in direction of Duct route. Suitable Manhole MR4 -MRT9 shall be utilized for Exchanges, Point of Presence (POP), or where enclosure required to be build.
9) If the Network Deployment on one side of the road, the chamber distribution should be replicated on the other side of the road with minimum number of 4xD54 duct crossing at each chamber connecting the other side of the road.
10) Endcaps for the Ducts to be provided.
11) Lead In duct should be extended 1M minimum after the plot/premises boundary.
12) utility marker sysbmol to be used as "CRA TEL" inside the plot/premises boundary for the CRA network.
13) Small -Office Home-Office (SOHO) and Residential Services Internal Cabling Guidelines Specifications are applicable for the developers and building owners.
14) In case Joint Box/MH located interfacing 2 plots/premises, those plots can be served directly from the interfacing side and additional 4 lead In ducts (2x2) from the distribution interfaces to serve additional 4 plots/premises and distance not to be extended 150m.
15) JRC/MH should be located in the middle of the boundary wall between two plots.
16) JRC/MH should not be located in the drive way or infront of the plot gate.
17) JRC4 & JRC2 can be used in the following conditions:
    i) where no of plots to be connected below four.
    ii) small lane/sikkahs and streets where it is not visible/feasible to place JRC12.

LEGEND:-

- 6(2x3) HDPE 110mm
- 2(1x2) HDPE 110mm
- 4 x (2x2) HDPE 110mm
- 4 Way 25/20mm HDPE

JRC14 JRC14-WED
JRC12 JRC4
MRT9 MR4
MR2

4 Way 25/20mm HDPE

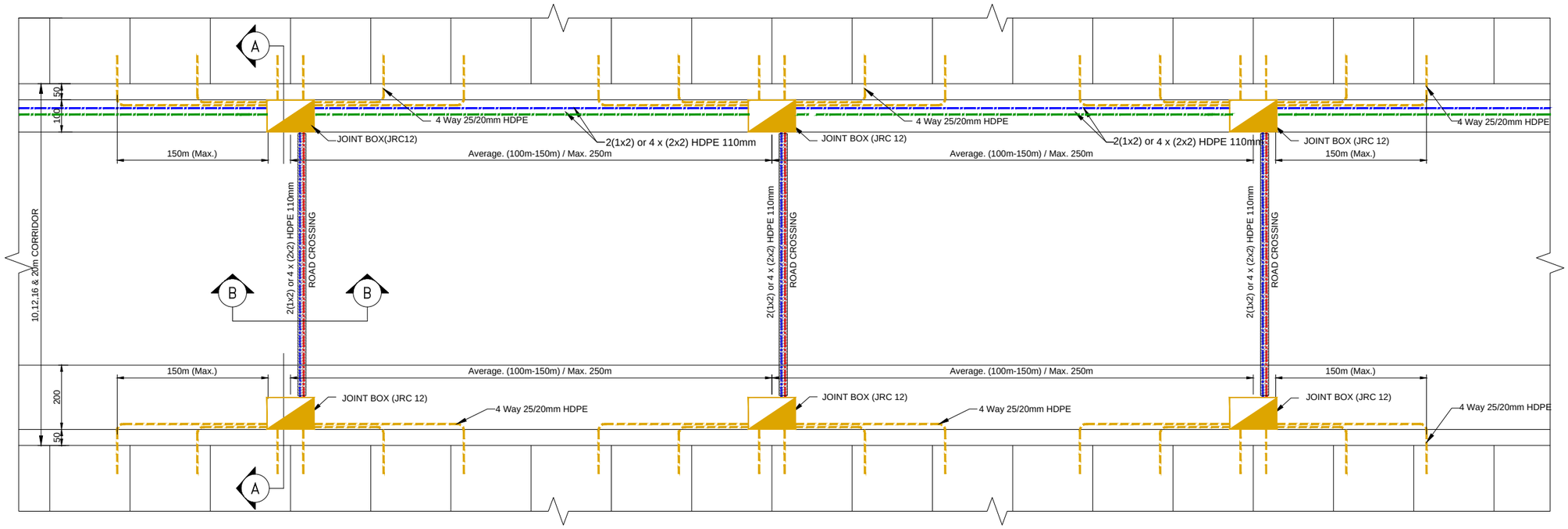
TITLE

JOINT BOX - JRC 12
FOR 10,12,16 & 20m CORRIDOR
(NETWORK DEPLOYMENT ON BOTH SIDES)

PROJECT DOCUMENTATION REFERENCE NO.

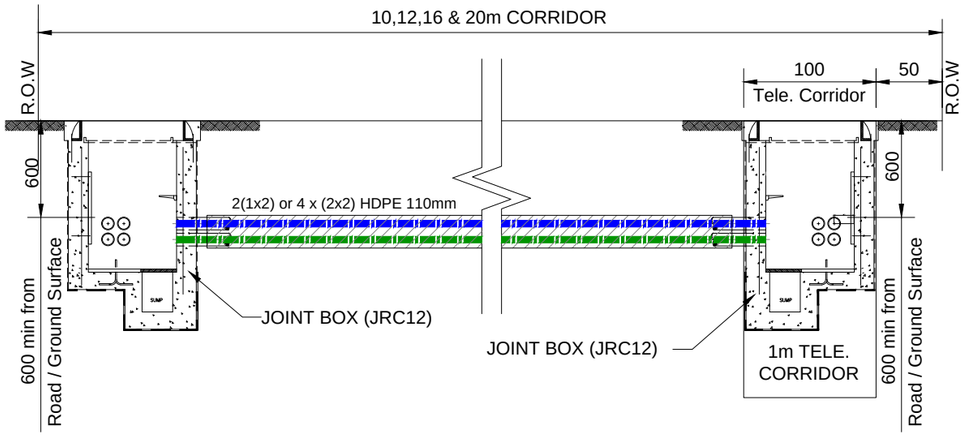
DRAWING NO.	SCALE	DATE	SHEET	REV
XX	NTS	12-07-1a5		XX

PREPARED BY	REVISED BY	REVIEW & APPROVED	REMARKS
XX	XX	XX	



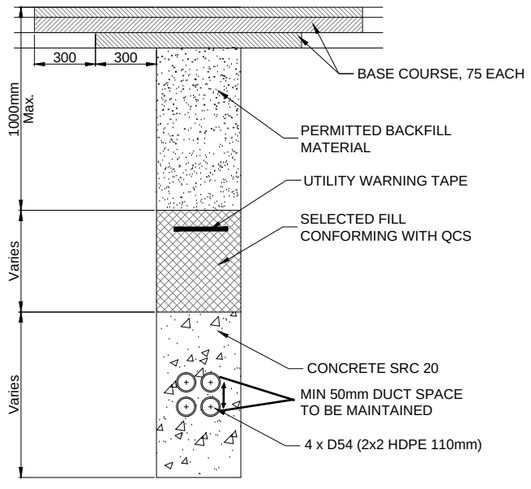
PLAN - 10,12,16 & 20m CORRIDOR (NETWORK DEPLOYMENT ON ONE SIDE)

(SCALE: N.T.S)



SECTION A-A (10,12,16 & 20m CORRIDOR)

(SCALE: N.T.S)



SECTION B-B (ROAD CROSSING)

(SCALE: N.T.S)

JRC/MH Notes For 10,12,16 & 20 m corridor

1. All dimensions are in millimeters unless otherwise stated.
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5. All works to be carried out as per qcs standards & specifications.
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7. All duct entries to the jb/ mh to be perpendicular to the wall. the ducts to be cut flush with the inner wall and edges to be rounded off.

NOTES:

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2. HDPE sub ducting with 4 way 25/20mm diameter shall be used for each plot.
3. Colors Blue, Red, Green & Orange recommended for Backbone/Distribution Network and for premises drop network same color for the inner sub ducts with the main outside Yellow color HDPE as main duct (Refer to Picture # 1).
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16) JRC/MH should not be located in the drive way or infront of the plot gate.
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    i) where no of plots to be connected below four.
    ii) small lane/sikkahs and streets where it is not visible/feasible to place JRC12.

LEGEND:-

- 6(2x3) HDPE 110mm
- 2(1x2) HDPE 110mm
- 4 x (2x2) HDPE 110mm
- 4 Way 25/20mm HDPE
- JRC14
- JRC14-WED
- JRC12
- JRC4
- MRT9
- MR4
- MR2
- 4 Way 25/20mm HDPE

TITLE

JOINT BOX - JRC 12
FOR 10,12,16 & 20m CORRIDOR
(NETWORK DEPLOYMENT ON ONE SIDE)

PROJECT DOCUMENTATION REFERENCE NO.

DRAWING NO.	SCALE	DATE	SHEET	REV
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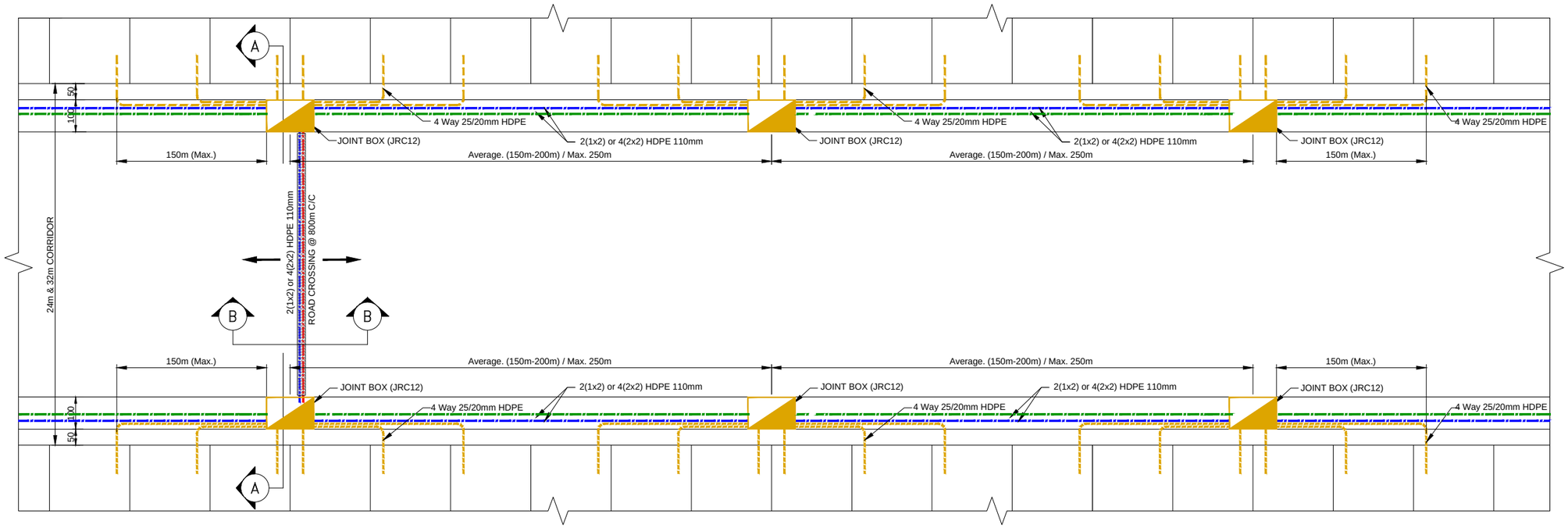
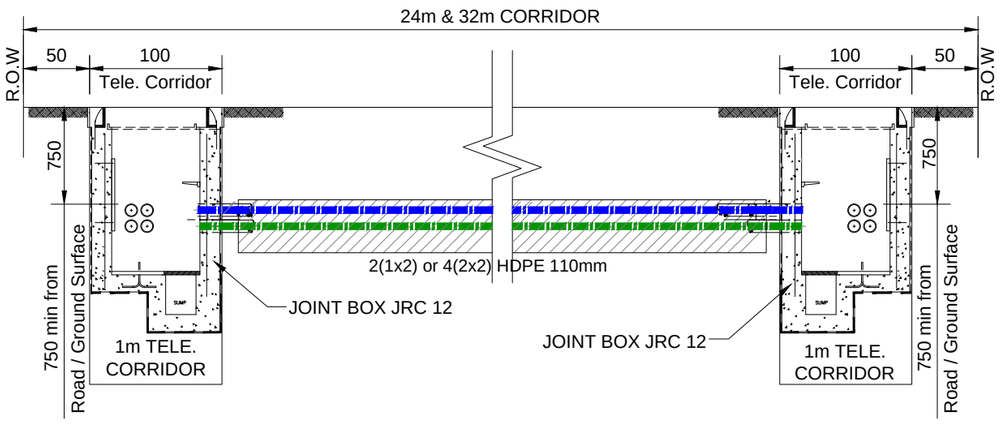
PREPARED BY	REVISED BY	REVIEW & APPROVED	REMARKS
XX	XX	XX	



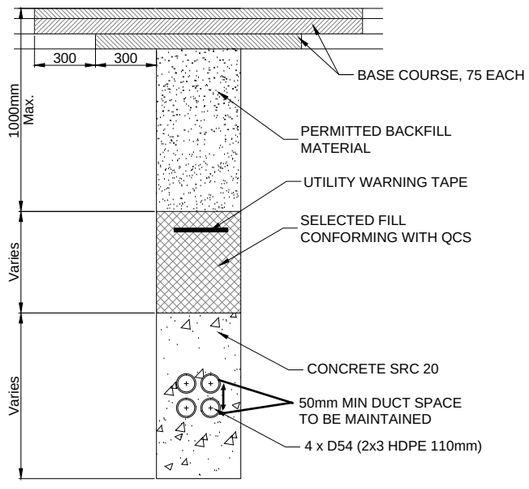
PLAN - 24m & 32m CORRIDOR

(SCALE: N.T.S)



SECTION A-A (24m & 32m CORRIDOR)

(SCALE: N.T.S)



SECTION B-B (ROAD CROSSING @ 800m C/C)

(SCALE: N.T.S)

JRC/MH Notes For 24 & 32 m corridor

1. All dimensions are in millimeters unless otherwise stated.
2. The number and type of ducts used to be as proposed by the MICT CRA.
3. Reinforcement repositioned slightly to clear ducts when necessary.
4. All external concrete surfaces to be painted with two coats of bituminous water proofing paint.
5. All works to be carried out as per qcs standards & specifications.
6. All duct ends must be in line.
7. All duct entries to the jb/ mh to be perpendicular to the wall. the ducts to be cut flush with the inner wall and edges to be rounded off.
8. To accommodate more than 4xd54 in jrc12/14 an additional 200mm is required.

NOTES:

1. High Density Polyethylene (HDPE) with 110m diameter shall be used in the trenches.
2. HDPE sub ducting with 4 way 25/20mm diameter shall be used for each plot.
3. Colors Blue, Red, Green & Orange recommended for Backbone/Distribution Network and for premises drop network same color for the inner sub ducts with the main outside Yellow color HDPE as main duct (Refer to Picture # 1).
4. Duct bank system shall have 750mm minimum depth from paved level at carriage way or road crossings and minimum distance of 600mm in footway areas.
5. Duct bank shall be separated from electrical duct with a minimum distance of 500mm. This shall be strictly applied on high voltage cable exceeding 650 Volts.
6. Minimum Duct Separation for duct banks laid in parallel to other utilities shall be 200mm minimum and must be developed in close coordination with the respective utility disciplines.
7. Minimum Duct Separation for duct banks laid in parallel to other utilities shall be 150mm minimum and must be developed in close coordination with the respective utility disciplines.
8) Joint Box (JRC14 chamber Type) shall be provided at every change in direction of Duct route. Suitable Manhole MR4 -MRT9 shall be utilized for Exchanges, Point of Presence (POP), or where enclosure required to be build.
9) If the Network Deployment on one side of the road, the chamber distribution should be replicated on the other side of the road with minimum number of 4xD54 duct crossing at each chamber connecting the other side of the road.
10) Endcaps for the Ducts to be provided.
11) Lead In duct should be extended 1M minimum after the plot/premises boundary.
12) utility marker sysbmol to be used as "CRA TEL" inside the plot/premises boundary for the CRA network.
13) Small -Office Home-Office (SOHO) and Residential Services Internal Cabling Guidelines Specifications are applicable for the developers and building owners.
14) In case Joint Box/MH located interfacing 2 plots/premises, those plots can be served directly from the interfacing side and additional 4 lead In ducts (2x2) from the distribution interfaces to serve additional 4 plots/premises and distance not to be extended 150m.
15) JRC/MH should be located in the middle of the boundary wall between two plots.
16) JRC/MH should not be located in the drive way or infront of the plot gate.
17) JRC4 & JRC2 can be used in the following conditions:
    i) where no of plots to be connected below four.
    ii) small lane/sikkahs and streets where it is not visible/feasible to place JRC12.

LEGEND:-

- 6(2x3) HDPE 110mm
- 2(1x2) HDPE 110mm
- 4 x (2x2) HDPE 110mm
- 4 Way 25/20mm HDPE

JRC14 JRC14-WED
JRC12 JRC4
MRT9 MR4
MR2

4 Way 25/20mm HDPE

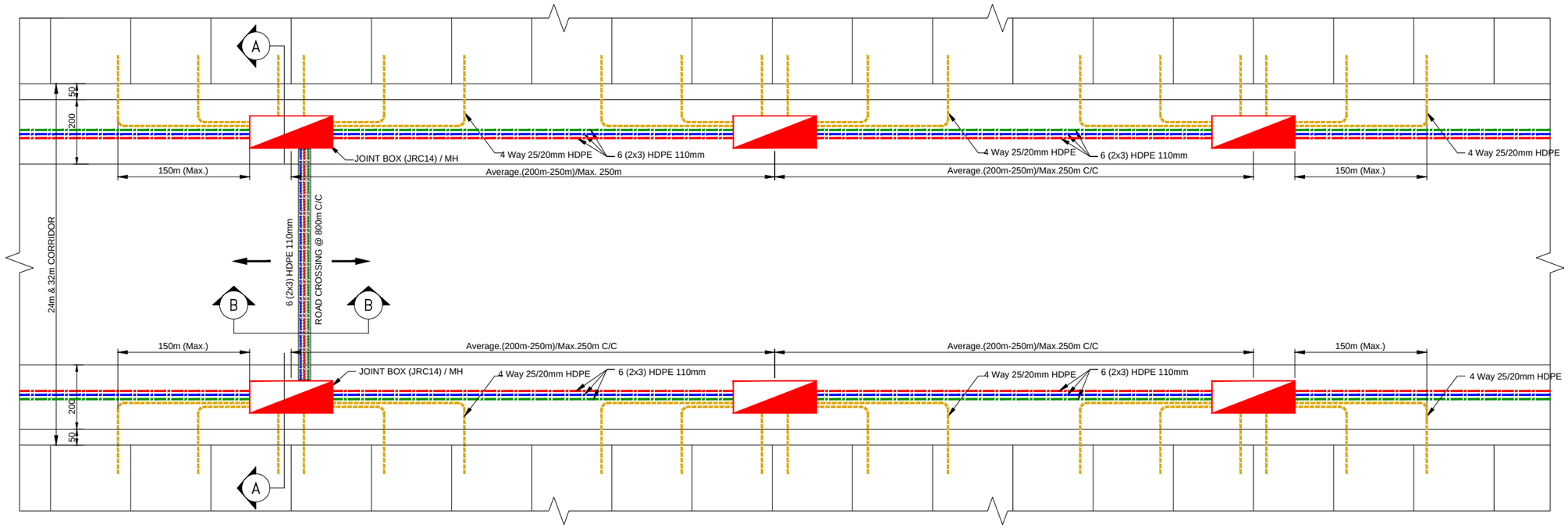
TITLE

JOINT BOX - JRC 12
FOR 24m & 32m CORRIDOR

PROJECT DOCUMENTATION REFERENCE NO.
Qnbn.CVL01–2014

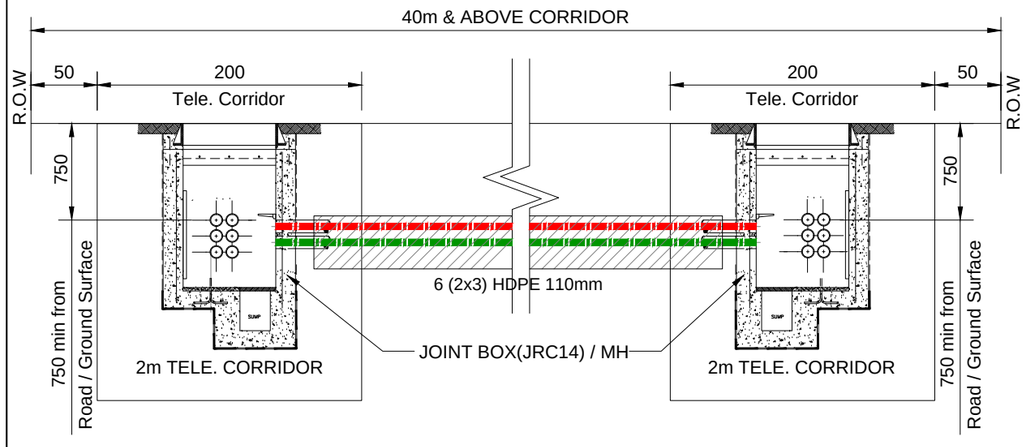
DRAWING NO.	SCALE	DATE	SHEET	REV
XX	NTS	12–07–15		XX

PREPARED BY	REVISED BY	REVIEW & APPROVED	REMARKS
XX	XX	XX	



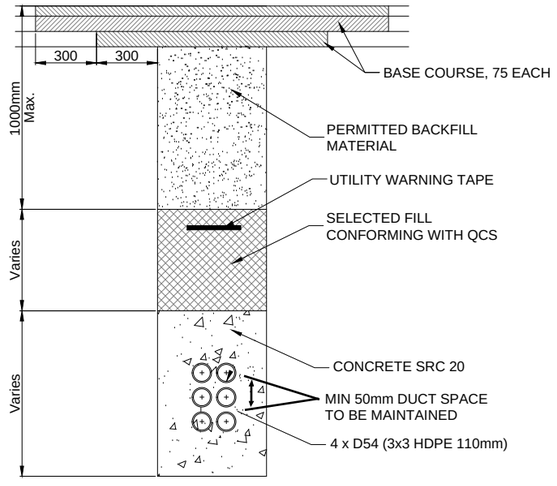
PLAN - 40m & ABOVE CORRIDOR

(SCALE: N.T.S)



SECTION A-A (40m & ABOVE CORRIDOR)

(SCALE: N.T.S)



SECTION B -B (ROAD CROSSING @ 800m C/C)

(SCALE: N.T.S)

JRC14/MH Notes For 40m and above corridor

1. All dimensions are in millimeters unless otherwise stated.
2. The number and type of ducts used to be as proposed by the MICT CRA.
3. Reinforcement repositioned slightly to clear ducts when necessary.
4. All external concrete surfaces to be painted with two coats of bituminous water proofing paint.
5. All works to be carried out as per qcs standards & specifications.
6. All duct ends must be in line.
7. All duct entries to the jb/ mh to be perpendicular to the wall. the ducts to be cut flush with the inner wall and edges to be rounded off.
8. To accommodate more than 6xd54 in manhole an additional 200mm is required.
9. To accommodate 6xd54 in JRC14 an additional 200mm is required.

NOTES:

1. High Density Polyethylene (HDPE) with 110m diameter shall be used in the trenches.
2. HDPE sub ducting with 4 way 25/20mm diameter shall be used for each plot.
3. Colors Blue, Red, Green & Orange recommended for Backbone/Distribution Network and for premises drop network same color for the inner sub ducts with the main outside Yellow color HDPE as main duct (Refer to Picture # 1).
4. Duct bank system shall have 750mm minimum depth from paved level at carriage way or road crossings and minimum distance of 600mm in footway areas.
5. Duct bank shall be separated from electrical duct with a minimum distance of 500mm. This shall be strictly applied on high voltage cable exceeding 650 Volts.
6. Minimum Duct Separation for duct banks laid in parallel to other utilities shall be 200mm minimum and must be developed in close coordination with the respective utility disciplines.
7. Minimum Duct Separation for duct banks laid in parallel to other utilities shall be 150mm minimum and must be developed in close coordination with the respective utility disciplines.
8. Joint Box (JRC14 chamber Type) shall be provided at every change in direction of Duct route. Suitable Manhole MR4 -MRT9 shall be utilized for Exchanges, Point of Presence (POP), or where enclosure required to be build.
9. If the Network Deployment on one side of the road, the chamber distribution should be replicated on the other side of the road with minimum number of 4xD54 duct crossing at each chamber connecting the other side of the road.
10. Endcaps for the Ducts to be provided.
11. Lead In duct should be extended 1M minimum after the plot/premises boundary.
12. utility marker sysbmol to be used as "CRA TEL" inside the plot/premises boundary for the CRA network.
13. Small -Office Home-Office (SOHO) and Residential Services Internal Cabling Guidelines Specifications are applicable for the developers and building owners.
14. In case Joint Box/MH located interfacing 2 plots/premises, those plots can be served directly from the interfacing side and additional 4 lead In ducts (2x2) from the distribution interfaces to serve additional 4 plots/premises and distance not to be extended 150m.
15. JRC/MH should be located in the middle of the boundary wall between two plots.
16. JRC/MH should not be located in the drive way or infront of the plot gate.
17. JRC4 & JRC2 can be used in the following conditions:
    i) where no of plots to be connected below four.
    ii) small lane/sikkahs and streets where it is not visible/feasible to place JRC12.

LEGEND:-

- 6(2x3) HDPE 110mm
- 2(1x2) HDPE 110mm
- 4 x (2x2) HDPE 110mm
- 4 Way 25/20mm HDPE
- JRC14
- JRC14-WED
- JRC12
- JRC4
- MRT9
- MR4
- MR2
- 4 Way 25/20mm HDPE

TITLE

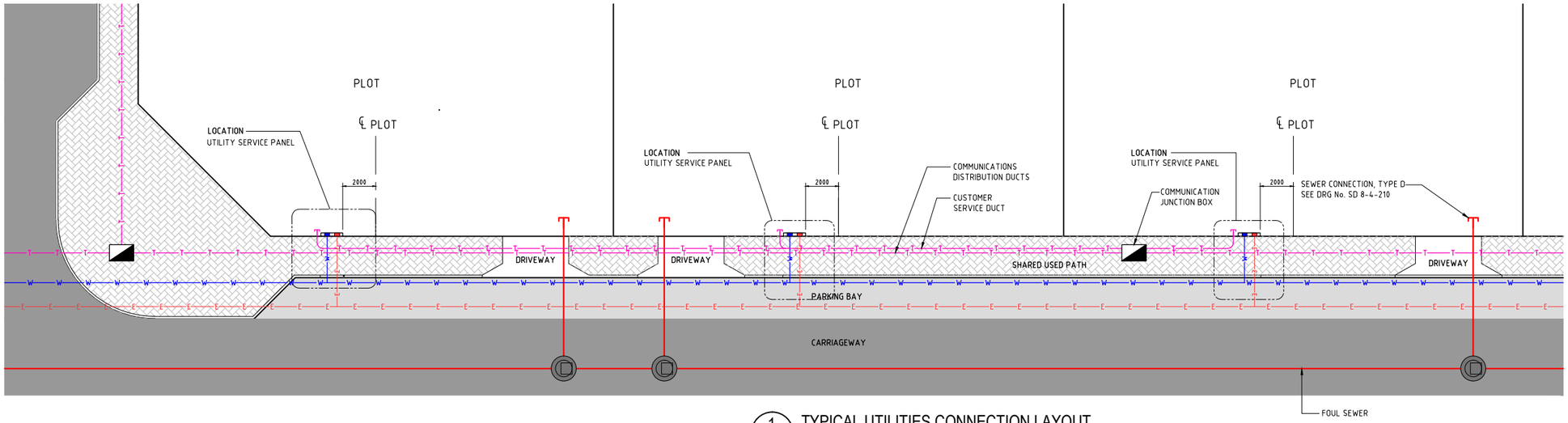
JOINT BOX - JRC 14
FOR 40m AND ABOVE CORRIDOR

PROJECT DOCUMENTATION REFERENCE NO.
Qnbn.CVL01–2014

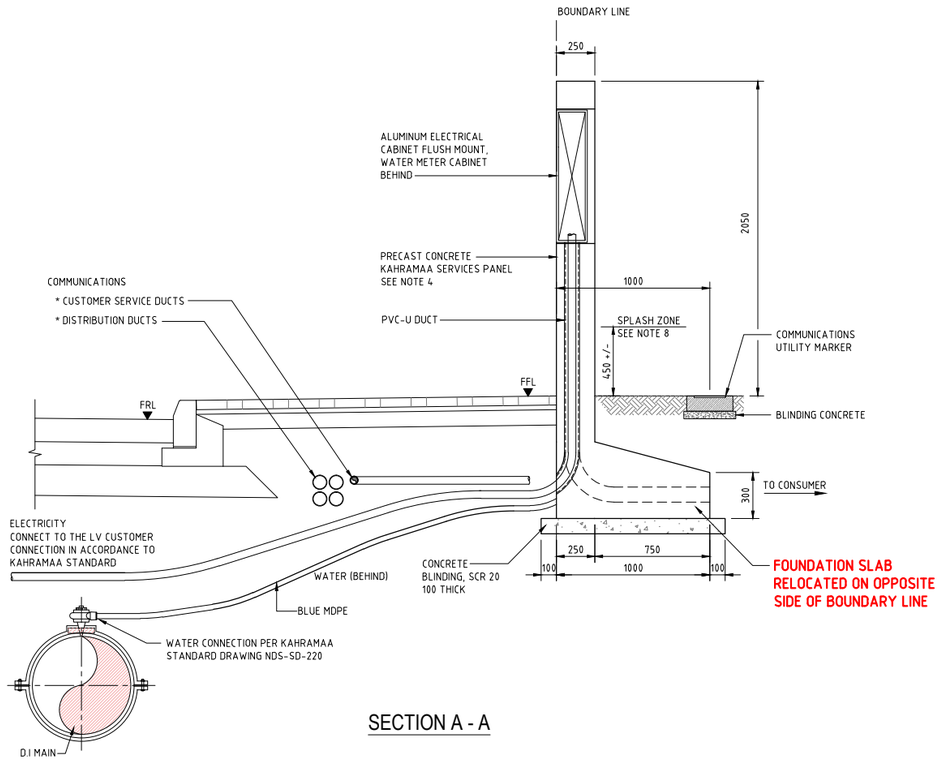
DRAWING NO.	SCALE	DATE	SHEET	REV
XX	NTS	12–07–15		XX

PREPARED BY	REVISED BY	REVIEW & APPROVED	REMARKS
XX	XX	XX	

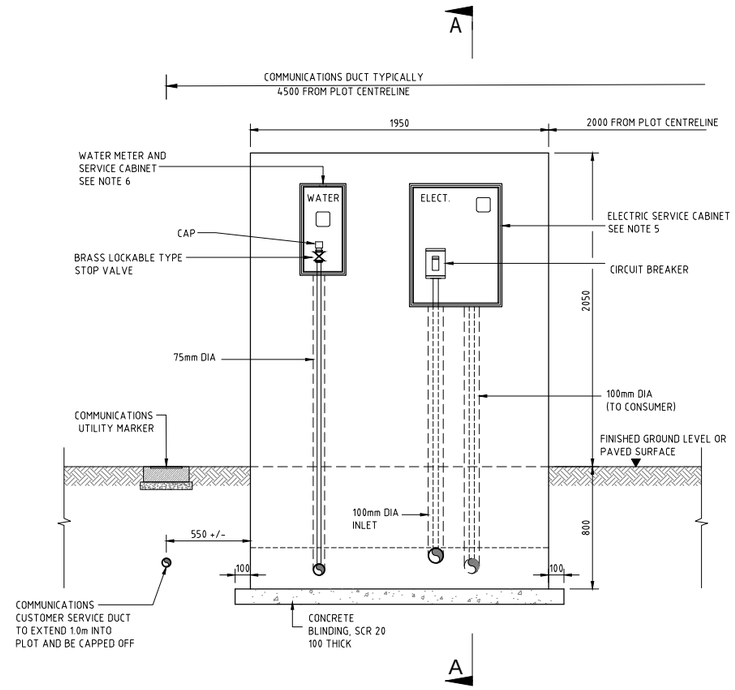
Utility Mareker



1 TYPICAL UTILITIES CONNECTION LAYOUT
SCALE N.T.S.



SECTION A - A



ELEVATION

2 TYPICAL SERVICE PANEL LAYOUT
SCALE N.T.S.

NOTES:

1) Lead In duct should be extended 1M minimum after the plot/premises boundary.
2) CRA Marker shoud be labeled as " CRA-TEL" inline with the Lead-in location.
3) CRA Marker shoud be clearly visible.

LEGEND:

- TELECOMMUNICATIONS
- POTABLE WATER SUPPLY
- ELECTRICITY
- SEWERAGE

LEGEND:

FFL	FINISHED FOOTWAY LEVEL
FRL	FINISHED ROAD LEVEL
PVC-U	POLYVINYL CHLORIDE - UNPLASTICISED
SRC	SULPHATE RESISTANT CEMENT

Communications Regulatory Authority State of Qatar
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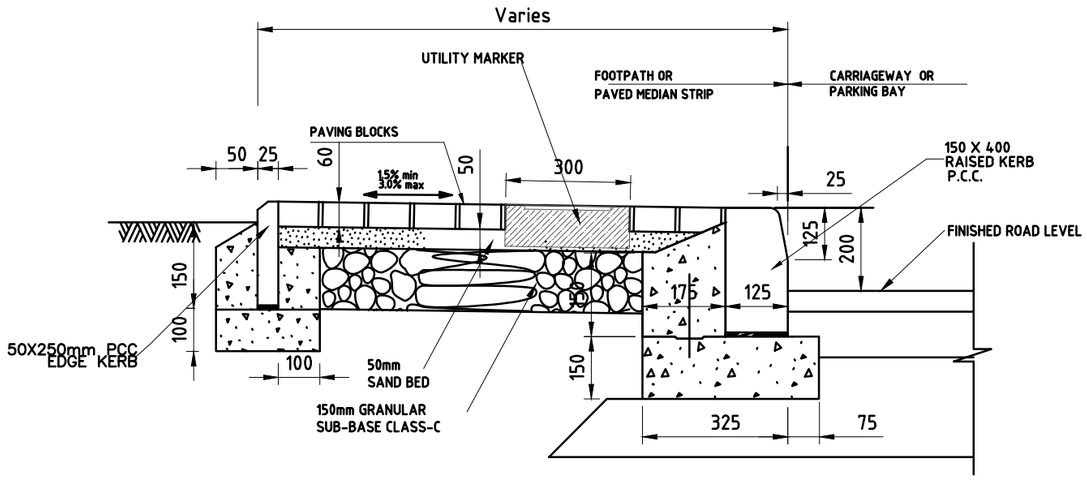
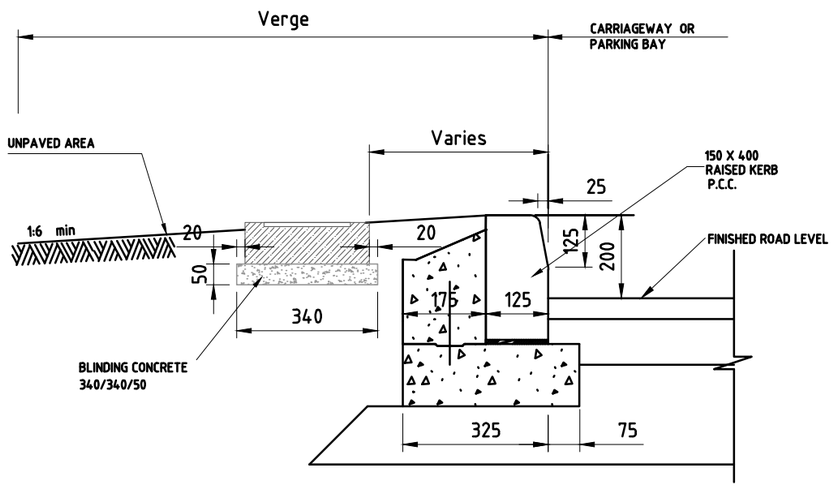
UTILITIES
CONNECTION DETAIL

Approved:	Sheet No:
Date:	Scale:
Drawing Number:	Revision:

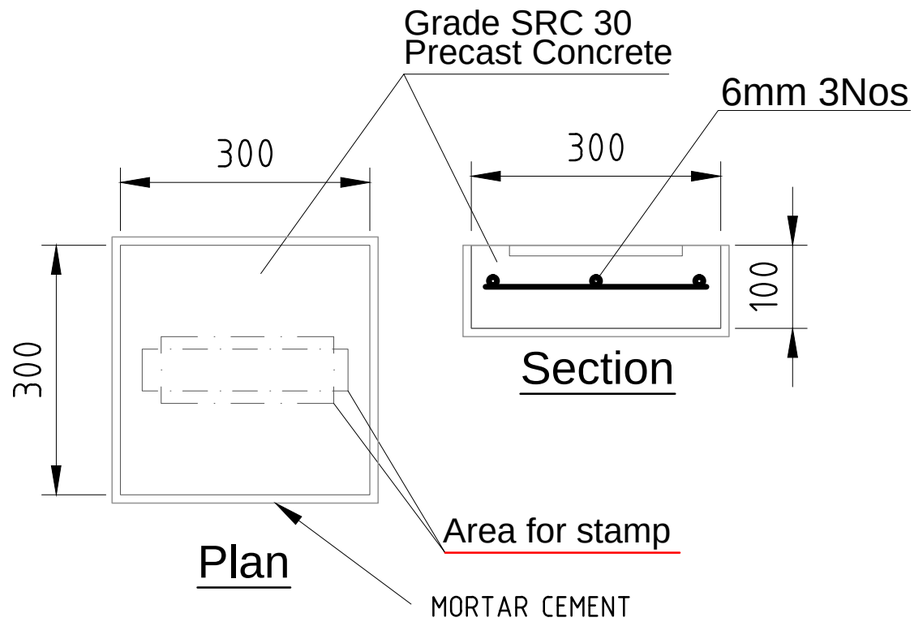
Utility Mareker

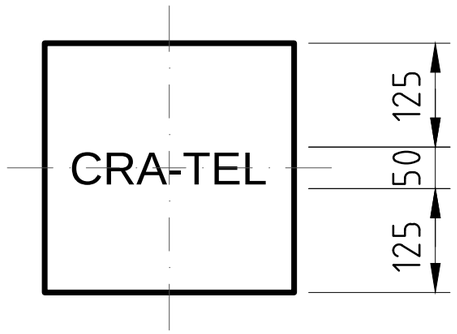


DETAIL FOR PLACEMENT OF MARKER
TILES IN SIDEWALK AREA

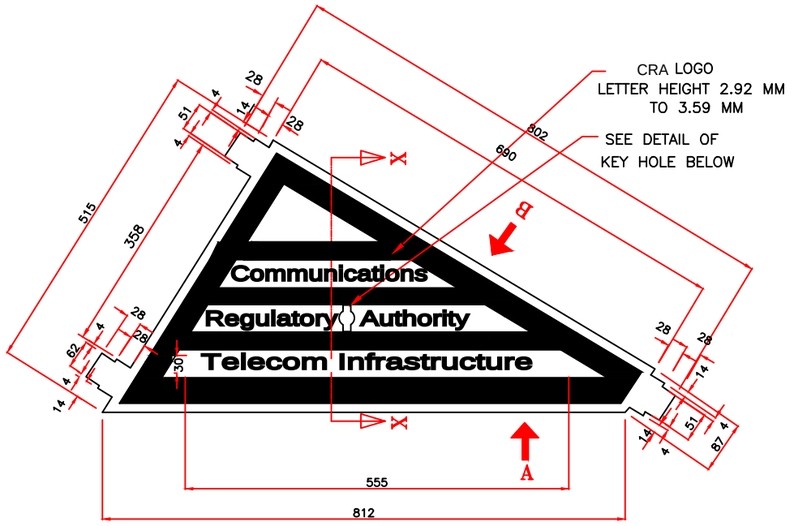


DETAIL FOR PLACEMENT OF MARKER
TILES IN VERGES AND GREEN AREA

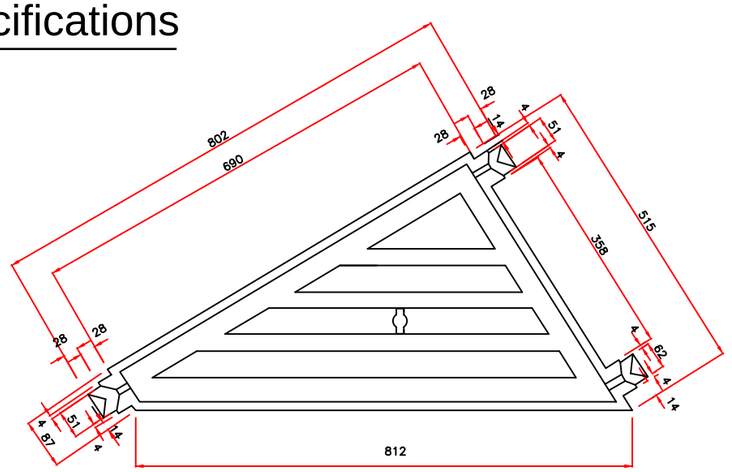




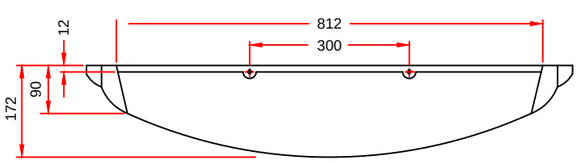
Frames & Covers Specifications



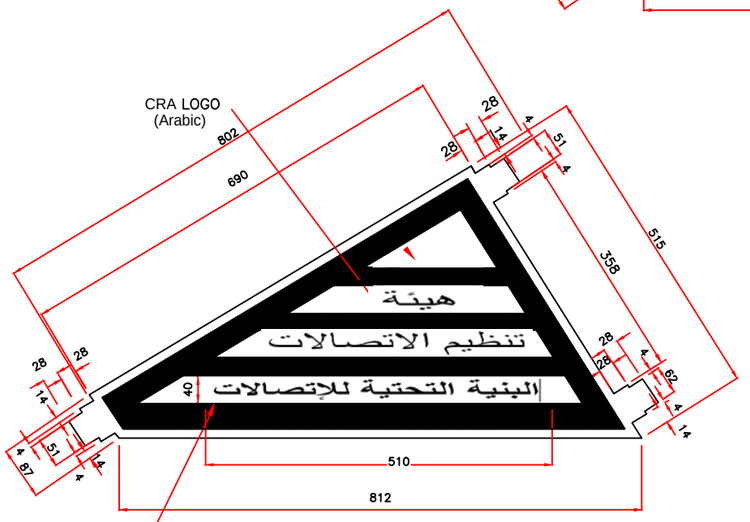
TOP PLAN (COVER 1)



BOTTOM PLAN (COVER)

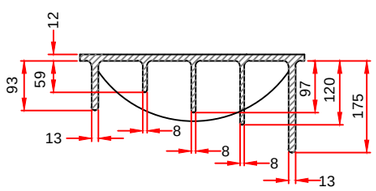


ELEVATION–A

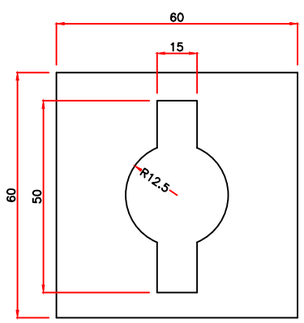


TOP PLAN (COVER 2)

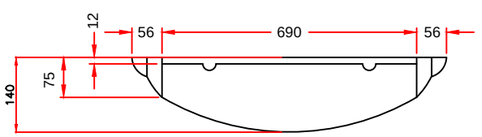
Letter Height 2.92mm Io 3.59mm



SECTION–X–X



DETAIL OF KEYHOLE



ELEVATION–B

NOTES :

1. MATERIAL - DUCTILE IRON.
2. MARKING - COVER SHALL BE MARKED WITH INSCRIPTION AS PER DRAWING OF EACH COVER. MANUFACTURER'S CODE LETTERS AND LAST TWO FIGURES OF GREGORIAN YEAR OF MANUFACTURE SHALL BE MARKED ON THE UNDER SIDE OF EACH COVER.
3. FINISH - SOLID TOP DESIGN WITH NON-SKID RAISED PATTERN ON THE UPPER FACE.
4. CLEARANCE - 2MM TO 5MM SHALL EXIST ALL AROUND COVERS WHEN INSTALLED IN FRAME.
5. DIMENSION - ALL DIMENSIONS ARE IN MM.
6. REF. SEC. X-X THE DESIGN OF THE BOTTOM RE-INFORCING WEB CASTING SHOULD BE ADEQUATE TO MEET THE LOADING SPECIFICATION AND TO ENSURE THE BALANCE OF THE COVER CENTERED APPROXIMATELY ON THE KEY HOLES.
7. THE UNDER SIDE OF KEY HOLE SHALL HAVE A RECESS CAST IN TO PREVENT KEY BEING TURNED WHEN BEARING WEIGHT OF COVER. DIMENSIONS WILL BE TO MATCH KEY HOLE.
8. THE DIA OF HOLE WILL BE 25MM AND PLACED WITH CENTER AT 25MM FROM THE SURFACE OF THE COVER.
9. THE COVER ELEVATION DIAGRAM FLANGE BEARING MEASUREMENTS SHOWN SHOULD CONFORM WITH FRAME SEAT MEASUREMENT TO ENSURE A NON ROCKING AND NON JAMMING FITTING.
10. TOLERANCE - FOR THICKNESS ± 2MM AND OVERALL ± 3MM.
11. WEIGHT - TOTAL WEIGHT SHOULD BE NOT LESS THAN 60 KG. FOR EACH TRIANGULAR.
12. PAINTING - TWO COATS OF BLACK BITUMINOUS PAINT APPLIED ON TOP OF GREY COLOUR PRIMER AS PER BS 4164:2002.
13. CERTIFICATION - THE PRODUCT NEEDS KITEMARK CERTIFICATION FROM BSI (UK).
14. KEY HOLE - TO BE APPLIED FOR ALL DUCTILE TYPE COVERS.

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TITLE

COVER TO FIT FRAMES OF JRC12 & JRC14

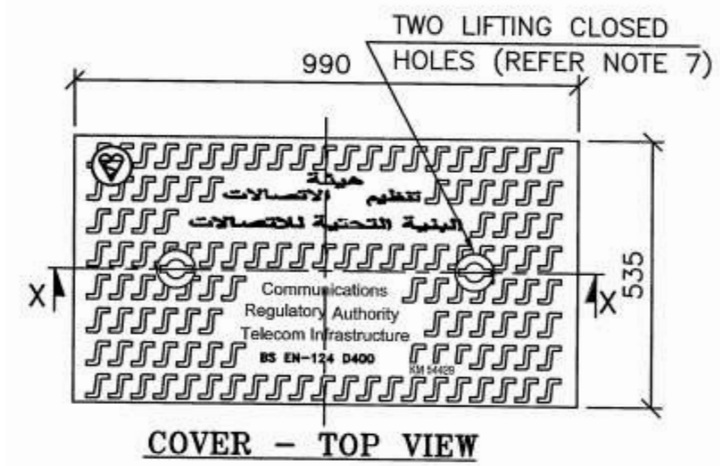
PROJECT DOCUMENTATION REFERENCE NO.

REFERENCE DRAWINGS FOR FRAME : CVL14002

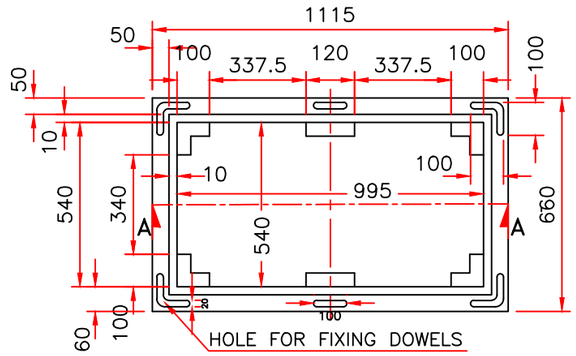
DRAWING NO.	SCALE	DATE	SHEET	REV

PREPARED BY	REVISED BY	Review & Approved	Remarks

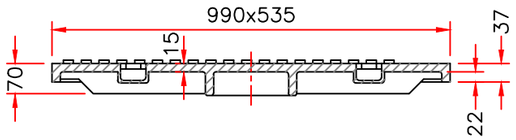
Frames & Covers Specifications



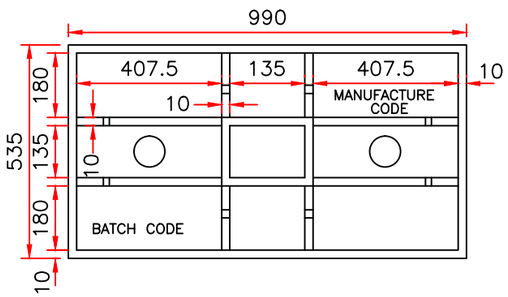
COVER – TOP VIEW



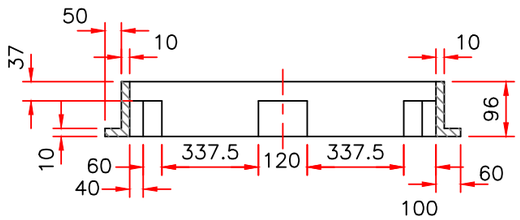
FRAME



SECTION XX



COVER BACK VIEW



SECTION AA

SL. NO.	INTERNAL	EXTERNAL	DEPTH	TOTAL WT.	FRAME. WT.	COVER. WT.	GRADE
	MM.	MM.	MM.	KG.	KG.	KG.	
A	995 x 540	1115 x 660	96	128	48 ±2	80 ±2	D–400

NOTES :

1. MATERIAL - DUCTILE IRON.
2. MARKING - COVER SHALL BE MARKED WITH INSCRIPTION AS PER DRAWING OF EACH COVER. MANUFACTURER'S CODE LETTERS AND LAST TWO FIGURES OF GREGORIAN YEAR OF MANUFACTURE SHALL BE MARKED ON THE UNDER SIDE OF EACH COVER.
3. FINISH - SOLID TOP DESIGN WITH NON-SKID RAISED PATTERN ON THE UPPER FACE.
4. CLEARANCE - 2MM TO 5MM SHALL EXIST ALL AROUND COVERS WHEN INSTALLED IN FRAME.
5. DIMENSION - ALL DIMENSIONS ARE IN MM.
6. REF. SEC. X-X THE DESIGN OF THE BOTTOM RE-INFORCING WEB CASTING SHOULD BE ADEQUATE TO MEET THE LOADING SPECIFICATION AND TO ENSURE THE BALANCE OF THE COVER CENTERED APPROXIMATELY ON THE KEY HOLES.
7. THE UNDER SIDE OF KEY HOLE SHALL HAVE A RECESS CAST IN TO PREVENT KEY BEING TURNED WHEN BALANCING WEIGHT OF COVER. DIMENSIONS WILL BE TO MATCH KEY HOLE.
   KEY HOLES WILL BE CLOSED TYPE.
8. THE COVER ELEVATION DIAGRAM FLANGE BEARING MEASUREMENTS SHOWN SHOULD CONFORM WITH FRAME SEAT MEASUREMENT TO ENSURE A NON ROCKING AND NON JAMMING FITTING.
9. PAINTING - TWO COATS OF BLACK BITUMINOUS PAINT APPLIED ON TOP OF GREY COLOUR PRIMER AS PER BS 4164:2002.
10. CERTIFICATION - THE PRODUCT NEEDS KITEMARK CERTIFICATION FROM BSI (UK).

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State of Qatar دولة قطر

TITLE
FRAMES CARRIAGEWAY NO 4 (TYPE A)
JRC 4

PROJECT DOCUMENTATION REFERENCE NO.

DRAWING NO.		SCALE	DATE	SHEET	REV
PREPARED BY	REVISED BY	Review & Approved		Remarks	

Communications Regulatory Authority State of Qatar | هيئة تنظيم الاتصالات دولة قطر

Warning Tape Specifications

DATA	
PRODUCT SAMPLE	Polyethylene Trench Marker Tape
PRINTING	CAUTION! TELECOM INFRASTRUCTURE - COMMUNICATIONS REGULATORY AUTHORITY (CRA) DUCT /CABLE BURIED BELOW (Printing in English, black and Red font)
THICKNESS	180 ± 5 Micron
WIDTH	6 Inch (152.4 mm)
LENGTH OF ROLL	1000 Ft (305 MTR)
COLOR OF TAPE	YELLOW
COLOR OF IMPRINT (TEXT)	RED AND BLACK
FONT HEIGHT (TEXT)	33.7mm
LENGTH OF IMPRINT(TEXT)	950mm
SPACE BETWEEN REPEATING IMPRINT	130mm
TEXT LANGUAGES	ENGLISH
RAW MATERIALS USED	High Density Polyethylene (HDPE)

Inspection Checklist

Communications Regulatory Authority | State of Qatar

Duct Network: Approval CHECKLIST during implementation

PROJECT NAME:		**Project ID**											
LOCATION:		**Area Zone**											
MANHOLE TYPE:		Manhole A	Manhole C										
NUMBERS of MANHOLE :		TO	TO										
Duct Check list :		Manhole B	Manhole D										
1	Duct Spacers, Couplers, Warning Tape & trade mark on the ducts should be as per the followed standard.												
2	Number of Ducts as per Approved Design												
3	Lead In duct extended 1M inside the plot with Utility Marker as Per the Approved Shop Drawings.												
4	Virgin Areas: line of ducts to be aligned between each 2 manholes,Ducts deviations not exceeds 15 degree.												
5	Duct undamaged or twisted.												
6	Back Bone Duct type uPVC or HDPE as per Approved Design,Type in Remarks												
7	House Connection Duct Type uPVC or HDPE as per Approved Design,Type in Remarks.												
8	Installation of end caps -project boundary												
9	Installation of end caps -house Connection												
10	Identifiable Utility markers in non-built up areas as per Approved Design.												
11	Trench depth matching Road Profile/sidewalk/parking/verge level as per Appproved design												
12	Telecommunication Corridor width reservation maintained as per Appproved Corridor design												
13	Bedding padding material should matching the CRA standard.												
14	Bedding padding depth and Width should matching the CRA standard.												
15	Backfilling should matching the CRA standard.												
16	Concrete Surrounding for road crossings												
17	Completed backfilled Trench level to match surface level												
18	GPS coordinates must be recorded and rechecked in site .												
19	Manhole Position and orientatation as per the approved design												
20	Villa lead in duct directions As per Approved Design drawings and standards												
21	Crossing with other Duct utilites should be as per Approved Design and standards.												

NOTES:

*4. In Case of Brown Project , Mandrell test Report to be provided for the inspected area.

PLACE	✓	To indicate ***Approval***
	x	if there is ***DEFICIENCY***
	—	if ***NOT APPLICABLE***
	info needed	points 6&7

COMMENTS:

CRA Implementation Engineer:

Date:

Consultant Representative:

Date:

Contractor Representative:

Date:

Inspection Checklist

Communications Regulatory Authority | State of Qatar

Communications Regulatory Authority State of Qatar | هيئة تنظيم الاتصالات دولة قطر

Manhole Network: Approval CHECKLIST

PROJECT NAME:		**Project ID**										
LOCATION:		**Area Zone**										
MANHOLE TYPE:		JRC12	JRC14									
MANHOLE NUMBER:		JRC12-1	JRC14-2									
MANHOLE Accessories:												
1	MH Type / Size as per Approved DDw											
2	Cover Level With Surface											
3	Cover Frame Properly Bedded											
4	Frame and Cover Unbroken											
5	Cover Fitting In Frame OK											
6	Cable Bearer, Wall Type Installed											
7	Cable Bearer Bracket & Pins Fitted											
8	Safety Grids Fitted											
9	Anchor Irons OK											
10	Grating Sump Installed											
11	MH Steps OK											
12	Pulling Rope 6mm Dia.Provided											
OTHER ITEMS:												
13	House Connection As per Approved design											
14	House Connections are Capped											
15	House Connection Duct Type uPVC or HDPE as per Approved Design, Duct Type in Remarks.											
16	Lead In duct (HC) extended 1M inside the vacant plot .											
17	Back Bone Duct type uPVC or HDPE as per Approved Design, Duct Type in Remarks.											
18	Manhole Duct No , Entry directions & location As per Approved design											
19	JRC14 above 4 ducts -Extra depth of 200mm											
20	MH Outside Walls Water Proofing Finishing											
21	MH Clean and Dry											
22	Concrete Base Undamaged											
23	MH Protective Coating on frames											
24	MH Covers as per Approved Design, Company Logo name in Remarks.											
25	Bore Alignment as per Standards											
26	Conduits No Sharp Ends											
27	Face of Duct Flush											
28	Duct Entry OK											
29	Duct Celeing (dust tight)											

NOTES: PLACE

✓ To indicate ***Approval***

X if there is ***DEFICIENCY***

— if ***NOT APPLICABLE***

COMMENTS: ***For Final approval -** All JRC-12, JRC-14 & MR4 MH top framed cover should be painted (Fully unrusted) Typical for all JRC's MH

*7 Cable Barrier angle all bolt & nuts found loose need to be tight. Please refer site photos

*21 All JRC's MH should be neat & clean, water found inside chamber need to be clean.

*All Villa MH walls & floor should be flushed with Cements

CRA Implementation Engineer: Date:

Consultant Representative: Date:

Contractor Representative: Date:

Inspection Checklist

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Master plan PROJECT MANDRELL TEST REPORT

PROJECT NAME: LOCATION: CONSULTANT: CONTRACTOR: INSPECTION DATE:					Porject ID Area Zone			
Sl. No.	From Manhole / Joint Box	To Manhole / Joint Box	No. of Ways	Apprx. Length Center to Center	Duct Type	Condition/DDw	Pull Ropes	Remarks
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								

CRA Implementation

Consultant Representative:

Contractor Representative:

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Design Documents Submission Checklist

PROJECT DESIGN DOCUMENTS			
SECTION #	**DESCRIPTIONS**	**NUMBER of Sheets/copies**	**YES/NO**
1	FOLDER FRONT COVER PAGE, Project design info	2	
2	CURRENT LAND USE PLAN A0 size	2	
3	DESIGN DRAWING Hardcopy as per CRA Standards: 1) Overall Telecom Project Layout Plan, A0 size 2) Key plan, A3 size 3) General Notes and Legend, A3 size 4) Telecommunication Network Layout sheets A3 size Legend as per CRA Standards: a) Manhole type symbol and color b) Manhole Numbering System, and Coordinates for each Manhole c) Duct length (between two MHs), type, symbol and color d) Road crossings e) House connections (HC), duct type and color f) Utility markers	2	
4	DESIGN DRAWING SOFT COPY (AutoCAD (dwg) file format) as per CRA Standards (shape files, templates etc.)	2	
5	ESTIMATED QUANTITIES: 1) Manhole types 2) Number of the Manholes 3) Duct type and lengths 4) House connections lengths	2	

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Design Documents Submission Checklist

PROJECT HANDOVER INFO	
Project Name	
CRA Project Lead / Contact	
CRA Project Site ENG / Contact	
Main Consultant, Projects Lead / Contact	
Main Contractor, Projects Lead / Contact	
Start Date / Completed Date	
Document Prepared Date	
PMC Projects Lead / Contact	

VERIFIED BY CRA TEAMS / SIGNATURE	
CRA Line Manager	
CRA Control Team	
CRA Director	

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Handover Documents Submission Checklist

PROJECT HANDOVER DOCUMENT			
SECTION #	DESCRIPTIONS	NUMBER of Sheets	YES/NO
1	Folder Front Cover	2	
2	As Built Drawings As Per The CRA Requirements, Both Hard And Soft Copies.	2	
3	Planned BOQ +Actual BOQ	2	
4	Installation Inspection Sheets	2	
5	Material Test Summary, List Of Approved Materials And Specifications Of All Materials Used.	2	
6	Name And Contacts Info Of The Supplier.	2	
7	Works Completion Statements	2	
8	Site Photos	2	
9	Site Instructions	2	
10	Final Project Summary Sheet	2	
11	List Of Any Spares And Surplus Of Relevant Materials	2	
12	List Of Any Risk Associated With The Civil Works, Which Operators Should Take Care Of When Installing The Cables	2	
13	Mandrel test Results SOFT COPIEs only	2	

CRA AutoCAD & GIS As-Built Data Requirements

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AutoCAD Requirements:

1. Create features in the layers as shown in below table.
2. Models to be used against to the CAD Layer Name as given in the table
3. Predefined Blocks were developed for each Structure type of Joint Box (JRC), Manhole (MNHL) and EndCap (ENDCAP). Duct feature types are D54, D56-LEADIN, HDPE and HDPE-LEADIN.
4. Insertion Point for each Block is created at center of the Block symbol.
5. Model names will be identified based on the Layer names only.
6. For Data migration, the entities created in the specified layers are only taken into consideration.
7. AutoCAD drawing file will be saved in 2013 or below version only.
8. All Duct entities should be connected to Structures insertion point.
9. Single Duct entity should be drawn between two Structure entities.
10. It is assumed that, Existing Duct and Structure entities will be very less in quantity in each drawing file and will be created in specified layer as mentioned in below table.
11. All types of Existing Joint Box features (JRC2, JRC12, JRC14, and JRC14-WED) will be created in one layer called “SVC_JBOX_EXISTING”.
12. All types of Existing Manhole features (MRT9, MR2, and MR4) will be created in one layer called “SVC_MNHL_EXSITING”.
13. To specify the types for Exiting Joint Boxes and Manholes user need to select the block and choose a proper type from the list to create existing features.

CRA AutoCAD & GIS As-Built Data Requirements

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Sl. No	CAD Layer Name	GIS Layer Name	Description	ENE mapping Models
1	SVC_DUCT_D54_1x1	SPAN	SERVICES CRA D54 1x1 DUCT / TELECOM	D54-1x1
2	SVC_DUCT_D54_1x2	SPAN	SERVICES CRA D54 1x2 DUCT / TELECOM	D54-1x2
3	SVC_DUCT_D54_2x2	SPAN	SERVICES CRA D54 2x2 DUCT / TELECOM	D54-2x2
4	SVC_DUCT_D54_3x2	SPAN	SERVICES CRA D54 3x2 DUCT / TELECOM	D54-3x2
5	SVC_DUCT_D54_EXISTING	SPAN	SERVICES CRA D54 DUCT EXISTING / TELECOM	D54-1x1, D54-1x2, D54-2x2, D54-3x2
6	SVC_ LEADIN_D56	SPAN	SERVICES CRA D56 LEADIN DUCT / TELECOM	D56-1x1
7	SVC_DUCT_HDPE_1x1	SPAN	SERVICES CRA HDPE 1x1 DUCT / TELECOM	HDPE-1x1
8	SVC_DUCT_HDPE_1x2	SPAN	SERVICES CRA HDPE 1x2 DUCT / TELECOM	HDPE-1x2
9	SVC_DUCT_HDPE_2x2	SPAN	SERVICES CRA HDPE 2x2 DUCT / TELECOM	HDPE-2x2
10	SVC_DUCT_HDPE_3x2	SPAN	SERVICES CRA HDPE 3x2 DUCT / TELECOM	HDPE-3x2
11	SVC_DUCT_HDPE_EXISTING	SPAN	SERVICES CRA D54 DUCT EXISTING / TELECOM	HDPE-1x1, HDPE-1x2, HDPE-2x2, HDPE-3x2
12	SVC_LEADIN_HDPE	SPAN	SERVICES CRA HDPE LEADIN DUCT / TELECOM	HDPE-25-2x2
13	SVC_ENDCAP	STRUCTURE	SERVICES CRA END CAP/ TELECOM	END CAP
14	SVC_ENDCAP_EXISTING	STRUCTURE	SERVICES CRA END CAP EXISTING/ TELECOM	END CAP
15	SVC_JBOX_EXISTING	STRUCTURE	SERVICES CRA JOINT BOX EXISTING / TELECOM	JRC2, JRC4, JRC12, JRC14, JRC14 Extra Depth
16	SVC_JBOX_JRC2	STRUCTURE	SERVICES CRA JRC2 JOINT BOX / TELECOM	JRC2
17	SVC_JBOX_JRC4	STRUCTURE	SERVICES CRA JRC4 JOINT BOX / TELECOM	JRC4
18	SVC_JBOX_JRC12	STRUCTURE	SERVICES CRA JRC12 JOINT BOX / TELECOM	JRC12
19	SVC_JBOX_JRC14	STRUCTURE	SERVICES CRA JRC14 JOINT BOX / TELECOM	JRC14
20	SVC_JBOX_JRC14_E	STRUCTURE	SERVICES CRA JRC14 EXTRA DEPTH JOINT BOX / TELECOM	JRC14 Extra Depth
21	SVC_MNHL_EXSITING	STRUCTURE	SERVICES CRA MANHOLE EXISTING / TELECOM	MR2, MR4, MRT9
22	SVC_MNHL_MR2	STRUCTURE	SERVICES CRA MR2 MANHOLE / TELECOM	MR2
23	SVC_MNHL_MR4	STRUCTURE	SERVICES CRA MR4 MANHOLE / TELECOM	MR4
24	SVC_MNHL_MRT9	STRUCTURE	SERVICES CRA MRT9 MANHOLE / TELECOM	MRT9
25	SVC_ROAD_CROSSING_DUCTS	SPAN	SERVICES CRA ROAD CROSSINGS / TELECOM	ROAD CROSSING DUCT

CRA AutoCAD & GIS As-Built Data Requirements

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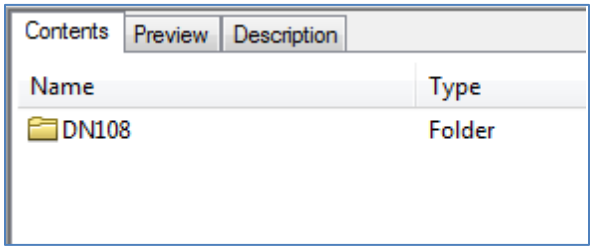
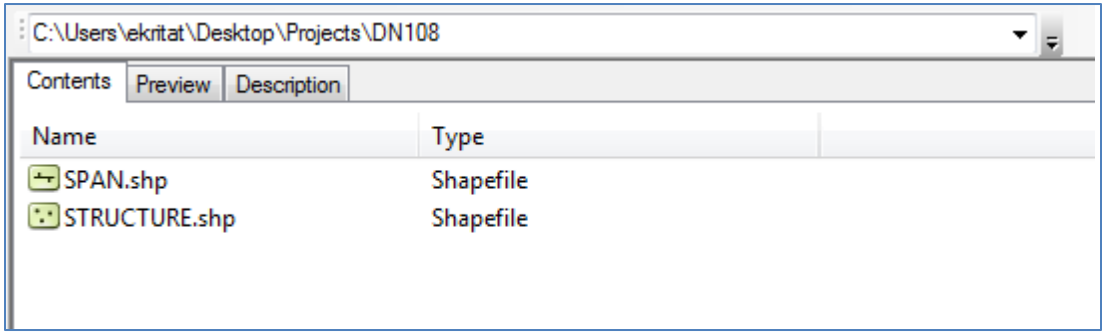
GIS As-Built Data Requirements:

- CRA require the As-Built data in shapefile format with required fields and proper naming conventions as specified below.

- In total 2 shape files are required in a folder with Project name.
  STRUCTURE.shp
  SPAN.shp
- MODEL_NAME attribute should not NULL or Empty.

Example:





CRA AutoCAD & GIS As-Built Data Requirements

Description on STRUCTURE.shp

- This file is of type “Point”.
- This file contains all joint boxes of the Network for that project.
- Must contain fields, “SHAPE”, “MODEL_NAME”, “PROJECT_ID” and “ANGLE”.
- SHAPE field geometry of the feature.
- MODEL_NAME field will contain the values of type of joint box like JRC12, JRC14 Extra Dept , MRT9 etc., as shown in CAD template file.
- PROJECT_ID field will contain the values of Project ID like “DN108”.
- ANGLE field will contain the angle of Joint boxes.

Description on SPAN.shp

- This file is of type “Polyline”.
- This file contains all ducts or spans of the Network for that project.
- Must contain fields, “SHAPE”, “MODEL_NAME” and “PROJECT_ID”.
- SHAPE field contains geometry of the feature.
- MODEL_NAME field will contain the values of type of joint box like D54-1x1, HDPE-1x1 etc., as shown in AutoCAD standards document.
- PROJECT_ID field will contain the values of Project ID like “DN108”.

END