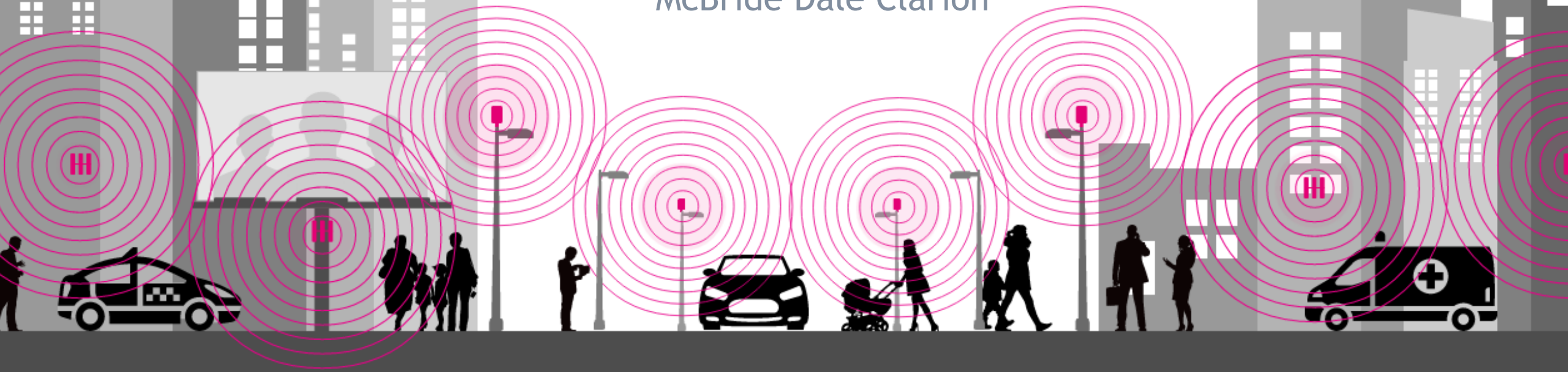
Small What?

A look into Small Cell Facilities and how communities can regulate them

Elizabeth Fields, AICP

McBride Dale Clarion



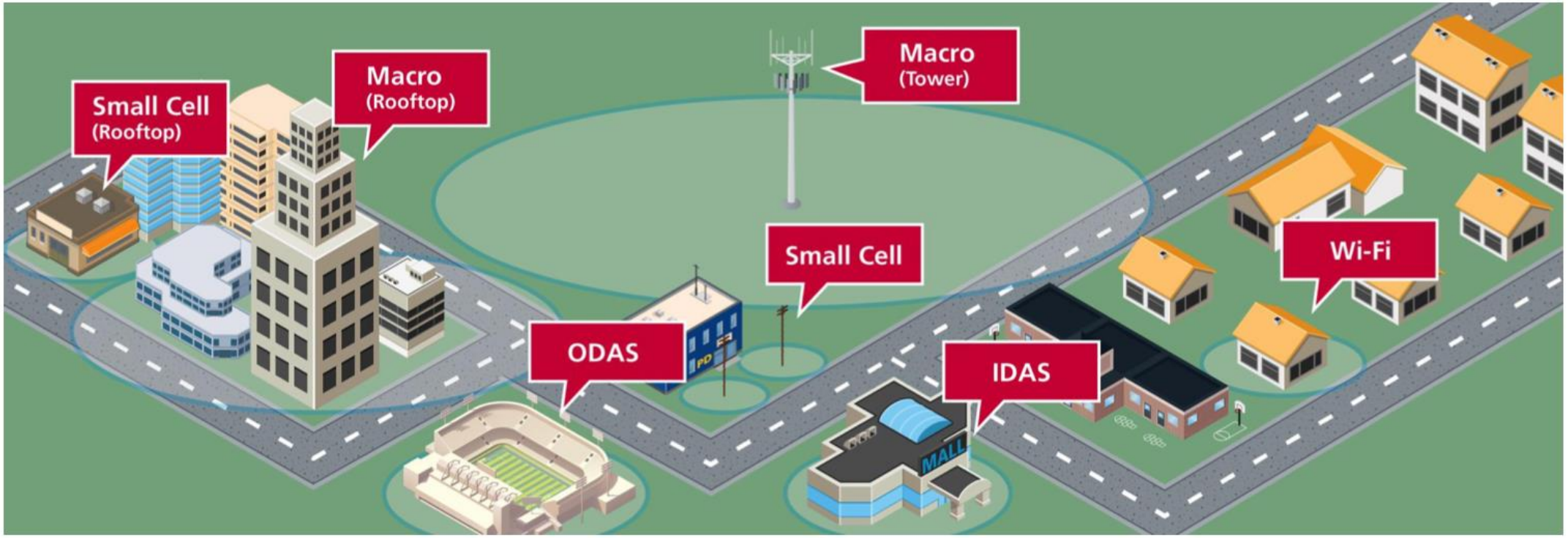
Agenda

1. What is a Small Cell?
2. FAQ
3. History Lesson
4. Regulatory Options
5. Lessons Learned

Mobile Networks Use Multiple Technologies

Heterogeneous Networks (HetNets)

Network deployments will consist of multiple layers—traditional macro cell towers provide a blanket of coverage, while underneath this umbrella, a combination of other technologies are deployed to increase network capacity, particularly in dense urban areas



- Macro sites will continue to provide wide area coverage for high mobility users and be the core of wireless networks
- Multiple solutions including DAS, Rooftops, Wi-Fi and Small Cell networks will complement the coverage provided by towers


TéO
Restaurant
&Bar
1100
MISSIO


ROSS SKYTRAK

FAQ

What does a small cell facility actually do?

It is designed to offload wireless users from large cell phone towers and funnel the data directly to a fiber optic network.

Instead of building additional macro cell towers, small cell facilities are strategically placed in areas where high demand is anticipated or exists to satisfy customer needs.

A macro tower has a finite area and capacity that can be served with its transmission capabilities. If a high demand area appears within the macro tower area, capacity is directed to accommodate users which actually reduces the effective range and capacity of the macro tower.

Small cell facilities are strategically located to ensure this is kept to a minimum.

FAQ

Why haven’t we heard service complaints?

In many areas there are not current issues with connectivity and dropped calls.

Despite that, in areas of high concentration data speeds get slowed down.

Slow speeds aren’t noticeable with light usage such as phone calls and email functions. Streaming services and heavy data usage will notice a significant improvement with the deployment of small cell facilities.

FAQ

Are small cells safe?

Small cell facilities are regulated by the FCC. The FCC sets limits for RF (Radio Frequency) emissions for small cells.

In general exposure from standing 9 feet from a small cell facility is similar to the RF exposure for a cell phone.

FAQ

Can small cells be placed underground?

Small cell equipment requires electrical power and generates heat. It must be cooled and if placed underground large air vents at ground level would be needed. Small cells are therefore installed above ground to avoid potential hazards from snow piling up and melting into the equipment vaults.

FAQ

What is the range of these systems?

It greatly depends on a number of factors, but generally small cell facilities have a range of 150-500 feet.

Macro facilities range between ¼ mile and one mile depending on topography and density.

FAQ

Can Townships Regulate Small Cells?

The ORC provides limited ability for townships to regulate small cell facilities

The township may only regulate them if **ALL** of the following apply:

- The tower is constructed after October 31, 1996
- It is to be owned or principally used by a public utility engaged in the provision of telecommunication services
- It is located in an area zoned for residential use
- It is taller than the allowable maximum height
- It is proposed to have attached to it radio frequency transmission or reception equipment

When the above criteria is met, the applicant must notify surrounding property owners and the Board of Trustees who can object to the tower. If no objection is made, the applicant can proceed with construction.

Small Cell History Lesson

- Communities across Ohio started receiving applications for Small Cell Facilities – many passed regulations
- Ohio Senate Bill 331 passed in December 2016
- 90 cities sued the state in 5 different lawsuits
- Law overturned in June 2017
- Cities worked with telecommunication carriers on new bill
- House Bill 478 passed on April 11, 2018 (effective July 31st)

Small Cell History Lesson

Senate Bill 331

- Bill titled *"Regulate dog sales and license pet store"* aka the Petland Bill passed on December 7, 2016
- Language was inserted into this bill stripping a municipality's ability to regulate small cells
- Only impacted cities and villages – it did not apply to counties or townships
- It prohibited:
  - Applying zoning regulations to small cells
  - Evaluating the business decisions of the applicant
  - Precluding placement of equipment in residential areas
  - Demanding the removal of existing wireless support systems as a condition of approval of new applications
  - Limiting the duration of the permit
  - Imposing separation of spacing requirements
  - Enacting any moratorium on the filling, consideration, or approval of applications
  - Entering into exclusive arrangements for the right to attach to a municipal corporation's poles or other structures

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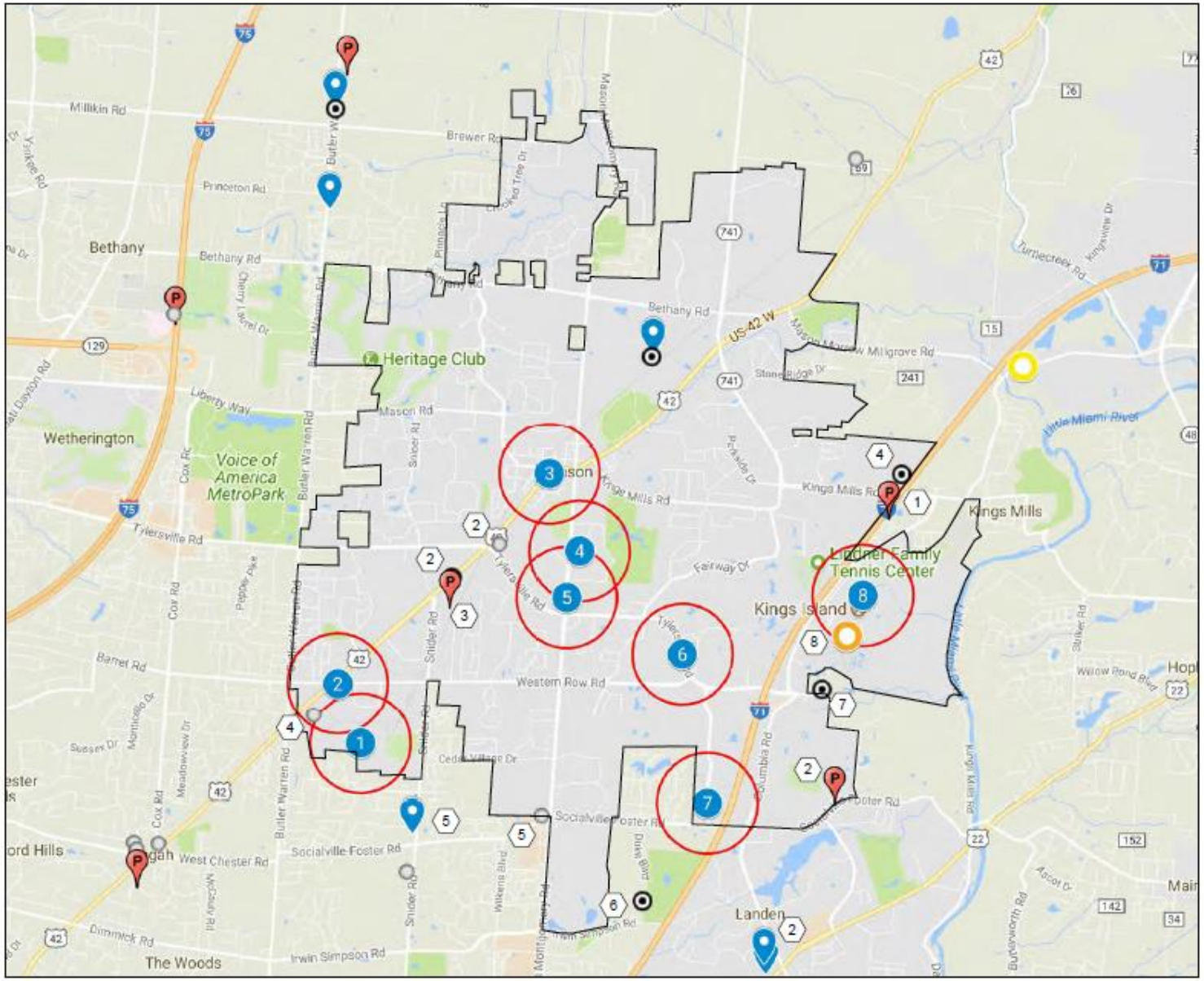
Small Cell History Lesson

House Bill 478

- Allows for reasonable design guidelines
- 120 days to review applications
- Application fees up to $250 and yearly rental fess up to $200
- Maximum of 30 applications at any one time
- Maximum 40’ height (can be reduced to 35’ in certain areas)

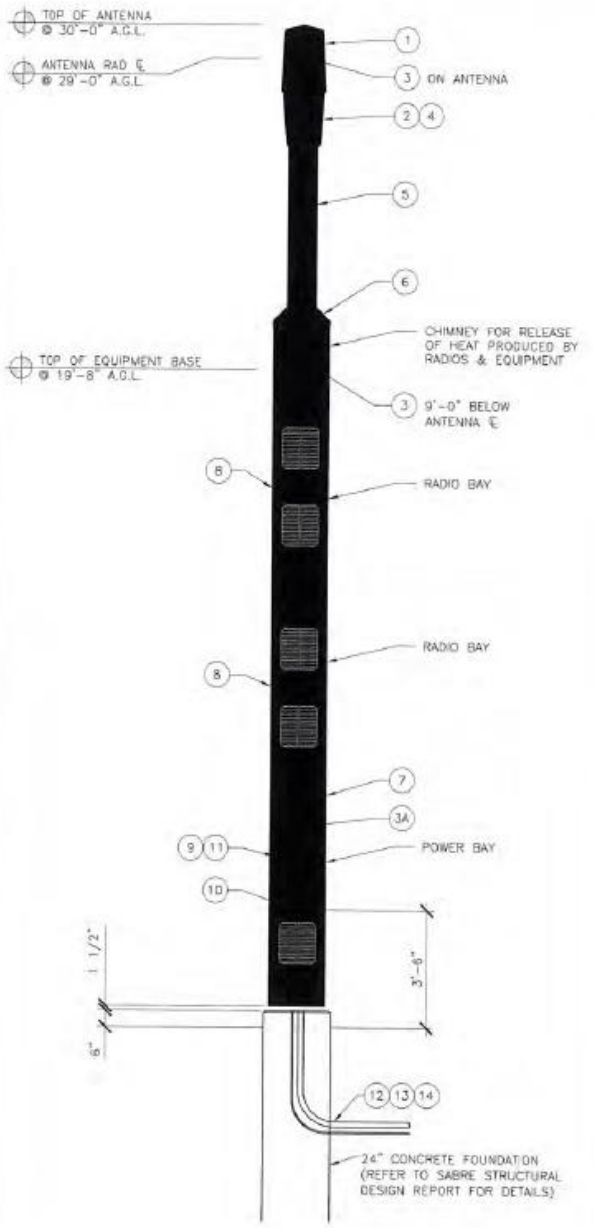
Regulatory Options

- Location
- Spacing requirements
- Height
- Setbacks
- Design
  - Materials
  - Width
  - Colors
  - Equipment
  - Stealthiness

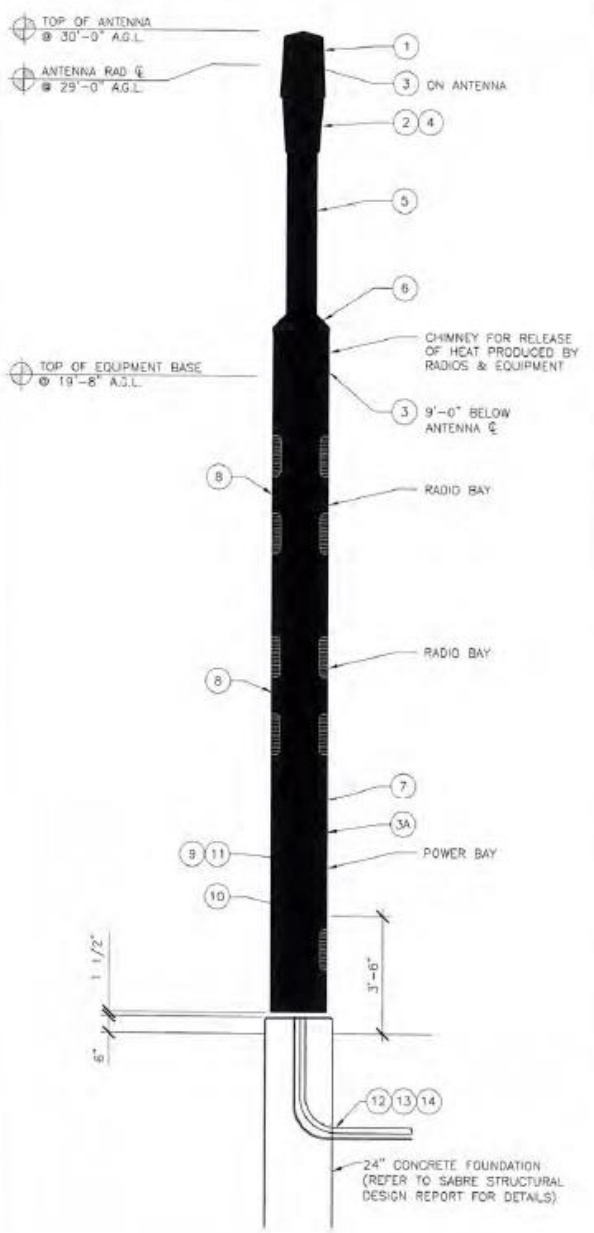


PROPOSED MASON SMALL CELL SITE INVENTORY SCHEDULE			
REFERENCE	SITE NAME/NUMBER	LAT/LON	STRUCTURE TYPE
1	CB-75 MASON_Z_5_SC	39.33052'/-84.33922'	PROPOSED SMALL CELL
2	CB-76 MASON_Z_6_SC	39.33705'/-84.34244'	PROPOSED SMALL CELL
3	CB-81 MASON_X_5_SC1	39.35985'/-84.31264'	PROPOSED SMALL CELL
4	CB-82 MASON_Y_6_SC	39.35212'/-84.30957'	PROPOSED SMALL CELL
5	CB-83 MASON_Y_7_SC	39.34640'/-84.31021'	PROPOSED SMALL CELL
6	CB-84 WHIPPLE_X_1_SC	39.34027'/-84.29391'	PROPOSED SMALL CELL
7	CB-95 KINGS_ISLAND_Z_1_SC1	39.32397'/-84.29042'	PROPOSED SMALL CELL
8	CB-344 KINGS_ISLAND_Y_6_SC	39.34662'/-84.26853'	PROPOSED SMALL CELL
1	EX. CB-072 MASON MACRO CELL	39.37280'/-84.29809'	EXISTING 300' LATTICE TOWER
2	EX. CB-388 MASON MACRO CELL	39.34873'/-84.32618'	EXISTING 186' MONOPOLE
3	EX. CB-388 WESTERN ROW MACRO CELL	39.34873'/-84.32618'	EXISTING 186' MONOPOLE
4	EX. CB-505 WATER PARK MACRO CELL	39.35989'/-84.26290'	EXISTING 145' MONOPOLE
5	EX. CB-512 S. MASON MONTGOMERY MACRO CELL	39.31349'/-84.29940'	EXISTING 150' MONOPOLE
7	EX. CB-151 KING'S ISLAND MACRO CELL	39.33659'/-84.27409'	EXISTING 285' LATTICE TOWER
2	EX. T-MOBILE MACRO CELL	39.35222'/-84.31968'	EXISTING 164' MONOPOLE
4	EX. MACRO CELL TOWER	39.33385'/-84.34500'	EXISTING 190' MONOPOLE
5	EX. MACRO CELL TOWER	39.32264'/-84.31369'	EXISTING 155' MONOPOLE
2	EX. T-MOBILE MACRO CELL	39.30639'/-84.28244'	EXISTING 150' MONOPOLE
5	EX. WARREN COUNTY TOWER	39.32055'/-84.33194'	EXISTING 240' LATTICE TOWER
8	EX. AT&T MOBILITY MACRO CELL	39.34223'/-84.27075'	EXISTING 105' MONOPOLE
1	EX. VERIZON WIRELESS MACRO CELL	39.35694'/-84.26488'	EXISTING 199' MONOPOLE
2	EX. VERIZON WIRELESS MACRO CELL	39.32583'/-84.27250'	EXISTING 285' LATTICE TOWER
3	EX. VERIZON WIRELESS MASON MACRO CELL	39.34873'/-84.32618'	EXISTING 186' MONOPOLE

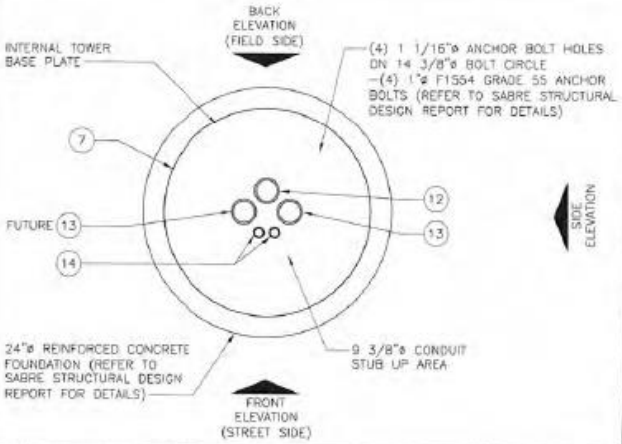
2000' FACILITIES SPACING RADIUS



1 BACK POLE ELEVATION (FIELD SIDE) SCALE: NTS



2 SIDE TOWER ELEVATION SCALE: NTS



3 EQUIPMENT PLAN VIEW SCALE: NTS

KEYED NOTES:

1. ANTENNA. SEE DETAIL 1 ON SHEET C-4. ANTENNA SHALL BE PAINTED BLACK (FEDERAL STANDARD #595-C, COLOR 27038).
2. TOP TENON ANTENNA MOUNTING BRACKET. SEE DETAIL 2 ON SHEET C-4.
3. RF "CAUTION" SIGNS PLACED AT NOTED ELEVATIONS
   TOP MOUNT ANTENNA CONFIGUATION:
   -(2) "CAUTION" SIGNS AT 9' BELOW ANTENNA ℄ (STREET SIDE AND FIELD
   -(1) "CAUTION" SIGN ON ANTENNA ON STREET SIDE

3A. "RF SAFETY GUIDELINES" SIGN PLACED AT 6'-0" AGL ON POLE

4. SABRE SPLIT CABLE CONCEALMENT SHROUD. SHROUD SHALL BE BLAC FROM MANUFACTURER (FEDERAL STANDARD #595-C, COLOR 27038).
5. 10"ø RISER POLE WITH 1/2" COAX FROM ANTENNA TO RRUS. POLE S POWDER COATED FROM MANUFACTURER (FEDERAL STANDARD #595-C, COLOR 27038).
6. SABRE SPLIT TRANSITION SHROUD. SHROUD SHALL BE BLACK POWDER COATED FROM MANUFACTURER (FEDERAL STANDARD #595-C, COLOR 27038).
7. 20"ø SABRE SMARTSTACK EQUIPMENT BASE. BASE SHALL BE BLACK POWDER COATED FROM MANUFACTURER (FEDERAL STANDARD #595-C, COLOR 27038).
8. REMOTE RADIO UNITS MOUNTED WITHIN RADIO BAY
9. DC POWER PLANT MOUNTED WITHIN POWER BAY.
10. 100A METER MAIN WITH LOAD CENTER W/100A MAIN BREAKER (MILBANK U8435-XL-TG-HSP) BUILT INTO POWER BAY OF POLE. METER SIGHT GLASS OPENING PROVIDED BY POLE MANUFACTURER. (METER CENTER BY CONTRACTOR, METER BY UTILITY COMPANY). REFER TO SHEET E-3 FOR DETAILS.
11. CBT FIBER TERMINAL DEMARC MOUNTED WITHIN POWER BAY
12. 2" POWER CONDUIT FOR UNDERGROUND FEED (PROVIDED AND INSTALLED BY CONTRACTOR). REFER TO DETAIL 4 ON SHEET E-2 FOR CONDUIT STUB UP DETAIL.
13. (2) 2" FIBER CONDUIT FOR UNDERGROUND FEED (PROVIDED AND INSTALLED BY CONTRACTOR). REFER TO DETAIL 4 ON SHEET E-2 FOR CONDUIT STUB UP DETAIL.
14. (2) 3/4" CONDUIT FOR GROUND LEAD TO GROUND ROD/RING (PROVIDED AND INSTALLED BY CONTRACTOR). REFER TO DETAIL 4 ON SHEET E-2 FOR CONDUIT STUB UP DETAIL.

4 KEYED NOTES SCALE: NTS

Cincinnati Bell
221 E. FOURTH ST
P.O. BOX 2301
CINCINNATI, OH 45201

verizon wireless

GPD GROUP.
520 South Main Street
Akron, OH 44311
Tel 330.572.2100 Fax 330.572.2101

DATE	DESCRIPTION
06/06/17	ISSUED FOR 90% REVIEW
06/06/17	ISSUED FOR CONSTRUCTION
07/06/17	REVISED SMARTSTACK DESIGN

STATE OF OHIO DARRIN KOTECKI 57418 REGISTERED PROFESSIONAL ENGINEER

07/06/17

WHIPPLE_X_1_SC
CB-84
4000 LUXOTTICA PLACE
MASON, OH 45040

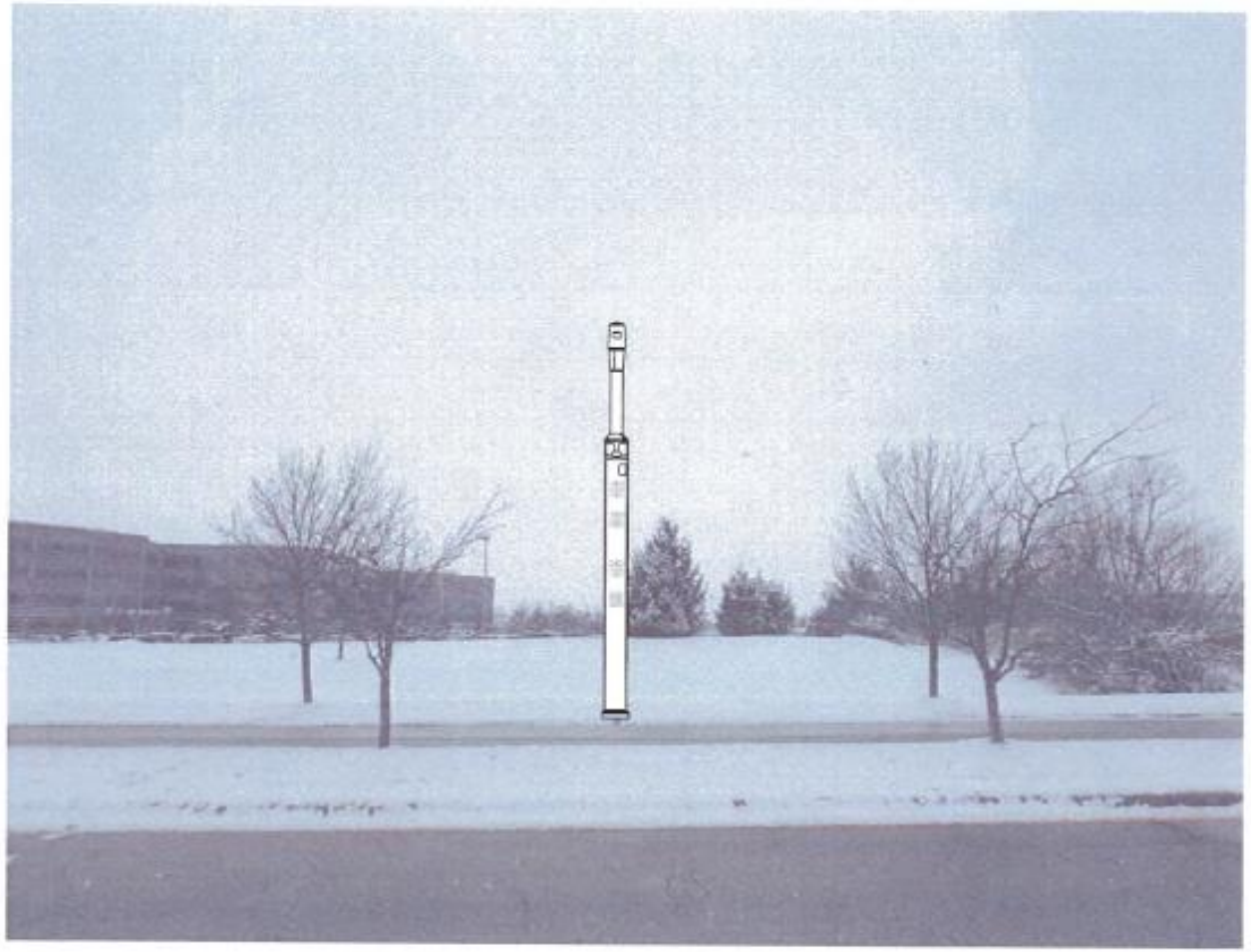
POLE ELEVATIONS & DETAILS

ISSUED FOR:	
REVIEW	06/06/17
PERMIT	07/06/17
CONSTRUCTION	07/06/17
RECORD	-

PROJECT MANAGER	DESIGNER
TTP	SEK

JOB NO.
2015738.56

C-3



Lessons Learned

- Spacing requirements should only require small cells to be a certain distance apartment – not small cell distance from macro towers
- It is very difficult – but possible – for all the small cell equipment to be located within a 24” structure – generally they need some box or piece of equipment on the outside or a pole
- Different jurisdictions are going to have different design preferences

Thank you!

Elizabeth Fields, AICP
McBride Dale Clarion
5721 Dragon Way Ste 300
Cincinnati, OH 45227
513-561-6232