



Designing on a Dime

Ohio Transportation Engineering Conference , October 28-29, 2008



AECOM

ITS – Information To Share

A Freeway Management System (FMS) can best be described as people, processes, and technology working together to improve the safety and mobility of the community.



Fun
Mansion.com

2001 ODOT ITS BEST PRACTICES

- Profile of ODOT's ITS Program
 - Freeway Service Patrols
 - Multi-agency traffic management
 - 9-1-1 cell calls for incident detection
 - Non-intrusive detection technologies
 - Hybrid communications network



CLEVELAND AND AKRON-CANTON FMS DETAILED PROJECT PLANS

- A Preliminary Engineering & stakeholder effort
- Advisory Committee
 - Define a Concept of Operations
 - Define basic system functions
 - Determine system devices/elements and locations
 - Develop a project architecture

CLEVELAND AND AKRON-CANTON FMS DETAILED PROJECT PLANS

- Advisory Committee
 - System- **Promote the “able’s”**
 - Flexible
 - Expandable
 - Reliable
 - Reduce Incident-Related Congestion
 - Reduce Incident Response Time
 - Reduce Recurring Congestion
 - Allow motorists to make informed decisions



PROVIDE INFORMATION

- Real Time
- Accurate
- Reliable



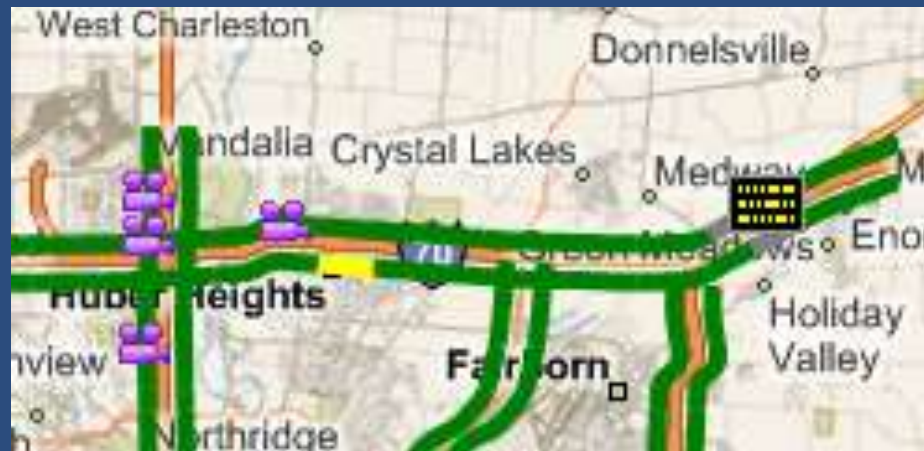
INCIDENT MANAGEMENT

- Detection
- Verification
- Response
- Scene Management (Traffic Control)
- Traveler Information
- Clearance



COMMUNICATING WITH THE MEDIA

- Traffic Information is free:
 - Media can use ODOT live video by signing agreement
 - Must bring communication lines to access ODOT facility
- BuckeyeTraffic system map with incidents, speeds, DMS, and CCTV



COMMUNICATIONS

2004 DESIGN PROJECT APPROACH FOR TELECOMMUNICATIONS

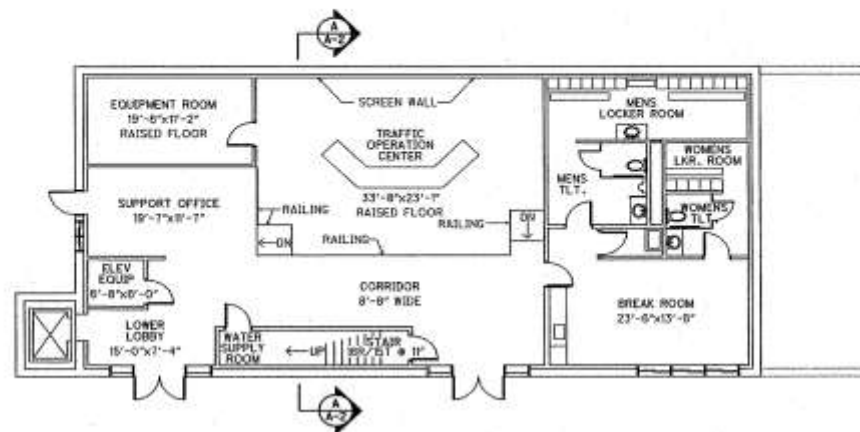
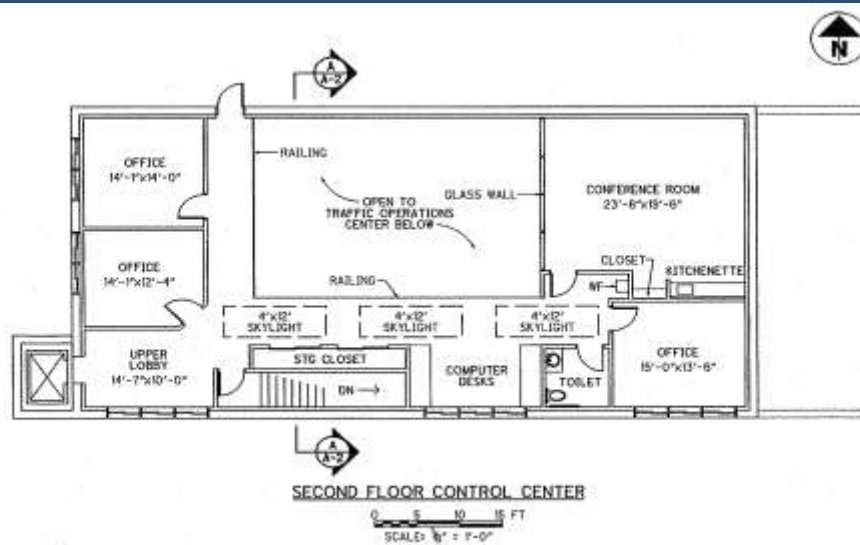
- State-owned wireless
- State-owned wire line
- Leased services
- State of Ohio Multi Agency Communications System (SOMACS) Contract
- Hybrid of the above (e.g., could include wireless/fiber, wireless/leased, leased/fiber, “last mile” wireless, etc.)

TRAFFIC MANAGEMENT CENTER

THE “DREAM TMC”



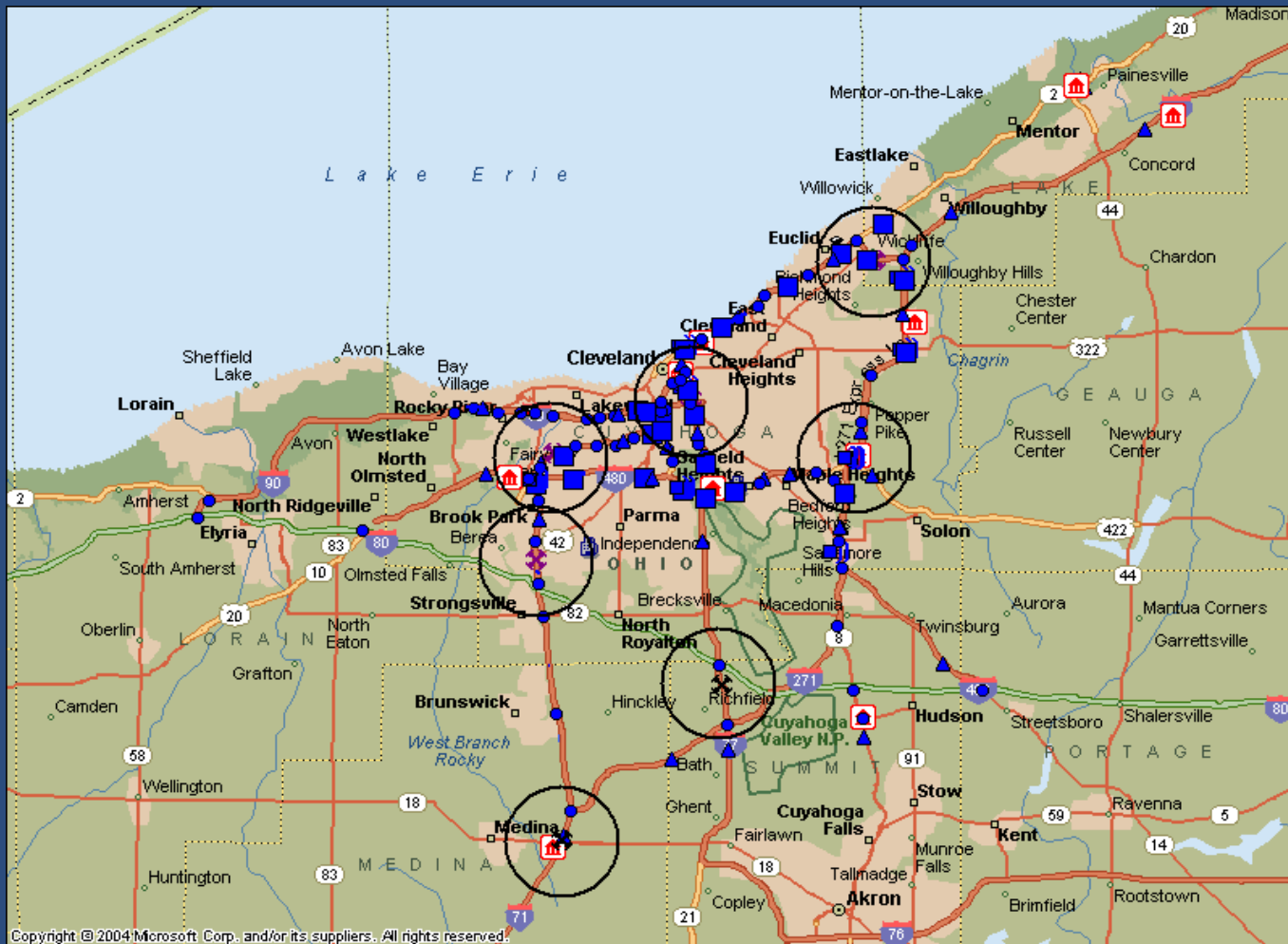
THE INITIAL THOUGHT WAS....



CLEVELAND FREEWAY MANAGEMENT SYSTEM



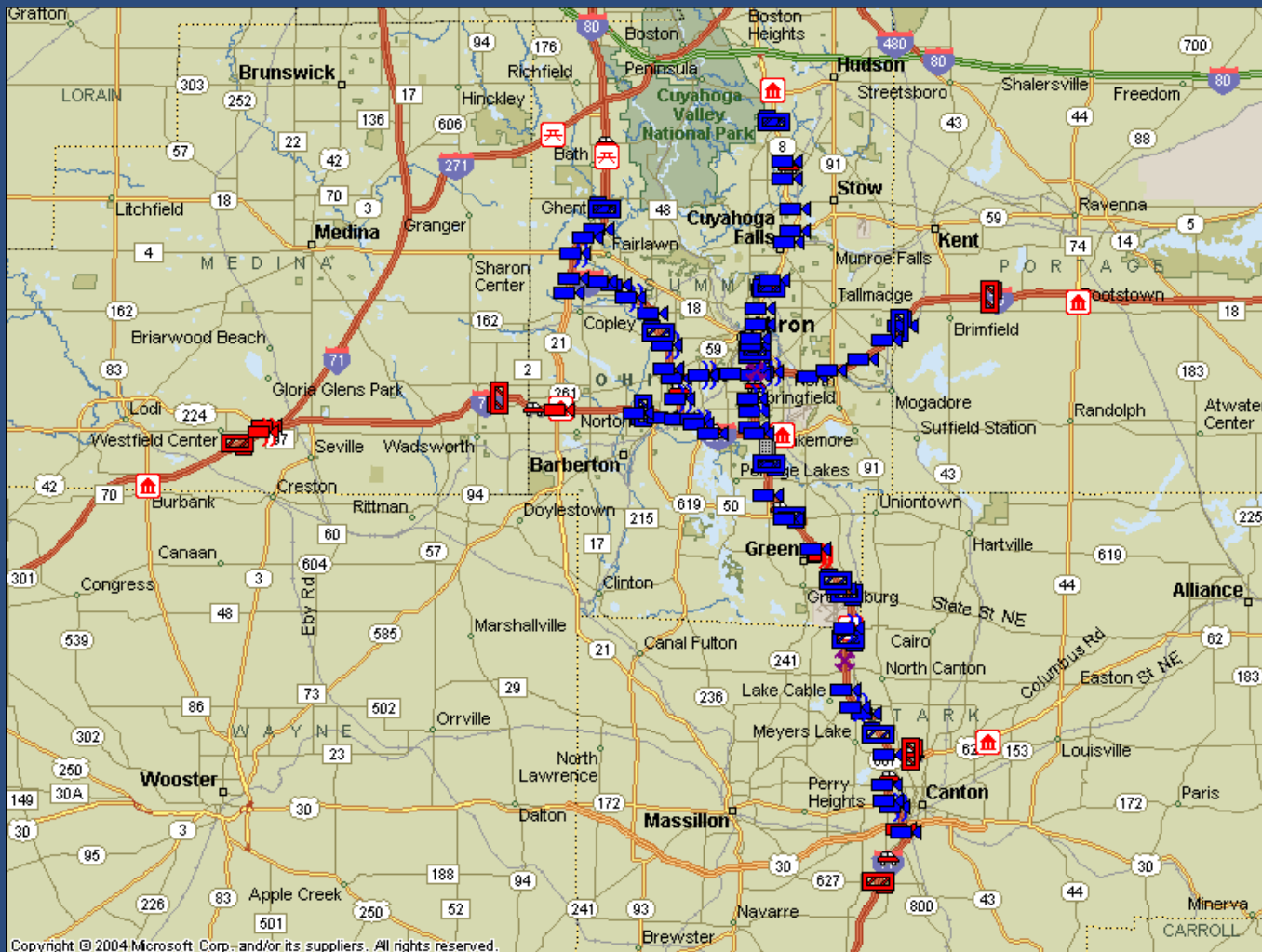
FIELD DEVICE LOCATIONS



AKRON-CANTON FREEWAY MANAGEMENT SYSTEM



FIELD DEVICE LOCATIONS



CLEVELAND AND AKRON-CANTON FMS INITIAL COST ESTIMATES

- Cleveland FMS: \$23M
 - CCTV: 80
 - Flow Detection: 21
 - DMS: 28
 - HAR
 - 2 New
 - Communications
 - Fiber: 83 miles
 - Wireless: 31 locations
- Akron-Canton FMS: \$11M
 - CCTV: 64
 - Flow Detection: 19
 - DMS: 18
 - HAR
 - 2 upgrades
 - Communications
 - Fiber: 64 miles
 - Wireless: 8 locations

VALUE ENGINEERING

- Original design concept called for all fiber optic cable to be in conduit
- Suggested switching to direct buried armored fiber optic cable to decrease capital costs
- 128 miles of direct buried armored fiber optic cable
- 83 CCTV locations and 28 DMS
- 45 vehicle detectors either collocated with cameras or mounted separately
- Only 13 sites not connected to fiber network
- Connection between Cleveland and Akron over backbone fiber network

WE WANT THE SAME AMOUNT OF.....
TO FINISH.....



2007 - New ODOT Administration

- **Construction Inflation is devastating ODOT's Purchasing Power**
- **ODOT is experiencing flattening State Revenues and uncertain Future Federal Investment**
- **ODOT Must Adjust to Address Past Program Decisions**
- **Constraints Have Been Placed On Major New Construction**

REACTION:



ADDITIONAL COST CONTAINMENT MEASURES FOR BOTH PROJECTS

- ODOT still looking to reduce capital costs
 - Remove fiber from designs
 - Utilize existing communication contracts
 - Reduce TMC requirements
- All devices now connected via a combination of private service provider Ethernet-over-Copper, T1, and wireless CDMA

PRIVATE SERVICE PROVIDER

– Pros

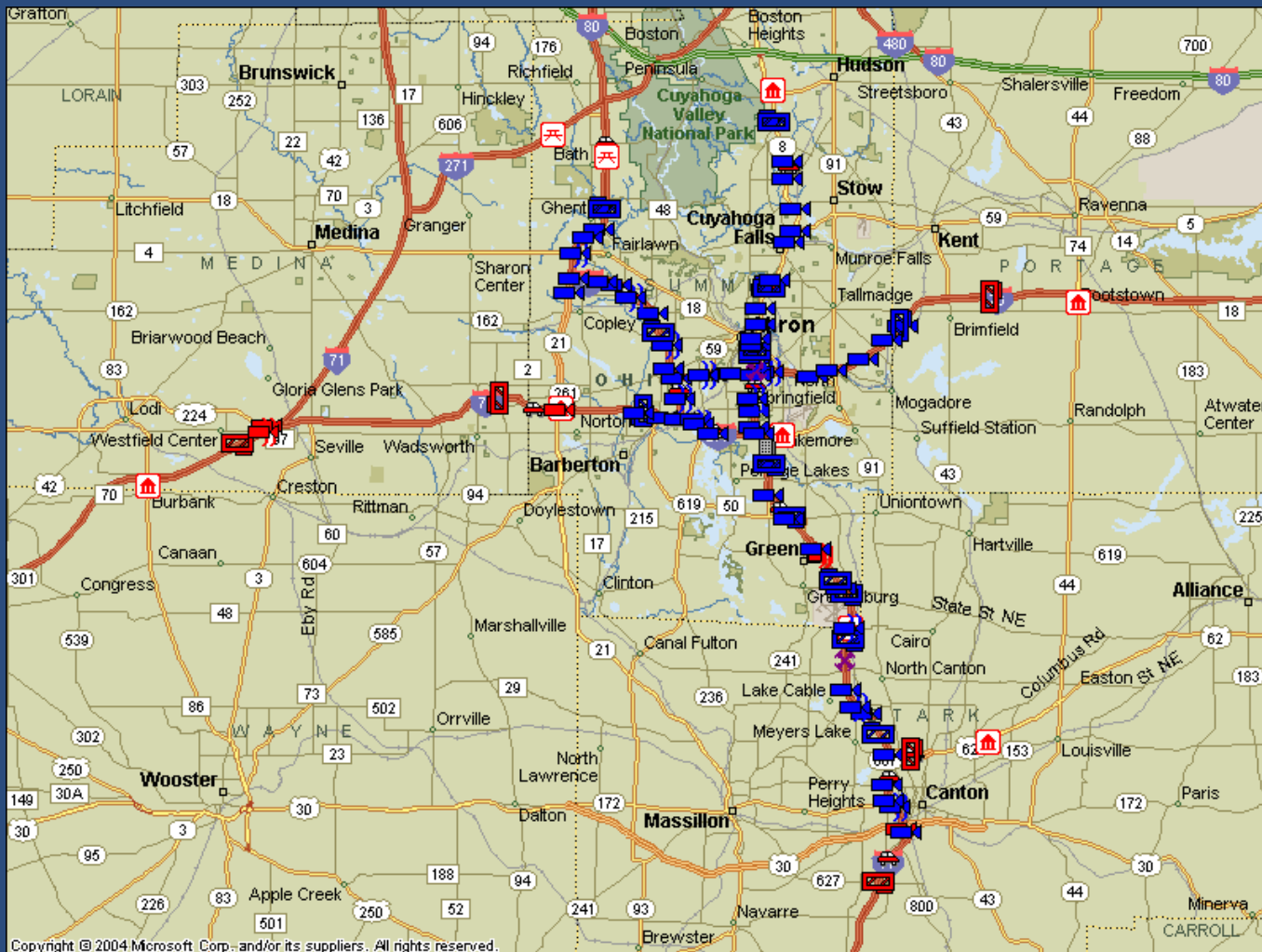
- Minimize Capital \$
- Maintenance is the responsibility of others
- Minimize system testing, integration activities for contractor

– Cons

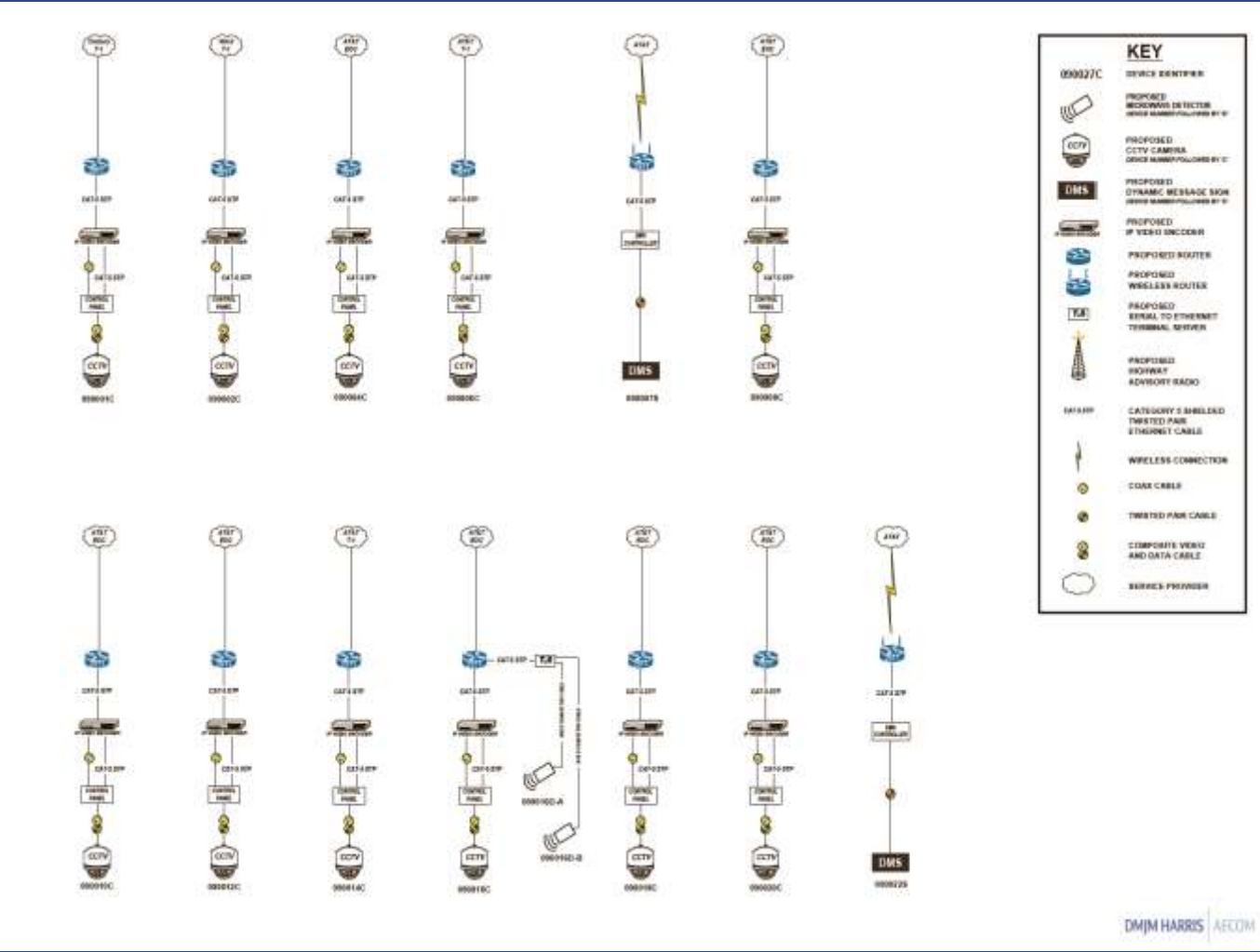
- Increased Operational \$
- Dependent upon service provider for connectivity
- Maintenance is the responsibility of others

20-Year Payback for Lease vs. Purchase

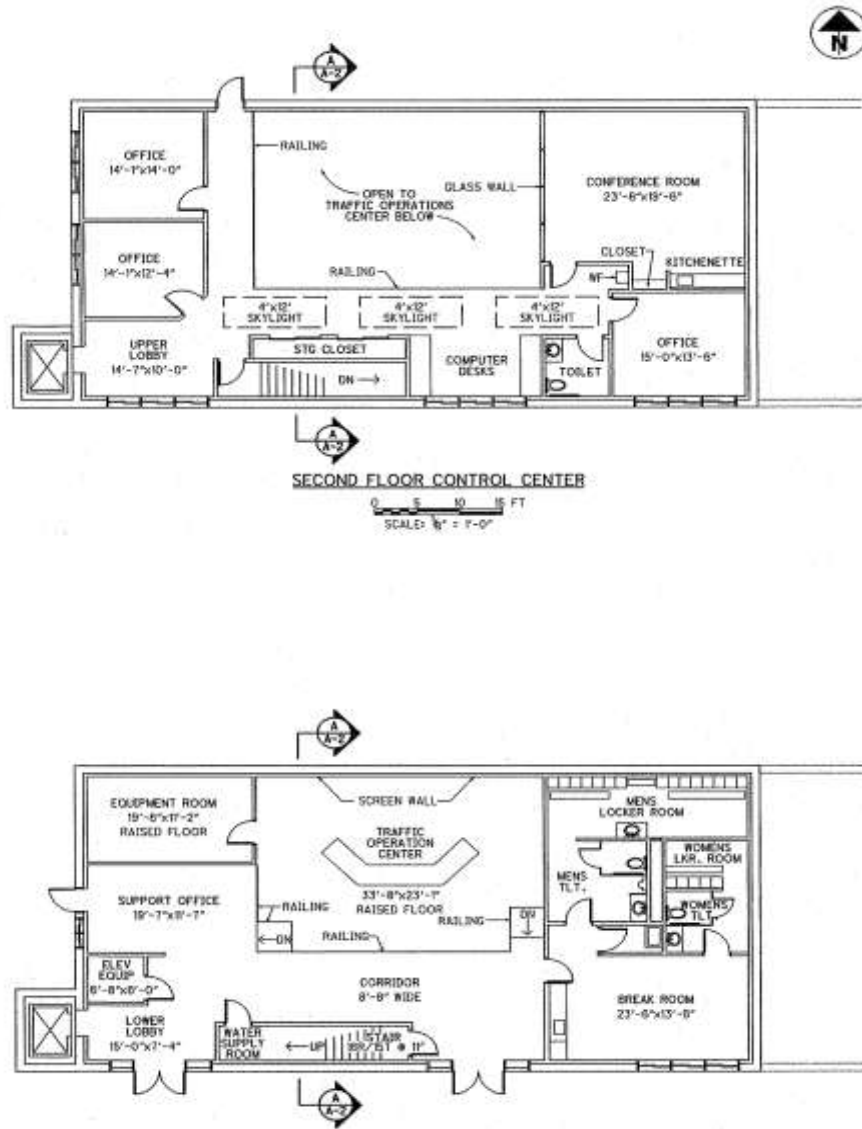
SAME FOR AKRON-CANTON



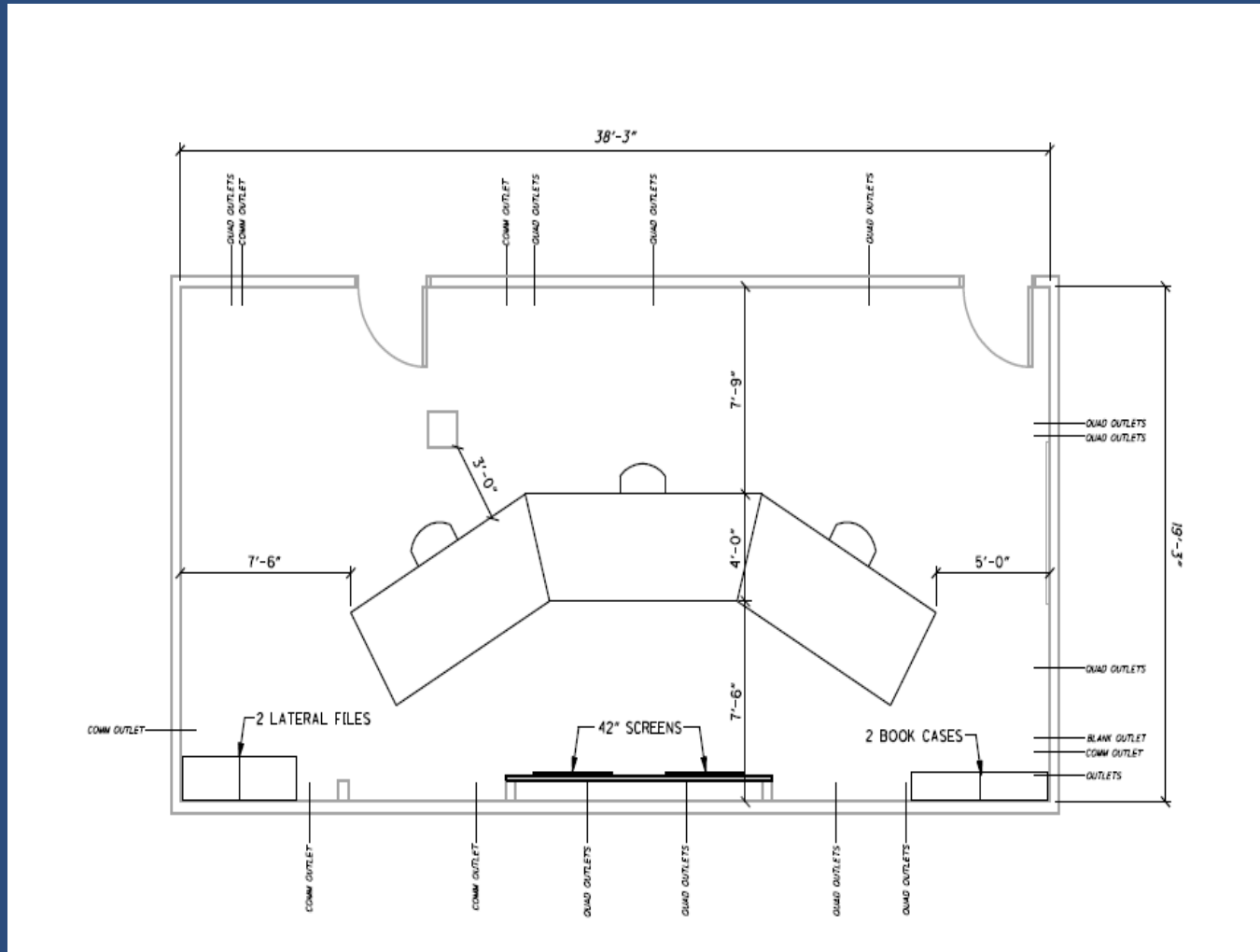
CLEVELAND COMMUNICATIONS DESIGN



INITIAL THOUGHT WAS....



WHAT WAS DECIDED



RESULT:

- Same functionality with some trade-offs
- Buy-In from other departments
- Achieved Capital Cost Objective





QUESTIONS ???

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