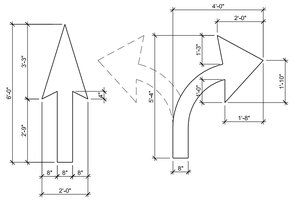
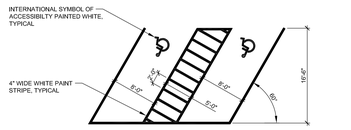
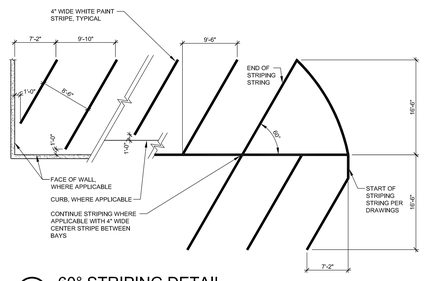


NOTE: PAINT ARROWS SOLID WHITE, UNLESS NOTED OTHERWISE.

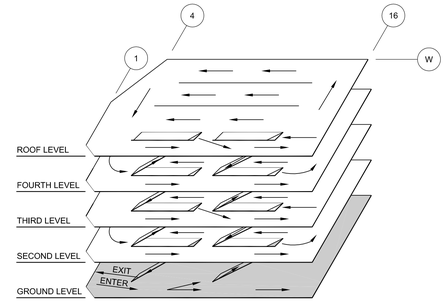
3 TYPICAL ARROW DETAILS
SCALE: 1/2" = 1'-0"



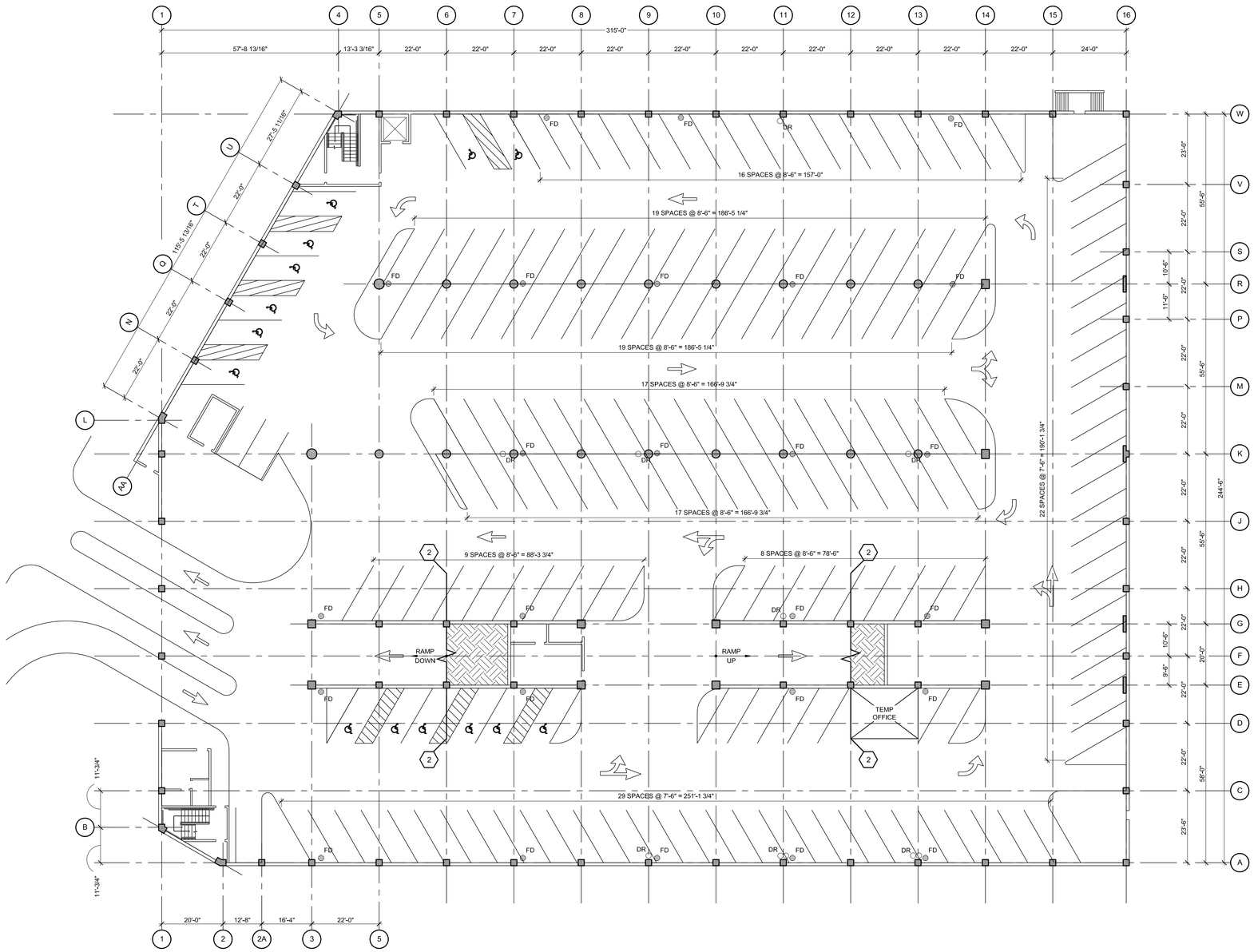
2 60° ACCESSIBLE STRIPING DETAIL
SCALE: 1/8" = 1'-0"



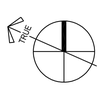
1 60° STRIPING DETAIL
SCALE: 1/8" = 1'-0"



ISOMETRIC



1 LEO A. ROY PARKING GARAGE
GROUND LEVEL STRIPING PLAN



PARKING COUNT			
Level	Parking Spaces	Accessible Parking	Total Spaces
Ground Level	166	14	180
Second Level	199	7	206
Third Level	207	0	207
Fourth Level	207	0	207
Roof Level	207	0	207
Total Spaces	986	21	1007

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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/30/15	ISSUED FOR BIDDING

PROJECT NO: 16-2526.01
DRAWN BY: DWC
CHECKED BY: DWJ
SHEET TITLE:
LRPG
GROUND LEVEL
STRIPING PLAN

RG-101

J:\16-2526-01-LOWER_LOCKS_&_LEO_ROY_CDS\ACAD\REST\2526_RG101.DWG 7/30/2015 11:22:57 AM CLEMENTIN, DONALD

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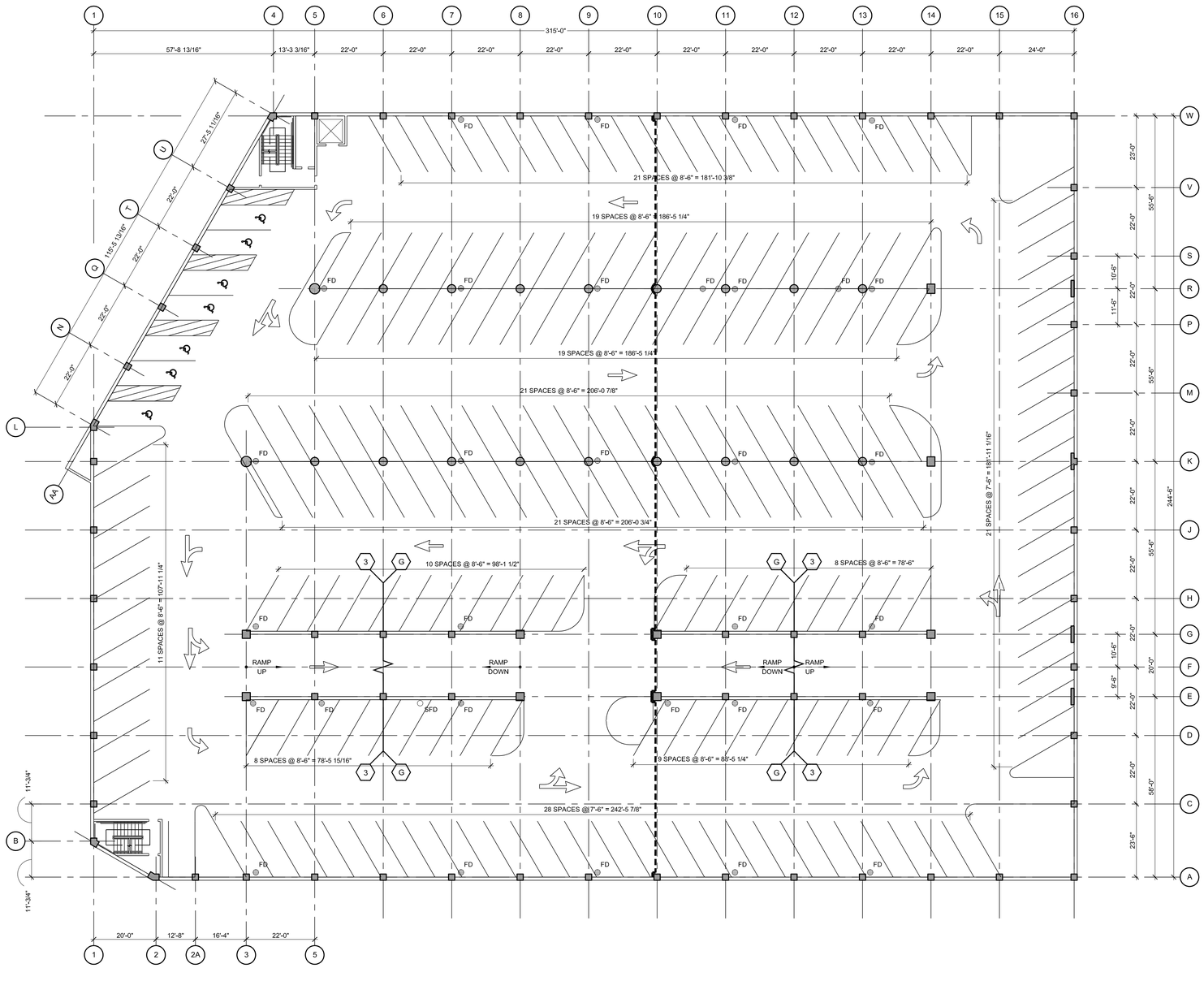
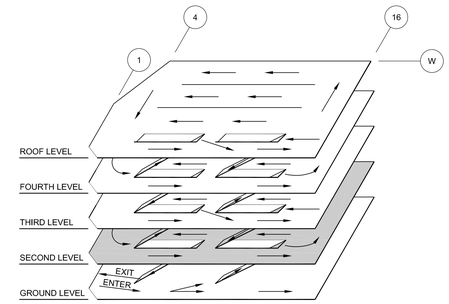


1 LEO A. ROY PARKING GARAGE
SECOND LEVEL STRIPING PLAN

0 8' 16' 32'
1/16" = 1'-0"



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LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/06/15	ISSUED FOR BIDDING

PROJECT NO:	16-2526.01
DRAWN BY:	DWC
CHECKED BY:	DWJ
SHEET TITLE:	

LRPG
SECOND LEVEL
STRIPING PLAN

RG-102

J:\16-2526-01-LOWER_LOCKS_& _LEO_ROY_CD\SACAD\REST\2526_RG102.DWG 7/30/2015 11:23:04 AM CLEMENTIN, DONALD

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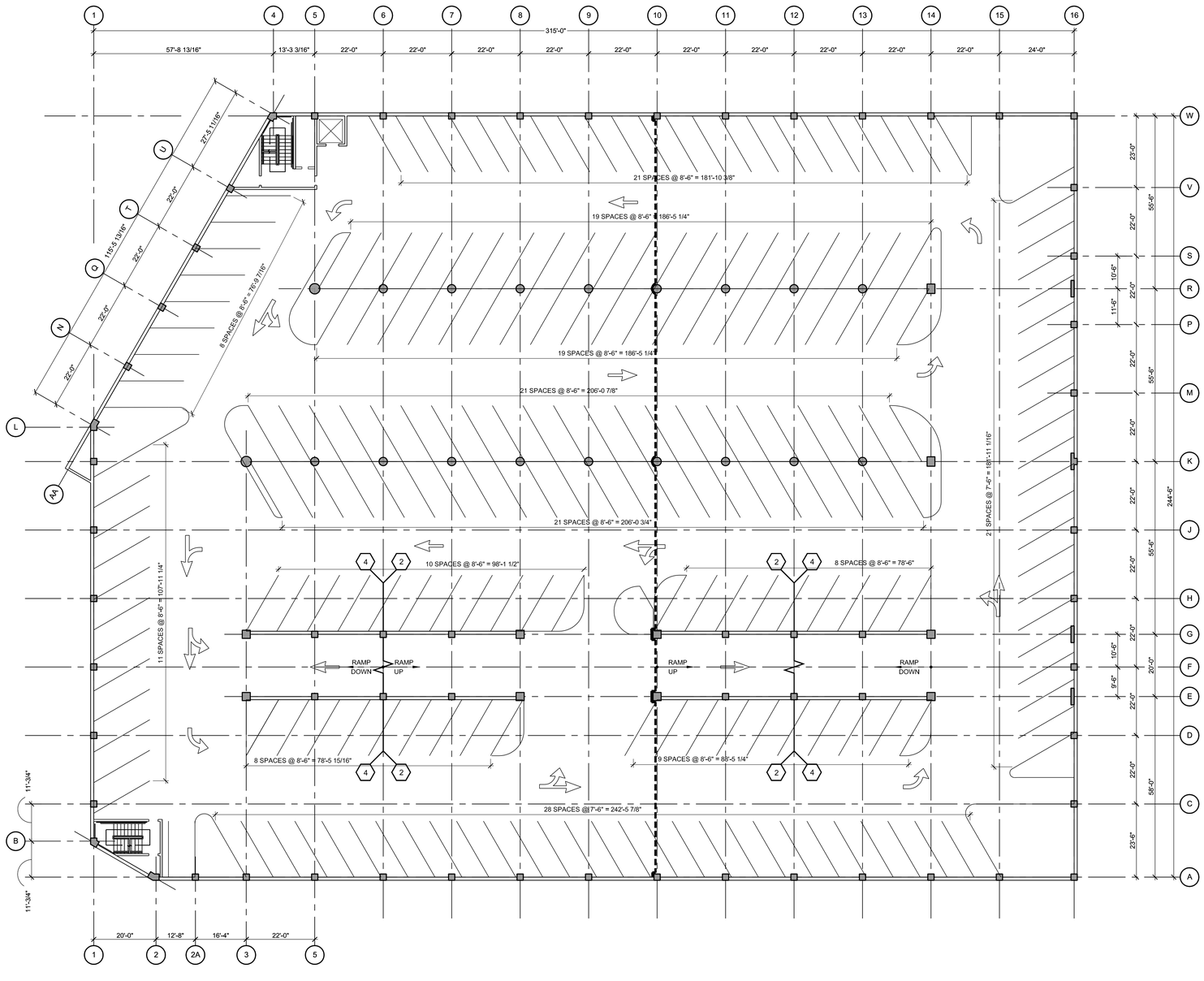
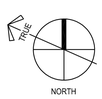
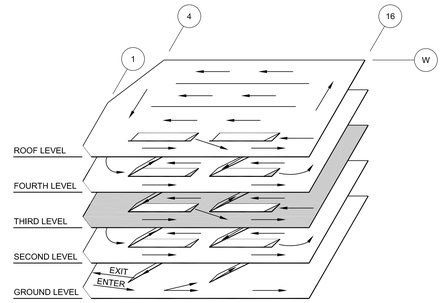


LEO A. ROY PARKING GARAGE
THIRD LEVEL STRIPING PLAN





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PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/05/15	ISSUED FOR BIDDING

PROJECT NO:	16-2526.01
DRAWN BY:	DWC
CHECKED BY:	DWJ
SHEET TITLE:	

LRPG
THIRD LEVEL
STRIPING PLAN

RG-103

J:\16-2526-01-LOWER_LOCKS_& _LEO_ROY_CD\SACAD\REST\2526_RG103.DWG 7/30/2015 11:23:08 AM CLEMENTIN, DONALD

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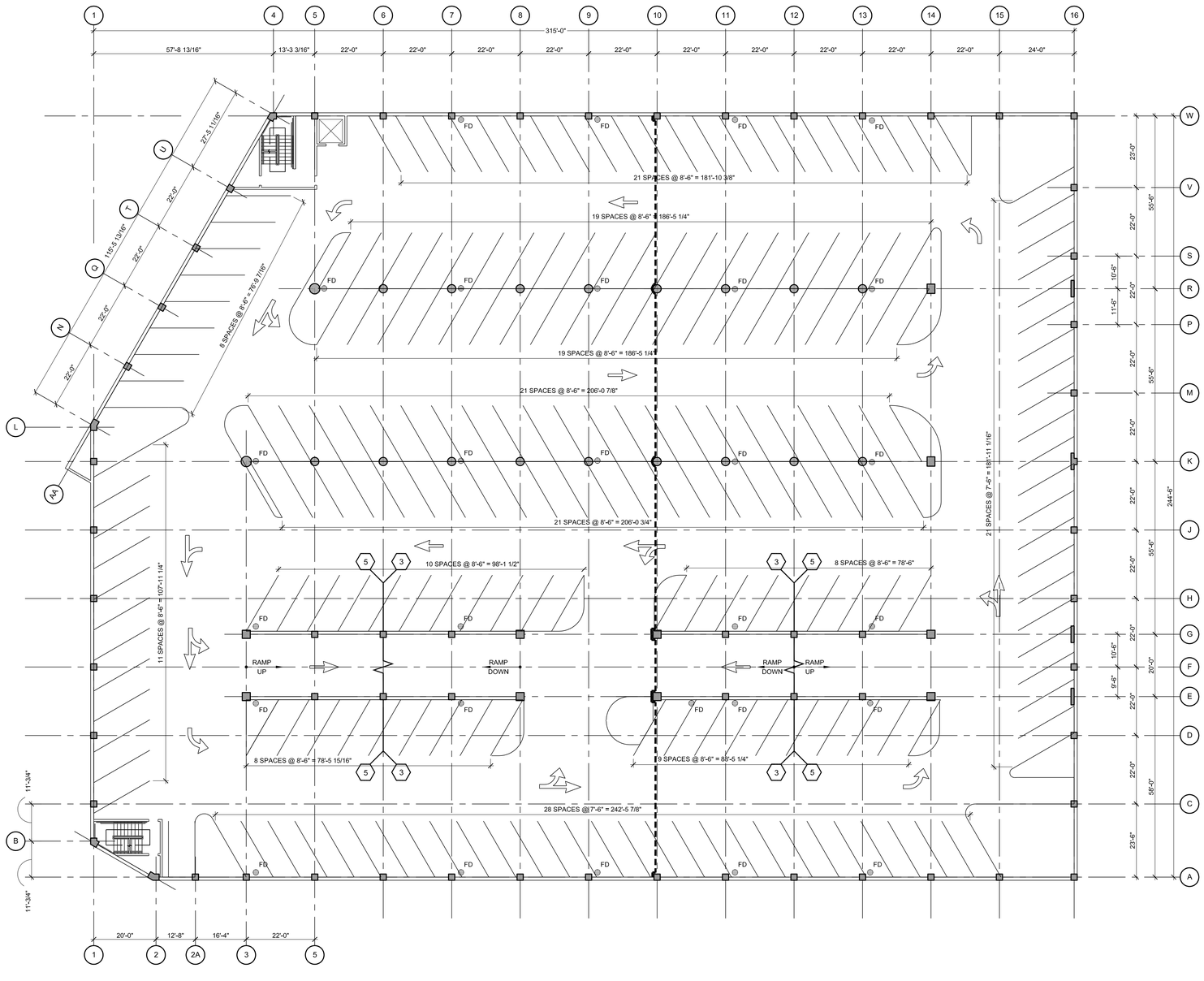
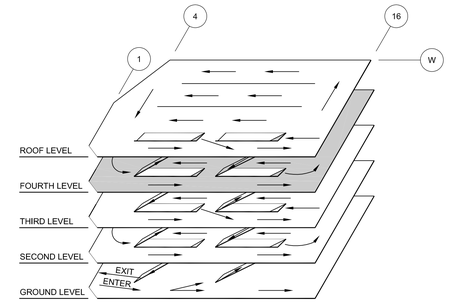


LEO A. ROY PARKING GARAGE
FOURTH LEVEL STRIPING PLAN

1

0 8' 16' 32'
1/16" = 1'-0"

NORTH



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PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/06/15	ISSUED FOR BIDDING

PROJECT NO:	16-2526.01
DRAWN BY:	DWC
CHECKED BY:	DWJ
SHEET TITLE:	

LRPG
FOURTH LEVEL
STRIPING PLAN

RG-104

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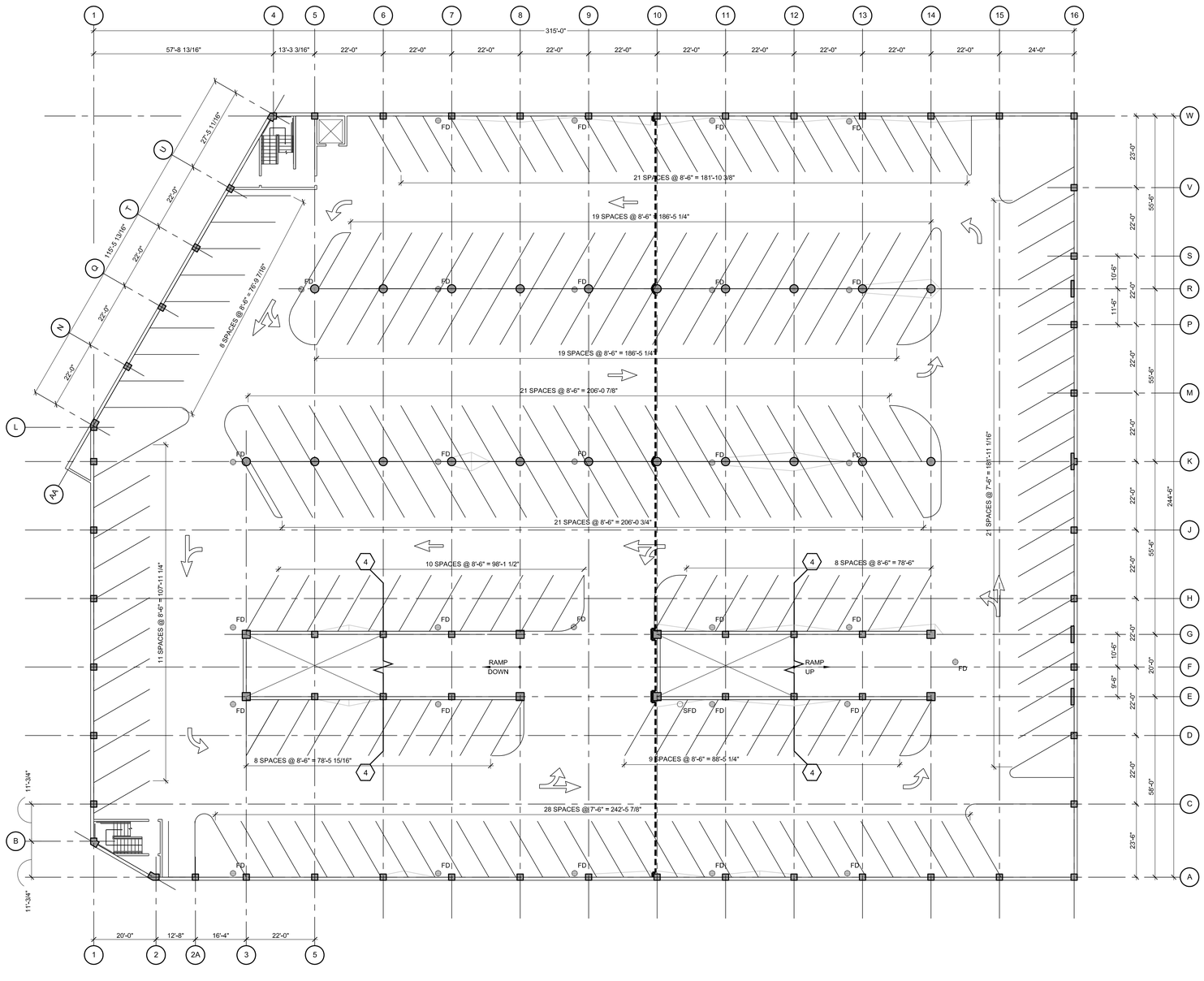
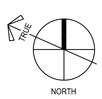
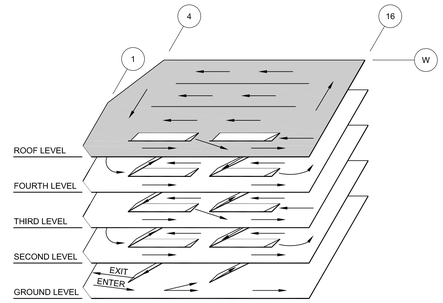


1 LEO A. ROY PARKING GARAGE
ROOF LEVEL STRIPING PLAN





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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/05/15	ISSUED FOR BIDDING

PROJECT NO:	16-2526.01
DRAWN BY:	DWC
CHECKED BY:	DWJ
SHEET TITLE:	

LRPG
ROOF LEVEL
STRIPING PLAN

RG-105

J:\16-2526-01-LOWER_LOCKS_& _LEO_ROY_CD\SACAD\REST\2526_RG105.DWG 7/30/2015 11:23:14 AM CLEMENTIN, DONALD

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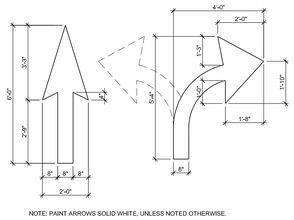
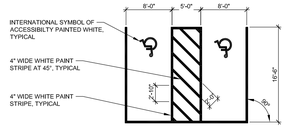
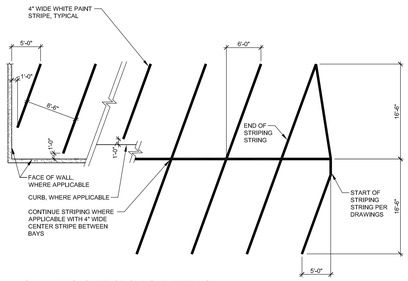


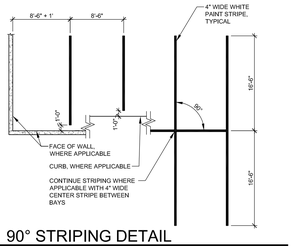
4 TYPICAL ARROW DETAILS
SCALE: 1/2" = 1'-0"



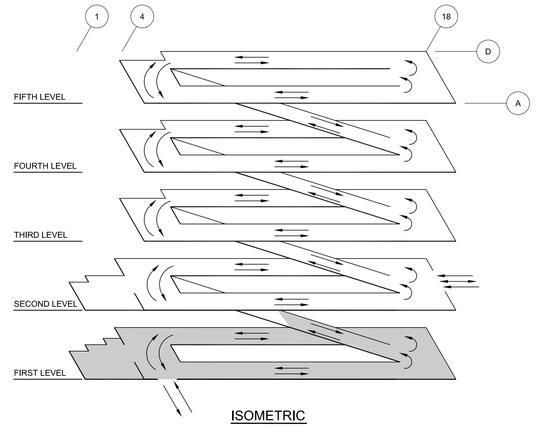
3 90° ACCESSIBLE STRIPING DETAIL
SCALE: 1/8" = 1'-0"



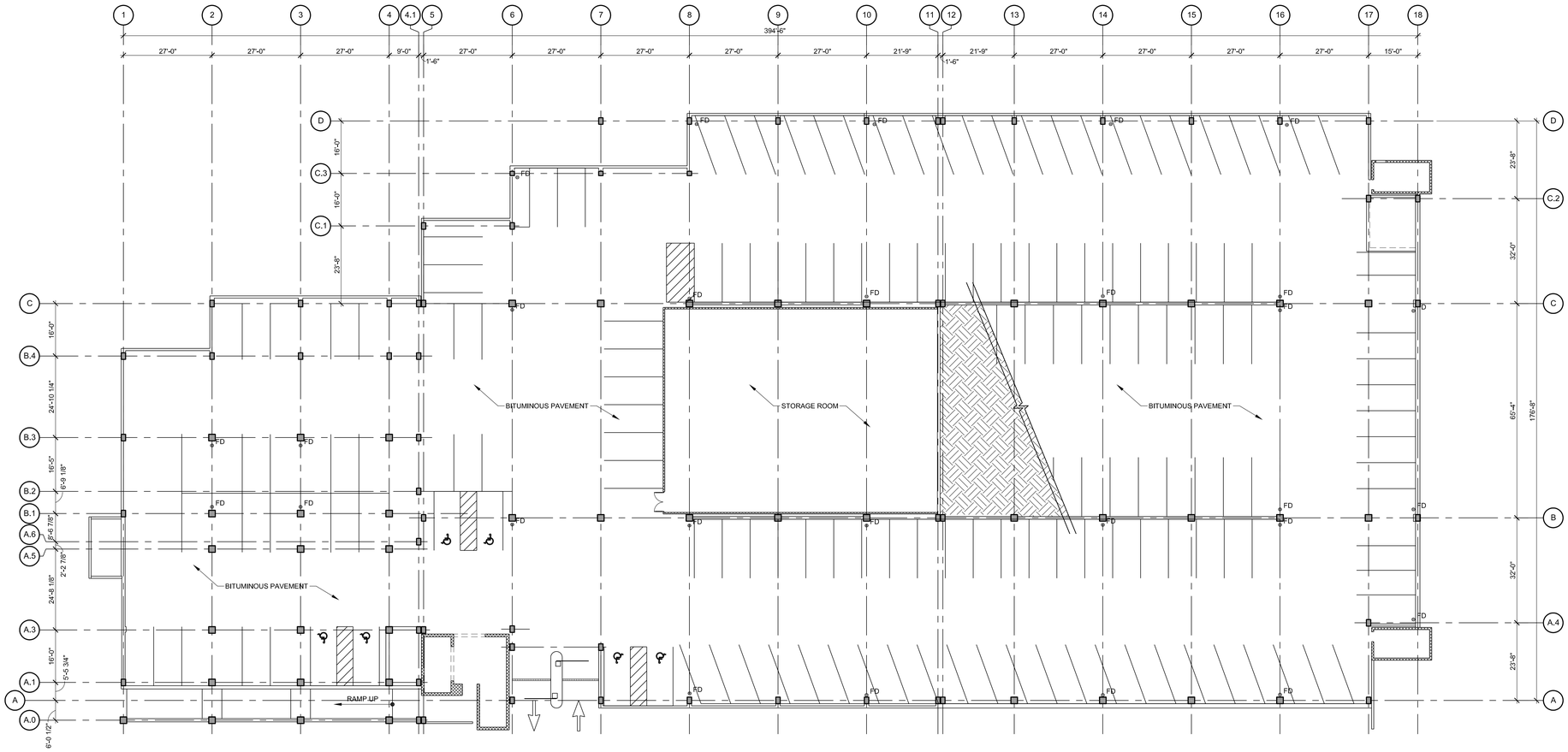
2 70° STRIPING DETAIL
SCALE: 1/8" = 1'-0"



1 90° STRIPING DETAIL
SCALE: 1/8" = 1'-0"



ISOMETRIC



1 LOWER LOCKS PARKING GARAGE
FIRST LEVEL STRIPING PLAN
1/16" = 1'-0"

NORTH

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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/06/15	ISSUED FOR BIDDING

PROJECT NO: 16-2526.01
DRAWN BY: DWC
CHECKED BY: DWJ
SHEET TITLE:
LLPG
FIRST LEVEL
STRIPING PLAN

RG-201

J:\16-2526-01-LOWER_LOCKS &_LEO_ROY_CDS\ACAD\REST2526_RG201.DWG 7/30/2015 1:15:37 PM CLEMENTIN, DONALD

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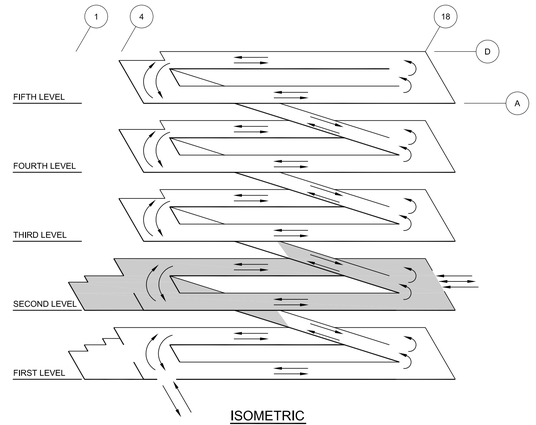

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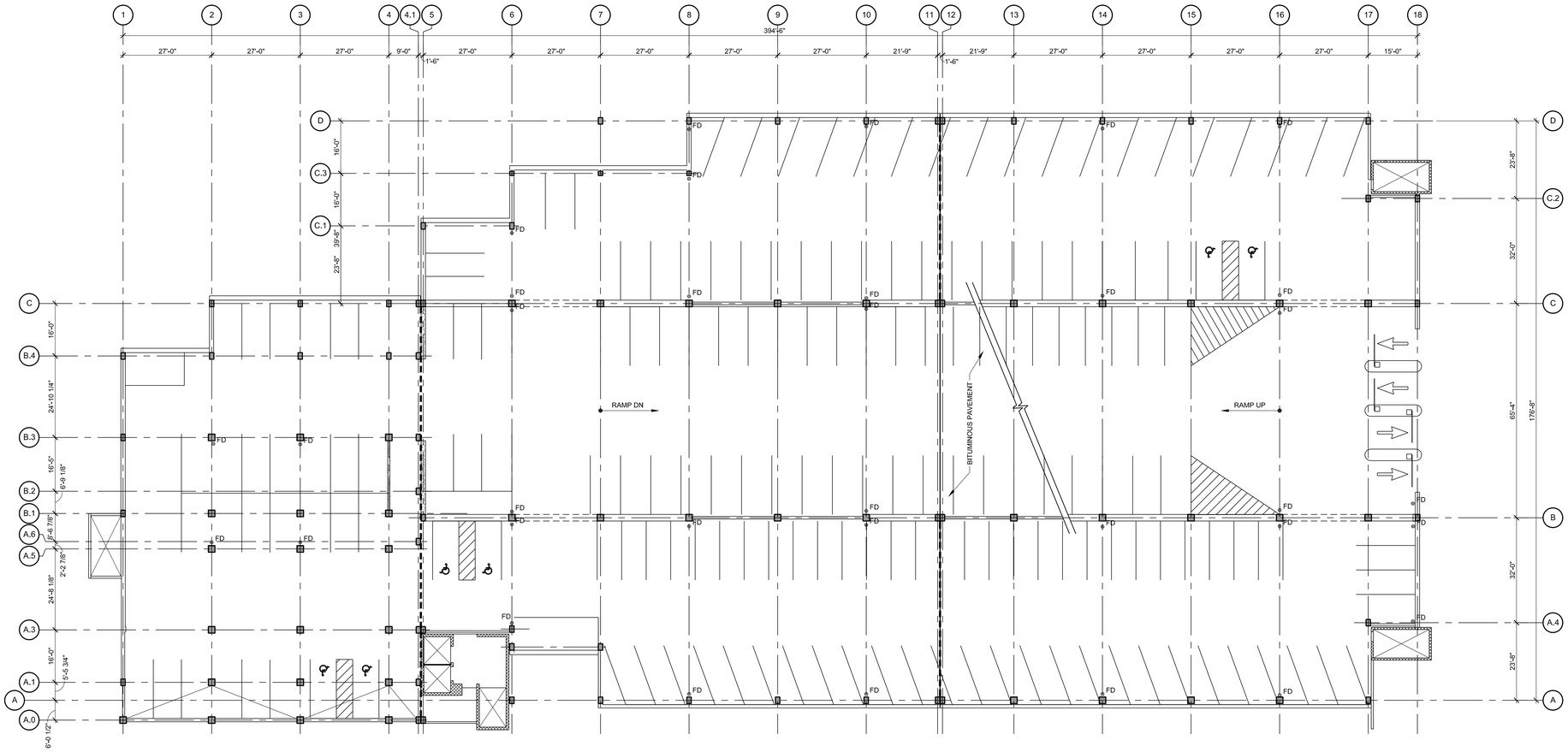

1 LOWER LOCKS PARKING GARAGE
SECOND LEVEL STRIPING PLAN

0 8' 16' 32'
1/16" = 1'-0"

TRUE NORTH

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PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/05/15	ISSUED FOR BIDDING

PROJECT NO: 16-2526.01
DRAWN BY: DWC
CHECKED BY: DWJ
SHEET TITLE:
LLPG
SECOND LEVEL
STRIPING PLAN

RG-202

J:\16-2526-01-LOWER_LOCKS_&_LEO_ROY_CDS\ACAD\REST\2526_RG202.DWG 7/30/2015 11:29:45 AM CLEMENTIN, DONALD

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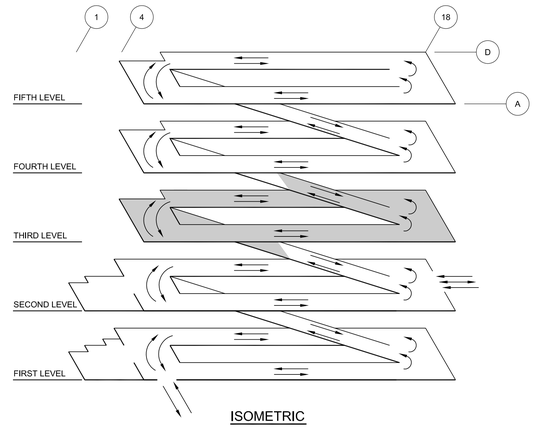

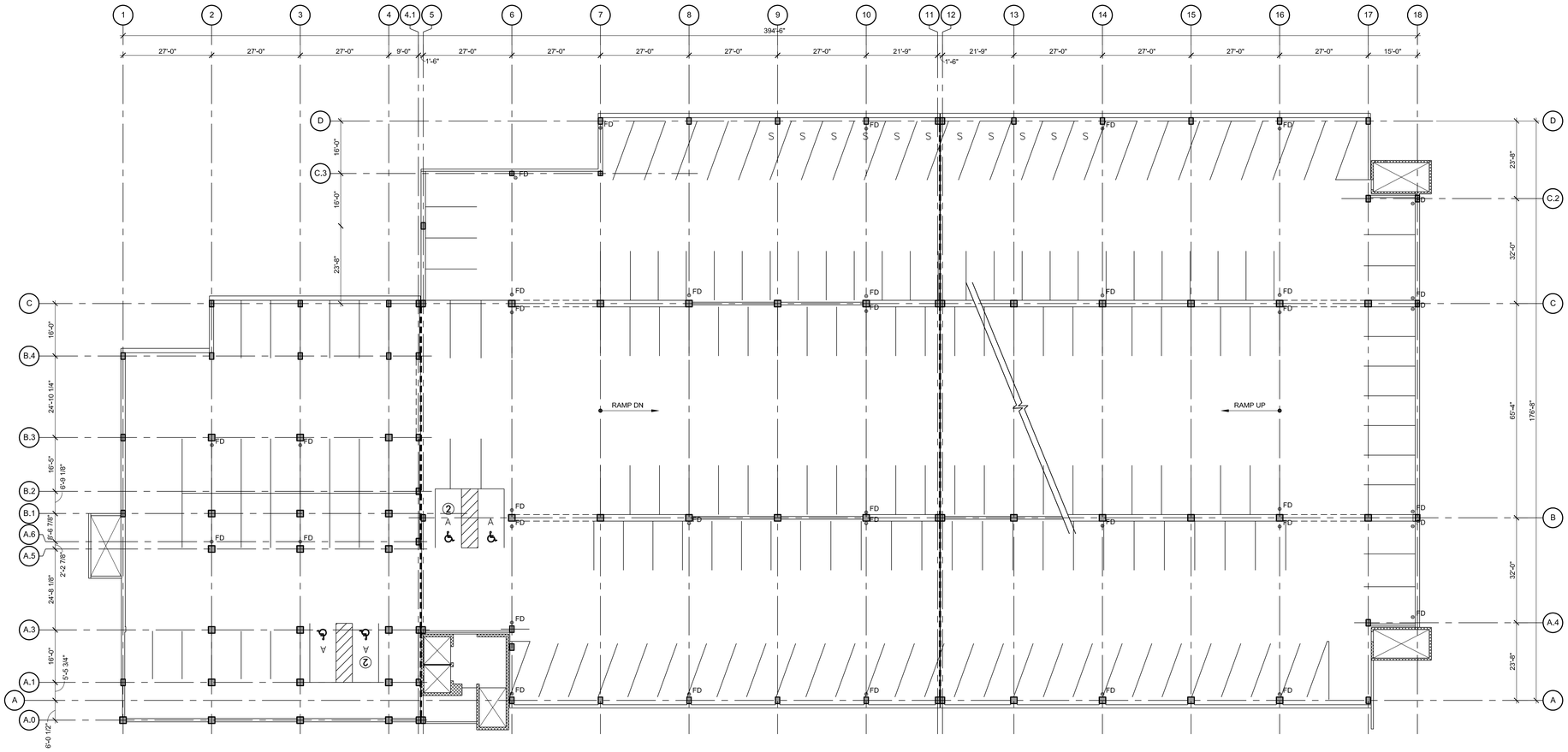

1 LOWER LOCKS PARKING GARAGE
THIRD LEVEL STRIPING PLAN

0 8' 16' 32'
1/16" = 1'-0"

TRUE NORTH

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LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/05/15	ISSUED FOR BIDDING

PROJECT NO: 16-2526.01
DRAWN BY: DWC
CHECKED BY: DWJ
SHEET TITLE:
LLPG
THIRD LEVEL
STRIPING PLAN

RG-203

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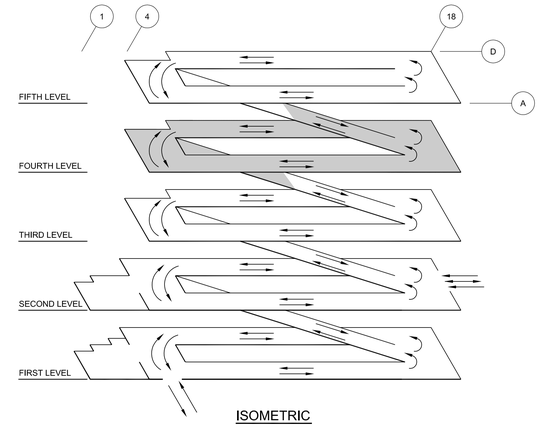

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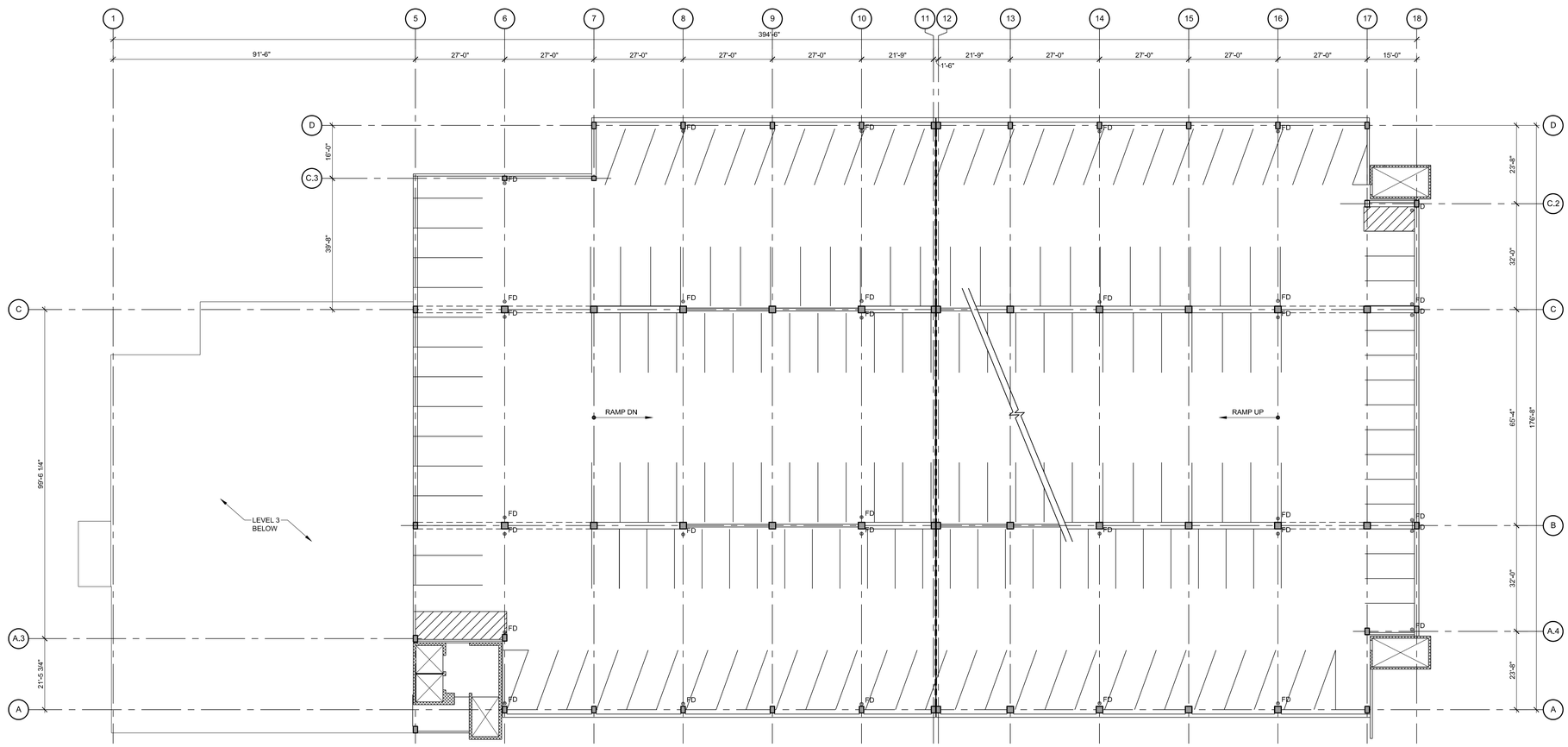

1 LOWER LOCKS PARKING GARAGE
FOURTH LEVEL STRIPING PLAN

0 8' 16' 32'
1/16" = 1'-0"

TRUE NORTH

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LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/05/15	ISSUED FOR BIDDING

PROJECT NO: 16-2526.01
DRAWN BY: DWC
CHECKED BY: DWJ
SHEET TITLE:
LLPG
FOURTH LEVEL
STRIPING PLAN

RG-204

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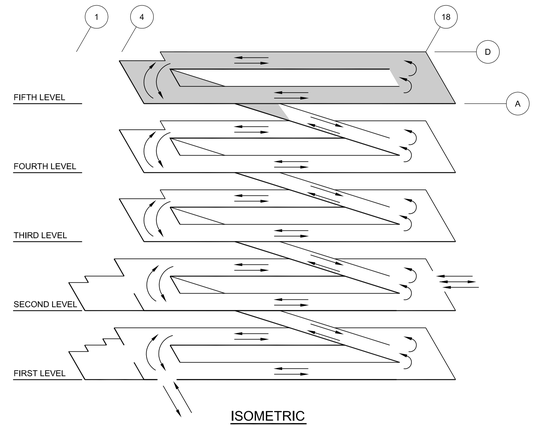

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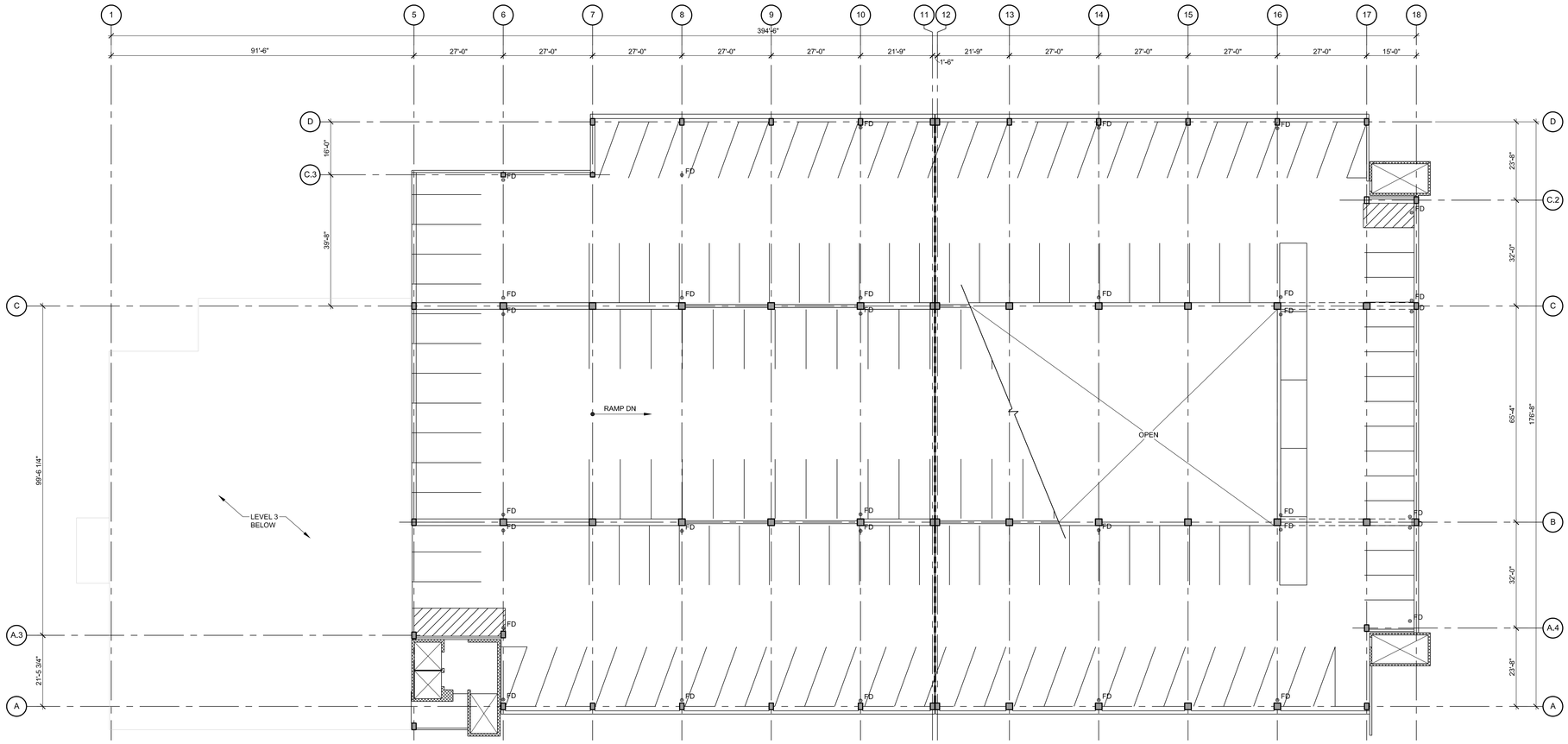
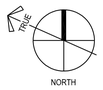


1 LOWER LOCKS PARKING GARAGE
FIFTH LEVEL FLOOR PLAN

0 8' 16' 32'
1/16" = 1'-0"



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PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:		
	08/05/15	ISSUED FOR BIDDING

PROJECT NO: 16-2526.01
DRAWN BY: DWC
CHECKED BY: DWJ
SHEET TITLE:
LLPG
FIFTH LEVEL
STRIPING PLAN

RG-205

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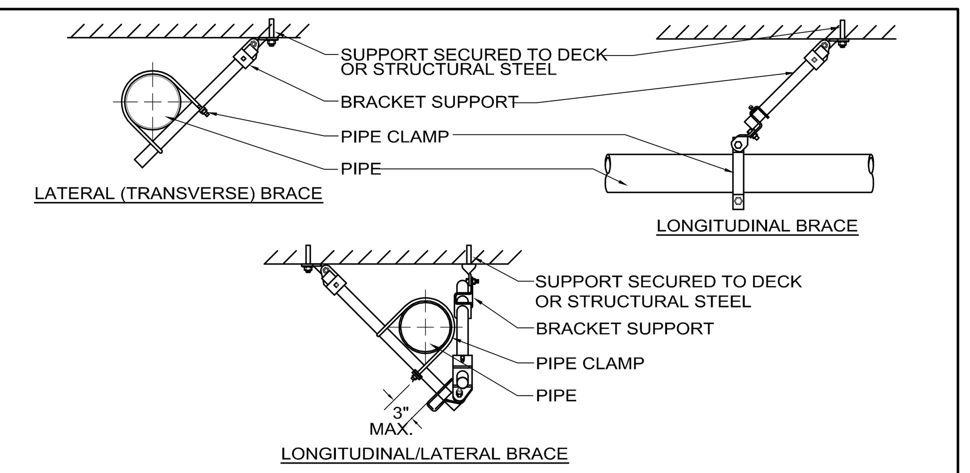
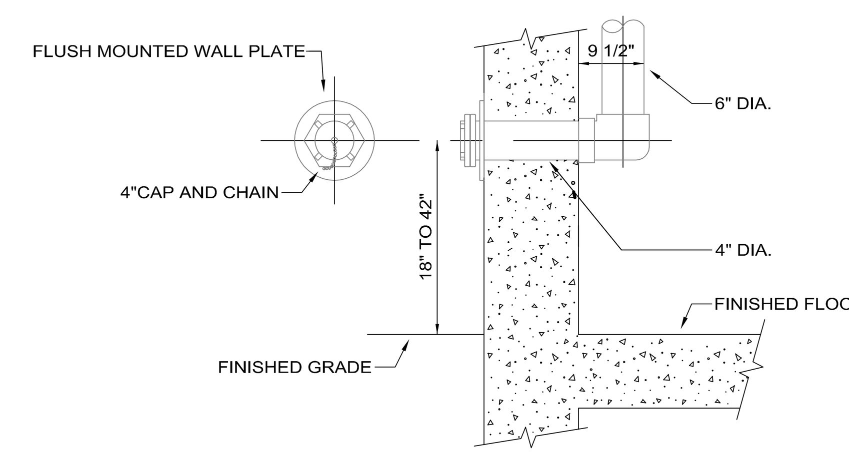
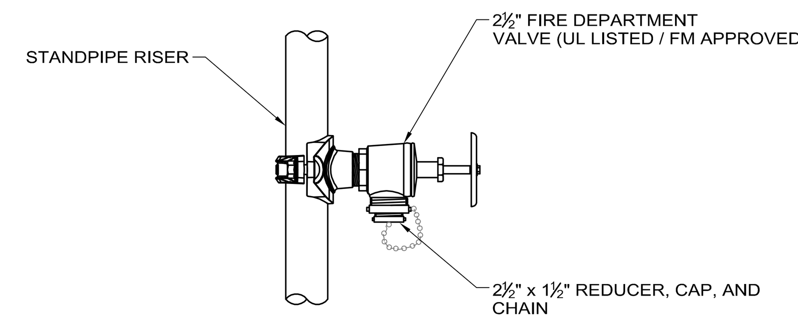


NOTES:
1. ALL APPLICABLE FIRE PROTECTION PIPING SYSTEMS SHALL BE SEISMICALLY BRACED AND INSTALLED PER APPLICABLE SECTIONS OF THE MASS. STATE BUILDING CODE LATEST EDITIONS.

RDK — SEISMIC PIPE BRACING DIAGRAM — NO SCALE — F700

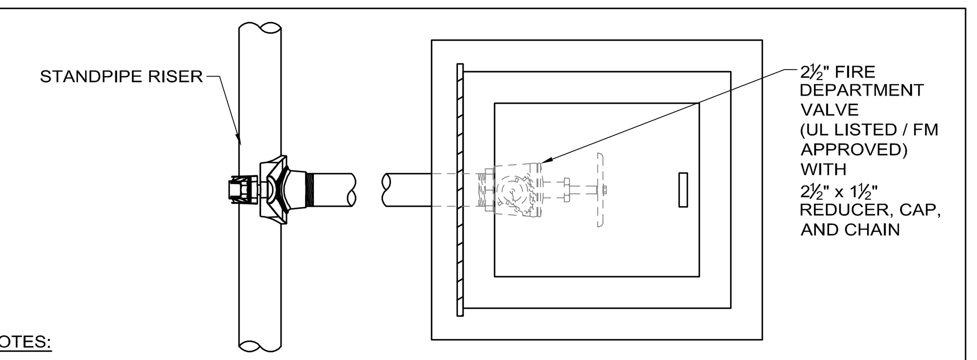


RDK — STORZ FIRE DEPARTMENT CONNECTION DIAGRAM — NO SCALE — F401R



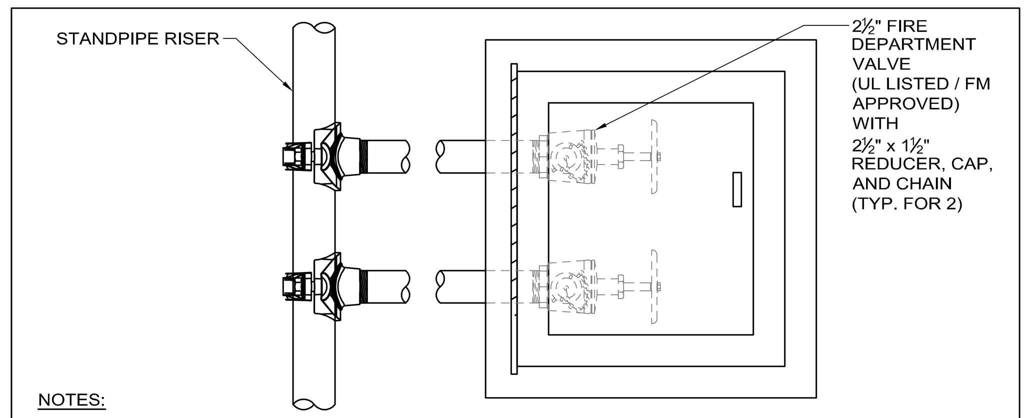
NOTES:
1. INSTALLATION HEIGHT SHALL BE IN ACCORDANCE WITH THE STATE BUILDING CODE AND THE LOCAL FIRE DEPARTMENT REGULATIONS.
2. PROVIDE A UL LISTED / FM APPROVED PRESSURE REDUCING FIRE DEPARTMENT VALVE WHEN SYSTEM PRESSURE AT THE VALVE EXCEEDS 100 PSI.

RDK — FIRE DEPARTMENT VALVE — NO SCALE — F500



NOTES:
1. FURNISH AND INSTALL FIRE DEPARTMENT VALVE AND FIRE DEPARTMENT VALVE CABINET.
2. INSTALLATION HEIGHT SHALL BE IN ACCORDANCE WITH THE STATE BUILDING CODE AND THE LOCAL FIRE DEPARTMENT REGULATIONS.
3. PROVIDE A UL LISTED / FM APPROVED PRESSURE REDUCING FIRE DEPARTMENT VALVE WHEN SYSTEM PRESSURE AT THE VALVE EXCEEDS 100 PSI.
4. PROVIDE A FIRE-RATED FIRE DEPARTMENT VALVE CABINET WHEN THE CABINET PENETRATES A FIRE-RATED WALL.

RDK — FIRE DEPARTMENT VALVE CABINET — NO SCALE — F501



NOTES:
1. FURNISH AND INSTALL FIRE DEPARTMENT VALVE AND FIRE DEPARTMENT VALVE CABINET.
2. INSTALLATION HEIGHT SHALL BE IN ACCORDANCE WITH THE STATE BUILDING CODE AND THE LOCAL FIRE DEPARTMENT REGULATIONS.
3. PROVIDE A UL LISTED / FM APPROVED PRESSURE REDUCING FIRE DEPARTMENT VALVE WHEN SYSTEM PRESSURE AT THE VALVE EXCEEDS 100 PSI.
4. PROVIDE A FIRE-RATED FIRE DEPARTMENT VALVE CABINET WHEN THE CABINET PENETRATES A FIRE-RATED WALL.

RDK — DUAL FIRE DEPARTMENT VALVE CABINET — NO SCALE — F502

ABBREVIATIONS

AFF	ABOVE FINISH FLOOR
AP	ACCESS PANEL
BLDG	BUILDING
CLG	CEILING
CTE	CONNECT TO EXISTING
CONT	CONTINUATION
D	DRY SPRINKLER SYSTEM
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
EL/ELEV	ELEVATION
ETBR	EXISTING TO BE REMOVED
EX	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FDV	FIRE DEPARTMENT VALVE
FDVC	FIRE DEPARTMENT VALVE CABINET
FFE	FINISH FLOOR ELEVATION
FLR	FLOOR
FP	FIRE PROTECTION
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
MECH	MECHANICAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
OS&Y	OUTSIDE SCREW & YOLK
PG	PRESSURE GAUGE
PSI	POUNDS PER SQUARE INCH
SPEC	SPECIFICATION
SPD	SPRINKLER DRAIN
STP	STANDPIPE SYSTEM
TS	TAMPER SWITCH
TYP	TYPICAL

PIPING LINETYPES

FDC	FIRE DEPARTMENT CONNECTION PIPING
SPD	SPRINKLER DRAIN
STP	MANUAL DRY STANDPIPE SYSTEM
– – – –	EXISTING TO REMAIN
++++++	EXISTING TO BE REMOVED

PIPING SYMBOLS

- DIRECTION OF SLOPE
- ELBOW UP OR RISE
- ELBOW DOWN OR DROP
- TEE LOOKING DOWN
- TEE LOOKING UP
- CAP OR END OF PIPE
- PIPE SLEEVE

ANNOTATIONS

- 1 / FP-1 — DETAIL DESIGNATION NUMBER; DETAIL DESIGNATION DRAWING
- # / # — HYDRAULIC CALCULATION NODE POINT

EQUIPMENT & VALVES

- CHECK VALVE
- FIRE DEPARTMENT HOSE VALVE
- FIRE DEPARTMENT HOSE VALVE CABINET
- SUPERVISED OS&Y VALVE
- WALL MOUNTED FIRE DEPARTMENT INLET CONNECTION

DEMOLITION NOTES

1. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE EXTENT OF THE DEMOLITION SCOPE OF WORK AND AREA. THE DEMOLITION PLANS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED.
2. VISIT THE SITE PRIOR TO SUBMISSION OF THE BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF THE WORK.
3. TRACE AND LABEL ALL EXISTING SYSTEMS WITHIN THE DEMOLITION AREA AND BEYOND PRIOR TO DISCONNECTION AND REMOVAL TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION AREA IS AFFECTED. REVIEW IN DETAIL WITH THE GENERAL CONTRACTOR AND OWNER WHAT IS TO BE REMOVED AND REMAIN PRIOR TO WORK COMMENCING THE DEMOLITION. THERE SHALL BE NO INTERRUPTION OF SERVICES OUTSIDE THE DEMOLITION AREA WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE.
4. NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING THE DEMOLITION.
5. ALL ITEMS REMOVED SHALL BE OFFERED TO THE OWNER FOR SALVAGE. IF THE OWNER DOES NOT TAKE POSSESSION, DISPOSE OF THE ITEMS IN A SAFE AND LEGAL MANNER. ALL ITEMS CLASSIFIED AS HAZARDOUS SHALL BE DISPOSED AS HAZARDOUS WASTES AND A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PROVIDED TO THE OWNER.
6. ENSURE THE SAFE PASSAGE OF PERSONS IN AND AROUND THE BUILDING DURING DEMOLITION. PREVENT INJURY TO PERSONS AND DAMAGE TO PROPERTY. PROVIDE ADEQUATE SHORING AND BRACING TO PREVENT COLLAPSE. IMMEDIATELY REPAIR DAMAGED PROPERTY TO THE CONDITION BEFORE BEING DAMAGED. TAKE EFFECTIVE MEASURES TO PREVENT WINDBLOWN DUST.
7. DO NOT USE CUTTING TORCHES UNTIL WORK AREA IS CLEARED OF FLAMMABLE MATERIALS. AT CONCEALED SPACES, SUCH AS PIPE INTERIORS, VERIFY CONDITION AND CONTENTS OF HIDDEN SPACE BEFORE STARTING FLAME-CUTTING OPERATIONS. MAINTAIN FIRE WATCH AND PORTABLE FIRE-SUPPRESSION DEVICES DURING FLAME-CUTTING OPERATIONS. MAINTAIN ADEQUATE VENTILATION WHEN USING CUTTING TORCHES.
8. ALL REQUIRED SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER'S REPRESENTATIVE AND THE AUTHORITY HAVING JURISDICTION.
9. CREATE AND SUBMIT IMPAIRMENT PLANS TO THE AHJ IF ANY PORTION OF THE EXISTING FIRE PROTECTION SYSTEM IS TAKEN OUT OF SERVICE DURING THE EXECUTION OF THE PROJECT.
10. REMOVE ABANDONED AND/OR SCHEDULED TO BE DEMOLISHED FIRE PROTECTION SPRINKLERS, PIPE, FITTINGS, HANGERS, AND SUPPORTS BACK TO THE LAST ACTIVE MAIN OR BRANCHLINE. CAP OR PLUG ALL OPEN OUTLETS.

GENERAL NOTES

1. FIRE PROTECTION WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE BUILDING CODE, LOCAL AMENDMENTS AND THE REFERENCED NATIONAL FIRE PROTECTION ASSOCIATION CODES INCLUDING 13 AND 14.
2. ALL FIRE PROTECTION SYSTEMS, EQUIPMENT, PIPING AND VALVES SHALL BE INSTALLED AND TESTED BY A SPRINKLER CONTRACTOR LICENSED BY THE STATE AND EXPERIENCED IN THE INSTALLATION OF SPRINKLER SYSTEMS.
3. OBTAIN ALL PERMITS AND PAY ALL FEES ASSOCIATED WITH THIS WORK PRIOR TO COMMENCEMENT.
4. PIPING AND EQUIPMENT IS SHOWN DIAGRAMMATICALLY THE ACTUAL ROUTING OF PIPING AND EXACT LOCATION OF EQUIPMENT SHALL BE DETERMINED IN THE FIELD.
5. THE DRAWINGS SUGGEST ROUTING OF PIPING, AND PIPE SIZES. THE CONTRACTOR SHALL PRODUCE A COMPLETE SET OF WORKING PLANS IN ACCORDANCE WITH NFPA 14. THE SYSTEM SHALL BE HYDRAULICALLY CALCULATED PER THE DESIGN CRITERIA SPECIFIED. ALL PLANS AND CALCULATIONS SHALL BE STAMPED BY THE CONTRACTOR'S REGISTERED FIRE PROTECTION ENGINEER AND SHALL BE SUBMITTED TO THE LOCAL AUTHORITY AND OWNER'S UNDERWRITER FOR APPROVAL.
6. IN ADDITION TO REVIEWING AND COORDINATING WITH THE OTHER TRADES (STRUCTURAL, PLUMBING, AND ELECTRICAL) THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE DETAILS OF CONSTRUCTION.
7. FURNISH AND INSTALL ALL NECESSARY PIPING EQUIPMENT SUPPORTS AND ANY EQUIPMENT NOT SHOWN ON DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS BUT NECESSARY TO PROVIDE A COMPLETE AND WORKABLE SYSTEM.
8. PROVIDE ACCESS TO ALL EQUIPMENT REQUIRING PERIODIC SERVICE AND MAINTENANCE.
9. FURNISH ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION UNDER THE RELATED TRADES.
10. PITCH ALL PIPING TO DRAIN, PROVIDE AN AUXILIARY DRAIN AT ALL LOW POINTS.
11. PROVIDE WATER TIGHT SLEEVES ON ALL PIPES PASSING THROUGH EXTERIOR WALLS.
12. ALL VALVES CONTROLLING FIRE PROTECTION MAINS SHALL BE PROVIDED WITH TAMPER/SUPERVISORY SWITCHES WIRED TO THE FIRE ALARM CONTROL PANEL.
13. CONTRACTOR SHALL PROVIDE FIRE STOPPING FOR ALL PENETRATIONS THRU FIRE WALLS AND FIRE RATED SEPERATIONS, CONTRACTOR SHALL COORDINATE WITH THE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND RATINGS OF ALL FIRE RATED SEPARATIONS AND BARRIERS, INSTALLATION OF FIRE STOPPING SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
14. ALL FIRE PROTECTION SYSTEMS SHALL BE SEISMICALLY BRACED ACCORDING TO THE APPLICABLE SECTIONS OF THE STATE BUILDING CODE AND THE REFERENCED EDITION OF NFPA 14.

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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
	06-19-15	ISSUED FOR BIDDING

ISSUED:

PROJECT NO: 16-2526.01
DRAWN BY: MS
CHECKED BY: JTF
SHEET TITLE:

FIRE PROTECTION LEGENDS, NOTES AND ABBREVIATIONS

FP0.00

Q:\2015\20150312 - LOWELL ROY - LOWER LOCKS PARKING GARAGES\1200 DRAWINGS\1201 FIRE PROTECTION\PLOT FILES\20150312 FP0.00 FIRE PROTECTION LEGENDS, NOTES AND DETAILS.DWG 6/19/2015 3:59:11 PM LUKAS, CHRISTOPHER

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PIPE, FITTING, HANGER, VALVE AND FIRE ALARM SWITCH SCHEDULE

SERVICE	MAXIMUM SERVICE OPERATING LIMITS			PIPE SIZE RANGE					
				1" TO 1¼"			1½" AND LARGER		
	LEGEND	PRESS. (PSIG)	TEMP (°F)	PIPE	FITTINGS	HOLE CUT OUTLETS	PIPE	FITTINGS	HOLE CUT OUTLETS
Standpipe (Dry Pipe)	STP/ FDC	175	70	N/A	N/A	N/A	UL 852, ASTM A53 welded and seamless galvanized steel, schedule 40 threaded and coupled or, schedule 10 roll grooved ends.	ANSI/ASME B16.4, ASTM galvanized cast iron class 125 threaded or, UL 213, ASTM A536 galvanized ductile iron grooved.	UL 213 two-piece galvanized (ASTM A153) ductile iron (ASTM A536) body, bolt assembled with grade "E" EPDM gasket. U-bolt or strap-on fittings are not acceptable. Listed for same working pressure as pipe.
Sprinkler Drain Piping	SPD	175	70	UL 852, ASTM A53 welded and seamless galvanized steel, schedule 40 threaded and coupled.	ANSI/ASME B16.4, ASTM A153 galvanized cast iron class 125 threaded.	UL 213 two-piece galvanized (ASTM A153) ductile iron (ASTM A536) body, bolt assembled with grade "E" EPDM gasket. U-bolt or strap-on fittings are not acceptable. Listed for same working pressure as pipe.	UL 852, ASTM A53 welded and seamless galvanized steel, schedule 40 threaded and coupled or, schedule 10 roll grooved ends.	ANSI/ASME B16.4, ASTM galvanized cast iron class 125 threaded or, UL 213, ASTM A536 galvanized ductile iron grooved.	UL 213 two-piece galvanized (ASTM A153) ductile iron (ASTM A536) body, bolt assembled with grade "E" EPDM gasket. U-bolt or strap-on fittings are not acceptable. Listed for same working pressure as pipe.
				ACCEPTABLE MANUFACTURERS					
				Allied Tube & Conduit Corp.; Bullmoose Tube Co.; Wheatland Tube Co.	Anvil International LP; Tyco Fire & Building Products; Ward Manufacturing Inc.	Tyco Fire & Building Products; Grinnell; Victaulic Co.	Allied Tube & Conduit Corp.; Bullmoose Tube Co.; Wheatland Tube Co.	Anvil International LP; Tyco Fire & Building Products; Ward Manufacturing Inc.	Tyco Fire & Building Products; Grinnell; Victaulic Co.

Pipe Support	UL 203 galvanized band hanger with galvanized threaded steel rod and UL 203 beam clamp. Acceptable manufacturers: Afcon Inc; Cooper B-Line Inc; Erico Inc; PHD Manufacturing Inc; Tolco (Nibco Co.)
Seismic Restraint	UL 203A rigid sway brace assembly with attachment fittings appropriate to building structure. Acceptable manufacturers: Afcon Inc; Erico Inc; Tolco (Nibco Co.)
Control Valves	UL listed gate type ductile iron body with grooved ends, integral indicating device and pre-wired supervisory switch. Acceptable manufacturers: Victaulic Co; Viking Corp; Tyco Fire and Building Products; Reliable Sprinkler Co.
Check Valves	UL 312, galvanized cast-iron body and bolted cap, with bronze disc and grooved ends. Acceptable manufacturers: Victaulic Co; Viking Corp; Tyco Fire and Building Products; Reliable Sprinkler Co.

FIRE ALARM MONITORING SWITCHES

General	Valve supervisory switches	Acceptable Manufacturers
NEMA enclosure suitable for intended application; include tamper resistant cover; 250 psig pressure rating; two sets, single pole double throw form C contacts.	UL 753 with normally closed contacts and compatible with valve stem to be monitored.	Gamewell Co, System Sensor, Potter Electric Signal Co.

GENERAL MATERIAL NOTES:

1.	Pipe, fittings and valves shall conform to the latest standards per relevant sections of ANSI, ASTM, AWWA and NFPA. In addition, adhere to state and local plumbing and fire codes.
2.	Rate system components for the maximum working pressure to which they are exposed but not less than 175 psig.
3.	Pipe, valves and fittings shall meet or exceed ASTM/ANSI standards listed in the National Fire Codes and specifically in NFPA 13 and NFPA 14.
4.	All threaded piping and fittings shall conform to thread cuts listed in ANSI/ASME B1.20.1.
5.	Welding methods shall comply with all the requirements listed in American Welding Society document B2.1.
6.	Each length of pipe, each pipe fitting, material or device used in the respective system shall have cast, stamped or indelibly marked the maker's name or mark, weight and quality of the product when such marking is required by the approved standards to which it applies.
7.	All fire service piping shall be seismically braced per applicable sections of the state building code. Standards for braces and seismic joints shall be installed per the National Fire Prevention Code NFPA 13 and NFPA 14 as referenced by the state building code.
8.	Fittings into which drop nipples or riser nipples are screwed shall be threaded type. Plain end fittings with mechanical couplings, fittings which use steel gripping devices to bite into the pipe and segmented welded fittings shall not be used.
9.	On threaded pipe joints, apply joint compound or teflon tape to male pipe threads.

SPECIFICATIONS

GENERAL

1. SCOPE
   - A. PROJECT SCOPE INCLUDES THE RENOVATION OF THE DRY MANUAL STANDPIPE SYSTEMS AT THE LEO ROY AND LOWER LOCKS PARKING GARAGES IN LOWELL, MA.
   - B. THE WORK UNDER THIS SECTION INCLUDES ALL LABOR, MATERIALS, FEES AND ACTIVITIES NECESSARY TO INSTALL, TEST AND COMMISSION A FULLY FUNCTIONAL AND CODE COMPLIANT MANUAL DRY STANDPIPE SYSTEM FOR THE AREAS SHOWN.
   - C. SUBMITTALS SHALL BE PREPARED AND FORWARDED TO THE ARCHITECT/ENGINEER FOR REVIEW. SUCCESSFULLY COMPLETING THE SUBMITTAL AND REVIEW PROCESS OF FIRE SPRINKLER SYSTEM PRODUCT DATA, SHOP DRAWINGS, CALCULATIONS, AS-BUILT DRAWINGS AND TEST CERTIFICATES SHALL BE A PREREQUISITE TO ISSUING FINAL ENGINEER APPROVAL CERTIFICATION FOR OCCUPANCY.
     - C.A. WORKING PLANS AND HYDRAULIC CALCULATIONS SHALL BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER OR PREPARED BY A NICET CERTIFIED LEVEL III OR IV AUTOMATIC SPRINKLER SYSTEM ENGINEERING TECHNICIAN. WORKING PLANS SHALL BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER WHEN REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
   - D. THE WORK SHALL BE AS DESCRIBED DIRECTLY BY THESE DRAWINGS AND RELATED DOCUMENTS UNDER THIS SECTION AND AS AFFECTED BY RELATED DOCUMENTS NOT EXCLUSIVE TO THE WORK OF THIS SECTION.
2. PURPOSE OF ENGINEERING DRAWINGS
   - A. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED FOR PURPOSES OF OBTAINING A BUILDING PERMIT AND AS THE BASIS OF DESIGN FOR PREPARATION OF DETAILED SHOP DRAWINGS (WORKING PLANS). THE DRAWINGS ARE NOT INTENDED TO SHOW EXACT LOCATIONS, BUT TO DEMONSTRATE THE CONFIGURATION OF MAJOR SYSTEM COMPONENTS AND APPROXIMATE SPRINKLER LOCATIONS. FIELD VERIFY LOCATIONS OF ALL SPRINKLERS AND SYSTEM PIPING.
   - B. ALL COMPONENTS SHOWN ARE NEW UNLESS SPECIFICALLY NOTED AS EXISTING.
3. RELATED DOCUMENTS
   - A. ARCHITECTURAL, STRUCTURAL & ENGINEERING DRAWINGS & SPECIFICATIONS
   - B. OWNER AND/OR TENANT CONSTRUCTION STANDARDS OF PRACTICE
   - C. MANUAL DRY STANDPIPE SYSTEM DESIGN HYDRAULIC CALCULATIONS
   - D. MANUAL DRY STANDPIPE SYSTEM SPECIFICATIONS
   - E. FIRE PROTECTION SYSTEMS NARRATIVE REPORT
4. CODES & STANDARDS
   - A. BUILDING CODE: MASSACHUSETTS STATE BUILDING CODE, 8TH ED. (780 CMR)
   - B. FIRE CODE: MASSACHUSETTS STATE FIRE PREVENTION CODE (527 CMR)
   - C. SPRINKLER STANDARD: NFPA 13 (2013)
   - D. STANDPIPE STANDARD: NFPA 14 (2013)
   - E. FIRE ALARM CODE: NFPA 72 (2010)
5. DESIGN CRITERIA
   - A. OPEN PARKING GARAGE: PROVIDE A MANUAL DRY STANDPIPE SYSTEM CAPABLE OF PROVIDING 250 GPM AT THE TWO HYDRAULICALLY MOST REMOTE HOSE CONNECTIONS ON THE MOST REMOTE STANDPIPE AND AT THE TOPMOST OUTLETS OF EACH OF THE OTHER STANDPIPES AT A MINIMUM RESIDUAL PRESSURE OF 100 PSI AT A MAXIMUM TOTAL FLOW OF 1,250 GPM IN ACCORDANCE WITH NFPA 14 AND THE MASSACHUSETTS STATE BUILDING CODE.
6. QUALITY ASSURANCE
   - A. PRODUCTS: DOMESTICALLY MANUFACTURED, UL LISTED & FM APPROVED FOR USE WITH FIRE SPRINKLER SYSTEMS.
   - B. INSTALLERS: LICENSED IN GOOD STANDING AS SPRINKLER PIPE FITTERS IN MASSACHUSETTS.
7. WARRANTEE
   - A. WARRANTEE WORK OF THIS SECTION IN WRITING FOR ONE YEAR FROM DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THE PERIOD, PROMPTLY AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.
8. INSPECTION OF SITE CONDITIONS
   - A. AT THE TIME OF BID, ALL EXCEPTIONS TAKEN TO THESE DRAWINGS AND RELATED DOCUMENTS, VARIANCES FROM SAME AND ALL SUBSTITUTIONS OF EQUIPMENT SPECIFIED SHALL BE LISTED IN WRITING AND INCLUDED IN THE BID FOR REVIEW. ANY SUCH EXCEPTIONS, VARIANCES, OR SUBSTITUTIONS, WHICH WERE NOT LISTED AT THE TIME OF BID SHALL NOT BE APPROVED OR CONSIDERED.
9. CUTTING AND PATCHING: INCLUDE ALL CORING, CUTTING, PATCHING AND FIREPROOFING NECESSARY FOR THE EXECUTION OF THE WORK OF THIS SECTION. STRUCTURAL ELEMENTS SHALL NOT BE CUT WITHOUT WRITTEN APPROVAL OF THE ARCHITECT. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING ALL PRECAUTIONS REQUIRED TO IDENTIFY HIDDEN PIPING, CONDUITS, ETC. BEFORE ANY CORE DRILLING AND/OR CUTTING OF SLABS COMMENCES,INCLUDING X-RAYING THE AFFECTED SLABS. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF THE FIRE RESISTANCE-RATED ASSEMBLY. ALL PENETRATIONS AND ASSOCIATED FIRE STOPPING SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE STOPPING MANUFACTURER'S LISTED INSTALLATION DETAILS AND BE LISTED BY UL OR FM.

PRODUCTS

1. REFER TO PRODUCT SCHEDULE, THIS DRAWING.

EXECUTION OF WORK

1. PREPARATION, PRIOR TO BEGINNING WORK
   - A. SITE VISIT: VISIT AND EXAMINE SITE FOR PARTITIONS TO BE PENETRATED, CLEARANCES TO OBSTRUCTIONS, AND OTHER EXISTING FACILITY FEATURES THAT WILL AFFECT THE WORK.
   - B. SECURE MOST RECENT FIRE DEPARTMENT PUMPED TRUCK INFORMATION FROM THE LOWELL FIRE DEPARTMENT.
   - C. SUBMITTALS: PRIOR TO BEGINNING WORK, PREPARE AND SUBMIT FOR REVIEW AND IN ONE COMPLETE PACKAGE PRODUCT DATA "CUT-SHEETS" FOR EACH PRODUCT SPECIFIED AND SHOP DRAWINGS INCLUSIVE OF INFORMATION REQUIRED BY NFPA 13 AND NFPA 14 FOR WORKING PLANS WITH HYDRAULIC CALCULATIONS PREPARED IN ACCORDANCE WITH NFPA 14.
   - D. OBTAIN NECESSARY PERMITS AND APPROVALS FROM LOCAL AUTHORITIES HAVING JURISDICTION.
2. IMPAIRMENTS & TEMPORARY PROTECTION
   - A. COORDINATE SYSTEM IMPAIRMENTS WITH THE OWNER AND LOCAL AUTHORITIES HAVING JURISDICTION.
3. COORDINATION
   - A. COORDINATE INSTALLATION WITH OTHER SECTIONS OF THE WORK.
   - B. COORDINATE FIRE ALARM MONITORING DEVICE TESTING WITH THE FIRE ALARM PORTION OF THE WORK.
4. GENERAL SYSTEM INSTALLATION
   - A. INSTALL PIPING IN A NEAT AND WORKMANLIKE MANNER WITH PIPING PARALLEL OR PERPENDICULAR TO INTERIOR BUILDING FEATURES.
   - B. INSTALL PIPE WITH PROPER PITCH FOR DRAINAGE. INSTALL AUXILIARY DRAIN VALVES AND PLUGS AS REQUIRED BY NFPA 13 WHERE TRAPPED SECTIONS OF PIPING CANNOT BE AVOIDED.
   - C. SUPPORT PIPE WITH HANGERS SPACED IN ACCORDANCE WITH NFPA 13. ALL ATTACHMENTS SHALL BE TO BUILDING STRUCTURAL ELEMENTS.
   - D. PROTECT SYSTEM FROM EARTHQUAKE DAMAGE VIA SWAY-BRACING INSTALLED IN ACCORDANCE WITH NFPA 13.
   - E. INSTALL VALVES IN ACCESSIBLE LOCATIONS WITH INDICATORS VISIBLE FROM THE ADJACENT FLOOR LEVEL.
   - F. INSTALL FIRE ALARM MONITORING DEVICES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ADJUST WATERFLOW SWITCH RETARD FEATURE TO 30-SECONDS.
5. PENETRATIONS
   - A. USE APPROPRIATE TOOLS AND SAWS FOR MAKING PENETRATIONS,
   - B. SLEEVE PENETRATIONS WITH GALVANIZED SCHEDULE 10 PIPE SLEEVE AND PROTECT WITH FIRE-STOPPING IN ACCORDANCE WITH MANUFACTURER'S LISTING REQUIREMENTS. COORDINATE WALL RATING REQUIREMENTS WITH ARCHITECTURAL PLANS.
   - C. COVER PENETRATIONS WITH ESCUTCHEON PLATE.
6. CLEANING
   - A. CLEAN INSTALLATION THOROUGHLY UPON COMPLETION TO REMOVE GREASE, METAL CUTTINGS, DIRT AND OTHER FOREIGN MATERIALS.
   - B. REPAIR STOPPAGES, DISCOLORATION AND DAMAGE THAT RESULT FROM FAILURE TO CLEAN PIPING PROPERLY WITHIN CONTRACT PRICE.
7. TESTING
   - A. HYDROSTATICALLY TEST SYSTEM AS REQUIRED BY NFPA 13. MONITOR FOR LEAKS FOR A PERIOD OF TWO (2) HOURS. REMOVE DEFECTIVE MATERIALS, REPLACE WITH NEW AND REPEAT TESTS AS NECESSARY.
   - B. COORDINATE FIRE ALARM MONITORING DEVICE TESTING WITH FIRE ALARM PORTION OF WORK. OPERATE AND ADJUST SWITCHES TO ACHIEVE SATISFACTORY RESULTS.

PROJECT CLOSEOUT

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH PROJECT CLOSEOUT. ALLOW SUFFICIENT TIME IN THE CONSTRUCTION SCHEDULE TO ENSURE THAT THE INSTALLATION IS SUBSTANTIALLY COMPLETE AND ALL REQUIRED TESTING AND ACCURATELY COMPLETED DOCUMENTATION IS DELIVERED TO THE ENGINEER AT LEAST TWO WEEKS PRIOR TO ENGINEER'S SUBSTANTIAL COMPLETION SITE VISIT. FAILURE TO ADEQUATELY PLAN OR SUBMISSION OF INCOMPLETE/INCORRECT DOCUMENTATION WILL RESULT IN BACK CHARGES OF ALL COSTS ASSOCIATED WITH ADDED WORK PERFORMED BY RDK ENGINEERS.
2. PROVIDE THE CONTRACTOR CERTIFICATE OF COMPLETION IN ACCORDANCE WITH 780CMR 107.6.3 INDICATING THAT THE INSTALLATION IS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND ALL APPLICABLE LOCAL, STATE AND FEDERAL STATUTES AND CODES. PROVIDE CERTIFICATION FROM BOTH THE GENERAL CONTRACTOR AND ASSOCIATED TRADE CONTRACTOR FOR COMPLIANCE WITH 780CMR CHAPTERS 1, 9 & 13.
3. PROVIDE FIRE PROTECTION SYSTEMS DOCUMENTATION (INCLUDING BUT NOT LIMITED TO TIER II SHOP DRAWINGS AND TIER III RECORD DRAWINGS) IN ACCORDANCE WITH 780 CMR 901.2.1 RECORD DRAWINGS MUST BE PRODUCED BY THE CONTRACTOR AND SUBMITTED ON CONTRACTOR'S TITLE-BLOCK WITH ACCURATE DEPICTION OF THE FINAL INSTALLED SYSTEMS. CONTRACTOR IS RESPONSIBLE FOR ACCURATELY REPRESENTING THE FINAL INSTALLED SYSTEMS. ANY INACCURACIES BETWEEN THE INSTALLED CONDITION AND THE RECORD DRAWINGS WILL BE CAUSE FOR RETURNED RECORD DRAWINGS FOR CORRECTION BY THE CONTRACTOR. THE ADDITIONAL TIME INCURRED BY RDK TO RE-REVIEW THE RECORD DRAWINGS WILL RESULT IN BACK CHARGES.
4. PROVIDE NFPA 14 CONTRACTOR'S MATERIAL AND TEST CERTIFICATES FOR ABOVE GROUND PIPING.
5. NO LIFE SAFETY DEFICIENCIES IN THE STANDPIPE SYSTEM SHALL BE PRESENT WHEN REQUESTING SUBSTANTIAL COMPLETION SITE VISIT.
6. SUBSTANTIAL COMPLETION SITE VISIT BY THE ENGINEER SHALL BE CONDUCTED AFTER RECEIPT AND REVIEW OF THE CONTRACTORS CERTIFICATE OF COMPLETION AND ALL CODE MANDATED TEST REPORTS AND SUBMISSIONS LISTED ABOVE. SUBSTANTIAL COMPLETION SITE VISITS SHALL NOT BE REQUESTED UNTIL THE PROJECT IS SUBSTANTIALLY COMPLETE.
7. PREMATURE REQUESTS THAT REQUIRE ADDITIONAL/FOLLOW UP SITE VISITS BY THE ENGINEER OF DEFICIENT ITEMS (AREAS INCOMPLETE, SYSTEMS NOT OPERATIONAL, ETC.) WILL RESULT IN BACK CHARGES OF THE COSTS ASSOCIATED WITH ANY ADDED VISITS.

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LOWELL MASSACHUSETTS

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PROJECT NO: 16-2526.01
DRAWN BY: MS
CHECKED BY: JTF
SHEET TITLE:

FIRE PROTECTION SPECIFICATIONS

FP0.01

Q:\2015\20150312 - LOWELL ROY - LOWER LOCKS PARKING GARAGES\1200 DRAWINGS\1201 FIRE PROTECTION\PLOT FILES\20150312 FP0.01 FIRE PROTECTION SPECIFICATIONS.DWG 6/19/2015 10:24:22 AM LUKAS, CHRISTOFFER

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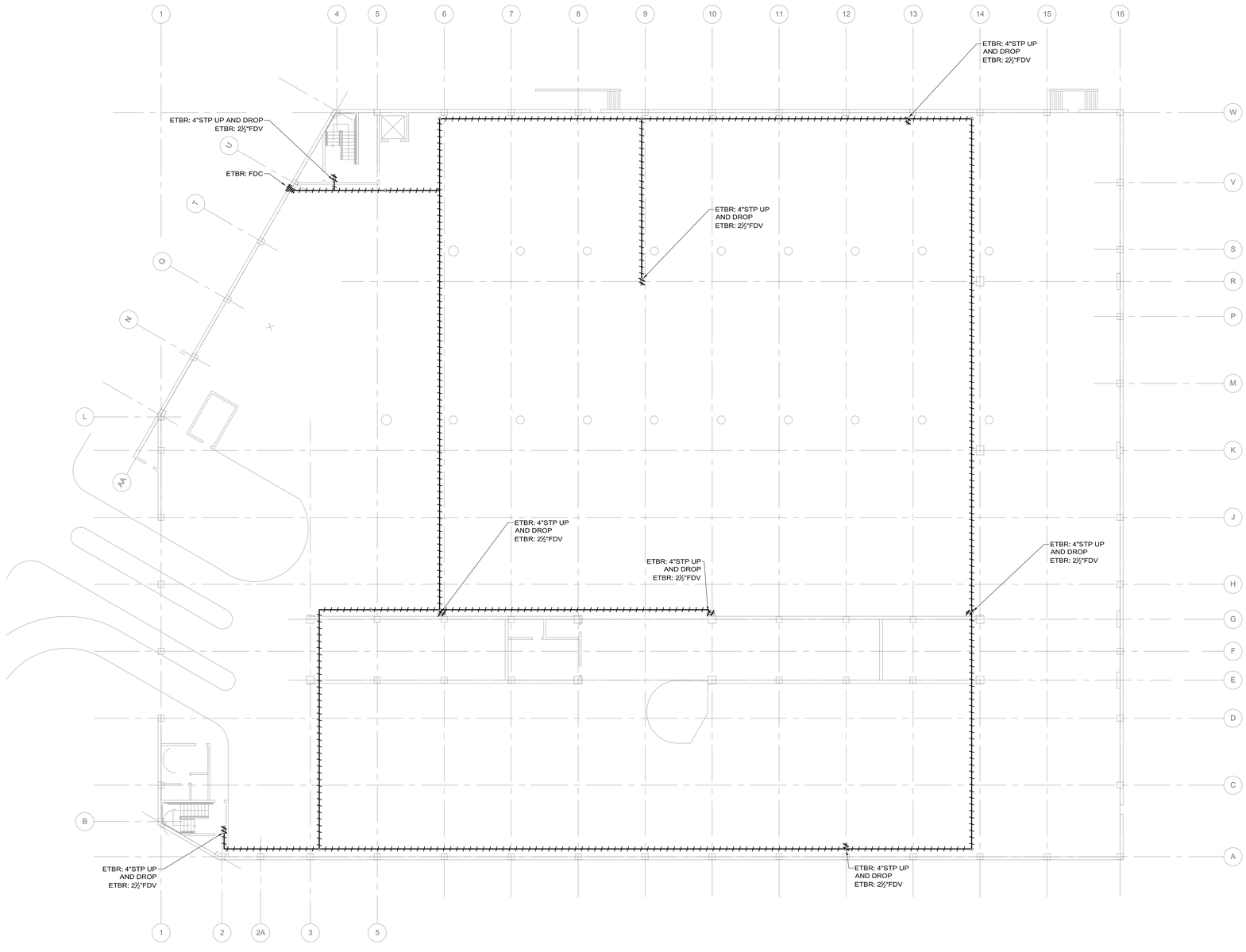

LEO ROY
GROUND LEVEL DEMOLITION PLAN
SCALE: 1/16"=1'-0"

1/16" = 1' - 0"
0 16' 32'

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FIRE PROTECTION GROUND LEVEL DEMOLITION PLAN

FPD2.00

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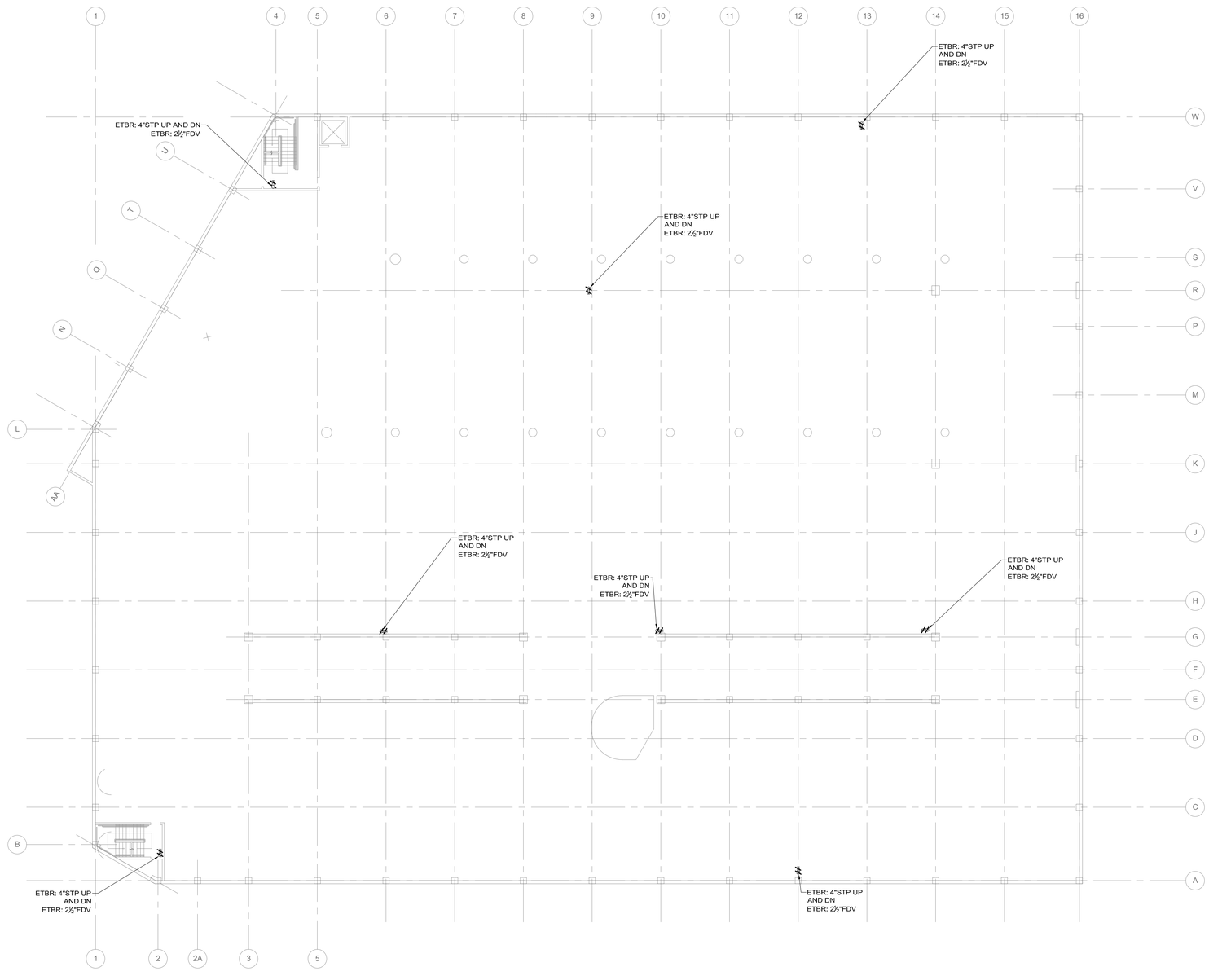

LEO ROY - SECOND, THIRD
& FOURTH LEVEL DEMOLITION PLAN
SCALE: 1/16"=1'-0"

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FIRE PROTECTION
2ND, 3RD & 4TH LVL
DEMOLITION PLAN

FPD2.01

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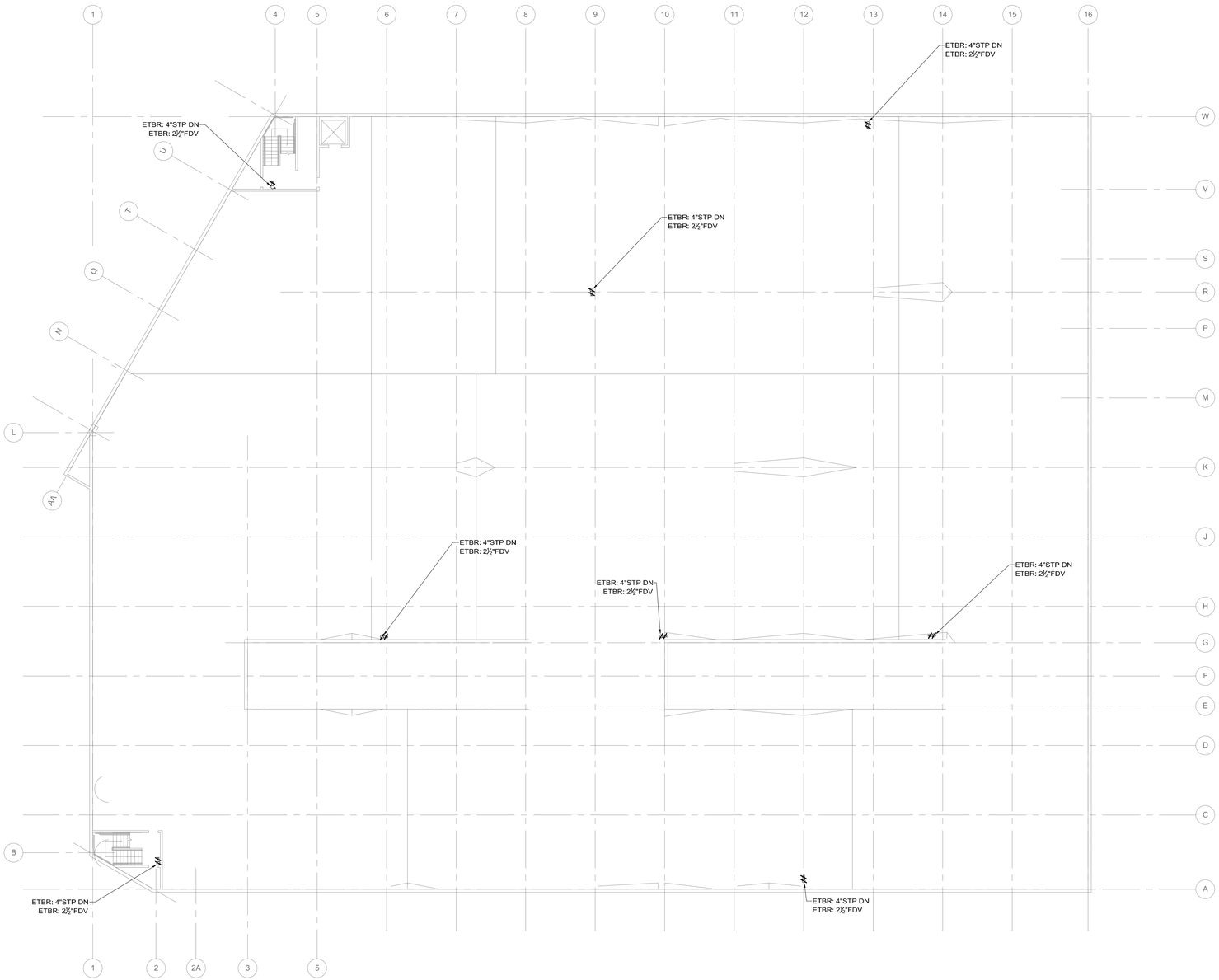

LEO ROY
& ROOF LEVEL DEMOLITION PLAN
SCALE: 1/16"=1'-0"

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FIRE PROTECTION
ROOF LEVEL
DEMOLITION PLAN

FPD2.02

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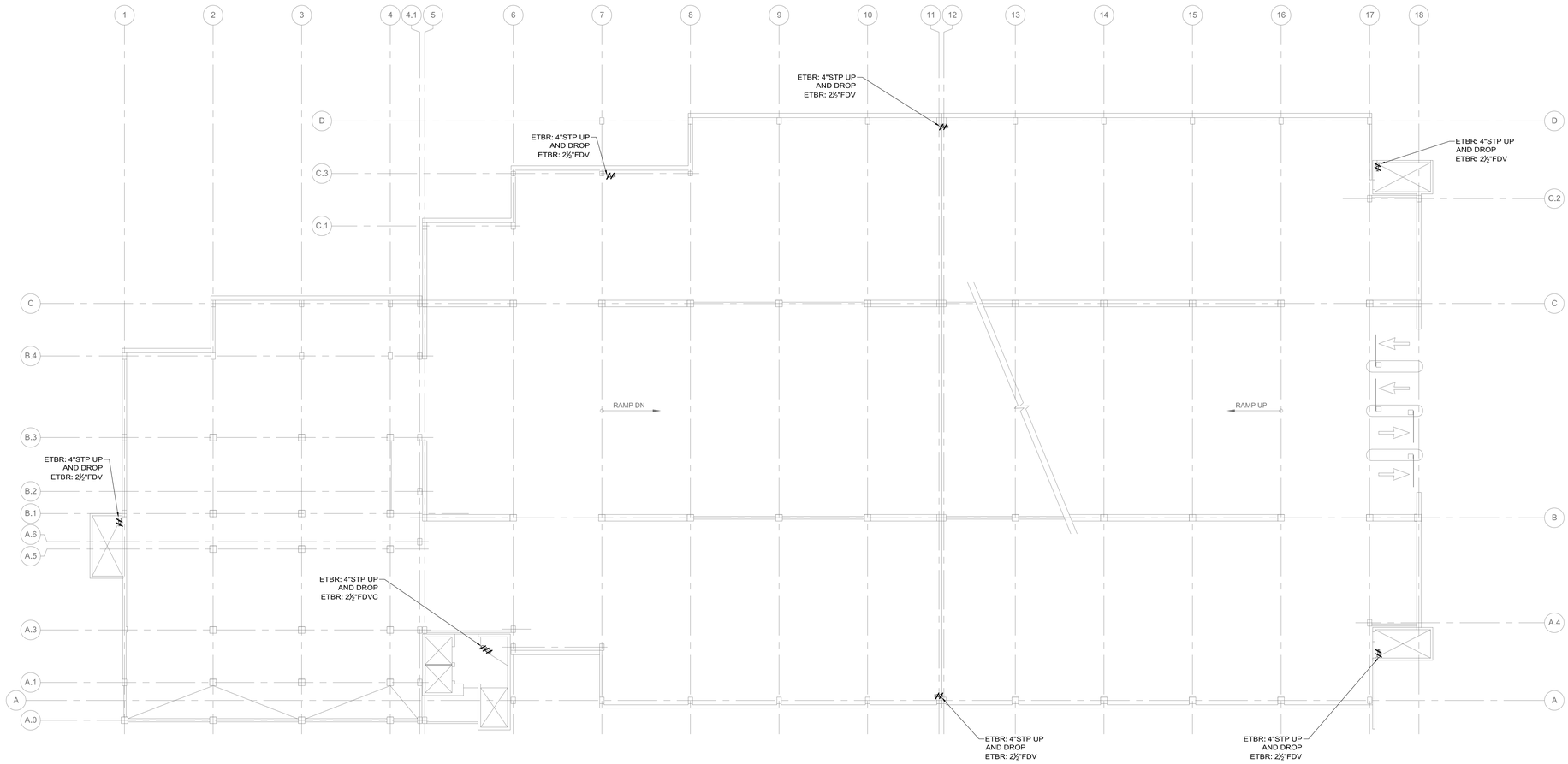

LOWER LOCKS
FIRST LEVEL DEMOLITION PLAN
SCALE: 1/16"=1'-0"

1/16" = 1' - 0"
0 16' 32'

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SHEET TITLE:

FIRE PROTECTION
FIRST LEVEL
DEMOLITION PLAN

FPD2.03

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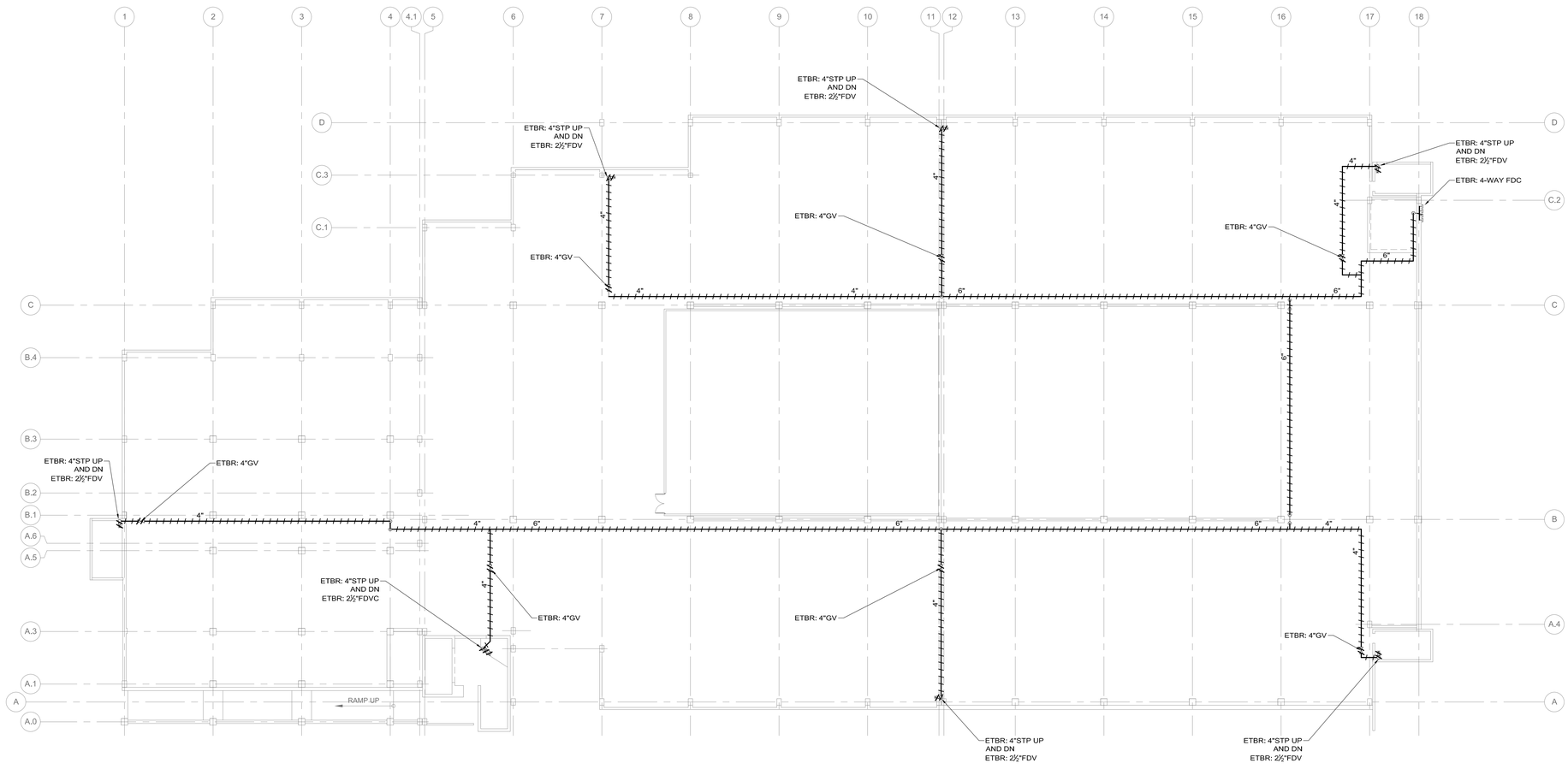

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SECOND LEVEL DEMOLITION PLAN
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FIRE PROTECTION SECOND LEVEL DEMOLITION PLAN

FPD2.04

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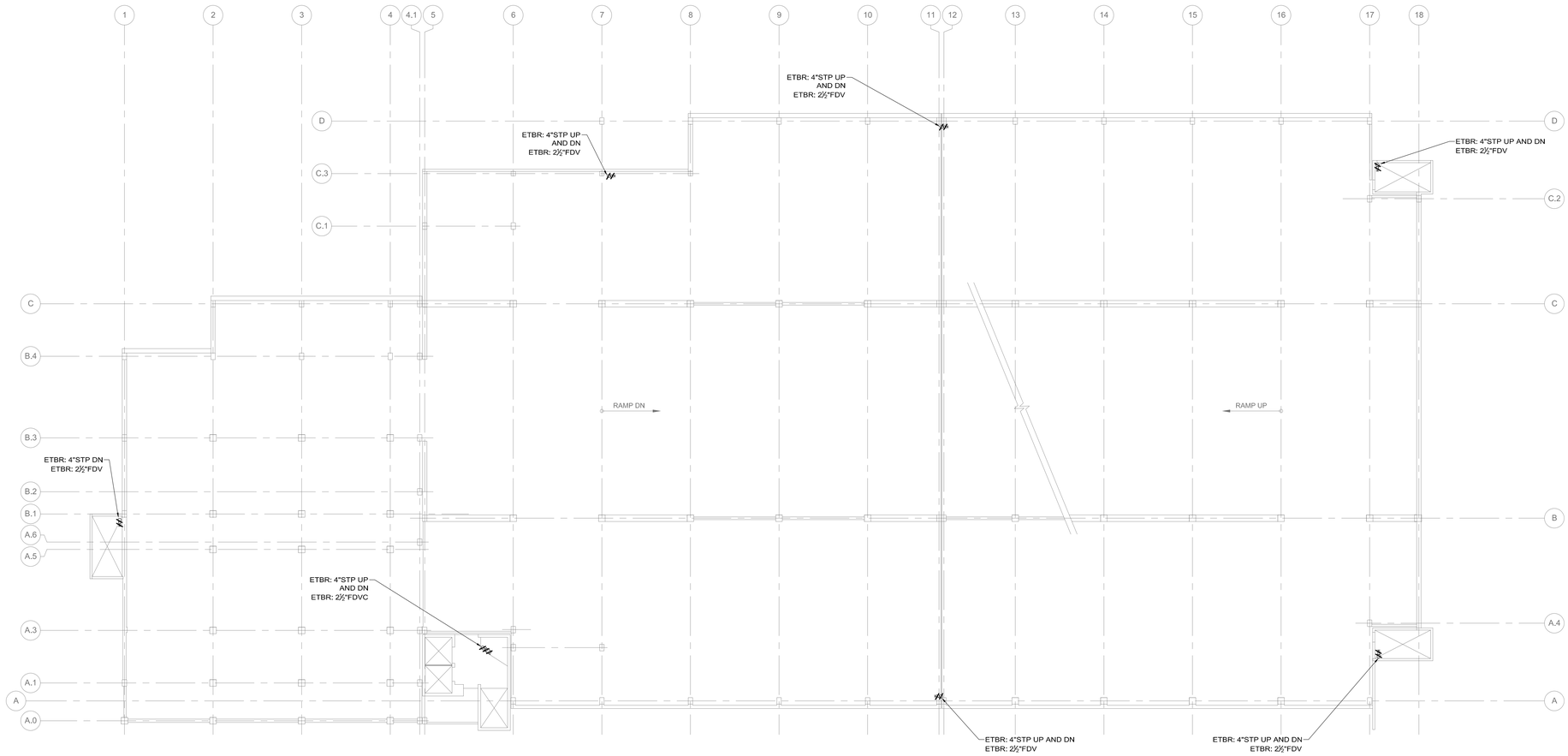

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THIRD LEVEL DEMOLITION PLAN
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FPD2.05

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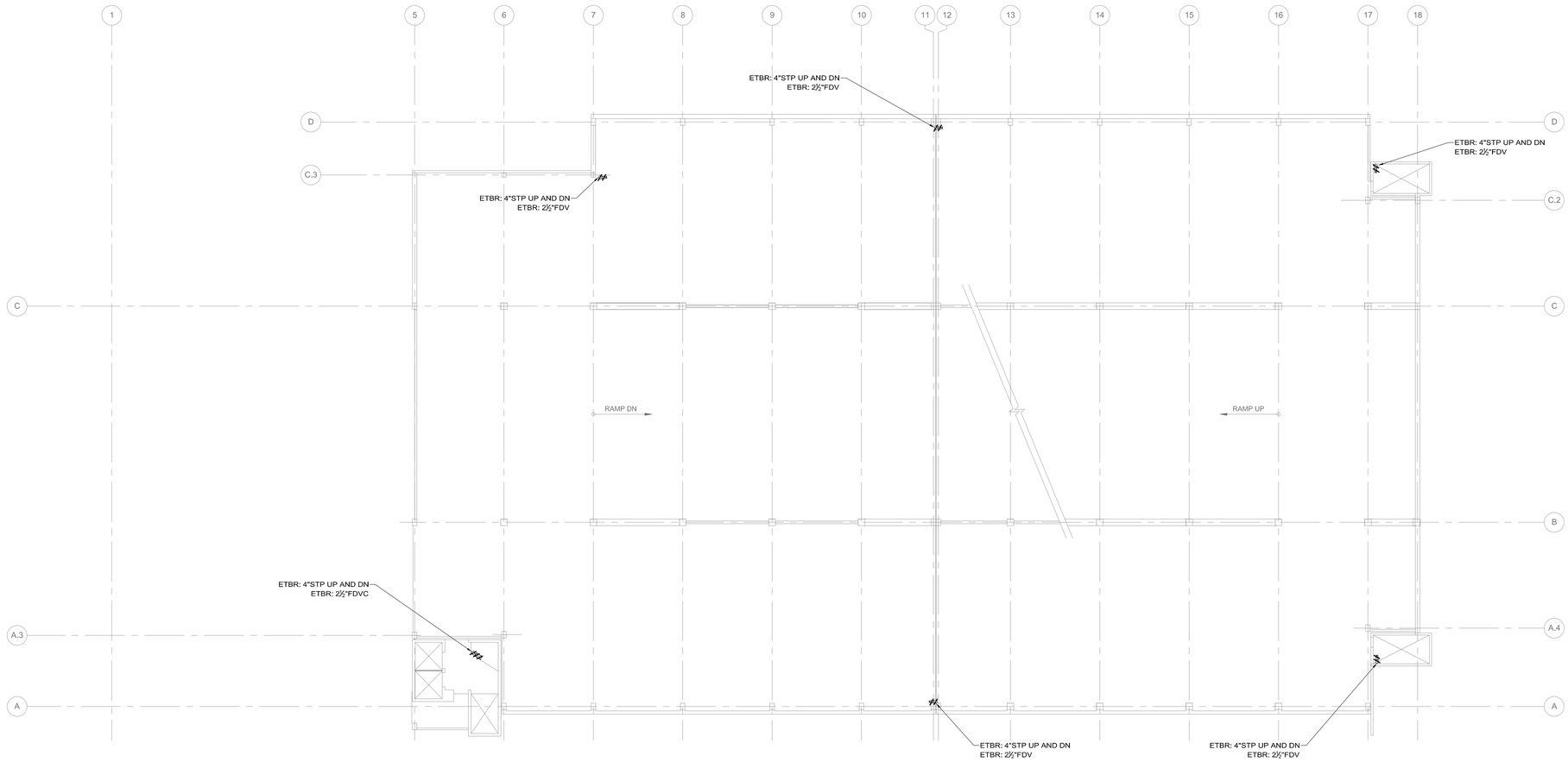

LOWER LOCKS
FOURTH LEVEL DEMOLITION PLAN
SCALE: 1/16"=1'-0"

1/16" = 1' - 0"
0 16' 32'

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FOURTH LEVEL
DEMOLITION PLAN

FPD2.06

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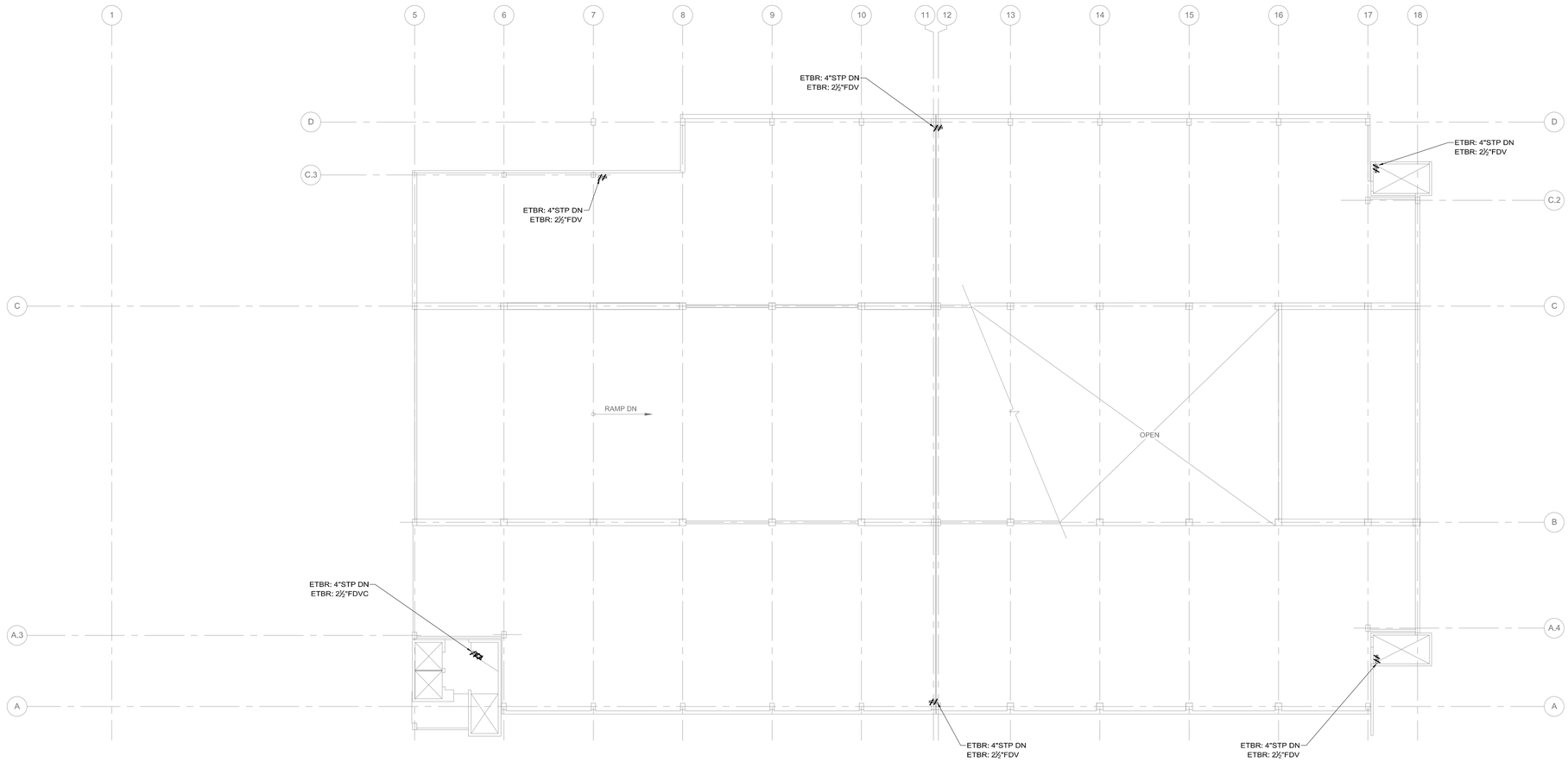

LOWER LOCKS
FIFTH LEVEL DEMOLITION PLAN
SCALE: 1/16"=1'-0"

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FIFTH LEVEL
DEMOLITION PLAN

FPD2.07

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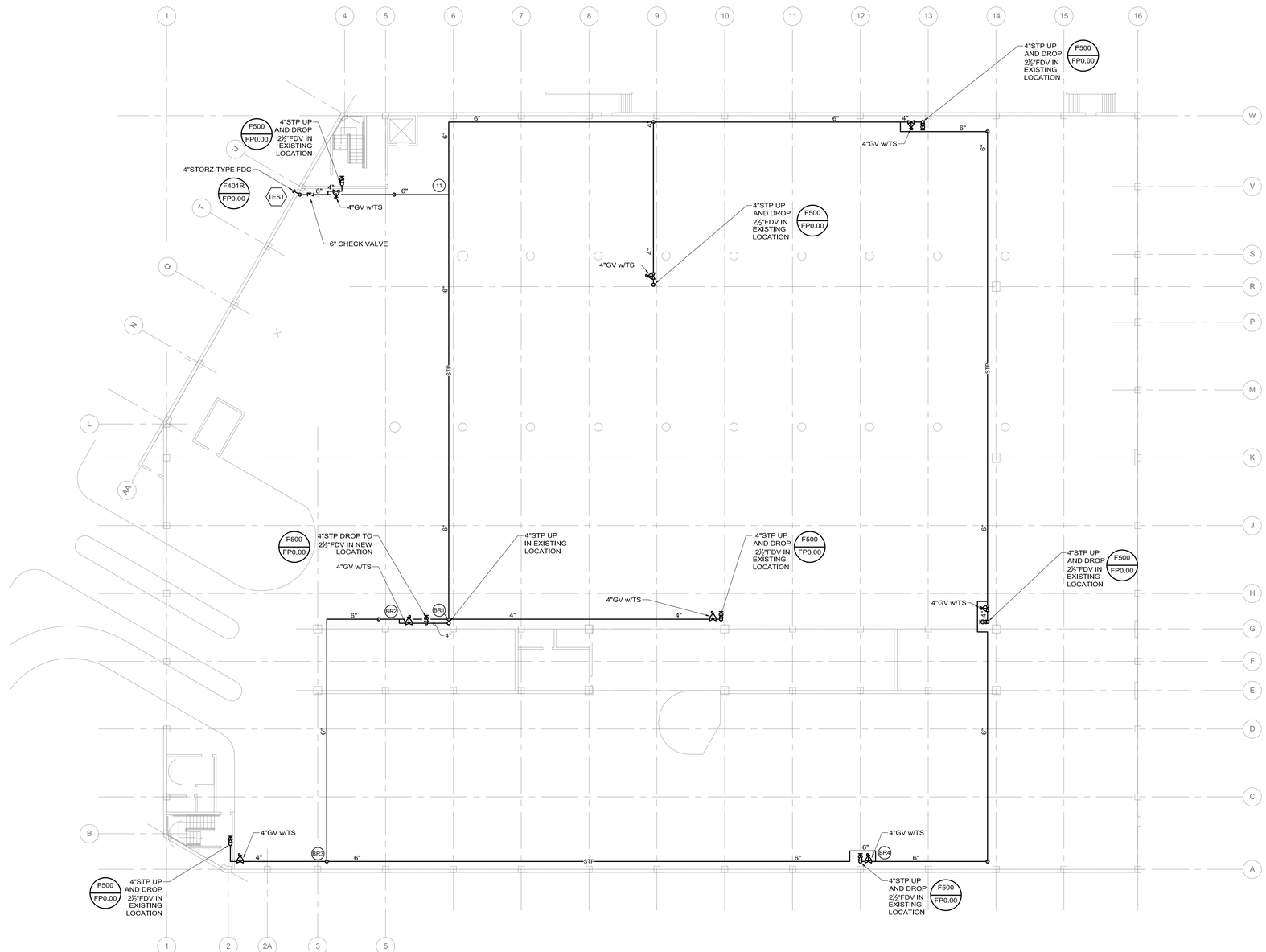

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GROUND LEVEL NEW WORK PLAN
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GROUND LEVEL
NEW WORK PLAN

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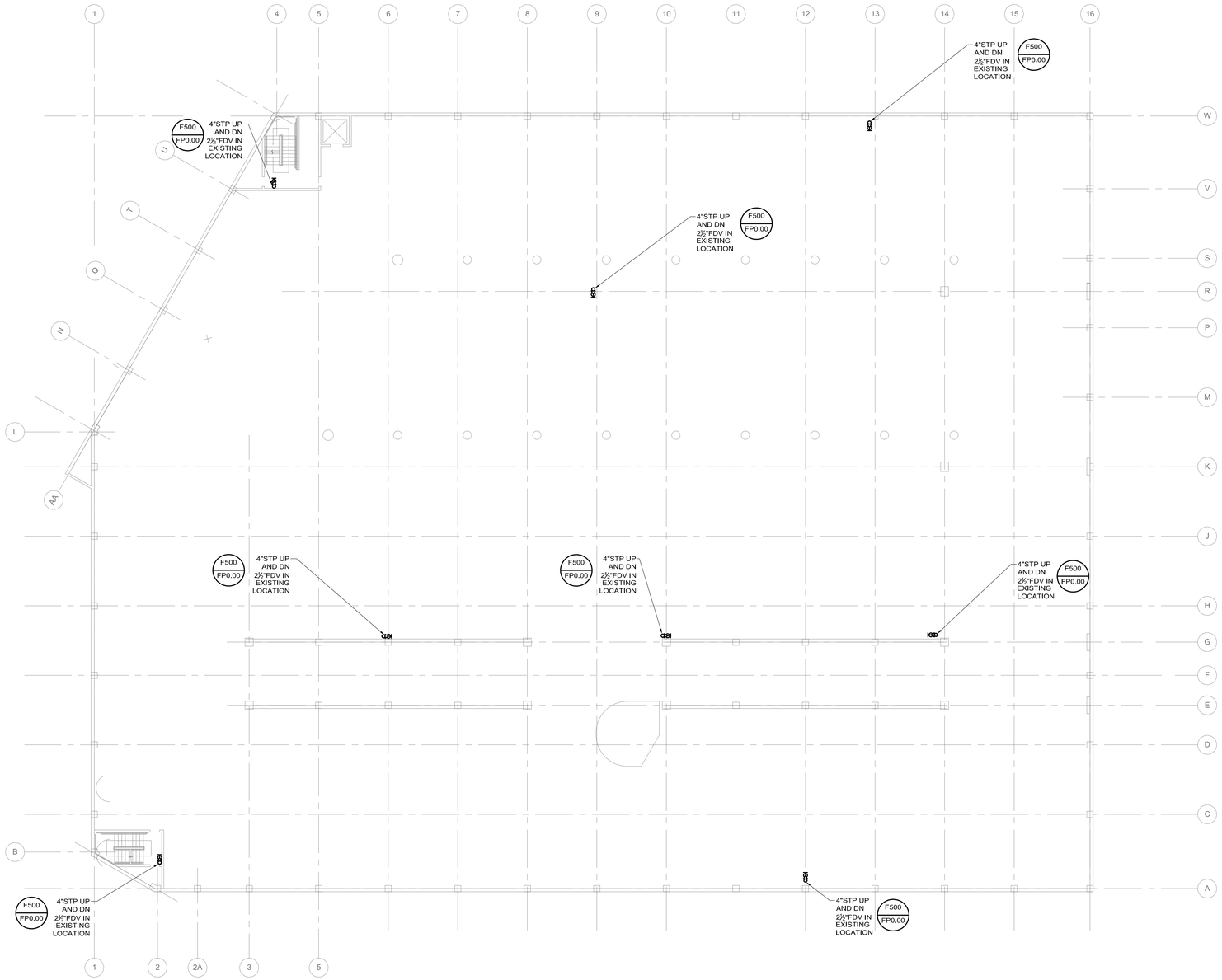

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& FOURTH LEVEL NEW WORK PLAN
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2ND, 3RD & 4TH LVL
NEW WORK PLAN

FP2.01

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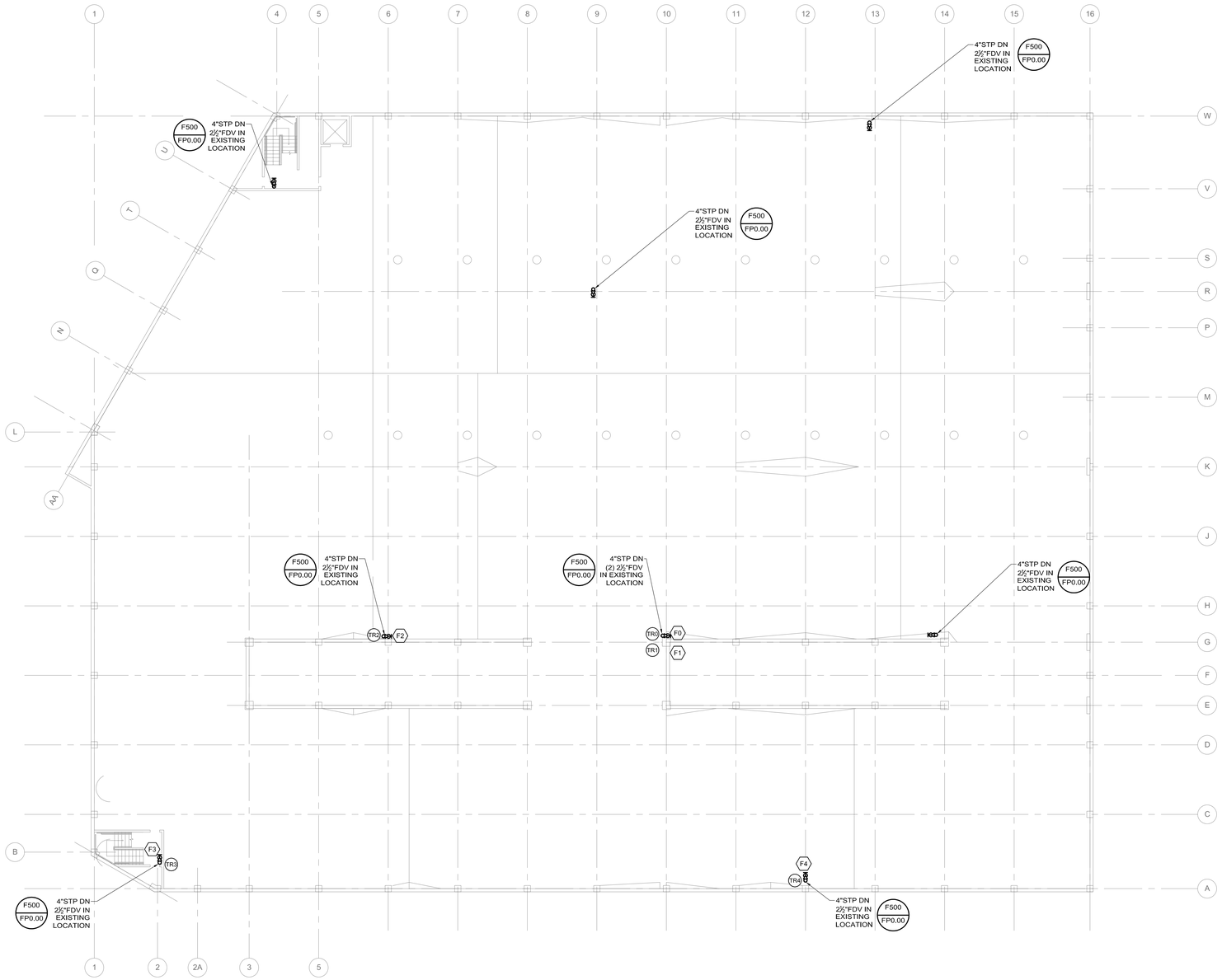

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& ROOF LEVEL NEW WORK PLAN
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FIRE PROTECTION
ROOF LEVEL
NEW WORK PLAN

FP2.02

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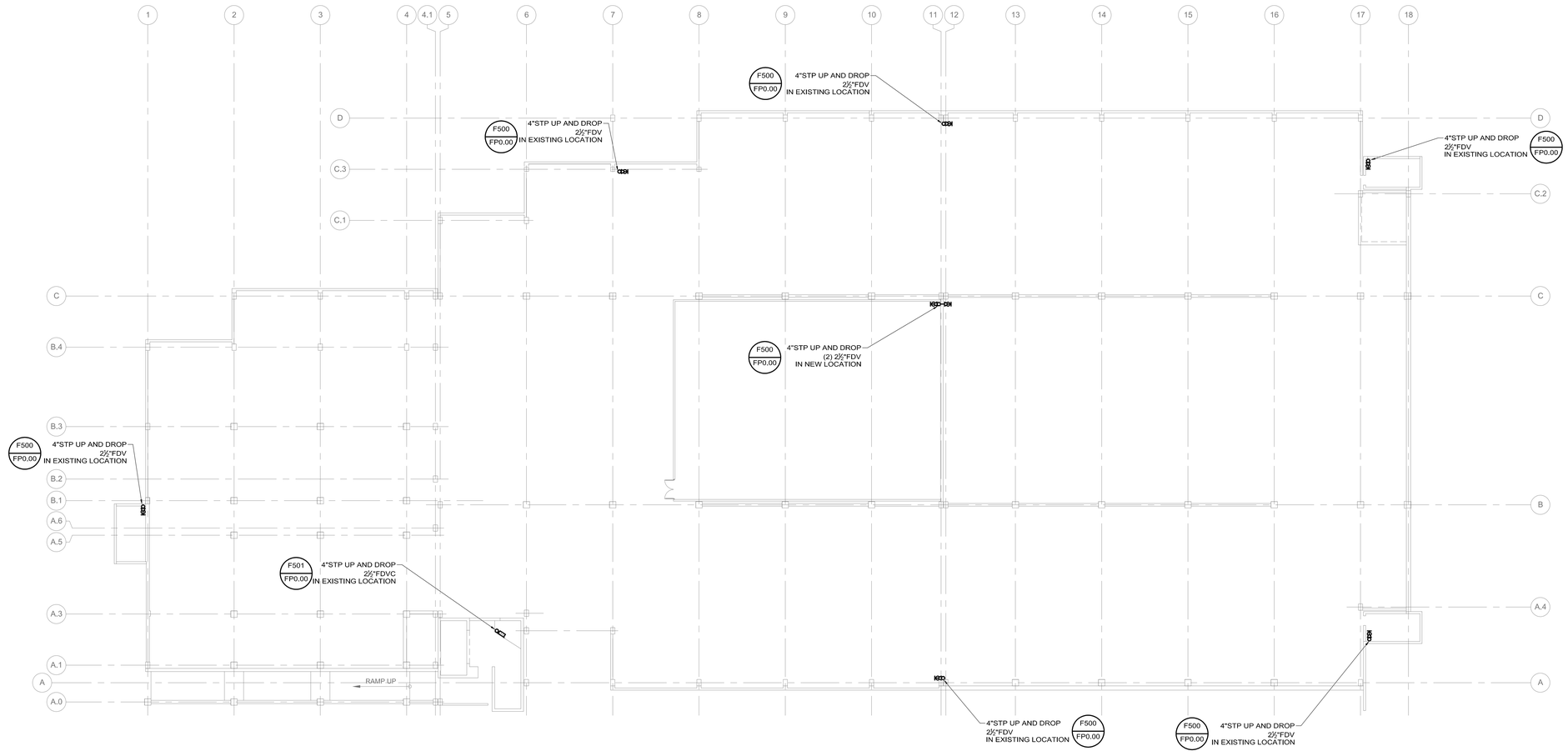

LOWER LOCKS
FIRST LEVEL NEW WORK PLAN
SCALE: 1/16"=1'-0"

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FIRE PROTECTION
FIRST LEVEL
NEW WORK PLAN

FP2.03

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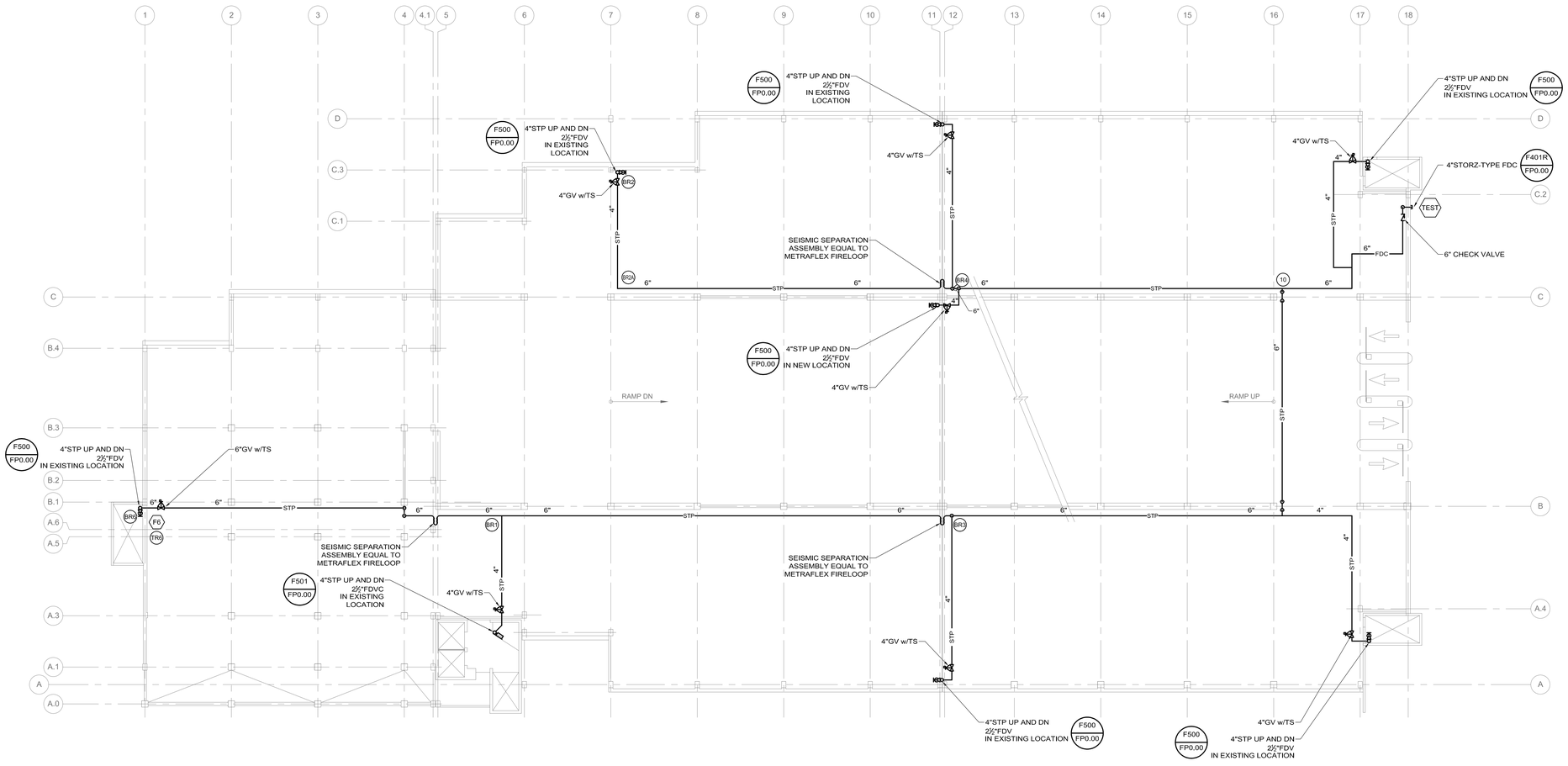

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SECOND LEVEL NEW WORK PLAN
SCALE: 1/16"=1'-0"

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SECOND LEVEL
NEW WORK PLAN

FP2.04

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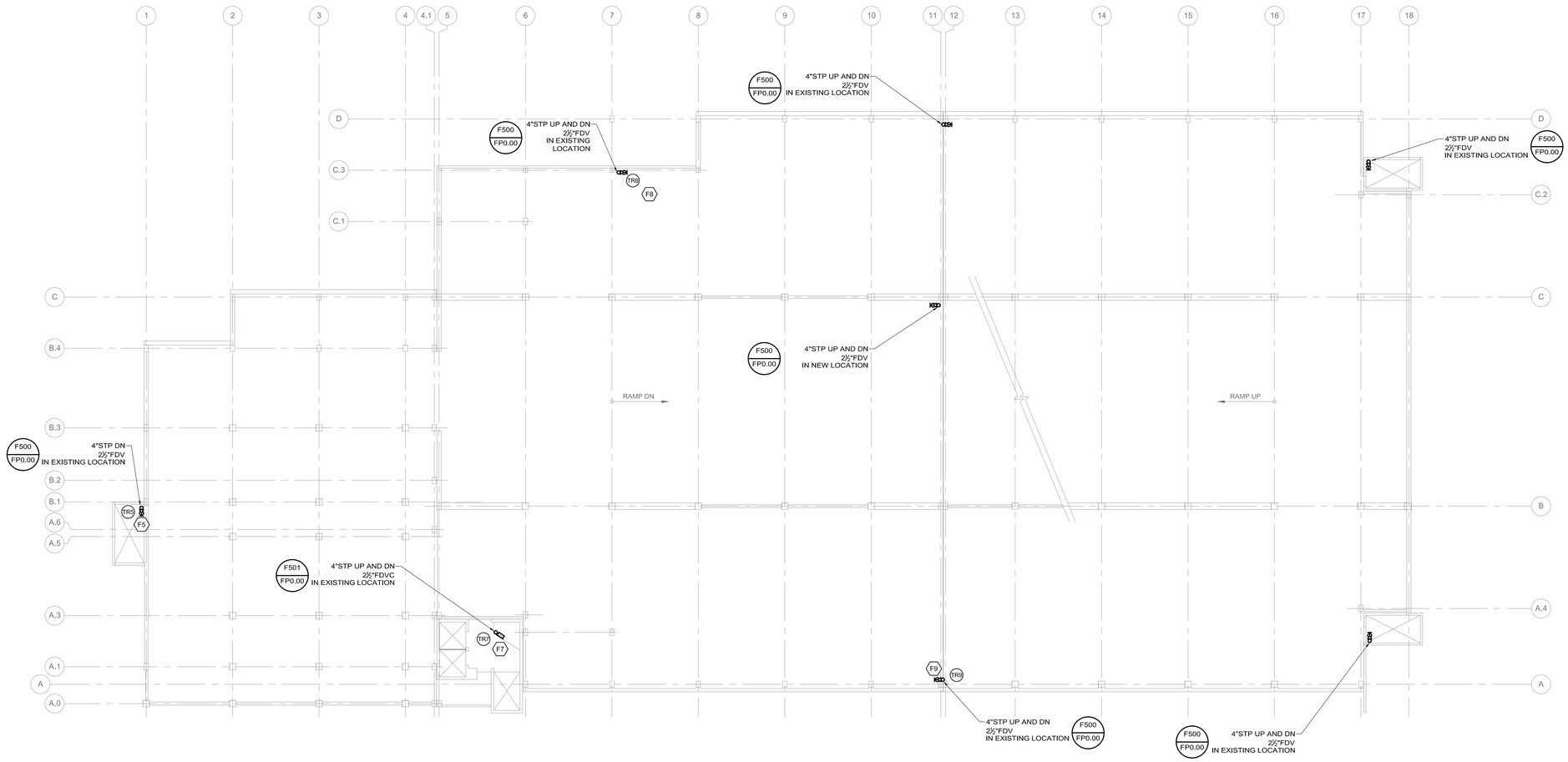

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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
	06-19-15	ISSUED FOR BIDDING

ISSUED:

PROJECT NO: 16-2526.01
DRAWN BY: MS
CHECKED BY: JTF
SHEET TITLE:

FIRE PROTECTION
THIRD LEVEL
NEW WORK PLAN

FP2.05

Q:\2015\20150312 - LOWELL ROY - LOWER LOCKS PARKING GARAGES\1200 DRAWINGS\1201 FIRE PROTECTION\PLOT FILES\20150312 FP2.05 FIRE PROTECTION THIRD LEVEL NEW WORK PLAN - LLPG.DWG 7/29/2015 9:17:10 AM LUKAS, CHRISTOFFER

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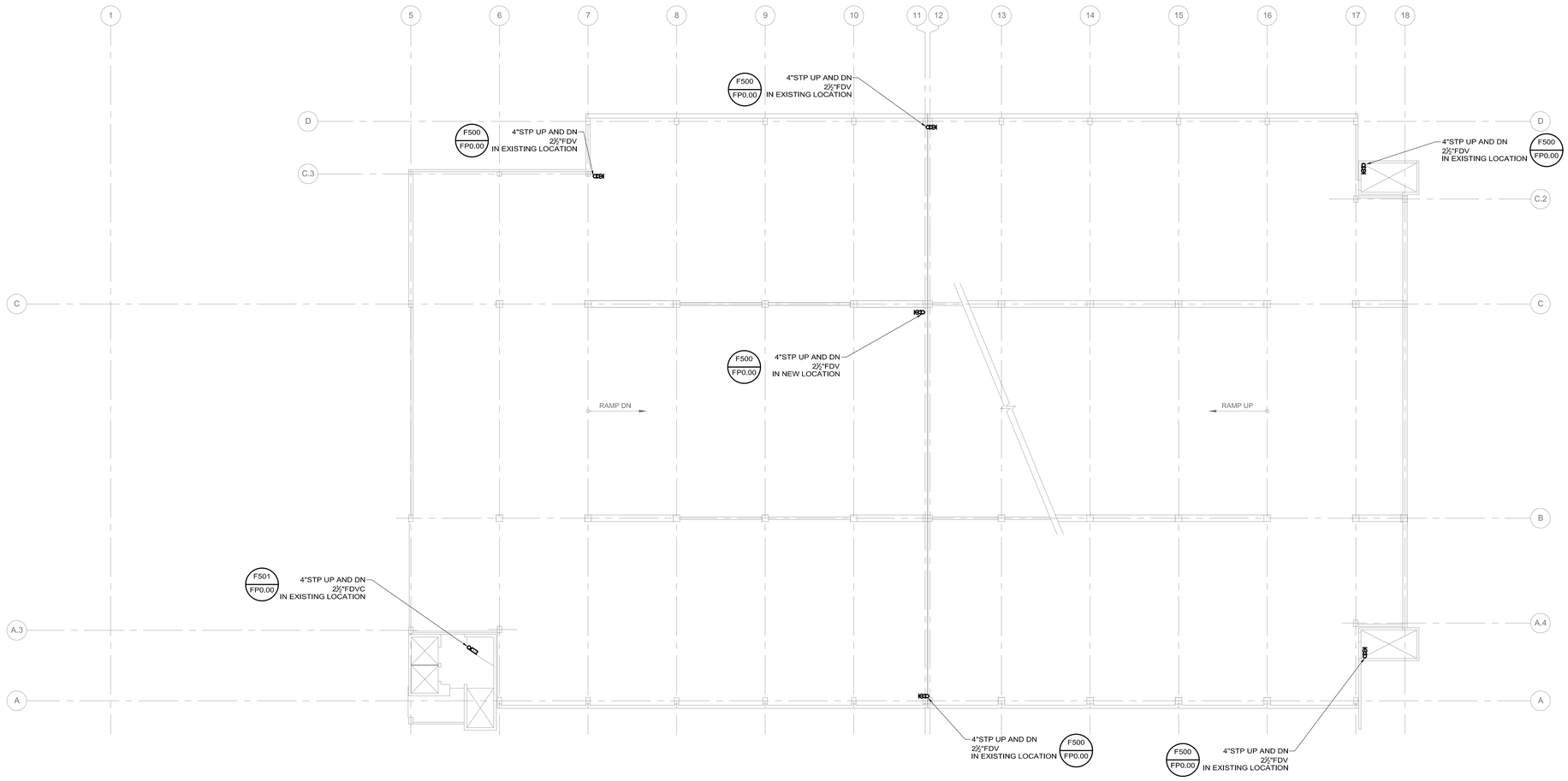

LOWER LOCKS
FOURTH LEVEL NEW WORK PLAN
SCALE: 1/16"=1'-0"

1/16" = 1' - 0"
0 16' 32'

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FIRE PROTECTION
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NEW WORK PLAN

FP2.06

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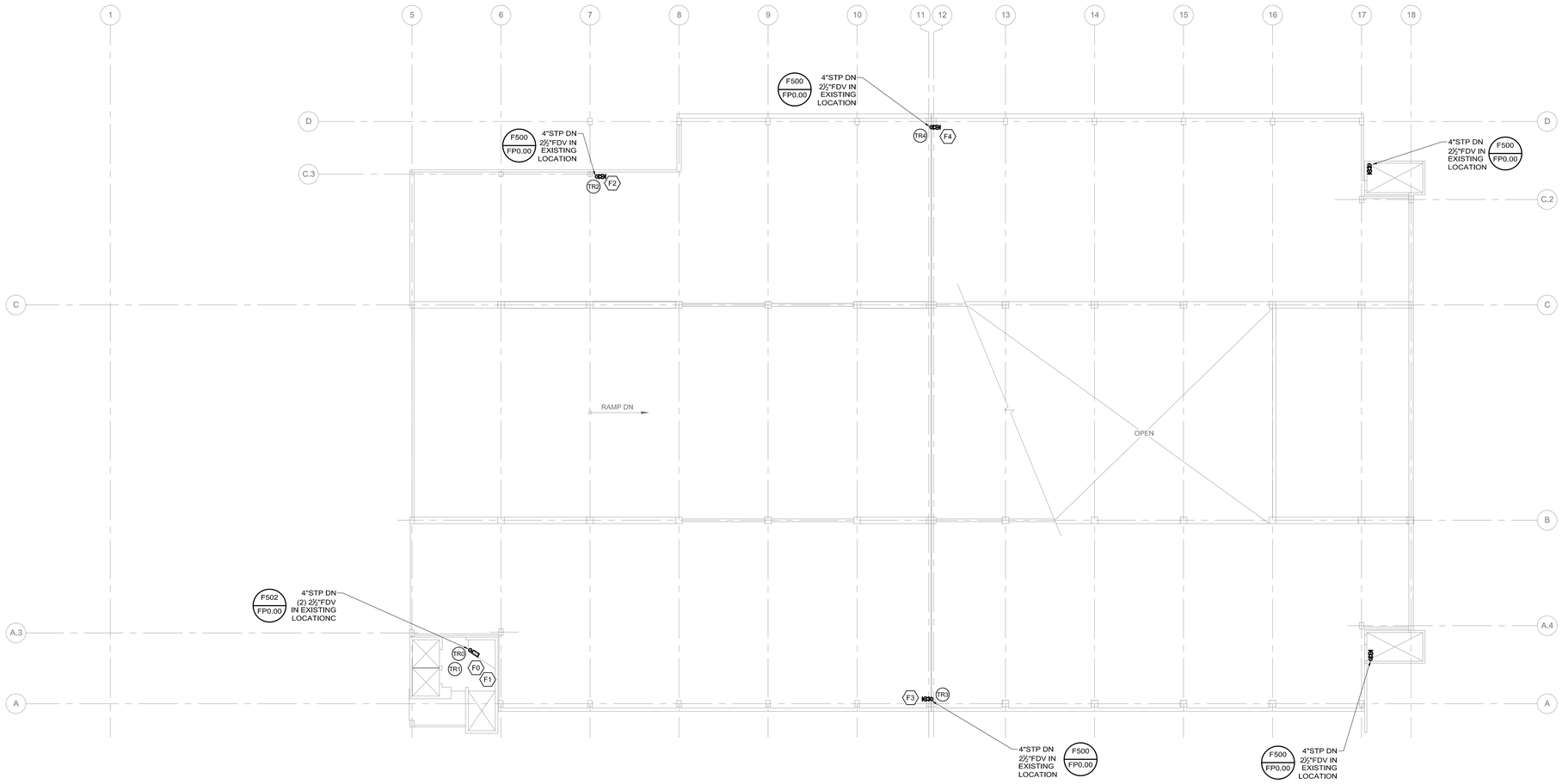

LOWER LOCKS
FIFTH LEVEL NEW WORK PLAN
SCALE: 1/16"=1'-0"

1/16" = 1' - 0"
0 16' 32'

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FIFTH LEVEL
NEW WORK PLAN

FP2.07

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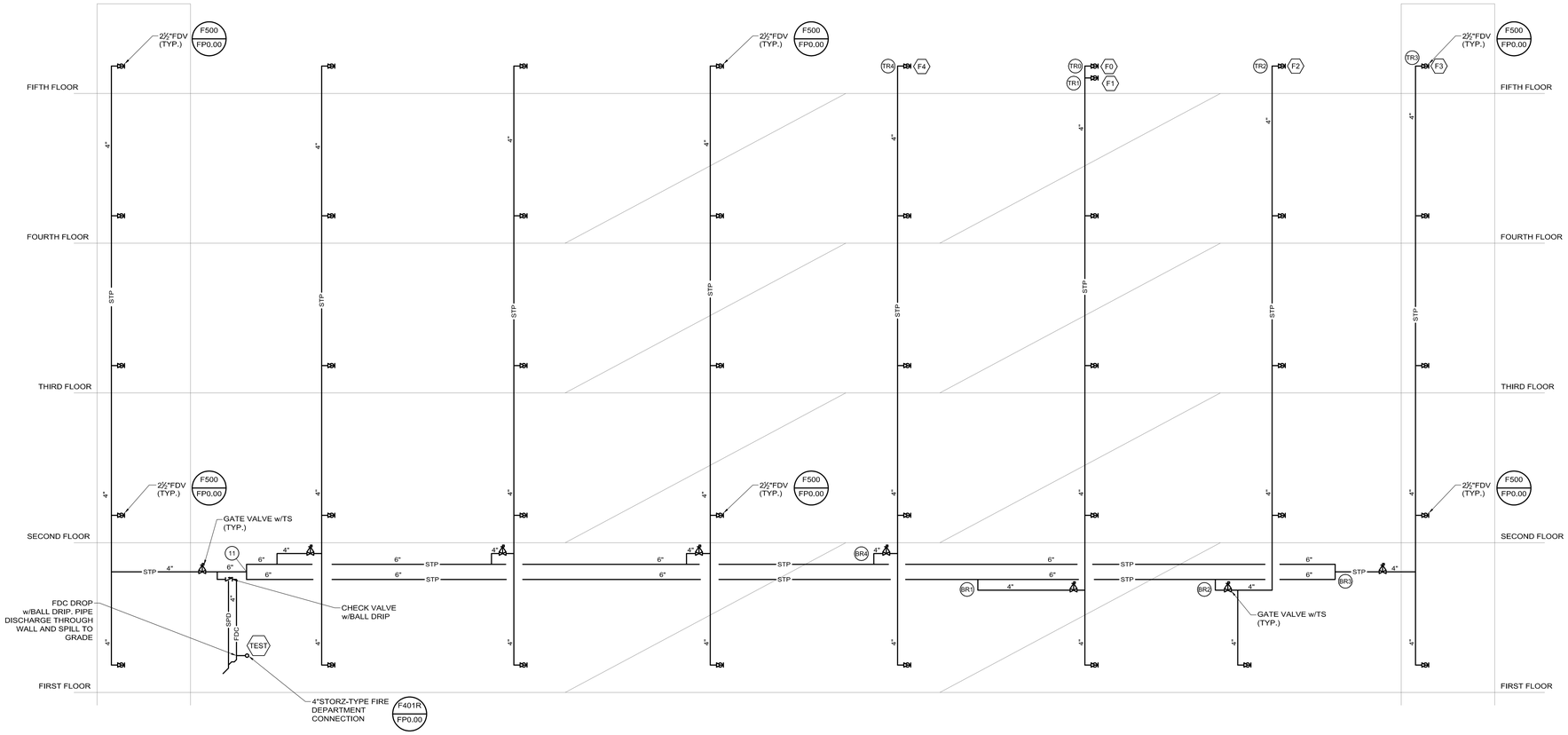

LEO ROY GARAGE
STANDPIPE RISER DIAGRAM
NOT TO SCALE

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FP5.00

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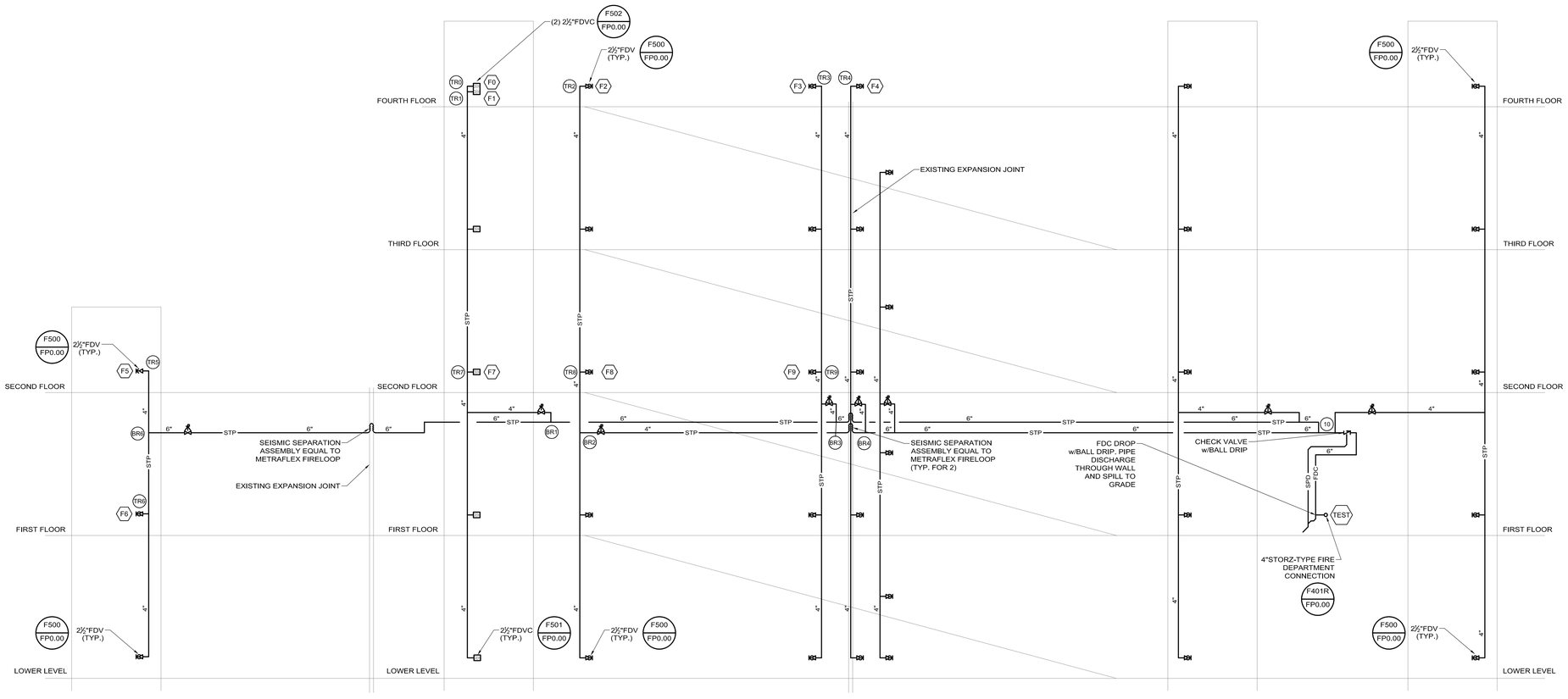

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RISER DIAGRAM
LOWER LOCKS

FP5.01

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FIRE ALARM SPECIFICATIONS

PART 1 - GENERAL

1. GENERAL PROVISIONS: DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK IN CONTRACT. REFER TO ALL DRAWINGS ASSOCIATED WITH THIS PROJECT (EACH TRADE) FOR EXACT LOCATION OF ALL EQUIPMENT AND REQUIRED MOUNTING HEIGHTS.

2. SCOPE: PERFORM WORK AND PROVIDE NEW MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. PROVIDE ALL COMPONENTS AND MATERIALS, WHETHER SPECIFICALLY SHOWN OR NOT, THAT ARE NECESSARY TO MAKE THE SYSTEMS COMPLETE AND FULLY OPERATIONAL. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO: 1) THE DESIGN INTENT AS ILLUSTRATED ON THESE DRAWINGS, 2) REQUIREMENTS FOR THIS PROJECT INCLUDED IN THE "NARRATIVE REPORT FOR COMPLIANCE WITH THE FIRE PROTECTION AND LIFE SAFETY SECTION OF THE MASSACHUSETTS STATE BUILDING CODE (780CMR) - FIRE PROTECTION CONSTRUCTION DOCUMENTS" AND 3) ALL TESTING AND CERTIFICATIONS NECESSARY FOR COMPLIANCE AND ANY REQUIRED REMEDIAL ACTIONS AND RETESTING DUE TO FAILURE.

3. SITE VISIT: VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS THAT MAY AFFECT WORK OF THIS SECTION BEFORE SUBMITTING BID. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY DISCERNED.

4. CODES, STANDARDS, AUTHORITIES AND PERMITS: ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STATE BUILDING CODE, THE STATE ELECTRICAL CODE, NFPA, ANSI/NECA INSTALLATION STANDARDS AND OTHER APPLICABLE CODES, REGULATIONS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENT, OTHER AUTHORITIES HAVING JURISDICTION AND APPLICABLE BASE BUILDING STANDARDS AND SPECIFICATIONS. CODES, LAWS AND ORDINANCES PROVIDE A BASIS FOR THE MINIMUM INSTALLATION CRITERIA. THESE DRAWINGS AND SPECIFICATIONS ILLUSTRATE THE SCOPE REQUIRED FOR THIS PROJECT, WHICH MAY EXCEED MINIMUM CODE, LAW AND STANDARDS CRITERIA. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY BACKCHARGES AND OBTAIN NECESSARY APPROVALS FROM UTILITY COMPANIES AND AUTHORITIES HAVING JURISDICTION AS REQUIRED FOR THE EXECUTION OF ALL WORK ASSOCIATED WITH THIS PROJECT.

5. INTERPRETATION OF DOCUMENTS: ADVISE THE ENGINEER IN WRITING (RFI) PRIOR TO PROCEEDING WITH PROCUREMENT OR INSTALLATION THAT THE DESIGN INTENT IS UNCLEAR OR THAT CONSTRUCTION DOCUMENTS DO NOT COINCIDE WITH MANUFACTURER'S RECOMMENDATIONS. ALL COSTS FOR REWORK NECESSARY TO RESOLVE DISCREPANCIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

6. REQUEST FOR INFORMATION: RFI ISSUED TO RESOLVE A CONFLICT OR DISCREPANCY SHALL BE PROVIDED WITH THE PREFERRED SOLUTION VIA WRITTEN DESCRIPTION OR SKETCH.

7. SUBMITTALS: PROVIDE SPECIFIED MATERIALS AND EQUIPMENT UNLESS "EQUAL" OR "APPROVED EQUAL" IS EXPLICITLY INDICATED ON THE DRAWINGS. DEVIATIONS TO SPECIFIED MATERIALS SHALL BE AT THE SOLE RISK OF THE CONTRACTOR, WHO SHALL BE RESPONSIBLE FOR ALL ASSOCIATED CHANGES TO THIS AND OTHER TRADES. SUBMITTALS SHALL INDICATE REVIEW AND APPROVAL BY THE RESPONSIBLE CONTRACTOR. SUBMIT FOR REVIEW ELECTRONIC COPIES OF MANUFACTURER'S PRODUCT DATA FOR ALL FIRE ALARM SYSTEM COMPONENTS. ALLOW ENGINEER A MINIMUM OF 10 WORKING DAYS FOR PROCESSING AND REVIEW OF EACH SUBMISSION.

8. OPERATION AND MAINTENANCE DATA: SUBMIT (3) SETS OF OPERATING AND MAINTENANCE MANUALS INCLUDING SYSTEM DESCRIPTION, WIRING DIAGRAMS, WRITTEN WARRANTY, RECOMMENDED SPARE PARTS AND ROUTINE MAINTENANCE REQUIREMENTS WITH RECOMMENDED INTERVALS FOR ALL SUPPLIED EQUIPMENT.

9. RECORD DRAWINGS: CAD RECORD DRAWING FILES SHALL BE SUBMITTED AT THE COMPLETION OF THE PROJECT SHOWING THE “AS-BUILT” CONDITION INCLUDING WORK INSTALLED AND ALL MODIFICATONS OR ADDITIONS TO ORIGINAL DESIGN. OBTAIN THE AUTOCAD FILES FOR PREPARATION OF AS-BUILT DRAWINGS FROM THE ARCHITECT. THE ARCHITECT AND ENGINEER ARE NOT GRANTING ANY OWNERSHIP OR PROPERTY INTEREST IN THE CAD DRAWINGS BY THE DELIVERY OF THE CAD FILES. THE RIGHTS TO USE THE CAD FILES AND DRAWINGS ARE LIMITED TO USE FOR THE SOLE PURPOSE OF ASSISTING IN THE PERFORMANCE OF CONTRACTUAL OBLIGATIONS WITH RESPECT TO THIS PROJECT. ANY REUSE AND/OR OTHER USE WILL BE AT THE CONTRACTOR'S SOLE RISK AND WITHOUT LIABILITY TO THE ARCHITECT AND ENGINEER.

10. WARRANTIES: WARRANTY INSTALLATION IN WRITING FOR ONE YEAR FROM DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. REPAIR, REPLACE OR PROVIDE TEMPORARY ACCOMMODATIONS FOR DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN 24 HOURS OF NOTIFICATION. WARRANTY SHALL INCLUDE A CONTACT PERSON (NAME AND 24 HOUR TELEPHONE NUMBER) FOR SERVICE REQUESTS. CORRECT DAMAGE CAUSED WHILE MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY PERIOD AT NO ADDITIONAL COST.

11. COORDINATION: CONFER WITH ALL OTHER TRADES RELATIVE TO LOCATION OF ALL APPARATUS AND EQUIPMENT TO BE INSTALLED AND SELECT LOCATIONS SO AS NOT TO CONFLICT WITH OR HINDER PROGRESS OF WORK OF OTHER SECTIONS. WORK INSTALLED THAT CREATES INTERFERENCE OR RESTRICTS ACCESS REQUIRED BY CODE OR TO CONDUCT MAINTENANCE AND/OR ADJUSTMENTS SHALL BE MODIFIED AT NO ADDITIONAL COST TO THE OWNER.

12. SUPPORTS: INCLUDE ALL STRUCTURAL STEEL SUPPORTS, HANGER BRACKETS, ETC., REQUIRED FOR THE EXECUTION OF THE WORK OF THIS SECTION. HANGERS SHALL BE PREFINISHED CHANNEL AND THREADED ROD USED WITH APPROVED CLAMPS, HARDWARE, ETC. CHANNEL INSTALLED IN EXTERIOR LOCATIONS SHALL BE GALVANIZED STEEL WITH STAINLESS STEEL HARDWARE.

13. CUTTING AND PATCHING: INCLUDE ALL CORING, CUTTING, PATCHING AND FIREPROOFING NECESSARY FOR THE EXECUTION OF THE WORK OF THIS SECTION. STRUCTURAL ELEMENTS SHALL NOT BE CUT WITHOUT WRITTEN APPROVAL OF THE ARCHITECT. REPAIR AND PATCH AROUND THE WORK SPECIFIED HEREIN TO MATCH THE EXISTING ADJACENT SURFACES TO THE SATISFACTION OF THE ARCHITECT. FILL AND PATCH ALL OPENINGS OR HOLES LEFT IN THE EXISTING STRUCTURES BY THE REMOVAL OF EXISTING EQUIPMENT THAT IS PART OF THIS SECTION OF THE SPECIFICATIONS. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF THE FIRE RESISTANCE-RATED ASSEMBLY. ALL PENETRATIONS AND ASSOCIATED FIRE STOPPING SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE STOPPING MANUFACTURER'S LISTED INSTALLATION DETAILS AND BE LISTED BY UL OR FM.

14. HOISTING, SCAFFOLDING AND PLANKING: INCLUDE THE FURNISHING, SET-UP AND MAINTENANCE OF ALL HOISTING MACHINERY, CRANES, SCAFFOLDS, STAGING AND PLANKING AS REQUIRED FOR THE EXECUTION OF WORK FOR THIS SECTION.

15. SAFETY PRECAUTIONS: LIFE SAFETY AND ACCIDENT PREVENTION SHALL BE A PRIMARY CONSIDERATION. COMPLY WITH ALL OF THE SAFETY REQUIREMENTS OF THE OWNER AND OSHA THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. FURNISH, PLACE AND MAINTAIN PROPER GUARDS AND ANY OTHER NECESSARY CONSTRUCTION REQUIRED TO SECURE SAFETY OF LIFE AND PROPERTY.

16. ACCESSIBILITY: ALL WORK PROVIDED UNDER THIS SECTION OF THE SPECIFICATION SHALL BE INSTALLED SO THAT PARTS REQUIRING PERIODIC INSPECTION, MAINTENANCE AND REPAIR ARE READILY ACCESSIBLE. WORK OF THIS TRADE SHALL NOT INFRINGE UPON CLEARANCES REQUIRED BY EQUIPMENT OF OTHER TRADES.

17. PROTECTION OF WORK AND PROPERTY: THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE AND PROTECTION OF ALL WORK INCLUDED UNDER THIS SECTION UNTIL THE COMPLETION AND FINAL ACCEPTANCE OF THIS PROJECT. PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE FROM ALL CAUSES INCLUDING, BUT NOT LIMITED TO, FIRE, VANDALISM AND THEFT. ALL MATERIALS AND EQUIPMENT DAMAGED OR STOLEN SHALL BE REPAIRED OR REPLACED WITH EQUAL MATERIAL OR EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER. PROTECT ALL EQUIPMENT, OUTLETS AND OPENINGS, AND ROOF PENETRATIONS WITH TEMPORARY PLUGS, CAPS AND COVERS. PROTECT WORK AND MATERIALS OF OTHER TRADES FROM DAMAGE THAT MIGHT BE CAUSED BY WORK OR WORKMEN UNDER THIS SECTION AND MAKE GOOD DAMAGE THUS CAUSED. DAMAGED MATERIALS ARE TO BE REMOVED FROM THE SITE; NO SITE STORAGE OF DAMAGED MATERIALS WILL BE ALLOWED. ANY DAMAGE TO EXISTING SYSTEMS AND EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.

18. SEISMIC RESTRAINT REQUIREMENTS: PROVIDE SEISMIC RESTRAINTS AS REQUIRED IN ACCORDANCE WITH THE STATE BUILDING CODE. A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER, LICENSED IN THE APPLICABLE STATE FOR THE PROJECT LOCATION, SHALL PREPARE THE SEISMIC RESTRAINT DESIGN AND CERTIFY THAT THE DESIGN IS IN COMPLIANCE WITH THE STATE BUILDING CODE REQUIREMENTS.

PART 2 - PRODUCTS

1. IDENTIFICATION: NAMEPLATES SHALL INDICATE EQUIPMENT TAG, VOLTAGE CHARACTERISTICS AND SOURCE OF POWER. REFER TO NAMEPLATE DETAIL FOR ADDITIONAL INFORMATION.

2. RACEWAYS AND CONDUIT: RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE UTILIZED WITH THREADED FITTINGS ONLY. ELECTRICAL METALLIC TUBING (EMT) SHALL BE UTILIZED WITH SET SCREW TYPE FITTINGS. PROVIDE CONDUIT EXPANSION FITTINGS WITH EXTERNAL BONDING JUMPERS EQUAL TO OZ GEDNEY TYPE EX FOR RGS AND TYPE TX FOR EMT WHEN CROSSING EXPANSION JOINTS. UL LISTED LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC) AND FLEXIBLE METAL CONDUIT (FMC) SHALL BE USED FOR FINAL CONNECTIONS TO EQUIPMENT WHERE FLEXIBILITY OR VIBRATION ISOLATION ARE REQUIRED. LFMC SHALL BE UV RESISTANT WHEN INSTALLED IN AN EXTERIOR LOCATION.

3. WIRE AND CABLE: ALL CONDUCTORS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. COLOR CODING SHALL BE CONSISTENT THROUGHOUT INCLUDING CONDUCTORS INSTALLED IN RACEWAYS AND IN ALL CABLE ASSEMBLIES (MC AND/OR AC). FLEXIBLE METAL CLAD (MC) CABLE SHALL BE UL LISTED WITH INSULATED CONDUCTORS WITHIN A GALVANIZED STEEL OR ALUMINUM INTERLOCKING ARMOR WITH RED IDENTIFIER.

4. FIRE ALARM SYSTEM: NEW SYSTEM AT LEO ROY GARAGE

A. PROVIDE A COMPLETE ADDRESSABLE FIRE DETECTION ALARM AND CONTROL SYSTEM WITH NOTIFICATION APPLIANCES IN COMPLIANCE WITH ALL APPLICABLE CODES AND LOCAL ORDINANCES. ALL NEW COMPONENTS SHALL BE UL LISTED FOR THEIR INTENDED PURPOSE AND CROSS-LISTED FOR USE ON THE SYSTEM. NEW DEVICES SHALL BE PROGRAMMED TO INITIATE ACTION IN ACCORDANCE WITH THE SEQUENCE OF OPERATION INCLUDED ON THE PLANS. SYSTEM SUBMITTAL SHALL INCLUDE AN INPUT/OUTPUT MATRIX CLEARLY DEFINING THE SEQUENCE FOR EACH DEVICE.

B. EQUIPMENT SHALL BE BY EDWARDS SYSTEMS TECHNOLOGY (EST), FCI, NOTIFIER OR SIMPLEX.

C. THE FACP SHALL BE A MICROPROCESSOR BASED SYSTEM UL LISTED FOR FIRE ALARM APPLICATIONS. THE PROCESSOR SHALL SUPPORT ANALOG SENSING TECHNIQUES TO MONITOR INDIVIDUAL DEVICES AND INITIATE MAINTENANCE ALERTS FOR DIRTY SENSORS. THE INSTALLED SYSTEM SHALL BE SUPPORTED BY THE MANUFACTURER FOR A MINIMUM OF 10 YEARS AFTER INSTALLATION, I.E. NO PLANNED DISCONTINUATION OF FACTORY SUPPORT OR AVAILABILITY OF NEW REPLACEMENT OR REPAIR PARTS. THE FACP SHALL SUPPORT A MINIMUM OF 500 SUPERVISED ANALOG ADDRESSABLE DEVICES, 4 DEDICATED NAC CIRCUITS AND PANEL TO PANEL NETWORKING FOR GLOBAL ANNUNCIATION AND CONTROL. THE FACP SHALL BE ENCLOSED IN A SEMI-FLUSH LOCKABLE ENCLOSURE WITH STATUS INDICATORS CLEARLY VISIBLE WITH DOOR CLOSED. AN ALARM AND SUPERVISORY DISPLAY SHALL BE A MINIMUM OF 80 CHARACTER LCD. PROVIDE INDIVIDUAL ALARM LEDS FOR ZONED ALARMING OF EACH FLOOR AND DEVICE TYPE. PROVIDE OFF/AUTOMATIC SWITCHES FOR EACH HVAC UNIT SPECIFIED WITH DUCT SMOKE DETECTION FOR FIRE DEPARTMENT OFF OVER-RIDE CONTROL.

D. BATTERIES SHALL BE MOUNTED INTEGRAL TO THE FACP AND REMOTE POWER SUPPLY CABINETS. POWER SUPPLIES/AMPLIFIERS SHALL BE SIZED TO ACCOMMODATE THE DESIGN LOAD PLUS RESERVE CAPACITY OF 50% OR 1 WATT/1,000 SF, WHICHEVER IS GREATER. STANDBY BATTERIES SHALL SUPPORT THE SYSTEM IN THE EVENT OF A LOSS OF PRIMARY POWER FOR 24 HOURS OF FULL SUPERVISORY OPERATION FOLLOWED BY 15 MINUTES OF ALARM. BATTERIES SHALL BE MOUNTED INTEGRAL TO THE POWER SUPPLY CABINET.

E. PROVIDE DISTRIBUTED INTELLIGENT POWER SUPPLIES TO ACCOMMODATE THE POWER REQUIREMENTS OF NAC CIRCUITS AS INDICATED ON THE RISER AND FLOOR PLANS. POWER SUPPLIES SHALL COMMUNICATE WITH THE FACP VIA DATA COMMUNICATIONS, WHEREBY EACH POWER SUPPLY SHALL REPORT A LOSS OF AC POWER, BATTERY FAIL OR GROUND FAULT, AND EACH NOTIFICATION APPLIANCE CIRCUIT SERVED SHALL BE INDIVIDUALLY MONITORED FOR WIRING INTEGRITY.

F. NOTIFICATION APPLIANCE CIRCUITS AND SIGNALING LINE CIRCUITS (SLC) SHALL BE WIRED IN ACCORDANCE WITH THE CLASS IDENTIFIED ON THE RISER DIAGRAM. ISOLATION MODULES SHALL BE PROVIDED TO MAINTAIN SLC INTEGRITY A MINIMUM OF EVERY 25 DEVICES OR ONE SET PER FLOOR, WHICHEVER IS GREATER. WHERE CLASS B IS SPECIFIED, END OF LINE RESISTORS SHALL BE PLACED WITHIN THE FACP OR FIRE ALARM TERMINAL CABINETS.

G. REMOTE ANNUNCIATOR SHALL BE AN 80 CHARACTER ALPHANUMERIC LCD DISPLAY WITH COMMON LED INDICATORS OF POWER ON, TROUBLE, SUPERVISORY AND ALARM CONDITIONS. WHERE REMOTE SYSTEM CONTROL FUNCTIONS ARE REQUIRED, THE ANNUNCIATOR SHALL PROVIDE KEY-ENABLED ALARM SILENCE, TROUBLE SILENCE, DRILL/TEST AND RESET SWITCHES. AN ELEVEN INCH BY SEVENTEEN INCH GRAPHIC DEPICTING THE ARCHITECTURAL LAYOUT OF THE FACILITY WITH STAIRWELLS, CORRIDORS, ELEVATORS AND EGRESS POINTS CLEARLY SHOWN SHALL BE FRAMED AND PERMANENTLY MOUNTED ADJACENT TO THE ANNUNCIATOR. ALPHANUMERIC DESCRIPTORS FOR EACH INITIATING DEVICE SHALL CORRESPOND TO DESCRIPTORS INCLUDED ON THE GRAPHIC.

H. PROVIDE ADDRESSABLE DETECTION AS ILLUSTRATED ON THE PLANS. ALL COMMON TYPES OF DETECTION SHALL BE INTERCHANGEABLE ON COMMON BASES. SMOKE DETECTORS SHALL BE ANALOG ADDRESSABLE AND SHALL ALLOW FOR AUTOMATIC AND MANUAL CHANGES TO SENSITIVITY VIA THE FACP. DUCT SMOKE DETECTORS SHALL BE ANALOG ADDRESSABLE AND SHALL ALLOW FOR AUTOMATIC AND MANUAL CHANGES TO SENSITIVITY VIA THE FACP, EACH PROVIDED WITH HOUSING, SAMPLING TUBE SIZED TO DUCT DIMENSIONS AND REMOTE TEST/INDICATION STATION. HEAT DETECTION SHALL BE ANALOG FROM 32 TO 158 DEGREES F, WITH CAPABILITY TO SELECT FIXED OR RATE OF RISE AT THE FACP.

I. PROVIDE ADDRESSABLE MONITORING MODULES FOR CONNECTING ALL CONVENTIONAL DEVICES TO THE SLC, SUCH AS FIRE SUPPRESSION WATER FLOW, PRESSURE, TAMPER SWITCHES, FIRE SUPPRESSION SYSTEM CONTROL PANELS, ETC.

J. MANUAL PULL STATIONS SHALL BE ADDRESSABLE DUAL ACTION TYPE. PROVIDE RED CAST BOX WHERE SURFACE MOUNTED. WHERE ALARMED COVERS (EQUAL TO STOPPER) ARE SPECIFIED TO MINIMIZE VANDALISM AND FALSE ALARMS, SINGLE ACTION PULL STATIONS SHALL BE PROVIDED AT THOSE LOCATIONS ONLY.

K. VISUAL SIGNAL SHALL BE SELF-SYNCHRONIZING XENON STROBES RATED BY UL 1971 TEST CRITERIA AND IN ACCORDANCE WITH NFPA 72. VISUAL SIGNALS SHALL HAVE A MINIMUM EFFECTIVE INTENSITY OF 15 CANDELA (CD) OR AS OTHERWISE SPECIFIED ON THE DRAWINGS. MULTIPLE STROBES VISIBLE FROM A SINGLE LOCATION SHALL BE SYNCHRONIZED. PROVIDE RED CAST BOX WHERE SURFACE MOUNTED.

L. AUDIBLE SIGNALS FROM HORNS SHALL PRODUCE A MINIMUM REVERBERANT SOUND LEVEL OF 85dB OR 15dB ABOVE AMBIENT, WHICHEVER IS GREATER OR AUDIBLE SIGNALS FROM SPEAKERS SHALL PRODUCE A MINIMUM REVERBERANT SOUND LEVEL OF 85dB AT 10 FEET ON THE 1 WATT TAP; NOT TO EXCEED 110dB AT THE NEAREST HEARING DISTANCE. AUDIBLE NOTIFICATION SHALL BE SYNCHRONIZED.

M. SUBMITTALS: PROVIDE THE FOLLOWING DOCUMENTS FOR REVIEW AND EVALUATION 1) POINT TO POINT WIRING DIAGRAMS OF THE PROPOSED MODIFICATION INCLUDING ALL CONDUCTOR QUANTITY AND SIZING 2)PANEL LAYOUTS INDICATING MODULE PLACEMENT AND SPARE CAPACITY ALLOWANCE FOR FUTURE EXPANSION 3)MANUFACTURERS CATALOG CUT SHEETS OF ALL COMPONENTS AND DEVICES WITH INTERCONNECTION DIAGRAMS 4) BATTERY CAPACITY CALCULATIONS INDICATING REQUIRED AND SPARE CAPACITY 5)POWER SUPPLY CAPACITY CALCULATIONS INCLUDING EACH CIRCUIT LOAD, VOLTAGE DROP AND SPARE CAPACITY 6) WRITTEN TEST REPORT FOR NOTIFICATION OF SUCCESSFUL COMPLETION OF EACH REQUIRED TEST AND SYSTEM RECORD OF COMPLETION. 7) AS-BUILT DRAWINGS INCLUDING ALL DEVICE ADDRESSES AND ALPHANUMERIC DESCRIPTORS ASSIGNED IN THE CONTROL PANEL.

5. FIRE ALARM SYSTEM MODIFICATIONS: LOWER LOCKS GARAGE:

A. MODIFICATIONS MADE TO THE BASE BUILDING FIRE ALARM SYSTEM SHALL BE MADE IN COMPLIANCE WITH ALL APPLICABLE CODES AND REQUIREMENTS. ALL NEW COMPONENTS SHALL BE UL LISTED FOR THEIR INTENDED PURPOSE AND CROSS-LISTED FOR USE ON THE EXISTING SYSTEM.

B. THE ADDITION OF NEW INITIATING DEVICES OR NOTIFICATION APPLIANCES TO THE EXISTING SLC AND NAC SHALL NOT ADVERSELY AFFECT SUPERVISION. THE WIRING CLASS AND STYLE FOR THE ADDITION OF DEVICES SHALL BE CONSISTENT WITH EXISTING AND PER THE RISER DIAGRAM INCLUDED IN THESE DRAWINGS

C. NEW DEVICES SHALL BE PROGRAMMED TO INITIATE ACTION IN ACCORDANCE WITH THE EXISTING SEQUENCE OF OPERATION AS APPROVED BY THE AHJ. SYSTEM SUBMITTAL SHALL INCLUDE AN INPUT/OUTPUT MATRIX CLEARLY DEFINING THE SEQUENCE FOR EACH ADDED DEVICE.

D. PROVIDE DISTRIBUTED INTELLIGENT POWER SUPPLIES TO ACCOMMODATE THE POWER REQUIREMENTS OF NAC CIRCUITS. POWER SUPPLIES SHALL COMMUNICATE WITH THE FACP VIA DATA COMMUNICATIONS, WHEREBY EACH POWER SUPPLY SHALL REPORT A LOSS OF AC POWER, BATTERY FAIL OR GROUND FAULT, AND EACH NOTIFICATION APPLIANCE CIRCUIT SERVED SHALL BE INDIVIDUALLY MONITORED FOR WIRING INTEGRITY. POWER SUPPLIES/AMPLIFIERS SHALL BE SIZED TO ACCOMMODATE THE DESIGN LOAD PLUS RESERVE CAPACITY OF 50% OR 1 WATT/1,000 SF, WHICHEVER IS GREATER. STANDBY BATTERIES SHALL SUPPORT THE SYSTEM IN THE EVENT OF A LOSS OF PRIMARY POWER FOR 24 HOURS OF FULL SUPERVISORY OPERATION FOLLOWED BY 15 MINUTES OF ALARM. BATTERIES SHALL BE MOUNTED INTEGRAL TO THE POWER SUPPLY CABINET.

E. SUBMITTALS: PROVIDE THE FOLLOWING DOCUMENTS FOR REVIEW AND EVALUATION 1) POINT TO POINT WIRING DIAGRAMS OF THE PROPOSED MODIFICATION INCLUDING ALL CONDUCTOR QUANTITY AND SIZING 2)PANEL LAYOUTS INDICATING MODULE PLACEMENT AND SPARE CAPACITY ALLOWANCE FOR FUTURE EXPANSION 3)MANUFACTURERS CATALOG CUT SHEETS OF ALL COMPONENTS AND DEVICES WITH INTERCONNECTION DIAGRAMS 4) BATTERY CAPACITY CALCULATIONS INDICATING REQUIRED AND SPARE CAPACITY 5)POWER SUPPLY CAPACITY CALCULATIONS INCLUDING EACH CIRCUIT LOAD, VOLTAGE DROP AND SPARE CAPACITY 6) WRITTEN TEST REPORT FOR NOTIFICATION OF SUCCESSFUL COMPLETION OF EACH REQUIRED TEST AND SYSTEM RECORD OF COMPLETION. 7) AS-BUILT DRAWINGS INCLUDING ALL DEVICE ADDRESSES AND ALPHANUMERIC DESCRIPTORS ASSIGNED IN THE CONTROL PANEL.

PART 3 EXECUTION

1. GENERAL: ALL INTERRUPTIONS AND SHUTDOWNS OF EXISTING SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE OWNER AND ENGINEER. THE CONTRACTOR SHALL INCLUDE ALL PREMIUM TIME ASSOCIATED WITH THE SYSTEM AND SERVICE INTERRUPTIONS AND SHUTDOWNS.

2. IDENTIFICATION: FURNISH AND INSTALL NAMEPLATES ON ALL NEW EQUIPMENT.

3. RACEWAYS AND CONDUIT: REFER TO FIRE ALARM DRAWINGS FOR ALLOWABLE WIRING METHODS. EMT MAY BE USED WITH SET SCREW FITTINGS IN CONCEALED AND EXPOSED LOCATIONS WHERE NOT EXPOSED TO PHYSICAL DAMAGE OR MOISTURE. USE RIGID GALVANIZED STEEL WITH THREADED FITTINGS WHERE EMT PROHIBITED. ALL RACEWAYS, WHICH PASS THROUGH BUILDING EXPANSION JOINTS, SHALL BE EQUIPPED WITH EXPANSION FITTINGS. ALL CONDUITS SHALL BE SUPPORTED IN AN APPROVED MANNER TO THE BUILDING STRUCTURE. SUPPORT FROM CONDUITS, DUCTWORK, PIPING, ETC. WILL NOT BE PERMITTED. RACEWAYS SHALL BE RUN CONCEALED UNLESS NOTED OTHERWISE, PERPENDICULAR AND/OR PARALLEL TO THE BUILDING STRUCTURE. NECA STANDARDS SHALL DEFINE MINIMUM QUALITY LEVEL FOR INSTALLATION WHERE APPLICABLE.

4. WIRE AND CABLE: WIRING IS NOT ILLUSTRATED ON THE DRAWINGS. PROVIDE COMPLETE WIRING SYSTEM TO MEET ILLUSTRATED INTENT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

5. FIRE ALARM SYSTEM:

A. ALL DETECTORS SHALL BE LABELED WITH ASSIGNED ADDRESS ON BOTH THE DETECTOR HOUSING AND THE BASE WITH A BLACK ON CLEAR TYPED LABEL EQUAL TO KROY. THE BASE ADDRESS SHALL BE LEGIBLE WITHOUT REMOVAL OF THE DETECTOR. THE DETECTOR ADDRESS SHALL BE CONCEALED WHEN PLACED INTO THE BASE. REMOTE ALARM AND TEST STATIONS SHALL BE PROVIDED WITH NAMEPLATES DESCRIBING THE MONITORED DEVICE.

B. FIRE ALARM SYSTEM WIRING SHALL BE INSTALLED IN CONDUIT. THE USE OF MC CABLE LISTED FOR FIRE ALARM USE MAY BE ALLOWED IF SPECIFICALLY NOTED ON THE FLOOR PLANS. EXPOSED CABLE OR WIRE IS NOT ALLOWED.

C. ALL JUNCTION BOXES SHALL BE SPRAYED RED AND LABELED “FIRE ALARM”. CONDUIT COUPLINGS SHALL BE SPRAY PAINTED RED PRIOR TO INSTALLATION.

D. CONNECTIONS AND SPLICES SHALL BE MADE USING SCREW TERMINAL BLOCKS. THE USES OF WIRE NUT TYPE CONNECTORS ARE PROHIBITED IN THE SYSTEM.

E. DETECTORS SHALL BE PLACED IN ACCORDANCE WITH NFPA 72 CRITERIA. DETECTORS SHALL BE NO CLOSER THAT 12 INCHES FROM A LIGHT FIXTURE OR 36 INCHES FROM AN AIR HANDLING DIFFUSER. PROVIDE AIR FLOW READINGS AT THE LOWEST SYSTEM DESIGN POINT ASSOCIATED WITH ALL DUCT SMOKE DETECTOR INSTALLATIONS TO VERIFY LISTING CRITERIA IS MET.

F. PERFORM INSULATION TESTING (MEGGER), CONTINUITY AND LOOP RESISTANCE CHECKS ON ALL SYSTEM CONDUCTORS TO DETERMINE THAT THE SYSTEM IS FREE FROM GROUNDED, SHORTED, OR OPEN CIRCUITS. THESE TESTS SHALL BE CONDUCTED PRIOR TO THE INSTALLATION OF FIRE ALARM EQUIPMENT. LOOP RESISTANCE MEASUREMENT SHALL VERIFY THAT THE LOOP RESISTANCE DOES NOT EXCEED THE MANUFACTURERS SPECIFIED LIMITS. CORRECTIONS SHALL BE MADE AND THE SYSTEM SHALL BE RETESTED IF DEFICIENCIES ARE FOUND. A WRITTEN REPORT SHALL BE SUBMITTED DETAILING THE RESULTS OF THE PRELIMINARY TESTS SHALL ACCOMPANY THE REQUEST FOR FINAL ACCEPTANCE TEST.

G. THE FIRM WHO HOLDS THE EXISTING SYSTEM MAINTENANCE CONTRACT SHALL PERFORM FINAL CONNECTIONS, PROGRAMMING, AND TESTING. THE CONTRACTOR SHALL CARRY ALL COSTS ASSOCIATED WITH FINAL CONNECTIONS, PROGRAMMING AND TESTING AS WELL AS DISABLING CONNECTIONS TO THE MUNICIPAL LOOP DURING FINAL CONNECTIONS AND TESTING.

H. CARRY ALL COSTS ASSOCIATED WITH FINAL CONNECTIONS, PROGRAMMING AND TESTING AS WELL AS DISABLING CONNECTIONS TO THE MUNICIPAL LOOP DURING FINAL CONNECTIONS AND TESTING. THE MANUFACTURE'S REPRESENTATIVE SHALL BE PRESENT TO SUPERVISE PANEL START UP, PROGRAMMING AND TESTING.

I. CERTIFY INSTALLATION WITH THE SUCCESSFUL COMPLETION OF ALL ASSOCIATED NFPA 72 TESTS AND MEASURE SOUND PRESSURE LEVELS IN ALL ROOMS WITHIN THE SCOPE OF THIS PROJECT. REPORTS SHALL CLEARLY INDICATE THE OPERATION OF EACH INITIATING DEVICE AND SUBSEQUENT OUTPUT AND CONTROL POINTS. SUBMIT THE TEST REPORTS FOR REVIEW PRIOR TO REQUEST FOR FINAL PUNCH LIST INSPECTION.

J. PERFORM FINAL TESTING FOR THE FIRE DEPARTMENT ACCEPTANCE AFTER APPROVAL OF THE INITIAL SYSTEM TESTING IDENTIFIED ABOVE.

K. PROVIDE A ONE YEAR MAINTENANCE CONTRACT TO COINCIDE WITH THE WARRANTEE PERIOD. THE MAINTENANCE CONTRACT SHALL INCLUDE QUARTERLY INSPECTIONS IN ACCORDANCE WITH NFPA 72 REQUIREMENTS.

L. CLEAN THE INTERIOR AND EXTERIOR OF ALL EQUIPMENT AT PROJECT COMPLETION OF ALL CONSTRUCTION DEBRIS AND RESIDUE. DAMAGED SURFACES SHALL BE REPAIRED AND FINISHES TOUCHED UP PAINT TO MATCH THE MANUFACTURER'S FINISH. EXTENSIVELY DAMAGED ENCLOSURES SHALL BE REPLACED.

PART 4 PROJECT CLOSEOUT

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH PROJECT CLOSEOUT. ALLOW SUFFICIENT TIME IN THE CONSTRUCTION SCHEDULE TO ENSURE THAT THE INSTALLATION IS SUBSTANTIALLY COMPLETE AND ALL REQUIRED TESTING AND ACCURATELY COMPLETED DOCUMENTATION IS DELIVERED TO THE ENGINEER AT LEAST TWO WEEKS PRIOR TO ENGINEER'S SUBSTANTIAL COMPLETION SITE VISIT. FAILURE TO ADEQUATELY PLAN OR SUBMISSION OF INCOMPLETE/INCORRECT DOCUMENTATION WILL RESULT IN BACK CHARGES OF ALL COSTS ASSOCIATED WITH ADDED WORK PERFORMED BY RDK ENGINEERS.

2. PROVIDE THE CONTRACTOR CERTIFICATE OF COMPLETION IN ACCORDANCE WITH 780CMR 107.6.3 INDICATING THAT THE INSTALLATION IS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND ALL APPLICABLE LOCAL, STATE AND FEDERAL STATUTES AND CODES. PROVIDE CERTIFICATION FROM BOTH THE GENERAL CONTRACTOR AND ASSOCIATED TRADE CONTRACTOR FOR COMPLIANCE WITH 780CMR CHAPTERS 1 & 9.

3. PROVIDE FIRE ALARM SYSTEMS DOCUMENTATION (INCLUDING BUT NOT LIMITED TO TIER II SHOP DRAWINGS AND TIER III RECORD DRAWINGS) IN ACCORDANCE WITH 780 CMR 901.2.1. RECORD DRAWINGS MUST BE PRODUCED BY THE CONTRACTOR AND SUBMITTED ON CONTRACTOR'S TITLE-BLOCK WITH ACCURATE DEPICTION OF THE FINAL INSTALLED SYSTEMS. CONTRACTOR IS RESPONSIBLE FOR ACCURATELY REPRESENTING THE FINAL INSTALLED SYSTEMS. ANY INACCURACIES BETWEEN THE INSTALLED CONDITION AND THE RECORD DRAWINGS WILL BE CAUSE FOR RETURNED RECORD DRAWINGS FOR CORRECTION BY THE CONTRACTOR. THE ADDITIONAL TIME INCURRED BY RDK TO RE-REVIEW THE RECORD DRAWINGS WILL RESULT IN BACK CHARGES.

4. PROVIDE “SYSTEM RECORD OF COMPLETION” AND “SYSTEM INSPECTION AND TESTING FORM” IN ACCORDANCE WITH NFPA 72 2010 CHAPTER 10 AND 14 REQUIREMENTS.

5. PROVIDE BACKUP DOCUMENTATION TO NFPA 72 TESTING INCLUDING AMBIENT AND ALARM SOUND PRESSURE LEVELS THROUGHOUT THE PROTECTED AREA, VERIFICATION OF INTELLIGIBILITY FOR SPEAKER SYSTEMS AND DUCT SMOKE DETECTOR SAMPLING TUBE DIFFERENTIAL PRESSURE READINGS.

6. NO FUNCTIONAL DEFICIENCIES IN THE FIRE ALARM SYSTEM SHALL BE PRESENT WHEN REQUESTING SUBSTANTIAL COMPLETION SITE VISIT.

7. SUBSTANTIAL COMPLETION SITE VISIT BY THE ENGINEER SHALL BE CONDUCTED AFTER RECEIPT AND REVIEW OF THE CONTRACTOR'S CERTIFICATE OF COMPLETION AND ALL CODE MANDATED TEST REPORTS AND SUBMISSIONS LISTED ABOVE. SUBSTANTIAL COMPLETION SITE VISITS SHALL NOT BE REQUESTED UNTIL THE PROJECT IS SUBSTANTIALLY COMPLETE.

8. PREMATURE REQUESTS THAT REQUIRE ADDITIONAL/FOLLOW UP SITE VISITS BY THE ENGINEER OF DEFICIENT ITEMS (AREAS INCOMPLETE, SYSTEMS NOT OPERATIONAL, ETC.) WILL RESULT IN BACK CHARGES OF THE COSTS ASSOCIATED WITH ANY ADDED VISITS.

FIRE ALARM LEGEND

Symbol	Description
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR PANEL
ESR	ELEVATOR STATUS/RECALL CABINET
BATT	FIRE ALARM SYSTEM BATTERY PACK & BATTERY CHARGER
F	FIRE ALARM MASTER BOX
T	FIRE ALARM COMMUNICATIONS ANTENNA/TRANSMITTER
F	FIRE ALARM RED ROTATING BEACON, EXTERIOR MOUNTED, WEATHERPROOF
15cd L	FIRE ALARM VISUAL DEVICE
B	FIRE ALARM BELL
H	FIRE ALARM HORN
F SC	FIRE ALARM MANUAL PULL STATION "SC" INDICATES STOPPER COVER
TS	SPRINKLER TAMPER FLOW SWITCH
RAI	REMOTE ALARM INDICATOR
RTS	REMOTE TEST STATION
ACM	INDIVIDUAL ADDRESSABLE CONTROL MODULE
ZMM	ZONE MONITORING MODULE
110cd F WG	FIRE ALARM AUDIBLE AND VISUAL DEVICE, NUMERAL INDICATES CANDELA VALUE "WG" INDICATES WIRE GUARD "WP" INDICATES WEATHERPROOF
S ER	FIRE ALARM SMOKE DETECTOR, PHOTO ELECTRIC UNLESS NOTED OTHERWISE "ER" INDICATES ELEVATOR RECALL "SC" INDICATES SELF-CONTAINED, SINGLE STATION TYPE "I" INDICATES IONIZATION TYPE DETECTOR "M" INDICATES MULTI-SENSOR "WG" INDICATES WIRE GUARD
H RR	FIRE ALARM HEAT DETECTOR, 135° FIXED TEMPERATURE UNLESS NOTED OTHERWISE "RR" INDICATES RATE OF RISE "R/F" INDICATES RATE OF RISE AND FIXED TEMPERATURE "200" INDICATES 200° TEMPERATURE "WG" INDICATES WIRE GUARD

BRANCH CIRCUIT & FEEDER LEGEND

Symbol	Description
(solid line)	BRANCH CIRCUIT OR FEEDER CONCEALED IN FINISHED AREAS
(dashed line)	BRANCH CIRCUIT OR FEEDER, CONCEALED IN OR UNDER FLOOR SLAB
(line with open circle)	BRANCH CIRCUIT OR FEEDER TURNING UP TOWARDS OBSERVER
(line with filled circle)	BRANCH CIRCUIT OR FEEDER TURNING DOWN AWAY FROM OBSERVER
(line with bracket)	CONDUIT STUBBED ABOVE CEILING
R22A-1,3,5	BRANCH CIRCUIT HOME RUN TICKS INDICATE QUANTITY OF CONDUCTORS, GROUND CONDUCTORS ARE NOT INDICATED. NO TICKS INDICATES 2#12 & 1#12G IN 3/4"C MINIMUM. R22A-1,3,5 INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOMERUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 20A-1P (20AMP SINGLE POLE) UNLESS NOTED OTHERWISE.
H42B-1 100A-3P 6	FEEDER HOMERUN. REFER TO LEGEND OF FEEDER SIZES FOR CONDUCTOR AND RACEWAY REQUIREMENTS DESIGNATED INSIDE TAG. H42B-1 INDICATES PANEL AND CIRCUIT NUMBER DESIGNATION FROM WHICH HOME RUN SHALL ORIGINATE, 100A-3P INDICATES 100 AMPERE, 3 POLE CIRCUIT BREAKER.

EXISTING EQUIPMENT LEGEND

Symbol	Description
XM	EXISTING EQUIPMENT TO REMAIN
X	EXISTING EQUIPMENT TO BE REMOVED
XR	EXISTING EQUIPMENT TO BE RELOCATED
XN	NEW LOCATION OF EXISTING RELOCATED EQUIPMENT
NR	EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER
(light box)	EXISTING EQUIPMENT FOR INFORMATION ONLY- INDICATED BY SYMBOL WITH LIGHT AND OUT OF FUNCTION LINE TYPE
(dashed box)	EXISTING EQUIPMENT TO BE REWORKED- INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE

ABBREVIATIONS

ADA	AMERICAN WITH DISABILITIES ACT	MTD	MOUNTED
AFG	ABOVE FINISHED GRADE	MTG	MOUNTING
AIC	AMPERE INTERRUPTING CAPACITY	NC	NORMALLY CLOSED CONTACT
AL	ALUMINUM	NEC	NATIONAL ELECTRICAL CODE
AT	AMPERE TRIP	NO	NORMALLY OPEN CONTACT
ATS	AUTOMATIC TRANSFER SWITCH	NTS	NOT TO SCALE
AWG	AMERICAN WIRE GAUGE	#	NUMBER
C	CONDUIT	POS	PROVIDED UNDER OTHER SECTIONS
CA	CABLE	PWR	POWER
CKT	CIRCUITS	RGS	RIGID GALVANIZED STEEL
CPU	CENTRAL PROCESSING UNIT	RMS	ROOT MEAN SQUARE VALUE
℄	CENTERLINE	RPM	REVOLUTIONS PER MINUTE
dB	DECIBEL	TERMN	TERMINAL
DWG	DRAWING	TSP	TWISTED SHIELDED-PAIR
EC	ELECTRICAL CONTRACTOR	TYP	TYPICAL
EMT	ELECTRIC METALLIC TUBING	UG	UNDERGROUND
FDR	FEEDER	UNO	UNLESS NOTED OTHERWISE
FLMT	FLEXIBLE LIQUID TIGHT METALLIC TUBING	UPS	UNINTERRUPTIBLE POWER SUPPLY
GEC	GROUNDING ELECTRODE CONDUCTOR	WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTING		
JB	JUNCTION BOX		

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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
	06-19-15	ISSUED FOR BIDDING

ISSUED:

PROJECT NO: 16-2526.01
DRAWN BY: AM
CHECKED BY: MM
SHEET TITLE:

FIRE ALARM LEGENDS & SPECIFICATIONS

FA0.00

Q:\2015\20150312 - LOWELL ROY - LOWER LOCKS PARKING GARAGES\1200 DRAWINGS\1204 ELECTRICAL\PLOT FILES\20150312 FA0.00 FIRE ALARM LEGENDS, NOTES, SPECIFICATIONS AND DETAILS.DWG 6/24/2015 3:53:45 PM LUKAS, CHRISTOFFER

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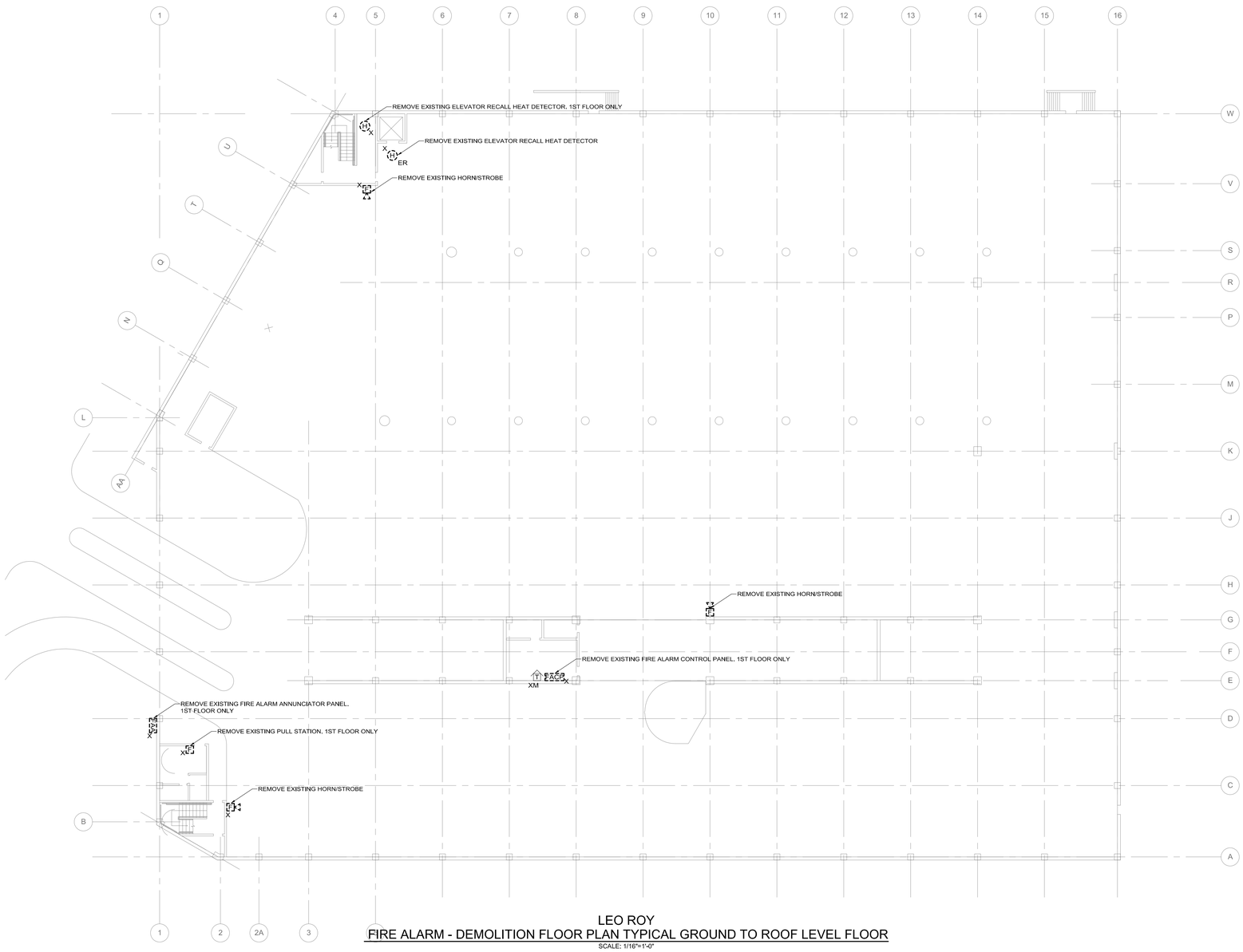

LEO ROY
FIRE ALARM - DEMOLITION FLOOR PLAN TYPICAL GROUND TO ROOF LEVEL FLOOR
SCALE: 1/16"=1'-0"

ELECTRICAL DEMOLITION NOTES

1. REFER TO THE DRAWINGS FOR THE EXTENT OF THE DEMOLITION SCOPE OF WORK AND AREA. THE DEMOLITION PLANS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED.
2. VISIT THE SITE PRIOR TO SUBMISSION OF THE BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF THE WORK.
3. TRACE AND LABEL ALL EXISTING SYSTEMS WITHIN THE DEMOLITION AREA AND BEYOND PRIOR TO DISCONNECTION AND REMOVAL TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION AREA IS AFFECTED. REVIEW IN DETAIL WITH THE GENERAL CONTRACTOR AND OWNER WHAT IS TO BE REMOVED AND REMAIN PRIOR TO WORK COMMENCING THE DEMOLITION. THERE SHALL BE NO INTERRUPTION OF SERVICES OUTSIDE THE DEMOLITION AREA WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE.
4. NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING THE DEMOLITION.
5. ALL ITEMS REMOVED SHALL BE OFFERED TO THE OWNER FOR SALVAGE. IF THE OWNER DOES NOT TAKE POSSESSION, DISPOSE OF THE ITEMS IN A SAFE AND LEGAL MANNER. ALL ITEMS CLASSIFIED AS HAZARDOUS SHALL BE DISPOSED AS HAZARDOUS WASTES AND A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PROVIDED TO THE OWNER.
6. NOTIFY UTILITY COMPANIES IN ACCORDANCE WITH THEIR REQUIREMENTS PRIOR TO DEMOLITION. VERIFY THAT THE UTILITIES HAVE BEEN DISCONNECTED, CAPPED AND MADE SAFE PRIOR TO DEMOLITION.
7. ENSURE THE SAFE PASSAGE OF PERSONS IN AND AROUND THE BUILDING DURING DEMOLITION. PREVENT INJURY TO PERSONS AND DAMAGE TO PROPERTY. PROVIDE ADEQUATE SHORING AND BRACING TO PREVENT COLLAPSE. IMMEDIATELY REPAIR DAMAGED PROPERTY TO THE CONDITION BEFORE BEING DAMAGED. TAKE EFFECTIVE MEASURES TO PREVENT WINDBLOWN DUST.
8. DO NOT USE CUTTING TORCHES UNTIL WORK AREA IS CLEARED OF FLAMMABLE MATERIALS. AT CONCEALED SPACES, SUCH AS PIPE INTERIORS, VERIFY CONDITION AND CONTENTS OF HIDDEN SPACE BEFORE STARTING FLAME-CUTTING OPERATIONS. MAINTAIN FIRE WATCH AND PORTABLE FIRE-SUPPRESSION DEVICES DURING FLAME-CUTTING OPERATIONS. MAINTAIN ADEQUATE VENTILATION WHEN USING CUTTING TORCHES.
9. DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINTS OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY OTHERS. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED AND LABELED SPARE.
10. CREATE AND SUBMIT IMPAIRMENT PLANS TO THE AHJ IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM IS TAKEN OUT OF SERVICE DURING THE EXECUTION OF THE PROJECT.

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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
	06-19-15	ISSUED FOR BIDDING

ISSUED:

PROJECT NO: 16-2526.01
DRAWN BY: AM
CHECKED BY: MM
SHEET TITLE:

FIRE ALARM
GROUND TO ROOF LVL
DEMO PLAN

FAD1.00

Q:\2015\20150312 - LOWELL ROY - LOWER LOCKS PARKING GARAGES\1200 DRAWINGS\1204 ELECTRICAL\PLOT FILES\20150312 FAD1.00 FIRE ALARM GROUND LEVEL DEMOLITION PLAN - LRPG.DWG 7/29/2015 9:23:32 AM LUKAS, CHRISTOFFER

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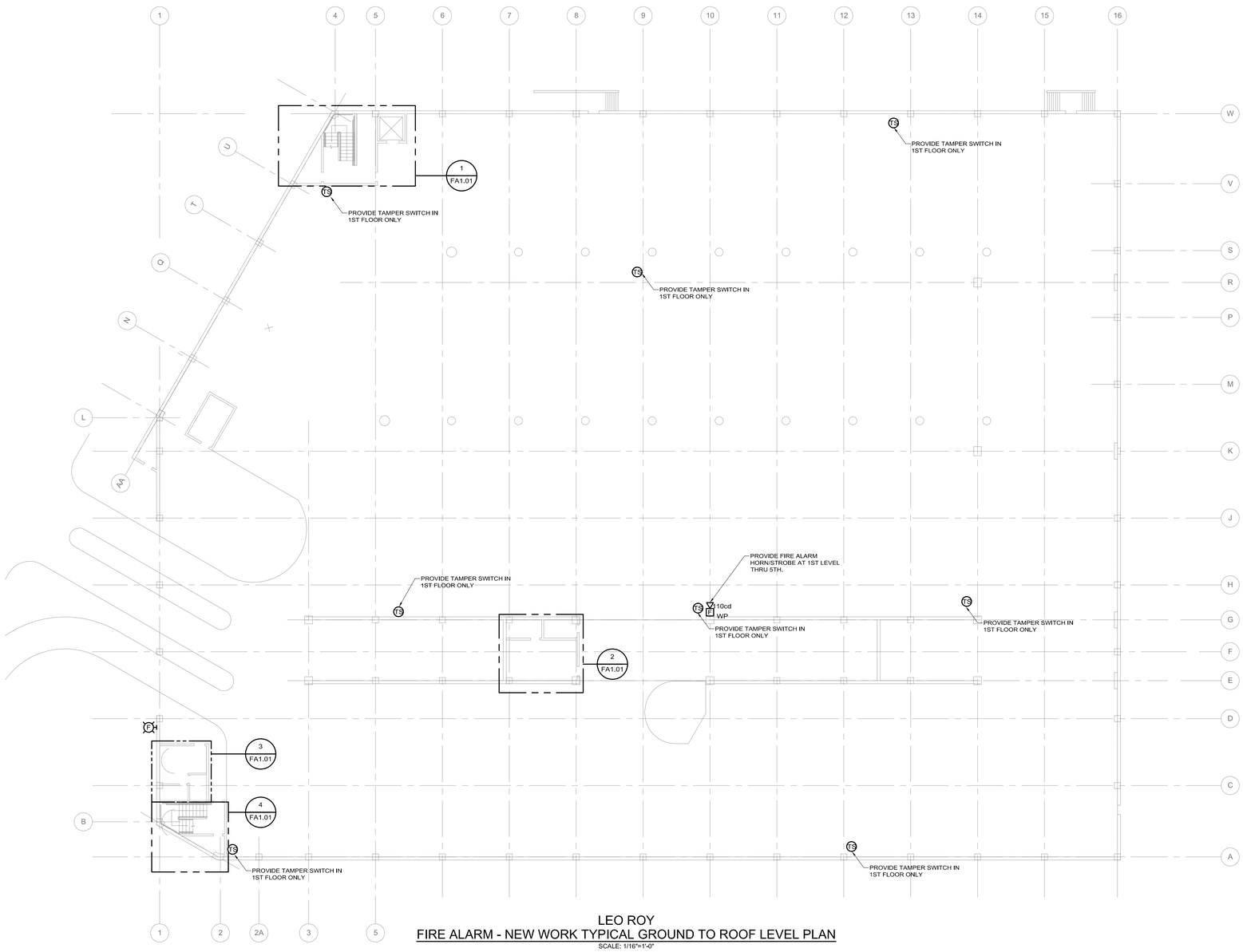

LEO ROY
FIRE ALARM - NEW WORK TYPICAL GROUND TO ROOF LEVEL PLAN
SCALE: 1/16"=1'-0"

FIRE ALARM NOTES

1. ALL FIRE ALARM EQUIPMENT/DEVICES AND THEIR INSTALLATION SHALL MEET THE REQUIREMENTS OF ADA, NFPA 72, NFPA 13, BOCA, THE TOWNSEND FIRE DEPARTMENT RULES AND REGULATIONS AND USPS DESIGN GUIDELINES. REQUIREMENTS INCLUDE MOUNTING HEIGHT, db AND CANDELA LEVELS, AS WELL AS SYNCHRONIZATION OF ALL NEW FIRE ALARM AUDIO/VISUAL AND STROBE ONLY UNITS.
2. ALL FIRE ALARM WIRING SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS. ALL WIRING SHALL BE COPPER #14 AWG MINIMUM. ALL EXPOSED WIRING SHALL BE INSTALLED IN CONDUIT.
3. ALL CONDUIT SHALL BE RIGID STEEL (RGS) CONDUIT. NO CONDUIT SMALLER THAN ¾ INCH ELECTRICAL TRADE SIZE SHALL BE USED, UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS. ALL EQUIPMENT LOCATIONS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC.
4. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING FIRE ALARM DEVICES TO REMAIN.
5. ALL FIRE ALARM JUNCTION BOXES (ENTIRE BOX), COVERS AND CONDUIT FITTINGS SHALL BE PAINTED RED.
6. THE COSTS OF ANY REQUIRED FIRE WATCHES AND/OR FINES DUE TO INTERRUPTIONS, SCHEDULED OR OTHERWISE, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN FIRE ALARM PERMIT AND ELECTRICAL PERMIT AND PAY ALL PERMIT FEES.
8. ALL FIRE ALARM WORK SHALL BE PER THE FIRE AND BUILDING RULES AND REGULATIONS.
9. ALL FIRE ALARM PANELS SHALL BE PROVIDED A NAMEPLATE LABEL: "FIRE ALARM SYSTEM", CONSISTING ONE INCH WHITE LETTERING ON A RED BACKGROUND.
10. PROVIDE AS-BUILT DRAWING CABINET TO HOUSE A COMPLETE SET OF AS-BUILT DRAWINGS HOUSED IN A RED CABINET CLEARLY MARKED 'AS-BUILT DRAWINGS' LOCKED AND KEYED THE SAME AS THE FACP AND MANUAL PULL STATIONS. PROVIDE KEYS PER LOWELL FIRE DEPARTMENT REQUIREMENTS.
11. FIRE ALARM DESIGN ATTEMPT IS REPAIR/REPLACE ONLY. MINIMAL NOTIFICATION APPLIANCES PROVIDED TO ANNUNCIATE.
12. ALL ADDRESSABLE DEVICES SHALL BE LOCATED WITHIN CONDITIONED SPACES.
13. ALL FIELD DEVICES SHALL BE SUITABLE FOR EXPECTED TEMPERATURE RANGE OF 0°F TO 110°F.

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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
ISSUED:	06-19-15	ISSUED FOR BIDDING

PROJECT NO: 16-2526.01
DRAWN BY: AM
CHECKED BY: MM
SHEET TITLE:
FIRE ALARM
GROUND TO ROOF LVL
NEW WORK PLAN

FA1.00

Q:\2015\20150312 - LOWELL ROY - LOWER LOCKS PARKING GARAGES\1200 DRAWINGS\1204 ELECTRICAL\PLOT FILES\20150312 FA1.00 FIRE ALARM GROUND TO ROOF LEVEL NEW WORK PLAN - LRPG.DWG 7/29/2015 9:28:58 AM LUKAS, CHRISTOFFER

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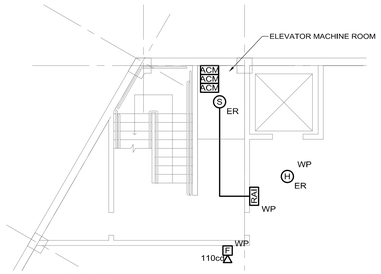
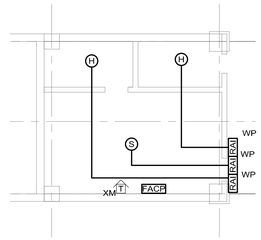
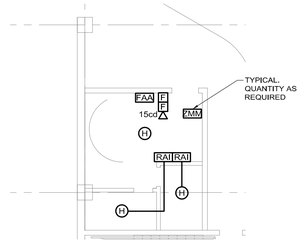


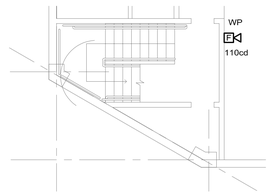
Stair #2
1 E1.00 1ST FLOOR
1/8" = 1'-0"



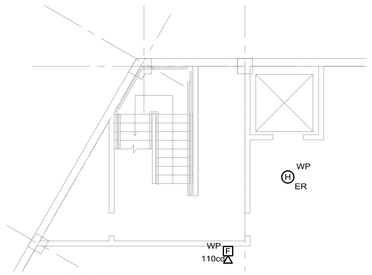
2 E1.00 ELECTRICAL ROOM PART PLAN
1/8" = 1'-0"



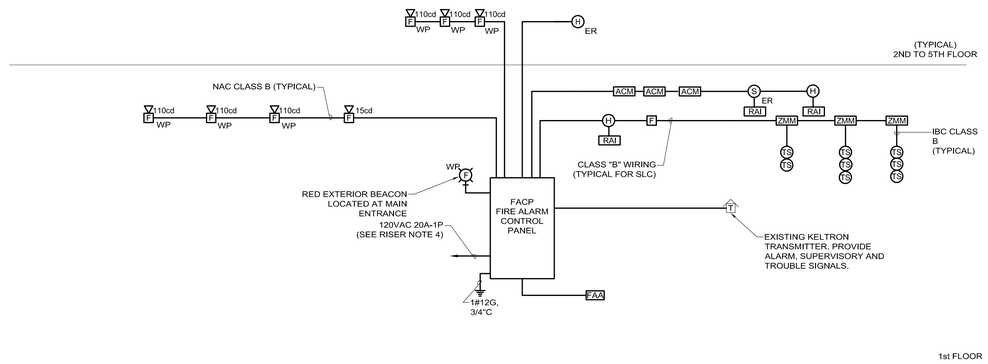
3 E1.00 GARAGE OFFICE PART PLAN
1/8" = 1'-0"



Stairs #1
4 E1.00 TYPICAL - 1ST TO 5TH FLOOR
1/8" = 1'-0"



Stair #2
1 E1.00 TYPICAL-2ND TO 5TH FLOOR
1/8" = 1'-0"



LEO ROY - FIRE ALARM SYSTEM RISER DIAGRAM

SCALE: N.T.S.

1.REFER TO DRAWING FA0.00 FOR LEGEND, SYMBOLS AND GENERAL FIRE ALARM NOTES.

2.THIS DRAWING IS INTENDED TO ILLUSTRATE MAJOR EQUIPMENT AND THE INTENDED INTERCONNECTIONS. THE INITIATION AND NOTIFICATION CIRCUITS SHALL BE CLASS "B" AND ALL SIGNAL LINE CIRCUITS SHALL BE CLASS "B "(STYLE 4) REFER TO THE FLOOR PLANS FOR EXACT LOCATIONS AND QUANTITIES OF DEVICES. REFER TO THE SPECIFICATIONS AND MANUFACTURER'S WIRING DIAGRAMS FOR INTERCONNECTION REQUIREMENTS, INCLUDING WIRE TYPES, QUANTITY OF CONDUCTORS, AND SIZE OF CONDUCTORS. INTERCONNECTION DETAILS SHALL BE INCLUDED IN THE SHOP DRAWINGS WITH COMPONENT CUT SHEETS FOR REVIEW AND APPROVAL.

3.RISER DIAGRAMS ARE TO SHOW INTENT OF OPERATION OF SYSTEMS, QUANTITY OF FIRE ALARM DEVICE SHALL BE PER FLOOR PLANS.

4.UTILIZE EXISTING 120V, 20A-1P CIRCUIT BREAKER PROVIDING POWER TO EXISTING FIRE ALARM CONTROL PANEL TO PROVIDE POWER TO NEW FIRE ALARM CONTROL PANEL. MODIFY CIRCUIT DIRECTORY TO REFLECT THE CHANGE. PROVIDE ONE (1) UL LISTED LOCKING DEVICE AT EACH LOCATION FOR POWER SOURCE CIRCUIT BREAKERS AND LABEL AS "FIRE ALARM CONTROL CIRCUIT" IN THE PANELBOARD DIRECTORY. PROVIDE LUGS SIZED TO ACCOMMODATE NEW CONDUCTORS.

5.PROVIDE SIGNALS TO THE ELEVATOR CONTROLLER FOR ELEVATOR RECALL TO THE DESIGNATED FLOOR AND ELEVATOR RECALL TO THE ALTERNATE FLOOR. COORDINATE WITH THE ELEVATOR CONTRACTOR.

6.VISUAL APPLIANCES WITHIN SAME ROOM OR FIELD OF VIEW SHALL BE SYNCHRONIZED.

7.STROBES INDICATED AS 15CD OR 30CD SHALL BE DUAL RATED 15/75CD RESPECTIVELY, OR 75CD MINIMUM IF NOT AVAILABLE BY THE MANUFACTURER.

8.FIRE ALARM SYSTEM INSTALLATION SHALL BE IN CONFORMANCE WITH THE LATEST FIRE DEPARTMENT RULES AND REGULATIONS.

9.ALL LOW VOLTAGE FIRE ALARM CIRCUITS MAY OCCUPY A COMMON CONDUIT, RUN AC POWER AND CONTROL IN SEPARATE CONDUIT. DO NOT RUN WITH ANY OTHER FIRE ALARM SYSTEM WIRING IN A COMMON CONDUIT.

10. CONTRACTOR SHALL SYNCHRONIZE TEMPORALS ON ALL A/V DEVICES.

11. PROVIDE A MINIMUM OF TWO NOTIFICATION CIRCUITS PER FLOOR OR AREA ALTERNATELY WIRING ADJACENT NOTIFICATION APPLIANCES BETWEEN CIRCUITS.

12. PROVIDE FAULT ISOLATION MODULES (IM) ON THE SLC TO PROTECT THE SYSTEM AGAINST LINE-TO-LINE FAULTS. PROVIDE (1) IM PER FLOOR OR (1) PER 20 DEVICES, WHICH EVER IS GREATER.

13. PROVIDE FACP WITH THE FOLLOWING CAPABILITIES:
- DRILL SWITCH TO INITIATE AN EVACUATION SIGNAL.

13. COORDINATE WITH THE OWNER TO PROVIDE (2) TWO DEDICATED TELEPHONE LINES FOR USE BY THE FIRE ALARM SYSTEM COMMUNICATOR TRANSMITTER FOR CENTRAL STATION SUPERVISION AND ALARM. THE REMOTE SUPERVISORY STATION SHALL RETRANSMIT THESE SIGNALS TO THE OWNER'S DESIGNATED REPRESENTATIVE.

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LEO A. ROY & LOWER LOCKS
PARKING GARAGE RESTORATION
LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
	06-19-15	ISSUED FOR BIDDING

ISSUED:

PROJECT NO: 16-2526.01
DRAWN BY: AM
CHECKED BY: MM
SHEET TITLE:

FIRE ALARM PART PLANS & RISER DIAGRAM

FA1.01

Q:\2015\20150312 - LOWELL ROY - LOWER LOCKS PARKING GARAGES\1200 DRAWINGS\1204 ELECTRICAL\PLOT FILES\20150312 FA1.01 FIRE ALARM NEW WORK PART PLANS AND RISER DIAGRAM - LRPG.DWG 6/24/2015 3:52:14 PM LUKAS, CHRISTOPHER

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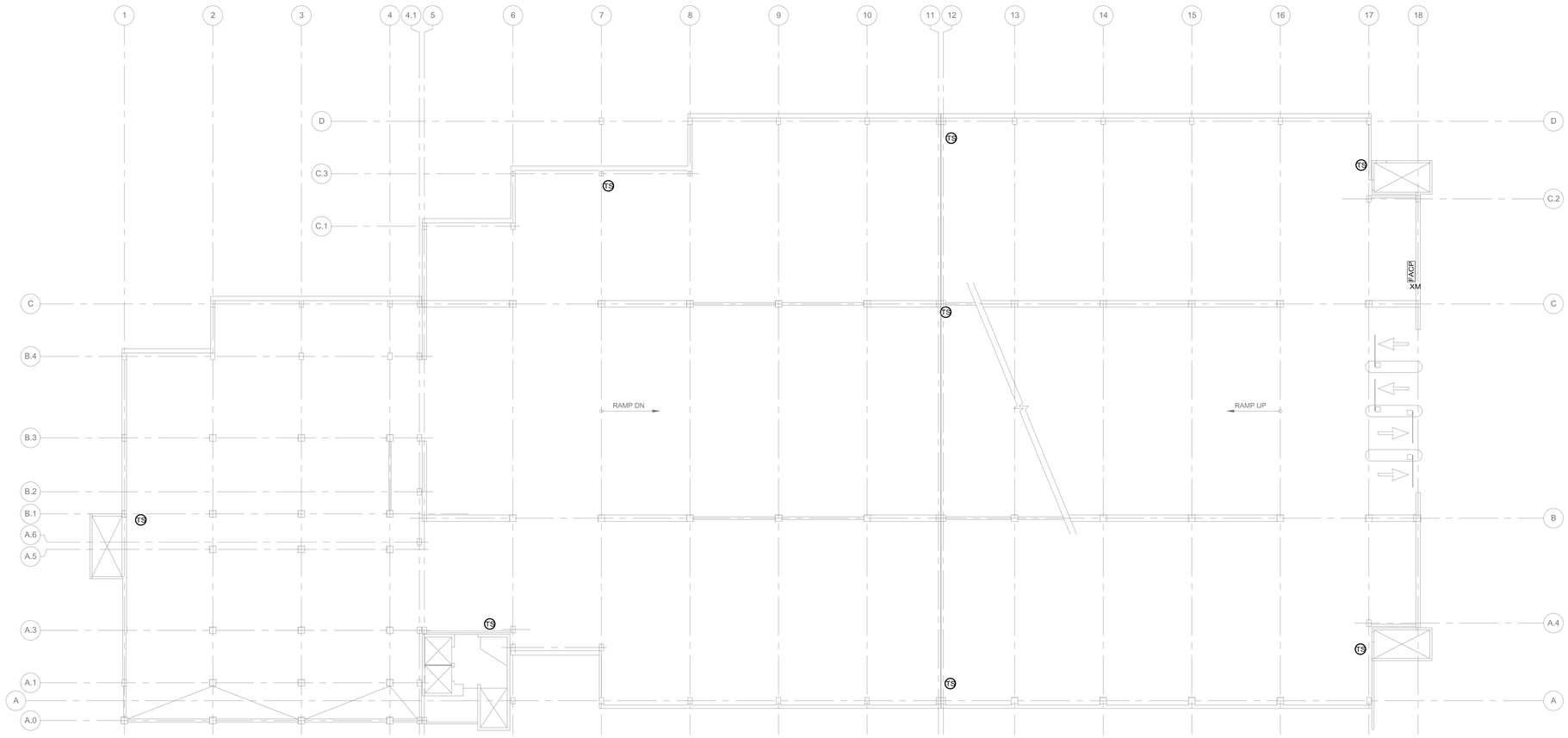
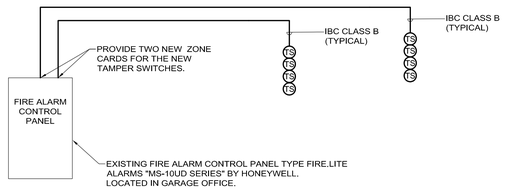


LOWER LOCKS
FIRE ALARM - NEW WORK FIRST LEVEL PLAN
SCALE: 1/16"=1'-0"



LOWER LOCKS - FIRE ALARM SYSTEM RISER DIAGRAM

SCALE: N.T.S.

1.REFER TO DRAWING FA.00 FOR LEGEND, SYMBOLS AND GENERAL FIRE ALARM NOTES

2.THIS DRAWING IS INTENDED TO ILLUSTRATE MAJOR EQUIPMENT AND THE INTENDED INTERCONNECTIONS. THE INITIATION AND NOTIFICATION CIRCUITS SHALL BE CLASS "B" AND ALL SIGNAL LINE CIRCUITS SHALL BE CLASS "B "(STYLE 4) REFER TO THE FLOOR PLANS FOR EXACT LOCATIONS AND QUANTITIES OF DEVICES. REFER TO THE SPECIFICATIONS AND MANUFACTURER'S WIRING DIAGRAMS FOR INTERCONNECTION REQUIREMENTS, INCLUDING WIRE TYPES, QUANTITY OF CONDUCTORS, AND SIZE OF CONDUCTORS. INTERCONNECTION DETAILS SHALL BE INCLUDED IN THE SHOP DRAWINGS WITH COMPONENT CUT SHEETS FOR REVIEW AND APPROVAL.

3.RISER DIAGRAMS ARE TO SHOW INTENT OF OPERATION OF SYSTEMS, QUANTITY OF FIRE ALARM DEVICE SHALL BE PER FLOOR PLANS.

4.FIRE ALARM SYSTEM INSTALLATION SHALL BE IN CONFORMANCE WITH THE LATEST FIRE DEPARTMENT RULES AND REGULATIONS.

5.ALL LOW VOLTAGE FIRE ALARM CIRCUITS MAY OCCUPY A COMMON CONDUIT, RUN AC POWER AND CONTROL IN SEPARATE CONDUIT. DO NOT RUN WITH ANY OTHER FIRE ALARM SYSTEM WIRING IN A COMMON CONDUIT.

FIRE ALARM NOTES

1. ALL FIRE ALARM EQUIPMENT/DEVICES AND THEIR INSTALLATION SHALL MEET THE REQUIREMENTS OF ADA, NFPA 72, NFPA 13, BOCA, THE TOWNSEND FIRE DEPARTMENT RULES AND REGULATIONS AND USPS DESIGN GUIDELINES. REQUIREMENTS INCLUDE MOUNTING HEIGHT, db AND CANDELA LEVELS, AS WELL AS SYNCHRONIZATION OF ALL NEW FIRE ALARM AUDIO/VISUAL AND STROBE ONLY UNITS.
2. ALL FIRE ALARM WIRING SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS. ALL WIRING SHALL BE COPPER #14 AWG MINIMUM. ALL EXPOSED WIRING SHALL BE INSTALLED IN CONDUIT.
3. ALL CONDUIT SHALL BE RIGID STEEL (RGS) CONDUIT. NO CONDUIT SMALLER THAN ½ INCH ELECTRICAL TRADE SIZE SHALL BE USED, UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS. ALL EQUIPMENT LOCATIONS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC.
4. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING FIRE ALARM DEVICES TO REMAIN.
5. ALL FIRE ALARM JUNCTION BOXES (ENTIRE BOX), COVERS AND CONDUIT FITTINGS SHALL BE PAINTED RED. ALL CONCEALED CONDUIT/MC SHALL BE STRIPED RED ON 2'-0" INTERVALS.
6. THE COSTS OF ANY REQUIRED FIRE WATCHES AND/OR FINES DUE TO INTERRUPTIONS, SCHEDULED OR OTHERWISE, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN FIRE ALARM PERMIT AND ELECTRICAL PERMIT AND PAY ALL PERMIT FEES.
8. ALL FIRE ALARM WORK SHALL BE PER THE FIRE AND BUILDING RULES AND REGULATIONS.
9. ALL FIRE ALARM PANELS (I.E. BOOSTER PANELS, TERMINAL CABINETS, ETC.) SHALL BE PROVIDED A NAMEPLATE LABEL: "FIRE ALARM SYSTEM", CONSISTING ONE INCH WHITE LETTERING ON A RED BACKGROUND.
10. PROVIDE AS-BUILT DRAWING CABINET TO HOUSE A COMPLETE SET OF AS-BUILT DRAWINGS HOUSED IN A RED CABINET CLEARLY MARKED 'AS-BUILT DRAWINGS' LOCKED AND KEYED THE SAME AS THE FACP AND MANUAL PULL STATIONS. PROVIDE KEYS PER LOWELL FIRE DEPARTMENT REQUIREMENTS.

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LOWELL MASSACHUSETTS

NO.	DATE	DESCRIPTION
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	06-19-15	ISSUED FOR BIDDING

PROJECT NO: 16-2526.01
DRAWN BY: AM
CHECKED BY: MM
SHEET TITLE:

FIRE ALARM
FIRST LEVEL &
RISER DIAGRAM

FA2.00

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Q:\2015\20150312 - LOWELL ROY - LOWER LOCKS PARKING GARAGES\1200 DRAWINGS\1204 ELECTRICAL\PLOT FILES\20150312 FA2.00 FIRE ALARM FIRST LEVEL NEW WORK PLAN - LLP.DWG 7/29/2015 9:27:52 AM LUKAS, CHRISTOFFER